Solicitor

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Letters Patent of:
Jan LEEMANS *et al.*

Patent No. 5,561,236
Issue Date: October 1, 1996

For: *Genetically Engineered Plant Cells And Plants Exhibiting Resistance To Glutamine Synthetase Inhibitors, DNA Fragments and Recombinants For Use In The Production Of Said Cells And Plants*

NOTICE OF ARBITRATION AWARD PURSUANT TO 35 U.S.C. § 294 AND 37 C.F.R. § 1.335

Mail Stop 8
Director of the USPTO
Attn: Office Of The Solicitor
P.O. Box 1450
Alexandria, VA 22313-1450

The Office is hereby notified of an arbitration award ("Award," attached hereto as Annex A) involving the above-referenced patent and other patents.[1]

These patents were subjects of an arbitration in the International Court of Arbitration of the International Chamber of Commerce ("ICC") captioned as follows:

> *(1) Bayer CropScience A.G. (2) Bayer CropScience N.V. v. (1) Dow AgroSciences LLC (2) Mycogen Plant Science, Inc. (3) Agrigenetics, Inc. d/b/a Mycogen Seeds, LLC (4) Phytogen Seed Company, LLC*, ICC Case No. 18892/VRO/AGF

Other information is provided below:

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[1] The Award concerns Pat. No: RE 44,962 (a reissue of Pat. No. 7,112,665), Pat. No. 5,561,236, Pat. No. 5,646,024, and Pat. No. 5,648,477. A separate notice is provided for each patent. *See* 35 U.S.C. § 294(d). The relevant and non-confidential portions of the Award are provided in Annex A. Portions of the Award that were designated by the parties to the arbitration as being confidential or highly confidential have been redacted.

Patent Owners	Bayer CropScience N.V.; and Biogen Idec MA Inc.
Inventors	Jan LEEMANS; Johan BOTTERMAN; Marc DE BLOCK; Charles THOMPSON; and Rao MOUVA
Parties to the arbitration	*Claimants*: (1) Bayer CropScience A.G.. a German company, having its place of business at Alfred-Nobel-Strasse 50 D-40789, Monheim am Rhein, Germany; and (2) Bayer CropScience N.V., a Belgian company, having its place of business at J.E. Mommaertslaan 14, 1831 Diegem Belgium. *Respondents*: (1) Dow AgroSciences LLC.; (2) Mycogen Plant Science, Inc.,; (3) Agrigenetics, Inc. d/b/a Mycogen Seeds,; and (4) Phytogen Seed Company, LLC, all of which have their principal place of business located at 9330 Zionsville Road, Indianapolis, Indiana, U.S.A.

Although no fees are believed due in connection with the present Notice, if necessary, the Director is hereby authorized to charge the same to Deposit Account No. 02-2448.

Dated: 21/10/2015

Respectfully submitted,

By _____

Jan Desomer, Ph.D.
Senior Patent Counsel
Bayer CropScience NV
Innovation Center-IP Department
J.E. Mommaertslaan 14
1831 Diegem
Belgium

ANNEX A

NOTICE OF ARBITRATION AWARD UNDER 35 U.S.C. § 294 AND 37 C.F.R. § 1.335

[ICC Case No. 18892/VRO/AGF AWARD]

INTERNATIONAL CHAMBER OF COMMERCE

INTERNATIONAL COURT OF ARBITRATION

CASE NO. 18892/VRO/AGF/ZF

BAYER CROPSCIENCE AG (Germany)
and
BAYER CROPSCIENCE NV (Belgium)

Claimants

and

DOW AGROSCIENCES, LLC (U.S.A.)
and
MYCOGEN PLANT SCIENCE, INC. (U.S.A.)
and
AGRIGENETICS, INC. d/b/a MYCOGEN SEEDS, LLC (U.S.A.)
and
PHYTOGEN SEED COMPANY, LLC (U.S.A.)

Respondents

Final Award

(issued pursuant to the 2012 Rules of Arbitration
of the International Chamber of Commerce)

The Arbitral Tribunal:
Professor Fabien Gélinas (President)
Professor George A. Bermann
Professor William W. Park

INTERNATIONAL CHAMBER OF COMMERCE

INTERNATIONAL COURT OF ARBITRATION

CASE NO. 18892/VRO/AGF/ZF

Final Award

Table of Contents

Table of Short Forms

"'024 patent": U.S. Patent No. 5,646,024, concerning processes for transforming a plant cell

"'236 patent": U.S. Patent No. 5,561,236, concerning cells, seeds, and plants

"'477 patent": U.S. Patent No. 5,648,477, concerning vectors

"'665 patent": U.S. Patent No. 7,112,665, concerning DNA sequences

"Accused products": Enlist E3, Insect Resistant Soybean, Enlist Soybean, and soybeans comprising stacks of these events (notably Enlist E3+IR), as well as WideStrike, WideStrike 3, Enlist Cotton, and cotton comprising stacks of these events

"Enlist E3": Soybean event DAS-444Ø6-6, a triple stack of *pat*, *dmmg*, and *aad-12*

"Enlist E3+IR": A breeding stack of Enlist E3 (event number DAS-444Ø6-6) and Insect Resistant Soybean (event number DAS-68416-4); a stack of *pat*, *dmmg*, and *aad-12*, plus two insect-resistance traits

"Enlist Cotton": Cotton event DAS-8191Ø-7, a double stack of *pat* and *aad-12*

"Enlist Soybean": Soybean event DAS-68416-4, a double stack of *pat* and *aad-12*

"Event 416": An event consisting of a stack of the *pat* and *aad-12* genes

"Event 419": Insect-resistance traits Cry1F and Cry1Ac, plus *pat*

"FCC": French Civil Code

"FG72": An event consisting of a stack of the *dmmg* and *hppd* genes

"GS": glutamine synthetase, an enzyme crucial for plant survival

"ICC Court": International Court of Arbitration of the International Chamber of Commerce

"ICC Rules": 2012 Rules of Arbitration of the International Chamber of Commerce

"Insect Resistant Soybean": Soybean event DAS-81419-2, a stack of *pat* and two insect-resistance traits

"MET": the amino acid methionine

"Patents-at-issue": the '236 patent, the '024 patent, the '477 patent, and the '665 patent and its reissue, RE44962

"PPT": phosphinothricin, a compound that inhibits the glutamine synthetase enzyme

"RE44962": A reissue of the '665 patent, conerning DNA sequences

"USPTO": United States Patent and Trademark Office

"VAL": the amino acid valine

"WideStrike" and "WideStrike 3": Cotton events involving stacks of the 281-24-236 and 3006-210-23 events, using *pat* as a selectable marker

Table of Key Actors

"Agrigenetics": Agrigentics, Inc., a predecessor of Dow Agrosciences LLC, and a subsidiary of Lubrizol Genetics, Inc.

"Bayer": Bayer CropScience AG and Bayer CropScience NV, as well as their predecessors

"Biogen": Biogen Idec MA Inc.

"Claimants": Bayer CropScience AG and Bayer CropScience NV, as well as their predecessors

"Dow": Dow Agrosciences LLC, Mycogen Plant Science, Inc., Agrigentics, Inc., and Phytogen Seed Company LLC, as well as their predecessors

"DAS": Dow Agrosciences LLC

"Hoechst": Hoechst Aktiengesellschaft, a predecessor of Bayer CropScience AG and Bayer CropScience NV

"LGI": Lubrizol Genetics, Inc., parent company of Agrigenetics, Inc.

"MS Tech": MS Technologies, LLC

"Mycogen": Mycogen Plant Science, Inc.

"PGS": Plant Genetic Systems, Bayer's predecessor

"Respondents": Dow Agrosciences LLC, Mycogen Plant Science, Inc., Agrigentics, Inc., and Phytogen Seed Company LLC, as well as their predecessors

Table of Agreements

"*pat* Research License": Hoechst Aktiengesellschaft-Agrigenetics Company Agreement, dated 29 April 1991; Agreement providing Agrigenetics with a license to use the *pat* gene and certain glufosinate-resistant plants, and to use the *pat* gene as a seletable marker

"Promoter Research License": Lubrizol Genetics, Inc.-Hoechst Aktiengesellschaft Agreement, dated 29 April 1991; Agreement providing Hoescht with a license to use LGI's Tmr, p-Ubi (also known as ubiquitin) and p-Emu promoters for research purposes in conjunction with the expression of the *pat* gene in plants

"1991 Agreements": Collectively the *pat* Research License and the Promoter Research License

"Secrecy Agreement": Hoechst Aktiengesellschaft-Agrigenetics Company Secrecy Agreement, dated 29 April 1991; Agreement indicating Hoechst and Agrigenetics' intention to open discussions concerning general cooperation in the field of plant breeding

"1992 Agreement": Hoescht Aktiengesellschaft-Lubrizol Genetics, Inc., Agreement, dated 15 June 1992; A royalty-free cross-licensing agreement granting LGI a license to the *pat* gene and Hoescht a license to certain promoters

"Hoechst Aktiengesellschaft-Agrigenetics, L.P. Secrecy Agreement", dated 13 December 1993: [redacted]

"2004 Bayer-MS Tech Agreement": Acquisition Agreement of Certain Soybean Assets of Bayer CropScience S.A. and License Agreement Between Bayer CropScience S.A. and MS Technologies, LLC, dated 28 May 2004; An agreement notably granting MS Tech a license to Bayer's *dmmg* gene

"2007 Dow-MS Tech Agreement": Dow AgroSciences, LLC-MS Technologies, LLC, Material Transfer Agreement, dated 11 September 2007; An agreement granting Dow access to Bayer's *dmmg* gene, [redacted]

"2007 Bayer-MS Tech Agreement": Agreement for Soybeans among Bayer CropSciences AG, MS Technologies LLC and Mertec LLC, dated 19 November 2007; An agreement notably providing Bayer with [redacted]

"2008 Dow-MS Tech Agreement": Dow AgroSciences, LLC-MS Technologies, LLC, Agreement, dated 4 April 2008; An agreement transferring soybean-seed Transformants containing the *pat* gene from Dow to MS Tech

1. FACTS AND PROCEDURE

1. These proceedings arose out of the alleged breach and termination of a license agreement executed on 15 June 1992 ("1992 Agreement" or "Agreement"), as well as the alleged infringement of four United States patents relating to technology covered by the license.

I. The Parties

2. First Claimant, BAYER CROPSCIENCE AG, is a corporation organized and existing under the laws of Germany, with its principal place of business at Alfred-Nobel-Strasse 50, 40789 Monheim am Rhein, Germany.

3. Second Claimant, BAYER CROPSCIENCE NV, is a corporation organized and existing under the laws of Belgium, with its principal place of business at J.E. Mommaertslaan 14, 1831 Diegem, Belgium.

4. Claimants are represented in this Arbitration by:

Robert J. Koch
Michael D. Nolan
Stephanie R. Amoroso
Ronald L. Sigworth
Kamel Aït-El-Hadj
Edward J. Mayle
MILBANK, TWEED, HADLEY & MCCLOY LLP
International Square Building
1850 K Street, NW, Suite 1100
Washington, DC 20006-5417
U.S.A.
Tel: +1 202 835 7500
Fax: +1 202 835 7586
Email: rkoch@milbank.com
mnolan@milbank.com
samoroso@milbank.com
rsigworth@milbank.com
kait-el-hadj@milbank.com
emayle@milbank.com

Fredrick M. Zullow
Christopher J. Gaspar
MILBANK, TWEED, HADLEY & MCCLOY LLP
1 Chase Manhattan Plaza
New York, NY 10005
U.S.A.
Tel: +1 212 530 5533
Fax: +1 212 530 5219
Email: fzullow@milbank.com
cgaspar@milbank.com

Stephen L. Drymer
WOODS LLP
2000 McGill College Avenue, Suite 1700
Montréal, Québec H3A 3H3
Canada
Tel: +1 514 370 8745
Fax: +1 514 284 2046
Email: sdrymer@woods.qc.ca

5. First Respondent, DOW AGROSCIENCES, LLC ("DAS"), is a limited liability company organized under the laws of Delaware, U.S.A., with its headquarters and principal place of business at 9330 Zionsville Road, Indianapolis, IN 46268, U.S.A.

6. Second Respondent, MYCOGEN PLANT SCIENCE, INC. ("Mycogen"), is a corporation organized under the laws of Delaware, U.S.A., with its headquarters and principal place of business at 9330 Zionsville Road, Indianapolis, IN 46268, U.S.A.

7. Third Respondent, AGRIGENETICS, INC. ("Agrigenetics"), which conducts business under the name MYCOGEN SEEDS, LLC, is a corporation organized under the laws of Delaware, U.S.A., with its headquarters and principal place of business at 9330 Zionsville Road, Indianapolis, IN 46268, U.S.A.

8. Fourth Respondent, PHYTOGEN SEED COMPANY, LLC, is a limited liability company organized under the laws of Delaware, U.S.A., with its headquarters and principal place of business at 9330 Zionsville Road, Indianapolis, IN 46268, U.S.A.

9. Respondents are represented in this Arbitration by:

Peter A. Bicks
Alex V. Chachkes
Robert L. Sills
James L. Stengel
ORRICK, HERRINGTON & SUTCLIFFE LLP
51 West 52nd Street
New York, NY 10019
U.S.A.
Tel: + 1 212 506 5000
Fax: +1 212 506 5151
Email: pbicks@orrick.com
achachkes@orrick.com
rsills@orrick.com
jstengel@orrick.com

Jeffrey M. Prokop
ORRICK, HERRINGTON & SUTCLIFFE LLP
Columbia Center
1152 15th Street, NW
Washington, DC 20005
U.S.A.
Tel: +1 202 339 8400
Fax: +1 202 339 8500
Email: jprokop@orrick.com

Professor Emmanuel Gaillard
Mark S. McNeill
SHEARMAN & STERLING LLP
114, avenue des Champs-Élysées
75008, Paris
France
Tel: +33 1 53 89 70 00
Fax: +33 1 53 89 70 70
Email: egaillard@shearman.com
mark.mcneill@shearman.com

II. The Arbitral Tribunal

10. On 28 March 2013, the International Court of Arbitration of the International Chamber of Commerce ("ICC Court") confirmed Professor William W. Park as Co-arbitrator upon Claimants' nomination. His contact details are:

Professor William W. Park
BOSTON UNIVERSITY LAW FACULTY
765 Commonwealth Avenue
Boston, 02215
U.S.A.
Tel.: +1 617 353 3149
Fax: +1 617 353 3077
Email: wwpark@bu.edu

11. On 28 March 2013, the ICC Court confirmed Professor George A. Bermann as Co-arbitrator upon Respondents' nomination. His contact details are:

Professor George A. Bermann
COLUMBIA UNIVERSITY
Jerome L. Greene Hall
435 West 116th Street
New York, NY 10027
U.S.A.
Tel.: +1 212 854 4258
Fax: +1 212 854 7946
Email: gbermann@law.columbia.edu

12. On 8 August 2013, the ICC Court appointed Professor Fabien Gélinas as President of the Arbitral Tribunal upon the proposal of the Canadian National Committee. His contact details are:

Professor Fabien Gélinas
MCGILL UNIVERSITY
Faculty of Law
3644 Peel Street
Montreal, Quebec H3A 1W9
Canada
Tel.: +1 (514) 398-6623
Fax: +1 (514) 398-3233
Email: fabien.gelinas@mcgill.ca

III. The Arbitration Agreement

13. These proceedings were initiated in connection with the 1992 Agreement, dated 15 June 1992 and signed by Claimants' and Respondents' respective predecessors-in-interest, Hoechst Aktiengesellschaft ("Hoechst") and Lubrizol Genetics, Inc. ("LGI"). The 1992 Agreement provides in its Article 10 that it "shall inure to the benefit of the parties and their legal successors in interest."

14. Article 12 of the 1992 Agreement reads as follows:

> This Agreement shall be governed by and construed in accordance with the laws of France.
>
> Any controversies or disputes in connection with this Agreement which cannot be amicably settled by the parties shall be decided by arbitration in accordance with the Rules of Conciliation and Arbitration of the International Chamber of Commerce then prevailing. The arbitration shall be held at the place of business of the defendant. The decision of this Court of Arbitration shall be final and binding on the parties and their legal successors.
>
> Each party to this Agreement may apply to any ordinary court having jurisdiction for judicial acceptance of the award or order of enforcement for the purpose of its execution.
>
> In the event legal provisions should prevent a final settlement by arbitration, the place of venue shall be Paris.

15. Article 12 thus provides that this Arbitration is to be conducted in accordance with the Rules of Arbitration of the ICC ("ICC Rules"). The proceedings were commenced on 13 August 2012. The current version of the ICC Rules came into effect on 1 January 2012 and therefore governs this Arbitration.

16. Article 12 further stipulates: "This Agreement shall be governed by and construed in accordance with the laws of France."

17. The parties have agreed that U.S. law governs the claims for patent infringement.[1]

18. Article 12 of the Agreement provides that "arbitration shall be held at the place of business of the defendant." The parties agree that the place of business of the defendant is Indianapolis, Indiana (U.S.A.). The place of Arbitration is accordingly Indianapolis.

19. The arbitration agreement does not specify the language of this Arbitration. The parties have agreed that the Arbitration shall be conducted in English.[2]

IV. Summary of Facts

20. The Claimants in this Arbitration are Bayer CropScience AG and Bayer CropScience NV (collectively, "Bayer" or "Claimants"). The Respondents are DAS, Mycogen, Agrigenetics, and the Phytogen Seed Company LLC (collectively, "Dow" or "Respondents"). For ease of

[1] Terms of Reference. dated 4 October 2013, paras. 72-73
[2] *Id.*, para. 74

presentation, references to the parties include their respective predecessors, and the names of predecessors are used only when helpful to the understanding of this Award.

21. At the beginning of the 1990s, when the industry for bioengineered crops was in its infancy, predecessors of Bayer and Dow initiated talks to evaluate the feasibility of a relationship in the seed business.[3] Hoechst, a predecessor of Bayer CropScience AG and Bayer CropScience NV, had invented and obtained patent rights to a recombinant DNA technology, the *pat* gene, which confers resistance to the herbicide glufosinate and is used both for its herbicide-resistance trait and as a "selectable marker" in genetic transformation processes intended to confer other traits to plants.[4] The *pat* gene, which is now at the center of this Arbitration, was of interest to Agrigenetics, a predecessor of DAS.

22. In June 1992, Hoechst and LGI, the parent company of Agrigenetics,[5] entered into the royalty-free cross-licensing agreement, dated 15 June 1992, that is now at issue in this Arbitration. Under the 1992 Agreement, LGI obtained rights to use the *pat* gene, and Hoechst, rights to use certain promoters under defined LGI patent rights.[6] Promoters are used to initiate transcription (the first step of trait expression) of a particular gene in a plant and were of interest to Hoechst at the time.[7]

23. The 1992 Agreement provides in its Article 10 that it "shall inure to the benefit of the parties and their legal successors in interest." Rights and obligations under the 1992 Agreement were transferred by Hoechst to Hoechst Schering AgrEvo GmbH in 1994, then to Aventis CropScience in 1999, and finally to Bayer in 2002.[8] Rights to the *pat* gene that LGI acquired under the Agreement were transferred to Mycogen in 1992, then to DowElanco in 1996, and finally to DAS in 1997.[9]

24. For a period of almost 20 years, the parties operated under the 1992 Agreement without any disputes. LGI's promoters were widely used by Claimants,[10] and the *pat* gene was utilized in

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[3] C-18 (Translation at R-29): Letter from Agrigenetics to Hoechst, dated 22 March 1991
[4] Claimants' Phase I Memorial, dated 7 November 2013, paras. 2-3
[5] Respondents' Phase I Memorial, dated 28 January 2014, para. 13
[6] C-2: Hoechst Aktiengesellschaft-Lubrizol Genetics, Inc. Agreement, dated 15 June 1992 ("1992 Agreement"), Arts. 2, 3
[7] Claimants' Phase I Memorial, dated 7 November 2013, para. 53; Respondents' Phase I Memorial, dated 28 January 2014, para. 10, n.8
[8] Claimants' Phase I Memorial, dated 7 November 2013, para. 3
[9] *Id.*
[10] Respondents' Phase I Closing Presentation, dated 17 April 2014, slide 76

numerous products that now comprise the majority of Respondents' multi-billion dollar seed business.[11]

25. On 9 November 2011, Claimants sent Respondents a letter entitled "Notice of Material Breach" pursuant to Article 9 of the 1992 Agreement.[12] Article 9 is a clause governing termination, known as a *clause résolutoire* in French law, the law that the parties have made applicable to the Agreement.[13] The letter refers to Article 4 of the 1992 Agreement, according to which Respondents do not possess the right "to use any other proprietary technology owned by or available to [Claimants] in connection with the licenses" granted under the Agreement. The letter goes on to explain that Respondents have used the glufosinate-resistance technology (*pat*) that is the object of the 1992 Agreement in connection with 2,4-D resistance technology, a "proprietary technology owned by or available to" Claimants, and have used *pat* in connection with glyphosate resistance technology "in a manner that is not authorized under any license, or sublicense thereof, from Bayer."[14]

26. By letter dated 13 January 2012, Respondents replied to the notice, stating that they were "in full compliance with the referenced 1992 Agreement" and did "not intend to take any action in response" to the notice.[15] On 17 January 2012, Claimants sent a letter entitled "Notice of Termination" regarding the 1992 Agreement, referring again to the unauthorized "combination" of herbicide-resistance technologies and stating that the Agreement was terminated "with immediate effect".[16]

27. The use of herbicide-resistance technologies that prompted Claimants' notice of breach and notice of termination had materialized some time before, in the development through molecular stacking of the "Enlist E3" soybean, a three-gene event resistant to three herbicides. The necessary three-gene construct was built by Dow [redacted] This was successfully accomplished at some point in [redacted]. The Enlist E3 event contains

[11] Respondents' Phase I Memorial, dated 28 January 2014, para. 2
[12] C-2: 1992 Agreement, Art. 9
[13] *Id.*, Art. 12
[14] C-86: Letter from Bayer to Dow, dated 9 November 2011
[15] C-87: Letter from Dow to Bayer, dated 13 January 2012
[16] C-88: Letter from Bayer to Mycogen, dated 17 January 2012
[17] C-205: [redacted]

Dow's *aad-12* gene, which confers resistance to 2,4-D; Bayer's *dmmg* (or *2mepsps*) gene, which confers resistance to glyphosate; and Bayer's *pat* gene, which confers resistance to glufosinate.[18] The relevant Transformants were then sent on to MS Technologies, LLC ("MS Tech") ("2008 Dow-MS Tech Agreement"), which, like the [redacted], is not a party to this Arbitration. MS Tech had received from Bayer rights and access to the *dmmg* gene that went into the Enlist E3 event ("2004 Bayer-MS Tech Agreement").[19] It is now common ground that the Enlist E3 event was made for, and is owned by, MS Tech.[20]

28. Claimants allegedly learned about Enlist E3 on 22 August 2011 and, as mentioned earlier, sent their notice of breach on 9 November of the same year.[21]

29. On 20 January 2012, Claimants filed a complaint against Respondents in the U.S. District Court for the Eastern District of Virginia, alleging infringement of four of their patents.[22] The first patent-at-issue is the '236 patent, which was filed on 17 May 1990 and issued on 1 October 1996. It covers plants, seeds, and cells containing the *pat* gene, and it expired on 1 October 2013.[23] The second patent, the '024 patent, was filed on 5 June 1995 and relates to transformation processes for introducing *pat* into a cell's genome. The patent issued on 8 July 1997 and expired on 8 July 2014.[24] The third patent, the '477 patent, covers vectors used to impart glufosinate resistance (i.e., *pat* activity). It was filed on 7 June 1995, it issued on 15 July 1997, and it expired on 15 July 2014.[25] Finally, the fourth patent, the '665 patent, was filed on 5 June 1995 and covers DNA sequences including the *pat* gene. Following its issue on 26 September 2006, Bayer filed a reissue application relating to this patent on 10 September 2013. The '665 patent was reissued on 24 June 2014 as the RE44962 patent, and will expire on 26 September 2023.[26]

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[18] C-66: Dow AgroSciences, LLC-MS Technologies, LLC, dated 4 April 2008 ("2008 Dow-MS Tech Agreement")
[19] C-57: Bayer CropSciences SA-MS Technologies, LLC, dated 28 May 2004 ("2004 Bayer-MS Tech Agreement")
[20] See e.g. Respondents' Phase I Memorial, dated 28 January 2014, para. 55; Claimants' Phase I Reply, dated 27 February 2014, para. 138
[21] 22 April 2011 is the date when Dow and MS Tech issued a joint press release announcing their joint petition seeking regulatory approval for DAS-44406-6 (the E3 event). See R-19: Dow Press Release, "Dow AgroSciences, M.S. Technologies Submit for Approval of First Ever Three-Gene Herbicide Tolerant Soybean", dated 22 August 2011, *available at* http://www.dowagro.com/newsroom/corporate/2011/20110822a.htm (press release), and C-84: Petition for Determination of Nonregulated Status for Herbicidal Tolerant DAS-44406-6 Soybean (petition)
[22] C-89: *Bayer CropScience AG v. Dow AgroSciences LLC*, No. 2:12-cv-00047-RAJ-TEM (E.D. Va.), Complaint, dated 20 January 2012
[23] C-5: '236 Patent; Claimants' Phase II Memorial, dated 2 June 2014, paras. 40ff
[24] C-6: '024 Patent; Claimants' Phase II Memorial, dated 2 June 2014, paras. 49ff
[25] C-7: '477 Patent; Claimants' Phase II Memorial, dated 2 June 2014, paras. 52ff
[26] C-8: '665 Patent; C-350: RE44962 Reissue Patent; Claimants' Phase II Memorial, dated 2 June 2014, paras. 55ff

30. On 9 March 2012, Respondents moved to dismiss Claimants' complaint or, in the alternative, to stay the Virginia litigation pending arbitration in accordance with Article 12 of the 1992 Agreement.[27] Claimants opposed that motion, taking the position that the arbitration agreement did not extend to the patent infringement claims.[28]

31. On 13 July 2012, Judge Jackson of the U.S. District Court for the Eastern District of Virginia granted Respondents' motion to stay the case in favor of arbitration, ruling that all of the claims fell within the scope of the arbitration clause.[29] Claimants then wanted either Dow to commence arbitration in Germany or the parties to jointly commence arbitration, which led Respondents to file a motion to compel Claimants to commence arbitration.[30] On 31 July 2012, Judge Jackson issued an order directing Claimants to commence arbitration by 13 August 2012, failing which the court would dismiss the case.[31]

32. The subsequent procedural history that led to this Award is recounted below.

V. History of the Arbitral Proceedings

33. On 13 August 2012, Bayer filed its Request for Arbitration.

34. On 29 October 2012, Respondents submitted an Answer to Claimants' Request for Arbitration.

35. On 2 September 2013, at the request of the Arbitral Tribunal, Claimants and Respondents each submitted a letter providing observations on the conduct of the arbitral proceedings, as well as a list of issues to be determined by the Arbitral Tribunal. Claimants also submitted a redacted version of their Memorial.

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[27] R-39: *Bayer CropScience AG v. Dow AgroSciences LLC*, No. 2:12-cv-00047-RAJ-TEM (E.D. Va.), Defendants' Memorandum in Law in Support of Their Motion to Dismiss or, in the Alternative, to Stay this Action Pending Arbitration, dated 9 March 2012

[28] R-8: *Bayer CropScience AG v. Dow AgroSciences LLC*, No. 2:12-cv-00047-RAJ-TEM (E.D. Va.), Plaintiffs' Memorandum in Opposition to Defendants' Motion to Dismiss or, in the Alternative, to Stay, this Action Pending Arbitration, dated 13 April 2012, at 8-16

[29] R-10: *Bayer CropScience AG v. Dow AgroSciences LLC*, No. 2:12-cv-00047-RAJ-TEM (E.D. Va.), Memorandum Opinion & Order, dated 13 July 2012

[30] R-112: *Bayer CropScience AG v. Dow AgroSciences LLC*, No. 2:12-cv-00047-RAJ-TEM (E.D. Va.), Defendants' Memorandum in Support of Their Motion for an Order of Clarification Regarding Initiation of Arbitration Proceedings, dated 27 July 2012

[31] R-11: *Bayer CropScience AG v. Dow AgroSciences LLC*, No. 2:12-cv-00047-RAJ-TEM (E.D. Va.), Order, dated 31 July 2012

36. On 2 October 2013, a case management conference took place at which procedural issues, particularly the possibility of bifurcating the proceedings, were discussed.

37. On 4 October 2013, the Terms of Reference, executed by the parties and the members of the Arbitral Tribunal, took effect.

38. On 11 October 2013, Claimants submitted a request to the Tribunal for interim measures, in the form of an order, directed at Respondents, to cease all activities pertaining to the *pat* gene pending the resolution of the dispute.

39. By letter dated 18 October 2013, following written submissions by the parties on the issue of bifurcation on 14 October 2013, the Arbitral Tribunal informed the parties that it had come to a determination in favor of bifurcation.

40. On 30 October 2013, Claimants submitted the unredacted version of their Memorial, on which they elected to rely as their opening Memorial in this Arbitration on 7 November 2013.

41. On 5 November 2013, the parties agreed to stipulate terms regarding disclosure in the Arbitration and jointly requested that those terms be entered as a stipulated procedural order, which was issued by the Arbitral Tribunal as Procedural Order No 1 on 7 November 2013.

42. Following a case management conference and procedural hearing held on 7 November 2013, the Arbitral Tribunal issued two orders on 15 November 2013.

43. Procedural Order No 2 (Decision on Interim Measures) denied Claimants' pending request for interim measures.

44. Procedural Order No 3 (Initial Procedural Directions) bifurcated the proceedings into two evidentiary phases, a "contract" phase and, if required, a "patent infringement" phase. A Procedural Timetable for Phase I was also issued.

A. Phase I

45. Pursuant to Procedural Order No 3, the proceedings in this Arbitration were bifurcated in a manner that made the holding of a second phase on patent infringement dependent on the findings of the Arbitral Tribunal following Phase I, which focused upon the purported breach and termination of the 1992 Agreement. If the Agreement conferred a license that encompasses Respondents' use of the technology at issue and if that license is still in effect, then the patent infringement claims are

moot. If, however, the Agreement was breached and validly terminated, then Respondents do not have a license to use the technology and must face the patent infringement claims brought against them.

46. Paragraph 8 of Procedural Order No 3 describes the scope of the two phases of the proceedings as follows:

> The contract issues as they are defined in the Terms of Reference will be addressed in the first phase of the proceedings. This will cover issues of costs as they are incurred until completion of the first phase, including those related to the Virginia litigation, but not the measure and award of any monetary remedy to Claimants. If needed, the patent infringement issues defined in the Terms of Reference will be addressed in a second phase of the proceedings, together with the measure and award of any monetary remedy to Claimants under the License Agreement.

47. The contract issues were thus defined by reference to the issues listed in the Terms of Reference.

48. Pursuant to Procedural Order No 3 and Procedural Timetable No 1, Claimants and Respondents exchanged document requests on 26 November 2013, submitted objections on 10 December 2013, and responded to objections on 16 December 2013.

49. Following the joint submission of a Redfern Schedule to the Arbitral Tribunal by Claimants and Respondents on 19 December 2013, the Tribunal issued Procedural Order No 4 (Decision on Document Production) on 23 December 2013, which *inter alia*, ordered Claimants to provide a privilege log detailing the claims of protection appearing under three of Respondents' requests for production in the Redfern Schedule (33, 34, and 35).

50. On 1 January 2014, the Tribunal issued Procedural Order No 4A (Amended Decision on Document Production), following a request for clarification of Procedural Order No 4 by Claimants. Claimants produced a privilege log on 2 January 2014 and a revised privilege log on 6 January 2014.

51. On 7 January 2014, following Respondents' objections to Claimants' privilege log, the Arbitral Tribunal issued Procedural Order No 5 (Decision on Claimants' Claims of Protection), sustaining Respondents' objection to the protection of Logs 50 and 53–56, and denying Respondents' other objections.

52. On 28 January 2014, Respondents submitted their Phase I Memorial.

53. On 27 February 2014, Claimants submitted their Phase I Reply.

54. On 13 March 2014, in response to procedural requests by Respondents, including a request for a case management conference, the Tribunal issued Procedural Order No 7 (Procedural Decision concerning Article 23(4) and other matters), reserving its decision on the use of documents C-157 and C-162 (and their English translations C-158 and C-163) and denying Respondents' other claims.

55. On 21 March 2014, after ordering further information regarding documents C-157 and C-162 from Claimants, the Arbitral Tribunal issued Procedural Order No 7A (Additional Procedural Decision concerning Article 23(4) and other matters), denying Respondents' request that Claimants be precluded from relying on those documents.

56. On 27 March 2014, Respondents submitted their Phase I Reply.

57. On 31 March 2014, at the request of the parties, the President of the Arbitral Tribunal held a preparatory conference regarding the procedure for the hearing. On 1 April 2014, at the Tribunal's request, the parties jointly reported their agreement on nearly all of the points discussed, and on 2 April 2014, the Tribunal issued Procedural Order No 8 (Procedural Directions for the First Phase Hearing).

58. On 9, 10, 11, 12, and 17 April 2014, a hearing on Phase I of this Arbitration was held in New York.

59. On 24 April 2014, the Tribunal issued a Procedural Timetable No 3 and requested Phase I Post-Hearing Submissions addressing specific questions, and Phase I Costs Submissions.

60. On 6 May 2014, the parties simultaneously submitted their Phase I Post-Hearing Submissions, followed by their Phase I Post-Hearing Replies on 13 May 2014.

61. On 13 May 2014, the parties submitted Phase I Costs Submissions, followed by their Phase I Costs Replies on 16 May 2014.

62. Having heard the parties and considered their submissions as well as the evidence they adduced in Phase I, the Arbitral Tribunal provisionally formed the view that the 1992 Agreement was indeed breached by Respondents and that it had been validly terminated: outlining their "procedural and tentative views," the Tribunal indicated that "Respondents breached Art. 4 by a grant of rights to a third party to use the *pat* gene or a construct containing it" and that "[t]he notices of breach and

termination cover breach by reason of an unauthorized grant of rights, specifying use of the technology in a manner not authorized under any license, and thus meet the applicable requirements for termination."[32] The proceedings in this Arbitration therefore continued on to Phase II pursuant to the Tribunal's decision issued as Procedural Order No 10 (Decision concerning the Second Phase) on 23 May 2014.

63. For the sake of clarity in outlining the steps of Phase I of this Arbitration, it should be mentioned that, although issues relating to costs, including the parties' legal fees and expenses, were included in the Phase I submissions, costs submissions were requested and obtained from the parties merely to ensure that the Tribunal would be in a position to render a final award putting an end to these proceedings if it found in favor of Respondents on the contract claims. Having decided to proceed on to Phase II, the Tribunal deferred its consideration of the issue of costs and will address them in the Part 6 of this Award.

64. Also, although the issue of the so-called Virginia litigation costs is, strictly speaking, a contract issue, it has no bearing on the other contractual claims raised in this case and was included in Phase I—and submissions addressing the issue were requested and obtained from the parties—only to ensure that the Tribunal would be in a position to render a final award if it found in favor of Respondents on the other contract issues. Having decided to proceed on to Phase II, the Tribunal deferred its consideration of this issue and will address it in Part 6 of this Award.

65. Finally, one issue was put to the side at the conclusion of Phase I of the proceedings. At the outset of the proceedings, Claimants had made a reservation concerning the jurisdiction of this Tribunal over the issues allotted for consideration in Phase II. When the Terms of Reference took effect on 4 October 2013, Claimants had taken the position that the arbitration clause in the 1992 Agreement did not extend to its patent infringement claims against Respondents. This led to jurisdiction being listed in the Terms of Reference as an issue to be determined in this Arbitration. During the first case management conference, however, Claimants indicated that, while they wished to maintain their position that the arbitration clause in the 1992 Agreement did not extend to those claims, they were willing independently to grant jurisdiction to the Tribunal. By letter of 11 October 2013, Claimants consented in writing to the Tribunal's jurisdiction over the patent claims.[33] Jurisdiction was therefore no longer an issue.

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[32] Procedural Order No. 10, dated 23 May 2014, para. 5

[33] Letter from Claimants to the Tribunal, dated 11 October 2013 (last paragraph)

B. Phase II

66. As with the contract issues addressed during Phase I of this Arbitration, the Arbitral Tribunal defined the patent infringement issues to be dealt with during Phase II of this Arbitration by reference to the issues listed in the Terms of Reference. Paragraph 8 of Procedural Order No 3 had described the scope of Phase II in the following terms:

> If needed, the patent infringement issues defined in the Terms of Reference will be addressed in a second phase of the proceedings, together with the measure and award of any monetary remedy to Claimants under the [1992] Agreement.

67. On 31 January 2014, with a view to Phase II of this Arbitration, the Arbitral Tribunal issued Procedural Order No 6 (Procedural Directions for a Second Phase) with a Procedural Timetable No 2, reflecting a proposal jointly submitted by Claimants and Respondents on 21 January 2014 regarding the structure and timetable of a possible Phase II of the Arbitration, comprising a second and third hearing. The second hearing, on patent infringement, validity, and enforceability, would take place in August 2014, and the third hearing, on remedies, would take place in November 2014, with this remedies stage of the Arbitration coming to be known as "Phase III".

68. Pursuant to Procedural Order No 6 and Procedural Timetable No 2, Claimants and Respondents exchanged document requests on 25 April 2014, submitted objections on 5 May 2014, and responded to objections on 9 May 2014.

69. Following Claimants and Respondents' joint submission of a Redfern Schedule to the Tribunal on 12 May 2014, the President of the Arbitral Tribunal issued Procedural Order No 9 (Decision on Document Production for a Second Phase) on 16 May 2014.

70. On 21 May 2014, following a request for clarification from Respondents concerning Procedural Order No 9, the President of the Arbitral Tribunal issued Procedural Order No 9A (Amended Decision on Document Production), which amended the text of the ruling on Claimants' Disclosure Request No 61.

71. On 26 May 2014, pursuant to Procedural Order No 9A, the parties filed or detailed their claims of protection.

72. On 29 May 2014, after Respondents wrote to the Arbitral Tribunal concerning the detail of Claimants' claims of protection, the Arbitral Tribunal issued further directions on document production as Procedural Order No 9B.

73. On 30 May 2014, the parties submitted their technology tutorials.

74. On 2 June 2014, the parties filed burden-based Memorials regarding patent infringement claims and remedies; Claimants filed their Phase II Memorial on infringement and remedies, and Respondents filed their Phase II Memorial on validity and enforceability.

75. On 6 June 2014, the President of the Tribunal held a conference call with the parties to discuss Respondents' request for relief concerning documents and information that were referenced and relied on in Claimants' submissions but which were redacted or withheld from Respondents, and Claimants' request to strike part of Respondents' technology tutorial from the record. On the same day, the President of the Arbitral Tribunal issued Procedural Order No 9C (Further Directions on Document Production and other matters), requiring Claimants to produce unredacted versions of the relevant documents immediately, denying Claimants' request regarding the technology tutorial, and ordering a change in the timetable (Procedural Timetable No 4) to account for the delay in document production.

76. On 1 July 2014, the parties filed Phase II Responsive Memorials regarding infringement, for Respondents, and validity and enforceability, for Claimants. On 10 July 2014, Respondents filed their Phase II Responsive Memorial regarding remedies.

77. On 1 August 2014, the parties filed Phase II Replies regarding infringement, for Claimants, and validity and enforceability, for Respondents. On 11 August 2014, Claimants filed their Reply regarding remedies.

78. On 15 August 2014, in preparation for the Phase II hearing and at the President of the Arbitral Tribunal's request, the parties reported to the Tribunal on their agreement concerning procedural directions for the August hearing.

79. On 18 August 2014, the Tribunal held a pre-hearing preparatory telephonic conference and issued Procedural Order No 11 (Procedural Directions for the Hearing on patent infringement, validity, and enforceability). During the preparatory conference, a difference between the parties as to the precise scope of the third hearing, scheduled for November, became apparent. The Tribunal directed that all remedial issues would be reserved for the November hearing, and this stage of the Arbitration, concerning remedies, began to be referred to as "Phase III".

80. On 25-26 August 2014, a hearing on patent infringement, validity, and enforceability was held in New York.

81. On 5 September 2014, the parties simultaneously submitted Phase II Post-Hearing Submissions, with simultaneous Phase II Post-Hearing Replies on 12 September 2014.

C. Phase III

82. On 25 September 2014, the Tribunal provided guidance to the parties for the preparation of the November hearing, now referred to between the parties as the "Phase III" hearing, and asked the parties to confer on a further round of submissions, and on page limitations for their submissions.

83. On 30 September 2014, the parties reported agreement on a further round of submissions for the Phase III hearing and on page limitations for their submissions.

84. On 6 October 2014, the Tribunal issued Procedural Timetable No 5, reflecting, *inter alia*, the parties' agreement. On the same day, Claimants filed their Phase III Memorial.

85. On 16 October 2014, Respondents filed their Phase III Memorial.

86. On 23 and 30 October 2014, respectively, Claimants and Respondents each filed a Phase III Reply.

87. On 10 November, a pre-hearing preparatory telephonic conference was held at which the parties discussed outstanding issues concerning the Phase III hearing.

88. On 10 November 2014, the Tribunal issued Procedural Order No 12 (Procedural Directions for the Hearing on Remedies).

89. On 20 and 21 November 2014, the hearing on remedies took place in New York.

90. On 4 December 2014, Respondents informed the Tribunal of the USPTO's decision of 2 December 2014 to grant Respondents' request for re-examination of claim 1 of the RE44962 reissue patent, and submitted a Request to Stay Arbitral Proceedings.

91. On 5 December 2014, the Tribunal acknowledged receipt of Respondents' Request to Stay Arbitral Proceedings and gave Claimants an opportunity to respond in writing to the Request.

92. On 10 December 2014, Claimants submitted an Opposition to Respondents' Request to Stay Arbitral Proceedings.

93. On 11 December 2014, at the request of the Tribunal, the parties reported their agreement on the procedure for a second round of submissions concerning Respondents' Request to Stay Arbitral Proceedings.

94. In accordance with the parties' agreement, Respondents submitted a Responsive Submission on 12 December 2014 and Claimants, a Responsive Submission on 15 December 2014.

95. On 22 December 2014, the Arbitral Tribunal issued Procedural Order No 13 (Decision on Request to Stay Arbitral Proceedings), denying the Request to stay arbitral proceedings.

96. On 4 February 2015, the Tribunal requested Phase III Post-Hearing Submissions on a number of issues. On 18 February 2015, the parties simultaneously submitted Phase III Post-Hearing Submissions, followed by their Phase III Post-Hearing Replies on 27 February 2015.

97. On 19 February 2015, on 28 May 2015, and on 20 August 2015, respectively, the ICC Court extended the time limit for rendering the Final Award until 29 May 2015, 31 August 2015, and 30 November 2015.

98. On 30 April 2015, the Arbitral Tribunal declared the proceedings closed subject to cost submissions and indicated that a draft award would be submitted to the ICC Court approximately five weeks following the last cost submissions.

99. On 14 May 2015, the parties simultaneously submitted their Costs Submissions, reflecting the costs of all three phases of the Arbitration, followed by their Costs Replies on 21 May 2015.

100. On 12 June 2015, Respondents requested to supplement the record with a Federal Circuit case[34] that, in their view, concerned the issues of costs and patent law standing. On 16 June 2015, Claimants informed the Tribunal that they did not oppose the entry of the case into the record. The Tribunal, accordingly, entered the case into the record on 20 June 2015. On 14 August 2015, Respondents requested to further supplement the record with an *ex parte* office action granting re-examination of claim 1 of the RE44962 patent.[35] Following written responses from Claimants, on 17 August 2015, and Respondents, on 19 August 2015, the Tribunal determined that the office

[34] *Alps South LLC v. The Ohio Willow Wood Co.*, __ F.3d __ (Fed. Cir. June 5, 2015)
[35] USPTO Office Action in Ex Parte Re-examination, dated 11 August 2015

action would be entered into the record on 21 August 2015, noting that it continued to regard the record as being closed.

101. At its session of 1 October 2015, the ICC Court approved this Final Award pursuant to Article 33 of the ICC Rules and fixed the costs of the Arbitration.

VI. The Applicable Rules of Law

102. Article 12 of the 1992 Agreement provides: "This Agreement shall be governed by and construed in accordance with the laws of France."

103. The parties have agreed, in the Terms of Reference, that U.S. law governs the claims for patent infringement.[36]

VII. Claims and Issues for Determination

104. Based on their most recent submissions in this Arbitration, the parties, on both sides, seek relief as follows:

- Declarations as to contract breach and termination or continued validity;
- Declarations as to patent scope, validity, and enforceability;
- Declarations as to (wilful) patent infringement;
- Recovery of reasonable legal and other costs, including ICC costs and the Virginia litigation costs;
- Pre-award simple interest on costs at a rate between 6% and 10%;
- Other relief the Tribunal may deem appropriate.

More particularly, Claimants seek:

- Damages for breach of contract, in the maximum amount of $990 million (including pre-award interest);
- A cessation and destruction order under French law;
- Injunctive relief under U.S. patent law;
- Patent damages in the form of a lump-sum reasonable royalty in the maximum amount of $746.3 million (including pre-award interest);
- The trebling of patent damages for wilful infringement, yielding an additional maximum amount of $1.493 billion;

[36] Terms of Reference, dated 4 October 2013 at 43

- Pre-award simple interest on contract and patent damages, at a rate between 6% and 10%, for a maximum of four years;
- Post-award simple interest on all amounts due at a rate between 6% and 10%;

Respondents seek:

- Dismissal of all of Claimants' claims;
- Pre-award simple interest on costs at a rate between 6% and 10%;
- Other relief the Tribunal may deem appropriate.

105. The Terms of Reference list the issues pertaining to the contract claims as follows:

(1) Does the 1992 Agreement prohibit Respondents from using the *pat* gene in combination with other proprietary technology owned by or available to Claimants?

(2) Have Respondents combined the *pat* gene with other proprietary technology owned by or available to Claimants to which Respondents do not have a right of use, and if so, does such a combination constitute a material breach of the Agreement? If so, what monetary and non-monetary relief is appropriate?

(3) Does the Agreement prohibit Respondents from using the *pat* gene for any other purpose except as a selectable marker? If so, does Respondents' alleged use of the *pat* gene materially breach the Agreement, and what monetary and non-monetary relief would be appropriate for such breach?

(4) Have Respondents assigned away their ownership rights in the Transformants obtained by using the *pat* gene and, if so, does such conduct constitute a material breach of the Agreement? If so, what monetary and non-monetary relief is appropriate?

(5) Have Respondents failed to give Claimants notice that Respondents had made an invention(s) or improvement(s) on the *pat* gene, and if so, does such failure constitute a material breach of the Agreement? If so, what monetary and non-monetary relief is appropriate?

(6) Did Respondents fail to negotiate a license to Bayer to the Enlist E3 triple-gene event, and if so, does such conduct constitute a material breach of the Agreement? If so, what monetary and non-monetary relief is appropriate?

(7) Did Claimants validly terminate the Agreement?

(8) Did Claimants attempt to terminate the Agreement in bad faith, and what are the consequences of bad-faith attempted termination?

(9) Are Claimants' claims time-barred by the applicable periods of prescription?

(10) Are Claimants' claims barred by the doctrines of estoppel and/or renunciation?

(11) Did termination by Claimants require immediate cessation of use of the *pat* gene?

(12) Is declaratory relief available in respect of breach and termination?

(13) Does the Agreement remain in force?

(14) In case of breach or other violation, what measure of monetary damages, if any, should be awarded?

(15) How much interest on such monetary award is proper and on what basis?

(16) What additional remedies are appropriate if a breach has been established?

106. The Terms of Reference list the issues pertaining to the patent claims as follows:

(17) Under 35 U.S.C. §§ 271(a), (b), and/or (c), have Respondents infringed the asserted claims of the '236, '024, '477, and/or '665 patents, and if so, have they done so willfully?

(18) With respect in particular to claims 8, 9, 12, and 15–17 of the '236 patent:

- Do the asserted claims meet the "written description" requirement under U.S. law?
- Do the asserted claims meet the "enablement" requirement under U.S. law?

(19) With respect in particular to claims 8, 9, and 12–17 of the '236 patent:

- Are the asserted claims invalid as anticipated by, or obvious in light of, the prior art?
- Do the products identified by Claimants infringe the asserted claims?
- Have Claimants engaged in inequitable conduct before the U.S. Patent and Trademark Office such that the asserted claims are unenforceable?

(20) With respect in particular to claims 15 and 16 of the '024 patent:

- Do the asserted claims meet the "enablement" requirement under U.S. law?
- Do the asserted claims meet the "written description" requirement under U.S. law?
- Are the asserted claims invalid as anticipated by, or obvious in light of, the prior art?
- Do the products identified by Claimants infringe the asserted claims?
- Have Claimants engaged in inequitable conduct before the U.S. Patent and Trademark Office such that the asserted claims are unenforceable?

(21) With respect in particular to claims 15, 16, and 19 of the '477 patent:

- Do the asserted claims meet the "enablement" requirement under U.S. law?
- Do the asserted claims meet the "written description" requirement under U.S. law?
- Are the asserted claims invalid as anticipated by, or obvious in light of, the prior art?

- Do the products identified by Claimants infringe the asserted claims?

(22) With respect in particular to claim 1 of the '665 patent:

- Is the asserted claim invalid as anticipated by, or obvious in light of, the prior art?
- Is the asserted claim invalid and unpatentable subject matter, by virtue of the U.S. Supreme Court's decision in *Myriad Genetics*?
- Do the products identified by Claimants infringe the asserted claim?
- Do Claimants' infringement claims concerning Dow's Herculex products fail because Dow has a valid and continuing license to use the *pat* gene from Pioneer?

(23) If infringement is established:

- What monetary and non-monetary relief is appropriate?
- Are Claimants entitled to an injunction to stop further infringement?
- What measure of monetary damages are Claimants entitled to recover?

(24) In case of willful infringement, are Claimants entitled to an award of treble damages, and their attorney fees, costs, and expenses?

(25) How much interest on such monetary award is proper and on what basis?

(26) In case of willful infringement, what remedies are appropriate?

107. Finally, the Terms of Reference list the following general issues:

(27) Are all of the claims asserted by Bayer, including, without limitation, its claims of patent infringement, within the scope of the arbitration clause of the License Agreement?

(28) Who should bear the costs or an apportionment of the costs of Arbitration, and who should bear the prevailing party's fees and expenses, and in what amounts?

(29) Did Bayer breach the license agreement by commencing litigation in the Virginia Federal Court [i.e., the U.S. District Court for the Eastern District of Virginia], and if so, what is the proper measure of damages for such breach?

108. The Award will first deal with the claim that the Agreement was breached (Part 2.II, below), addressing the claims under Article 2 (portions of question 3), then Article 7 (portions of questions 5 & 6) and Article 4 of the 1992 Agreement (questions 1, as well as portions of questions 2 & 4). The Tribunal's treatment of the issue of termination (questions 7 & 8) comes next (Part 2.III,

below), followed by an analysis of the question of issue preclusion (Part 2.IV, below), and a brief overview of prescription (question 9), and estoppel or renunciation (question 10) (Part 2.V, below).

109. The Award will then turn to the claims relating to patent infringement, beginning with the issues of jurisdiction (question 27), standing, admissibility of claims based on the '665 patent's reissue, RE44692, and the role of French law in the patent analysis (Part 3.I, below). It will address the issue of patent infringement by assessing claim construction and whether Respondents' accused products have every element of the asserted claims (portions of questions 17–22) (Part 3.II, below). The award will next discuss whether defenses to patent infringement exist, relating notably to the issues of estoppel, prescription, written description, enablement, indefiniteness, invalidity in light of the U.S. Supreme Court's *Myriad* decision, intervening rights, and double patenting (questions 18–22) (Part 3.III, below).

110. Finally, the Award will address remedies. It will first discuss the availability of an injunction during the course of the Arbitration, following a finding of termination of the 1992 Agreement (question 11) (Part 4.I, below). It will then consider non-monetary relief arising from breach of contract (portions of questions 2–6 & 16, as well as question 13) and patent infringement (portions of questions 23 and 26) (Parts 4.II and 4.III, below) as well as declaratory relief (question 12) (Part 4.IV, below) and monetary relief arising from breach of contract (questions 14 & 15, as well as portions of questions 2–6, 16) and patent infringement (question 25, portions of questions 23, 24 & 26) (Part 5, below). It will conclude by discussing costs, including issues relating to the Virginia litigation, (portions of question 24, as well as questions 28 & 29) (Part 6, below) and post-award interest (Part 7, below).

2. CLAIMS BASED ON CONTRACTUAL BREACH OF THE 1992 AGREEMENT

I. Introduction

111. Claimants have put forth theories of breach that fall under several provisions of the 1992 Agreement. Although some of the facts about the use of *pat* by Respondents are disputed, the validity of Claimants' theories turns at least in part on the interpretation of the 1992 Agreement. A brief review of the principles of French law governing contract interpretation is therefore in order before the Tribunal can turn to an analysis of the facts surrounding the Agreement and each of the relevant contractual provisions.

A. Principles of French Law and Interpretation

112. The first principle of contract interpretation in French law, expressed in Article 1156 of the French Civil Code ("FCC"), is that one must seek "what the common intention of the contracting parties was, rather than pay attention to the literal meaning of the terms."[37] This Tribunal will therefore seek to identify the common intention of the parties at the time when the 1992 Agreement was drafted.

113. The various rules and approaches that have been highlighted by the parties to this Arbitration in their arguments are intended to facilitate the achievement of this overall purpose of ascertaining the parties' common intention. Departing from a perfectly clear agreement by engaging in an overly open exercise in interpretation, for example, may lead the interpreter astray and defeat the objective of identifying the parties' common intention. This rule is known as *in claris cessat interpretatio*: what is clear requires no interpretation.[38]

114. Where the contract is not so clear as to require no interpretation, French law is open to the consideration of extrinsic evidence in contract interpretation.[39] According to Article 1158 FCC, a contract must be interpreted in light of its nature and subject matter, "in overall harmony with the structure of the contract and with its context." The inquiry into the nature and subject matter of the contract in the present Arbitration would lead the interpreter to take account of the understanding of the particular kind of contract that is a license agreement. French law suggests that a license agreement, for example, should normally be interpreted in favor of the licensor.[40]

115. Also, according to Article 1161, a contract must be read as a coherent whole.

116. All of the rules mentioned above should be understood as facilitating the identification of the parties' common intention.

117. The parties labored over the question whether the Agreement, in particular its Article 2, is so clear as to not require interpretation.[41] The question is somewhat misleading for two reasons. The first is that the interpreter must necessarily take into account the relevant provision's context, at least to

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[37] CL-1/RLA-107: Civil Code, translated by Georges Rouhette with the assistance of Dr. Anne Rouhette-Berton
[38] CL-67: Alain Bénabent, *Droit des obligations*, para. 274
[39] RLA-51: Cass. civ. 1ère, 4 avril 2001, n° 98-20.528
[40] CL-139: Basire, *JCL Brevets*, Fasc. 4740, para. 100
[41] See notably *id.*, para. 9

an extent, before deciding whether the contract is clear. This may already be characterized as engaging in interpretation, understood broadly. The second reason, which Respondents emphasized, is that the existence of a dispute over the proper interpretation of a contract term cannot in itself be determinative of this question.[42] One cannot simply conclude that a provision is unclear and requires interpretation from the bare observation that its meaning is disputed by the parties.

118. The cogency of the arguments presented on both sides in favor of diverging interpretations, however, may be indicative of an ambiguity or difficulty that consideration of extrinsic evidence can legitimately help to resolve. Looking particularly at Article 2 of the Agreement, Claimants argued that the terms were ambiguous and therefore required interpretation,[43] and Respondents acknowledged at the hearing that Article 2's disputed terms do not have only one meaning.[44] When Respondents contend that there is no ambiguity,[45] they do so by reference to scientific definitions that can provide no more than an indication of the possible intent of the parties. The meaning of the terms as a matter of legal interpretation can only become clear once the parties' use of scientific terms at the relevant time is understood.[46]

119. Bearing these points in mind, the Tribunal finds that Article 2 is not so clear as to preclude a deeper investigation of its true meaning as a matter of the parties' common intention. Article 4 is also ambiguous in some respects, and since an agreement must be interpreted as a whole, and each of its provisions read in light of the others, the Tribunal finds that the Agreement requires interpretation as a whole.

120. Articles 2 and 4 of the Agreement read as follows:

> 2. Hoechst hereby grants to LGI and its Affiliates a non-exclusive, fully-paid royalty-free, irrevocable worldwide license under the Hoechst Patent Rights to use the Gene for transformation purposes in plants other than sugar beets and to make, use and sell Transformants.
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> ...

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[42] Phase I Hearing Transcript, dated 9 April 2014, at 228:15-229:6
[43] C-148: Gauthier First Witness Statement, para. 9; Claimants' Phase I Closing Presentation, dated 17 April 2014, slide 19
[44] Phase I Hearing Transcript, dated 9 April 2014, at 230:13-24; Claimants' Phase I Closing Presentation, dated 17 April 2014, slide 20
[45] Respondents' Phase I Memorial, dated 28 January 2014, para. 109
[46] Claimants' Phase I Memorial, dated 7 November 2013, paras. 102 ff.; Claimants' Phase I Closing Presentation, dated 17 April 2014, slide 21

> 4. No right or license is hereby granted, to either party, either expressly or by implication, to use any other proprietary technology owned by or available to the other in connection with the licenses granted hereunder.
>
> Both parties are entitled to grant sublicences or distribution rights for their Transformants. Hoechst is furthermore entitled to grant sublicences for gene promoter constructs containing a Promoter in conjunction with any gene of which Hoechst can dispose.

These provisions, together with Articles 7 and 9, provide the basis of the theories of breach addressed below in Parts 2.II (Articles 2, 4, and 7) and 2.III (Article 9).

> 7. If a party in the course of exercising its license makes an invention or finds an improvement, whether patentable or not, directly related to Material it will promptly inform the other party thereof and shall grant to the other party a non-exclusive license to such invention or improvement at conditions to be agreed upon case by case in good faith.
>
> ...
>
> 9. This Agreement shall commence upon the last date by which a party hereto shall have signed this Agreement, and shall terminate upon expiration of the last-to-expire Patent Right except for the obligations in Article 8 hereof, which shall survive the termination. However, if either party has committed a breach of its obligations under this Agreement and has failed to remedy such breach within 60 (sixty) days from the receipt of a notification by the other party specifying the breach, the said other party shall be entitled to terminate the agreement with immediate effect.

Before going back to these provisions, the Tribunal will first go over the parties' pre- and post-contractual dealings.

B. The Facts Surrounding the 1992 Agreement

121. What follows is a review of the parties' pre- and post-contractual dealings that may shed light on the interpretation of the 1992 Agreement: (1) the initial discussions, (2) the 1991 Research Agreements, (3) the 1992 Agreement and its drafting history, and (4) the parties' post-contract dealings.

1. The Initial Discussions

122. In the early 1990s, DAS's predecessor LGI concentrated its efforts on developing vegetable oil high in the type of fatty acid that would be useful in the manufacture of additives and specialty chemicals, now referred to as a "specialty" canola (canola was previously known as rapeseed).[47]

[47] R-79: Sc[redacted] First Witness Statement, dated 26 January 2014, para. 6

At that time, Agrigenetics, which LGI had acquired in 1985, had invested in plant genetic engineering and had a substantial seed business.[48]

123. In the summer of 1990, Dr. [redacted], a scientist at Agrigenetics, traveled to Saskatchewan to view Hoechst's field trials of glufosinate-resistant canola, which Hoechst had transformed using the *pat* gene. At the time, Agrigenetics was interested in using the *pat* gene to create glufosinate-tolerant canola,[49] and the parties discussed the possibility of Hoechst granting Agrigenetics a license to use the *pat* gene.[50] [redacted]

124. On 19 December 1990, Dr. [redacted] received a telephone call from Dr. [redacted], the Director of Biotechnology for Hoechst, concerning [redacted] On Hoechst's side, this was understood as an interest on Agrigenetics' part in the gene "for their own rapeseed growing program" to tackle the problem of contamination of their "oleic acid-rich canola varieties that are to be used in contract cultivation for production in their own mills."[54]

125. On 5 February 1991, Dr. [redacted] sent Dr. [redacted] a letter confirming Hoechst's position that "a cooperation with Agrigenetics could be advantageous for both side[s]" and asking for Agrigenetics' views on such a collaboration "in order to prepare a draft contract."[55] [redacted]

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[48] *Id.*, para. 7
[49] *Id.*, para. 11
[50] R-87: Agrigenetics Internal Memorandum, [redacted]
[51] *Id.*
[52] R-88: Agrigenetics Internal Memorandum, [redacted]
[53] *Id.*
[54] C-153 (Translation at C-154): Hoechst Internal Memorandum, dated 20 December 1990
[55] R-89: Letter from Hoechst to Agrigenetics, dated 5 February 1991

126. On 11 March 1991, Dr. S, traveled to Frankfurt, Germany, to meet with representatives of Hoechst, including Dr. M and Dr. W, the Head of the Biochemistry Department of the Agricultural Division for Hoechst, in order to further discuss the *pat* gene and a possible business relationship between the parties.[57]

127. At no point during that meeting, or otherwise, did Hoechst state that a potential license to the *pat* gene would be restricted to using the gene as a selectable marker.[58] At the meeting, Hoechst made a presentation concerning glufosinate, the development of glufosinate resistance, and Hoechst's use of the *pat* gene to transform eleven species of plants. Dr. M explained that

128. At the March 1991 meeting, Dr. W asked

[56] R-90: Agrigenetics Internal Memorandum, (emphasis in original): Respondents' Phase I Memorial, dated 28 January 2014, para.16. See R-79: S First Witness Statement, para. 12

[57] R-79: S First Witness Statement, para. 14

[58] *Id.*, para. 15; R-27: Agrigenetics Internal Memorandum, ; R-28: Agrigenetics Internal Memorandum,

[59] R-27: Agrigenetics Internal Memorandum, at 1; R-28: Agrigenetics Internal Memorandum, at 3; R-79: Sc First Witness Statement, para. 15

[60] R-27: Agrigenetics Internal Memorandum at 1

[61] R-28: Agrigenetics Internal Memorandum, at 3

[redacted] In his witness statement, Dr. W[redacted] confirms that part of Hoechst's business strategy at that time was to develop a market in the United States for glufosinate.[64]

129. Dr. M[redacted] typewritten notes from the 11 March 1991 meeting reflect Hoechst's understanding that Agrigenetics had an interest in using the *pat* gene to create glufosinate-resistant canola for the purposes of controlling weeds and ensuring oil purity: "As oil purity and crop security through weed control are especially important criteria for the market success in special oils, Agrigenetics is interested in BASTA [glufosinate] resistance, i.e., the introduction of the PAT gene in rapeseed and other cultures."[65]

130. After Hoechst concluded its presentation at the 11 March 1991 meeting, Dr. S[redacted] explained that Agrigenetics would be willing to make certain of its promoters available as a potential solution to concerns expressed by Dr. M[redacted] about [redacted] having a potential blocking patent on Hoechst's use of the "35S" promoter to express the *pat* gene in plants. The parties agreed that they would draft reciprocal research agreements for the *pat* gene and for certain of LGI's promoters in which Hoechst was interested, and discussed the possibility of a follow-up meeting at Agrigenetics' Madison, Wisconsin, laboratory in late April 1991.[66]

131. Shortly after his return to the United States, Dr. S[redacted] sent a letter to Dr. W[redacted] seeking to confirm such a meeting.[67] A handwritten note in German to Dr. T[redacted], then the Head of the Patents, Trademarks and Licenses Department at Hoechst, appears on the copy of that letter submitted by Claimants. That note, which appears to have been written by Dr. M[redacted], states as follows, in translation, with emphasis in the original:

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[62] *Id.* at 4
[63] *Id.* at 5
[64] C-3: W[redacted] Witness Statement, para. 10: "At the same time Hoechst would have the possibility to extend the use of glufosinate to important crops." *Id.* para. 14: "Hoechst's line of business with glufosinate focused on the commercialization of its patented glufosinate herbicide as a non selective herbicide"
[65] C-19 (Translation at R-91): Hoechst Internal Memorandum, dated 2 April 1991
[66] R-28: Agrigenetics Internal Memorandum, [redacted] at 5
[67] C-18 (Translation at R-29): Letter from Agrigenetics to Hoechst, dated 22 March 1991

> Agrigenetics would like to use the PAT-gene for producing Basta tolerance *and* as a selectable marker. It would be good if the "Secrecy Agreement" (Standard) were sent to "Agrigenetics" as a draft two weeks before the beginning of the visit, so that it can be signed during our visit.
>
> *Important*: Please provide a clause [to] be added in which Hoechst foregoes royalties if a corresponding counter value (promoters) be given to Hoechst.
>
> For your information only:
>
> *Aim*: Agrigenetics may use [the] PAT-gene as it sees fit; Hoechst may use promoters as it sees fit.[68]

2. The Research Agreements

132. On 29 April 1991, Dr. W[redacted] and Dr. M[redacted] visited Agrigenetics' Madison, Wisconsin, laboratory, where the parties executed two research agreements (collectively, the "1991 Research Agreements") and a secrecy agreement (the "Secrecy Agreement"). Pursuant to one of those agreements (the "*pat* Research License"), Hoechst provided Agrigenetics with a license (i) to use the *pat* gene and certain glufosinate-resistant plants and (ii) to use the *pat* gene "as a selectable marker".[69] Pursuant to the second agreement (the "Promoter Research License"), LGI provided Hoechst with a license to use LGI's Tmr, p-Ubi (also known as ubiquitin) and p-Emu promoters for research purposes "in conjunction with expression of the *pat* gene in plants."[70] The Secrecy Agreement stated that the parties "intend to open discussions concerning a general cooperation in the field of plant breeding to enable each party to evaluate whether a business relationship in the seed and plant business is feasible."[71]

133. The *pat* Research License expressly stated that Agrigenetics wished to use the *pat* gene to create marketable glufosinate-resistant crops *and* as a selectable marker to introduce other genes of interest:

> [Agrigenetics] wishes to use the Gene and Plants for transformation and crossing experiments with its own lines with a view to obtaining marketable lines and varieties with novel genetic properties (hereinafter "Lines" and "Varieties"). [Agrigenetics] furthermore wishes to use the

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[68] *Id.*

[69] R-30: Hoechst Aktiengesellschaft-Agrigenetics Company Agreement, dated 29 April 1991 ("*pat* Research License"), Recitals

[70] R-31: Lubrizol Genetics, Inc.-Hoechst Aktiengesellschaft Agreement, dated 29 April 1991 ("Promoter Research License"), Art. 2

[71] Hoechst Aktiengesellschaft-Agrigenetics Company Secrecy Agreement, dated 29 April 1991 ("Secrecy Agreement")

Gene as a selectable marker for transformation experiments with other genes of which it can freely dispose.[72]

134. Article 6 of the *pat* Research License contemplated a potential royalty to Hoechst if Agrigenetics succeeded in obtaining marketable plant varieties, which "[u]nless otherwise agreed by the parties and provided it does not lead to [i]nequitable results ... should be based on the price premium obtainable by [Agrigenetics] for glufosinate-resistant plants compared to non-herbicide resistant plants."[73]

135. Upon entering the 1991 Research Agreements, LGI conveyed to Hoechst that it was interested in a partnership for its "seed and research activities."[74] On 22 May 1991, Hoechst wrote to Agrigenetics that, having "intensively discussed" the point, they were "not interested in a participation in all presently existing seed and biotech activities of Agrigenetics" but were interested "in discussing a possible participation of Hoechst in the activities directed to the breeding of oil crops, namely rapeseed and sunflower."[75] Agrigenetics replied on 19 June 1991 that they "would be pleased to explore further with Hoechst the possibility of rape and sunflower breeding projects."[76]

3. The 1992 Agreement and Its Drafting History

136. At the request of Agrigenetics, a meeting took place in Frankfurt on 6 September 1991 regarding "the participation of Hoechst in the activities directed toward the breeding of rapeseed and sunflower."[77] During this meeting, it was suggested by Agrigenetics "that Hoechst should draft an agreement for the commercial use of, respectively, Hoechst's gene by Agrigenetics and Agrigenetics's promoters by Hoechst."[78] On 3 December 1991, Hoechst sent Dr. W[redacted] at Agrigenetics the first draft of a commercial cross-license, which would ultimately become the 1992 Agreement at issue in these proceedings.[79] The subject line of the cover letter was as follows:

1.) Resistance against Glufosinate
2.) Agrigenetics Promoters[80]

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[72] R-30: *pat* Research License, Recitals
[73] *Id.*, Art. 6
[74] C-157 (Translation at C-158): Hoechst Internal Memorandum, dated 6 May 1991 at 1
[75] C-159: Letter from Hoechst to Agrigenetics dated 22 May 1991
[76] C-160: Letter from Agrigenetics to Hoechst, dated 19 June 1991
[77] C-161: Letter from Agrigenetics to Hoechst, dated 2 July 1991
[78] C-23/R-93: Letter Hoechst to Agrigenetics, dated 3 December 1991 (handwritten note)
[79] *Id.*
[80] *Id.*

137. Hoechst's draft provided for "mutual cost free licenses under each other's patent rights."[81] Article 2 of that draft provided Agrigenetics with "a non-exclusive, royalty-free, irrevocable license under the Hoechst Patent Rights to make, use and sell genetically transformed oilseed rape seeds or other propagating material and their progeny obtained with the use of the Gene."[82] Article 3 of Hoechst's draft granted Hoechst a reciprocal license relating to LGI's promoters.[83]

138. As will appear in more detail below, in the following months, the parties negotiated the terms of the Agreement and agreed to broaden the license grant to LGI in Article 2 to include all crops except sugar beet and to provide LGI with a sublicensing right. On 7 January 1992, Dr. W[redacted] wrote to Dr. W[redacted] and Dr. T[redacted] as follows:

> AGC [Agrigenetics] has a diverse crop interest, much like that expressed by Hoechst. We are prepared to grant Hoechst unrestricted use of our promoters in all plants, it would be most straightforward for Hoechst to grant AGC a comparable right. In any event, rights beyond rapeseed will be necessary for us.
>
> As you can judge from our areas of concern, our view of this transaction is one of parity. We believe that we should grant to one another comparable rights in our respective biological materials.[84]

139. On 5 February 1992, Hoechst responded thus:

> We are pleased to inform you that we can agree to all of your requests, as you will see from the enclosed revised agreement. Only in respect of your item three we have made an exception with regard to sugar beet.[85]

140. The revised draft, however, included a change that, although characterized as "cosmetic" by Hoechst when it was made, has now consumed a significant amount of time in these proceedings.[86] Article 2 was modified to include the phrase "for transformation purposes," as follows: "license under the Hoechst Patent Rights *to use the Gene for transformation purposes in plants other than sugar beets and* to make, use and sell *Transformants* [emphasis added]." Transformants became a defined term in this new draft.

141. The parties also negotiated two provisions in the 1992 Agreement—Articles 8 and 4—that may bear on the claims in these proceedings. In reply to certain changes that Agrigenetics proposed on

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[81] *Id.*
[82] R-93: Draft of 1992 Agreement
[83] *Id.*
[84] C-24: Letter from Agrigenetics to Hoechst, dated 7 January 1992
[85] R-94: Letter from Hoechst to Agrigenetics, dated 5 February 1992, with revised draft
[86] *Id.*

6 April 1992, Hoechst insisted that the term "Material" be included in the confidentiality and non-transfer provisions set forth in Article 8, as follows, in a 6 May 1992 letter to Dr. W[redacted]:

> We have reinserted "Material" at the beginning of Art. 8. There is no reason why Material (ie. the Gene and Promoters) should not be kept secret by the recipient (even though transformants *containing* the Material integrated in the plant genome may be given or sublicensed to others).[87]

142. In a 21 May 1992 letter to Hoechst in response, Dr. W[redacted] proposed adding the phrase "except as otherwise permitted hereunder" to the second sentence of Article 8 "to make it even clearer that the confidentiality provision does not prevent distribution of 'Material' under the sublicensing provisions" of the Agreement.[88]

143. In his 21 May 1992 letter, Dr. W[redacted] also requested that the following language be added to the first paragraph of Article 4: "No right or license is hereby granted, to either party, either expressly or by implication, to use any other proprietary technology owned by or available to the other in connection with the licenses granted hereunder."[89] According to his letter, Dr. W[redacted] sought to include that language "to clarify that it is only the specific gene and promot[e]rs that are being licensed under the Agreement, and not any other technology."[90]

144. On behalf of Hoechst, Dr. W[redacted] and Dr. T[redacted] executed the 1992 Agreement on 4 June 1992, and Dr. S[redacted] executed it on behalf of LGI on 15 June 1992. Articles 4 and 8 of the executed Agreement contain the precise language requested by Dr. Walker in his 21 May 1992 letter to Hoechst.

4. The Post-Agreement Dealings between the Parties

i. Discussion Concerning Further Areas of Collaboration

145. After entering into the 1992 Agreement, the parties continued to discuss the development of glufosinate-tolerant crops. For example, on 15 and 16 July 1992, Dr. S[redacted] and Dr. S[redacted] traveled to Saskatchewan to meet with representatives of Hoechst, including Dr. W[redacted]

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[87] C-27: Letter from Hoechst to Agrigenetics, dated 6 May 1992 (emphasis in original). "Material" is defined in the 1992 Agreement as "the Gene when received by LGI and the Promoters when received by Hoechst": R-1: 1992 Agreement, Art. 1(e)
[88] C-28: Letter from Agrigenetics to Hoechst, dated 21 May 1992
[89] *Id.*
[90] *Id.*

and Dr. R[redacted]. During the two-day visit, Dr. S[redacted] and Dr. S[redacted] were given a tour of Hoechst's Ignite (glufosinate) resistance field trials.[91] A contemporaneous file memorandum summarizing the tour notes that [redacted]

146. In the discussions between Agrigenetics and Hoechst following that tour, Hoechst gave a presentation about its activities regarding the development of Ignite-resistant (i.e., glufosinate-resistant) canola in North America and the advantages of its Ignite herbicide. As reflected in that memorandum, Hoechst stated to Agrigenetics that "Ignite will be another very strong product[,] especially when combined with crop resistance" and that its "primary interest is in herbicide sales."[93] Dr. S[redacted] also gave a presentation explaining [redacted] The parties concluded the meeting by discussing potential areas for collaboration, including "high oil germplasm with [the] PAT gene" and specialty oil rapeseed transformed by Agrigenetics with *pat*.[95]

147. The following year, on 4 March 1993, Mr. [redacted] B[redacted], Manager for Market Planning of a Hoechst affiliate in the United States, visited Agrigenetics to provide "sample quantities of Basta ... /Ignite ... for [Agrigenetics'] greenhouse spray experiments" and to discuss "Hoechst's plan for introducing Ignite in the US, Hoechst's goals for transgenic crops and evaluation of transgenic plants."[96] During his visit, Mr. B[redacted] explained that Hoechst was developing a "commercialization plan" for glufosinate-resistant products in the United States and, as part of that plan, was helping seed companies with "PAT gene registration, sharing and developing necessary data required by the federal agencies such as FDA, and helping in transgenic field trials."[97]

148. Agrigenetics had already begun transformation experiments for glufosinate-resistant cotton.[98] In a follow-up discussion between Dr. [redacted] R[redacted], a representative of Agrigenetics, and Mr. B[redacted]

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[91] R-98: Agrigenetics File Memorandum, [redacted] at 1
[92] *Id.* at 1
[93] *Id.* at 1, 3
[94] *Id.* at 2
[95] *Id.* at 4
[96] R-32: Agrigenetics Internal Memorandum, [redacted] at 1
[97] *Id.* at 1-2. [redacted]
[98] *Id.*at 2. In 1995, Agrigenetics conducted field trials for glufosinate resistant cotton in Mississippi. See US Department of Agriculture, APHIS, Biotechnology Regulatory Service, Spreadsheet Summarizing All APHIS Notification, Permit, and Petition Data, *available at* http://www.aphis.usda.gov/brs/status/BRS_public _data_file.xlsx

shortly thereafter, Mr. B[redacted] explained that, as part of Hoechst's plan to encourage seed companies to create glufosinate-resistant corn, soybean, and canola, Hoechst was offering licenses at no charge to a construct consisting of the 35S promoter and the *pat* gene for corn, soybean, and canola.[99] The 35S promoter, when used in conjunction with the *pat* gene, was known to achieve very high expression of *pat* in plants.[100] [redacted]

149. In November 1993, Agrigenetics signed a secrecy agreement with Hoechst, pursuant to which Agrigenetics obtained certain of Hoechst's glufosinate-tolerant corn plants for purposes of conducting breeding experiments with Agrigenetics' own corn lines.[102] By that time, Mycogen had acquired LGI.[103] In Dr. W[redacted] cover letter to Mr. B[redacted], enclosing a signed copy of the secrecy agreement, Dr. W[redacted] expressed Mycogen's interest in the 35S promoter and a potential collaboration in developing glufosinate-resistant soybeans.[104]

ii. Consent to Third-Party Transformation

150. Dr. W[redacted] wrote to Dr. W[redacted] on 7 September 1993 seeking Hoechst's consent for Mycogen to transfer a construct containing the *pat* gene to a third-party laboratory for the purpose of having that party perform certain plant transformations for Mycogen on a contract basis.[105] After describing in some detail the parameters of the work to be performed by the third party, Dr. W[redacted] explained his understanding of the Agreement as follows: "While we do not believe that the foregoing violates the spirit of the Agreement, it is unclear under the Agreement whether we can transfer the gene construct containing the PAT gene for the purposes outlined above. ... The third party's use of the PAT gene would not extend beyond its use to screen transformants, an activity consistent with the agreement."[106]

(relevant portion at R-99) (indicating that Mycogen was issued Permit Number 95-060-06n in 1995 to conduct glufosinate tolerance trials in Mississippi and Wisconsin)

[99] R-100: Agrigenetics Internal Memorandum, [redacted]

[100] R-80: W[redacted] First Witness Statement, para. 22

[101] R-100: Agrigenetics Internal Memorandum [redacted]

[102] C-37: Hoechst Aktiengesellschaft-Agrigenetics, L.P. Secrecy Agreement, dated 13 December 1993

[103] C-30: Letter from Mycogen to Hoechst, dated 7 September 1993

[104] R-101: Letter from Mycogen to Hoechst, dated 11 November 1993; R-80: W[redacted] First Witness Statement, para. 23

[105] C-30: Letter from Mycogen to Hoechst, dated 7 September 1993

[106] *Id.*

151. On 6 October 1993, Dr. W[redacted] and Dr. T[redacted] provided Mycogen with the requested consent by counter-signing Dr. W[redacted] 7 September 1993 letter.[107] In a follow-up letter sent the next day, Hoechst sought to confirm its understanding that Mycogen's purpose in transferring the construct containing the *pat* gene to a third party was "for the purpose of that party conducting contract transformation for and on behalf of Mycogen, i.e., that all materials will be returned to Mycogen."[108] Mycogen provided such confirmation on 18 October 1993.[109] Before receiving Hoechst's letters of 6 and 7 October 1993, Dr. W[redacted] wrote again on 12 October 1993 to enquire about his request of 7 September 1993 and to inform Hoechst that another situation had arisen whereby Mycogen wished to transfer a gene construct containing *pat* and a Mycogen gene to a third party, a university, for insertion into a certain crop species. Dr. W[redacted] made clear in that letter that Mycogen "would own the transformants of this crop species" and that the "gene constructs would contain the PAT gene as a selectable marker."[110]

iii. Consent to 95% Glufosinate Resistance and Labeling

152. In a letter dated 27 October 1993, Hoechst requested that Mycogen agree to formally amend the Agreement to provide (i) that at least 95% of Transformants that Mycogen sold would be fully resistant to glufosinate; and (ii) that every container of Transformants sold by Mycogen or one of its sublicensees include a label describing the glufosinate tolerance of the Transformants and providing instructions to the purchaser about the use of glufosinate herbicide.[111] Hoechst described the reason for its request as follows:

> While the above agreement grants Mycogen the right "to use the (PAT-) Gene for transformation purposes in plants other than sugar beet and to make, use and sell Transformants", it does not specify the degree of glufosinate resistance in the Transformants.
>
> As you know, Hoechst is now actively engaged in developing glufosinate resistance in eg corn and rapeseed and to this end cooperates with a number of breeders, also on the American continent. In order to ascertain and ensure a uniform level of resistance in these plants our agreements with the breeders contain a clause stipulating that the plants must be at least 95%

[107] C-31: Letter from Hoechst to Mycogen, dated 6 October 1993
[108] C-32: Letter from Hoechst to Mycogen, dated 7 October 1993
[109] R-102: Letter from Mycogen to Hoechst, dated 18 October 1993
[110] C-33: Letter from Mycogen to Hoechst, dated 12 October 1993
[111] C-35: Letter from Hoechst to Mycogen, dated 27 October 1993

glufosinate resistant. We would appreciate it if you would agree to the same condition, trusting that this does not impose any undue restrictions or additional efforts on Mycogen.[112]

153. In a letter dated 3 December 1993, Dr. W[redacted] responded that Mycogen was prepared to agree to Hoechst's glufosinate resistance standard and labeling requirements "where we would intend to promote and sell the Transformants as being glufosinate resistant" but not for seeds where the *pat* gene was used solely as a selectable marker.[113] He wrote:

> Please note that a primary intent of that agreement was to provide to us the use of the PAT gene as a selectable marker for transformation purposes. The actual level of glufosinate resistance achieved in the Transformant (so long as it was sufficient to function as a selectable marker) was not going to be an advertised characteristic of the product which would be sold. We are willing to agree to your proposed amendment to the Agreement in those cases where we would intend to promote and sell the Transformant as being glufosinate resistant. However, in accordance with the original intent of the Agreement, we must be able to sell Transformants which contain the gene solely as the consequence of its use as a selectable marker for the insertion of other genetic material (and not as a promotional characteristic) regardless of the level of glufosinate resistance conferred.[114]

154. In an internal Hoechst memorandum to Dr. T[redacted] concerning the matter, dated 7 January 1994, Dr. W[redacted] instructed Dr. T[redacted] to insist on the "95% clause" with respect to corn, rapeseed, sugar beet, and soy, and that with respect to other crops "[a] reference to the approximate [B]asta [glufosinate] resistance level will have to be added to the seed packaging for the other cultures ... in order to prevent farmers from making mistakes in the non-selective application."[115]

155. On 21 January 1994, Dr. T[redacted] of Hoechst replied to Dr. W[redacted] 3 December 1993 letter, in which he had stated that Mycogen would agree to the requested amendment only where Mycogen promoted and sold Transformants as being glufosinate resistant but not where the gene was used merely as a selectable marker. Dr. T[redacted] stated as follows:

> Our position to the subject raised in your December 3 letter is as follows: it makes no difference whether a transformant is being sold as glufosinate resistant or not. What matters is whether the transformant actually *is* resistant and can be safely treated with glufosinate. If it is, then farmers will want, or should be encouraged, to use Basta for selective treatment. If

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[112] *Id.* Hoechst's contemporaneous internal communications confirm Hoechst's belief that its request to Mycogen would not "mean any additional effort on the part of Mycogen since the desired resistance level is reached in nearly all cases": R-121: Internal Hoechst Note, dated 18 October 1993 (English translation included)

[113] C-36: Letter from Mycogen to Hoechst, dated 3 December 1993; R-80: Walker First Witness Statement, para. 34

[114] C-36: Letter from Mycogen to Hoechst, dated 3 December 1993

[115] R-103: Internal AgrEvo Memorandum, dated 7 January 1994 (English translation included)

it isn't, then farmers should be guaranteed zero resistance so that they can use Basta for eradication, e.g. where the transformants appears as a volunteer crop.[116]

156. However, Hoechst offered to compromise and "to restrict the 'all or nothing' requirement to corn, rapeseed and soybean."[117]

157. On 26 April 1994, Dr. W[redacted] replied to Hoechst, explaining Mycogen's appreciation of Hoechst's concerns about resistance levels and labeling, but refusing to consent to Hoechst's proposal:

> Our current license while unrestricted, contemplates the use of Basta as a selectable marker. We would like to emphasize that your request is an added limitation to that license and created a situation which could result in additional costs being incurred by Mycogen without any assurance of a corresponding benefit when Basta is used only as a selectable marker.[118]

158. The parties continued their discussions concerning Hoechst's proposed amendment but never reached an agreement.[119]

iv. The Negotiation of a "Separate Commercial License"

159. In his letter of 26 April 1994, Dr. W[redacted] made reference to a "separate commercial license" being negotiated with [redacted] B[redacted], who dealt with Basta resistance for Hoechst in the United States. Dr. W[redacted] wrote as follows:

> As you know, we have also requested a separate commercial license from Hoechst through [redacted] B[redacted] who is handling these matters in the U.S. to Basta for herbicide resistance. We have made that request because we are genuinely interested in using Basta resistance for strict commercial purposes as outlined in your correspondence with us. As yet we have not made a great deal of progress with Roger obtaining that license.[120]

This reference to a "separate commercial license" is interpreted differently by the parties.

160. Claimants argue that it was "precisely because Mycogen's use was restricted to the use of the *pat* gene as a selectable marker that the parties subsequently engaged in discussions for the negotiation of a separate license."[121] This was apparently the understanding on Hoechst's part at that particular

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[116] R-33: Letter from Hoechst to Mycogen, dated 21 January 1994 (emphasis in original)
[117] *Id.*
[118] C-38: Letter from Mycogen to Hoechst, dated 26 April 1994
[119] R-104: Letter from Mycogen to Hoechst, dated 21 September 1994; R-105: Letter from Hoechst to Mycogen, dated 1 November 1994; R-118: Letter from Mycogen to Hoechst, dated 16 November 1994; C-44: Letter from Hoechst to Mycogen, dated 22 December 1994
[120] C-38: Letter from Mycogen to Hoechst, dated 26 April 1994
[121] Claimants' Phase I Reply, dated 27 February 2014, para. 45

time. In an internal memorandum dated 19 May 1994 and concerning Mycogen's letter of 26 April 1994, Dr. W[redacted] explained this understanding at length, viewing the potential "separate commercial license" as a new right to use *pat* for herbicide resistance, which Hoechst could give Mycogen in exchange for labeling and quality control obligations relating to the use of *pat* as a marker gene.[122] He wrote:

> Mycogen has the rights for the use of PAT as a marker gene in all crops, with exception of sugarbeets. However, they do not have the right to use PAT/Ignite for weed control (herbicide resistance), therefore they are in discussions (?) with [redacted] B[redacted] to obtain a license for this purpose. I suggest we should include the issues of labelling and quality control for use as a marker gene in the discussions on use of PAT for herbicide resistance and make Mycogen's acceptance a condition for the license.[123]

161. According to Respondents, the "separate commercial license" was a potential co-operation agreement that would go beyond the simple "unrestricted" grant in the 1992 Agreement and would set out the parties' obligations in respect of such issues as labeling, regulatory approvals, marketing, and indemnities for product liability and other claims.[124]

II. Theories of Breach

A. Article 2: "Selectable Marker Only" Theory of Breach

162. The "selectable marker only" theory of breach consumed a significant portion of the energy spent on the taking of evidence in Phase I of this Arbitration. The theory is that, under Article 2 of the 1992 Agreement, Dow could only use the *pat* gene as a selectable marker. In Dow's case, the use of *pat* as a selectable marker would involve employing the *pat* gene as a tool (to indicate that transformation of a plant has occurred) within a process of using genes to transform plants in order to express certain traits. The Tribunal was ultimately unable to accept an interpretation of the 1992 Agreement that would draw a distinction between the permissible use of *pat* as a selectable marker and the impermissible use of *pat* for its herbicide-resistance traits.

1. Claimants' Position on Article 2

163. Article 2 states that "Hoechst hereby grants to LGI and its Affiliates a non-exclusive, fully-paid royalty-free, irrevocable worldwide license under the Hoechst Patent Rights to use the Gene *for*

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[122] C-39: Hoechst Internal Memorandum, dated 19 May 1994
[123] *Id.*
[124] Respondents' Phase I Memorial, dated 28 January 2014, paras. 49, 122; R-80: W[redacted] First Witness Statement, paras. 37-38

transformation purposes in plants other than sugar beets and to make, use and sell Transformants [emphasis added]."

164. **Article 2 excludes the right to use *pat* other than as a selectable marker**—In Claimants' view, the purpose of selectable marker genes is to enable scientists to transform plants with other genes.[125] When the license says "for transformation purposes", it is therefore an unambiguous reference to the use of the *pat* gene as a selectable marker.[126]

165. ***Drafting history***—Placing the 1992 Agreement in its historic context, Claimants assert that the parties had contemplated a license in return for royalties in the 1991 Research Agreements[127] and that Hoechst granted Agrigenetics a royalty-free license in the 1992 Agreement because the use of *pat* was restricted.[128] Giving away the broadest possible rights to the *pat* gene, not only as an enabling technology but also as a trait royalty-free, without restriction as to duration or geographies, is not a reasonable interpretation.[129]

166. In Claimants' view, Hoechst's interest in entering the 1992 Agreement was to see whether it could entrust its technology to Agrigenetics to determine the "suitability of the glufosinate resistance technology" through experiments.[130] Hoechst's goal was to create a market for glufosinate resistance for itself. Any interest that Agrigenetics had in glufosinate resistance at the beginning of its discussions with Hoechst was prompted by its objective to "develop high yielding, agronomically superior varieties" of canola, LGI's business at the time.[131] The focus was not on granting the right to use of *pat* as weed control: on Dow's side, LGI and Mycogen were not pursuing this business at the time, and on Bayer's, Hoechst wanted to retain control of its inventions.[132]

167. Hoechst's first draft of the cross-license agreement thus restricted Agrigenetics to use of the *pat* gene in canola, but Hoechst expanded these rights, at the request of Agrigenetics,[133] to quasi-unlimited rights in terms of crops; rights that were, however, only "for transformation purposes".

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[125] See e.g. C-129, Penna et al., "Positive selectable marker genes for routine plant transformation"
[126] Claimants' Phase I Memorial, dated 7 November 2013, para. 100
[127] C-1: *pat* Research Agreement, Art. 6
[128] Claimants' Phase I Memorial, dated 7 November 2013, para. 108
[129] C-148: Gautier First Witness Statement
[130] C-143: W[redacted], Second Witness Statement, paras. 7, 10, 21
[131] C-152: Fax from Agrigenetics to Hoechst, dated 19 December 1990
[132] Claimants' Phase I Reply, dated 27 February 2014, paras. 120, 121
[133] C-24: Letter from Agrigenetics to Hoechst, dated 7 January 1992

In doing so, Hoechst granted Agrigenetics all the rights that the latter needed for its upcoming acquisition by Mycogen.[134]

168. Claimants analyze the 1992 Agreement in comparison with other agreements entered into by Hoechst with other parties, to further argue that the 1992 Agreement was intended to give rights to use the *pat* gene only as a selectable marker. A contemporaneous contract with another company contemplated royalties in exchange for use of the *pat* gene for herbicide resistance,[135] demonstrating that access to Hoechst's *pat* gene for weed control is not free. Furthermore, the 1992 Agreement lacks provisions for rights to the "chemically linked" 35S promoter, regulatory approvals for glufosinate treatment, and quality standards that would be necessary if *pat* were to be used for herbicide resistance.[136]

169. ***Subsequent behavior***—In Claimants' view, Dow was well aware and communicated on several occasions that its rights to the *pat* gene under the 1992 Agreement were restricted. Notably, Mycogen acknowledged that "[its then] current license while unrestricted contemplate[d] the use of Basta [i.e., *pat*] as a selectable marker"[137] and that "the original intent of the Agreement [was to] be able to sell Transformants which contain the gene solely as a consequence of its use as a selectable marker for the insertion of other genetic material (and not as a promotional characteristic)."[138]

170. As a result, Mycogen "requested a separate commercial license from Hoechst through [redacted] B[redacted] who [was] handling these matters in the U.S. to Basta [i.e., *pat*] for herbicide resistance. [It] made that request because [it was] genuinely interested in using Basta resistance for strict commercial purposes."[139] This commercial license was never granted.

171. **Dow is in breach of Article 2**—Claimants allege that Dow's internal documents prove that its original goal was to develop a soybean having tolerance to "2,4-D + glyphosate." While Dow understood that it could only use the *pat* gene "as a selectable marker," it breached the 1992 Agreement when successful field testing studies suggested that Dow had the "technical ability to bring a glufosinate tolerance concept to market" but only "if [Dow] address[ed] non-technical

[134] Claimants' Phase I Reply, dated 27 February 2014, para. 104
[135] C-34: Hoechst- DJ van der Have Agreement, dated 18 October 1993, Arts. 2, 3
[136] Claimants' Phase I Reply, dated 27 February 2014, paras. 81-82
[137] C-38: Letter from Mycogen to Hoechst, dated 26 April 1994
[138] C-36: Letter from Mycogen to Hoechst, dated 3 December 1993
[139] C-38: Letter from Mycogen to Hoechst, dated 26 April 1994

issues."[140] The mere fact that Dow used the "Basta resistance for strict commercial purposes"[141] of the *pat* gene, and not "for transformation purposes ... to make, use and sell Transformants"[142] meant that Dow exceeded the scope of its license and breached the 1992 Agreement.

2. Respondents' Position on Article 2

172. In Respondents' view, the 1992 Agreement gives Dow an unrestricted commercial license to use the *pat* gene (with the sole exception of sugar beet).[143] The recitals to the 1992 Agreement show that the parties wished to obtain commercial licenses to the technologies that were the subject of the 1991 Research Agreements, including *pat*, the "gene conferring resistance against glufosinate in plants."[144] There is no indication in the recitals, or elsewhere in the 1992 Agreement, that LGI's ability to use *pat* would be more limited than under the *pat* Research License.[145] Notably, for Respondents, though the parties were familiar with the term "selectable marker", it was not used in the 1992 Agreement to restrict LGI's rights.[146]

173. Furthermore, Respondents note that because use of *pat* as a selectable marker results naturally in Transformants having tolerance to glufosinate, the 1992 Agreement necessarily permits Dow to make glufosinate-tolerant Transformants. The restriction that Bayer seeks to impose is therefore a prohibition against promoting the Transformants as glufosinate tolerant,[147] but this is unsupported by the text of the 1992 Agreement.[148]

174. **Drafting history**—Respondents cite the documentary evidence concerning the drafting of the 1992 Agreement to demonstrate that Agrigenetics wished to use the *pat* gene to confer glufosinate tolerance in plants (initially canola), in addition to its interest in *pat* as a selectable marker.[149] Hoechst's primary interest was in herbicide sales, and it sought to create a market for its nascent glufosinate technology by encouraging breeders to create glufosinate tolerant crop varieties, a strategy that dovetailed not only with Agrigenetics' interest in potentially creating glufosinate tolerant canola, but also with Agrigenetics' request, granted by Hoechst, for a broad license to use

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[140] C-79: Jack Kaskey, *Dow's Superweed-Busting Herbicide May Save Farmers $4 Billion* at 9
[141] C-38, Letter from Mycogen to Hoechst, dated 26 April 1994
[142] C-2/R-1: 1992 Agreement, Art. 2
[143] Respondents' Phase I Memorial, dated 28 January 2014, para. 101
[144] C-2/R-1: 1992 Agreement at 1
[145] Respondents' Phase I Memorial, dated 28 January 2014, para. 102
[146] *Id.*, para. 105
[147] Claimants' Phase I Memorial, dated 7 November 2013, paras. 71-77
[148] Respondents' Phase I Memorial, dated 28 January 2014, para. 132
[149] See e.g. R-79: S[redacted] First Witness Statement, paras. 11-12, 15-17, 25; R-80: W[redacted] First Witness Statement, paras. 15, 21-25

pat in crops beyond canola.[150] Furthermore, Respondents argue that Claimants' allegation that *pat* and Agrigentics' promoters were not of equivalent value should not be used to construe the breadth of the license granted to *pat* in exchange for these promoters.[151] Even if this argument were to be considered, Respondents assert that Claimants undervalue Agrigenetics' promoters: Hoechst was in need of the promoters because [redacted] had a potential blocking patent on Hoechst's 35S promoter.[152]

175. Dr. Sc[redacted] and Dr. W[redacted], of Agrigenetics, confirm that there was never any discussion between the parties about a selectable marker restriction or a prohibition on LGI's right to promote its Transformants during the drafting of the 1992 Agreement.[153] At the time that the words "for transformation purposes" were added by Hoechst to the draft agreement, Hoechst's accompanying letter announced that they were acquiescing to LGI's request for broader rights and a transaction of parity between the parties with comparable grants of rights by each party, and that "[o]nly in respect of your item three we have made an exception with regard to sugar beet."[154] Dr. W[redacted], of Hoechst, characterized the insertion of the phrase "for transformation purposes" as "cosmetic change".[155] Respondents conclude that the parties cannot have departed radically from rights granted in the *pat* Research License under cover of a letter agreeing to broaden LGI's rights. Such a reading would entail a view that the parties reduced the scope of LGI's right to use *pat*, changed the meaning of "transformation", and reduced the scope of use permitted in Hoechst's first draft of the 1992 Agreement without any discussion of these changes.[156]

176. **Subsequent behavior**—Respondents point to examples of the parties' post-Agreement behavior that support their interpretation. Notably, Bayer's 9 November 2011 notice of breach did not refer to Bayer's claim that Enlist E3 breached the alleged selectable marker restriction in the 1992 Agreement.[157] To the contrary, that letter expressly refers to "the glufosinate resistance technology

[150] See e.g. R-136: Sc[redacted] Second Witness Statement, paras. 6-9; R-137: W[redacted] Second Witness Statement, para. 22
[151] Respondents' Phase I Reply, dated 27 March 2014, paras. 81 ff.
[152] R-28: Agrigenetics Internal Memorandum, [redacted]; R-31: Promoter Research License
[153] R-79: Sc[redacted] First Witness Statement, paras. 17, 21-23; R-80: W[redacted] First Witness Statement, at paras. 19(a)-20, 26-29
[154] C-24: Letter from Agrigenetics to Hoechst, dated 7 January 1992; R-94: Letter from Hoechst to Agrigenetics, dated 5 February 1992
[155] R-94: Letter from Hoechst to Agrigenetics, dated 5 February 1992
[156] Respondents' Phase I Memorial, dated 28 January 2014, para. 114
[157] C-86: Letter from Bayer to Dow, dated 9 November 2011

licensed under the Agreement," without asserting a restriction on the use of *pat* for its herbicide resistance.[158]

177. While Dr. W[redacted] did request a "separate commercial license ... to Basta [i.e., *pat*] for herbicide resistance,"[159] this letter was sent in the context of Hoechst's request that Mycogen agreed to amend the 1992 Agreement to meet glufosinate tolerance and labeling standards to which other breeders of glufosinate tolerance crops had agreed.[160] Indeed, in 1993, Hoechst requested that Mycogen label its *pat*-containing products to describe those products' tolerance to glufosinate, suggesting that the 1992 Agreement did not prohibit Dow from promoting the glufosinate tolerance properties of its products.[161]

178. Dr. W[redacted] explains that the "separate commercial license" to which he referred did not concern the scope of Dow's rights to use the *pat* gene under the 1992 Agreement, but rather Hoechst's proposed promotion of Basta (i.e., *pat*) for use with Mycogen's crops.[162] The "separate commercial license" would therefore have described the parties' obligations with respect to such an ongoing relationship, including regulatory matters, indemnities, marketing efforts, and the like.[163]

179. **Common licensing practice**—Respondents argue that the grant to Dow to "make, use and sell" is the customary broad grant language for a U.S. patent, meant to immunize the licensee from suit for patent infringement.[164] It is part of basic patent licensing practice that a limitation on such a paradigmatically broad grant should be detailed and explicit,[165] which was not the case with respect to the selectable marker restriction alleged by Bayer, especially in contrast to the parties' express exclusions in Articles 2 (i.e., sugar beet) and 3 (i.e., Australia).[166]

3. Tribunal's Determination: Respondents' Use of the *pat* Gene other than as a Selectable Marker Is Not a Breach of Article 2

180. Bayer argues that the 1992 Agreement granted Dow the right to use the *pat* gene only as a selectable marker based on the presence of the words "for transformation purposes" in Article 2, which states:

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[158] *Id.*
[159] Claimants' Phase I Memorial, dated 7 November 2013, para. 113; C-38: Letter from Mycogen to Hoechst, dated 26 April 1994 at 1
[160] C-35: Letter from Hoechst to Mycogen, dated 27 October 1993
[161] Respondents' Phase I Memorial, dated 28 January 2014, para. 120
[162] R-80: W[redacted] First Witness Statement, para. 37
[163] Respondents' Phase I Memorial, dated 28 January 2014, paras. 48-49; R-80: W[redacted] First Witness Statement, para. 38
[164] R-82: Milgrim First Witness Statement, paras. 29-30
[165] *Id.*, para. 38
[166] *Id.*, paras. 38-39

> Hoechst hereby grants to LGI and its Affiliates a non-exclusive, fully-paid royalty-free, irrevocable worldwide license under the Hoechst Patent Rights to use the Gene *for transformation purposes* in plants other than sugar beets and to make, use and sell Transformants [emphasis added].

In the Tribunal's opinion, the evidence does not sufficiently support the theory that the parties' common intention, per Article 1156 FCC, was to limit Dow to using the *pat* gene only as a selectable marker. While two points raised by Bayer weaken Dow's theory that its use of the *pat* gene is unrestricted except with respect to sugar beets, these two points, discussed in turn below, are not sufficient to tip the balance of evidence away from Dow's theory.

181. The first weak point in Dow's theory is that Mycogen requested a "separate commercial licence ... to Basta [i.e., to the *pat* gene] for herbicide resistance" from Hoechst, in addition to 1992 Agreement.[167] This license was never granted, and, as Bayer argues, the fact that it was requested by Mycogen could well suggest that Dow's successor knew its rights under the 1992 Agreement to be limited to the use of *pat* as a selectable marker, necessitating a further license to permit it to use *pat* as an herbicide.

182. On this point, however, the Tribunal considers Dr. W[redacted] testimony to be believable: Mycogen had an "unrestricted" commercial license under the 1992 Agreement but was interested in a broader business collaboration with Hoechst. Specifically, Mycogen was interested in tying its herbicide-resistant seeds to the herbicide that Hoechst was selling to "link arm and arm to go to market" with both products.[168] The joint commercialization of the products, which Dr. W[redacted] notes was a practice in the industry at the time,[169] would have required an agreement on a number of issues including marketing, registration and de-regulation activities, and allocation of liability.[170] The Tribunal is of the view that these issues, relating to joint commercialization of Bayer' herbicide and Dow's herbicide-resistant seeds, were the object of Dow's request for a "separate commercial agreement". Under this interpretation, the separate agreement, had it been granted, would have operated in addition to the existing 1992 Agreement, the latter of which granted Dow the right to use *pat* both as a selectable marker and for its herbicide-resistance traits. In the Tribunal's view,

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[167] C-38: Letter from Mycogen to Hoechst, dated 26 April 1994
[168] Phase I Hearing Transcript, dated 11 April 2014, at 948:2-10 (Dr. W[redacted] testimony).
[169] *Id.*, at 948:17-22 (regarding herbicides Round Up and Liberty, and their respective seed brands Round Up Ready and Liberty Link)
[170] *Id.*, at 948:20-25; 949:1-25

the request for a separate commercial license was not a sufficient indication that Dow was limited to using *pat* as a selectable marker.

183. The second weak point in Dow's theory is that it contradicts the interpretative principle of effectiveness, or *effet utile*, as codified in Article 1157 FCC, by which "[w]here a clause admits of two meanings, one shall rather understand it in the one with which it may have some effect, than in the meaning with which it could not produce any."[171] In effect, Dow argues that the phrase "for transformation purposes" has no meaning whatsoever and might as well be taken out of the contract. Dow's reading is, however, consistent with Dr. W[redacted] characterization of the phrase as "cosmetic" at the time of drafting.[172]

184. Construing the words as a restriction would be at odds with the context of their addition to the 1992 Agreement: they were among the changes Bayer made to the draft version of the Agreement in response to a request from Dow for broader rights, "comparable" with the "unrestricted" use of promoters being granted to Bayer.[173] Writing to Dow to outline these changes, Bayer stated, "We are pleased to inform you that we can agree to all of your requests" and expressly noted a restriction it had added to Article 2, limiting Dow's rights with respect to sugar beets.[174] In the same letter, Bayer characterized the words "for transformation purposes" as merely "cosmetic" changes. There is no evidence to suggest that the parties otherwise discussed the possibility of restricting Dow to using *pat* only as a selectable marker.

185. Bayer advances several arguments in favor of its interpretation of "for transformation purposes", notably that the restrictions on Bayer's right to use promoters under Article 2 meant that its agreement to grant "comparable" rights to Dow did not confer "unrestricted" rights to Dow,[175] and that the change was qualified as "cosmetic" because it expressed what was already understood between the parties.[176] Within the context of a letter agreeing to broaden Dow's rights, however, the Tribunal is unable to view the addition of the words "for transformation purposes", qualified as "cosmetic" and made without further discussion, as the basis for finding a common intention on the part of the parties to prohibit Dow from using *pat* other than as a selectable marker. The Tribunal

[171] CL-1/RLA-107: Civil Code, translated by Georges Rouhette with the assistance of Dr. Anne Rouhette-Berton
[172] R-94: Letter from Hoechst to Agrigenetics, dated 5 February 1992
[173] C-24: Letter from Mycogen to Hoechst, dated 7 January 1992
[174] R-94: Letter from Hoechst to Agrigenetics, dated 5 February 1992
[175] Claimants' Phase I Closing Presentation, dated 17 April 2014, slides 34-35 ff.
[176] Phase I Hearing Transcript, dated 10 April 2014, at 444:7-18 (Dr. W[redacted] testimony)

therefore rejects the "selectable marker only" theory of breach and finds that Respondents were not in breach of Article 2.

B. Article 7: Obligation to Inform and Negotiate

186. Claimants put limited emphasis on their Article 7 theory of breach, which is that Dow failed in its obligation to inform and negotiate a license with Bayer regarding the Enlist E3 event. Based on the Tribunal's holding that Article 2 of the 1992 Agreement does not provide a basis for distinguishing between the use of the *pat* gene as a selectable marker, on the one hand, and for its herbicide-resistance traits, on the other, Bayer's argument that Dow has breached Article 7 must fail.

1. Claimants' Position on Article 7

187. Claimants argue that Dow breached Article 7 of the 1992 Agreement by failing in its obligation to inform and negotiate a license with Bayer regarding the Enlist E3 event. Article 7 provides that "[i]f a party in the course of exercising its license makes an invention or finds an improvement, whether patentable or not, directly related to Material it will promptly inform the other party thereof and shall grant to the other party a non-exclusive license to such invention or improvement at conditions to be agreed upon case by case in good faith." "Material" is defined as "the Gene when received by LGI and the Promoters when received by Hoechst."[177]

188. In Claimants' view, inclusion of Article 7 in the 1992 Agreement was necessary because the *pat* gene was only intended to be used as a selectable marker "for transformation purposes".[178] Subsequent developments, if any, made through Dow's experiments with the *pat* gene as an herbicide-resistance gene would presumably serve Bayer's interests in the herbicide-resistance business.[179] Though Hoechst could not fathom how "independent development [on the *pat* gene could] occur after the exchange of the Material has taken place,"[180] it sought to provide for future rights in any improvement or invention, if such "independent development" did occur.[181]

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[177] C-2: 1992 Agreement at 2
[178] *Id.*, Art. 2
[179] Claimants' Phase I Memorial, dated 7 November 2013, para. 130
[180] C-27: Letter from Hoechst to Agrigenetics, dated 6 May 1992
[181] Claimants' Phase I Memorial, dated 7 November 2013, para. 129

189. **Invention directly related to material**—Claimants assert that the combination of the *pat* gene with other herbicide-resistance genes by Dow, as opposed to the permissible use of *pat* as a selectable marker,[182] renders Enlist E3 an invention or improvement within the meaning of Article 7. Though the novelty of the event has not yet been ascertained before the relevant authorities, Claimants refer to Dow's filing of a patent application for Enlist E3 as evidence that Dow considers Enlist E3 to be an invention.[183] The fact that the DNA sequence of the *pat* gene remained unchanged in the Enlist E3 event does not prevent it from constituting an improvement or invention. Indeed, as Article 2 of the 1992 Agreement conferred a right to use only the specific gene[184] and not its variants, changes to the DNA sequence would not be permitted under Dow's license.[185]

190. Furthermore, in Claimants' view, the invention is directly related to "Material"—defined as the *pat* gene in the case of Dow—as required by Article 7. Enlist E3 could not have been developed without the glufosinate resistance conferred by Bayer's *pat* gene.[186] An invention or improvement "directly related to" *pat* is a broader concept than an invention or improvement *to* the Material (i.e., by changing the DNA sequence).[187] The term is intended to distinguish between the use of the *pat* gene as selectable marker and tool in the transformation process, on the one hand, and derivation of commercial value from an invention "directly related" to *pat* on the other.[188] Based on Claimants' interpretation of the 1992 Agreement in light of its "selectable marker only" theory of breach, only the latter would trigger Article 7, in order to allow the licensor, Bayer, to participate in any additional value created from the *pat* gene.[189]

191. **Failure to inform and negotiate**—Claimants consider that Dow wrongfully omitted to communicate to Bayer that it had conducted research for the purpose of stacking *pat* with other herbicide resistance genes and to grant Bayer a right to the Enlist E3 event,[190] in breach of Article 7 and the principles of good faith, loyalty, and sincerity stemming from Article 1134 FCC.[191]

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[182] Claimants' Phase I Reply, dated 27 February 2014, para. 181
[183] R-19: Dow Press Release, "Dow AgroSciences, M.S. Technologies Submit for Approval of First Ever Three-Gene Herbicide Tolerant Soybean", dated 22 August 2011, *available at* http://www.dowagro.com/newsroom/corporate/2011/20110822a.htm
[184] R-82: Milgrim First Witness Statement, para. 43
[185] Claimants' Phase I Reply, dated 27 February 2014, para. 184
[186] Claimants' Phase I Memorial, dated 7 November 2013, para. 153
[187] Claimants' Phase I Closing Presentation, dated 17 April 2014, slide 201
[188] *Id.*, slides 206-207
[189] *Id.*, slide 204
[190] C-95: Respondents' Answer, dated 29 October 2012, para. 31
[191] Claimants' Phase I Memorial, dated 7 November 2013, para. 133

2. Respondents' Position on Article 7

192. Respondents argue that Dow had no obligation to inform or negotiate with Bayer because the Enlist E3 event did not constitute an invention or improvement. The wording of Article 7 is narrow, and the "combination" of the *pat* gene with other herbicide tolerant genes does not constitute an "invention" or "improvement". Bayer's rights attach to inventions and improvements "*directly* related to" the Material, which by definition refers to Material that has been changed.[192]

193. If Article 7 is not interpreted narrowly, Respondents assert that virtually any activity under the 1992 Agreement would trigger an obligation to negotiate a non-exclusive license, because the entire purpose of the Agreement is to permit each party to use the licensed technology to transform plants, which necessarily involves using the licensed technology in combination with other technology. This outcome would be inconsistent with the language of Article 7 and the parties' stated intent to exchange "royalty-free" licenses.[193] Respondents note furthermore that, even under Bayer's interpretation, the *pat* gene was used as a selectable marker in the Enlist E3 and would therefore not qualify as an invention.[194] Finally, Respondents argue that their interpretation reflects the prevailing practice of narrowly interpreting clauses in licenses concerning the licensing back of "improvements" and "inventions".[195]

194. Respondents also note that Bayer has been aware since the 1990s that Dow has used *pat* in products such as Herculex and WideStrike, and in combination with other genes of interest, yet it was not until 2 September 2013 that Bayer claimed that such use triggered an obligation under Article 7 to negotiate a license, and then only with respect to Enlist E3, [redacted].[196]

3. Tribunal's Determination: Respondents' Failure to Inform and Negotiate Regarding Enlist E3 Is Not a Breach of Article 7

195. Bayer's argument is premised on the fact that Article 2 permits the use of *pat* only as a selectable marker and that Article 7, which requires notification and negotiations regarding a license for inventions or improvements that are "directly related to" the *pat* gene, aims to protect Bayer's future

[192] Respondents' Phase I Reply, dated 27 March 2014, para. 97
[193] Respondents' Phase I Memorial, dated 28 January 2014, para. 152
[194] Respondents' Phase I Reply, dated 27 March 2014, para. 100
[195] R-82: Milgrim First Witness Statement, paras. 41-44
[196] Respondents' Phase I Memorial, dated 28 January 2014, paras. 88, 152

rights in the *pat* gene in the event of incidental inventions or improvements to the *pat* gene in terms of herbicide resistance. In this interpretation, "invention or improvement" "directly related to" the *pat* gene would refer to use of the *pat* gene for its herbicide-resistance traits.[197] Given the Tribunal's finding that the 1992 Agreement provides no basis for distinguishing between the use of *pat* as a selectable marker and for herbicide resistance, Bayer's interpretation cannot be maintained. The role of Article 7 cannot be to protect Bayer's future rights, notably to a royalty,[198] in the event that Dow uses the gene for herbicide resistance, because Dow was granted this right, royalty-free, by Article 2.

196. The Tribunal therefore adopts Dow's interpretation of Article 7, by which "invention or improvement" that is "directly related to" the *pat* gene refers to an alteration of the *pat* gene (i.e., a change to its DNA sequence). In this view, Article 7 is not triggered merely by "combining" the *pat* gene with other technology, as was the case for the Enlist E3 event, where *pat* was used in conjunction with two other herbicide-resistant genes without alteration of its DNA sequence.[199]

197. Bayer objects that Dow's interpretation has the effect of "interpret[ing] [Article 7] out of existence,"[200] because Article 2 confers a right to use only the specific gene[201] and not its variants, meaning that alterations to *pat*'s DNA sequence would necessarily go beyond the terms of the license granted. As a result, any situation in which Article 7 could be invoked would necessarily not be covered by the license. This understanding is at odds with the principle of effectiveness codified in Article 1157 FCC and the coherent interpretation of the contract required by Article 1161 FCC. Bayer has given evidence, however, that it was not clear how Article 7 would apply in practice, as Hoechst could not fathom how "independent development [of the *pat* gene could] occur after the exchange of the Material has taken place,"[202] but rather added Article 7 because it sought to ensure the protection of its *pat* technology in all events.[203] In this light, the ambiguity regarding situations in which Article 7 would apply under Dow's interpretation appears compatible with Bayer's intentions at the time of drafting.

198. The Tribunal concludes that there was no violation of Article 7.

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[197] Claimants' Phase I Closing Presentation, dated 17 April 2014, slides 206-207
[198] Claimants' Phase I Memorial, dated 7 November 2013, para. 130
[199] Respondents' Phase I Reply, dated 27 March 2014, para. 97
[200] Claimants' Phase I Reply, dated 27 February 2014, para. 184
[201] R-82: Milgrim First Witness Statement, para. 43
[202] C-27: Letter from Hoechst to Agrigenetics, dated 6 May 1992
[203] Claimants' Phase I Memorial, dated 7 November 2013, para. 129

C. Article 4: "Stacking" Theory of Breach

199. The stacking theory of breach most closely tracks what Bayer appears to have had in mind when the notice of breach was sent. However, it relies on an interpretation of Article 4 that this Tribunal is unable to adopt.

1. Claimants' Position on Article 4 "Stacking"

200. Article 4, paragraph 1 of the 1992 Agreement provides that "[n]o right or license is hereby granted, to either party, either expressly or by implication, to use any other proprietary technology owned by or available to the other in connection with the licenses granted hereunder."

201. **Article 4 prohibits "stacking" of *pat* with other technologies owned by or available to Bayer—** Claimants state that Article 4 was inserted, upon Agrigenetics' request, "to clarify that ... only the specific gene and promot[e]rs ... are being licensed under the Agreement, and not any other technology."[204] Article 4 was thus an affirmative covenant that Dow would not use any altered version of the *pat* gene in its commercial endeavors.[205]

202. In Claimants' view, it was natural for the parties to strictly limit the scope of the licenses granted to each other in the context of a new field of research in which commercial applications were still not fully delineated.[206] By inserting this provision, Hoechst was also ensuring that the *pat* gene would not be combined with technology developed or to be developed by Hoechst in its line of business—that is, agrochemicals and gene technology—in a way that would hinder Hoechst's own commercial opportunities.[207]

203. Claimants cite examples of the parties' post-Agreement behavior that is consistent with their interpretation. For example, in the course of negotiations with Hoechst to obtain the right to sublicense DNA constructs containing the *pat* gene along with other proprietary technology owned by Mycogen to third parties, [redacted] Claimants

[204] C-28: Letter from Agrigenetics to Hoechst, dated 21 May 1992
[205] Claimants' Phase I Memorial, dated 7 November 2013, para. 123
[206] See e.g. C-24: Letter from Agrigenetics to Hoechst, dated 7 January 1992 (in which Agrigenetics stated: "We are not prepared at this time to grant Hoechst a right to sublicense AGC promoters *per se*, or on a stand-alone basis")
[207] Claimants' Phase I Memorial, dated 7 November 2013, para. 124
[208] For more details, see Claimants' Memorial, dated 7 November 2013, paras. 126 ff.

were not willing to grant such a license without additional consideration in the form of royalties, and negotiations eventually stalled.[209]

204. Further, Claimants explain that the parties did not use express language prohibiting stacking because stacking was not contemplated by the parties at the time that the 1992 Agreement was drafted. No biotechnology company was engaged in the licensing of stacking rights with herbicide-resistance genes yet, and Hoechst did not even know if glufosinate resistance itself was a viable concept.[210] The parties simply did not bargain for a commercial right to stack the glufosinate resistant trait.[211] Dow's argument that the absence of a restriction using the precise word "stacking" permits it to claim stacking rights is, in Claimants' view, in bad faith.[212]

205. **Dow engaged in "stacking"**—Claimants allege that Dow's use of the *pat* gene to create the Enlist E3 event is unauthorized because it is a use of the *pat* gene "in connection with other proprietary technology owned by or available to" Bayer.[213] Dow's patent applications explain that the plasmid in the Enlist E3 soybean contains "the selectable marker, patv6 and the genes of interest, aad-12 v1 and 2mEPSPS v1" (the latter two "genes of interest" are for 2,4-D and glyphosate resistance, respectively, and are Bayer technologies).[214]

2. Respondents' Position on Article 4 "Stacking"

206. In Respondents' view, Article 4 does not prohibit them from stacking *pat* in order to produce Enlist E3; Article 4, paragraph 1's confirmation that "[n]o right or license is hereby granted ... in connection with the licenses granted hereunder" clarifies what is *not* included in the license grants, and cannot reasonably read to affirmatively proscribe any conduct. Had the parties intended to prohibit stacking of the licensed technologies, it would have been a simple matter to state so

[209] C-43: Letter from Mycogen to Hoescht, dated 16 November 1994; C-44: Letter from Hoechst to Mycogen, dated 22 December 1994; Claimants' Phase I Memorial, dated 7 November 2013, para. 60
[210] C-143: W[redacted] Second Witness Statement, part C
[211] Claimants' Phase I Reply, dated 27 February 2014, para. 127
[212] *Id.*, para. 128
[213] *Id.*, para. 26
[214] Claimants' Phase I Memorial, dated 7 November 2013, para. 71, citing C-122: Dow's Patent Application of 28 February 2013, para. 0171 (emphasis added). See also C-122: Dow's Patent Application of 28 February 2013, para. 0173 ("[t]he screened plants were sampled and molecular analyses for the confirmation of the selectable marker and/or the gene of interest were carried out")

expressly[215] in the part of the agreement (Articles 2 and 3) where the other limitations on the parties' license rights appeared.[216]

207. **Extrinsic evidence**—Respondents argue that the extrinsic evidence supports their interpretation of Article 4. Notably, in his letter to Hoechst seeking to add the part of Article 4 at issue, Dr. W[redacted] of Agrigenetics, stated that the addition of that clause was meant "to clarify that it is only the specific gene and promot[e]rs that are being licensed under the Agreement, and not any other technology."[217] At no time did the parties discuss that the proposed clause, or any other provision in the Agreement, prohibited "stacking" the licensed technology with other technology owned by the other party.[218] None of the parties' correspondence concerning the negotiation of the Agreement reflects any discussion about "stacking" the licensed technology with other technology "owned by or available to" the other party, whether in the context of Article 4 or otherwise, Dr. W[redacted] and Dr. S[redacted], of Agrigenetics, confirm such discussion never took place,[219] and Bayer presents no evidence to the contrary.[220]

208. **Established licensing practice**—Respondents also refer to well-established licensing practice by which clauses such as the first paragraph of Article 4 have long been included in intellectual property licenses for the very reason identified by Dr. W[redacted]—to emphasize that the sole rights granted are those that are expressly granted.[221]

209. **Implicit prohibition**—Respondents assert that Bayer has evidenced bad faith by changing its argument with respect to Article 4, paragraph 1. Having initially argued that Article 4 expressly prohibited stacking, Bayer's current position is that Article 4 does not expressly prohibit stacking because the parties had not contemplated stacking at the time the Agreement was drafted.[222] Furthermore, Respondents argue that this new stacking theory based on an implicit prohibition is not supported by French law, under which a license is presumed to convey all of the grantor's rights in a patent unless there is an express limitation.[223] In the 1992 Agreement, the only express

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[215] *Id.*, para. 94
[216] *Id.*, para. 95
[217] C-28: Letter from Agrigenetics to Hoechst, dated 21 May 1992; R-80: W[redacted] First Witness Statement, at paras. 40-43
[218] *Id.*, paras. 19, 41: R-79: S[redacted] First Witness Statement, para. 30
[219] R-80: W[redacted] First Witness Statement, paras. 19(b), 41; R-79: S[redacted] First Witness Statement, at para. 30
[220] Respondents' Phase I Memorial, dated 28 January 2014, para. 96; C-86: Letter from Bayer to Dow, dated 9 November 2011
[221] Respondents' Phase I Memorial, dated 28 January 2014, para. 97
[222] Respondents' Phase I Reply, dated 27 March 2014, para. 24
[223] R-81: Aynès First Witness Statement at 25; R-132: Aynès Second Witness Statement at 8-9.

limitation on Dow's rights to the *pat* gene is under Article 2 with respect to the use of the *pat* gene in connection with sugar beets.[224]

3. Tribunal's Determination: Article 4 Does Not, in and of Itself, Exclude "Stacking"

210. The theory that Bayer first put forward (and the one that they may have had in mind when they sent their notice of breach) is the stacking theory. This theory is based on the first paragraph of Article 4, which reads as follows:

> No right or license is hereby granted, to either party, either expressly or by implication, to use any other proprietary technology owned by or available to the other in connection with the licenses granted hereunder.

211. The stacking theory seems to depend on a syntactic assumption that "in connection with" qualifies the verb "to use" (as opposed to the verbal phrase "is granted" found at the beginning of the sentence). This assumption is tenuous given the fairly common use of such clauses merely to ensure that the license is limited to the technology the parties have in mind and mention.[225] If adopted, however, the stacking theory would read the following limitation into the scope of Dow's right to use the *pat* gene: "you can make Transformants using *pat* and sell them, as provided by Article 2, but you cannot make Transformants using *pat* if you are going to *combine pat* with another technology that happens to be owned by or available to Bayer."

212. Looking at the drafting history, this first paragraph was added word for word to Article 4 at the suggestion of Dr. W[redacted], of Agrigenetics, in his letter of 21 May 1992. According to this letter, the purpose of this addition was "to clarify that it is only the specific gene and promot[e]rs that are being licensed under the Agreement, and not any other technology."[226] This is consistent with a widespread use of such clauses in order to limit licenses to the technology the parties have in mind and mention, which has nothing to do with stacking. Furthermore, if there is an obvious commercial interest for Bayer in creating a ban on the use of *pat* in combination with other Bayer technology, as Bayer argues,[227] why were the words giving rise to this alleged ban suggested by Dr. W[redacted], the representative of Agrigenetics?

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[224] Respondents' Phase I Reply, dated 27 March 2014, para. 25, referring to C-2: 1992 Agreement, Art. 2 and Respondents' Phase I Memorial, dated 28 January 2014, para. 95

[225] R-82: Milgrim First Witness Statement, paras. 4-5, 24-26, 39

[226] C-28: Letter from Agrigenetics to Hoechst, dated 21 May 1992; R-80: W[redacted] First Witness Statement, at paras. 40-43

[227] Claimants' Phase I Memorial, dated 7 November 2013, para. 124

213. On balance, the Tribunal rejects the "stacking" theory: Article 4 does not exclude the right to "combine" a Bayer gene with *pat*, as long as Dow is also allowed to use this other Bayer gene. The question of whether, in the case at hand, Dow was allowed to use the other gene will be discussed further in the following part, Part 2.II.D, with respect to Bayer's theory of breach based on sublicensing.

214. Given the Tribunal's determination, it is unnecessary to address Dow's additional argument that Bayer relies on an implicit prohibition on stacking inconsistent with the French law on licensing, which would require an express prohibition to restrict a licensee's rights. It is worth noting, however, that for reasons that will be discussed below, in Part 2.II.D.1, with respect to the "sublicensing" theory of breach, the Tribunal is of the opinion that the absence of an express restriction in a license, on its own, can simply be construed as equivalent to a permission, is unlikely to find support under French law.

D. Article 4: "Sublicensing" Theory of Breach

215. The sublicensing theory of breach made its appearance relatively late in these proceedings. In particular, while a claim of breach based on Dow's sublicensing of Transformants that were not its own was first raised in Claimants' Phase I Memorial of 2 September 2013,[228] the theory that Article 4 of the 1992 Agreement was violated by Dow's sublicensing of the naked *pat* gene or a construct containing *pat* was advanced for the first time in Claimants' Phase I Reply of 27 February 2014.[229] In light of this relatively late date, as well as an alleged modification of the argument during the closing presentations at the April 2014 hearing, Respondents have argued, in their Phase II Responsive Memorial, that the Tribunal's consideration of the sublicensing argument constitutes a breach of procedural fairness.[230]

216. The Tribunal is of the view, however, that Respondents had ample opportunity to fully respond to the arguments raised by Claimants with respect to sublicensing. The same issue of procedural fairness with respect to the sublicensing argument was raised by Respondents in March of 2014,[231] at which time the Tribunal gave full consideration to, and ultimately dismissed, Respondents'

[228] Dow's Letter to the Tribunal, dated 6 March 2014, para. 6
[229] Claimants' Phase I Reply, dated 27 February 2014, part III; Dow's Letter to the Tribunal, dated 6 March 2014, paras. 11, 13
[230] Respondents' Phase II Responsive Memorial, dated, 1 July 2014, para. 21
[231] Dow's Letter to the Tribunal, dated 6 March 2014

objections.[232] Respondents had the opportunity to advance and did advance extensive arguments in response to Claimants' allegations based on sublicensing rights.[233] All of Claimants' witnesses were made available to Respondents, and Respondents elected to cross-examine seven of these witnesses.[234] Having concluded that there has been no violation of procedural fairness, the Tribunal will therefore proceed with its determination regarding the sublicensing theory of breach.

217. A question preliminary to the determination of whether Dow has sublicensed the *pat* gene to MS Tech in contravention of Article 4 of the 1992 Agreement is whether the French law of contract, as it pertains to licenses, requires an express prohibition in order to restrict the scope of the license or, conversely, whether the mere fact that a behavior is not prohibited by the license means that it is permitted.

218. This question arises because Dow argues that Article 4 of the 1992 Agreement does not expressly prevent Dow from using *pat* to make a Transformant "for" a third party, as Dow argues it has done for MS Tech. Similarly, Dow argues that compliance with Article 2 does not turn on whether Dow builds a Transformant on its own initiative or at the request of another, as there is nothing in the language of the Agreement that suggests such a limitation. Consequently, before turning to the question of what Article 4 permits (2), it is first necessary to consider whether the fact that there is no express restriction in Article 2 or Article 4 excluding the right to use *pat* to make a Transformant "for" a third party makes a difference in terms of Dow's rights under the 1992 Agreement (1).

1. French Law on Contracts of License

i. Claimants' Position on French Law on Licenses

219. Claimants argue that, under French law, that which is not expressly granted in a license is disallowed.[235] Article 1162 FCC codifies a fundamental principle of French law, by which, "[i]n case of doubt, an agreement shall be interpreted against the one who has stipulated, and in the favour of the one who has contracted the obligation."[236] This principle is reiterated in the specific

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[232] Procedural Order No 7, dated 13 March 2014, para. 6

[233] See e.g. Respondents' Phase I Reply, dated 27 March 2014, paras. 106-12; Respondents' Phase I Closing Presentation, dated 17 April 2014, slides 109-43; Respondents' Phase I Post-Hearing Submission, dated 6 May 2014 (especially at paras. 30-42)

[234] Claimants' Phase II Reply, dated 1 August 2014, para. 9

[235] Claimants' Phase I Post-Hearing Submission, dated 6 May 2014, at 1, referring to, in particular, CL-2: French Code of Intellectual Property, Art. L.613-8

[236] CL-1/RLA-107: Civil Code, translated by Georges Rouhette with the assistance of Dr. Anne Rouhette-Berton

context of the law of patent licenses; according to Article L613-8 of the French Code of Intellectual Property, "the rights afforded by the patent may be invoked against a licensee who exceeds any of the limits on his license stipulated." This article manifests a restrictive position, limiting the licensee's rights to those stipulated in the license,[237] and doctrine on the interpretation of licenses similarly recognizes that the rights granted to licensees must be narrowly interpreted.[238]

220. Based on the rights granted under Article 4, paragraph 2 of the 1992 Agreement ("[b]oth parties are entitled to grant sublicenses or distribution rights for their Transformants"), it is common ground that Dow is not permitted to sublicense the underlying *pat* gene or a construct containing the *pat* gene.[239] Nor can Dow sublicense the underlying *pat* gene patent rights or act as a contractor to make *pat*-containing Transformants owned by someone other than Dow in the absence of express language giving rise to this right in the Agreement. In that respect, it should also be noted that Article 10 of the 1992 Agreement specifically prohibits assigning rights under the 1992 Agreement: "This Agreement ... shall not otherwise be assigned by either party without the other party's consent."[240]

ii. Respondents' Position on French Law on Licenses

221. According to Respondents, under French law, a patent license is to be interpreted in the manner "most favorable to the licensee."[241] As a result, absent an express restriction, the licensee "acquires the use of all rights attached to the patent,"[242] and implying a restriction on Dow's rights absent express language in the Agreement would violate this basic principle.[243]

222. In Respondents' view, contrary to Bayer's argument that Dow cannot "act as a contractor to make *pat*-containing Transformants owned by someone other than itself,"[244] the 1992 Agreement has no ownership requirement.[245] Patent rights are distinct from ownership rights.[246] Dow's license "to

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[237] C-148: Gautier First Witness Statement, para. 24
[238] CL-144: Passa, *Traité de Droit de la Propriété Industrielle*, para. 595; CL-139: Basire, *JCL Brevets*, Fasc. 4740, para. 100
[239] See e.g., Respondents' Phase I Post-Hearing Submission, dated 6 May 2014, para. 27; Claimants' Phase I Closing Presentation, dated 17 April 2014, slide 5
[240] Claimants' Phase I Post-Hearing Submission, dated 6 May 2014, at 2
[241] R-132: Aynès Second Witness Statement at 8-9 (French), 7-9 (English), citing RLA-252: Basire, *JCL Brevets*, Fasc. 4740, para. 64
[242] R-81: Aynès First Witness Statement at 25-26 (French); 26-27 (English); R-132: Aynès Second Witness Statement at 8-9 (French), 7-9 (English); Respondents' Phase I Closing Presentation, dated 17 April 2014, slide 7
[243] Respondents' Phase I Post-Hearing Reply, dated 13 May 2014, para. 6
[244] *Id.*, para. 2, referring to Claimants' Phase I Post-Hearing Submission, dated 6 May 2014, at 1-2
[245] Respondents' Phase I Closing Presentation, dated 17 April 2014, slide 140
[246] Respondents' Phase I Post-Hearing Reply, dated 13 May 2014, para. 2

use the Gene for transformation purposes in plants other than sugar beet and to make, use and sell Transformants" under Article 2 does not concern what Dow owns. Likewise, there are no restrictions in Article 4 (which provides that "[b]oth parties are entitled to grant sublicenses or distribution rights for their Transformants") that exclude the right to use *pat* to make a Transformants "for" a third party.

iii. Tribunal's Determination: French Law Requires an Express Stipulation of Sublicensing Rights

223. As explained in this paragraph, the underlying legal principle documented in the record provides that, under French law, a license is by default *intuitu personae*; that is, there is no sublicensing right arising from a license unless this right is stipulated. As Bayer notes, in French contract law generally, an agreement is to be interpreted against the party who has stipulated and in favor of the party who contracts an obligation.[247] More particularly, a license is to be interpreted in favor of the licensor, as rights granted to a licensee are to be narrowly interpreted.[248] This principle is also recognized by the doctrinal authority that was cited by Dow's expert witness.[249] This requirement, that sublicensing rights be stipulated in order to be granted to a licensee, applies to the 1992 Agreement when one falls outside the scope of Article 4's grant of an "entitlement" to sublicense. The only right to sublicense under the 1992 Agreement thus relates to each party's "own" Transformants—that is, "their Transformants" under Article 4, and not Transformants owned by another party. Accordingly, the Tribunal will now consider the rights of the parties under Article 4 to determine whether Dow sublicensed (or assigned or granted) rights to MS Tech in breach of the 1992 Agreement.

2. Article 4 Sublicensing

i. Claimants' Position on Article 4 Sublicensing

224. In summary, Claimants' position is that Dow incorporated the *pat* gene into a construct that Dow says it made for MS Tech, resulting in an event that Dow says MS Tech owns. It follows that Dow effectively sublicensed the *pat* gene to MS Tech.[250] The point of the restriction on sublicensing in

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[247] See e.g. CL-1/RLA-107: Civil Code, translated by Georges Rouhette with the assistance of Dr. Anne Rouhette-Berton, Art. 1162. See also C-148: First Gautier Witness Statement
[248] See e.g. CL-2: French Intellectual Property Code, Art. L.613-8; C-148: Gautier First Witness Statement, para. 24
[249] Basire, *JCL Brevets*, Fasc. 4740, para. 100; Claimants' Phase I Closing Presentation, dated 17 April 2014, slide 14
[250] Claimants' Phase I Closing Presentation, dated 17 April 2014, slide 98

the 1992 Agreement was to prevent third parties from developing bioengineered products utilizing *pat*, without paying Bayer. This is why the sublicensing right that Dow acquired under the Agreement was only with respect to "their Transformants" (Dow's own seeds or plants). Dow violated the 1992 Agreement by permitting MS Tech, as "owner of the E3 event", to utilize the *pat* gene to achieve the end that the parties intended to foreclose.[251]

225. **Dow's problem and solution**—Claimants relate that, in order to create the Enlist E3 event, Dow required access to the *dmmg* gene, which Bayer had licensed to MS Tech.[252] Article 4 of 1992 Agreement did not allow Dow to sublicense the *pat* gene or constructs containing *pat*, and in a similar fashion, the 2004 Bayer-MS Tech Agreement[253] did not allow MS Tech to sublicense *dmmg* or constructs containing *dmmg*. [redacted]

226. According to Claimants, in addition to the prohibition on licensing that Claimants argue exists under the 2004 Bayer-MS Tech Agreement, MS Tech was contractually required, pursuant to [redacted] of its 2004 agreement with Bayer, to "own or license in" any other biological material used with the *dmmg* gene to create a so-called "MS Soybean Event" (meaning an event that would be owned by MS Tech).[256] Thus, MS Tech was required to own, or to license in, any genetic elements contained, or to be contained, in a construct containing the *dmmg* gene.

227. According to the terms of its 2004 agreement with Bayer, MS Tech possessed the right to "have" an event "made" by a third party on MS Tech's behalf. As Dow itself explains, "a right to have made is not a sublicense, as the contractor who makes for the licensee does not receive a sublicense from the licensee."[257] Under MS Tech's "have made rights", the contractor Dow merely provided services to MS Tech: putting the *pat* gene into a three-gene construct and creating the Enlist E3

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[251] *Id.*, slide 99
[252] Claimants' Phase I Memorial, dated 7 November 2013, para. 80
[253] C-207: 2004 Bayer-MS Tech Agreement
[254] CB-56: [redacted]
[255] C-175: [redacted]
[256] [redacted] See also C-142: V R Witness Statement, paras. 19-34; Phase I Hearing Transcript, dated 11 April 2014, at 663:14-665:22, 670:23-675:13
[257] CL-12: *Corebrace LLC v. Star Seismic LLC*, 566 F.3D 1069, 1073 (Fed. Cir. 2009); Claimants' Phase I Post-Hearing Submission, dated 6 May 2014, at 7 (citing Respondents' Phase I Closing Presentation, dated 17 April 2014, slide 128)

event therefrom. Mr. R[redacted], an employee of Dow, testified that Dow, on behalf of MS Tech, put *pat* in the E3 construct: [redacted][258]

228. Claimants thus argue that, because MS Tech could not provide *dmmg* to Dow, MS Tech and Dow decided that Dow would become MS Tech's "contractor" to do, with *dmmg*, what Dow could not be given a sublicense by MS Tech to do on its own behalf.[259]

229. **Dow understood that third-party transformation was not permitted under Article 4 of the 1992 Agreement**—According to Claimants, it is common ground that Bayer did not give MS Tech a license to the *pat* gene.[260] The *pat* gene was licensed only to Dow.

230. Article 4, paragraph 2 of Dow's license to the *pat* gene, the 1992 Agreement, allows Dow to grant sublicenses: "[b]oth parties are entitled to grant sublicenses or distribution rights for their Transformants. Hoechst is furthermore entitled to grant sublicenses for gene promoter constructs containing a Promoter in conjunction with any gene of which Hoechst can dispose." Dow is thus permitted to sublicense only its Transformants[261] containing the *pat* gene, and not the *pat* gene itself, or a construct[262] containing the *pat* gene. Nor can Dow sublicense the underlying *pat* gene patent rights or act as a contractor to make *pat*-containing Transformants owned by someone other than itself.[263] In Claimants' view, Dow has done all of these things, in violation of Article 4.

231. Claimants argue that Article 2 of the 1992 Agreement contains Dow's license grant, an *intuitu personae* right that is distinct from any right that Bayer permitted Dow, through Article 4, to grant to others. Dow could make an event (a Transformant) solely for itself using the *pat* gene as a selectable marker. In the case at hand, however, Dow did not make the Enlist E3 event for itself

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[258] Claimants' Phase I Post-Hearing Submission, dated 6 May 2014, at 3 n.9, referring to Phase I Hearing Transcript, dated 12 April 2014, at 1061:11-22 (Mr. R[redacted] discussing C-66: 2008 Dow-MS Tech Agreement [redacted])

[259] Claimants' Phase I Opening Presentation, dated 9 April 2014, slide 64, referring to C-172: Mansfield Deposition at 30-31

[260] Claimants' Phase I Closing Presentation, dated 17 April 2014, slide 53. See C-142: V[redacted] R[redacted] Witness Statement, paras. 24-34: [redacted]

[261] C-2: 1992 Agreement, Art. 1(f). The term "Transformants" is defined in the 1992 Agreement as "genetically transformed plants or plant parts (seeds) obtained by Agrigenetics with the Gene ... and their progrny obtained by further breeding or propagating steps"

[262] Claimants' Phase I Reply, dated 27 February 2014, para. 149. A "construct" is a human-engineered fusion of DNA sequences that are not found together in nature. A DNA construct is made in a laboratory by scientists and exists outside of any plant

[263] Article 10 of the 1992 Agreement specifically prohibits assigning rights under the 1992 Agreement

because Dow could not obtain rights to the *dmmg* gene from MS Tech under the terms of the 2004 Bayer-MS Tech Agreement, which prohibited MS Tech from sublicensing *dmmg*.[264] As a result, Dow had to effectively sublicense or assign the *pat* gene (and the patent rights thereto) to MS Tech in order for Dow to combine the genes in a construct "for" MS Tech.

232. Furthermore, in Claimants' view, the contemporaneous documentary evidence establishes Dow's awareness that it was obligated under the 1992 Agreement to maintain ownership of events involving *pat* and did not have an unfettered right to use third parties for transformation work.[265] In particular, Claimants refer to an internal Dow document indicating that the [redacted][266]

233. **Dow breached Article 4 by supplying MS Tech with the *pat* gene**—The 2008 Dow-MS Tech Agreement defines [redacted] Claimants assert that, under the 2007 Dow-MS Tech Agreement, Dow put the *pat* gene into a construct on behalf of MS Tech, as MS Tech's "contractor"[268] and in effect supplied the *pat* gene to MS Tech despite the fact that the latter was never openly given the right to handle the naked gene.[269]

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[264] See Claimants' Phase I Closing Presentation, dated 17 April 2014, slides 65-67 (citing C-175: [redacted]

[265] Claimants' Phase I Closing Presentation, dated 17 April 2014, slide 83

[266] C-53: Dow Internal Document: [redacted]

[267] C-66: 2008 Dow-MS Tech Agreement, [redacted]

[268] Claimants' Phase I Closing Presentation, dated 17 April 2014, slides 71-72, referring to C-172: *Bayer CropScience AG v. Dow AgroSciences LLC*, Civ. No. 12-256-RGA (D. Del.), Mansfield Deposition at 30-31

[269] Respondents' Phase I Reply, dated 27 March 2014, para. 109

234. Claimants note that Dow has admitted in other litigation that the Enlist E3 soybeans containing the *pat* gene were owned by MS Tech *ab initio*.[270] Had MS Tech and Dow taken the position that Dow owned Enlist E3, the implication would have been a violation of MS Tech's *dmmg* license, as Bayer allowed MS Tech to create molecular stacks with the *dmmg* gene only if it owned or licensed in the other genes.[271] Accordingly, in other litigation, MS Tech's [redacted] has testified that MS Tech "in-licensed" the *pat* section of the construct from Dow,[272] allowing Dow to incorporate the *pat* gene into a construct Dow says it made "for MS Tech". This resulted in an event that Dow says MS Tech owns. It follows that Dow effectively sublicensed the *pat* gene to MS Tech.[273]

235. In Claimants' view, the point of the restriction on sublicensing in the 1992 Agreement was to prevent third parties from developing bioengineered products utilizing *pat* without paying Bayer. This is why the sublicensing rights that Dow acquired in the 1992 Agreement was only to "their Transformants" (i.e., Dow's seeds or plants). Dow violated the 1992 Agreement by permitting MS Tech, as "owner of the E3 event", to utilize the *pat* gene to develop bioengineered products and therefore achieve the end that the parties intended to foreclose.[274]

236. **Dow could have made E3 a breeding stack instead of breaching Article 4 by making E3 a molecular stack, but this would have required paying hefty royalties**[275]—Claimants state that Dow was allowed to license *pat*-containing Transformants to MS Tech under Article 4.[276] Furthermore, MS Tech was allowed to in-license *pat*-containing Transformants from Dow and to stack them with FG72 soybeans by traditional breeding methods.[277] As a result, Dow and MS Tech could have made E3 by traditional breeding, without Dow breaching Article 4.[278] This option would, however, have *de facto* required Dow to share [redacted] from Enlist E3 with

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[270] Claimants' Phase I Opening Presentation, dated 9 April 2014, slide 69, referring to C-109: *Bayer CropScience AG v. Dow AgroSciences LLC*, Civ. No. 12-256-RMB-JS (D. Del.), Summary Judgment Transcript at 375

[271] C-142: V[redacted] R[redacted] Witness Statement, para. 24

[272] C-171: *Bayer CropScience AG v. Dow AgroSciences LLC*, Civ. No. 12-256-RGA (D. Del.), S[redacted] Deposition at [redacted]

[273] Claimants' Phase I Closing Presentation, dated 17 April 2014, slide 98

[274] *Id.*, slide 99

[275] Claimants' Phase I Closing Presentation, dated 17 April 2014, slide 84

[276] *Id.*, slide 85, referring to Article 2 of the 1992 Agreement: "both parties are entitled to grant sublicenses or distribution rights for their Transformants."

[277] Claimants' Phase I Closing Presentation, dated 17 April 2014, slide 86, referring to C-142: V[redacted] R[redacted] Witness Statement, paras. 19-20: "First, MS Tech could create "breeding stacks", which involves the stacking of two (or more) soybean events (each in different plants) "by traditional breeding" methods, i.e. by crossing the plants and selecting those progeny that contain the various events of interest"

[278] Claimants' Phase I Closing Presentation, dated 17 April 2014, slide 87

Bayer, due to Bayer's licensing agreement with MS Tech with respect to the *dmmg* gene included in the Enlist E3 event.[279]

237. **By seeking to accomplish indirectly what it could not do directly, Dow was in bad faith**—In Claimants' words, "[t]he objective of Dow and MS Tech [in circumventing the 1992 Agreement's restriction on sublicensing of the *pat* gene] was to deprive Bayer of a [redacted] to which Bayer would have been entitled had the Enlist product been developed utilizing breeding as opposed to Biotech, [redacted]."[280] Article 1134 FCC provides that contracts must be performed in good faith, a requirement that encompasses the principle stemming from Canon law and applied universally in both civil and common law jurisdictions contained in the phrase *Quando aliquid prohibetur ex directo, prohibetur et per oliquum* (when something is prohibited directly, it is likewise prohibited indirectly).[281] This principle has been reiterated in French case law, with courts refusing to allow a licensee to circumvent the prohibitions or exceed the limits of a license agreement through the exercise of rights that constitute a *de facto* evasion of the express or implied terms of the license.[282] Claimants conclude that, under French law, it is essential to look to the effect of the relationships and contracts formed by the licensees, and to their impact on the licensor-licensee relationship. In this light, they argue that Dow's sublicense of the *pat* gene to MS Tech, by circumventing the restriction on sublicensing in Article 4 of the 1992 Agreement, is in bad faith.[283]

ii. Respondents' Position on Article 4 Sublicensing

238. To summarize, Respondents allege that their activities have respected all relevant agreements. Dow made a Transformant (seed) containing *pat* (thus respecting Article 2 of the 1992 Agreement) for MS Tech (thus respecting Bayer and MS Tech's 2004 agreement ("have made" rights)); Dow sublicensed rights in the resultant Transformant to MS Tech (thus respecting Article 4 of the 1992 Agreement). Finally, MS Tech can own the Enlist E3 event without having any license to patents that may cover Enlist E3. Patent rights are not the same as ownership rights.

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[279] Claimants' Phase I Closing Presentation, dated 17 April 2014, slide 91, referring to C-183: Dow internal email, [redacted]; Transcription 1052:21-1053:3; 1054:4-17

[280] Claimants' Phase I Opening Presentation, dated 9 April 2014, slide 77

[281] Claimants' Phase I Post-Hearing Submission, dated 6 May 2014, at 10, citing Decree of Boniface VIII, 1302

[282] Claimants' Phase I Post-Hearing Submission, dated 6 May 2014, at 10–11, citing Cass. Com. 17 mars 2004, n° 02-21-278 (Tab 2); Cour d'appel de Paris, 4e Ch. A, 21 janvier 2004 (Tab 3); Cour d'appel d'Orléans, 12 mars 2009 n° RG : 08/01519 (Tab 4); TGI de Paris, 3e Ch. 1ère section, 29 juin 2010, n ° 08 17882 (Tab 5)

[283] Claimants' Phase I Post-Hearing Submission, dated 6 May 2014, at 11

239. Respondents submit that the terms of the 1992 Agreement for *pat* and the 2004 Bayer-MS Tech license for *dmmg* are fully compatible, and both were complied with in creating Enlist E3. The 1992 Agreement grants Dow broad rights to Bayer's patents when making, using, and selling Transformants containing *pat*.[284] The 2004 license from Bayer to MS Tech, for its part, broadly licenses MS Tech to have third parties make transgenic seed using the *dmmg* gene, if made "for" MS Tech.[285] When Dow made Enlist E3 for MS Tech, it was abiding by both agreements: with the 1992 Agreement by making a Transformant containing *pat*; with the 2004 Bayer-MS Tech Agreement by creating that seed for MS Tech; and with the 1992 Agreement by sublicensing rights in the resultant "Transformant" to MS Tech.[286]

240. Respondents note that if they could not grant (or had not granted) a valid sublicense covering the E3 event to MS Tech, then it would be MS Tech that Bayer would be alleging had infringed its patents, by multiplying and cross-breeding seeds and plants containing E3. In contrast, Dow would not be exposed to such infringement claims, because it had a broad license to make, use, and sell such seed and plants. Bayer, however, has never taken any action against MS Tech and has conceded that MS Tech was duly licensed.[287]

241. **Dow made a Transformant containing *pat*, respecting Article 2 of the 1992 Agreement**—In Respondents' view, Dow has broad rights to Bayer's patents when making, using, and selling Transformants (Article 2 of the 1992 Agreement). Compliance with Article 2 does not turn on whether Dow builds Transformants on its own initiative or at the request of another.[288] There is no broader grant than the one that Bayer gave to Dow in Article 2, because "[a] valid license to make, use and sell a machine is a complete defense to an action for infringement."[289] As explained by

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[284] C-2: 1992 Agreement, Art. 2

[285] C-57: Bayer-MS Tech Agreement, dated 28 May 2004, Arts. 3.1.2, 1.1 (definition of "M.S. Soybean Event" including events "made by or for [MS Tech]")

[286] Respondents' Phase I Post-Hearing Submission, dated 6 May 2014, para. 15 n.28: "Although it is not clear why Bayer believes the two agreements to be incompatible, it is clear that Bayer is taking inconsistent positions in the various cases. Here, Bayer finds it very significant that DAS [Dow] made E3 for MS Tech. In *Bayer II*, Bayer made precisely the opposite argument, and continues to do so on appeal." See R-119: *Bayer CropScience AG v. Dow AgroSciences LLC*, Civ. No. 12-256 RMB-JS (D. Del.), Bayer's Brief in Opposition to Dow's Motion for Summary Judgment of Noninfringement at 25-26 ("E3 was not made 'by or for' MS Tech ... DAS [Dow] and MS Tech *jointly* own E3, and have since its inception."); R-143: *Bayer CropScience AG v. Dow AgroSciences LLC*, No. 1:12-cv-00256-RMB-JS, Bayer's Opening Appeal Brief at 29-30 ("Bayer proffered written evidence that MST does not solely own E3, and that DAS [Dow] never made E3 'for' MST pursuant to MST's have-made rights")

[287] Respondents' Phase I Post-Hearing Submission, dated 6 May 2014, para. 20, referring to Phase I Hearing Transcript, dated 11 April 2014, 643:19-644:19

[288] Respondents' Phase I Post-Hearing Submission, dated 6 May 2014, para. 27

[289] *Id.*, para. 26, referring to RLA-253: *Anthony Co. v. Perfection Stell Body Co.*, 315 F. 2d 138, 141 (6th Cir. 1963), citing, *inter alia*, RLA-287: *De Forest Radio Tel. & Tel. Co. v. U.S.*, 273 U.S. 236, 241 (1927)

Respondents' expert witness, Mr. Milgrim, and as is not disputed by Bayer, "[a] patentee's grant of the right to 'make, use and sell' is the customary way to immunize the licensee's activity against a U.S. patent infringement action. Such a grant authorizes the licensee to use everything the patent authorizes *except* that which the licensor reserves, or excludes, or limits."[290]

242. **Dow made the Transformant for MS Tech, respecting the 2004 agreement**—Respondents argue that the 2004 Bayer-MS Tech agreement broadly licenses MS Tech to have third parties make transgenic seeds using the *dmmg* gene, if "made for" MS Tech. Compliance with Article 2 of the 1992 Agreement does not turn on whether Dow builds a Transformant on its own initiative or at the request of another, and there is nothing in the language of the 1992 Agreement to suggest such a limitation.[291]

243. **Dow sublicensed rights in the resultant Transformants to MS Tech, respecting the 1992 Agreement**—In Respondents' view, Article 4 of the 1992 Agreement allows Dow to grant sublicenses or distribution rights to its Transformants. The purpose of Article 4 is to allow Dow to provide third parties with the full set of rights regarding Transformants made by Dow that Dow itself enjoys. Accordingly, [redacted], Dow sublicensed rights in the Enlist E3 Transformants to MS Tech.[292]

244. [redacted] of the 2008 Dow-MS Tech Agreement covers Dow's licenses of intellectual property to MS Tech. The second sentence addresses E3 and provides a [redacted] That grant would thus include the Bayer patents licensed to Dow under the 1992 Agreement, to the extent those patents cover the *pat* gene.[295]

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[290] R-82: Milgrim First Witness Statement, para. 29 (emphasis in original). The same is true under French law: see R-81: Aynès First Witness Statement at 25 (French), 27 (English)
[291] Respondents' Phase I Post-Hearing Submission, dated 6 May 2014, para. 27
[292] *Id.*, para. 33: "As an internal memorandum from Dr. T[redacted] to Dr. W[redacted] explained, "the right to grant sublicenses for seed *propagation* is a mandatory requirement for distribution"; R-96: Internal Memorandum, dated 24 January 1992 (translation; emphasis in original)
[293] See Transcript, 1058:2-8; 1059:20-25 (the "DMMG/AAD12 Stack" is E3).
[294] C-66: Dow-MS Tech Agreement, [redacted]
[295] Respondents' Phase I Post-Hearing Submission, dated 6 May 2014, para. 4

245. Dow did not grant MS Tech any rights to the Bayer patents beyond those necessary to work with the Transformants, consistent with the language of Article 4 of the Agreement:[296]

i. Only Dow is authorized to make constructs, transform soybean, and create first generation seed.[297] MS Tech's Enlist E3 activities do not include any work with the "naked" *pat* gene or with any construct containing *pat*.[298]

ii. Dow's license in the second sentence of [redacted] is qualified by the definition of [redacted] which as noted above, includes the Bayer patents. That definition is limited to use [redacted][299]

iii. Dow's license to MS Tech in the second sentence of [redacted] is limited [redacted][300] Accordingly, to the extent Dow could not give MS Tech a sublicense other than to Transformants, Dow did not purport to provide that license.[301]

246. Respondents note that Dow never gave the naked *pat* gene to MS Tech, only seed containing that gene. In other words, Dow never gave MS Tech a *pat* gene other than as part of a Transformant.[302] It was only after Dow created the Enlist E3 seed that MS Tech began its work under the 2008 Dow-MS Tech Agreement. Indeed, in *Bayer II*, Bayer argued that Dow always controlled the *pat* gene.[303]

247. **MS Tech can own the Enlist E3 event without having any license to patents that may cover E3**—Respondents assert that MS Tech holds a valid sublicense from Dow, granted under [redacted] of the 2008 Dow-MS Tech Agreement and in accordance with Dow's right under Article 4 of

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[296] Respondents' Phase I Post-Hearing Submission, dated 6 May 2014, para. 9

[297] [redacted]

[298] Respondents' Phase I Post-Hearing Submission, dated 6 May 2014, para. 6; C-66: Dow-MS Tech Agreement, dated [redacted]

[299] Respondents' Phase I Post-Hearing Submission, dated 6 May 2014, para. 7; C-66: Dow-MS Tech Agreement, dated [redacted]

[300] C-66: Dow-MS Tech Agreement, [redacted]

[301] Respondents' Phase I Post-Hearing Submission, dated 6 May 2014, para. 8

[302] *Id.*, para. 10; referring to R-135: R[redacted] Second Witness Statement, paras. 4-5; Transcription, 1062:11-19, 1076:8-18

[303] R-352: *Bayer CropScience AG v. Dow AgroSciences LLC*, No. 12-256-RMBJS, 2013 WL 5539410 (D. Del.), Transcript of Hearing on Dow's Motion for Summary Judgment, 337:2-3

the 1992 Agreement to grant sublicenses to "Transformants". It is common ground, in Respondents' view, that what Dow sublicensed to MS Tech under [redacted] was the Enlist E3 event, in the form of seed and plants containing E3,[304] and Bayer agrees that this seed and these plants are "Transformants" as that term is defined in the 1992 Agreement.[305]

248. **Bayer's "vicarious action" argument is legally and factually unfounded**—Respondents reject Bayer's argument, which in their view, seems to suggest that it was "effectively" MS Tech that created the *pat* construct, even though Dow did all the relevant work. In Respondents' view, when Dow created E3, it was acting in strict accordance with Article 2 of the 1992 Agreement, and MS Tech did not do any of the work. There is a clear distinction between sublicensing the *pat* gene to MS Tech and making an event for MS Tech. The former relates to Article 4 of the 1992 Agreement, under which Dow can grant a third party freedom from suit for its use of Transformants. The latter relates to Article 2, which gives Dow itself the right to make those Transformants. Respondents assert that Bayer's argument would render Article 4 meaningless, by limiting Dow's sublicensing rights to parties that already held rights to *pat*.[306]

249. Respondents explain that the definition of [redacted] in the 2008 Dow-MS Tech Agreement,[307] which specifies that [redacted] and on which Bayer bases its claim, creates no rights or obligations, and must be read in the context of the operative provisions of the agreement. The agreement did not provide that MS Tech would receive the *pat* gene or any construct containing the *pat* gene; the *pat* gene was incorporated in a Transformant, in strict compliance with Article 4.[308]

250. **Bayer's "sham transaction" argument is legally and factually unfounded**—In Respondents' view, Bayer appears to rely on the French legal doctrine of fraud by evasion, by which a transaction can be deemed to be an invalid "sham" if it was executed with the fraudulent intent of avoiding a mandatory rule of law and served no commercial purpose. Contracts governed by French law are presumed to be executed in good faith, and Bayer would need to prove both fraudulent intent and

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[304] Respondents' Phase I Post-Hearing Submission, dated 6 May 2014, para. 10
[305] *Id.*, para. 19, referring to Claimants' Memorial, dated 7 November 2013, para. 53 ("In the 1992 Agreement, Hoechst granted a commercial license for LGI to commercialize 'Transformants', that is seeds and plants transformed as a result of the use of the pat gene for transformation purposes")
[306] Respondents' Phase I Post-Hearing Reply, dated 13 May 2014, para.8
[307] Claimants' Phase I Post-Hearing Submission, dated 6 May 2014, at 9, n.26
[308] Respondents' Phase I Post-Hearing Submission, dated 6 May 2014, para. 10; Respondents' Rejoinder, dated 27 March 2014, paras. 108-12. See also C-66: Dow-MS Tech Agreement, [redacted]

the lack of a commercial purpose, in order to show that the transaction was a sham.[309] In Respondents' opinion, the French cases cited by Bayer[310] on this point are distinguishable from Dow's situation. Each case concerns a license agreement with an express prohibition on sublicensing[311] and a defendant who, in an attempt to grant rights to a patented product, executed agreements characterized as something other than a sublicense.[312] Moreover one of the cases cited by Bayer does not involve a dispute between a licensor and a licensee.[313] In stark contrast, Dow's sublicense to MS Tech was a valid sublicense executed in accordance with Article 4, which expressly authorizes "both parties ... to grant sublicenses ... for their Transformants."

iii. Tribunal's Determination: Respondents Breached Article 4 by a Grant of Rights to a Third Party to Use the *pat* Gene or a Construct Containing It

251. Article 4, paragraph 2, of the 1992 Agreement provides that "[b]oth parties are entitled to grant sublicenses or distribution rights for their Transformants."

252. One might certainly argue that Dow has breached Article 4 by sublicensing Transformants that were not Dow's own. The 1992 Agreement provides in pertinent part that "[b]oth parties are entitled to grant sublicenses or distribution rights for their [*and only their*] Transformants" with the clear implication that sublicenses or distribution rights may not be granted for Transformants of the other party. Reaching the conclusion that Dow can sublicense only its own Transformants does not conflate or confuse "ownership" and patent rights, as Dow argues, but rather uses the term "ownership" within the relevant contractual sense, given the reference to "their" (i.e., Dow's) Transformants in Article 4. An internal Dow document confirms that the [redacted]

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[309] Respondents' Phase I Post-Hearing Submission, dated 6 May 2014, para. 36

[310] Claimants' Phase I Post-Hearing Submission, dated 6 May 2014, at 10-11

[311] See Cass. Com. 17 mars 2004, n° 02-21-278 (Tab 2); Cour d'appel de Paris, 4ème ch. A, 21 janvier 2004 (Tab 3); Cour d'appel d'Orléans, 12 mars 2009 n° RG : 08/01519 (Tab 4); TGI de Parie 3e Ch. 1ère section, 29 juin 2010, n ° 08 17882 (Tab 5)

[312] Respondents explain in their Phase I Post-Hearing Reply, dated 13 May 2014 at 14 n.24 that "[o]ne case, for example, involved an agreement to sell a pair of mice subject to a patent for the purpose of breeding. The court held that the sales agreement constituted an invalid sublicense: see TGI de Paris 3e Ch. 1ère section, 29 juin 2010, n° 08 17882 (Tab 5). The other three cases involved an equipment leasing agreement (see Cour d'appel de Paris, 4ème ch. A, 21 janvier 2004 (Tab 3)), a service agreement (see Cour d'appel d'Orléans, 12 mars 2009 n° RG 08/01519 (Tab 4)), and a commercial agency agreement (see Cass. com. 17 mars 2004, n ° 02-21.278 (Tab 2)), all of which were invalidated because they attempted to grant a third party rights that could only be obtained through a valid sublicense, although the contracts in question all prohibited sublicensing"

[313] Cass. com. 17 mars 2004, n ° 02-21.278 (Tab 2)

[redacted]

253. Dow has apparently sublicensed Transformants (seeds or plants containing the *pat* gene) that were not Dow's own. As decided and confirmed on appeal in *Bayer II*, and as acknowledged by both parties in this Arbitration, Dow made Transformants "for" MS Tech.[315] Dow could not validly license these Transformants to MS Tech under Article 4, because they were not Dow's Transformants.

254. In deciding this case, the Tribunal need not rely on an invalid license of the Transformants to find breach. Indeed, to do so might unduly shift the focus to Dow's rights under its agreement with MS Tech, along with the MS Tech rights vis-à-vis Bayer.

255. Rather, attention should be placed on Dow's rights under its agreement with Bayer. In this connection, the Tribunal finds Dow in breach of Article 4 by virtue of its effective sublicensing of the underlying *pat* gene itself, which ultimately went into Transformants produced by MS Tech. As discussed below, Dow has given MS Tech the right to handle the naked *pat* gene through its contractor (Dow), granting rights in breach of Article 4.

256. It is common ground that Article 4 of the 1992 Agreement permits Dow to sublicense only Transformants and not the naked *pat* gene or a construct containing it.[316] The French law of contract comprises a principle of good faith in the performance of contractual obligations, codified in Article 1134 FCC, which has been invoked by the *Cour de cassation* to prevent contracting parties from doing indirectly that which they are prevented, by contract, from doing directly.[317] In the present Arbitration, Dow is in breach of the 1992 Agreement because the acts that constitute its dealings with MS Tech have together created a chain of events by which Dow has effected a sublicensing of the rights it holds in Bayer's naked *pat* gene (or a construct containing it) that Article 4 excludes from the scope of Dow's license under the 1992 Agreement. The Tribunal does not draw a

[314] C-53: Dow Internal Presentation: [redacted]
[315] See e.g. Respondents' Phase I Memorial, dated 28 January 2014, para. 55; Claimants' Reply, dated 27 February 2014, para. 138
[316] See e.g., Respondents' Phase I Post-Hearing Submission, dated 6 May 2014, para. 33; Claimants' Phase I Closing Presentation, dated 17 April 2014, slide 5
[317] Cass. com. 17 mars 2004, n° 02-21278 (see Claimants' Phase I Post-Hearing Submission, dated 6 May 2014, at Tab 2)

distinction between whether a construct or the naked gene itself was sublicensed, given the parties' understanding that either situation would constitute a breach.[318]

257. The Tribunal also notes that, while Claimants link the notion of doing indirectly what one cannot do directly to a finding of bad faith,[319] it is not necessary for the Tribunal to go so far as to determine whether Respondents' behavior constituted bad faith.[320]

258. Bayer characterizes Dow and MS Tech's collaboration as consisting of three chronological steps.[321] Bayer does not allege a specific breach with respect to the third and final step, the sublicensing of the completed Enlist E3 event from its owner MS Tech back to Dow,[322] and this step will not therefore be discussed in detail in the present analysis.

259. In the first step outlined by Bayer, MS Tech gave Dow access to Bayer's *dmmg* gene through the 2007 Dow-MS Tech Agreement because [redacted] Bayer alleges that this step constitutes a breach of Article 4, which excludes rights to sublicense *pat* as a naked gene or construct from Dow's license to *pat*.[324]

260. In the second step, Dow fused the *pat* and *dmmg* genes (as well as *aad*-12) together on a genetic construct belonging to MS Tech, and contracted with [redacted] to insert this construct into soybeans.[325] Dow transferred the resulting Transformants, in the form of seeds, back to MS Tech pursuant to [redacted] of the 2008 Dow-MS Tech Agreement.[326] Bayer characterizes this 2008 agreement as a retroactive formalization of the collaboration between Dow and MS Tech,[327] and as a second, separate breach of Article 4—in this case, of the restriction on

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[318] See e.g. Respondents' Phase I Post-Hearing Submission, dated 6 May 2014, paras. 6-9 (arguing that the Dow-MS Tech Agreement restricted work with constructs containing *pat* to Dow)
[319] Claimants' Phase I Post-Hearing Submission, dated 6 May 2014, at 11
[320] As will be discussed below in Part 5.I.C, with respect to monetary remedies, the Tribunal's determination that the contract damages at issue were foreseeable renders moot the question of whether Respondents were in bad faith
[321] Claimants' Reply, dated 27 February 2014, para. 144
[322] *Id.*, paras. 144-45
[323] C-186: Dow-MS Tech Material Transfer Agreement, [redacted]
[324] Claimants' Reply, dated 27 February 2014, para. 145
[325] C-206: [redacted]; C-205: [redacted]
[326] C-66: Dow-MS Tech Agreement, [redacted]
[327] Claimants' Reply, dated 27 February 2014, para. 58

sublicensing Transformants that are not Dow's own.[328] As mentioned above, however, this latter ground of breach under Article 4 will not be discussed in the present Award.

261. The second step outlined by Bayer remains nonetheless relevant to the discussion of the sublicensing theory of breach. The Tribunal is of the view that the two steps must be treated as a whole because they, together, create the indirect path by which Dow was able to accomplish a sublicensing of the *pat* gene itself (as opposed to merely a Transformant containing *pat*), a right excluded from Dow's license to *pat* under Article 4.

262. Regarding the first step, which relates to the signing of the 2007 Dow-MS Tech Agreement, the evidence of the parties is clear that the transformation contemplated by the agreement was an MS Tech transformation.[329] Dow acknowledges that MS Tech retained ownership of the construct containing *dmmg* to which Dow was given access. Dow's role was that of MS Tech's contractor with respect to the *dmmg* construct, charged with incorporating the [redacted] into MS Tech's construct on behalf of MS Tech.[330] The 2007 agreement appears to create no explicit obligation that Dow incorporate the *pat* gene into Ms Tech's construct, contemplating only the incorporation of [redacted] In the event, however, that Dow were to incorporate the *pat* gene into MS Tech's construct, Dow would, in effect, be giving MS Tech the right to handle the naked *pat* gene. This handling of the naked *pat* gene would be carried out by MS Tech through its contractor (which just happened to be Dow), and this grant of rights by Dow to MS Tech concerning the use of the naked *pat* gene, as opposed to merely a Transformant containing *pat*, would constitute a grant of rights effectively amounting to a sublicense, and would therefore be in breach of Article 4.

263. It was during the second step of the Dow-MS Tech collaboration, [redacted] 2008 Dow-MS Tech Agreement, that the breach of Article 4 contemplated by [redacted] as described above, became definitive. Following Dow's incorporation of *pat* into MS Tech's construct and the creation of soybean seed Transformants through a subcontractor, the sublicensing of *pat* to MS Tech in the course of the Dow-MS Tech collaboration, and the resultant breach of Article 4 of the 1992 Agreement, was formalized through the Dow-MS Tech Agreement of [redacted]

[328] Claimants' Reply, dated 27 February 2014, para. 145
[329] See e.g. Respondents' Phase I Memorial, dated 28 January 2014, para. 55; Claimants' Reply, dated 27 February 2014, para. 138
[330] C-186: Dow-MS Tech Material Transfer Agreement, [redacted]

[redacted] The 2008 agreement acknowledges that the naked *pat* gene was [redacted] —the contract defines the *pat* gene as [redacted][331]—and also [redacted].[332] On [redacted], therefore, MS Tech formally gained possession of its soybean seed Transformants, the creation of which had required the handling of the naked *pat* gene by MS Tech's contractor (Dow), and which now contained both *dmmg* and *pat* (as well as *aad*-12).

264. Throughout their collaboration, [redacted][3] but which, if permitted, would have enabled Dow to incorporate the naked *pat* gene into the *dmmg* construct on its own accord (rather than as MS Tech's contractor). Under the constraint that MS Tech could not grant Dow a license to handle *dmmg* on Dow's own behalf, Dow and MS Tech were thus faced with the challenge of combining *pat* and *dmmg* within one construct when Dow also lacked the right to license the naked *pat* gene to MS Tech, due to Article 4 of the 1992 Agreement: while only MS Tech could handle the naked *dmmg* gene, it could not be granted the additional right to handle the naked *pat* gene. [redacted], combined with the fact that Dow's license to *pat* under the 1992 Agreement excluded the right to sublicense the *pat* gene to MS Tech, prevented Dow from achieving its objective directly.

265. In other words, in order to avoid a direct sublicensing of the right to handle the naked *pat* gene to MS Tech (which would be contrary to Article 4) followed by the creation of the soybean seed Transformants by MS Tech, the two steps discussed above were combined to achieve this sublicensing through an indirect path. First, through the 2007 material transfer agreement, MS Tech gave Dow [redacted] which would involve handling the relevant naked genes. Second, as formalized in the 2008 agreement by which Dow acknowledged that it had supplied *pat* to MS Tech, MS Tech's contractor (which also happened to be Dow) was allowed to handle the naked *pat* gene [redacted] when placing it into MS Tech's construct containing *dmmg*, and the resulting Transformants were transferred back to MS Tech. Dow's actions, as bookended

[331] C-66: Dow-MS Tech Agreement, [redacted]
[332] *Id.*, [redacted]
[333] C-175: Email Chain between [redacted]

by the Dow-MS Tech agreements of [redacted], constitute a complex, interrelated, and indissociable chain of events, which culminated on [redacted] in the signing of the 2008 agreement, and by which Dow, however indirectly or convolutedly, sublicensed to MS Tech the right to handle the naked *pat* gene, constituting a breach of Article 4 of the 1992 Agreement.

III. Article 9: Termination of the 1992 Agreement

266. In this section, the Tribunal addresses Dow's contention that Bayer's notice of breach was inadequate under the termination clause (*clause résolutoire*) found in the 1992 Agreement. It determines that the 1992 Agreement was validly terminated on the basis of the Article 4 sublicensing theory of breach.

A. Claimants' Position on Article 9

267. Termination of the 1992 Agreement is governed by Article 9, which provides:

> ... However, if either party has committed a breach of its obligations under this Agreement and has failed to remedy such breach within 60 (sixty) days from the receipt of a *notification by the other party specifying the breach*, the said other party shall be entitled to terminate the agreement with immediate effect [emphasis added].

268. Based on Dow's press release of August 2011,[334] Bayer determined that Dow had breached the 1992 Agreement by (i) exceeding the scope of its license to "use the [*pat*] Gene for transformation purposes,"[335] (ii) de facto sublicensing of a *pat* gene construct to MS Tech and not owning the Enlist E3 event, and (iii) failing to disclose and negotiate in good faith for its combination of the *pat* gene with other herbicide-resistance genes, otherwise impermissible.[336] These material breaches were the basis for Claimants' termination of the 1992 Agreement pursuant to Article 9.[337]

269. **Applicable law regarding termination**—Claimants assert that there is no French law per se on termination clauses: French law requires only that, where the parties intended to derogate from default termination by the courts under Article 1184 FCC, they abide by the contractual termination

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[334] R-19: Dow Press Release, "Dow AgroSciences, M.S. Technologies Submit for Approval of First Ever Three-Gene Herbicide Tolerant Soybean", dated 22 August 2011, *available at* http://www.dowagro.com/newsroom/corporate/2011/20110822a.htm

[335] C-2/R-1: 1992 Agreement, Art. 2

[336] Claimants' Reply, dated 27 February 2014, para. 199

[337] Claimants' Memorial, dated 7 November 2013, para. 156

clause agreed on by the parties according to Article 1134 FCC.[338] Courts exercise only a *control a minima* to determine whether the essential conditions of the termination clause were respected.[339] As a result, the only termination procedure for Bayer to follow was set out in Article 9 of the 1992 Agreement requiring "notification ... specifying the breach."[340]

270. French law does not therefore require a notice to articulate all the legal bases underlying a factual breach, bases that are to be developed in the context of litigation only if the breach is not remedied. The breach must simply be specified, and French courts do not review the factual breach absent manifest bad faith.[341] The goal of this specification is, as Dow points out, to allow the party receiving notice to understand the basis for notice and be able to cure the breach.[342]

271. Finally, French courts do not engage in a review of the merits of termination;[343] rather, a termination clause automatically denies judicial review of the appropriateness of termination: "The wording of the Court's holding shows the automaticity and generality of the exclusion of judicial review as to the appropriateness of the termination: such exclusion results from the sole stipulation of the termination clause, and is not subject to the express designation of obligations the breach of which is the basis for termination."[344]

272. **Bayer's notice of breach complies with French law requirements**—Bayer's notice of breach stated:

> Article 4 of the Agreement specifies that [Dow] does not possess the right to use other proprietary technology owned by Bayer ... in connection with the licenses granted under this agreement. Contrary to this provision, [Dow] has used, without authority from Bayer, 2,4-D resistance technology ... in connection with the glufosinate resistance technology under the Agreement.
>
> [Dow] has also used glufosinate resistance technology in connection with glyphosate resistance technology ... in a manner that is not authorized under any license, or sublicense thereof, from Bayer. ... [Dow] has exceeded the license granted under the Agreement and has thus committed a material breach of the Agreement.[345]

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[338] Claimants' Phase I Closing Presentation, dated 17 April 2014, para. 237
[339] C-151: J. Flour, J.L. Aubert & E. Savaux, Les obligations préc., vol. 3, 8è éd. (Sirey 2013), para. 259
[340] Claimants' Phase I Closing Presentation, dated 17 April 2014, para. 229
[341] C-148: First Gautier Witness Statement, n.57
[342] Hearing Transcription, dated 17 April 2014, at 1210:19-1211:6
[343] See, e.g. CL-149: Com. 10 juill. 2012, Bull. civ. IV n° 150
[344] *Id.* (annotation Yves-Marie Laithier); Claimants' Phase I Closing Presentation, dated 17 April 2014, slide 239
[345] C-86, Letter from Bayer to Dow, dated 9 November 2011 (notice of material breach)

273. In Claimants' view, the notice does not simply specify a breach based on "stacking" of the *pat* gene with Bayer's other technology as Dow contends.[346] Rather, the reference to Bayer's other products, 2,4-D resistance technology and glyphosate resistance technology, is a description of the Enlist E3 event based notably on Dow's press release,[347] and the breach of the 1992 Agreement with respect to this Enlist E3 event is defined as the use of "glufosinate resistance technology ... in a manner that is not authorized under any license, or sublicense thereof, from Bayer."[348] The objection articulated in the notice is thus broader than the description of the combination of three herbicide resistances that resulted in E3 and is indeed broad enough to encompass all of the claims of breach that Bayer has put forward in the present Arbitration.[349]

274. In any event, Claimants argue that the language used in the notice was sufficient to inform Dow of the actions on its part that were violative of the terms of the license. Dow's response to the notice, in which it stated that it was "in full compliance with the ... 1992 Agreement [in its entirety],"[350] did not indicate any confusion on the part of Dow regarding the notice.[351] Furthermore, even if Dow had not been properly informed by the notice, it was made aware of the extent of its breach upon reading Bayer's Phase I Memorial, yet still made no effort to cure.[352]

275. **Absence of bad faith on Bayer's part**—Regarding Dow's contention that Bayer's termination was in bad faith because of a "substantial delay in asserting [Bayer's] claims,"[353] Claimants assert that, until August of 2011, Bayer had never been made aware of any exploitation by Dow of the glufosinate resistant trait per se.[354] Dow also refers to inconsistent conduct during the Agreement, notably a letter "alleging that [Dow] was promoting the use of Ignite ... glufosinate on WideStrike ... crops" without claiming that such promotion was a breach of the 1992 Agreement.[355] In response, Claimants argue that this letter was intended to correct certain unofficial and improper

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[346] See e.g. Respondents' Rejoinder, dated 27 March 2014, paras. 11 ff.
[347] Hearing Transcription, dated 17 April 2014, at 1209:12-17
[348] Claimants' Phase I Closing Presentation, dated 17 April 2014, slide 233; Hearing Transcription, dated 17 April 2014, at 1209
[349] Hearing Transcription, dated 17 April 2014, at 1208:19-24
[350] C-87: Letter from Dow to Bayer, dated 13 January 2012
[351] Hearing Transcription, dated 17 April 2014, at 1212:7-20
[352] Claimants' Reply, dated 27 February 2014, para. 203
[353] Respondents' Phase I Memorial, dated 28 January 2014, para. 87
[354] Claimants' Reply, dated 27 February 2014, para. 204
[355] Respondents' Phase I Memorial, dated 28 January 2014, para. 123

behaviors from some of Dow's sales representatives, which were inconsistent with Dow's official position.[356]

B. Respondents' Position on Article 9

276. **Applicable law regarding termination**—According to Respondents, under French law, the general rule is that under Article 1184 FCC, only the court can terminate a contract, though as an exception to this rule, parties can enter into a termination clause, such as Article 9, by which the parties' agreed-upon terms govern termination following 1134 FCC.[357] Given the severity of the effects of a termination clause, however, the clause must be interpreted strictly:[358] a notice must precisely identify the alleged breach,[359]each new claim of breach requires a separate notification,[360] and claims raised during litigation or in the parties' pleadings do not constitute notice.[361]

277. French law requires fidelity to the particular terms of a termination clause. In the case of the 1992 Agreement, Article 9 provides that Bayer's notice must "specify... the breach." This requires a description of the particular conduct that underlies a claim of breach in sufficient detail to permit Dow the opportunity to analyze the claim and to cure the alleged breach or attempt to resolve its dispute with Bayer during the sixty-day notice period.[362] A general reference, for example, to the fact that the contract has been breached is not sufficient[363] and would enable Bayer to constantly change its theory about what conduct by Dow breached the Agreement.[364]

278. Respondents also argue that French case law does not support Bayer's assertion that "French courts do not review the factual breach absent manifest bad faith."[365] In the case cited by Bayer,[366] the lower court found that one party had effectively terminated a contract pursuant to a termination clause based on the other party's breach. On appeal, the allegedly breaching party argued that the breach did not warrant termination because it was not sufficiently material. The *Cour de cassation* held that, in light of the termination clause in the contract at issue, which was not limited to

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[356] Claimants' Reply, dated 27 February 2014, para. 205
[357] R-81: Aynès First Witness Statement at 15 (French), 17 (English)
[358] *Id.* at 18
[359] RLA-164: Cass. civ. 3e, 28 novembre 1968, Bull. civ. III, n° 6
[360] RLA-175: Cass. civ. 3e, 22 juillet 1987, n° 86-13998; Bull. civ. III, n° 152
[361] RLA-167: Cass. civ. 1ère, 3 février 2004, n° 01-02020 ; Bull. civ. I, n° 27
[362] Hearing Transcription, date 17 April 2014, at 1228:12-22
[363] *Id.* at 1227:21-25
[364] Respondents' Rejoinder, dated 27 March 2014, para. 14
[365] Claimants' Reply, dated 27 February 2014, para. 202; C-148: First Gautier Witness Statement, n.57
[366] CL-149: Com. 10 juill. 2012, Bull. civ. IV n° 150

termination upon a material breach, the court did not need to evaluate the "gravity" or "materiality" of the breach. The case thus stands only for the proposition that the parties control the content and terms of any termination clause.[367]

279. **With the exception of the "stacking" theory under Article 4, Respondents were not properly notified of alleged breaches**—In Respondents' view, Bayer's notice of breach[368] refers only to a breach based on the combination of *pat* with other Bayer technologies, alleged to be contrary to Article 4. The other claims of breach appear for the first time in Bayer's Phase I Memorial and not in Bayer's 9 November 2011 or 17 January 2012 letters, its federal court submissions, or its Request for Arbitration.[369]

280. On this reading, the word "also" in Bayer's notice ("[Dow] has also used glufosinate resistance technology in connection with glyphosate resistance technology ... in a manner that is not authorized under any license, or sublicense thereof, from Bayer"[370]) refers to combination of glyphosate resistance technology with *pat*, in addition to the combination of 2,4-D resistance technology with *pat* mentioned earlier in the paragraph, and not to grounds of breach extending beyond Article 4.[371]

281. Furthermore, even accepting that Bayer could comply with Article 9 by simply describing the allegedly offending conduct without specifying why or how it constituted a breach, Respondents allege that the activity described in Bayer's 9 November 2011 letter is not the activity underlying Bayer's new claims. The notice describes only the "combination" of the *pat* gene with 2,4-D and glyphosate tolerance technology, not the promotion of Enlist E3 as glufosinate tolerant, the relinquishment of "ownership", or the failure to negotiate a license.[372]

282. **Bayer was acting in bad faith**—Respondents claim, according to Article 1134 FCC, that a party cannot effectively terminate a contract pursuant to a termination clause invoked in bad faith and that courts have an independent duty to determine whether the clause was asserted unfairly.[373] Accordingly, even where the formal requirements of a termination clause have been met, a party's

[367] Respondents' Rejoinder, dated 27 March 2014, para. 16
[368] C-86, Letter from Bayer to Dow, dated 9 November 2011
[369] Respondents' Phase I Memorial, dated 28 January 2014, para. 83
[370] C-86, Letter from Bayer to Dow, dated 9 November 2011
[371] Hearing Transcription, dated 17 April 2014, at 1233:3-13
[372] Respondents' Phase I Memorial, dated 28 January 2014, para. 85
[373] RLA-46: Cass. civ. 1ère, 31 janvier 1995, n° 92-20.654

bad faith renders termination ineffective as a matter of law.[374] Notably, a party's delay in terminating a contract after it is aware of the grounds for termination, or conduct that is inconsistent with its asserted basis for the termination, may constitute bad faith.[375]

283. In Respondents' view, Bayer's bad faith is evidenced by a substantial delay in asserting its claims as well as inconsistent conduct during the term of the 1992 Agreement. The 1992 Agreement operated for nearly twenty years without Bayer once raising any of the contract theories it asserts in this proceeding. Once Bayer asserted a breach of Article 4 in November 2011, it waited an additional two years, until September 2013, before raising the other contract claims that are now the centerpiece of its case. Furthermore, Respondents argue that Bayer's own promotion of the use of glufosinate in an allegedly infringing product, Herculex, the trademark license it granted to Dow for use of its Liberty trademark for promotion of the use of glufosinate on Herculex products, and the license Bayer took from Dow to incorporate another allegedly infringing product, WideStrike, into certain of its products, are at odds with its current and former theories of breach.[376]

C. Tribunal's Determination: Termination of the 1992 Agreement Based on Dow's Breach of Article 4 by Sublicensing Was Valid

284. The Tribunal has determined that Dow breached Article 4, paragraph 2 of the 1992 Agreement by sublicensing the *pat* gene to a third party. Accordingly, the Tribunal must determine whether Bayer validly terminated the Agreement with respect to this breach. The positions of the parties, above, both rely on the fact that French law with respect to termination requires adherence to the conditions set out in the termination clause, Article 9 of the 1992 Agreement,[377] that Article 9 requires a notice "specifying the breach", and that the purpose of a notice of breach is to provide the party in breach with sufficient detail to analyze the claim and to cure the alleged breach or attempt to resolve its dispute.[378] As a result, the principal issue for the Tribunal is that of determining whether Bayer sufficiently specified Dow's breach, in the above sense, in its notice of 9 November 2011.

285. Even if Bayer possibly had stacking in mind at the time, the Tribunal is of the view that the conduct outlined in the notice of breach ("[Dow] has also used glufosinate resistance technology ... in a

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[374] R-81: Aynès First Witness Statement at 19
[375] *See id.* at 24, citing *inter alia* RLA-189: Cass. 1st civ., 16 février 1999, no. 96-21.997, Bull. civ. I, no. 52 (delay of 12 years in collecting overdue debt constituted bad faith); RLA-46: Cass. civ. 1ère, 31 janvier 1995, n° 92-20.654 (delay of 5 ½ years in seizing property in satisfaction of debt constituted bad faith)
[376] Respondents' Phase I Memorial, dated 28 January 2014, para. 88
[377] See, e.g. CL-149: Com. 10 juill. 2012, Bull. civ. IV n° 150
[378] Hearing Transcription, dated 17 April 2014, at 1210:19-1211:6, 1228:12-22

manner that is not authorized under any license, or sublicense thereof, from Bayer"), coupled with the reference to Article 4 in the notice of breach,[379] is broad enough to contemplate a breach of Article 4, paragraph 2, based on sublicensing, as well as Article 4, paragraph 1, based on stacking. Furthermore, in the context of the reference to Article 4, a breach arising from the use of *pat* "in a manner that is not authorized under any license, or sublicense thereof from Bayer" can be understood as sufficient specification under Article 9 of Dow's impermissible sublicensing of a construct containing the *pat* gene contrary to the license rights provided by Article 4. Respondents' own characterization of the purpose of the termination clause is "to put the party against which termination is sought on notice of the claim; not in excruciating detail but in sufficient detail to be able to respond; to cure, if so advised; or to engage with the party invoking the termination clause in an attempt to understand the claim, negotiate it, discuss it, perhaps talk the terminating party out."[380] Instead of engaging in an attempt to understand the claim, as would have been consistent with the purpose of the termination clause, Dow's response was to shut out any possible discussion by asserting peremptorily that it was in full compliance with the entire Agreement. It is clear, at the very least, that the notice specified the breach in "sufficient detail" for Dow "to engage with" Bayer "in an attempt to understand the claim" and to "discuss it." The Tribunal therefore finds that Bayer's notice satisfies Article 9, and the 1992 Agreement has therefore been validly terminated.[381]

286. Finally, the Tribunal is of the view that the evidence does not support a finding that Bayer attempted to terminate the 1992 Agreement in bad faith. Under Article 1134 FCC, it is clear that a party cannot effectively terminate a contract pursuant to a termination clause invoked in bad faith.[382] First, Respondents' argument based on delay in invoking the termination clause is not supported by evidence that, before August of 2011, Bayer was aware of the breach. There cannot be a delay in invoking the termination clause until there is knowledge of the breach, and there is no suggestion that the delay between August and November of 2011 was unreasonable. Second, Respondents' assertions that Bayer's conduct has been inconsistent with the basis for termination are of no avail in respect of the theory of breach adopted by the Tribunal. The Tribunal therefore rejects Respondents' argument based on bad faith.

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[379] C-86, Letter from Bayer to Dow, dated 9 November 2011

[380] Phase I Hearing Transcript, dated 17 April 2014, at 1228:12-22

[381] In order to clarify this finding in the context of the other theories of breach advanced by Bayer, the Tribunal notes that if it had found a breach of Article 2 due to the use of the *pat* gene other than as a selectable marker, or of Article 7 due to a failure to inform and negotiate regarding an invention or improvement, then it would be difficult to characterize the notice of breach as specifying a breach of either of these limitations. Alternatively, if the Tribunal had adopted the stacking theory, such that a breach of Article 4, paragraph 1, were found, the notice of termination would obviously meet the requirements of Article 9.

[382] RLA-46: Cass. civ. 1ère, 31 janvier 1995, n° 92-20.654

IV. Issue Preclusion

287. Respondents have taken the position that the doctrine of issue preclusion prevents Bayer from raising the near totality of the questions in Phase I of this Arbitration. The Tribunal has found that, while issue preclusion is available here to defeat a claim or defense, the requirements for issue preclusion, based on the judicial decisions in *Bayer I* and *Bayer II*, are not met in this case. The question of the preclusive effect of French law estoppel upon Respondents' invalidity defenses will be addressed under the patent infringement analysis in Part 3.III.B. In the present subpart, the Tribunal addresses issue preclusion in respect of the contract issues which arose as a result of the patent infringement claims.

A. Claimants' Position on Issue Preclusion

288. **Applicable law**—Referring mostly but not only to U.S. sources, Claimants articulate a test for issue preclusion that involves four questions: (1) Was the issue sought to be precluded the same as that involved in the prior action? (2) Was the issue actually litigated? (3) Was determination of the litigated issue essential to the final judgment? (4) Was the party against whom estoppel is invoked fully represented in the prior action?[383]

289. **The Tribunal is not precluded from determining the contractual issues set out in the Terms of Reference as a result of *Bayer I***—In Claimants' view, unlike the situation in the present Arbitration, no contract was at issue in *Bayer I*[384] and the patent-in-suit was unrelated to the *pat* gene: it instead pertained to 2,4-D tolerance genes. The court held that Bayer's patent claim had a narrow scope and did not cover the 2,4-D tolerance gene found in Enlist E3. No issue decided in *Bayer I* is present in this Arbitration.[385]

290. **The Tribunal is not precluded from determining the contractual issues set out in the Terms of Reference as a result of *Bayer II***—Claimants argue that the holding in *Bayer II*[386] does not preclude the determination of the issues raised in Phase I of the present Arbitration, because *Bayer*

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[383] Claimants' Phase I Closing Presentation, dated 17 April 2014, slide 256, citing *Johnston v. So*, 859 F. Supp. 1197, 1202 (N.D. Ind. 1994); *La Preferida v. Cerveceria Modelo. S.A. de C.V.*, 914 F.2d 900, 905-06 (7th Cir. 1990); *In re Career Educ. Corp. Derivative Litig.*, CIV.A. 1398-VCP, 2007 WL 2875203 (Del. Ch. 2007); *Deutsche Bank AG and others v. Unitech* (UK 2013); cf. *State v. Brown*, 927 A.2d 569, 576 (N.J. Super. App. Div. 2007)

[384] R-13: *Bayer CropScience AG v. Dow AgroSciences LLC*, No. 1:10-cv-01045 RMB-JS, Opinion, dated 27 September 2012

[385] Claimants' Phase I Closing Presentation, dated 17 April 2014, slide 244

[386] C-177/R-38: *Bayer CropScience AG v. Dow AgroSciences LLC*, Civ. No. 1:12-cv-00256 RMB-JS (D. Del.), Opinion regarding Summary Judgment, dated 7 October 2013

II concerns a 2004 contract between Bayer and MS Tech[387] rather than the 1992 Agreement between the predecessors of Bayer and Dow. The contract in *Bayer II* concerns the scope of MS Tech's rights to *dmmg*, not to *pat*.[388]

291. In *Bayer II*, Dow sought summary judgment, and claimed that it had a valid sublicense to *dmmg*, on the basis that "Bayer licensed the *dmmg* glyphosate tolerance technology to MS Tech."[389] The court accordingly granted a summary judgment determining two facts. First, under a contract governed by English law, MS Tech received from Bayer the right to sublicense Bayer's *dmmg* patents to Dow in order to allow Dow to sell soybean seeds containing *dmmg*.[390] Second, under a contract governed by Illinois law, MS Tech gave Dow a sublicense to those *dmmg* rights.[391]

292. For its part, Bayer did not assert its *pat* gene patents, but rather claimed that "its patents cover technology related to the *dmmg* gene, a gene that can confer glyphosate tolerance to plants."[392] Furthermore, Bayer could not have mentioned *pat* because the scope of the litigation concerned only Bayer patents covering the *dmmg* gene and had nothing to do with *pat*.[393] Claimants thus argue that it is only by overstating the holding in *Bayer II* and characterizing it as "talking about the right to commercialize E3 [and] not narrowly focused,"[394] that Dow can suggest that issue preclusion merits the Arbitral Tribunal's consideration.[395]

293. In Claimants' view, the issues relating to Dow's rights to use *pat*, with respect to which Dow attempts to invoke issue preclusion, are not the same as the issues addressed in the *Bayer II* litigation, these issues were not actually litigated in *Bayer II*, and their determination was not essential to the final judgment.[396] As a result, Claimants assert that the Tribunal is not precluded from determining the issues raised in Phase I of the present Arbitration, though Claimants do note

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[387] C-57: Bayer-MS Tech Agreement, dated 28 May 2004
[388] *Id.* at 5-7
[389] C-107: *Bayer CropScience AG v. Dow AgroSciences LLC*, Civ. No. 1:12-cv-00256 RMB-JS (D. Del.), Dow's Brief in Support of Motion for Summary Judgment, dated 22 May 2013, at 14-15
[390] C-177: *Bayer CropScience AG v. Dow AgroSciences LLC*, Civ. No. 1:12-cv-00256 RMB-JS (D. Del.), Opinion regarding Summary Judgment, dated 7 October 2013, at 27
[391] *Id.* at 26-27
[392] C-107: *Bayer CropScience AG v. Dow AgroSciences LLC*, Civ. No. 1:12-cv-00256 RMB-JS (D. Del.), Dow's Brief in Support of Motion for Summary Judgment, dated 22 May 2013, at 3
[393] Hearing Transcription, dated 17 April 2014, at 1349:4-13
[394] *Id.* at 195:7-16
[395] Claimants' Phase I Closing Presentation, dated 17 April 2014, slide 253
[396] *Id.*, slide 257

that *Bayer II* determined that MS Tech was the owner of the Enlist E3 soybean,[397] and therefore precludes determination of this specific issue.

B. Respondents' Position on Issue Preclusion

294. **Applicable law of issue preclusion**—Respondents argue that preclusion is generally governed by the law of the arbitral seat,[398] which in the present Arbitration, is the law of Indiana.[399] Indiana follows a robust approach to both issue and claim preclusion, on the basis that choosing to withhold evidence and theories of relief should not allow a party to have "another bite at the apple."[400]

295. In Indiana, claim preclusion applies when four factors are satisfied: (1) the former judgment must have been rendered by a court of competent jurisdiction; (2) the former judgment must have been rendered on the merits; (3) the matter now in issue was, or could have been, determined in the prior action; and (4) the controversy adjudicated in the former action must have been between the parties to the present suit or their privies.[401] Furthermore, Indiana law bars claim splitting by "pursuing [a claim] in a piecemeal fashion and subjecting the defendant to needless multiple suits."[402]

296. In Indiana, issue preclusion bars "the subsequent litigation of a fact or issue which was necessarily adjudicated in a former lawsuit if the same fact or issue is presented in a subsequent lawsuit."[403] The former decision will be conclusive in the subsequent litigation "even if the two actions are on different claims."[404]

297. Finally, a judgment on appeal is of "full force and effect until it is reversed,"[405] and Bayer's pending appeal therefore does not alter the fact that *Bayer II* can be treated as final for res judicata purposes.[406] The Tribunal notes that the appeal was subsequently rejected.[407]

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[397] C-177: *Bayer CropScience AG v. Dow AgroSciences LLC*, Civ. No. 1:12-cv-00256 RMB-JS (D. Del), Opinion regarding Summary Judgment, dated 7 October 2013, at 8
[398] Gary B. Born, *International Commercial Arbitration* (2009) at 2916
[399] Respondents' Phase I Closing Presentation, dated 17 April 2014, slide 34
[400] *Hilliard v. Jacobs*, 957 N.E.2d 1043, 1047 (Ind. Ct. App. 2011)
[401] *Id.* at 1046
[402] *Id.* at 1048
[403] *Bartle v. Health Quest Realty*, 768 N.E.2d 912, 917 (Ind. Ct. App. 2002), citing *Shell Oil Co. v. Meyer*, 705 N.E.2d 962, 968 (Ind. 1998)
[404] *Bartle v. Health Quest Realty*, 768 N.E.2d 912, 917 (Ind. App. 2002)
[405] *Jones v. American Family Mutual Insurance Co.*, 489 N.E.2d 160, 166 (Ind. Ct. App. 1986)
[406] Respondents' Phase I Closing Presentation, dated 17 April 2014, slide 38
[407] *Bayer Cropscience AG v. Dow Agrosciences LLC*, 2014-1032, Judgment, dated 17 October 2014 (Fed. Cir.)

298. Respondents note that some Indiana courts have looked to the rules of the rendering court, Delaware in the present case, instead of the law of the seat of arbitration, but that the laws of Indiana and Delaware are the same with respect to preclusion.[408] The test for claim preclusion in Delaware depends on five elements: (1) the court making the prior adjudication had jurisdiction, (2) the parties in the present action are either the same parties or in privity with the parties from the prior adjudication, (3) the cause of action must be the same in both cases or the issues decided in the prior action must be the same as those raised in the present case, (4) the issues in the prior action must be decided adversely to the plaintiff's contentions in the instant case, and (5) the prior adjudication must be final.[409]

299. The Delaware test for issue preclusion, which precludes "relitigation of the issue in a suit on a different cause of action involving a party to the first case," requires that (1) a question of fact essential to the judgment (2) be litigated and (3) determined (4) by a valid and final judgment.[410]

300. Respondents also refer to case law under the Federal Arbitration Act by which issue preclusion operates with respect to arbitrators when there has been a prior judicial proceeding.[411] They further invoke an international standard recognized in other ICC cases by which it is unfair to depart from views held in a previous award that were necessary to the disposition of certain issues in that award,[412] or unreasonable to go through the matter again where the applicable legal tests, facts, and evidence are essentially the same.[413]

301. **The issues raised in Phase I of the present Arbitration are precluded as a result of *Bayer I* and *Bayer II*—**In *Bayer I*, the court "adopted Dow's construction of Claim 1 and because Bayer does not dispute that Dow's dioxygenase-based products would not infringe the 401 Patent under such construction, summary judgment as to Dow's non-infringement claim is warranted."[414] The court in *Bayer II* framed the issue that it decided as:

> Plaintiffs Bayer ... have sued Defendant [Dow] ... for patent infringement based on Defendant's Enlist E3 ("E3") product. Defendant has moved for summary judgment, arguing that it does not infringe because it obtained a valid sublicense to develop and sell E3. Because

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[408] Hearing Transcription, dated 17 April 2014, at 1244:11-16
[409] *Bailey v. City of Wilmington*, 766 A.2d 477 (Del. Supr. 2001)
[410] *M.G. Bancorporation, Inc. v. Le Beau*, 737 A.2d 513, 520 (Del. 1999)
[411] *John Morrell & Co. v. Local Union 304a of United Food & Comm. Workers*, 913 F.2d 544, 562-63 (8th Cir. 1990); *Aircraft Braking Sys. Corp. v. Local 856, Int'l Union*, 97 F.3d 155, 159 (6th Cir. 1996)
[412] *Mexican Construction Company v. Belgian Company*, Final Award, ICC Case No. 3267, 28 March 1984, at 87
[413] *A v. Z*, ICC Case, Order No. 5 on Claimant's Request for Interim Relief, 2 April 2002, para 22
[414] R-13: *Bayer CropScience AG v. Dow AgroSciences LLC*, No. 1:10-cv-01045 RMB-JS, Opinion, dated 27 September 2012, at 22

this Court agrees that Defendant has a valid sublicense to develop and sell E3, Defendant's motion for summary judgment is GRANTED.[415]

302. The headings in the *Bayer II* judgment indicate that the court determined that "The Agreement Grants MS Tech Commercialization Rights",[416] "The Agreement Allows For Commercialization by MS Tech",[417] "MS Tech Appropriately Sublicensed Its Rights To Dow To Develop And Sell E3".[418] Furthermore, Bayer described the *Bayer II* case as ruling that Dow "has a valid sublicense to develop and sell its Enlist E3 product."[419]

303. As a result, Respondents argue that all of the "claims involving the sublicensing and the Dmmg gene ... have been decided."[420] The court in *Bayer II* "rejected Bayer's *dmmg* sublicensing theory,"[421] and Bayer cannot relitigate it in this Arbitration. After the conclusion of Phase I of this Arbitration, Dow notified the Tribunal that on 17 October 2014, the Court of Appeals for the Federal Circuit had rejected Bayer's appeal in *Bayer II*.[422]

C. Tribunal's Determination: The Issues Raised in Phase I of the Arbitration Are Not Precluded by *Bayer I* or *Bayer II*

304. **Applicability of the Doctrine of Issue Preclusion**—The threshold question of whether the doctrine of issue preclusion is generally available in international arbitration was not raised directly in this Arbitration. Respondents cited to international sources as well as case law under the Federal Arbitration Act indicating that issue preclusion operates with respect to arbitrators when there has been a prior judicial proceeding.[423] Claimants' submissions on issue preclusion took it as their starting point that the doctrine was available in this Arbitration. Claimants' post-dispute behavior, in particular their litigation of the issue of preclusion on substance before this Tribunal, serves as an indication of an expectation shared with Respondents, and *ex ante* to the dispute, that the doctrine of issue preclusion could apply in the context of this Arbitration. The Tribunal's basis for applying

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[415] R-38: *Bayer CropScience AG v. Dow AgroSciences LLC*, Civ. No. 1:12-cv-00256 RMB-JS (D. Del), Opinion regarding Summary Judgment, dated 7 October 2013, at *1
[416] *Id.* at *5
[417] *Id.* at *7
[418] *Id.* at *8
[419] *Bayer CropScience AG v. Dow AgroSciences LLC*, Civ. No. 1:12-cv-00256 RMB-JS (D. Del), Bayer's Notice Of Appeal, October 17, 2013
[420] Hearing Transcription, dated 17 April 2014, at 1249:2-9
[421] Respondents' Phase I Closing Presentation, dated 17 April 2014, slide 47
[422] Letter from Respondents to Tribunal, dated 17 October 2014.
[423] Gary B. Born, *International Commercial Arbitration* (2014) at 3773; *John Morrell & Co. v. Local Union 304a of United Food & Comm. Workers*, 913 F.2d 544, 562-63 (8th Cir. 1990)

the doctrine of issue preclusion, therefore, is an *ex ante* expectation on the part of the parties that the doctrine could apply to arbitral disputes arising from the 1992 Agreement.

305. **Applicable law**— The law governing issue preclusion was briefly discussed but was not a matter of significant focus in the proceedings. This is understandable because, according to their respective submissions, the parties are in substantial agreement regarding the relevant criteria for issue preclusion, which they both derive mainly from U.S. sources.[424] These criteria are applied here as a matter of agreement between the parties. Below, the Tribunal briefly summarizes the criteria before turning to their application to the facts of the dispute.

306. Claimants refer to a four-factor test: (1) Was the issue sought to be precluded the same as that involved in the prior action? (2) Was the issue actually litigated? (3) Was determination of the litigated issue essential to the final judgment? (4) Was the party against whom estoppel is invoked fully represented in the prior action?[425] These four factors appear to be in substantial alignment with Respondents' test for issue preclusion, which prevents "the subsequent litigation of a fact or issue which was necessarily adjudicated in a former lawsuit if the same fact or issue is presented in the subsequent lawsuit."[426] The similarity between the tests proposed by Claimants and Respondents is particularly clear in the present Arbitration, where no dispute has been raised concerning the fourth criterion under Claimants' version of the test, concerning whether Claimants were fully represented in the prior actions, *Bayer I* and *Bayer II*.

307. **Application: *Bayer I***—Applying the criteria put forth by Claimants and Respondents, the Tribunal comes to the view that *Bayer I* does not constitute a basis for preclusion of Phase I issues in this Arbitration. As noted by Respondents, *Bayer I* held that "because [the] Court has adopted Dow's construction of Claim 1 and because Bayer does not dispute that Dow's dioxygenase-based products would not infringe the 401 Patent under such construction, summary judgment as to Dow's non-infringement claim is warranted."[427] The court thus determined whether Dow had

[424] Hearing Transcription, dated 17 April 2014, at 1245:21-1246:13
[425] Claimants' Phase I Closing Presentation, dated 17 April 2014, slide 256, citing *Johnston v. So*, 859 F. Supp. 1197, 1202 (N.D. Ind. 1994); *La Preferida v. Cerveceria Modelo, S.A. de C.V.*, 914 F.2d 900, 905-06 (7th Cir. 1990); *In re Career Educ. Corp. Derivative Litig.*, CIV.A. 1398-VCP, 2007 WL 2875203 (Del. Ch. 2007); *Deutsche Bank AG and others v. Unitech* (UK 2013); cf. *State v. Brown*, 927 A.2d 569, 576 (N.J. Super. App. Div. 2007)
[426] *Bartle v. Health Quest Realty*, 768 N.E.2d 912, 917 (Ind. App. 2002); *Shell Oil Co. v. Meyer*, 705 N.E.2d 962, 968 (Ind. 1998)
[427] Respondents' Phase I Closing Presentation, dated 17 April 2014, slide 44, citing R-13: *Bayer CropScience AG v. Dow AgroSciences LLC*, No. 1:10-cv-01045 RMB-JS, Opinion, dated 27 September 2012, at 22

infringed Bayer's U.S. patents relating to 2,4-D tolerance genes, whereas Phase I in the present Arbitration concerns Dow's contract-based rights to the *pat* gene under French law.

308. **Application: *Bayer II***—The Tribunal also rejects issue preclusion based on *Bayer II*, which held "that Defendant [Dow] has a valid sublicense to develop and sell E3."[428] This holding must be understood within the context of the totality of the case, which was concerned with Dow's rights to use *dmmg* and not *pat*.

309. *Bayer II* began as a claim by Bayer that Dow had infringed its *dmmg* patents,[429] with Dow applying for summary judgment to dismiss on the basis that it had a valid sublicense to *dmmg*. The parties agreed "that, if Dow is operating under a valid sublicense, then Dow is entitled to summary judgment."[430] In this light, when the 2008 sublicense from MS Tech to Dow is referred to as "valid" in the summary judgment, this validity must be understood as referring to Dow's use of the *dmmg* gene, conveyed from MS Tech to Dow in accordance with the 2004 Bayer-MS Tech Agreement governing the use of *dmmg*. Three points can usefully be highlighted to clarify the relation between *Bayer II* and this Arbitration. First, by all accounts, MS Tech never received from Bayer the rights that would have allowed it to sublicense the naked *dmmg* gene to Dow (or to anyone else). As recited by the District Court in *Bayer II*, the 2004 Bayer-MS Tech Agreement states in its Article 3.1.2. that the license to MS Tech "shall include the right to sublicense ... the M.S. [Tech] SOYBEAN EVENTS, excluding, however, any right to grant bare sublicenses to ... DMMG." This means that a right granted to Dow by MS Tech to handle the naked *dmmg* gene or to put it in a construct on Dow's own behalf would have been a violation of MS Tech's Agreement with Bayer. MS Tech did, however, enjoy the right to grant to third parties commercial sublicenses to MS Tech events. Second, *Bayer II* finds that MS Tech had the "have made" rights to hire Dow to handle the *dmmg* gene, to build a construct with *dmmg*, and to create Transformants, all "on behalf of" or "for" MS Tech. Third, *Bayer II* declares that E3 was made "for" MS Tech.

310. The parties to this Arbitration, through an implied recognition of the effect of issue estoppel or otherwise, take as their starting point the *Bayer II* finding that Enlist E3 is indeed an MS Tech event, not a Dow event. If this Tribunal accepts, as it must, that E3 is indeed an MS Tech event,

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[428] R-38: *Bayer CropScience AG v. Dow AgroSciences LLC*, Civ. No. 1:12-cv-00256 RMB-JS (D. Del), Opinion regarding Summary Judgment, dated 7 October 2013, at *1

[429] See e.g. R-36: *Bayer CropScience AG v. Dow AgroSciences LLC*, Civ. No. 1:12-cv-00256 RMB-JS (D. Del), Opening Brief in Favor of Bayer's Motion for Preliminary Injunction, dated 19 February 2013, at 1-2

[430] C-177: *Bayer CropScience AG v. Dow AgroSciences LLC*, Civ. No. 1:12-cv-00256 RMB-JS (D. Del), Opinion regarding Summary Judgment, dated 7 October 2013, at 11

Bayer II does not and cannot lend any assistance as to how the *pat* gene could have found its way into this MS Tech Event. Neither *pat* nor the 1992 Agreement was mentioned in the *Bayer II* litigation, and the *Bayer II* decisions read as though *pat* did not exist.[431] The Tribunal is therefore of the view that the key issues in this Arbitration were not subject to prior litigation or adjudication in *Bayer II* and their determination is therefore not precluded by the *Bayer II* judgment. Not only is the issue of how *pat* found its way into an MS Tech event not precluded by *Bayer II*, but its determination here seems to provide the missing link in the legal understanding of the relevant chain of events. The only way in which *pat* could have found its way into this MS Tech event is through a sublicense by Dow to MS Tech, which this Tribunal finds to have been made in violation of Article 4.

311. **Claim preclusion**—As Respondents made reference to claim preclusion in their Phase I closing presentation, the Tribunal will briefly address it here. In doing so, the Tribunal does not decide whether this doctrine is available in this arbitration. In order for a claim to be precluded, Respondents argue that (1) the former judgment must have been rendered by a court of competent jurisdiction; (2) the former judgment must have been rendered on the merits; (3) the matter now in issue was, or could have been, determined in the prior action; and (4) the controversy adjudicated in the former action must have been between the parties to the present suit or their privies.[432] The Tribunal is of the view that, if Respondents' proposed test were to apply, its third branch, regarding whether the issue of Dow's right to use *pat* under the 1992 Agreement was or could have been determined in *Bayer I* or *Bayer II*, is not fulfilled. Neither *Bayer I* nor *Bayer II*, as cases heard in court, could have addressed Dow's claims concerning *pat*, given Dow's insistence that the *pat* claims be dealt with through arbitration rather than through the court system, demonstrated by Dow's successful motion to stay Bayer's claim regarding infringement of the 1992 Agreement pending arbitration.[433] Accordingly, the requirements of claim preclusion, to the extent that this doctrine is available as propounded by Respondents, are not met on the facts of the present case.

V. "Theory of Breach" Estoppel or Renunciation, and Prescription

312. Respondents had initially raised the issue of whether the doctrines of estoppel or renunciation, as well as whether prescription, barred Claimants from raising theories of breach other than the Article

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[431] *Id.* at 3

[432] *Hilliard v. Jacobs*, 957 N.E.2D 1043, 1046 (Ind. Ct. App. 2011)

[433] R-39: *Bayer CropScience AG v. Dow AgroSciences LLC*, No. 2:12-cv-00047-RAJ-TEM (E.D. Va.), Defendants' Memorandum in Law in Support of Their Motion to Dismiss or, in the Alternative, to Stay this Action Pending Arbitration, dated 9 March 2012; R-10: *Bayer CropScience AG v. Dow AgroSciences LLC*, No. 2:12-cv-00047-RAJ-TEM (E.D. Va.), Memorandum Opinion & Order, dated 13 July 2012

4 stacking theory. This issue has not, however, been pressed by Respondents since the Terms of Reference took effect on 4 October 2013. The Tribunal therefore considers Respondents' claims concerning estoppel or renunciation, as well as prescription, to have been abandoned.

3. CLAIMS BASED ON PATENT INFRINGEMENT OF THE '024, '236, '477, AND '665 (AND REISSUE) PATENTS

313. In light of the Arbitral Tribunal's finding of a breach of the 1992 Agreement, the Arbitral Tribunal now turns its attention to an analysis of issues relating to Respondents' alleged patent infringement.

I. Preliminary Issues

A. Jurisdiction

314. As discussed above in the overview of the procedural history of the Arbitration (Part I.V.A), Claimants had initially made a reservation concerning the jurisdiction of this Tribunal over the issues allotted for consideration in Phase II, taking the position, as documented in the Terms of Reference,[434] that the arbitration clause in the 1992 Agreement did not extend to its patent infringement claims against Respondents. During the first case management conference, however, Claimants indicated that, while they wished to maintain their position that the arbitration clause in the 1992 Agreement did not extend to those claims, they were willing independently to grant jurisdiction to the Tribunal. By letter of 11 October 2013, Claimants consented in writing to the Tribunal's jurisdiction over the patent claims.[435] Jurisdiction was therefore no longer an issue.

B. Standing

315. Late in this Arbitration, Respondents raised an issue regarding Bayer's standing to bring patent infringement claims, arguing that Biogen Idec MA Inc. ("Biogen") also needed to be a co-claimant.[436] To the extent that it is appropriate for the Tribunal to consider the standing argument at this stage, the Tribunal rejects it. In the analysis below, as Respondents first raised the issue of

[434] Terms of Reference, dated 4 October 2013, at 38 (general issues to be determined include jurisdiction of Tribunal regarding issues of patent infringement)
[435] Letter from Claimants to the Tribunal, dated 11 October 2013 (last paragraph)
[436] Respondents' Phase II Memorial, dated 2 June 2014, paras. 176-79

standing, their arguments have, for clarity, been presented first in the statement of the parties' positions, followed by Claimants' submissions in response.

316. The Tribunal also notes that it has considered the *Alps* case,[437] which concerns standing and was entered into the record on 20 June 2015 at the request of Respondents, following the formal closing of the record.[438] The Tribunal is of the view that the *Alps* case does not apply to the determination of standing for the purposes of this Arbitration because it relates to the requirements for standing under U.S. federal law. The non-applicability of U.S. federal law requirements for standing will be discussed in further detail in the Tribunal's determination, below.

1. Respondents' Position on Standing

317. **Standing is a requirement of substantive patent law**—According to Respondents, standing is not a procedural rule applicable only to U.S. federal courts. The U.S. Federal Circuit has explained that "*as a matter of substantive patent law*, all co-owners must ordinarily consent to join as plaintiffs in an infringement suit. Consequently, 'one co-owner has the right to impede the other co-owner's ability to sue infringers by refusing to voluntarily join in such suit.'"[439] Because Bayer has not joined the co-owner of its patents, Biogen, Respondents argue that Bayer lacks standing.[440]

318. Respondents also assert that a party suing for patent infringement under U.S. law bears the burden of proving standing.[441]

319. **Claimants have not shown that they are the sole owners of the four patents-in-suit**—In Respondents' view, Biogen has been a co-owner of the patents from the outset, a fact that is evident on the faces of the patents-at-issue. Respondents further argue that Bayer's practice of obtaining Biogen's consent to the application for the reissue of the '665 patent is inconsistent with Bayer's assertion that Biogen has waived its right to refuse to consent to a patent infringement suit.[442]

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[437] *Alps South LLC v. The Ohio Willow Wood Co.*, __ F.3d __ (Fed. Cir. June 5, 2015) (post-closing entry into record authorized on 20 June 2015)
[438] Letter from Respondents to Tribunal, dated 12 June 2015
[439] RLA-386: *Ethicon, Inc. v. U.S. Surgical Corp.*, 135 F.3d 1456, 1468 (Fed. Cir. 1998) (references omitted, emphasis added), citing *Schering Corp. v. Roussel–UCLAF SA*, 104 F.3d 341, 345 (Fed. Cir. 1997)
[440] Respondents' Phase II Reply, dated 1 August 2014, para. 127
[441] RLA-562: *Spine Solutions, Inc. v. Medtronic Sofamer Danek USA, Inc.*, 620 F.3d 1305, 1317 (Fed. Cir. 2010); RLA-639: *Sicom Sys. v. Agilent Techs.*, 427 F.3d 971, 976 (Fed. Cir. 2005); RLA-385: *MHL Tek, LLC v. Nissan Motor Co.*, 665 F.3d 1266, 1274 (Fed. Cir. 2011)
[442] R-377: Reissue Application Declaration Date Sheet, dated 10 February 2014; R-380: Reissue Application Consent of Assignee Biogen, dated 16 August 2013, at 1

320. Respondents note that Bayer's argument that [redacted] In Respondents' view, this provision has been [redacted]

321. Even assuming that [redacted] were in effect, Respondents assert that this provision [redacted] U.S. patent law provides that this type of "field of use" license, granting exclusive rights but only in a limited field, is insufficient to allow a licensee to pursue infringement claims as the sole plaintiff.[452]

322. **Waiver**—In Respondents' view, Procedural Order No. 3 deals only with the waiver of the right to object to a procedural rule or direction given by the Tribunal[453] and is not relevant to whether Dow failed to timely raise a substantive argument with respect to standing, an issue for which Bayer bears the burden of proof.[454] Furthermore, there is no requirement in ICC practice that all potential arguments be included in the Terms of Reference.[455]

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[443] Claimants' Phase II Counter-Memorial, dated 1 July 2014, para. 130
[444] C-356: [redacted]
[445] R-483: [redacted]
[446] Respondents' Phase II Reply, dated 1 August 2014, para. 129
[447] C-356: [redacted]
[448] Respondents' Phase II Reply, dated 1 August 2014, para. 130
[449] C-356: [redacted]
[450] *Id.* at [redacted]
[451] R-444: Sixth Dellaporta Witness Statement, paras. 8, 16, 17
[452] RLA-640: *International Gamco, Inc. v. Multimedia Games, Inc.*, 504 F.3d 1273, 1279 (Fed. Cir. 2007)
[453] Procedural Order No. 3, dated 15 November 2013, para. 34
[454] Respondents' Phase II Reply, dated 1 August 2014, para. 133
[455] *Id.*, para. 134

323. Respondents note, in fact, that the standing issue is in the Terms of Reference. The Terms of Reference state that "[t]he issues to be determined by the Tribunal shall be those arising from the submissions, statements, applications and pleadings of the parties and include any question of fact or law that the Tribunal may deem necessary to decide in order to determine such issues."[456] Bayer alleged in its Virginia complaint, which Bayer incorporated by reference in its Request for Arbitration, that it had the sole and exclusive right to bring an action for patent infringement,[457] and it is Bayer's burden to support that allegation with affirmative evidence.[458]

324. Respondents argue that, in any event, they raised the issue of standing with respect to the patent claims at the first opportunity in Phase II, the portion of the proceeding that would address patent infringement claims. Even though it was not required to mention issues for which Bayer bore the burden of proof, their Phase II Memorial referred to the fact that Bayer had yet to demonstrate standing.[459]

2. Claimants' Position on Standing

325. **Waiver**—Claimants argue that Dow has waived its right to challenge Claimants' standing. Under Procedural Order No. 3,[460] a party is deemed to have waived objections that it has failed to raise timely. Here, despite Respondents' admission that the fact that "Biogen ... has been a co-owner of the patents from the outset" is evident on the "faces" of the patents,[461] Respondents did not raise the standing issue in the Terms of Reference or at any other stage of the proceedings prior to their Phase II Memorial of 2 June 2014 (i.e., almost 30 months after Claimants filed their infringement claims and 22 months after this Arbitration began).[462]

326. Notably, though standing is an issue that is typically raised at the beginning of a case in a motion to dismiss under Federal Rule of Civil Procedure 12(b), none of Respondents' attempts to dismiss the U.S. District Court civil action from which this Arbitration originated were based on standing.[463]

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[456] Terms of Reference, dated 4 October 2013, at para. 70
[457] C-89: *Bayer CropScience AG v. Dow AgroSciences LLC*, No. 2:12-cv-00047, RAJ-TEM (E.D. Va.), Complaint, dated 20 January 2012, paras. 20, 30, 40, 50
[458] Respondents' Phase II Reply, dated 1 August 2014, para. 134, n.249
[459] *Id.* para. 135
[460] Procedural Order No. 3, dated 15 November 2013, para. 34
[461] Respondents' Phase II Memorial, dated 2 June 2014, para. 177
[462] Claimants' Phase II Counter-Memorial, dated 1 July 2014, para. 120
[463] *Id.*, para. 122; CB-160: *Bayer CropScience AG v. Dow AgroSciences LLC*, No. 2:12-cv00047-RAJ-TEM (E.D. Va.), Defendant's Motion to Dismiss or Stay, dated 9 March 2012; C-359: *Bayer CropScience AG v. Dow*

327. Claimants view Respondents' new position that Bayer lacks standing as a contradiction of their assertions, both in the present Arbitration and in the U.S. District Court action, that this Arbitration is *the* appropriate means of resolving Claimants' patent claims.[464]

328. **Notwithstanding waiver, Claimants have standing under U.S. District Court litigation standards**—Claimants note that, according to the U.S. District Court, "[i]t is well established that the holder of all substantial patent rights, by assignment or by exclusive license, has standing to sue for infringement in its own name."[465] Claimants argue that [redacted]

329. Claimants argue that the purposes of the rules on standing are to "shield the accused infringer from multiple suits" and to "resolve all potential claims efficiently and fairly,"[467] and that, because there is no risk that Dow will incur multiple or inconsistent obligations, Bayer thus has standing on its own, even under U.S. standards governing District Courts.[468]

330. **Even if Claimants lack standing according to U.S. District Court litigation standards, the Arbitral Tribunal has jurisdiction to decide the patent infringement claims**—In Claimants' view, the U.S. District Court requirements for standing are not applicable in the present Arbitration. The standing cases cited by Respondents arose under 35 U.S.C. § 281,[469] which applies only in a

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AgroSciences LLC, No. 2:12-cv00047-RAJ-TEM (E.D. Va.), Defendant's Reply to Plaintiff's Opposition to Defendant's Motion to Dismiss, dated 3 May 2012; C-360: *Bayer CropScience AG v. Dow AgroSciences LLC*, No. 2:12-cv00047-RAJ-TEM (E.D. Va.), Defendant's Opposition to Plaintiff's Motion for Surreply, dated 11 May 2012

[464] Claimants' Phase II Counter-Memorial, dated 1 July 2014, paras. 118, 125

[465] CL-380: *Ajinomoto Co., Inc. v. Archer-Daniels-Midland Co.*, 228 F.3d 1338, 1343 (Fed. Cir. 2000)

[466] C-356: [redacted]

[467] See generally CL-376: *STC.UNM v. Intel Corp.*, 2014 WL 2535257 at *7 (Fed. Cir. 2014) (Newman J., dissenting)

[468] Claimants' Phase II Counter-Memorial, dated 1 July 2014, para. 131

[469] "A patentee shall have remedy by civil action for infringement of his patent"

"civil action"—a U.S. Federal District Court action[470]—and not to this Arbitration. Instead, 35 U.S.C. §294 on "Voluntary Arbitration" applies. Section 294(b) makes clear that voluntary arbitration proceedings are governed by title 9 (the Federal Arbitration Act) instead of title 35 (the Patent Act).[471]

331. In Claimants' view, Article 12 of the 1992 Agreement, which incorporates the parties' agreement to arbitrate, does not require that U.S. criteria for standing in patent cases be met. The ICC Arbitration Rules similarly do not contain such a requirement.[472] And, in the Terms of Reference, Dow asked that the Tribunal exercise jurisdiction over Bayer's patents and render an award "[d]eclaring that all of Bayer's claims, including its claims of patent infringement, are within the scope of the arbitration clause of the License Agreement."[473] Claimants note Dow's statement in its proposal for Phase II that "[o]f course the Panel is not bound to the Rules of the federal courts"[474] and argue that Dow has not established that U.S. rules or court practices with respect to standing apply in this international arbitration.[475]

3. Tribunal's Determination: Tribunal Has Jurisdiction to Hear Patent Infringement Claims without Biogen as a Co-claimant

332. A party suing for patent infringement in a U.S. court bears the burden of proving standing.[476] The standing requirement exists (1) to protect defendants from multiple patent infringement suits and (2) to save judicial resources by avoiding multiple proceedings.[477] These objectives may or may not engage public policy, but as neither of them appears relevant in the presence of an arbitration agreement, the Tribunal considers that the standing requirement does not apply to these proceedings. The Tribunal's task here is to determine whether to exercise its jurisdiction to decide the questions in this Arbitration without Biogen's presence.

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[470] *Akamai Technologies, Inc. v. Limelight Networks*, 692 F.3d 1301, 1314 (Fed. Circ. 2012), *rev'd on other grounds*, 134 S. Ct. 2111 (2014)

[471] See e.g. CB-160: *Bayer CropScience AG v. Dow AgroSciences LLC*, No. 2:12-cv00047-RAJ-TEM (E.D. Va.), Defendant's Motion to Dismiss or Stay, dated 9 March 2012; C-359: *Bayer CropScience AG v. Dow AgroSciences LLC*, No. 2:12-cv00047-RAJ-TEM (E.D. Va.), Defendant's Reply to Bayer's Opposition to Dow's Motion to Dismiss, dated 3 May 2012;

[472] Claimants' Phase II Counter-Memorial, dated 1 July 2014, para. 133

[473] Terms of Reference, dated 4 October 2013, at para. 68

[474] C-364: Dow's Proposal for the Second Phase, dated 9 December 2013, para. 2

[475] Claimants' Phase II Counter-Memorial, dated 1 July 2014, para. 134

[476] RLA-562: *Spine Solutions, Inc. v. Medtronic Sofamer Danek USA, Inc.*, 620 F.3d 1305, 1317 (Fed. Cir. 2010)

[477] See generally CL-376: *STC.UNM v. Intel Corp.*, 2014 WL 2535257 at *7 (Fed. Cir. 2014) (Newman J., dissenting)

333. The answer must be given in the affirmative. Dow in the Virginia litigation successfully compelled Bayer to submit the dispute to arbitral proceedings to which Biogen would clearly not be a party. Moreover, it has been established to the Tribunal's satisfaction that Biogen transferred to Bayer all rights necessary to vest Bayer with full and independent authority to sue for patent infringement by itself. [redacted] Thus Bayer now stands in the shoes of Biogen for the purpose of this Tribunal's authority and duty to address the controverted matters raised in this arbitration.

C. Admissibility of Claims Based on Reissue Patent RE44962

334. This issue, distinct from the question of intervening rights under U.S. patent law as addressed below in Part 3.III.G, concerns the question of whether Claimants' assertion of infringement based on claim 1 of the RE44962 patent, the reissue of the '665 patent, is a new claim, in terms of Article 23(4) of the ICC Rules, that is not covered by the Terms of Reference. The Tribunal is of the view that the reissue does not constitute a new claim and may therefore be considered by the Tribunal. In the analysis below, as Respondents first raised the issue of admissibility, for clarity, their arguments have been presented first in the statement of the parties' positions, followed by Claimants' submissions in response.

1. Respondents' Position on the Reissue Patent

335. **Reissue patent not in the Terms of Reference**—In Respondents' view, Claimants should not be permitted to assert the reissue patent RE44962 because it was not part of the Terms of Reference or any document referred to in the Terms of Reference.[480] To do so would allow Claimants to bring an arbitration on one patent, '665, fail to inform the Tribunal that the patent was invalid and that a

[478] C-356: [redacted]
[479] R-483: [redacted]
[480] Respondents' Phase II Reply, dated 1 August 2014, para. 9

replacement was being sought, and then try to substitute the replacement patent, RE44962, once it issued.[481]

336. Respondents note that, until Claimants' Phase II Memorial,[482] Bayer asserted that Dow had infringed the '665 patent, one of the four patents set out in the Terms of Reference.[483] Bayer invoked this patent as valid in its Phase I Memorial of 2 September 2013[484] and relied on this patent twice when it moved to enjoin Dow from making, using, or selling products containing the *pat* gene.[485] At that time, Bayer had already acknowledged to the USPTO that it "believe[d] the ['665] patent to be wholly or partly inoperative,"[486] under the Supreme Court's 2013 decision in *Myriad*,[487] without disclosing that belief or acknowledgment to the Tribunal or Dow. Bayer filed for reissue on 3 September 2013, a month before executing the Terms of Reference in which it invoked the '665 patent against Dow.[488]

337. **Reissue patent not the same as the '665 patent**—Respondents further argue that the reissue patent is a new patent, such that it cannot be treated as the same patent as'665 under a different number, and should therefore not be in the case. The reissue patent's claims are narrower than those of the now cancelled '665 patent. Bayer has acknowledged that it has narrowed claim 1 of the '665 patent in two ways, precluding infringement by DNA encoding a protein sequence either: (i) beginning with "VAL" (the amino acid valine); or (ii) beginning with "MET" (the amino acid methionine) other than coded by the nucleotides "ATG".[489] If claim 1 had not changed, Bayer would, in Respondents' view, have to admit the invalidity of the reissue claim under *Myriad*, on the same grounds as the original '665 patent claim, and RE44962 is accordingly a new patent that is not within the Terms of Reference.[490]

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[481] Respondents' Phase II Memorial, dated 2 June 2014, para. 159
[482] Claimants' Phase II Memorial, dated 2 June 2014, para. 12
[483] Terms of Reference, dated 4 October 2013, paras. 32, 70
[484] Claimants' Memorial, dated 7 November 2013, paras. 170, 194 (unredacted version of 2 September 2013 memorial)
[485] Claimants' Request for Interim Measures, dated 11 October 2013, para. 42; Claimants' Reply, dated 27 February 2014, at 50
[486] R-364: Reissue Application Declaration, dated 29 August 2013 (Bayer checked boxes on a USPTO form, in filing for its reissue application, to affirm that: "I believe the original patent to be wholly or partially inoperative or invalid")
[487] C-322: *Association for Molecular Pathology v. Myriad Genetics, Inc.*, 133 S. Ct. 2107 (2013); Claimants' Phase II Responsive Memorial, dated 1 July 2014, para. 34
[488] R-411: U.S. Patent No. RE44962, reissued 24 June 2014; Terms of Reference, dated 4 October 2013, para. 3
[489] See e.g. Claimants' Phase II Reply, dated 1 August 2014, paras. 47, 49; R-364: Reissue Application Declaration, dated 29 August 2013
[490] Respondents' Phase II Reply Memorial, dated 1 August 2014, para. 12

338. **Article 23(4) of the ICC Rules and due process**—According to Respondents, a principal purpose of the Terms of Reference is to define the scope of the dispute and hence the jurisdiction of the tribunal.[491] Article 23(4) of the ICC Rules provides that no party can make new claims that fall outside the limits of the Terms of Reference unless it has been authorized, exceptionally, to do so by the arbitral tribunal, based on the "nature of such new claims, the stage of the arbitration and other relevant circumstances." Bayer never sought to amend its claims or the Terms of Reference to include claims under RE44962 and should not be allowed to reframe its case at this late stage, in Respondents' view, as a matter of fundamental fairness and due process.[492]

339. According to Respondents, Dow's insistence that the patent infringement claims be dealt with through arbitration instead of in U.S. District Court cannot be understood as an agreement that Bayer could add any new patent to the arbitral proceeding at any time.[493] Dow's Answer to Claimants' Request for Arbitration stated only that the *pleaded* patents—which did not include RE44962—were within the scope of the 1992 Agreement:[494] the reissue patent had not yet been applied for, issued, or pled.[495] When Dow raised an issue in the Terms of Reference seeking determination that all of Bayer's pleaded claims were within the scope of the 1992 Agreement's arbitration clause,[496] this was not an admission that RE44962 was part of the case, but rather it aimed to address Bayer's claims of non-arbitrability. The fact that Bayer may be able to obtain arbitral jurisdiction over a claim under the RE44962 patent in some future arbitration does not mean that the reissue is part of the present Arbitration.[497] The reissue patent is a new patent with different invalidity implications, for which Dow had only weeks to prepare, depriving it, in Respondents' view, of a full and fair opportunity to put on its defense.[498]

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[491] RLA-430: Jason Fry, Simon Greenberg & Francesca Mazza, *The Secretariat's Guide to ICC Arbitration* (2012), at 255, § 3-890
[492] Respondents' Phase II Reply Memorial, dated 1 August 2014, para. 15
[493] *Id.*, para. 16
[494] Respondents' Answer, dated 29 October 2012, para. 19
[495] Respondents' Phase II Reply Memorial, dated 1 August 2014, para. 17
[496] Claimants' Phase II Counter-Memorial, dated 1 July 2014, para. 105
[497] Respondents' Phase II Reply Memorial, dated 1 August 2014, para. 18
[498] *Id.*, para. 19

2. Claimants' Position on the Reissue Patent

340. **Opportunity to be heard**—Claimants argue that the reissue patent has been fully addressed in Respondents' written submissions.[499] Bayer also apprised the Tribunal and Respondents at the outset of Phase II that its application for reissue was underway.[500]

341. **Respondents have acknowledged the Tribunal's authority to address the reissue**—Claimants note that, in response to Claimants' Complaint in this Arbitration, Respondents insisted that it is "undisputed" that the '665 patent "and reissues thereof" are at issue in the Arbitration and to be determined by the Tribunal.[501] As a result, Claimants conclude that Dow should be estopped from arguing that this Tribunal is unable to address the reissue.[502]

342. Even if Respondents are not estopped, Claimants view Respondents' characterization of Article 12 of the 1992 Agreement as giving the Tribunal ample authority to resolve all patent infringement issues regarding Bayer's *pat* gene patents.[503] Indeed, Respondents' request for relief in this Arbitration seeks a formal declaration "that all of Bayer's claims, including its claims of patent infringement are within the scope of the arbitration clause of the License Agreement."[504] Furthermore, based on Respondents' explanation of paragraph 70 of the Terms of Reference, the Terms of Reference address any issue "arising from the submissions" and therefore cover the reissue because Bayer has briefed the claim.[505]

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[499] See e.g. Respondents' Phase II Responsive Memorial, paras. 38 ff.

[500] Claimants' Phase II Memorial, dated 2 June 2014, para. 12

[501] C-95: Respondents' Answer, dated 29 October 2012, para. 19 ("The License Agreement defines 'Gene' as 'the glufosinate resistance gene (pat gene) forming part of the Hoechst Patent Rights....' By express definition, the 'Hoechst Patent Rights' include patents entitled 'Genetically engineered plant cells and plants exhibiting resistance to glutamine synthetase inhibitors, DNA fragments and recombinants for use in the production of said cells and plants,' and all continuations, divisionals and reissues thereof, as well as all corresponding foreign applications and patents (hereinafter the 'Glufosinate Patents'). It is undisputed that these are the same patent rights at issue in this Arbitration" (footnotes omitted))

[502] Claimants' Phase II Counter-Memorial, dated 1 July 2014, para. 104

[503] See e.g. CB-160: *Bayer CropScience AG v. Dow AgroSciences LLC*, No. 2:12-cv00047-RAJ-TEM (E.D. Va.), Defendant's Motion to Dismiss or Stay, dated 9 March 2012; C-359: *Bayer CropScience AG v. Dow AgroSciences LLC*, No. 2:12-cv00047-RAJ-TEM (E.D. Va.), Defendant's Reply to Plaintiff's Opposition to Defendant's Motion to Dismiss, dated 3 May 2012

[504] Terms of Reference, dated 4 October 2013, para. 68

[505] *Id.*, para. 70 ("[t]he issues to be determined by the Tribunal shall be those arising from the submissions, statements, applications and pleadings of the parties and include any question of fact or law that the Tribunal may deem necessary to decide in order to determine such issues"); Respondents' Phase II Reply Memorial, dated 1 August 2014, para. 134, n.249; Claimants' Phase II Opening Presentation, dated 25 August 2014, slide 107

343. **Reissue does not render the Tribunal unable to rule on infringement of claim 1 of RE44962—** Claimants argue that the reissue only changed claim 1 slightly, resulting in a minor narrowing of the claim scope. The reissue claim specifies the same protein sequence as the original claim, except that the reissue claim prescribes that the first amino acid can be only methionine and must be encoded by an "ATG" codon[506] instead of beginning with either valine or methionine (and permitting methionine to be encoded by either an "ATG" or a "GTG" codon) as in the original claim. All 182 other amino acids in the listed sequence are identical, as are all other aspects of the claim.[507]

344. The purpose of the changes to claim 1, according to Claimants, was to clarify that the U.S. Supreme Court's recent *Myriad* decision preventing patenting of a naturally occurring DNA segment from a human gene, an unforeseeable change in law, did not encumber the claim in the '665 patent.[508] Claimants argue that in seeking reissue there has been no concession that originally issued claim 1 was wholly invalid: since the *Myriad* decision did not address bacterial genes, which differ from human genes in material ways, original claim 1 could be distinguished, and Bayer sought reissue out of an abundance of caution.[509]

345. Claimants are of the view that Dow did not rely on the claims asserted in the original patent in any way. At the time the original patent was issued, and when Dow is alleged to have begun infringing, the *Myriad* case had not yet been decided. Thus, no invalidity argument with respect to original claim 1 existed based on *Myriad*.[510] Claimants argue that Dow's DNA encodes a protein with an "ATG" codon coding for methionine at the first position,[511] thus infringing original claim 1, and that the reissued claim covers Dow's gene in the exact same way as the original claim. The fact that the claims were changed in the reissue thus has no effect on the fact of Dow's alleged infringement.[512]

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[506] C-390: Second Sherman Witness Statement, para. 15
[507] Claimants' Phase II Reply Memorial, dated 1 August 2014, para. 46
[508] CL-322: *Association for Molecular Pathology v. Myriad Genetics, Inc.*, 133 S. Ct. 2107 (2013); Claimants' Phase II Reply Memorial, dated 1 August 2014, para. 51
[509] Claimants' Phase II Counter-Memorial, dated 1 July 2014, para. 106; Claimants' Phase II Reply Memorial, dated 1 August 2014, para. 41
[510] Claimants' Phase II Reply Memorial, dated 1 August 2014, paras. 50-51
[511] C-84: Petition for Determination of Nonregulated Status for Herbicidal Tolerant DAS-444Ø6-6 Soybean
[512] Claimants' Phase II Reply Memorial, dated 1 August 2014, para. 48

3. Tribunal's Determination: The Reissue Patent Is Validly before the Tribunal

346. Including the reissue in these proceedings is appropriate from both a substantive and a procedural standpoint: on substance, the asserted claim of the reissue patent is fully included in the asserted claim of the '665 patent; on procedure, the reissue was fully briefed. In addition, as a matter of common sense and economy, if the reissue is excluded from these proceedings, it will have to be dealt with in another proceeding.

347. The relationship between the '665 patent and its reissue as a matter of U.S. law may shed light on, but is not determinative of, the question of whether asserting the reissue gives rise to a new claim falling outside the Terms of Reference under Article 23(4) of the ICC Rules.

348. On the one hand, if there is claim continuity under U.S. patent law such that the reissue operates as if it had been issued on the date of the original patent, then it seems obvious that the reissue does not give rise to a new claim in the sense of Article 23(4). On the other hand, if Dow can claim intervening rights under U.S. patent law because the patent claim in question is not substantially identical, then it may seem reasonable to treat the reissue as a new claim falling outside the Terms of Reference, as wasteful as this may seem from a procedural economy standpoint. This is a risk that Bayer could be said to have taken and assumed by seeking reissue in the middle of these proceedings.

349. One should not, however, confuse the meanings of "claim" under the U.S. patent law of claim continuity, and "claim" for the purpose of Article 23(4) of the ICC Rules, concerning claims set out in the Terms of Reference. Even if the Tribunal finds that there is no claim continuity under U.S. patent law because claim 1 of the '665 patent is not identical to claim 1 of the reissue, this does not mean that the claim under claim 1 is a new claim for the procedural purposes of the ICC Rules. For the purpose of the ICC Rules, the Tribunal must consider the effect of the allegedly new claim and decide the issue as a matter of procedural integrity and fairness.

350. From this perspective, the Tribunal finds that the claim under the reissue patent is not "a new claim" that falls "outside the limits of the Terms of Reference": it contains not a single allegation that was not also included in the '665 version of the claim. In other words, the alleged infringement of claim 1 of the reissue covers an area of claim 1 that was not changed by the reissue. As Bayer points out, the reissue patent is narrower than the original '665 patent and Dow is not seeking so-called equitable rights in order to protect post-reissue behavior that would not have constituted patent

infringement prior to the reissue.[513] Rather, the use of the *pat* gene alleged by Bayer would constitute infringement of claim 1 both under the original '665 patent and under its reissue.

351. For analysis of the intervening rights issue, see Part 3.III.G below.

D. Role of French Law in the Infringement Analysis

352. This issue relates to Claimants' argument that, because Dow was found to have breached the 1992 Agreement, it has automatically infringed Bayer's patents as a matter of French contract law. The Tribunal rejects this argument and finds that Bayer's patent infringement claims are subject exclusively to U.S. law.

1. Claimants' Position on French Law

353. According to Claimants, French law governs the interpretation of the 1992 Agreement and provides that a licensee who exceeds the scope of a patent license automatically becomes an infringer[514] because its acts are no longer covered by the license.[515] Such is the case, for example, for a licensee that keeps exploiting the patented invention after the termination of the license.[516]

354. In Claimants' view, Dow's breach of the 1992 Agreement automatically entitles Bayer not only to recover damages for patent infringement but also to seek to enjoin any further impermissible use of Bayer's *pat* gene by Dow. Professor Passa states that "[t]he licensee is contractually liable for any exploitation exceeding such limits, and this may even be considered to be infringement since he is acting without authorization."[517] Professor Aynès agrees that "[f]ailure to comply with the limits placed on the scope of the license constitutes a breach of contract as well as an act of infringement. ... Thus, it opens the way to the possibility of claiming damages and the right to stop any illegal activity in favor of the patent holder."[518]

355. Finally, even if the Tribunal entertains Dow's invalidity defense, Claimants argue that this defense would not bar their right to compensation. Indeed, French courts have held that the payment of

[513] Claimants' Phase II Post-Hearing Reply, dated 12 September 2014, at 6 n.40
[514] See CL-2: French Code of Intellectual Property, Article L.613-8, 613-3
[515] CL-21: Cass. Com., 10 October 2000, Case No. 98-11147, PIBD 2001 No 711, III, 1
[516] CL-22: CA Paris, 16 April 2008, Case No. 07/19281
[517] CL-49: J. Passa, *Droit de la propriété industrielle*, tome 2, n° 595 (translated in Claimants' Phase II Memorial, dated 2 June 2014, para. 93)
[518] R-81: Aynès First Witness Statement, at 28

compensation is due regardless of the invalidity of the underlying patent, because the licensee effectively enjoyed the advantages associated with the patent license.[519]

2. Respondents' Position on French Law

356. Respondents argue that the parties, notably in the Terms of Reference, have agreed that U.S. law applies in this Arbitration to patent infringement claims and patent defenses.[520]

357. Respondents further argue that a French court would hold that U.S. law, and not the choice of law clause specifying French law in the 1992 Agreement, governs Bayer's patent claims and Dow's infringement defenses. The choice of law clause with respect to the license granted in the 1992 Agreement does not govern post-termination use of *pat* because post-termination use of the patented technology is infringement and falls within the purview of intellectual property law, not contract law.[521] With respect to Bayer's patent claims, French law provides that "[t]he law applicable to a non-contractual obligation arising from an infringement of an intellectual property right shall be the law of the country for which protection is claimed,"[522] defined as the law of the country where the accused conduct occurred,[523] which in the present case would be U.S. law. Because under French law "[t]he legal regime under which a patent holder seeks protection also determines ... conditions of validity of the patent,"[524] U.S. law would also govern Dow's patent defenses.

358. Even if the choice of French law in the 1992 Agreement were to prevail, Respondents argue that the mandatory rules of U.S. law, as the seat and place of performance, apply.[525] Patent law, as a law that goes to competition by allowing the creation of monopolies, is a mandatory regime as a matter of U.S. public policy, similarly to antitrust law,[526] meaning that U.S. patent law prevails over state law, including the parties' contractual choice of law, to the extent that they are inconsistent.[527]

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[519] See e.g. CL-311: Cass. Com., 28 January 2003
[520] Terms of Reference, dated 4 October 2013, para. 72. See also Claimants' Request for Arbitration, dated 13 August 2012
[521] C-388: Second Galloux Witness Statement, para 13. See also CL-418: J. Flour, J.L. Aubert & E. Savaux, *Les obligations*, vol. 3, n°179; CL-472: Passa, *Droit de la propriéte industrielle*, tome 2, n° 927 at 1013
[522] RLA-731: Rome II Regulation, Article 8(1))
[523] RLA-732: Cass. civ. 1ère, 5 mars 2002, Sisro, Bull.civ. 2002, I. n° 75; RLA-733: Cass. civ. 1ère, 30 janvier 2007, Bull. civ. 2007, I, No. 44
[524] CA Poitiers, 20 December 1932, Rev. crit. DIP 1936, at 510; P. Mayer & V. Heuze, *Droit international privé*, 11th ed., para. 668
[525] *Mitsubishi Motors Corp. v. Soler Chrysler-Plymouth, Inc.*, 473 U.S. 614, 637 n.19 (1985)
[526] Phase II Transcript, dated 25 August 2014, at 159:4-17
[527] RLA-69: *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 141 (1989)

U.S. patent law would also apply to Dow's patent defenses, as the U.S. statute allowing arbitration of patent disputes requires the hearing of patent defenses.[528]

3. Tribunal's Determination: French Law Does Not Apply to the Infringement Analysis

359. French law, the parties' choice of law to govern the 1992 Agreement (which provided Dow with a license to the *pat* gene), has no bearing on the U.S. patent infringement analysis and can only affect remedies under the license agreement. The Tribunal cannot move directly from a conclusion of breach of the license agreement in terms of French law to a conclusion that there is infringement of Bayer's patents under U.S. patent law, the law chosen by the parties to apply to the patent infringement claims.

II. Patent Infringement Claims

360. Claimants assert the '024,[529] '236,[530] and '477[531] patents, as well as the '665 patent[532] and its reissue,[533] as the basis of their patent infringement claims. Respondents, in addition to raising several defenses to patent infringement, argue against a finding of infringement due to issues of claim construction and of the time of the alleged infringement in light of the date of issuance and expiry of the patents, as well as the existence of a valid license to the patented technology at the relevant times. For reasons discussed in the present part of the Award, the Tribunal is of the view that all of the patents asserted by Claimants satisfy the test for a finding of patent infringement, necessitating consideration of the defenses to infringement raised by Respondents (Part III of this Award).

361. In their submissions, Claimants have set out a methodology to be applied to the patent infringement analysis that Respondents do not contest. Claimants, as the patentees, bear the burden of proving infringement by preponderance of the evidence.[534] Direct infringement occurs where any of the acts mentioned in 35 U.S.C. § 271(a) are performed with respect to an invention, which is defined by claims in a patent:[535] "whoever without authority makes, uses, offers to sell, or sells any patented

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[528] RLA-80: 35 U.S.C. § 294 (b); RLA-81: 35 U.S.C. § 282
[529] C-6: '024 Patent
[530] C-5: '236 Patent
[531] C-7: '477 Patent
[532] C-8: '665 Patent
[533] C-350: RE44962 Reissue Patent
[534] CL-359: *Transclean Corp. v. Bridgewood Servs., Inc.*, 290 F.3d 1364, 1370 (Fed. Cir. 2002)
[535] CL-345: *Multiform Desiccants, Inc. v. Medzam, Ltd.*, 133 F.3d 1473, 1476 (Fed. Cir. 1998)

invention, within the United States or imports into the United States any patented invention during the term of the patent therefor, infringes the patent."[536] The analysis to determine whether direct infringement has occurred is a two-step process: first, the meaning (or scope) of the claim is determined from a study of the patent and its prosecution history;[537] second, the construed claim is compared with the accused instrumentality.[538] If every properly construed claim element is found exactly in the accused product or method, then the asserted claim is "literally" infringed.[539] When an accused product does not meet a claim limitation exactly, infringement may nevertheless be found under the "doctrine of equivalents", if a device "performs substantially the same function in substantially the same way to obtain the same result."[540]

362. Infringement may also be indirect,[541] but given that Claimants allege, and that the Tribunal, for reasons detailed below, finds direct infringement with respect to each patent, this means of infringement will not be discussed.

A. Claim Construction

363. This subpart addresses the first stage of the patent infringement analysis presented above, namely issues of claim construction with respect to the '024, '236, and '477 patents, as well as the '665 patent and its reissue. Respondents challenge two aspects of the claim constructions asserted by Claimants: the meaning of the term "a variant thereof" in claim 1 of the '665 patent and its reissue, and whether the '024 and '477 patents, as well as the '665 patent and its reissue, can be construed as covering monocots as well as dicots. While Respondents had initially raised an additional construction issue regarding the requirement that the DNA encode the *bar* (*S. hygro.*) protein in claim 13 of the '236 patent, this issue became moot during the course of the proceedings when Claimants informed Respondents and the Tribunal that they would not argue that claim 13 was infringed.[542]

364. Before examining these two contested issues, the Tribunal will briefly summarize the other aspects of Claimants' claim construction arguments that have not been expressly contested by Respondents.

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[536] CL-5: 35 U.S.C. § 271(a)
[537] RLA-86: *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995) (en banc), *aff'd*, 116 S. Ct. 1386 (1996)
[538] CL-329: *Chimie v. PPG Indus., Inc.*, 402 F.3d 1371, 1376 (Fed. Cir. 2005)
[539] CL-344: *Monsanto Co. v. Scruggs*, 459 F.3d 1328, 1334 (Fed. Cir. 2006)
[540] CL-339: *Graver Tank & Mfg. Co., Inc. v. Linde Air Prods. Co.*, 70 S. Ct. 854, 856 (1950)
[541] CL-5: 35 U.S.C. § 271(b)
[542] Claimants' Phase II Counter-Memorial, dated 1 July 2014, n.131

The Tribunal is of the view that the evidence presented by Claimants is, in the absence of arguments to the contrary from Respondents, sufficient to support the claim constructions that they advance.

365. First, the asserted claims 8, 9, 12, and 15 of the '236 patent relate to plants, plant cells, and seeds comprising "a DNA fragment containing a determined gene, the expression of which inhibits the antibiotic and herbicidal effects of Bialaphos and related products."[543] Bialaphos is an antibiotic produced by certain species of bacteria;[544] its antibiotic and herbicidal properties are caused by phosphinothricin (PPT, which is here synonymous with glufosinate),[545] a compound that inhibits an enzyme—that is, a type of protein—crucial to plant survival, known as glutamine synthetase (GS).[546] The patent describes a way to prevent inhibition of GS, and to protect certain plants from the effects of GS inhibitors like Bialaphos and PPT, using a protein that confers resistance to GS inhibitors.[547] The '236 patent describes DNA fragments, made up of nucleotide sequences, that code for this protein: the "[p]referred nucleotide sequences for use in this invention encode a protein which has acetyl transferase activity with respect to said GS inhibitors. A most preferred DNA fragment according to the invention comprises a nucleotide sequence coding for a polypeptide having a PPT acetyl transferase activity [i.e., *pat* activity]."[548] The acetyltransferase activity referred to is a chemical reaction that changes PPT into a non-herbicidal compound, N-acetyl-PPT.[549] The patent also explains that "any fragment encoding an enzymatic activity which would protect plant cells and plants against said GS inhibitors, by inactivating, should be viewed as an equivalent" of the preferred DNA sequences that have been disclosed.[550]

366. Next, claims 15 and 16 of the '024 patent are directed to the process of using *Agrobacterium* to transform a plant cell by incorporating within it a gene capable of preventing GS inhibition, from a micro-organism that produces a GS inhibitor (a compound with a PPT "moiety", that is, a compound imparting a specific PPT function).[551] Bialaphos is one compound with a PPT moiety, and the patent also notes that "[o]ther tripeptide antibiotics which contain a PPT moiety are or might

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[543] C-5: '236 Patent, at Abstract
[544] *Id.*, col. 2: 1-11
[545] *Id.*, col. 12:50-52; C-75: *Petition for Determination of Nonregulated Status for Herbicide Tolerant DAS-68416-4 Soybean* at 168-69
[546] C-5: '236 Patent, column 1:23-33
[547] *Id.*, col. 1:11-22
[548] *Id.*, col. 3:16-21
[549] *Id.*, col. 12:52-53
[550] *Id.*, col. 6:44-49
[551] Claimants' Phase II Memorial, dated 2 June 2014, paras. 174-75

be discovered in nature as well, *e.g.*, phosalacin."[552] As discussed below in Part 2.II.A.3, the parties contest whether these patent claims are limited to dicots or can also be construed as covering monocots.

367. Additionally, claims 15, 16, and 19 of the '477 patent are directed to a vector, a human-made construct of DNA from different sources used to transfer DNA to a target cell.[553] The vector in the '477 patent contains a DNA fragment encoding a protein with acetyltransferase activity that is "capable of inactivating a [GS] inhibitor in a plant cell,"[554] or in other words, the *pat* gene.[555] As discussed below in Part 2.II.A.3, the parties contest whether these patent claims are limited to dicots or can also be construed as covering monocots.

368. Finally, claim 1 of the '665 patent is directed to an isolated DNA sequence of particular length encoding a protein having phosphinothricin acetyltransferase (i.e., *pat*) activity.[556] This claim was reissued as claim 1 of the RE44962 reissue patent.[557] The claim recites the protein sequence, known as the *bar* protein, produced by DNA isolated from the *S. hygroscopicus* bacteria and known as the *bar* gene.[558] The claim also covers "variants", and as discussed below in Part 2.II.A.2, the parties contest whether "variants" can be interpreted as including the *pat* gene. In addition, and similarly to the cases of the '024 and '477 patents, the parties contest whether claim 1 is limited to dicots or whether it can also be construed as covering monocots.

369. Having reviewed the non-contested claim constructions above, the Tribunal next considers the parties' submissions concerning the two contested claim constructions, beginning with an overview of the methodology applicable to claim construction.

1. Methodology

370. As a preliminary matter, the Tribunal notes that the parties generally agree on the rules of construction and the hierarchy of sources used to construe patent claims under U.S. law. For clarity,

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[552] C-6: '024 Patent, column 2:12-14
[553] Claimants' Phase II Memorial, dated 2 June 2014, para 183
[554] C-7: '477 Patent, claim 1
[555] Claimants' Phase II Memorial, dated 2 June 2014, para 182
[556] C-8: '665 Patent, claim 1
[557] C-350: RE44962 Reissue Patent, claim 1
[558] C-348: Nucleotide sequence of the phosphinothricin N-acetyltransferase gene from Streptomyces viridochromogenes TU494 and its expression in Nicotiana tabacum

the Tribunal will briefly set out these principles, which will be applied to the claim construction issues discussed below in Parts 2.II.A.2 and 2.II.A.3.

371. The words of a patent claim "are generally given their ordinary and customary meaning," which is the "meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention." Courts look to "those sources available to the public that show what a person of skill in the art would have understood ... [the] claim language to mean."[559]

372. Because the ordinary meaning is "how a person of ordinary skill in the art understands a claim term," the claims "must be read in view of the specification, of which they are a part."[560] The specification—meaning the whole patent including the claims—"[u]sually ... is dispositive; it is the single best guide to the meaning of a disputed term."[561]

373. Next in the interpretive hierarchy is the patent's prosecution history, which is the written record of the give-and-take between the patent applicant and the USPTO: "In addition to consulting the specification, [the Federal Circuit has] held that a court 'should also consider the patent's prosecution history, if it is in evidence.'" The prosecution history "consists of the complete record of the proceedings before the USPTO and includes the prior art cited during the examination of the patent. Like the specification, the prosecution history provides evidence of how the USPTO and the inventor understood the patent."[562] For example, if the USPTO had rejected the patentee's proposed claim to a "car" because the prior art contained a "van", and if the patentee responded that he was not claiming a van, then that would reflect on the meaning of "car" in the issued patent.[563]

374. Last in the interpretive hierarchy is extrinsic evidence, which "consists of all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises":[564] "Within the class of extrinsic evidence, the court has observed that dictionaries and treatises can be useful in claim construction ... [especially] technical dictionaries."[565] The

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[559] RLA-87: *Phillips v. AWH Corp*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (*en banc*)
[560] *Id.* at 1312-13, 1315 (citations omitted)
[561] *Id.* at 1315, citing *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed.Cir.1996)
[562] RLA-87: *Phillips v. AWH Corp*, 415 F.3d 1303 at 1317 (*en banc*), citing *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 980 (Fed. Cir. 1995) (*en banc*)
[563] Respondents' Phase II Memorial, dated 2 June 2014, para. 87
[564] RLA-87: *Phillips v. AWH Corp.*, 415 F.3d 1303, 1317 (Fed. Cir. 2005) (*en banc*), citing *Seymour v. Osborne*, 78 U.S. (11Wall.) 516, 546
[565] RLA-87: *Phillips v. AWH Corp.*, 415 F.3d 1303, 1318 (Fed. Cir. 2005) (*en banc*)

Federal Circuit is particularly skeptical of experts when it comes to interpreting claims. Indeed, "conclusory, unsupported assertions by experts as to the definition of a claim term are not useful to a court" and "a court should discount any expert testimony that is 'clearly at odds with the claim construction mandated by the claims themselves, the written description, and the prosecution history, in other words, with the written record of the patent.'"[566]

2. "A Variant Thereof" ('665 Patent and Its Reissue)

375. This part concerns claim 1 of the '665 patent and its reissue, which refers to "[a]n isolated DNA encoding a protein having phosphinothricin acetyltransferase activity, or a variant thereof retaining said activity, said protein comprising the amino acid sequence (SEQ ID No. 1)." Claim 1 recites the gene sequence of the *bar* protein, produced by the DNA isolated from *S. hygroscopicus* (the *sfr* gene), and Respondents argue that the claim does not cover the *pat* gene. The Tribunal rejects this claim construction and finds that "a variant thereof" encompasses the *pat* protein and, by extension, that claim 1 encompasses the *pat* gene.

i. Claimants' Position on "Variant"

376. Claimants argue that claim 1 covers genes encoding the *bar* protein and variants of the *bar* protein that have phosphinothricin acetyltransferase activity:[567] the claim encompasses the *pat* gene because the latter gene encodes a protein (the *pat* protein) highly similar to the *bar* protein at the amino acid level and functionally identical.[568] Professor Sherman suggests that "a variant can easily be ascertained by ... determining by simple math whether it has about 70% or more end-to-end amino acid identity with the *bar* sequence."[569] The *pat* protein is 84% identical to the amino acid sequence of the *bar* protein, and from the disclosure in the specification, one of ordinary skill in the art would consider functionally similar variants to at least include closely related sequences having 84% identity.[570] Dow admits in its patent applications that a protein sequence having a range of 85-98% amino acid identity to the *pat* or *bar* proteins is "highly identical" or has "high homology", and would be expected to retain similar properties (i.e., *pat* activity) as *pat* or *bar*.[571]

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[566] *Id.*, citing *Key Pharms. v. Hercon Labs. Corp.*, 161 F.3d 709, 716 (Fed.Cir.1998)
[567] C-348: Wohlleben, et al., *Nucleotide Sequence of the Phosphinothricin B-acetyltransferase Gene from Strepromyces viridochromogenes Tu494 and Its Expression in Nocotiana tabacum*, Gene 70:25-37 (1988)
[568] Claimants' Phase II Memorial, dated 2 June 2014, paras. 203-205
[569] C-349: Sherman Witness Statement, para. 72
[570] *Id.*, paras. 20-21
[571] C-121: U.S. Patent Application Publication No. 2011/0107455, at 10

377. **Specification**—Claimants note that the *pat* gene is listed as a "preferred embodiment" in the specification. They argue that a construction that excludes a "preferred embodiment" of the invention that is specifically described in the patent specification is "rarely, if ever, correct" and can only be proper where such embodiment is unambiguously excluded by the claim language itself or was surrendered during prosecution.[572] In Claimants' view, neither exception to the rule applies here: the patentees made clear during prosecution that the enzyme encoded by the *pat* gene was a variant encompassed by this term and there is no language in the claim expressly excluding the *pat* protein.[573]

378. **Prosecution history**—Claimants further argue that, during the prosecution of the '665 patent, the USPTO expressly confirmed that claim 1 (numbered as claim 63 at the time of the application) covers both the *pat* gene and the *bar* gene, asking Bayer to elect only one of the two for examination.[574] In response to this requirement, Bayer paid an additional fee in order to permit both inventions (the *pat* gene and the *bar* gene) to be examined.[575] Claimants note that these facts are acknowledged by Dow's expert Mr. Godici.[576]

379. **No requirement that variant be "derived from" the *bar* sequence by humans**—Claimants argue that the term "variant" in claim 1 does not exclude a natural variant found in another bacterial species or strain, which is then manipulated in the laboratory. First, the patents' specification describes a variant occurring in another species, the *pat* enzyme (which is then altered from nature at the first amino acid).[577] Second, the prosecution history, notably a statement made by the patentees to the USPTO, makes clear that both the examiner and the patentees understood that both variants from different bacterial species that have been modified "and/or" human-made variants were encompassed by the term "variant".[578] Third, there is a vast amount of literature that establishes that those of ordinary skill in the art at the time of the invention referred to highly similar

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[572] CL-373: *Lucent Techs., Inc., v. Gateway, Inc.*, 525 F.3d 1200, 1214 (Fed. Cir. 2008)
[573] Claimants' Phase II Counter-Memorial, dated 1 July 2014, para. 68
[574] CX-189: '665 Patent File History, 28 August 2002 Office Action, at BL0006449
[575] C-310: '665 Patent File History, 10 December 2002 Office Action, at BL0003181
[576] R-447: Godici First Witness Statement, at 34
[577] Claimants' Phase II Counter-Memorial, dated 1 July 2014, paras. 63-65
[578] C-310: '665 Patent File History, 10 December 2002 Office Action, at BL0003543 ("[i]n particular, the Examiner argues that, given the "limited guidance" provided by the Applicant, it would have required undue trial and error experimentation by one of skill in the art at the time of Applicant's invention to screen through and/or produce a myriad of variants of the amino acid sequences taught by Applicant to identify those that encode PAT activity and would confer upon a transformed pant cell resistance to a glutamine synthetase inhibitor as broadly claimed")

enzymes in different strains and species that conferred resistance to the same antibiotic as "variants," and continue to do so today.[579]

380. Claimants further argue that Dow's interpretation of the term "variant" for the purposes of the present non-infringement defense is inconsistent with the broad interpretation of "variant" in its written description defense ("Almost all of Bayer's asserted claims cover something that has in it DNA that codes for a protein described functionally—that function being an acetyl transferase activity that inactivates a glutamine synthetase inhibitor"[580]) and the "unknowable" interpretation in its indefiniteness defense ("There is no 'reasonable certainty' as to what infringes and what does not—that is, what is a 'variant'"[581]).[582]

381. Claimants note, nevertheless, that because the inventors used the DNA of the *bar* gene to obtain the *pat* gene in *S. viridochromogenes*, by using a process called "hybridization" (which relies on the ability of similar DNAs from different sources to stick together), the *pat* protein (encoded by the *pat* gene) is indeed derived from the *bar* gene and protein.[583]

382. **Infringement under the doctrine of equivalents in any case**—Claimants argue that even if Dow's narrow reading of claim 1 as excluding the *pat* gene sequence were accepted, Dow's substitution of DNA encoding the *pat* protein for the claimed DNA that encodes the *bar* protein in its accused products would infringe the claim under the doctrine of equivalents. The claimed DNA and Dow's DNA encoding the *pat* protein share the same function (coding a protein having phosphinothricin acetyltransferase activity), work in the same way (using that protein to cause a particular chemical reaction), and have the same result (conferring glufosinate resistance). Thus, according to Claimants, any differences between the claimed and accused elements are insubstantial. In sum, the term "variant" as recited in claim 1 includes substitutions in the recited sequence that retain phosphinothricin acetyltransferase activity, including the *pat* gene's sequence.[584]

ii. Respondents' Position on "Variant"

383. Respondents argue that "variants" must be made from the same starting material. In their view, the phrase "or a variant thereof" does not change the fact that claim 1 of the '665 patent and its reissue

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[579] C-349: Sherman Witness Statement, paras. 20, 67, 69-70, 73
[580] Respondents' Phase II Memorial, dated 2 June 2014, para. 116
[581] *Id.*, paras. 172-73
[582] Claimants' Phase II Opening Presentation, dated 25 August 2014, slide 62
[583] C-5: '236 Patent, column 28:2-4, 8-15
[584] Claimants' Phase II Memorial, dated 2 June 2014, paras. 209-10

covers the *bar* (*S. hygro.*) gene, which Dow does not use. They note that changing the *bar* gene into the *pat* gene requires replacing 28 of the *bar* gene's 183 amino acids.[585] Respondents argue that interpreting "variant" as broad enough to encompass this kind of change would open the claim to proteins from any number of bacteria species and render the encoded 183 amino acid sequence meaningless.[586] This construction would rewrite the claim, reject its plain reading and prosecution history,[587] and pose problems in terms of the claim's validity. Respondents note that in *Bayer I*, Bayer argued for a broad construction of the '401 patent, which, if accepted, would have rendered the patents invalid on written description grounds; they are of the view that a similar result would pertain here.[588]

384. **"Comprising" claim**—Claim 1 covers DNA encoding a protein "comprising the amino acid sequence (SEQ ID No. 1)," a sequence referring to the *bar* protein and not the *pat* protein. Respondents note that the term "comprising" is a term of art in patent law meaning that the "named elements [within the claim] are essential, but the other elements may be added and still form a construct within the scope of the claim."[589] As a result, Respondents conclude that the *bar* amino acid sequence is essential to the claim and the *pat* amino acids are different claim elements, such that claim elements of the amino acids for the *bar* protein cannot simply be taken out and replaced with the amino acids of the *pat* protein in order to include *pat* under claim 1.[590]

385. **"Deriving from" requirement**—In Respondents' view, the specification makes clear that a "variant" is a protein sequence that has been derived from the same starting material—here, the *bar* (*S.hygro.*) protein sequence. The specification describes the process of starting with a parent plasmid, which is DNA, and constructing "variant plasmids deriving from" the parent plasmid.[591] Thus, the '665 patent specification states: "Two variant plasmids deriving from pGSR2, namely pGSFR280 and pGSFR281, have been constructed. They differ in the untranslated sequence following the transcription initiation site."[592] Respondents argue that these variants were versions of one starting material plasmid (pGSR2) that was modified.[593]

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[585] Respondents' Phase II Closing Presentation, dated 26 August 2014, slide 37
[586] Respondents' Phase II Memorial, dated 2 June 2014, para. 95
[587] *Id.*, para. 91
[588] Respondents' Phase II Responsive Memorial, dated 1 July 2014, paras. 43-44
[589] RLA-358: *Genentech, Inc. v. Chiron Corp.*, 112 F.3d 495, 501, 42 USPQ2d 1608, 1633 (Fed.Cir.1997)
[590] Phase II Transcript, dated 26 August 2014, at 500:8-21
[591] Respondents' Phase II Memorial, dated 2 June 2014, para. 96
[592] C-8: '665 Patent, column 16:54-57
[593] Respondents' Phase II Memorial, dated 2 June 2014, para. 96

386. In Respondents' view, the "variant" language was a narrowing of the claim in order to permit enablement after the patent examiner had rejected a version of the claim for DNA encoding a protein "comprising the amino acid sequence" corresponding to the *bar* gene.[594] In response, Bayer referred to the prior art as disclosing "[m]ethods for generating variant protein sequences" through "particular amino acid sequence substitutions,"[595] and added the language relating to variants to the claim: "a protein having phosphinothricin acetyltransferase activity, or a variant thereof retaining said activity, said protein comprising the amino acid sequence ..."[596] In Respondents' view, the claim refers to "generating" variants and those methods for "generating", rather than to discovery of completely different genetic sequences in different species.[597]

387. Respondents further note that, while Bayer argues that the Tribunal cannot construe the *bar* patents (the '665 and RE44962) to exclude the *pat* gene because, according to Bayer, it is a "preferred embodiment", in *Bayer I*, the Federal Circuit did just that, excluding the *only* embodiment.[598] Here, as in *Bayer I*, "[r]eferences to a preferred embodiment, such as those often present in a specification, are not claim limitations."[599]

388. **Coverage of *pat* disclaimed in prosecution history**—Respondents argue that "variants" of the *bar* gene cannot cover *pat* because Bayer disclaimed coverage of *pat* (*S.viridо.*) when it applied for the '665 patent. Claim 1 "must be read and interpreted with reference to claims that have been cancelled or rejected and [claim 1] cannot by construction be read to cover what was thus eliminated from the patent."[600] Early in the prosecution of that patent, Bayer canceled claims expressly and solely directed to *pat* because the patentability of those claims was put into serious doubt by patents issued years earlier to Strauch, which was also working on placing *pat* into plants.[601] Respondents thus argue that the resulting claim is specific to the full *bar*, not *pat*, amino acid sequence,[602] and note that Bayer elected not to add back a specific claim to *pat* during the reissue, which Bayer could have done if *pat* were within the scope of its original *bar* claim.[603]

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[594] R-460: Request for Filing Continuation/Divisional Application, dated 5 June 1995, at 120-21; R-463: Office Communication, dated 23 April 1997, at 2-3
[595] R-375: '665 Patent Reply & Amendment, dated 10 June 2003, at 12
[596] R-376: Amendment after Final Rejection, dated 7 November 1997, at 2
[597] Respondents' Phase II Memorial, dated 2 June 2014, para. 97
[598] R-34: *Bayer CropScience AG v. Dow AgroSciences LLC*, 728 F.3d 1324, 1332 (Fed. Cir. 2013)
[599] RLA-656: *Laitram Corp. v. Cambridge Wire Cloth Co.*, 863 F.2d 855, 865 (Fed. Cir. 1988)
[600] RLA-362: *Shriber-Schroth Co. v. Cleveland Trust Co.*, 311 U.S. 211, 220-21 (1940)
[601] R-447: Godici Witness Statement, para. 31
[602] Respondents' Phase II Reply Memorial, dated 1 August 2014, para. 38
[603] *Id.*, para. 39

389. Respondents further argue that a reference, in former claim 63 (which later became claim 1 of the patent), to the bacteria (*S. viridо.*) that gives rise to *pat* is not evidence that *pat* is covered by claim 1 but rather is a typo, as it appears accompanied with the *bar* gene amino acid sequence and was meant to reference the *bar* gene instead.[604]

390. **Genus claim rejected**—According to Respondents, the prosecution history also shows that genus claims that might have covered both *pat* and *bar* ("an isolated DNA fragment which encodes a protein having phosphoinothricin acetyltransferase (PAT) activity or a variant thereof ..."[605]) were rejected and, therefore, cannot be reclaimed. Respondents note that an examiner rejected every pending claim in the '665 patent that was drafted to a genus of DNA that was functionally defined, on written description grounds.[606] But he never rejected claim 1 of the '665 patent, then called "claim 63", indicating that the examiner did not consider that claim 63 to be a generic, functionally defined claim. Indeed, that same examiner also rejected Bayer's attempt to cover functionally defined DNA, explaining that the "[a]pplicant provides not [*sic*] guidance on how to make and use variants of the PAT proteins of SEQ. ID NO: 1 [*bar* (*S.hygro.*)] and 11 [*pat* (*S.viridо.*)]."[607]

391. **Bayer's interpretation of "variant" as based on 70% structural identity to *bar* is unfounded**—According to Respondents, similarly to Bayer's argument in *Bayer I*, Bayer's broad, functional construction of "variants" as covering *pat* and an unknown number of genes, rests on extrinsic evidence[608]—the least reliable of interpretive evidence under the Federal Circuit's hierarchy of interpretive sources and a form of evidence that should not be used to expand or contradict the meaning derived from the patent itself and its prosecution history.[609] Respondents question the methodology of Bayer's expert witness, which looks to non-contemporaneous publications that use the term "variant" to mean essentially DNA that codes for enzymes with the same activity and noting that many of these variants have 60% to 96% structural similarity in order to create a new definition of "variant" as having 70% structural identity.[610] Respondents argue that the purpose of this 70% limitation is to ensure that the expanded genus of patents is not as expansive as Bayer's broad reading of "variant" would otherwise make it.[611]

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[604] Phase II Transcript, dated 26 August 2014, 514-15
[605] R-374: '665 Patent File History, Office Action, dated 10 December 2002, at 5
[606] *Id.* at 5-6
[607] R-464: '665 Patent File History, Office Action, dated 12 January 2005, at 7; R-445: Edgar Witness Statement, para. 128
[608] Respondents' Phase II Post-Hearing Submission, dated 5 September 2014, paras. 4-5
[609] Respondents' Phase II Reply Memorial, dated 1 August 2014, para. 54
[610] C-349: Sherman Witness Statement, paras. 20-21, 68-70, 72
[611] Respondents' Phase II Post-Hearing Submission, dated 5 September 2014, para. 5

iii. Tribunal's Determination: The Term "A Variant Thereof" Includes *pat*

392. Claim 1 of the '665 patent and its reissue refers to "[a]n isolated DNA encoding a protein having phosphinothricin acetyltransferase activity, or a variant thereof retaining said activity, said protein comprising the amino acid sequence (SEQ ID No. 1)." Claim 1 recites the gene sequence of the *bar* protein, produced by the DNA isolated from *S. hygroscopicus* (the *sfr* gene) and covers DNA encoding the *bar* protein and variants of the *bar* protein that have phosphinothricin acetyltransferase activity.

393. The Tribunal is not convinced by Dow's argument that the "variant" in claim 1 of the '665 patent and its reissue excludes a variant found in another bacterial species or strain. The inclusion of genes encoding proteins found in other species or strains is made quite clear in the specification, which describes *pat*, a gene occurring in another bacterial species.[612]

394. While "[r]eferences to a preferred embodiment, such as those often present in a specification, are not claim limitations," as Respondents rightly point out,[613] it is also clear that a claim construction excluding a "preferred embodiment" of the invention that is specifically described in the patent specification—the *pat* gene is described therein as a preferred embodiment—will be "rarely, if ever, correct" unless the preferred embodiment is unambiguously excluded by the claim language itself or was surrendered during prosecution.[614] The evidence in the record does not support a finding that the *pat* gene was excluded or surrendered in this manner. As concerns Respondents' argument that in *Bayer I*, the Federal Circuit excluded the *only* embodiment of the claim at issue, it ignores the fact that the court finding was ultimately limited to a rejection of the broad claim construction proposed by Bayer; indeed, one of Dow's own proposed claim constructions in that case would have been limited to, but *included*, the specific gene sequence found in Figure 10 of the patent.[615]

395. Finally, the prosecution history supports an interpretation of "variant" that includes the *pat* protein. In particular, in an Office Action of 28 August 2002, the USPTO determined that what is now claim 1 of the '665 patent and its reissue was broad enough to cover both the *bar* and *pat* gene, asking Bayer to choose one or the other for examination.[616] In response, as documented in the USPTO records, Bayer chose both, paying an additional fee to permit both genes to be examined together.[617]

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[612] C-8: '665 Patent, columns 26, l.42–27, l.5
[613] RLA-656: *Laitram Corp. v. Cambridge Wire Cloth Co.*, 863 F.2d 855, 865 (Fed. Cir. 1988)
[614] CL-373: *Lucent Techs., Inc. v. Gateway, Inc.*, 525 F.3d 1200, 1214 (Fed. Cir. 2008)
[615] R-34: *Bayer CropScience AG v. Dow AgroSciences LLC*, 728 F.3d 1324, 1332 (Fed. Cir. 2013)
[616] CX-189: '665 Patent File History, Office Action, dated 28 August 2002, at BL0006449
[617] C-310: '665 Patent File History, Office Action, dated 10 December 2002, at BL0003181

396. In light of the evidence provided by the specification and the prosecution history of the '665 patent, the Tribunal is of the view that "a variant" of the *bar* protein encompasses the *pat* protein, and as a result that claim 1 of the '665 patent and its reissue covers the *pat* gene.

3. "Plant Cell" Limitation ('024, '477, and '665 (and Its Reissue) Patents)

397. Respondents argue that the '024, '477, and '665 patent claims asserted in this Arbitration cover monocot plant cells, with a view to making an argument that the claims are invalid for failure to provide an enabling disclosure with respect to monocots, as was the case in *PGS v. DeKalb*.[618] The Tribunal, however, rejects a construction of the patent claims that would encompass monocot plant cells.

i. Claimants' Position on "Plant Cell" Limitation

398. ***Dekalb*: reference to *Agrobacterium* transformation construed as excluding monocots—** Claimants note that the *DeKalb* cases on which Dow relies concerned the claims of the '236 patent. *DeKalb* established that the "plant and seed claims" (i.e., claims 8-9 and 12-15 of the '236 patent) were valid and were construed to exclude monocots from their scope. The courts in *DeKalb* observed that, during examination of the application that became the '236 patent, the USPTO had withdrawn a rejection based on an alleged lack of enablement of the plant and seed claims of the '236 patent. The reason for the withdrawal was that the applicants had amended their claims to require that the plant and seed claims be "susceptible to infection and transformation by Agrobacterium and capable of regeneration," which only applies to dicots.[619]

399. Claimants assert that the *DeKalb* courts held that a person skilled in the art at the time the patent application was filed would have understood the "plant and seed claims" to exclude monocots. In Claimants' view, it is because of this holding with respect to the '236 patent in *DeKalb* that Dow has not argued that the '236 patent's claims in this Arbitration cover monocots. Claimants argue that the USPTO's and courts' analyses in this regard apply to the other three patents-in-suit as well. Thus, the patent claims asserted in the present Arbitration that are susceptible to infection and

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[618] CL-349: *Plant Genetic Sys., Inc. v. DeKalb Genetics Corp.*, 175 F. Supp. 2d 246 (D. Conn. 2001), affirmed CL-350: *Plant Genetic Sys., Inc. v. DeKalb Genetics Corp.*, 315 F.3d 1335 (Fed. Cir. 2003)

[619] CL-349: *Plant Genetic Sys., Inc. v. DeKalb Genetics Corp.*, 175 F. Supp. 2d 246, 267-68 (D. Conn. 2001), affirmed, CL-350: *Plant Genetic Sys., Inc. v. DeKalb Genetics Corp.*, 315 F.3d 1335, 1344-45 (Fed. Cir. 2003)

transformation by *Agrobacterium* and capable of regeneration must also be interpreted as excluding monocots.[620]

400. **The '024 patent's asserted claims refer to *Agrobacterium* transformation and therefore exclude monocots**—Claimants assert claims 15 and 16 of the '024 patent. Claim 15 recites a process in which recombinant DNA is incorporated in the genome of a cell "by Agrobacterium mediated transformation." Claim 16 recites a process for producing a plant by producing a plant cell of, *inter alia*, claim 15, and regenerating the cell into a plant. Because claim 16 depends from claim 15, it too expressly requires transformation by *Agrobacterium*: "[a] claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers."[621] Claimants argue that the two asserted claims of the '024 patent thus expressly recite processes that require transformation by *Agrobacterium*.[622] Claimants assert that the USPTO's and the *DeKalb* courts' rulings each establish that patent claims to subject matter containing this *Agrobacterium*-transformation requirement necessarily exclude monocots, and note that Dow even suggests that the *DeKalb* ruling should be given *res judicata* effect.[623]

401. According to Claimants, Dow's argument that the '024 patent's asserted claims are not enabled rests on the premise that the '024 patent's claims are drawn to plant cells, because the *DeKalb* courts found that certain patent claims in the '236 patent that were expressly drawn to plant cells per se (i.e., without any *Agrobacterium* limitation) were not enabled (e.g., "1. A plant cell having a heterologous DNA stably integrated into its genome; said DNA comprising a heterologous DNA fragment encoding a protein having an acetyl transferase activity which inactivates a glutamine synthetase inhibitor in said cell"[624]).[625]

402. In contrast, however, Claimants argue that the asserted claims of the '024 patent are drawn to a different subject matter: processes, not cells. Claim 15 reads: "The process of claim 1, in which said recombinant DNA is incorporated in the genome of said cell by Agrobacterium mediated transformation." Claim 16 further requires a second process step of "regenerating from said cell [of claim 15] a plant." As a result, the cell used in the process of claim 15 must necessarily be

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[620] Claimants' Phase II Counter-Memorial, dated 1 July 2014, para. 86
[621] CL-381: 35 U.S.C. ¶ 112.
[622] Claimants' Phase II Counter-Memorial, dated 1 July 2014, para. 85
[623] Respondents' Phase II Memorial, dated 2 June 2014, paras. 73-79; Claimants' Phase II Counter-Memorial, dated 1 July 2014, para. 86
[624] C-5: '236 Patent, column 30
[625] Claimants' Phase II Counter-Memorial, dated 1 July 2014, para. 87

capable of regeneration. Thus, unlike the plant-cell claims of the '236 patent that were invalidated for encompassing monocots, the asserted claims of the '024 patent expressly require *Agrobacterium*-mediated transformation and capability of regeneration into a plant so as to exclude monocots. In Claimants' view, even though the asserted claims of the '024 patent are not plant or seed claims, they are similar (in the way material here) to the plant and seed claims in the '236 patent that were not invalidated.[626]

403. **The '477 patent's asserted claims refer to *Agrobacterium* transformation and therefore exclude monocots**—Claimants are of the view that an analysis similar to the '236 patent applies to the '477 patent, the asserted claims of which are limited to vectors to be used in *Agrobacterium*-mediated transformation. In particular, each asserted claim of the '477 patent requires a vector tailored for transformation of a plant cell by *Agrobacterium*: Claim 15 requires that a "chimeric DNA fragment encoding a protein with acetyltransferase activity on a GS inhibitor" in the vector be located between the T-DNA border sequences. Claim 16 requires that the vector be a modified Ti plasmid. Claim 19 requires that the vector be capable of replicating in *Agrobacterium tumefaciens*.[627] Claimants also note that Dow's USDA petition discloses that the vector pDAB8264 is used for transformation with *Agrobacterium* and contains the *pat* gene located between T-DNA border sequences excised from a Ti plasmid. It further discloses that DAS-444Ø6-6 was transformed with pDAB8264 using *Agrobacterium tumefaciens*,[628] and Claimants conclude that this means that pDAB8264 must be able to replicate in *Agrobacterium tumefaciens*.[629]

404. The '477 patent's asserted claims are directed to vectors that, while used to insert DNA into plant cells and plants, are not themselves plant cells or plants. Claimants argue that the express inclusion of *Agrobacterium*-mediated transformation as a requirement, as in the '236 patent, limits the use of the vector to transformation of dicot plant cells.[630]

405. **The '665 patent and its reissue's asserted claim covers DNA, not plants, and therefore does not cover monocots**—Claimants assert that claim 1 of the '665 patent and its reissue expressly covers DNA and is not limited to any use of the DNA in plant cells or in any other cells per se. Indeed, neither "plant" nor "plant cells" appears in the claim; Claimants note that the invention may

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[626] *Id.*, paras. 88-90
[627] *Id.*, para. 91
[628] C-84: Petition for Determination of Nonregulated Status for Herbicide Tolerant DAS-444Ø6-6 Soybean, dated 17 October 2011, at 22-23
[629] Claimants' Phase II Counter-Memorial, dated 1 July 2014, para. 93
[630] *Id.*, para. 94

exist *in vitro* in a petri dish even before entry into a plant.[631] In Claimants' view, Dow's position attempts to inject the notion of "plant cells" into the "DNA" claim so that a tie to the *DeKalb* ruling on plant-cell claims can be suggested, and is unsupported by the claim itself, the patent's specification, and the prosecution history.[632]

ii. Respondents' Position on "Plant Cell" Limitation

406. Respondents note that the claims of the '024 patent are all limited to a "process for the production of a plant cell," the asserted claims of the '477 patent are all limited to vectors that enable transfer of DNA "to a plant cell", and claim 1 of either the '665 patent or RE44962 covers DNA having PPT activity in a plant cell. As Bayer successfully argued in the *DeKalb* case, a "plant cell" does not distinguish between monocots or dicots—the phrase covers both.[633] Thus, Respondents argue that the asserted claims also cover monocot plants cells.[634]

407. **The claims**—Respondents argue that the ordinary meaning of "plant cell" is the cell of any plant, monocot or dicot. This understanding is supported by the Federal Circuit: "[F]lowering plants can be broadly categorized as monocotyledons ('monocots') and dicotyledons ('dicots'), depending on whether the initial development of the seed produces one leaf (monocot) or two leaves (dicot)."[635] In the *DeKalb* litigation, Bayer successfully argued that "the term 'plant cell' 'does not contain any limitation regarding the type of cell or type of plant species covered' ... including cells from both monocots and dicots."[636] Respondents argue that Bayer is now estopped from arguing that "plant cell" covers less than all plants.[637]

408. **Prosecution history**—According to Respondents, in the *DeKalb* case, the only claims that the courts found to exclude monocots were those in which the prosecution history clearly dictated that result.[638] In *DeKalb*, Bayer was found to have met this high hurdle to "effectively exclude monocots" only when it used a carefully worded limitation that requires the plant cells to be:

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[631] *Id.*, para. 100
[632] *Id.*, para. 99
[633] R-250: *Plant Genetic Sys., Inc. v. DeKalb Genetics Corp.*, 175 F. Supp. 2d 246, 253 (D. Conn. 2001)
[634] Respondents' Phase II Memorial, dated 2 June 2014, para. 109; Respondents' Phase II Reply Memorial, dated 1 August 2014, para. 106
[635] RLA-64: *Monsanto Co v Syngenta Seeds Inc.*, 503 F.3d 1352, 1361 (Fed. Cir. 2007), citing RLA-5: *Plant Genetic Sys., Inc. v. DeKalb Genetics Corp.*, 315 F.3d 1335, 1338 (Fed. Cir. 2003)
[636] R-250: *Plant Genetic Sys., Inc. v. DeKalb Genetics Corp.*, 175 F. Supp. 2d 246, 253 (D. Conn. 2001), citing Bayer's Post-Trial Reply Brief (internal brackets omitted).
[637] See e.g., RLA-349: *Matrix IV, Inc. v. Am. Nat. Bank & Trust Co. of Chicago*, 649 F.3d 539, 547 (7th Cir. 2011)
[638] See RLA-363: *Thorner v. Sony Computer Entm't Am. LLC*, 669 F.3d 1362, 1366-67 (Fed. Cir. 2012)

"susceptible to infection and transformation by Agrobacterium and capable of regeneration thereafter."[639] Bayer added these limitations during prosecution "to overcome the Examiner's rejection of non-enablement as to monocots" and that particular prosecution history of these claims led to the "inescapable" conclusion that the patentees amended the claims to exclude monocots.[640] According to Respondents, this crucial limitation does not appear in any of asserted claims of the '024, '477, and '665 patents.

409. **The '024 patent**—Respondents argue that, in contrast to the "plant and seed claims" that were recognized to be limited to dicots in *DeKalb*, the asserted '024 patent claims were not specifically amended to overcome a rejection of non-enablement as to monocots by the examiner. Furthermore, the claims of the '024 patent do not qualify the term "plant": the term *Agrobacterium* qualifies "[a] process" ("[t]he process of claim 1, in which said recombinant DNA is incorporated in the genome of said cell by Agrobacterium mediated transformation"[641]) used to produce a plant, which can be a monocot or a dicot. Respondents refer to the *In re Goodman* case, where claims reciting the *Agrobacterium* method of transformation were held invalid because the specification did not enable monocot transformation.[642] They argue that this case demonstrates that, just because a claim expressly requires a method for making plants using *Agrobacterium*, that claim is not thereby limited to dicots.[643]

410. **The '477 patent**—As discussed with respect to the '024 patent above, Respondents argue that the word "plant" in the asserted claims is not qualified such that it would be limited to just dicots and that there is no evidence in the prosecution history that clearly and unmistakably indicates the term "plant" was limited to mean only dicots. Accordingly, the claims are directed to vectors that are "tailored for transformation of a plant cell by Agrobacterium" and that contain DNA encoding a protein "capable of inactivating [a] glutamine synthetase inhibitor in a plant cell," without any limitation on the kind of plant cell.[644]

411. **'655 Patent or RE44962 Patent**—Respondents argue that, under Bayer's interpretation, the phrase "variants thereof retaining said activity" in claim 1, where said activity means "phosphinothricin

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[639] RLA-5: *Plant Genetic Sys., Inc. v. DeKalb Genetics Corp.*, 315 F.3d 1335, 1345 (Fed. Cir. 2003) 1345; R-250: *Plant Genetic Sys., Inc. v. DeKalb Genetics Corp.*, 175 F. Supp. 2d 246, 268 (D. Conn. 2001)
[640] RLA-5: *Plant Genetic Sys., Inc. v. DeKalb Genetics Corp.*, 315 F.3d 1335, 1345 (Fed. Cir. 2003)
[641] C-6: '024 Patent, claim 15
[642] RLA-374 : *In re Goodman*, 11 F.3d 1046, 1048-49, 1051-52 (Fed. Cir. 1993)
[643] Respondents' Phase II Reply Memorial, dated 1 August 2014, paras. 109-10
[644] C-7: '477 Patent, claim 1; Respondents' Phase II Reply Memorial, dated 1 August 2014, para. 112

[PPT] acetyltransferase activity", broadens this claim to a whole genus of genes defined by that function. In order to determine whether or not these variants satisfy the limitation of "retaining said activity," it is necessary to test for that activity in a cell.[645] Under the *Syngenta* analysis, the specification must be enabling for monocots because "[w]ithout the ability to transform a monocot cell, one skilled in the art could not determine whether the plant gene could carry out the claimed functions and thus fall within the scope of the claim."[646]

iii. Tribunal's Determination: The Term "Plant Cells" Does Not Encompass Monocots

412. The Tribunal is not convinced by Respondents' argument that the '024 and '477 patent claims asserted in this Arbitration, as well as those of the '665 patent and its reissue, cover monocot plant cells.

413. First, all asserted claims of the '024 and '447 patents implicitly but clearly exclude monocots. This is because those claims concern subject matter that is susceptible to *Agrobacterium* transformation, and, as a person skilled in the art at the relevant time would have understood, that is not the case for monocots. The '024 patent claims relate to a process of transformation based on *Agrobacterium*, which would have therefore been understood to be limited to the transformation of dicots, as monocots were not understood to be susceptible to this kind of transformation. Similarly, the '477 patent claims relate to *Agrobacterium*-based vectors for transformation, which would have been understood as being capable of use only in dicot transformation. There is therefore a clear, albeit implicit, exclusion of monocots.

414. Second, asserted claim 1 of the '665 patent and its reissue expressly covers DNA and thus cannot suffer from an alleged lack of enablement the basis of which is that a category of plant is not enabled. Neither "plant" nor "plant cells" appears in the claim and there is no support for Respondents' argument in the patent's specification and prosecution history. Respondents' attempt to apply the *Syngenta*[647] analysis to the '665 patent and its reissue is misguided because, unlike the patents-at-issue in that case, the '665 patent is not a process patent.

415. For these reasons, the Tribunal finds that a person well versed in the art would be expected to know immediately that the asserted claims of the '024 and '477 patents do not target monocots, which

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[645] Respondents' Phase II Memorial, dated 2 June 2014, para. 154
[646] RLA-64: *Monsanto Co v Syngenta Seeds Inc.*, 503 F.3d 1352, 1361 (Fed. Cir. 2007); Respondents' Phase II Reply Memorial, dated 1 August 2014, para. 113
[647] RLA-64: *Monsanto Co v Syngenta Seeds Inc.*, 503 F.3d 1352, 1361 (Fed. Cir. 2007); Respondents' Phase II Reply Memorial, dated 1 August 2014, para. 113

are excluded as a matter of claim construction. As for claim 1 of the '665 patent and its reissue, the Tribunal finds that it covers DNA, not plants.

B. Every Element of the Asserted Claims

416. In light of the determinations with respect to claim construction above, the Tribunal will now discuss the second step of the infringement analysis, namely whether Respondents' accused products possess every element of the asserted claims. Claimants assert that the patents at issue have been infringed by the following accused products belonging to Respondents. The soybean products are Enlist E3 (event number DAS-444Ø6-6), Enlist Soybean (event number DAS-68416-4), and Insect Resistant Soybean (event number DAS-81419-2 (an insect-resistant event)), as well as soybean comprising stacks of these events, notably Enlist E3+IR (a breeding stack of Enlist E3 and Insect Resistant Soybean). The cotton products are WideStrike and WideStrike 3 (involving stacks of event numbers 281-24-236 and 3006-210-23) and Enlist Cotton (event number DAS-8191Ø-7) or cotton comprising stacks of the above-referenced events.[648] Note that, contrary to their initial position recorded in the Terms of Reference,[649] Claimants did not argue in its Phase II submissions that Herculex corn was an infringing product.

417. The scope of the issues to be determined has been narrowed significantly by Respondents' admissions that "[t]he [Respondents'] products at issue in this Arbitration all contain the *pat* gene,"[650] that their "regulatory filings for the accused products accurately represent the *pat* gene therein, the protein it encodes, and the associated promoter," and that "the protein encoded by the *pat* gene in each of the accused products has an acetyltransferase activity against a glutamine synthetase inhibitor."[651] Based on these admissions, as well as the evidence of infringement provided by Claimants, the Tribunal concludes that all of the accused products have every element of the claims of the four patents-at-issue, and will briefly summarize the grounds for this finding below. The Tribunal notes, however, that Respondents have challenged Claimants' position on the period over which infringement has occurred, and this will be addressed in Part 2.II.B.2, below.

1. Overview of the Infringed Elements of Each Claim

418. For purposes of this infringement analysis, Claimants' tables comparing the elements of each asserted claim with the accused products have been reproduced. Elements that Respondents have

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[648] Claimants Phase II Memorial, dated 2 June 2014, para. 60
[649] Terms of Reference, 4 October 2013, at 42
[650] See e.g. C-95: Respondents' Answer to Claimants' Request for Arbitration, para. 23
[651] C-324: Email from A. Chachkes to E. Mayle, dated 12 May 2014

not contested, based on the admissions outlined in the previous paragraph, have been shaded grey, and the remaining, contested issues are presented in the unshaded cells of the tables and then discussed following each table.

i. The '236 Patent[652]

Claim 8

Feature of Claim 8 of the '236 Patent	Dow's Accused Products
A plant	soybean or cotton plants
which consists of plant cells (claim 1)	the plant necessarily consists of plant cells
and which is susceptible to infection and transformation by *Agrobacterium* and capable of regeneration thereafter	generated through *Agrobacterium* infection and transformation and are capable of regeneration (*e.g.*, DAS-68416-4, -81419-2, -444Ø6-6, -8191Ø-7, -281-24-236, and -3006-210-23)
the plant cell having a heterologous DNA stably integrated into its genome (claim 1)	contains an integrated *pat* gene[653]
said DNA comprising a heterologous DNA fragment (claim 1)	*pat* gene[654]
encoding a protein having an acetyl transferase activity (claim 1)	*pat* gene encodes for PAT protein[655]

419. The only element of claim 8 that Respondents' admissions do not expressly cover is the requirement that the plant be "susceptible to infection and transformation by *Agrobacterium* and capable of regeneration thereafter." Based on Respondents' recognition of the accuracy of their regulatory filings,[656] Claimants have cited regulatory filings to demonstrate that Enlist E3 (DAS-444Ø6-6),[657] Enlist Soybean (DAS-68416-4),[658] Insect Resistant Soybean (DAS-81419-2),[659] WideStrike (a breeding stack of events 281-24-236 and 3006-210-23),[660] and Enlist Cotton (DAS-8191Ø-7)[661] are generated through *Agrobacterium*-mediated transformation, meaning that the plants will be

[652] Claimants' Phase II Opening Presentation, dated 25 August 2014, slides 14-17
[653] See e.g. C-95: Respondents' Answer to Claimants' Request for Arbitration, para. 23
[654] *Id.*
[655] C-324: Email from A. Chachkes to E. Mayle, dated 12 May 2014
[656] *Id.*
[657] C-84: *USDA Petition for Nonregulated Status of DAS-444Ø6-6 Soybean* at 17, 21 ("DAS-444Ø6-6 soybean was developed using *Agrobacterium* mediated transformation to stably incorporate the...pat gene from *Streptomyces viridochromogenes* into soybean"; "DAS-444Ø6-6 soybean was generated through *Agrobacterium* mediated transformation of soybean (*Glycine max*)... Shoot initiation, shoot elongation, and rooting media were supplemented with cefotaxime, timentin and vancomycin to inhibit the growth of *Agrobacterium* ... Selected shoots were transferred to rooting medium for root development and then transferred to soil mix for acclimatization of plantlets")
[658] C-75: *USDA Petition for Nomegulated Status of DAS-68416-4 Soybean* at 15, 20
[659] C-98: *USDA Petition for Nonregulated Status of DAS-81419-2 Soybean*, at 19, 22
[660] C-54: *Cry1F Cotton Petition for Non-Regulated Status* at 15; C-55: *Cry 1Ac Cotton Petition for Non-Regulated Status* at 15-16
[661] C-320: *USDA-APHIS Petition for Nonregulated Status of DAS-8191Ø-7 Cotton* at 17, 21-22

succeptible to infection and transformation by *Agrobacterium*, and capable of regeneration. The Tribunal is of the view that all elements of claim 8 of the '236 patent are present in the accused products.

Claim 9

Feature of Claim 9 of the '236 Patent	Dow's Accused Products
A seed	soybean and cotton plants produce seeds which contain the events (*e.g.*, DAS-68416-4, -81419-2, -444Ø6-6, -8191Ø-7, -281-24-236, and -3006-210-23)
of a plant (claim 8)	results in soybean or cotton plants
which consists of plant cells (of claim 1)	the plant necessarily consists of plant cells
and which is susceptible to infection and transformation by *Agrobacterium* and capable of regeneration thereafter	generated through *Agrobacterium* infection and transformation and is capable of regeneration thereafter (*e.g.*, DAS-68416-4, -81419-2, -444Ø6-6, -8191Ø-7, -281-24-236, and -3006-210-23)
the plant cell having a heterologous DNA stably integrated into its genome (claim 1)	contains an integrated *pat* gene[662]
said DNA comprising a heterologous DNA fragment (claim 1)	*pat* gene[663]
encoding a protein having an acetyl transferase activity (claim 1)	*pat* gene encodes for PAT protein[664]
which inactivates a glutamine synthetase inhibitor in said cell (claim 1)	PAT protein inactivates the glutamine synthetase inhibitor[665]

420. As discussed above with respect to claim 8, Claimants have provided evidence from Respondents' regulatory filings to support the fact that the accused products are "susceptible to infection and transformation by *Agrobacterium* and capable of regeneration thereafter." With respect to the remaining element that has not been expressly acknowledged by Respondents—the requirement that the plants produce seeds containing the relevant events—Claimants have again relied on Respondents' representation concerning the accuracy of their regulatory filings[666] and cited regulatory filings to demonstrate that this is the case for Enlist E3 (DAS-444Ø6-6),[667] Enlist Soybean (DAS-68416-4),[668] Insect Resistant Soybean (DAS-81419-2),[669] WideStrike (a breeding

[662] See e.g. C-95: Respondents' Answer to Claimants' Request for Arbitration, para. 23
[663] *Id.*
[664] C-324: Email from A. Chachkes to E. Mayle, dated 12 May 2014
[665] *Id.*
[666] *Id.*
[667] C-84: *USDA Petition for Nonregulated Status of DAS-444Ø6-6 Soybean* at 21 ("Selected T0 [444Ø6-6] plants [i.e., plants obtained as a result of transformation process] were allowed to self-fertilize in the greenhouse to give rise to T1 seed. For T1 plants [i.e., the plants into which T1 seeds grow], PCR analysis, zygosity assay, and Southern blot analysis were performed to detect copy number, number of integration sites, and PTU integrity")
[668] C-75: *USDA Petition for Nonregulated Status of DAS-68416-4 Soybean*, at 20
[669] C-98: *USDA Petition for Nonregulated Status of DAS-81419-2 Soybean*, at 22

stack of events 281-24-236 and 3006-210-23),[670] and Enlist Cotton (DAS-8191Ø-7).[671] The Tribunal is of the view that the accused products have all elements of claim 9 of the '236 patent.

Claim 12

Feature of Claim 12 of the '236 Patent	Dow's Accused Products
A plant	soybean or cotton plant
consisting of cells (claim 2)	the plant necessarily consists of plant cells
and which is susceptible to infection and transformation by *Agrobacterium* and capable of regeneration thereafter	generated through *Agrobacterium* infection and transformation and is capable of regeneration thereafter (*e.g.*, DAS-68416-4, -81419-2, -444Ø6-6, -8191Ø-7, -281-24-236, and -3006-210-23)
The cell is a plant cell (of claim 1)	soybean or cotton plant cells
the plant cell having a heterologous DNA stably integrated into its genome (claim 1)	contains an integrated *pat* gene[672]
said DNA comprising a heterologous DNA fragment (claim 1)	*pat* gene[673]
encoding a protein having an acetyl transferase activity (claim 1)	*pat* gene encodes for PAT protein[674]
which inactivates a glutamine synthetase inhibitor in said cell (claim 1)	PAT protein inactivates the glutamine synthetase inhibitor[675]
The plant cell of claim 1 wherein said DNA fragment encodes a polypeptide having a phosphinothricin acetyl transferase activity with respect to Bialophos or phosphinothricin (claim 2)	PAT protein has phosphinothricin acetyl transferase [i.e., *pat*] activity with respect to phosphinothricin

421. As discussed above with respect to claim 8, Claimants have provided evidence from Respondents' regulatory filings to support the fact that the plants at issue are "susceptible to infection and transformation by *Agrobacterium* and capable of regeneration thereafter." With respect to the remaining element that has not been expressly acknowledged by Respondents—that *pat* (i.e., phosphinothricin acetyl transferase), the polypeptide encoded by the relevant DNA fragment in the plant cell, has *pat* activity with respect to phosphinothricin—Claimants have again relied on Respondents' representations concerning the accuracy of their regulatory filings[676] and cited regulatory filings to demonstrate that this is the case for the *pat* gene in the cells of Enlist E3 (DAS-

[670] C-54: *Cry1F Cotton Petition for Non-Regulated Status* at 15; C-55: *Cry 1Ac Cotton Petition for Non-Regulated Status*, at 16
[671] C-320: *USDA-APHIS Petition for Nonregulated Status of DAS-8191Ø-7 Cotton*, at 21-22
[672] See e.g. C-95: Respondents' Answer to Claimants' Request for Arbitration, para. 23
[673] *Id.*
[674] C-324: Email from A. Chachkes to E. Mayle, dated 12 May 2014
[675] *Id.*
[676] *Id.*

444Ø6-6),[677] Enlist Soybean (DAS-68416-4),[678] Insect Resistant Soybean (DAS-81419-2),[679] WideStrike (a breeding stack of events 281-24-236 and 3006-210-23),[680] and Enlist Cotton (DAS-8191Ø-7).[681] The Tribunal is of the view that the accused products have all the elements of claim 12 of the '236 patent.

Claim 15

Feature of Claim 15 of the '236 Patent	Dow's Accused Products
A plant	soybean or cotton plant
which consists of cells (of claim 5)	the plant necessarily consists of plant cells
and which is susceptible to infection and transformation by *Agrobacterium* and capable of regeneration thereafter	generated through *Agrobacterium* infection and transformation and is capable of regeneration thereafter (*e.g.*, DAS-68416-4, -81419-2, -444Ø6-6, -8191Ø-7, -281-24-236, and -3006-210-23)
the cell (of claim 1) wherein said DNA also comprises a promoter recognized by polymerase of said cell (claim 5)	the CsVMV promoter is recognized by plant polymerases
said DNA fragment being under control of said promoter (claim 5)	expression of the *pat* gene is controlled by the CsVMV promoter
the plant cell having a heterologous DNA stably integrated into its genome (claim 1)	contains an integrated *pat* gene[682]
said DNA comprising a heterologous DNA fragment (claim 1)	*pat* gene[683]
encoding a protein having an acetyl transferase activity (claim 1)	*pat* gene encodes for PAT protein, which has acetyl transferase activity[684]
which inactivates a glutamine synthetase inhibitor in said cell (claim 1)	PAT protein inactivates the glutamine synthetase inhibitor[685]

422. As discussed above with respect to claim 8, Claimants have provided evidence from Respondents' regulatory filings to support the fact that the plants at issue are "susceptible to infection and transformation by *Agrobacterium* and capable of regeneration thereafter." With respect to the remaining elements that have not been expressly acknowledged by Respondents—the requirements that the cells must contain a promoter that plant polymerases recognize, and that the *pat* gene must be under the control of this promoter—Claimants have again relied on Respondents'

[677] C-84: *USDA Petition for Nonregulated Status of DAS-444Ø6-6 Soybean* at 4, 17 ("The *pat* gene encodes the enzyme phosphinothricin acetyltransferase [i.e., *pat* protein] that inactivates glufosinate"; "The PAT enzyme acetylates the primary amino group of phosphinothricin rendering it inactive")
[678] C-75: *USDA Petition for Nomegulated Status of DAS-68416-4 Soybean*, at 4, 15
[679] C-98: *USDA Petition for Nonregulated Status of DAS-81419-2 Soybean*, at 5, 19
[680] C-54: *Cry1F Cotton Petition for Non-Regulated Status* at 3, 16; C-55: *Cry 1Ac Cotton Petition for Non-Regulated Status*, at 3, 17
[681] C-320: *USDA-APHIS Petition for Nonregulated Status of DAS-8191Ø-7 Cotton*, at 4, 78
[682] See e.g. C-95: Respondents' Answer to Claimants' Request for Arbitration, para. 23
[683] *Id.*
[684] C-324: Email from A. Chachkes to E. Mayle, dated 12 May 2014
[685] *Id.*

representations concerning the accuracy of their regulatory filings[686] and cited regulatory filings to demonstrate that this is the case for plant cells of Enlist E3 (DAS-444Ø6-6),[687] Enlist Soybean (DAS-68416-4),[688] Insect Resistant Soybean (DAS-81419-2),[689] WideStrike (a breeding stack of events 281-24-236 and 3006-210-23),[690] and Enlist Cotton (DAS-8191Ø-7).[691] The Tribunal is of the view that the accused products have all the elements of claim 15 of the '236 patent.

ii. '024 Patent:[692] Claims 15 and 16

Claim 15

Feature of Claim 15 of the '024 Patent	**Dow's Accused Products**
A process (of claim 1)	soybean or cotton plants are the products of a process
in which said recombinant DNA is incorporated into the genome of said cell by *Agrobacterium* mediated transformation	recombinant DNA, including the *pat* gene, was incorporated into plant cells via *Agrobacterium* mediated transformation (*e.g.*, DAS-68416-4, -81419-2, -444Ø6-6, -8191Ø-7, -281-24-236, and -3006-210-23)
A process for the production of a plant cell (claim 1)	the plant necessarily consists of plant cells
that is tolerant or resistant to the herbicidal activity of a glutamine synthetase inhibitor including phosphinothricin or a compound with a phosphinothricin moiety (claim 1)	contains the *pat* gene, which encodes for the PAT protein, and is resistant to the herbicidal activity of phosphinothricin
which comprises the step of incorporating into the nuclear genome of a starting plant cell a recombinant DNA comprising (claim 1)	recombinant DNA, including the *pat* gene, were incorporated into plant cell[693]
(a) a promoter recognized by the polymerases of said starting plant cell; and (claim 1)	the CsVMV promoter is recognized by plant polymerases
(b) a coding region comprising a DNA fragment from a microorganism, which produces said glutamine synthetase inhibitor (claim 1)	the *pat* gene from *Streptomyces viridochromogenes* , which produces the glutamine synthetase inhibitor[694]
wherein said DNA fragment encodes a protein with acetyltransferase activity to said glutamine synthetase inhibitor (claim 1)	the *pat* gene[695]

[686] *Id.*
[687] C-84: *USDA Petition for Nonregulated Status of DAS-444Ø6-6 Soybean*, at 29 ("Expression of the pat gene is controlled by the CsVMV promoter from cassava vein mosaic virus... The cassava vein mosaic virus is a circular double-stranded DNA virus which infects cassava plants...and has been characterized as a plant pararetrovirus belonging to the caulimovirus subgroup. The CsVMV promoter is known to drive constitutive expression of the genes it controls (Verdaguer et al., 1996)")
[688] C-75: *USDA Petition for Nonregulated Status of DAS-68416-4 Soybean*, at 27
[689] C-98: *USDA Petition for Nonregulated Status of DAS-81419-2 Soybean*, at 27-28
[690] C-54: *Cry1F Cotton Petition for Non-Regulated Status* at 16-18 (using the Ubiquitin 1 promoter (Ubi Zm1) instead of the CsVMV promoter); C-55: *Cry 1Ac Cotton Petition for Non-Regulated Status*, at 17-19 (using the chimeric 4OCSΔMas2' promoter instead of the CsVMV promoter)
[691] C-320: *USDA-APHIS Petition for Nonregulated Status of DAS-8191Ø-7 Cotton*, at 25-27
[692] Claimants' Phase II Opening Presentation, dated 25 August 2014, slides 21-22
[693] See e.g. C-95: Respondents' Answer to Claimants' Request for Arbitration, para. 23
[694] C-324: Email from A. Chachkes to E. Mayle, dated 12 May 2014
[695] *Id.*

423. As discussed above with respect to claim 8 of the '236 patent, Claimants have provided evidence from Respondents' regulatory filings to support the fact that the cells at issue are "susceptible to infection and transformation by *Agrobacterium* and capable of regeneration thereafter." Similarly, as discussed with respect to claim 12 of the '236 patent, in the accused products, cells containing the *pat* gene encode the *pat* protein, and are resistant to the herbicidal activity of phosphinothricin. Finally, as discussed with respect to claim 15 of the '236 patent, the cells contain a promoter recognized by plant cell polymerases. As Respondents have recognized that the accused products contain the remaining elements of the claim, the Tribunal is of the view that every element of claim 15 of the '024 patent is present in the process used to create the accused products.

Claim 16

Feature of Claim 16 of the '024 Patent	**Dow's Accused Products**
A process for producing a plant that is tolerant or resistant to the herbicidal activity of a glutamine synthetase inhibitor including phosphinothricin or a compound with a phosphinothricin moiety, which comprises the steps of	DAS soybean or cotton plants are tolerant or resistant to the herbicidal activity of a GS inhibitor
(a) producing a plant cell of any one of claims 1 [to 15]; and	the plant necessarily consists of plant cells
(b) regenerating from said cell a plant which has said recombinant DNA incorporated into the nuclear genome of its cells	the plant cells give rise to plants which have the *pat* gene incorporated into their cells
A process for the production of a plant cell that is tolerant or resistant to the herbicidal activity of a glutamine synthetase (GS) inhibitor including phosphinothricin or a compound with a phosphinothricin moiety (claim 1)	DAS plants are tolerant or resistant to the herbicidal activity of a GS inhibitor
which comprises the step of incorporating into the nuclear genome of a starting plant cell a recombinant DNA comprising (claim 1)	the *pat* gene is incorporated into the nuclear genome of DAS plant cells (*e.g.*, DAS-68416-4, -81419-2, -444Ø6-6, -8191Ø-7, -281-24-236, and -3006-210-23)[696]
(a) a promoter recognized by the polymerases of said starting plant cell, and (claim 1)	CsVMV is recognized by plant polymerases
(b) a coding region comprising a DNA fragment from a microorganism which produces said glutamine synthetase inhibitor, wherein said DNA fragment encodes a protein with acetyltransferase activity to said glutamine synthetase inhibitor (claim 1)	the *pat* gene from *Streptomyces viridochromogenes*, which produces the glutamine synthetase inhibitor[697]

424. As discussed above with respect to claim 8 of the '236 patent, Claimants have provided evidence from Respondents' regulatory filings to support the fact that the plant cells at issue are "capable of regeneration," giving rise to plants that Respondents have acknowledged "contain the *pat* gene."[698]

[696] See e.g. C-95: Respondents' Answer to Claimants' Request for Arbitration, para. 23
[697] C-324: Email from A. Chachkes to E. Mayle. dated 12 May 2014
[698] See e.g. C-95: Respondents' Answer to Claimants' Request for Arbitration, para. 23

Similarly, as discussed with respect to claim 15 of the '236 patent, the plant cells contain a promoter recognized by plant polymerases. With respect to the remaining element that has not been expressly acknowledged by Respondents—the requirement that the plants be tolerant or resistant to the herbicidal activity of a GS inhibitor—Claimants have again relied on Respondents' representations concerning the accuracy of their regulatory filings[699] and cited regulatory filings to demonstrate that this is the case for Enlist E3 (DAS-444Ø6-6),[700] Enlist Soybean (DAS-68416-4),[701] Insect Resistant Soybean (DAS-81419-2),[702] WideStrike (a breeding stack of events 281-24-236 and 3006-210-23),[703] and Enlist Cotton (DAS-8191Ø-7).[704] The Tribunal is of the view that every element of claim 16 of the '024 patent is present in the process used to create the accused products.

iii. '477 Patent:[705] Claims 15, 16, and 19

Claim 15

Feature of Claim 15 of the '477 Patent	**Dow's Accused Products**
A vector	pDAB4468 is a vector used to create E3
comprising a chimeric gene	which contains *pat* as a chimeric gene
comprising in sequence	*pat* is in sequence with CsVMV
(a) a promoter recognized by polymerases of a plant cell; and	CsVMV is recognized by plant polymerases
(b) a DNA fragment encoding a protein with acetyltransferase activity on a glutamine synthetase inhibitor, wherein said protein	*pat* gene encodes for the PAT protein, which has acetyltransferase activity on a glutamine synthetase inhibitor[706]
is capable of inactivating said glutamine synthetase inhibitor in a plant cell	PAT protein inactivates the glutamine synthetase inhibitor[707]
said DNA fragment encodes a protein with phosphinothricin acetyltransferase activity (claim 2)	*pat* gene encodes for PAT protein, which has acetyltransferase activity[708]
wherein said DNA fragment and said promoter are located between T-DNA border sequences to enable transfer of said DNA fragment and said promoter to a plant cell	in pDAB4468, the DNA fragment and promoter are located between T-DNA border sequences to enable transfer of said DNA fragment and said promoter to a plant cell

[699] *Id.*
[700] C-84: *USDA Petition for Nonregulated Status of DAS-444Ø6-6 Soybean*, at 138-39 (discussing results of field trials of 444Ø6-6 soybean plants comprised of plant cells comprising a DNA encoding a protein having acetyltransferase activity against glufosinate; plants were sprayed with glufosinate and lived)
[701] C-75: *USDA Petition for Nomegulated Status of DAS-68416-4 Soybean*, at 118-19
[702] C-98: *USDA Petition for Nonregulated Status of DAS-81419-2 Soybean*, at 4
[703] C-54: *Cry1F Cotton Petition for Non-Regulated Status* at 3, 16, 18; C-55: *Cry 1Ac Cotton Petition for Non-Regulated Status*, at 15-17
[704] C-320: *USDA-APHIS Petition for Nonregulated Status of DAS-8191Ø-7 Cotton*, at 119-20
[705] Claimants' Phase II Opening Presentation, dated 25 August 2014, slides 33-35
[706] C-324: Email from A. Chachkes to E. Mayle, dated 12 May 2014
[707] *Id.*
[708] *Id.*

425. Given Respondents' representations concerning of the accuracy of their regulatory filings,[709] Claimants cite regulatory filings to demonstrate (1) the use of a vector containing (2) *pat* as a chimeric gene (3) in sequence with (4) a promoter recognized by plant polymerases, (5) where both *pat* and the promoter are located between T-DNA border sequences to enable their transfer to a plant cell, to transform each of the accused products: Enlist E3 (DAS-444Ø6-6),[710] Enlist Soybean (DAS-68416-4),[711] Insect Resistant Soybean (DAS-81419-2),[712] WideStrike (a breeding stack of events 281-24-236 and 3006-210-23),[713] and Enlist Cotton (DAS-8191Ø-7).[714] As all the remaining elements of the claim have been acknowledged by Respondents, the Tribunal is of the view that every element of claim 15 of the '477 patent is present in the vectors used to produce the accused products.

Claim 16

Feature of Claim 16 of the '477 Patent	**Dow's Accused Products**
A vector	pDAB4468 is a vector used to create E3
which is a modified Ti-plasmid	vector is derived from *Agrobacterium* Ti plasmid
comprising a chimeric gene	which contains *pat* as a chimeric gene
comprising in sequence	*pat* is in sequence with CsVMV
(a) a promoter recognized by polymerases of a plant cell; and	CsVMV is recognized by plant polymerases
(b) a DNA fragment encoding a protein with acetyltransferase activity on a glutamine synthetase inhibitor, wherein said protein	*pat* gene encodes for the PAT protein, which has acetyltransferase activity on a glutamine synthetase inhibitor[715]
is capable of inactivating said glutamine synthetase inhibitor in a plant cell	PAT protein inactivates the glutamine synthetase inhibitor[716]
said DNA fragment encodes a protein with phosphinothricin acetyltransferase activity (claim 2)	*pat* gene encodes for PAT protein, which has acetyltransferase activity[717]
wherein said DNA fragment and said promoter are located between T-DNA border sequences to enable transfer of said DNA fragment and said promoter to a plant cell	in pDAB4468, the DNA fragment and promoter are located between T-DNA border sequences to enable transfer of said DNA fragment and said promoter to a plant cell

[709] *Id.*
[710] C-84: *USDA Petition for Nonregulated Status of DAS-444Ø6-6 Soybean*, at 21, 22, 26, 29, 74-77, 138-39
[711] C-75: *USDA Petition for Nonregulated Status of DAS-68416-4 Soybean*, at 4, 20, 21, 25, 27, 37, 74-76, 169
[712] C-98: *USDA Petition for Nonregulated Status of DAS-81419-2 Soybean*, at 5, 22, 23, 27-28, 78
[713] C-54: *Cry1F Cotton Petition for Non-Regulated Status* at 4, 16-18; C-55: *Cry 1Ac Cotton Petition for Non-Regulated Status*, at 8, 16-17, 19
[714] C-320: *USDA-APHIS Petition for Nonregulated Status of DAS-8191Ø-7 Cotton*, at 4, 21, 25, 118-20
[715] C-324: Email from A. Chachkes to E. Mayle, dated 12 May 2014
[716] *Id.*
[717] *Id.*

426. As discussed above with respect to claim 15 of the '477 patent, Claimants have provided evidence from Respondents' regulatory filings to demonstrate (1) the use of a vector containing (2) *pat* as a chimeric gene (3) in sequence with (4) a promoter recognized by the polymerases of a plant cell, (5) where both *pat* and the promoter are located between T-DNA border sequences to enable their transfer to a plant cell, in each of the accused products. With respect to the remaining element that has not been expressly acknowledged by Respondents—the requirement that the vector be a modified *Agrobacterium* Ti plasmid—Claimants have again relied on Respondents' representations concerning the accuracy of their regulatory filings[718] and cited regulatory filings to demonstrate that this is the case for the vectors used to transform Enlist E3 (DAS-444Ø6-6),[719] Enlist Soybean (DAS-68416-4),[720] Insect Resistant Soybean (DAS-81419-2),[721] WideStrike (a breeding stack of events 281-24-236 and 3006-210-23),[722] and Enlist Cotton (DAS-8191Ø-7).[723] The Tribunal is of the view that every element of claim 16 of the '477 patent is present in the vectors used to produce the accused products.

Claim 19

Feature of Claim 19 of the '477 Patent	**Dow's Accused Products**
A vector	pDAB4468 is a vector used to create E3
comprising a chimeric gene	which contains *pat* as a chimeric gene
comprising in sequence	*pat* is in sequence with the CsVMV promoter
(a) a promoter recognized by polymerases of a plant cell; and	CsVMV is recognized by plant polymerases
(b) a DNA fragment encoding a protein with acetyltransferase activity on a glutamine synthetase inhibitor, wherein said protein	*pat* gene encodes for the PAT protein, which has acetyltransferase activity on a glutamine synthetase inhibitor[724]
is capable of inactivating said glutamine synthetase inhibitor in a plant cell	PAT protein inactivates the glutamine synthetase inhibitor[725]
said DNA fragment encodes a protein with phosphinothricin acetyltransferase activity (claim 2)	*pat* gene encodes for PAT protein, which has acetyltransferase activity[726]
the vector is capable of replicating in a bacterium (claim 17)	pDAB4486 is transferred into *Agrobacterium* to infect plants and thus, can replicate in bacterium
The vector is capable of replicating in *Agrobacterium tumefaciens* (claim19)	pDAB4486 is transferred into *Agrobacterium* to infect plants and thus, can replicate in bacterium

[718] *Id.*
[719] C-84: *USDA Petition for Nonregulated Status of DAS-444Ø6-6 Soybean*, at 21, 22
[720] C-75: *USDA Petition for Nonregulated Status of DAS-68416-4 Soybean*, at 4, 20, 21
[721] C-98: *USDA Petition for Nonregulated Status of DAS-81419-2 Soybean*, at 5, 22-24
[722] C-54: *Cry1F Cotton Petition for Non-Regulated Status* at 4, 16-18; C-55: *Cry 1Ac Cotton Petition for Non-Regulated Status*, at 17, 19
[723] C-320: *USDA-APHIS Petition for Nonregulated Status of DAS-8191Ø-7 Cotton*, at 4, 21, 23
[724] C-324: Email from A. Chachkes to E. Mayle, dated 12 May 2014
[725] *Id.*
[726] *Id.*

427. As discussed above with respect to claim 15 of the '477 patent, Claimants have provided evidence from Respondents' regulatory filings to demonstrate (1) the use of a vector containing (2) *pat* as a chimeric gene (3) in sequence with (4) a promoter recognized by the polymerases of a plant cell. With respect to the remaining element that has not been expressly acknowledged by Respondents—the requirement that the vector be capable of replicating in a bacterium, and specifically in *Agrobacterium tumefaciens*—Claimants have again relied on Respondents' representations concerning the accuracy of their regulatory filings[727] and cited regulatory filings to demonstrate that, because the vectors used to produce Enlist E3 (DAS-444Ø6-6),[728] Enlist Soybean (DAS-68416-4),[729] Insect Resistant Soybean (DAS-81419-2),[730] WideStrike (a breeding stack of events 281-24-236 and 3006-210-23),[731] and Enlist Cotton (DAS-8191Ø-7)[732] contain an origin of replication and were transferred into an *Agrobacterium tumefaciens* that was used to infect plants, the vector must be capable of replicating in *Agrobacteria*. The Tribunal is of the view that every element of claim 19 of the '477 patent is present in the vectors used to produce the accused products.

iv. Reissued '665 Patent:[733] Claim 1

Claim 1

Feature of Claim 1 of the '665 RE Patent	**Dow's Accused Products**
An isolated DNA encoding a protein having phosphinothricin acetyltransferase activity	the *pat* gene encodes for the PAT protein, which has phosphinothricin acetylase activity[734]
[alternative 1] said protein comprising the amino acid sequence (SEQ ID No. 1):	(Not at issue)
[alternative 2] or a variant thereof retaining said activity	the protein is a variant 84.2% or 84.6% identical to the amino acid sequence of claim 1 of the '665 RE patent
in which X is Met	The isolated DNA encodes a protein in which the first amino acid (position of X in SEQ ID NO:1) is methionine
said DNA consisting of between 549 and 625 nucleotides	there are 549 nucleotides in DAS protein
wherein X is encoded by ATG	methionine is encoded by ATG

[727] *Id.*
[728] C-84: *USDA Petition for Nonregulated Status of DAS-444Ø6-6 Soybean*, at 21-22, 31
[729] C-75: *USDA Petition for Nonregulated Status of DAS-68416-4 Soybean*, at 21-31
[730] C-98: *USDA Petition for Nonregulated Status of DAS-81419-2 Soybean*, at 5, 19, 22-23, 27-28, 35, 40, 78
[731] C-54: *Cry1F Cotton Petition for Non-Regulated Status* at 15; C-55: *Cry 1Ac Cotton Petition for Non-Regulated Status*, at 15, 19
[732] C-320: *USDA-APHIS Petition for Nonregulated Status of DAS-8191Ø-7 Cotton*, at 22, 27
[733] Claimants' Phase II Opening Presentation, dated 25 August 2014, slide 65
[734] See e.g. C-95: Respondents' Answer to Claimants' Request for Arbitration, para. 23

428. Given Respondents' representations concerning the accuracy of their regulatory filings,[735] Claimants have cited these regulatory filings to demonstrate that the DNA in Enlist E3 (DAS-444Ø6-6),[736] Enlist Soybean (DAS-68416-4),[737] Insect Resistant Soybean (DAS-81419-2),[738] WideStrike (a breeding stack of events 281-24-236 and 3006-210-23),[739] and Enlist Cotton (DAS-8191Ø-7)[740] encodes a variant of the amino acid sequence listed in claim 1 (84.2 to 8.6% similarity), of which the first amino acid is methionine. Claimants also refer to Dow's letter of 19 May 2014[741] to establish that the protein encoded is of 549 amino acids, and is therefore of between 549 and 625 nucleotides, as well as that the first amino acid, methionine, is encoded by "ATG", the latter element having been added to claim 1 when the '665 patent was reissued. As all other elements of the claim have been acknowledged by Respondents', the Tribunal is of the view that every element of claim 1 of the '665 patent's reissue, RE44962, is present in the accused products.

429. The Tribunal thus finds that all of the accused products have all of the elements of the ten patent claims asserted by Claimants (claims 8, 9, 12, and 15 of the '236 patent; claims 15 and 16 of the '024 patent; claims 15, 16, and 19 of the '477 patent; and claim 1 of the '665 patent and its reissue). The Tribunal's determination that all the elements of the asserted claims are present in the accused products is based on a consideration of the detailed evidence brought forward by Claimants based on Respondents' regulatory filings, coupled with Respondents' decision not to contest this evidence and Respondents' admissions regarding their products, notably that their "regulatory filings for the accused products accurately represent the *pat* gene therein, the protein it encodes, and the associated promoter."[742] The Tribunal will now turn to the contested issues regarding the period of infringement of the patents.

2. Period of Infringement Issues

430. Respondents argue that any infringement of the patents at issue can only have begun following Bayer's termination of Dow's license to the *pat* gene (the 1992 Agreement) on 17 January 2012,

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[735] *Id.*
[736] C-84: *USDA Petition for Nonregulated Status of DAS-444Ø6-6 Soybean*, at 7, 74
[737] C-75: *USDA Petition for Nonregulated Status of DAS-68416-4 Soybean*, at 73
[738] C-98: *USDA Petition for Nonregulated Status of DAS-81419-2 Soybean*, at 78
[739] C-54: *Cry1F Cotton Petition for Non-Regulated Status* at 51; C-55: *Cry 1Ac Cotton Petition for Non-Regulated Status*, at 17
[740] C-320: *USDA-APHIS Petition for Nonregulated Status of DAS-8191Ø-7 Cotton*, at 78
[741] C-325: Letter from A. Chachkes to M. Nolan and C. Gaspar, dated 19 May 2014
[742] C-324: Email from A. Chachkes to E. Mayle, dated 12 May 2014

and notably, that the '024 and '477 patents were not infringed at all, because Respondents last made use of the inventions that they are alleged to cover in [redacted], prior to the termination of the license. For the reasons that follow, the Tribunal rejects this argument and finds that the relevant date for the purpose of license coverage is the date of breach.

i. Claimants' Position on Period of Infringement

431. Claimants argue that Dow's infringement began on [redacted], with the signing of the [redacted] Dow-MS Tech Agreement,[743] which Claimants advance as the date of breach of Dow's license to the *pat* gene (the 1992 Agreement). Claimants argue that it is this date, and not the eventual date of termination of the license agreement in 2012, that should serve as the beginning of the period of infringement of the '236, '024 and '477 patents, as well as the '665 patent and its reissue.

432. In Claimants' view, Dow hid its breach of the license agreement in [redacted] by failing to inform Bayer that it had granted a third party rights to the *pat* gene in a construct.[744] Claimants cite Respondents' submissions on the time at which transformation occurred in order to allege that Dow performed acts of patent infringement at or shortly after the time of the alleged [redacted] breach and continued doing so through [redacted].[745] Claimants also assert that any use of any vector containing a *pat* gene (inside or outside a plant) and any transformation of a plant with such vector constitutes infringement from [redacted] onward.[746] In Claimants view, as a matter of equity, the allegedly infringing acts that occurred prior to 2012 should not be ignored by the infringement analysis, as Claimants could not have known of these acts prior to 2012.[747]

433. Furthermore, as a legal matter, Claimants argue that the effects of its termination of Dow's license in 2012 are retroactive to the date of the breach of license.[748] Claimants note that the *Monsanto Co. v. Syngenta Seeds, Inc.* case cited by Respondents is inapposite because it refers to performance of acts before the issuance of a patent, rather than following the issuance of a patent but prior to the termination of a license, as is the case in the present Arbitration.[749] Similarly, Claimants note that though Respondents cite *Dow Chemical Co. v. U.S.*[750] for the proposition that there can be no patent

[743] C-184: 2007 Dow-MS Tech Agreement, [redacted]
[744] Phase I Hearing Transcript, at 1071:22-1072:12
[745] Respondents' Phase II Responsive Memorial, dated 1 July 2014, paras. 49, 50
[746] Claimants' Phase II Reply Memorial, dated 1 August 2014, para. 23
[747] *Id.*, para 22
[748] C-389: Second Gautier Witness Statement, at 8-12, 17 n.36; CL- 469, Ph. Malaurie, L. Aynès et Ph. Stoffel-Munck, Les obligations, 6è éd., LGDJ 2013, No. 881
[749] RLA-64: 503 F.3d 1352, 1359 (Fed. Cir. 2007)
[750] RLA-445: 226 F.3d 1334 (Fed. Cir. 2000)

infringement damages before termination of the contract, it is French contract law, and not the U.S. law at issue in the *Dow Chemical* case, that governs the question of when and whether the 1992 Agreement was breached and became inoperative.[751] Moreover, Claimants argue that *Dow Chemical* is inapposite because it does not address whether the date of a breach of license that is only discovered later by the patent holder should be the date on which infringement first occurred, but rather concerns a case of a patent holder's deliberate delay in terminating a license.[752] Finally, Claimants assert that *Dow Chemical* does not hold that infringement damages are unavailable before contract termination, but rather that, under U.S. law, infringement damages cannot be awarded in a manner that would amount to double recovery for contract breach damages and patent infringement damages.[753]

434. Claimants argue that the distinction between judicial termination and termination pursuant to a termination clause is not significant, as termination is retroactive in both cases: "whether it be pronounced by the court or result from the enforcement of a termination clause, the termination produces the same effects: not only does the contract no longer produce any effect in the future, but it is also in principle wiped out retroactively."[754] According to Claimants, Respondents' position conflates the moment that termination is pronounced (the moment after the termination process in the termination clause is completed) with the moment at which it should be effectuated (which can be retroactive).[755] In their view, the object of a termination clause is to grant greater rights to the creditor, by simplifying termination,[756] and it cannot logically, as a clause intended to benefit the victim of a breach, impede the creditor's right to the full compensation available through judicial termination.[757]

435. As a result, Claimants argue that the default French legal standard is that the effects of termination apply retroactively, unless the parties have stipulated that this effect is waived.[758] They assert that no such waiver occurred: the phrase "with immediate effect" aimed to ensure that no further delay would be granted to the breaching party, not that the parties intended to restrict the aggrieved party's

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[751] C-2: 1992 Agreement, Art. 12; Terms of Reference, at 71; Claimants' Phase II Reply Memorial, para. 26
[752] Claimants' Phase II Reply Memorial, dated 1 August 2014, para. 27
[753] RLA-445: *Dow Chem. Co. v. U.S.*, 226 F.3d 1334, 1348 (Fed. Cir. 2000)
[754] CL-642: Bénabent, *Droit des Obligations* (Montchrestien, 2012), at 398
[755] C-529: Third Gautier Witness Statement, at 2; Claimants' Phase III Reply, para. 44
[756] C-389: Second Gautier Witness Statement, at 17
[757] Claimants Phase III Reply, para. 45
[758] *Id.*, para. 47, citing RLA-157: J. MESTRE, J-C RODA, *Les principales clauses des contrats d'affaires*, Lextenso Editions, n°1690

prerogatives.[759] Furthermore, this phrase referred to the date of observance of termination rather than the date of application of the effects of termination, two distinct concepts.[760] Finally, even if the term "with immediate effect" were to constitute a bar to recovery, Claimants argue that Respondents' breach remained unknown to Claimants, depriving Claimants of the right to trigger termination prior to 2012, which amounts to a loss of opportunity (*perte de chance*) under French law, rendering damages for loss of opportunity payable from the date of breach.[761]

ii. Respondents' Position on Period of Infringement

436. Respondents argue that infringement of all patents cannot have occurred before 17 January 2012, the date at which their license to the *pat* gene (the 1992 Agreement) was terminated.[762] In Respondents' view, Claimants conceded that termination did not operate retroactively to the time of breach in its Request for Arbitration, stating that "the 1992 Agreement was terminated by Claimants *effective as of January 17, 2012*."[763] Furthermore, Respondents argue that the plain language of the termination clause is dispositive, as French law provides that courts must consider whether the parties have complied with such a clause, but do not have the power to decide on the termination or its effects.[764] As a result, if parties want a termination clause to have retroactive effect, they must expressly provide for this effect in the clause, [765] and Respondents argue that the 1992 Agreement's termination clause does not provide for retroactive effect, but rather "immediate" effect.[766] Given the distinctive features of termination pursuant to a termination clause, Respondents argue that the cases cited by Claimants refer only to judicial termination and are therefore inapposite.[767] Additionally, Respondents assert that, where a contract requires continuous performance, as a patent license does, then termination does not have retroactive effect.[768] Finally, they argue that even if Article 4 of the 1992 Agreement was breached in [redacted], Respondents benefited from a broad license to make, use, and sell transformed plants, seeds, and

[759] Claimants' Phase III Reply, para. 50
[760] *Id.*, para. 51; CL-601: Génicon, Effet partiellement rétroactif de la « résiliation » pour inexécution d'un contrat à exécution successive, at 70-76
[761] Claimants' Phase III Reply, paras. 52-55
[762] RLA-445: *Dow Chem. Co. v. U.S.*, 226 F.3d 1334 (Fed. Cir. 2000)
[763] Claimants' Request for Arbitration, at 2 (emphasis added)
[764] R-616: Fourth Aynès Witness Statement, at 5; RLA-686: Ph. Le Tourneau, *Droit de la responsabilité et des contrats*, at 1237
[765] R-616: Fourth Aynès Witness Statement, at 5; RLA-669: M. Storck, Fasc. 20: Contrats et Obligations, Dérogations à la résolution judiciaire: les clauses résolutoires, Jurisclasseur Civil Code, 2013, at para. 38
[766] R-1: 1992 Agreement, Art. 9
[767] C-389: Second Gautier Witness Statement, para. 17 (citing cases); R-616: Fourth Aynès Witness Statement, at 2-3
[768] Respondents' Phase III Memorial, para. 27

cells containing the *pat* gene under Article 2 of this agreement, a right that endured until termination of the Agreement in 2012.[769]

437. In the particular case of the '024 patent (the process patent), Respondents assert that infringement never occurred at all, because "a method or process claim is directly infringed only when the process is performed"[770] and the transformation process was last performed on the accused products in [redacted]. Similarly, they argue that the '477 patent (relating to vectors) was never infringed because Bayer alleges infringement based on the use of vector plasmids as part of a transformation experiment;[771] the plasmids, having never been incorporated into the transformed cells that resulted from the transformation process,[772] were last used with respect to the accused products in the same [redacted] transformation process,[773] prior to termination of the license.

438. Respondents further argue that the WideStrike and WideStrike 3 cotton products cannot infringe the '024 and '477 patents, because "activities of the defendants prior to issuance of the patent will not constitute acts of infringement"[774] and Respondents' transformation of the accused products occurred in 1995, before these two patents had issued.[775]

439. Respondents also note that Bayer cannot seek damages for infringement that occurs beyond the expiry of the patents-at-issue.[776] They take the position that the reissue of the '665 patent (which will expire 26 September 2023)[777] is not part of the present Arbitration, and therefore that damages could not be recovered beyond 15 July 2014 (the expiry date of the last of the remaining patents).[778]

iii. Tribunal's Determination: Infringement Can Be Found Prior to the Letter of Termination, as Termination Operates from the Time of Breach

440. Having considered the parties' submissions, the Tribunal is of the view that the termination of the 1992 Agreement under French law must operate from the date of the breach of the license. In light of its findings in Part 2.I.D, the Tribunal reiterates that, while U.S. law, and not French law, must govern the patent infringement analysis, French law applies to issues concerning the breach and

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[769] Respondents' Phase II Responsive Memorial, dated 1 July 2014, para. 53
[770] RLA-67: *Joy Techs., Inc. v. Flakt, Inc.*, 6 F.3d 770, 773 (Fed. Cir. 1993)
[771] Claimants Phase II Memorial, dated 2 June 2014, paras. 186, 190
[772] *Id.*, at para. 190
[773] Respondents' Phase II Responsive Memorial, dated 1 July 2014, para. 47
[774] RLA-448: *Nat'l Presto Indus., Inc. v. W. Bend Co.*, 76 F.3d 1185, 1196 (Fed. Cir. 1996)
[775] *Id.*, at para 19
[776] RLA-452: *Standard Oil Co. v. Nippon Shokubai Kagaku*, 754 F.2d 345, 347 (Fed. Cir. 1985)
[777] C-317: First Jarosz Expert Witness Statement, dated 2 June 2014, at 10, 25, 94
[778] Respondents' Phase II Responsive Memorial, dated 2 June 2014, para. 56

termination of the contract and will therefore be relevant to the determination of license coverage for the purpose of infringement. In Phase I, the Tribunal's contractual analysis under French law determined [redacted] (rather than the date of [redacted] advanced by Claimants) to be the date of breach of the 1992 Agreement, and 17 January 2012 to be the date of termination of the 1992 Agreement. The question here is whether termination operates from the date of breach.

441. Respondents argue that Claimants conceded that termination would not operate from the date of breach by asserting[779] that "the 1992 Agreement was terminated by Claimants effective as of January 17, 2012."[780] Respondents assert, in addition, that in the presence of a termination clause, courts only consider whether the conditions for resolution have been met, and do not have the power to decide upon termination or its effect. The Tribunal rejects both arguments. First, Claimants' pleadings citing the contract terms relating to "immediate effect" of the termination clause cannot amount to the concession being suggested here. Second, French law establishes that termination of a license normally operates from the date of breach of the license.[781]

442. The U.S. *Dow Chemical* case, on which Respondents rely, is of no avail. It establishes only (1) that patent infringement damages are not available prior to termination in cases where patent holders deliberately delayed termination of the license, which is not the case in the present Arbitration, and (2) that infringement damages are not available prior to the termination of a license under French law, as a means of preventing double recovery, which does not address the issue of whether termination should operate from the time of breach.[782] The Tribunal thus finds that Claimants' termination of the 1992 Agreement operates from the date of breach, that is, [redacted], such that license coverage ended on that date.

443. As a result of this finding, the Tribunal must reject the argument that the '024 and '477 patents were never infringed, given Respondents' acknowledgement that processes and vectors that the Tribunal has found to be covered by these patents were being used until [redacted][783]—that is, after the end of license coverage on [redacted].

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[779] Request for Arbitration, at 2
[780] Respondents' Phase III Memorial, para. 23
[781] C-389: Second Gautier Witness Statement, at 8-12, 17 n.36; CL-469, Ph. Malaurie, L. Aynès et Ph. Stoffel-Munck, *Les obligations*, 6th ed., LGDJ 2013, No. 881
[782] RLA-445: *Dow Chemical v U.S.*, 226 F.3d 1334 (Fed. Cir. 2000)
[783] Respondents' Phase II Responsive Memorial, dated 2 June 2014, para. 47

444. With regard to the specific case of WideStrike and WideStrike 3, however, the Tribunal agrees with Respondents that these two particular accused products do not infringe the '024 and '477 patents. Respondents cite case law to establish that "activities of the defendants prior to issuance of the patent will not constitute acts of infringement."[784] In this light, the Tribunal finds that WideStrike and WideStrike 3 do not infringe the '024 process patent because their transformation processes, now covered by the '024 patent, were carried out in [redacted] prior to the '024 patent's issuance in 1997. Similarly, the Tribunal finds that, as the vectors now covered by the '477 patent were used only during the transformation process and were never incorporated into the cells that resulted from the transformation process,[785] WideStrike and WideStrike 3 do not infringe the '477 patent, because their transformation was carried out prior to the issuance of the '477 patent.

445. Claimants argued that Enlist E3 was never "covered" by the 1992 Agreement and that the [redacted] creation of the molecular stack that led to Enlist E3 should therefore determine the date of infringement rather than the [redacted].[786] In the words of Claimants, "Dow was never licensed to create Enlist E3 (or similar products) because Enlist E3 resulted from an improper sublicense that Dow was not entitled to grant. Thus, Dow infringed Bayer's patents from the moment it created the E3 construct, for MS Tech, on [redacted]."[787] While there is merit to Claimants' position on this particular point, the Tribunal takes the view that [redacted] is the appropriate date of infringement for Enlist E3. The difficulty with Claimants' proposed analysis is that Dow did have the right to handle the naked *pat* gene when it built the molecular construct in [redacted], provided it did so on its own behalf. This question was not resolved, however, until later. Had Dow created the [redacted] molecular stack on its own behalf and not as MS Tech's contractor, it could have been acting within the terms of the 1992 Agreement, although MS Tech would then have been liable to being found in breach of its own obligations to Bayer in respect of *dmmg*. Accordingly, in the Tribunal's analysis, infringement in this case is indissociable from breach and termination. It is the entire chain of events culminating in [redacted] that determines the date of infringement as well as the date of breach and the effective date of termination.[788] This date does therefore apply to all of the products-at-issue including Enlist E3.

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[784] RLA-67: *Joy Techs., Inc. v. Flakt, Inc.*, 6 F.3d 770, 773 (Fed. Cir. 1993)
[785] Claimants Phase II Memorial, dated 2 June 2014, paras. 186, 190
[786] Claimants' Phase III Memorial, dated 6 October 2014, para. 77
[787] *Id.*, para. 78
[788] See the discussion of date of breach of the 1992 Agreement in Part 2.II.D.iii of this Award

C. Conclusion: Period of Infringement

446. In light of the determinations above that each of the patents-at-issue has been infringed, the Tribunal will next consider the defenses to infringement advanced by Respondents. Before turning its attention to defenses, however, the Tribunal will briefly summarize its findings regarding the relevant periods of infringement for each of the patents-at-issue, in the table below. In this summary, the Tribunal takes account of its determinations, made above, regarding periods of infringement; the dates of issue and of expiry of the four patents; the dates of the creation of the constructs and of the Transformants relating to the accused products;[789] and finally, of the Tribunal's findings with regard to intervening rights, which will be discussed below in Part 3.III.G, and which affect the date of issue applicable to the '665 patent and its reissue.

First and Last Date of Practice per Product

	Accused Product		Enlist E3	Enlist Soybean	IR Soybean	WideStrike / WideStrike 3	Enlist Cotton
	Date of Creation of Construct[790]		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	Date of Transformation[791]		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Patent	Date of Issue	Date of Expiry[792]	Date of First Practice[793]	Date of First Practice	Date of First Practice	Date of First Practice	Date of First Practice
'236	1 Oct 1996[794]	1 Oct 2013	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
'024	8 July 1997[795]	8 July 2014	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
'477	15 July 1997[796]	15 July 2014	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
RE44962	24 June 2014[797]	26 Sept 2023	24 June 2014[798]	24 June 2014[799]	24 June 2014[800]	24 June 2014[801]	24 June 2014[802]
	First Date of Practice		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	Last Date of Practice		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

[789] C-326: Dow discovery letter, dated 26 May 2014); C-325: Dow discovery letter, dated 19 May 2014)
[790] As given by Claimants' Phase II Memorial, dated 2 June 2014, para 130, citing C-326 (Dow discovery letter of May 26, 2014)
[791] As given by Claimants' Phase II Memorial, dated 2 June 2014, para 130, citing C-325 (Dow discovery letter of May 19, 2014); Respondents Phase II Responsive Memorial, dated 1 July 2014, para 19
[792] Claimants' Phase II Memorial, dated 2 June 2014, paras 40, 49, 52, 55
[793] Date of first practice for '236, '024, and '665 reissue patents is the date on which transformation first occurred; for the '477 patent, it is the date on which the construct (vector) was first created
[794] C-5: '236 Patent
[795] C-6: '024 Patent
[796] C-7: '477 Patent
[797] C-350: RE44962 Reissue Patent. See discussion of absolute intervening rights below, in Part III.G
[798] See discussion of absolute intervening rights below, in Part III.G
[799] See discussion of absolute intervening rights below, in Part III.G
[800] See discussion of absolute intervening rights below, in Part III.G
[801] See discussion of absolute intervening rights below, in Part III.G
[802] See discussion of absolute intervening rights below, in Part III.G

Period of Infringement per Product

Accused Product			Enlist E3	Enlist Soybean	IR Soybean	WideStrike / WideStrike 3	Enlist Cotton
	Date of Creation of Construct[803]		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	Date of Transformation[804]		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Patent	Date of Issue	Date of Expiry[805]	Date of Infringment	Date of Infringment	Date of Infringment	Date of Infringment	Date of Infringment
'236	1 Oct 1996[806]	1 Oct 2013	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
'024	8 July 1997[812]	8 July 2014	[redacted]	Not infringed[814]	[redacted]	Not infringed[816]	Not infringed[817]
'477	15 July 1997[818]	15 July 2014	[redacted]	Not infringed[820]	[redacted]	Not infringed[822]	Not infringed[823]
RE44962	24 June 2014[824]	26 Sept 2023	24 June 2014[825]	24 June 2014[826]	24 June 2014[827]	24 June 2014[828]	24 June 2014[829]
	Infringement Begins		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	Infringement Ends		26 Sept 2023	26 Sept 2023	26 Sept 2023	26 Sept 2023	26 Sept 2023

447. By reference to the above tables, the first and final day of practicing at least one of the patents-at-issue for each of the accused products are, for Enlist E3 and Enlist E3+IR, a first date [redacted] the creation of the E3 construct, and last date 26 September 2023, the reissue and expiry of RE44962; for Insect Resistant Soybean, a first date [redacted], the creation of the construct,

[803] As given by Claimants' Phase II Memorial, dated 2 June 2014, para 130, citing C-326 (Dow discovery letter of May 26, 2014)
[804] As given by Claimants' Phase II Memorial, dated 2 June 2014, para 130, citing C-325 (Dow discovery letter of May 19, 2014); Respondents Phase II Responsive Memorial, dated 1 July 2014, para 19
[805] Claimants' Phase II Memorial, dated 2 June 2014, paras 40, 49, 52, 55
[806] C-5: '236 Patent
[807] Date of first infringement; product not covered by 1992 Agreement
[808] Date of breach of the 1992 Agreement; prior to breach, accused product covered by license
[809] Date of transformation; transformation not carried out until after breach of 1992 Agreement
[810] Date of breach of the 1992 Agreement; prior to breach, accused product covered by license
[811] Date of breach of the 1992 Agreement; prior to breach, accused product covered by license
[812] C-6: '024 Patent
[813] Date of first infringement: product not covered by 1992 Agreement
[814] Transformation process carried out while valid license in effect
[815] Date of transformation: transformation not carried out until after breach of 1992 Agreement
[816] Vector used prior to issuance of patent
[817] Transformation process carried out while valid license in effect
[818] C-7: '477 Patent
[819] Date of first infringement: product not covered by 1992 Agreement
[820] Similarly to case of vector used prior to patent issuing; vector used while valid license in effect
[821] Date of breach of the 1992 Agreement; prior to breach, construct (vector) covered by license
[822] Transformation process carried out prior to issuance of patent
[823] Similarly to case of vector used prior to patent issuing; vector used while valid license in effect
[824] C-350: RE44962 Reissue Patent. See discussion of absolute intervening rights below, in Part III.G
[825] See discussion of absolute intervening rights below, in Part III.G
[826] See discussion of absolute intervening rights below, in Part III.G
[827] See discussion of absolute intervening rights below, in Part III.G
[828] See discussion of absolute intervening rights below, in Part III.G
[829] See discussion of absolute intervening rights below, in Part III.G

and last date 26 September 2023, the expiry of RE44962; for Enlist Soybean and Enlist Cotton, a first date [redacted], the creation of the construct, and last date 26 September 2023, the expiry of RE44962; and for WideStrike and WideStrike 3, a first date [redacted], the creation of the construct, and last date 26 September 2023, the expiry of RE44962.

448. Regarding dates of infringement, license coverage for all of the patents-at-issue ended on [redacted]. Infringement began, for all of the accused products, namely, Enlist E3, Enlist E3+IR, Enlist Soybean, Insect Resistant Enlist, Enlist Cotton, and WideStrike/WideStrike 3, on [redacted]. The period for which each accused product will infringe at least one of the patents-at-issue is, for Enlist E3 and Enlist E3+IR, from [redacted], the date of infringement with respect to the creation of E3, to 26 September 2023, the expiry of RE44962; for Insect Resistant Soybean, from [redacted], the end of license coverage, to 26 September 2023, the expiry of RE44962; for WideStrike, WideStrike 3, Enlist Cotton, and Enlist Soybean, from [redacted], the end of license coverage, to 1 October 2013, the expiry of the '236 patent, and then from 24 June 2014, the reissue of RE44962, to 26 September 2023, the expiry of RE44962, as these products do not infringe the '024 and '477 patents.

III. Patent Invalidity Defenses

449. Having determined that infringement of all four asserted patents has occurred, the Tribunal will now consider Respondents' defenses to patent infringement. In the presentations of the parties' positions below that address the specific defenses raised by Respondents, and where Respondents bear the burden of proof, Respondents' positions are discussed first, followed by Claimants'.

A. Backdrop: Burden of Proof and Presumption of Validity

450. This part addresses the effect of the presumption of validity set out in Section 282 of the Patent Act of 1952[830] on the patent invalidity defenses raised by Respondents below in Parts 3.III. C–H.

[830] CL-6: 35 U.S.C. §282

1. Claimants' Position on Burden of Proof

451. Claimants argue that, against the presumption of validity, a challenger must prove invalidity and unenforceability of each claim by clear and convincing evidence. This is a higher burden than the "preponderance of the evidence" burden required to prove infringement.[831]

452. This presumption of validity arises due to the deference accorded to the USPTO and the assumption that the USPTO has done its job correctly.[832] In response to Dow's allegations that "the volume and complexity of patent application submissions" compromise the ability of the USPTO to scrutinize applications sufficiently,[833] Claimants note that the post-grant validity challenges referred to by Dow involve only a very small percentage of issued patents, include only the most vulnerable of patents, and do not permit challenges based on lack of written description, indefiniteness, or lack of enabling disclosure.[834] Claimants refer, furthermore, to the *Microsoft* case, where Microsoft argued for a lowered burden of proof on the grounds (1) that the USPTO is unable to do its job due to lack of resources, and (2) when new evidence is presented to a court that the USPTO did not see, the presumption of validity should be more easily met. The court rejected these arguments.[835]

453. Claimants also note that some of the asserted patent claims in this Arbitration have withstood repeated challenges to their validity in previous District Court and Court of Appeals litigation. The U.S. Supreme Court has held that "prior adjudications fortif[y] the presumption of validity."[836] In particular, the validity of the '236 patent was challenged by Bayer's competitor, Dekalb, more than a decade ago, and the District Court in that case ruled that the '236 patent's claims asserted in the present Arbitration were valid.[837] The '665 patent was subject to a second complete examination by the USPTO on its reissue.[838]

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[831] CL-16: *Microsoft Corp v. i4i Ltd. P'ship*, 131 S. Ct. 2238, 2246 (2011)
[832] CL-320: *Applied Mats. v. Adv. Semiconductor Mats. Am., Inc.*, 98 F.3d 1563 (Fed. Cir. 1996)
[833] Respondents' Phase II Memorial, dated 2 June 2014, para. 5
[834] Claimants' Phase II Counter-Memorial, dated 1 July 2014, para. 21
[835] CL-16: *Microsoft Corp v. i4i Ltd. P'ship*, 131 S. Ct. 2238, 2250-52 (2011); Claimants' Phase II Counter-Memorial, dated 1 July 2014, paras. 18-20
[836] CL-17: *Leeds & Catlin Co. v. Victor Talking Mach. Co.*, 213 U.S. 301, 311 (1909)
[837] CL-349: *Plant Genetic Sys., Inc. v. DeKalb Genetics Corp.*, 175 F. Supp. 2d 246, 269 n.30 (D. Conn. 2001)
[838] CX225: Examination of Reissue Application, at 240

454. Finally, Claimants note that [redacted] leaders in the industry, have taken licenses to the patents-at-issue for products containing the *pat* gene[839] and argue that when numerous licenses to a patent are granted, it reinforces the patent's statutorily recognized validity.[840]

2. Respondents' Position on Burden of Proof

455. Respondents acknowledge that Dow bears the burden of showing, by clear and convincing evidence, that Bayer's asserted claims are invalid[841] but that the presumption of validity is a procedural device that does not render a weak patent strong[842] or relieve the patentee from the responsibility of setting forth evidence in opposition to a challenger's prima facie case.[843] Respondents argue that the presumption has little applicability in the present Arbitration in light of the particular history of the patents-at-issue.[844]

456. According to Respondents, the '236,'024, and '477 patents were issued before the change in written description law made by the *Eli Lilly* decision in 1997, but they are nonetheless subject to the *Eli Lilly* rule affecting genus claims. As a result, the mere fact that the patents were issued should not lead to a presumption of validity.[845]

457. Respondents further argue that challenges to patent validity are part of the USPTO's process, noting that 373 patents were re-examined by the USPTO between 1999 and 2012, and 88% of those patents were found to have improperly granted claims.[846]

458. Respondents also assert that the fact that a patent has been widely licensed is not necessarily an indication of its validity. Firms entering a particular field have powerful economic incentives to take licenses, even in the face of substantial uncertainty about whether a patent is valid. The *Lear* case acknowledged that licensees are often the best-placed to challenge these patents, as they are the ones with the financial incentive and wherewithal to eliminate bad patents, and that public

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[839] See e.g. C-353, [redacted]; C-352: [redacted]; C-354: [redacted]; C-355: [redacted]

[840] CL-379: *Arkie Lures, Inc. v. Gene Larew Tackle, Inc.*, 119 F.3d 953, 957 (Fed. Cir. 1997)

[841] Respondents' Phase II Memorial, dated 2 June 2014, para. 114

[842] RLA-464: *Rates Tech., Inc. v. Speakeasy, Inc.*, 685 F.3d 163, 168 (2d Cir. 2012), quoting RLA-343: *Lear v. Adkins*, 395 U.S. 653, 670 (1969)

[843] *Novo Nordisk A/S v. Caraco Pharm. Labs., Ltd.*, 719 F.3d 1346, 1353 (Fed. Cir. 2013)

[844] Respondents' Phase II Reply Memorial, dated 1 August 2014, paras. 21 ff.

[845] *Id.*, para. 22

[846] R-366: Inter Partes Reexamination Filing Data, dated 30 September 2012

policy favoring free competition in goods and ideas requires that patent licensees be permitted to raise whatever defenses exist to a licensed patent's validity.[847]

459. Respondents note, finally, that in the *Microsoft* case relied on by Bayer, the "clear and convincing" standard of evidence was found to apply to challengers seeking to show that the USPTO made an incorrect factual determination. They argue that it does not affect a court's duty to determine whether the USPTO applied the correct legal standard to the evidence before it, which is determined without any presumption at all.[848]

3. Tribunal's Determination: Standard of Clear and Convincing Evidence of Invalidity

460. The parties are broadly in agreement as to the principles that govern the proof of invalidity. According to the *Microsoft* case, "clear and convincing evidence" of invalidity is necessary, and this is a higher standard than "preponderance of evidence."[849] There is no basis for Respondents' argument that the presumption of validity should be ignored because the patents-at-issue were issued before the *Ely Lilly* rule concerning genus claims. The presumption affects the burden of proof, which concerns factual determinations; of course, this Tribunal's duty to determine whether the USPTO applied the correct legal standard remains, as Respondents suggest, unaffected.[850]

B. Preliminary Issues

1. French Law Estoppel

461. As a preliminary issue, the Tribunal will address Claimants' argument that Respondents are estopped, under French law, from arguing that Claimants' patents are invalid. The Tribunal finds that the U.S. *Lear* doctrine, preventing licensee estoppel, applies instead of French law as a matter of public policy.

i. Claimants' Position on French Law Estoppel

462. French law, in Claimants' view, would apply to the issue of estoppel because the issue of contract nullification of the 1992 Agreement is governed by the Agreement's choice of law clause, which

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[847] RLA-343: *Lear v. Adkins*, 395 U.S. 653 (1969); R-445: Edgar Witness Statement, paras. 25-39; Respondents' Phase II Reply Memorial, dated 1 August 2014, para. 28
[848] R-445: Edgar Witness Statement, paras. 48-51
[849] CL-16: *Microsoft Corp v. i4i Ltd. P'ship*, 131 S. Ct. 2238 (2011). See also CL-363: *American Hoist & Derrick Co. v. Sowa & Sons, Inc.*, 725 F.2d 1350 (Fed. Cir. 1984)
[850] R-445: Edgar Witness Statement, paras. 48-51

stipulates the application of French law. Claimants argue that Dow's assertion of patent invalidity is intended to nullify the 1992 Agreement, noting that Dow has argued that because of invalidity of the patents, it never needed a license to use the technology at issue, and that Dow's assertion of a license as a defense to Bayer's patent infringement claims operates as an estoppel against Dow's arguments that Bayer's patents are now invalid.[851]

463. According to Claimants, Dow inaction, by operating under the 1992 Agreement for almost two decades without raising the alleged invalidity of Bayer's patents, would be construed under French law as a form of estoppel, pursuant to the principle "nul ne peut se contredire au détriment d'autrui." This adage, recognized on an international plane in the UNIDROIT Principles,[852] has been upheld consistently by French courts[853] to preclude a party from contradicting itself with respect to prior substantive positions,[854] including in matters of patent invalidity.[855]

464. In Claimants' view, the *Lear* decision relied on by Dow (for the principle of public policy rejecting the contract doctrine of licensee estoppel) establishes that U.S. federal law trumps state law, not foreign law. Furthermore, the public policy considerations of *Lear* relating to promoting the free competition in goods and ideas by permitting challenges to patents may have been applicable to a U.S. court lawsuit, but are not applicable in international arbitration proceedings, where the effects are *inter partes*.[856]

ii. Respondents' Position on French Law Estoppel

465. Respondents argue that the mandatory rules of U.S. law, as the seat and place of performance, apply as a matter of United States public policy, and that U.S. public policy mandates that U.S. patent law prevails over state law, including the parties' contractual choice of law, to the extent that they are inconsistent.[857] Accordingly, in Respondents' view, the *Lear* doctrine applies to the present Arbitration, standing for the proposition that U.S. federal patent law requires the rejection of the contract doctrine of licensee estoppel on public policy grounds.[858]

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[851] Claimants' Phase II Closing Presentation, dated 26 August 2014, slide 41
[852] CL-310: UNIDROIT Principles, Article 1.8
[853] CL-312: Cass. Com., 20 September 2011
[854] CA Paris, 17 October 2013, No 11/22971, at 7
[855] CL-316: TGI Lyon, 1868, at 1587
[856] Phase II Transcript, dated 26 August 2014, at 397:3-398:13
[857] RLA-69: *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 141 (1989)
[858] RLA-343: *Lear v. Adkins*, 395 U.S. 667, 674 (1969); RLA-464: *Rates Tech. Inc. v. Speakeasy, Inc.*, 785 F.3d 163, 167-68 (2d Cir. 2012), citing *Lear v. Adkins*, 395 U.S. 667, 668-71 (1969)

466. Even if French law were to apply, Respondents are of the view that Bayer's interpretation of the French estoppel doctrine would be incorrect. Estoppel only applies in a procedural context, and there is no French law doctrine of licensee estoppel:[859] "this obligation [of consistency] is only applicable where a party has adopted a procedural position that constitutes a change of position from a previous phase of the same proceeding, or from claims made in a previous legal proceeding between the same parties."[860] Indeed French courts have held patents to be invalid where the licensee performed under a license and had not previously contested validity.[861] In Respondents' view, there is no estoppel because Dow has not taken any contradictory procedural positions.[862]

iii. Tribunal's Determination: French Law Estoppel Does Not Apply

467. Claimants argue that, because Dow operated under the 1992 Agreement for almost two decades without ever raising the alleged invalidity of Bayer's patents, and after raising the license as a defense to Bayer's patent infringement claims, Dow is now estopped under French law (pursuant to the principle "nul ne peut se contredire au détriment d'autrui" ("none can contradict him- or herself to the detriment of another")) from raising the invalidity of the relevant patents: "celui qui, à diverses reprises et en termes formels, a reconnu la validité du brevet, ne saurait ultérieurement, en la forme, être admis à en demander la nullité en justice."[863] In response, Respondents invoke the U.S. *Lear* case,[864] which rejected the contract doctrine of licensee estoppel on the public policy grounds that licensees are best placed to weed out bad patents by having them invalidated. Claimants valiantly argued, but ultimately failed to convince the Tribunal, that French law should somehow apply to this question instead of the *Lear* doctrine.

468. First, Claimants argued that the public policy considerations of *Lear* are inapplicable in arbitration because the legal effects of the resulting arbitral award are *inter partes*. Second, Claimants argued that *Lear* stands for the proposition that U.S. federal law trumps state contract law, not foreign law, so that the parties' choice of French law for the license agreement can validly prevail over U.S. patent law on this issue.

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[859] C-389: Second Gauthier Witness Statement, para. 5
[860] CA Paris, 17 October 2013, n°11/22971, at 7 (translated by Respondents)
[861] R-388: Third Aynès Witness Statement, at 16, citing RLA-421: CA Paris, 5 July 1995, PIBD, no. 597, III, no. 481 and RLA-425: F. Pollaud-Dulian, *La propriété industrielle*, no. 530
[862] R-388: Third Aynès Witness Statement, at 15-16
[863] CL-316: TGI Lyon, 1868 ("one who has, many times and in formal terms, recognized the validity of a patent, cannot later be permitted to claim its invalidity")
[864] RLA-343: *Lear v. Adkins*, 395 U.S. 653 (1969)

469. On the first point, the Tribunal finds that favoring the ability of licensees to weed out bad patents is, given the relatively small number of significant players in certain industries, still relevant in the arbitral context. An arbitral award in a case such as this one, though *inter partes* in its strict legal effect, will have an impact on the industry.

470. On the second point, even if the Tribunal were to accept, for the purposes of discussion, that one could indirectly but effectively contract out of the *Lear* principle through the mechanism of a contractual choice of a foreign law, the Tribunal finds that the choice of law clause in the license at issue is far too narrow to achieve this purpose. The choice of law clause in the 1992 Agreement reads as follows:

> This Agreement shall be governed by and construed in accordance with the laws of France.[865]

471. This is, by any standard, a narrow choice of law clause that, in view of the parties' agreement that the patent claims are to be decided under U.S. law, cannot have the effect of displacing *Lear*.

2. Prescription under French Law

472. Claimants also argue that Dow's arguments regarding the invalidity of the patents are time-barred under French law. The Tribunal rejects this argument.

i. Claimants' Position on French Law Prescription

473. In Claimants' view, Dow's invalidity argument is time-barred under French law. According to Claimants, Dow's assertion of patent invalidity is intended to nullify the 1992 Agreement: Dow has argued that because of invalidity of the patents, it never needed a license to use the technology at issue. As a result, in their view, French law applies because the 1992 Agreement is governed by the Agreement's choice of law clause, which provides for the application of French law.[866] Under French law, a defendant is free to raise nullity as a defense, unless the contract was already performed (*in toto* or partially) and unless the statute of limitation for bringing about a nullity action (i.e., as a claim or counterclaim, and not as a defense) has not yet lapsed.[867] In the present situation,

[865] R-1/C-2: 1992 Agreement, Art. 12
[866] Claimants' Phase II Closing Presentation, dated 26 August 2014, slide 41
[867] CL-314: Fages, *Droit des Obligations*, paras. 197-200

according to Claimants, the 1992 Agreement was performed and the standard five-year statute of limitation for bringing a civil action[868] has lapsed.[869]

ii. Respondents' Position on French Law Prescription

474. For the reasons discussed above, with respect to the role of French law in the infringement analysis (Part I.A.2.), Respondents argue that U.S. law applies to Bayer's patent infringement claims, and by extension, Dow's patent infringement defenses.

475. In the event that French law were to apply instead of U.S. law, Respondents argue that Bayer, in asserting that the five-year period for challenging the validity of the contract applies and has expired,[870] is confusing the procedural law governing an action for invalidity of an act, which may be time-barred, with the invalidity of a patent, which may always be raised as a defense.[871] Dow is not seeking to invalidate the 1992 Agreement on the basis of a defect in the contract itself but rather on the grounds that, because of the invalidity of the patents, it never needed a license to use the technology at issue.[872] Under French law, the invalidation of a patent results in the retroactive cancellation of the corresponding license agreement: "Due to its retroactive effect, revocation of the patent renders the agreement without a purpose, and therefore, cancels the agreement."[873]

iii. Tribunal's Determination: Respondents Are Not Time-Barred under French Law

476. Claimants' argument is that Dow's patent invalidity defenses are in effect a circuitous attempt to challenge the validity of the license agreement for lack of an object, known as *cause*. Under French law, the time bar for seeking the nullity of a contract for lack of *cause* is five years.[874]

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[868] CL-1/RLA-107: Civil Code, translated by Georges Rouhette with the assistance of Dr. Anne Rouhette-Berton, Arts. 1304(1), 2224
[869] Claimants' Phase II Memorial, dated 2 June 2014, para 148
[870] Bayer Phase II Reply Memorial, dated August 1, 2014, para. 52; C-389: Second Gautier Witness Statement, paras. 7-8; C-388: Second Galloux Witness Statement, paras. 18-19
[871] R-388: Third Aynès Witness Statement, at 16; C-389: Second Gautier Witness Statement, para. 7
[872] Respondents' Phase II Opening Presentation, dated 25 August 2014, slide 111
[873] RLA-401: J. Passa, *Traité de droit de la propriété industrielle*, Tome 2, 2013, No. 596 (translated by Respondents). See also RLA-422: CA Paris, 5 July 1995, PIBD 1995, No. 597, III, 481; C-389: Second Gautier Witness Statement, para. 2
[874] CL-1/RLA-107: Civil Code, translated by Georges Rouhette with the assistance of Dr. Anne Rouhette-Berton, Arts. 1304(1), 2224

477. The Tribunal agrees with Dow that Bayer conflates the limitations period applicable to a claim requesting the nullity of a contract, which is five years,[875] with the period applicable to raising a defense based on the invalidity of a patent, which is non-existent.[876]

478. Here, Dow alleges the invalidity of Bayer's patents as a defense to a patent infringement claim, for which French law itself, even if it could somehow prevent the raising of a defense to a patent infringement claim under U.S. law—which it cannot do—imposes no time bar.

C. Written Description Defense ('024, '236, '477, and '665 (and Reissue) Patents)

1. Applicable Test

479. In this part, the Tribunal addresses the issue of the standard to apply to the determination of whether Bayer's patents are invalid under the written description requirement.[877] The Tribunal finds that the standard for functionally defined genus claims, set out notably in the *Ariad* case, applies.

i. Respondents' Position on Written Description Test

480. Respondents assert that to satisfy the written description requirement, there must be disclosure of either (1) the particular DNA sequence of the claimed genes, (2) the DNA sequences or protein structure that correlate with claimed function, or (3) equivalent structural references in the established art.[878] When a patent claims a class of genes, merely drawing a fence around the outer limits of a purported genus is not sufficient to provide a written description of the claim: it is not "an adequate substitute for describing a variety of materials constituting the genus and showing that one has invented a genus and not just a species [or example]."[879]

481. **Standard for functionally defined genus claim**—As a result, when a patent claims a class of genes that is defined by their function, the patent must either (a) disclose a representative number of the genes in the group, (b) disclose structural features common to members of group, or (c)

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[875] *Id.*
[876] R-388: Third Aynès Witness Statement, at 16 (citing RLA-421: CA Paris, 5 juillet 1995, PIBD 1995, n°597, III, n°481; RLA-425: F. POLLAUD-DULIAN, La propriété industrielle, n°530); C-389: Second Gautier Witness Statement, para. 7 (noting that no case law exists to support the assertion that patent defenses to invalidity can be prescribed)
[877] CL-6: 35 U.S.C. §112
[878] CL-321: *Ariad Pharms., Inc. v. Eli Lilly and Co.*, 598 F.3d 1336, 1350-51 (Fed. Cir. 2010)
[879] *Id.*

reference art that establishes a "correlation between structure and function."[880] Simply describing the genus by function alone "does not suffice to define the genus because it is only an indication of what the gene does, rather than what it is" and "the patent statute requires a description of an invention, not an indication of a result that one might achieve if one made that invention."[881]

482. **Patents-at-issue do not disclose all of the DNA sequences that they claim**—Respondents note that "an adequate written description of a DNA requires more than a mere statement that it is part of the invention and reference to a potential method for isolating it; what is required is a description of the DNA itself."[882] As *Eli Lilly* explains, this "kind of specificity usually" is "achieved by means of the recitation of the sequence of nucleotides that make up the cDNA." Thus, a patent that discloses genetic "sequence information" for rat insulin has a description that is adequate to support a claim to the sequence for rat insulin—but not for human insulin as the invalidated patent in that case claimed.[883]

483. In the present Arbitration, Respondents argue that Bayer cannot rely on this "usual" method for satisfying the written description requirement, because the patents-at-issue do not disclose gene sequences for any claims other than the *pat* (*S.virido.*) and *bar* (*S.hygro.*) genes. While the patents-at-issue adequately describe those two specific genes, because their respective nucleotide sequences are disclosed, Bayer did not teach the public the class of all possible nucleotide sequences that fall within the breadth of its functionally defined claim. Indeed, many genes other than *pat* (*S.virido.*) and *bar* (*S.hygro.*) have been shown to produce proteins that inactivate a glutamine synthetase inhibitor. There are at least eight genes that have already been identified in publications as belonging to the genus of acetyltransferase genes claimed by Bayer, and Dr. Dellaporta's simple database search, turned up over 3,000 known and predicted annotated proteins from over thousands of different species of bacteria, most of which would fall within the genus.[884] Bayer's patents do not provide examples of such other genes, and because Bayer has not disclosed the sequence of all genes with the claimed function, it cannot, in Respondents' view, rely on this way of satisfying the written description requirement.[885]

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[880] *Id.*
[881] RLA-366: *Regents of the Univ. of Cal. v. Eli Lilly & Co.*, 119 F.3d 1559, 1568 (Fed. Cir. 1997)
[882] R-371: *Fiers v. Revel*, 984 F.2d 1164, 1170-71 (Fed. Cir. 1993)
[883] RLA-366: *Regents of the Univ. of Cal. v. Eli Lilly & Co.*, 119 F.3d 1559, 1567, 1569 (Fed. Cir. 1997), citing R-371: *Fiers v. Revel*, 984 F.2d 1164, 1171 (Fed. Cir. 1993)
[884] R-363: Fourth Dellaporta Witness Statement, para. 4
[885] Respondents' Phase II Memorial, dated 2 June 2014, para. 125

484. **Claims in the patents-at-issue are functionally defined**—In Respondents' view, the parties do not dispute that the asserted patents claim by function. The patents claim any genetic sequence that performs the particular "activity" of acetyltransferase enzymes. Indeed, Bayer's allegations of infringement are predicated entirely on the function of the genes in Dow's products, covering any gene that "encod[es] a protein having an acetyl transferase activity which inactivates a glutamine synthetase inhibitor."[886] Respondents note that "[f]unctionally defined genus claims can be inherently vulnerable to invalidity challenge for lack of written description support, especially in technology fields that are highly unpredictable"—like genetic technology—because it is difficult "to predict what would be covered by the functionally claimed genus."[887]

ii. Claimants' Position on Written Description Test

485. Claimants assert that the "written description" requirement has been interpreted to mean that the patent document must advise a hypothetical (objective) person of ordinary skill in the art that the inventors possessed the invention that is enumerated in the patent's claims.[888] The purpose of this requirement is to oblige an inventor to disclose his invention to the public in a manner as to allow a person of skill in the art to recognize that the patentee invented what is claimed (i.e., that it possessed the invention).[889] Claimants note that the Federal Circuit interpreted this standard as requiring that "application need only reasonably convey to one skilled in the art that [the patentee] had possession of at least one embodiment."[890]

486. Claimants further argue that a patent claiming a plurality of genes need not describe the precise structure of every gene. For example, claims to a genus of genes can be described by disclosing a representative number of DNA sequences or structural features common to the members of the genus.[891]

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[886] See C-5: '236 Patent, claim 1 (from which the asserted claims depend); C-6: '024 Patent, claim 1 (a coding region that "encod[es] a protein with acetyltransferase activity"); C-7: '477 Patent, claim 1 (same)
[887] RLA-609: *AbbVie Deutschland GmbH & Co. v. Janssen Biotech, Inc.*, 2014 WL 2937477, at *13 (Fed. Cir. 1 July 2014)
[888] CL-321: *Ariad Pharms., Inc. v. Eli Lilly and Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010)
[889] CL-377: *Tobinick v. Olmarker*, 2014 WL 2016141, at *5 (Fed. Cir. May 19, 2014).
[890] *Id.* at *5
[891] CL-321: *Ariad Pharms., Inc. v. Eli Lilly and Co.*, 598 F.3d 1336, 1350 (Fed. Cir. 2010)

iii. Tribunal's Determination: The Applicable Standard for a Functionally Defined Genus Claim

487. The patents-at-issue claim more than the genes whose DNA sequence they disclose. There is thus a claimed genus, which raises a written description issue.

488. The parties are in agreement as to the applicability of the *Ariad* standard: when a patentee, as here, claims a functionally defined class of genes, the patent must either

(a) disclose a representative number of the genes in the group; or

(b) disclose structural features common to members of the group; or

(c) reference "art" that established a correlation between structure and function.[892]

489. Having noted that neither of the parties has relied upon the third branch, the Tribunal will discuss the application of the *Ariad* standard to Bayer's patent claims in Part 3.III.C.2 below.

2. Application of the Written Description Standards for Functionally Defined Genus Claims Determined Above

490. In light of the Tribunal's determination of the relevant standards for written description of functionally defined genus claims immediately above in Part 3.III.C.1, the Tribunal will now proceed, in this subpart, to apply these standards to the patents-at-issue. Because Bayer does not rely on alternative (c) set out in these standards (i.e., references to "art" that establishes a correlation between structure and function) in claiming that it has satisfied the written description requirements, this alternative will not be discussed, and the Tribunal's analysis will focus primarily on alternative (a) (disclosure of a representative number of genes in the group), which was emphasized in particular by Bayer. The Tribunal finds that the "visualize or recognize" qualifier set out in the *Ariad* decision does not apply to the "representative number" standard and that Bayer's patents fulfill the "representative number" standard for written description.

i. Respondents' Position on Disclosure for Written Description

491. **"Visualize or recognize" requirement applies to the "representative number standard"—** Respondents argue that in the *Ariad* decision, the phrase "so that one of skill in the art can 'visualize or recognize' the members of the genus" modifies both the "representative species" and the "structural features common to the members" requirements, consistently with the statutory

[892] CL-321: *Ariad Pharms., Inc. v. Eli Lilly and Co.*, 598 F.3d 1336, 1350-51 (Fed. Cir. 2010)

requirement that the inventor must possess and have actually invented the full scope of what is claimed.[893] Respondents suggest that this test is typically satisfied by the disclosure of a correlation between a specific structure and the claimed function that defines the genus, or, alternatively, the disclosure of species representing the full structural diversity of the genus. The disclosure of a few examples cannot, by itself, suffice. For instance, the USPTO denied a patent that disclosed eight examples that did "not share a common structure that contribute[s] to the common desired activity of the peptides."[894] This flows from the principle that the artisan must be able to "visualize or recognize" the genus structurally.[895]

492. Respondents note that the *Ariad* court quotes this language directly from *Eli Lilly*.[896] *Eli Lilly* expressly holds that this language modifies all ways of showing adequate written description for claims that are phrased functionally rather than structurally, holding that a written description was inadequate because it "does not distinguish the claimed genus from others, except by function. It does not specifically define any of the genes that fall within its definition. It does not define any structural features commonly possessed by members of the genus that distinguish them from others. *One skilled in the art therefore cannot, as one can do with a fully described genus, visualize or recognize the identity of the members of the genus.*"[897]

493. Respondents argue that, regardless of the test, one must be able to "visualize or recognize the identity of the members of the genus." The Federal Circuit has subsequently quoted this "visualize or recognize" language as a general principle, recognizing that the *Eli Lilly* "holding was premised on the basic principle that a person of skill in the art must be able to 'visualize or recognize the identity of the members of the genus.'"[898] In *Alonso*, the Federal Circuit affirmed the USPTO's rejection of a functionally claimed genus of antibodies based on the disclosure of a single species notably because "the specificities of antibodies falling within the scope of the genus (and the structures of the antigens they bind) would be expected to vary substantially"), emphasizing disclosure of the full structural variation of the genus in the context of a representative number analysis.[899] Furthermore, the current USPTO Written Description Guidelines provide that, without

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[893] Respondents' Phase II Post-Hearing Submission, dated 5 September, para. 8
[894] RLA-653: *Ex Parte Daniel Joseph O'Mahony*, No. 2008-2117, 2008 WL 3824022, at *1 (B.P.A.I. 14 Aug. 2008)
[895] Respondents' Phase II Post-Hearing Reply, dated 12 September 2014, para. 6
[896] RLA-350: *Ariad Pharms., Inc. v. Eli Lilly and Co.*, 598 F.3d 1336, 1350 (Fed. Cir. 2010), citing RLA-366: *Regents of the Univ. of Cal. v. Eli Lilly & Co.*, 119 F.3d 1559,1568-69 (Fed. Cir. 1997)
[897] RLA-366: *Regents of the Univ. of Cal. v. Eli Lilly & Co.*, 119 F.3d 1559, 1568 (Fed. Cir. 1997) (emphasis added)
[898] RLA-368: *Carnegie Mellon University v. Hoffman La Roche et al.*, 541 F.3d 1115, 1124 (Fed. Cir. 2007)
[899] CL-575: *In re Alonso*, 545 F.3d 1015, 1019-20, 1022 (Fed. Cir. 2008)

disclosure of a structure-function correlation or a representative number of species, the USPTO may allow a claim that recites a 95% identity to the disclosed example, but will reject a claim that recites an 85% identity.[900] And in *Bayer I*, the Federal Circuit found that the only alternative to a structural identification is to "sufficiently correlate [function] with structure."[901]

494. **Standard for disclosure of representative number**—"[A]nalogizing the genus to a plot of land," Respondents note that, "if the disclosed species only abide in a corner of the genus, one has not described the genus sufficiently"[902] and argue that Bayer does not disclose a representative number of genes. The standard for satisfactory disclosure in *Carnegie* depended "on whether one of skill in the art would recognize that the applicant was in possession of the necessary common attributes or features of the elements possessed by the members of the genus in view of the species disclosed. For inventions in an unpredictable art, adequate written description of a genus that embraces widely variant species cannot be achieved by disclosing only one species within the genus." Under this standard, the *Carnegie* court found invalid a patent claiming plasmids containing DNA coding for an enzyme, DNA polymerase, that failed to disclose "sufficient species to show that he or she invented and disclosed the totality of the genus."[903]

495. Respondents assert that representativeness is not a question of numbers but rather of whether "the specification discloses species representing the genus throughout its scope." In *AbbVie*, disclosure of a diverse group (variation of 90% between the disclosed genes) of three hundred species of the claimed antibodies was insufficient to meet the written description test. The claimed genus was structurally diverse, and not one of the three hundred disclosed was "representative" of the full scope of the structurally diverse genus that was claimed, because the patents described only "one type of structurally similar antibodies" and the alleged infringing antibody was distinct from all of the patents' examples.[904] Similarly, an applicant's argument that, although it had not disclosed structure-function correlation, its eight disclosed species constituted a representative number under

[900] RLA-585: USPTO Written Description Training Materials, dated 25 March 2008, at 35 (example 10, claim 3), 38-39 (example 11A, claim 2)
[901] R-34: *Bayer CropScience AG v. Dow AgroSciences LLC*, Civ. No. 10-1045 (RMB/JS), 2012 WL 4498527 (D. Del. Sep. 27, 2012)
[902] RLA-609: *AbbVie Deutschland v. Janssen Biotech*, 2014 WL 2937477, at *11 (Fed. Cir. Jul. 1, 2014)
[903] RLA-368: *Carnegie Mellon University v. Hoffman La Roche et al.*, 541 F.3d 1115, 1124, 1126 (Fed. Cir. 2007)
[904] RLA-609: *AbbVie Deutschland GmbH & Co. v. Janssen Biotech, Inc.*, 2014 WL 2937477, at *12-13 (Fed. Cir. 1 July 2014)

the law was rejected because other members of the genus "would be expected to have diverse structures" and the disclosed members were thus "not representative of the broad genus."[905]

496. Respondents also emphasize the *Bayer I* case as sharing factual similarities with the present case. There, Bayer sought a construction of a claim that would cover a functionally defined genus of genes based on their ability to detoxify the herbicide 2,4-D and the court rejected this broad construction, noting "the primacy of structural identification for inventions in certain areas, ... and [that] when we have adverted to the possibility of other means of identification, we have focused on whether such alternative means sufficiently correlate with structure."[906] This, Respondents emphasize, despite the fact that the size of the genus claimed in *Bayer I* did not include hundreds of identified genes but rather only a few dozen.[907]

497. Respondents argue that Claimants erroneously attempt to introduce a new test for demonstrating the "commonality" required by the representative species test based on where one finds the genes: in the present Arbitration, in bacteria that make and efficiently detoxify PPT. Courts routinely hold that one cannot "possess" an entire genus by describing how or where undisclosed genes might be found.[908] Stating the general characteristics of the bacteria that may or may not contain unknown and undisclosed genes cannot describe what those genes "are".[909]

498. **Bayer's description not sufficient to meet the representative number standard**—According to Respondents, Bayer's patents do not meet the representative number standard for three reasons. First, the patents expressly admit that the invention includes other genes that may be "structurally different", but only disclose the structure of *pat* and *bar*.[910] The common specification for all of the patents states that genes can be obtained from "many other microorganisms" that produce PPT or PPT-derivatives (e.g., a bialaphos-resistance gene is obtained from *kitasotosporia*).[911] In cases

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[905] RLA-653: *Ex Parte Daniel Joseph O'Mahony*, 2008 WL 3824022, at *1, 2, 4 (PTAB Aug. 14, 2008)
[906] R-34: *Bayer CropScience AG v. Dow AgroSciences LLC*, Civ. No. 10-1045 (RMB/JS), 2012 WL 4498527 (D. Del. Sep. 27, 2012)
[907] R-466: Confidential Brief of Plaintiff Appellant, 12 December 2012, at 51
[908] See, e.g., R-34: *Bayer CropScience AG v. Dow AgroSciences LLC*, Civ. No. 10-1045 (RMB/JS), 2012 WL 4498527 (D. Del. Sep. 27, 2012) (Bayer's "patent provided what was at best ... a roadmap" to find more genes, which fails to provide the requisite "description of the shared structure") (internal quotation marks omitted)
[909] Respondents' Phase II Post-Hearing Reply, dated 12 September 2014, para. 16
[910] C-5: '236 Patent, column 6:44-54
[911] *Id.*, column 29:11-17

such as this, "a patent ... can be held invalid for failure to meet the written description requirement based solely on the face of the patent specification."[912]

499. Second, all the technical experts, including Dr. Sherman, agreed that: (i) there are at least six other structurally diverse PPT acetyltransferase genes that are not disclosed in the patent or prior art, some of which have under 30% gene sequencing identity to *pat* and *bar*; (ii) there is no structure-function correlation in the patent; (iii) there is no structure-function correlation in the prior art, and (iv) even today, a specific common structure that is responsible for the claimed function has not been identified.[913] Thus, Respondents argue that Bayer has not invented and disclosed the totality of the genus because the disclosed *pat* and *bar* genes are not structurally representative of the other genes that Bayer seeks to claim.[914]

500. Third, the ultimate size of the claimed genus as identified by Dr. Dellaporta using a database search is in the hundreds or thousands,[915] and Bayer has not identified the structure of these hundreds or thousands of other PPT acetyltransferase genes, which further confirms that Bayer did not invent or disclose them. Indeed, according to Respondents, Bayer emphasizes the differences of the disclosed *pat* and *bar* genes from the other members of the genus, imposing limitations based on 70% identity, efficiency of the genes, or the bacterial species of the PPT acetyltransferase genes, in order to give the impression that the claimed genus is smaller than it actually is. Because Bayer's claims are not limited to "70% identity" or "very high efficacy" or "just two bacterial species," however, Respondents view Bayer's arguments as highlighting the diversity of the genus. In the event that the claims are construed as limited by 70% identity requirement, Respondents argue that the representative number standard is still not fulfilled, because nothing has been identified about *pat* or *bar* that is representative of the structural diversity of the entire claimed genus, whether that genus is arbitrarily cut off at 70% identity or not.[916]

501. **"Common structural features" standard**—Respondents argue that Bayer does not contend that it could satisfy the test relating to disclosure of common structural features, and that with *structure* as the guide, it is clear that Bayer did not invent genes other than the *pat* (*S.virido.*) and the *bar*

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[912] RLA-655: *Centocor Ortho Biotech v. Abbot Labs.*, 638 F.3d 1341, 1347 (Fed. Cir. 2011)
[913] C-349: Sherman Witness Statement, paras. 12, 62; Phase II Transcript, dated 25 August 2014, at 196:2-197:24; 223:7-22, 224:24-225:10, 229:16-230:3, 230:21-231:3
[914] Respondents' Phase II Post-Hearing Submission, dated 5 September 2014, para. 19
[915] R-444: Sixth Dellaporta Witness Statement, paras. 75, 88, 89; Phase II Transcript, dated 25 August 2014, at 254:8-13, 338:2-6
[916] Respondents' Phase II Post-Hearing Submission, dated 5 September 2014, para. 21

(*S.hygro.*) genes.[917] The patents do not disclose any correlation between the function of the claimed acetyltransferase genes and the DNA structure of those genes. Although the patents set out the *pat* (*S.virido.*) and *bar* (*S.hygro.*) DNA sequences, these patents do not indicate which portions of those sequences are common to all the claimed genes and that are also related to the portion of the enzymes that provide the desirable function.[918]

502. According to Respondents, such disclosure may not be possible given Dr. Dellaporta's finding that the alignment of the amino acid and nucleotide sequences of the ten published genes known to be acetyltransferase genes had no apparent motifs. Nor does the common specification to the patents point to any regions or motifs in its disclosed genes that correlate, at either the DNA level or the protein level, to glutamine synthetase inhibitor acetyltransferase activity.[919]

ii. Claimants' Position on Disclosure for Written Description

503. **The "visualize or recognize" qualifier does not apply to the "representative number" alternative**—According to Claimants, the "visualize or recognize qualifier" imposed by the *Ariad* decision applies solely to the "structural features" alternative for describing genus claims and not to the "representative number" alternative. Courts recognize that there are different ways to meet this written description requirement and that "the description requirement does not demand any particular form of disclosure":[920] flexibility is required as technologies come and go; there can be no bright line approach as to what amount of disclosure is sufficient at a particular time.[921]

504. In *AbbVie*, the panel re-emphasized *Ariad*'s "either or" test. The "visualize or recognize" qualifier was not held to apply to the representative-example analysis. The court linked the qualifier with the analysis of common structural features, stating it immediately before the evaluation of whether the patents met the common structural features test.[922] In other decisions post-*Ariad*, the Federal Circuit either omitted mention of the "visualize or recognize" qualifier altogether, or did not link

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[917] *Id.*, para. 23
[918] Respondents Phase II Memorial, dated 2 June 2014, para. 127
[919] R-363: Fourth Dellaporta Witness Statement, paras. 9-11
[920] CL-321: *Ariad Pharms., Inc. v. Eli Lilly and Co.*, 598 F.3d 1336, 1351-52 (Fed. Cir. 2010)
[921] C-349: Sherman Witness Statement
[922] RLA-609: *AbbVie Deutschland GmbH & Co., KG v. Janssen Biotech, Inc.*, 2014 WL 2937477 at 11(Fed. Cir. 2014)

the qualifier to the representative-number test. In these cases, the court evaluated the facts using both alternative tests, representative number and common structural features.[923]

505. Before *Ariad*, the Federal Circuit consistently stated these two tests in the alternative, and did not link the qualifier to the "representative species" test. In *In re Alonso*, the test was stated without the qualifier. The court analyzed the tests separately and did not conflate them by imputing a structure requirement into the "representative species" test.[924] When the panel in *Carnegie* articulated the test, it did not use the qualifier or link it to the representative species test.[925]

506. Thus, in Claimants' view, while the disclosure must be sufficient for one of ordinary skill in the art to recognize that the inventors possessed the genus, there is no requirement that common structural features must be disclosed to meet this test. According to the USPTO, disclosing a representative number of species for genetic material cannot require predicting DNA or amino acid sequences because this would be "nearly impossible"[926] and Claimants argue that the USPTO also does not apply the qualifier to the "representative number" analysis.[927]

507. **Representative number standard**—In Claimants' view, the representative number standard first requires inquiry into the nature and size of the genus, and then an assessment of whether the species are representative:[928] "[O]ne must describe a sufficient variety of species to reflect the variation within the genus."[929]

508. In *AbbVie*, 200 versions of the same antibody (each differing by one amino acid) were found to be tantamount to no variation and not sufficiently representative of the enormous size and diversity of the genus of human antibodies (estimated to be millions). The panel explained that, because there were no antibodies in the patent that were similar to the accused antibody, the examples were not representative of the genus.[930] In *Carnegie*, where only one gene was disclosed, and was found not to be representative, the claims covered DNA polymerase I from all bacterial sources, implicating

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[923] See, e.g., CL-523: *Billups-Rothenberg, Inc. v. Assoc'd Regional Univ. Pathologists, Inc.*, 642 F.3d 1031 (Fed. Cir. 2011) (stating *Ariad's* alternative tests without the qualifier)
[924] CL-575: *In re Alonso*, 545 F.3d 1015, 1019-20 (Fed. Cir. 2008)
[925] RLA-368: *Carnegie Mellon University v. Hoffman La Roche et al.*, 541 F.3d 1115, 1122 (Fed. Cir. 2007)
[926] C-509: USPTO Revised Interim Guidelines, 1999, at 71440, n.51
[927] Claimants' Phase II Post-Hearing Submission, dated 5 September 2014, at 4
[928] CL-575: *In re Alonso*, 545 F.3d 1015, 1019 (Fed. Cir. 2008)
[929] RLA-368: *Carnegie Mellon University v. Hoffman La Roche et al.*, 541 F.3d 1115, 1124 (Fed. Cir. 2007)
[930] RLA-609: *AbbVie Deutschland GmbH & Co., KG v. Janssen Biotech, Inc.*, 2014 WL 2937477, *12 (Fed. Cir. 2014)

a large and highly diverse genus, as all of the over one million known species bacteria have a DNA polymerase I, and these DNA polymerase I were known to be diverse.[931]

509. Claimants note that *Ariad*, *Eli Lilly*, and *University of Rochester*, where the written description requirement was not met, the patentees disclosed no example of a gene or compound having the claimed function. In contrast, Bayer's patents explain every detail about a representative number of members of a small genus of genes. *Ariad* holds that there are no "bright line rules" about how many species are sufficient to support a genus claim.[932] Indeed, in *Invitrogen*, a single "representative embodiment" was found to entitle the patentee to claim a genus of DNAs with a specific artificial function ("substantially reduced RNase activity") and the court held that *Eli Lilly* did not apply as, in *Eli Lilly*, the claim at issue did not identify "any embodiment of DNA claimed."[933]

510. Claimants also refer to the USPTO Written Description Guidelines (adopted in this respect by the Federal Circuit): "What constitutes a 'representative number' is an inverse function of the skill and knowledge in the art. Satisfactory disclosure of a 'representative number' depends on whether one of skill in the art would recognize that the applicant was in possession of the necessary common attributes or features of the elements possessed by the members of the genus in view of the species disclosed." Claimants assert that these features are not necessarily structural and satisfying this standard does not require the ability to predict genetic sequences from other species.[934]

511. **The claimed genus does not comprise hundreds or thousands of genes**—Claimants argue that all patent claims asserted target a small genus of DNAs, as the claims are limited to genes or genetic material (1) derived from PPT-producing bacteria; (2) encoding enzymes having similar activity and the same properties as *bar* and *pat*; (3) and that are capable of inactivating PPT under the same circumstances as *bar* and *pat* (which are both disclosed by DNA and amino acid sequence in the patents). The patents' specification explains in great detail how to ascertain if a protein encoded by a gene has similar physical and chemical properties as *pat* and *bar* under the same circumstances (e.g., in "spray tests" with lethal doses of herbicide). The DNA of the claim in the '665 patent and

[931] RLA-368: *Carnegie Mellon University v. Hoffman La Roche et al.*, 541 F.3d 1115 (Fed. Cir. 2007)
[932] RLA-350: *Ariad Pharm., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1355 (Fed. Cir. 2010); RLA-372: *Univ. of Rochester v. G.D. Searle & Co.*, 358 F.3d 916, 925 (Fed. Cir. 2004)
[933] RLA-369: *Invitrogen vs. Clontech*, 429 F.3d 1052, 1072-74 (Fed. Cir. 2005)
[934] C-510: USPTO Written Description Guidelines, at 1106

its reissue has further structural limitations: (4) it starts with ATG; (5) it has between 549 and 625 nucleotides; and (6) it encodes a "variant" protein of the BAR protein.[935]

512. Claimants argue that, from reading the patents-in-suit, one of ordinary skill in the art at the time of the invention would have understood that there would exist few genes encoding *N*-acetyltransferases against PPT. This is because the most likely source of the genes would be in the bacteria that produced PPT (or that produced close chemical derivatives of PPT),[936] and one of ordinary skill would have expected there to be few bacteria that produce PPT or its derivatives. It was known at the relevant time that PPT and its derivatives were rare and unusual molecules: PPT remains the only known natural product with a C-P-C bond (i.e., phosphorous bonded to two carbon atoms). The inventors identified three bacteria that produced PPT and would thus need to have an enzyme specifically designed by nature to detoxify PPT. Since then, only a single PPT-producing bacterium has been identified that one would expect to contain such a gene.[937]

513. While (a total of six) genes with *N*-acetyltransferase activity against glufosinate were later discovered, Claimants argue that the discovery of these six was "unexpected" because they were found in bacteria that did not produce PPT.[938] Indeed, Dow was of the view that the discovery that two such genes worked in plants would have been so unexpected to a person of ordinary skill that Dow should be entitled to patents.[939] Furthermore, none of the six proteins Dow identified (1) have the "same properties" or "similar activity" "under the same circumstances" as *bar* and *pat*, or (2) come from PPT-producing bacteria, or (3) are variants of the *bar* protein. Dow has no experimental evidence that any of its six genes can withstand the rigorous herbicide spray tests described in the patents' specification.[940]

514. Claimants argue that Dr. Dellaporta's assertion that there are hundreds or thousands of genes other than *pat* or *bar* that encode enzymes with *N*-acetyltransferase activity against glufosinate was based on the GenBank database, which abundant scientific literature has shown to be unreliable. Many of GenBank's genes and their indicated functions are the product of computer scans of genomes and have not been confirmed by any experimental data.[941] Using sequence identity as the sole

[935] Claimants' Phase II Post-Hearing Reply, 12 September 2014, at 2-4
[936] C-349: Sherman Witness Statement, paras. 13, 24, 43, 47-48.
[937] *Id.*, paras. 13, 30, 43-45, 47-48
[938] *Id.*, paras. 13, 45, 49-51, 61-62, 72.
[939] Claimants' Phase II Counter-Memorial, dated 1 July 2014, para. 73
[940] Claimants' Phase II Post-Hearing Reply, dated 12 September 2014, at 5
[941] C-349: Sherman Witness Statement, para. 59

factor to predict enzyme function, as do many of the annotated entries in GenBank, is well-known to be error-prone, and experimentation in a laboratory is the "gold standard" for determining protein function.[942] Dr. Dellaporta has identified only eight references in GenBank in which the function of the enzyme annotated as having *pat* activity has been experimentally determined. Two do not have any *pat* activity.[943] Of the other six, only four were purportedly shown to encode enzymes that have *N*-acetyltransferase activity in plants against PPT and only one satisfied the size limitation of claim 1 of the reissued '665 patent.[944]

515. Claimants also argue that Dow's assertion that the claimed genus comprises hundreds or thousands of genes is contrary to its prior representations to the USPTO. There, Dow argued (1) that Bayer's patents claim genes sourced from microorganisms that make glufosinate or glufosinate-derivatives (rather than including genes from non- PPT/Bialaphos-producing organisms within the genus), and (2) that any "variant" of the *bar* amino acid sequence, like *pat* (at 85% homology), will have a high level of amino acid identity when so modified.[945]

516. Finally, in response to Dow's argument that Bayer's '236, '024, and '477 patents lack written description because they concern all "GS inhibitors", not just PPT-type herbicides, Claimants argue that it would be clear to one of ordinary skill in the art, from reading the patents-in-suit, that the GS inhibitors covered would be herbicidal GS inhibitors that look very similar to PPT (i.e., derivatives of PPT that retain the core phosphorus-containing portion of PPT that makes it unique).[946] Indeed, at least two of the inventors of the patents-in-suit were aware of the existence of GS inhibitors encoding enzymes that only had *N-acetytransferase* activity against GS inhibitors lacking a phosphorus atom, and yet chose not to include them in the patents.[947]

517. **Bayer has disclosed two genes containing the necessary common attributes of the genus of PPT-acetyltransferases**—Claimants argue that Bayer's patents explain every detail about a representative number of members of a small genus of genes. They direct a person of ordinary skill in the art regarding where to find the genes (in specific soil bacteria that make PPT or a PPT-derivative),[948] what they are (by describing the DNA sequences of two PPT-resistance genes, *pat*

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[942] C-383: Schnoes et al., PLoS Computational Biol., 2009; 5(12):1-13, at 2
[943] Claimants' Phase II Counter-Memorial, dated 1 July 2014, para. 61
[944] *Id.*, para. 76
[945] Claimants' Phase II Counter-Memorial, dated 1 July 2014, paras. 46-47, 53
[946] C-349: Sherman Witness Statement, paras. 19, 38
[947] Claimants' Phase II Counter-Memorial, dated 1 July 2014, para. 78
[948] C-5: '236 Patent, column 2:18-23, 37-40, column 26:39-41

and *bar*), what they do (the two enzymes encoded by the DNA work in plants to protect them against the effects of PPT), and how (showing the specific chemical activity of *pat* and *bar* proteins against the one-of-a-kind PPT molecule).[949] PPT is a rare molecule known as a phosphinate (the only known natural product with a C-P-C bond), meaning that the proteins that act on it are also rare. Only four strains of bacteria that produce the rare PPT-containing antibiotic are known to exist: three were disclosed in the patents-in-suit and the fourth was identified a few years later in 1991.[950]

518. **Common structural features standard**—Claimants argue that meeting the "common structural features" test for genetic material is akin to predicting sequences that all members will possess, a task even the USPTO recognizes would be "nearly impossible" and thus is unnecessary.[951]

519. According to Claimants, even if the rest of the specific requirements of each asserted claim could be ignored, a proper genus to consider could not consist of more than genes derived from the four PPT-producing bacteria, and *pat* and *bar* are representative of a genus whose members have, *inter alia*, the common attributes of being found in bacteria that make the "unusual" phosphinate PPT (as opposed to phosphonates, which are more common) and are highly efficient at detoxifying PPT to protect plants.[952] The specificity of *pat/bar* for PPT resides in the C-P-C bond. It is undisputed that PPT has been the only known natural phosphinate for more than forty years. Claimants assert that the patents make the restriction to the phosphinate clear by stating that the genes are in "microorganisms that produce PPT".[953]

520. **Effect of *Bayer I***—Claimants also argue that the facts of *Bayer I* are not comparable to those in this Arbitration and that the asserted patent claims should not be deemed invalid based on the *Bayer I* holding. As an initial matter, *Bayer I* did not hold that the asserted claim was invalid. In addition, the patent claim at issue in *Bayer I* and the disclosures in the rest of the patent differ considerably from those at issue in the present Arbitration. For example, in the patent-at-issue in *Bayer I*, the court ruled, based on the record, that the claim at issue was recited purely in terms of a function it performed. This is not the case for Bayer's claims asserted in this Arbitration. As another example,

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[949] C-5: '236 Patent, column 12:53-55, column 29:2-5; Claimants' Phase II Closing Presentation, dated 26 August 2014, slide 76

[950] C-349: Sherman Witness Statement, paras. 13, 30–31, 45-46

[951] CL-576, *In re Grimme*, 274 F.2d 949, 951 952 (C.C.P.A. 1960)

[952] Phase II Transcript, dated 25 August 2014, at 299:10-300:12; 308:12–22; 303:2-305:12; C-5: '236 Patent, column 2:16-36; C-349: Sherman Witness Statement, paras. 24, 48

[953] Claimants' Phase II Closing Presentation, dated 26 August 2014, slides 77–78; C-5: '236 Patent, columns 29:11-13, 3:12-13, 5:61-67, 6:54-56, 9:48-50

the record in *Bayer I* included evidence of the existence of hundreds of genes that performed the recited function. In this Arbitration, only a handful of actual genes have been identified that are *N*-acetyletransferases.[954]

iii. Tribunal's Determination: The "Representative Number" Standard Does Not Include a Structural Ingredient Tied to Gene or Protein Structure and Is Satisfied by the Patent Claims Asserted by Bayer

521. In arguing that it has fulfilled the written description requirements, Bayer relies mainly on the standard corresponding to alternative (a) for meeting the written description requirement for functionally defined genus claims: disclosure of a representative number of the genes in the group.

The "Representative Number" Standard Does Not Include a Structural Ingredient

522. In the Phase II Post-Hearing Submission it made in response to a series of questions from the Tribunal, Dow has attempted to infuse the "representative number" test with a structural ingredient tied to gene or protein sequences, which, in the Tribunal's opinion, the relevant case law does not support.

523. In the end, both parties agreed, and Dow appears to have conceded by quoting from *Carnegie*, that "[s]atisfactory disclosure of a 'representative number' depends on whether one of skill in the art would recognize that the applicant was in possession of the necessary common attributes or features of the elements possessed by the members of the genus in view of the species disclosed."[955] These attributes or features are not necessarily limited to gene sequences, as the USPTO Written Description Guidelines make clear, referring to "partial structure, physical properties, chemical properties" as types of features or attributes.[956]

524. In the Tribunal's considered view, the common and distinguishing physical and chemical attributes of being genes found in bacteria that produce PPT, a rare type of molecule containing a C-P-C chemical bond and known as a phosphinate, and of coding for rare enzymes that are highly effective at detoxifying the phosphinate PPT, seem sufficient to meet this requirement.

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[954] CL-365, *Bayer CropScience AG v. Dow AgroSciences LLC*, Civ. No. 10-1045 (RMB/JS), 2012 WL 4498527 (D. Del. Sep. 27, 2012); Claimants' Phase II Counter-Memorial, dated 1 July 2014, para. 42

[955] Respondents' Phase II Post-Hearing Submission, dated 5 September 2014, para. 14, citing R-368: *Carnegie Mellon University v. Hoffmann-La Roche Inc.*, 541 F.3d 1115, 1124 (Fed. Cir. 2008) (ellipses removed)

[956] C-510: USPTO Written Description Guidelines, at 1106

Application of the Representative Number Standard

525. Bayer explains in its Post Hearing Reply that the subject matter of each of the 10 asserted claims includes only genes (1) derived from PPT-producing bacteria; (2) encoding an enzyme having similar activity and the same properties as *bar* and *pat*; and (3) that are capable of inactivating PPT under the same circumstances as *bar* and *pat*.[957] In addition to those three limitations, the asserted claim from the '665 patent and its reissue has three further limitations: (1) it starts with ATG; (2) it has between 549 and 625 nucleotides; and (3) it encodes the BAR protein or a variant thereof.[958]

526. In its Phase II Post-Hearing Submission, Bayer reaffirms that its patents claim a genus of four genes coding for rare, PPT *N*-acetyltransferases: *pat*, *bar*, *kita* (all of which are cited in the patents' specifications, the latter with reference to a scientific publication) and a fourth gene, derived from another strain of *S. hygro*.[959] The sequence of the fourth gene has not been established, so that its variation with *pat* and *bar* has not been shown by Dow.

527. In accordance with the "representative number" standard, Bayer has demonstrated that the gene structures of *pat* and *bar* provided in the patents are representative of this small genus whose members have, *inter alia*, the common attributes of being found in bacteria that make the "unusual" phosphinate PPT (characterized by the presence of rare a C-P-C bond and in opposition to phosphonates, which are more common), and that encode proteins that are highly efficient at detoxifying PPT to protect plants. There is enough evidence of the efficiency required to meet this last criterion in the patents' specifications, as demonstrated by Claimants in their Phase II Post-Hearing Reply where they have catalogued indications provided in the specifications of whether a protein encoded by a gene displays similar physical and chemical properties as *pat* and *bar* under the same circumstances, notably in herbicide spray tests.[960]

528. The Tribunal is thus of the view that Dow has not met its burden of bringing clear and convincing evidence of Bayer's failure to meet the "representative number" standard. As a result, the written description defense fails in respect of all asserted claims.

529. Given the finding that Bayer's written description is sufficient under the representative number standard, it is unnecessary to discuss the "common structural features" standard (alternative (b) for

[957] Claimants' Phase II Post-Hearing Reply, dated 12 September 2014, at 2-3
[958] *Id.* at 4
[959] C-349: First Sherman Witness Statement, paras. 13, 30-31, 45-46
[960] Claimants' Phase II Post-Hearing Reply, dated 12 September 2014, at 3 n.12

meeting the written description standard for a functionally defined genus claim). The Tribunal notes that alternative (c) (reference to "art" that establishes a correlation between structure and function) is not discussed in this Award as Bayer did not rely on this standard.

D. Enablement Defense ('024, '477, and '665 (and Reissue) Patents)

530. This part addresses Respondents' argument that Bayer's asserted claims in the '024, '477, and '665 patents fail to "enable any person skilled in the art to which [they] pertain, ... or with which [they are] most nearly connected, to make and use the same,"[961] on the ground that they encompass monocot plants and are not enabled with respect to monocots. Given the finding above in Part 3.II.A.3 that the patent claims exclude monocots as a matter of claim construction, however, this argument is rejected.

1. Respondents' Position on Enablement

531. To satisfy the enablement requirement, the patent must teach a skilled artisan "how to make and use the full scope of the claimed invention without 'undue experimentation'."[962] In *DeKalb*, the court held that the common specification of the patents-in-suit did not enable a skilled artisan to practice Bayer's invention in monocots: "[t]he claim requires transformation of the plant cell. Without the ability to transform a monocot cell, one skilled in the art could not determine whether the plant gene could carry out the claimed functions and thus fall within the scope of the claim."[963] Bayer does not dispute that its patents fail to enable transformation of monocots and agreed to drop any claims construed to cover monocots.[964] Respondents argue, however, that the claims in Bayer's '024, '477, and '665 patents all cover monocots and are therefore not enabled, as discussed above with respect to the construction of the term "plant cells".

2. Claimants' Position on Enablement

532. In Claimants' view, Dow's "enablement" arguments should fail because they request that this Tribunal reverse determinations by (1) the USPTO's Ph.D.-educated patent examiner, (2) the U.S. District Court for the District of Connecticut, and (3) a unanimous three-judge panel of the U.S. Court of Appeals for the Federal Circuit that the claims are enabled. Dow argues that Bayer's

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[961] RLA-1: 35 U.S.C. §112
[962] RLA-364: *In re Wright*, 999 F.2d 1557 (Fed. Cir. 1993)
[963] CL-349: *Plant Genetic Sys., Inc. v. DeKalb Genetics Corp.*, 175 F. Supp. 2d 246 (D. Conn. 2001), affirmed CL-350: *Plant Genetic Sys., Inc. v. DeKalb Genetics Corp.*, 315 F.3d 1335 (Fed. Cir. 2003)
[964] R-371: Email from R. Sigworth to A. Chachkes, dated 12 May 2014

patent claims are not enabled in view of one aspect of the ruling in *PGS v. DeKalb*; namely, that Bayer's patents did not adequately enable claims covering monocot plant cells. As discussed above with respect to the claim construction of "plant cells", asserted claim 1 of the '665 Patent and its reissue covers DNA and, thus, cannot suffer from an alleged lack of enablement on the basis that a particular type of plant is not enabled. Furthermore, all asserted claims of the '024 and '447 Patents exclude monocots because those claims concern subject matter that is susceptible to *Agrobacterium* transformation.[965]

3. Tribunal's Determination: The Asserted Patent Claims Are Enabled

533. This is essentially the same argument as was dealt with in Part 3.II.A.2 concerning the claim construction issue with respect to the term "plant cells". Dow's argument is that the '024, '477, and '665 patent claims cover monocot plant cells but fail to provide an enabling disclosure for them, as in *PGS v. DeKalb*.[966]

534. The Tribunal's determination in Part 3.II.A.2 that the asserted patent claims exclude monocots as a matter of claim construction removes any issue of enablement. The '024, '477, and '665 patent claims are not invalid due to lack of enablement.

E. Indefiniteness ('665 Patent and Reissue)

535. This part addresses Respondents' argument that claim 1 of the '665 patent and its reissue is indefinite according to the standard set out in 35 U.S.C. §112, and is therefore invalid. The Tribunal rejects this argument.

1. Respondents' Position on Indefiniteness

536. As 35 U.S.C. §112 specifies, "[t]he specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention." The court in *Nautilus* added that Section 112 requires reasonable certainty about the scope.[967]

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[965] Claimants' Phase II Counter-Memorial, dated 1 July 2014, para. 82
[966] CL-349: *Plant Genetic Sys., Inc. v. DeKalb Genetics Corp.*, 175 F. Supp. 2d 246 (D. Conn. 2001), affirmed CL-350: *Plant Genetic Sys., Inc. v. DeKalb Genetics Corp.*, 315 F.3d 1335 (Fed. Cir. 2003)
[967] RLA-397: *Nautilus, Inc. v. Biosig Inst., Inc.*, 134 S. Ct. 2120 (2014)

537. According to Respondents, the Supreme Court's recent decision in *Nautilus* raised the bar for patentees to make their claims clear and definite: "In place of the 'insolubly ambiguous' standard, [the Supreme Court held that] a patent is invalid for indefiniteness if its claims... fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention."[968] Further, federal courts following *Nautilus* have similarly recognized this material change, ruling that "[t]he *Nautilus* decision has clearly rejected [the] looser standard of definiteness,"[969] and that the *Nautilus* standard "is stricter than that previously employed by the Federal Circuit."[970]

538. Respondents argue that even under their narrower construction of "variant", which requires that variants be made by substituting (changing) amino acids in the *bar* (*S.hygro.*) protein starting material, claim 1 of '665 patent and its reissue is indefinite. It would not be clear how many changes or what type of changes are permissible because there are no examples or teachings in Bayer's patent in this regard. The term variant encompasses proteins with a vast number of potential changes. For example, the number of *bar* (*S.hygro.*) protein variants having just four amino acid substitutions is in the millions. Yet Bayer's patent provides no yardstick for identifying which of these "variants" retains enough (or any) of the recited acetyltransferase activity required by the claims.[971] Respondents note that Bayer's broader construction, which would stretch claim 1 from the claimed bar (*S.hygro.*) to the independently sourced *pat* gene (*S.virido.*), would pose even more problems. There is no "reasonable certainty" as to what infringes and what does not—that is, what is a "variant" of the claimed bar (*S.hygro.*) and what is not, where now wildly divergent genes would fall under claim 1.[972] Because there is no clear delineation of when a modified version of the bar protein is no longer a "variant," claim 1 is indefinite.[973]

539. Respondents assert that, in defining the limits of its claims, Bayer relies on extrinsic evidence, "contrary to the approach endorsed in *Nautilus*, which requires an evaluation of whether a patent's claims 'viewed in light of the specification and prosecution history, inform those skilled in the art about the scope of the invention with reasonable certainty.'"[974] The 70% limitation proposed by Dr. Sherman, in Respondents' view, is an arbitrary cut-off and unsupported in the art. Furthermore,

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[968] *Id.* at 1
[969] RLA-624: *Fla. Atlantic Univ. Research Corp. v. Acer, Inc.*, 2014 WL 2960968, at *5 n.9 (S.D. Fla. 2014)
[970] RLA-625: *Broussard v. Go-Devil Mfg. Co..of La., Inc.*, 2014 WL 3377708, at *41 (M.D. La. 2014)
[971] RLA-384: *Cellectis S.A. v. Precision Biosciences, Inc*, 937. F. Supp. 2d 474, 482-483 (D. Del. 2013)
[972] Respondents' Phase II Memorial, dated 2 June 2014, para. 173
[973] RLA-384: *Cellectis S.A. v. Precision Biosciences, Inc*, 937. F. Supp. 2d 474, 483 (D. Del. 2013)
[974] R-446: Farnan Witness Statement, para. 56

it does not supply key information about how many and what kinds of changes can be made such that the patent retains the requisite activity and what level of activity may be sufficient.[975]

2. Claimants' Position on Indefiniteness

540. Claimants assert that a patent is indefinite and thus invalid "if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention." Importantly, "definiteness is to be evaluated from the perspective of someone skilled in the relevant art." And when assessing definiteness, "claims are to be read in light of the patent's specification and prosecution history." The definiteness requirement recognizes that "absolute precision is unattainable."[976]

541. According to Claimants, Dow's own patents and applications establish that, in general, the term "variant" has a well- and long-understood meaning to a person of ordinary skill in the relevant art. In Dow's patent application for use of the *bar* gene from *S. coelicolor* in plants, which Dow calls DSM-2, Dow explains the meaning of this term precisely: "'variant proteins' and 'equivalent proteins' refer to proteins having the same or essentially the same biological/functional activity against the target substrates and equivalent sequences as the exemplified proteins. ... Certain proteins of the subject invention have been specifically exemplified herein. As these proteins are merely exemplary of the proteins of the subject invention, it should be readily apparent that the subject invention comprises variant or equivalent proteins (and nucleotide sequences coding for equivalents thereof) having the same or similar activity of the exemplified proteins. Equivalent proteins will have amino acid similarity (and/or homology) with an exemplified protein. The amino acid identity will typically be at least 60%, preferably at least 75%, more preferably at least 80%, even more preferably at least 90%, and can be at least 95%."[977]

542. In Claimants' view, Dow's threshold of "at least 60%, preferably at least 75%, more preferably at least 80%," is how a person having ordinary skill in the art would have understood the term "variant" as applied to the specific context of bacterial antibiotic resistance gene in 1987 and also in the context of an antibiotic resistance enzyme. Professor Sherman explains that the standard of 70% amino-acid identity for determining variants accords with the level of similarity between

[975] Respondents' Reply Memorial, dated 1 August 2014, paras. 113-14
[976] RLA-397: *Nautilus, Inc. v. Biosig Inst., Inc.*, 134 S. Ct. 2120 (2014)
[977] C-367: U.S. Patent Application No. 12/997,514

variant antibiotic resistance genes (against the same antibiotic) in different strains or species that were known around the time the patents-in-suit were filed.[978]

3. Tribunal's Determination: Claim 1 of the '665 Patent and Its Reissue Is Not Indefinite

543. Following the *Nautilus* decision, the test for indefiniteness is whether a patent's "claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention." It must be emphasized that definiteness is to be evaluated "from the perspective of someone skilled in the relevant art."[979] This standard relating to indefiniteness is distinguishable from the written description requirement based on the former's focus on the claims themselves, read in light of the specification, as opposed to the latter's focus on the written description provided in the specifications.

544. Respondents have further explained the distinction between definiteness and written description by using the analogy of a piece of land: the definiteness analysis concerns the "clarity of the perimeter", that is, whether identifiable boundaries exist for the asserted claims; the written description analysis, by contrast, focuses on the adequate description of the content falling within the perimeter, in order to assess whether any inventions that the patentee did not predict and master fall into this bounded area. The analyses are thus independent, but bear on certain related issues concerning the scope of the patent.[980]

545. In discussing claim construction, above in Part 2.II.A.2, the Tribunal found that "variant" should be read as including the *pat* protein, and by extension that the claim should encompass the *pat* gene, because, *inter alia*, the latter is specifically mentioned in the specification. The outstanding question is whether the term "variant" is too open-ended to meet the definiteness requirement.

546. The Tribunal is of the view that it is sufficiently definite. Here again, as in the written description analysis, there is no requirement that all nucleotide or amino acid sequences be predicted for the claimed gene. All that is required for the indefiniteness analysis is that the scope of the claim be disclosed with reasonable certainty from the perspective of a person skilled in the relevant art. The Tribunal notes that while this new "failure to inform with reasonable certainty" standard articulated

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[978] C-349: Sherman Witness Statement, paras. 20, 69; Claimants' Phase II Counter-Memorial, dated 1 July 2014, para. 113

[979] RLA-397: *Nautilus, Inc. v. Biosig Inst., Inc.*, 134 S. Ct. 2120 (2014)

[980] Phase II Transcript, dated, 108-109, 125:3-10

in *Nautilus* is more stringent than the prior "insolubly ambiguous" standard,[981] *Nautilus* itself does not discuss the particular effect, if any, that this change in standards would have on the application of definiteness analysis to a claim using the notion of "variant". It further notes that the use of the notion of "variant" in order to describe a genus is a fairly common practice.[982]

547. In the Tribunal's view, its analysis of written description above in Part 3.III.C, while determining that the claimed invention had been mastered in accordance with the written description "representative number" standard, also showed that claim 1 of the '665 patent and its reissue is sufficiently finite, bounded, and defined, by virtue of the term "variant", to satisfy the "reasonable certainty" definiteness test. As explained above, the claim contains three limitations: (1) it starts with ATG; (2) it has between 549 and 625 nucleotides; and (3) it encodes the *bar* protein or a variant thereof.[983] Contrary to Respondents' arguments that there is no clear delineation of when a modified version of the *bar* or *pat* protein is no longer a "variant", the determinations made in the course of the written description analysis show that a "variant" of the *bar* or *pat* protein, when read in light of the patent's specification, must be understood as a member of a small group of rare PPT *N*-acetyltransferases, of which only four are known to exist, whose members are defined in terms of their ability to act, with high efficiency, on the also rare PPT molecule, [984] particularly by displaying similar physical and chemical properties as the *pat* and *bar* proteins in herbicide spray tests.[985]

548. Additionally, the Tribunal notes that the sequencing identity percentage criterion, which was discussed extensively during the hearing, is not required to provide reasonable certainty, because there is no requirement that the members of the genus be structurally linked through isolated fragments of identical or similar sequences.

549. This defense, therefore, must fail.

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[981] RLA-397: *Nautilus, Inc. v. Biosig Inst., Inc.*, 134 S. Ct. 2120 (2014)
[982] See e.g. Dow's patent application for use of the *bar* gene from *S. coelicolor* in plants: C-367: U.S. Patent Application No. 12/997,514
[983] *Id.* at 4
[984] C-349: Sherman Witness Statement, paras. 13, 30–31, 45-46
[985] Claimants' Phase II Post-Hearing Reply, dated 12 September 2014, at 3 n.12

F. Myriad Invalidity ('665 Patent and Reissue)

550. Respondents argue that claim 1 of the original '665 patent and its reissue is invalid due to the *Myriad* decision, as it covers a naturally occurring DNA sequence. The Tribunal agrees that the original '665 patent is invalid but upholds the validity of the reissue.

1. Respondents' Position on *Myriad* Invalidity

551. **Naturally occurring DNA is not patentable**—In Respondents' view, under Bayer's claim construction, the '665 and RE44962 patents are invalid in light of *Myriad* because they claim naturally occurring DNA sequences. The first provision of the Patent Act, 35 U.S.C. § 101, provides that "[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title." The Supreme Court has "long held that this provision contains an important implicit exception[:] Laws of nature, natural phenomena, and abstract ideas are not patentable."[986]

552. On this basis, the U.S. Supreme Court held in *Myriad* that a "naturally occurring DNA segment is a product of nature" and, thus, "not patent eligible." However, in Respondents' view, claim 1 covers exactly that. Claim 1 of the '665 patent relates to DNA that codes the *bar* (*S.hygro.*) protein, where the first amino acid is encoded by either ATG (the more common codon for MET, which is always the first amino acid in a protein), or GTG, which in certain bacteria is sometimes used to encode MET as the first amino acid. The second codon, GTG is the naturally occurring starting codon for the first amino acid MET in the *bar* (*S.hygro.*) gene. In its reissue claim 1, Bayer dropped the option of using the GTG codon to code for the first amino acid MET and added the qualifier that it is "encoded by ATG," recognizing, as it must, that the *bar* gene, which *itself* occurs in nature, would include a gene that uses GTG to code for MET.[987]

553. Respondents assert that naturally occurring DNA is not patentable: *Myriad* is not limited to human DNA, as Bayer argues. In *In re Roslin*,[988] the court held that a cloned sheep is an exact copy, and therefore is not patent eligible. Respondents note that Bayer argues that it did not make a

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[986] See RLA-378: *Mayo Collaborative Services v. Prometheus Labs, Inc.*, 132 S. Ct. 1289, 1293 (2012) (citation and brackets omitted)
[987] R-378: Preliminary Amendment for Reissue Application, dated 3 September 2013, at 2, 4; Respondents' Phase II Memorial, dated 2 June 2014, paras. 163-65
[988] R-611: *In re Roslin Inst. (Edinburgh)*, 750 F.3d 1333, 1337 (Fed. Cir. 2014)

substantive change to the '665 patent, which is the only way it could survive the intervening rights doctrine and keep this patent in the case. At the same time, Bayer has to argue that it made a substantive change because claim 1 of the '665 is the naturally occurring *bar* (*S. hygro.*) gene and, as such, invalid pursuant to *Myriad*.[989] In its reissue application, therefore, Bayer concedes that the '665 patent is invalid under *Myriad*.[990]

554. According to Respondents, as in *Bayer I*, Bayer's construction would raise additional grounds for a finding of invalidity. It would bring back the *Myriad* problem that Bayer attempted to remedy through reissue. As construed by Bayer, the term "variant" would sweep in at least the naturally occurring gene for *bar* (which Bayer already conceded to the USPTO is unpatentable) and the naturally occurring gene for *pat*. Respondents note that Dr. Sherman admitted this point on cross-examination.[991]

555. **Effect of the *Ambry* decision**—Following the Phase II hearing, Respondents asserted, by letter of 19 December 2014 sent to the Tribunal and to Claimants, that the Federal Circuit's *Ambry* decision of 17 December 2014[992] addressed the *Myriad* decision and clarified that claim 1 of the reissue patent is invalid under *Myriad*. According to Respondents, *Ambry* clarifies that a "DNA structure with a function similar to that found in nature can only be patent eligible as a composition of matter if it has a unique structure, different from anything found in nature," that patent claims that cover "synthetically created compositions that are structurally identical to the naturally occurring compositions" are also invalid, and that the *Myriad* decision is not restricted to invalidating patents of human DNA found in nature.[993] As a result, Respondents argue that, because claim 1 of the reissue patent covers the naturally occurring *pat* gene[994] and performs the same function as the naturally occurring DNA—that of encoding a protein with *pat* activity—the claim is invalid.[995]

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[989] Respondents' Phase II Reply Memorial, dated 1 August 2014, para. 123
[990] R-364: Reissue Application Declaration, dated 29 August 2013
[991] Phase II Transcript, dated 25 August 2014, at 195:19-25; Respondents' Phase II Post-Hearing Submission, dated 5 September 2014, para. 6
[992] *University of Utah Research Foundation v. Ambry Genetics Corporation*, Nos. 2014-1361, -1366 (Fed. Cir. Dec. 17, 2014) (slip opinion)
[993] *Id.*, at 8-9
[994] Phase II Transcript, dated 25 August 2014, at 195:19-25 (testimony of Claimants' expert)
[995] Letter from Respondents to Tribunal, dated 19 December 2014

2. Claimants' Position on *Myriad* Invalidity

556. In *Myriad*, the U.S. Supreme Court held that a naturally occurring segment from a human gene is a product of nature and accordingly is not patent-eligible subject matter merely because the gene is isolated.[996] Claimants argue that *Myriad* did not address bacterial genes, which differ from human genes in material ways, so claim 1 in the '665 patent, which covered a naturally occurring, isolated segment of a bacterial gene could be distinguished. Nonetheless, out of an abundance of caution, Bayer sought reissue and made a minor change to the claim to obviate any potential argument that the claim could be interpreted to cover naturally occurring subject matter such that it would have been invalid under *Myriad*. The amendment clarified that claim 1 should not be interpreted to cover naturally occurring isolated DNA found in bacteria and is not encumbered by *Myriad* in any way.[997]

557. Claimants are of the view that Dow's argument that the RE44962 reissue claim violates *Myriad* because it covers the naturally occurring *bar* gene is meritless because neither the naturally occurring *bar* gene nor the naturally occuring *pat* gene begins with ATG (as required by claim 1).[998] The term "variant" does not modify the requirement of claim 1 that the start codon must be ATG.[999]

3. Tribunal's Determination: '665 Patent Invalid under *Myriad*

558. There is no question that claim 1 of the '665 patent covers the naturally occurring *bar* (*S. hygro*) gene and is therefore invalid according to the standard in *Myriad* preventing the patenting of naturally occurring DNA sequences. The '665 patent's reissue, RE44962, narrows claim 1 to exclude the naturally occurring gene, which begins with a "GTG" codon, and to point to a synthetic version, beginning with an "ATG" codon, and thus avoids *Myriad* invalidity.

559. Regarding Respondents' position that, if "variant" in claim 1 of the reissue is construed to include *pat*, then it will necessarily cover naturally occurring materials, the Tribunal is of the opinion that this argument must also fail. As Claimants point out,[1000] the requirement in claim 1 of the reissue that the first item in the sequence be "ATG" prevents the claim from covering naturally occurring genes, and this requirement is not modified by the presence of the term "variant". Respondents had previously argued that at least seven genes falling within the genus covered by claim 1 of the reissue

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[996] CL-322: *Ass'n for Molecular Pathology v. Myriad Genetics, Inc.*, 133 S. Ct. 2107 (2013)
[997] Claimants' Phase II Reply Memorial, dated 1 August 2014, para. 42
[998] Phase II Transcript, dated 25 August 2014, at 231:17-233:14
[999] Claimants' Phase II Post-Hearing Submission, dated 5 September 2014
[1000] Claimants' Phase II Post-Hearing Reply, dated 12 September 2014, at 6

begin, in their naturally occurring state, with the "ATG" codon,[1001] meaning that the restriction in claim 1 to gene sequences beginning with "ATG" would not succeed in excluding these naturally occurring genes. The Tribunal has determined, however, that the genes referred to by Respondents fall outside of the genus covered by claim 1 of the reissue patent, as discussed above in Part 3.III.E.3 with respect to indefiniteness. As a result, the requirement in claim 1 of the reissue that the first codon in the sequence of the gene and variants claimed be "ATG" is sufficient to ensure the exclusion of naturally occurring genes, and by extension, that the patent is not invalid on the basis of the *Myriad* decision.

560. The Tribunal's determination is not altered by the Federal Circuit's holdings in the *Ambry* decision.[1002] First, while *Ambry* appears to have clarified and broadened the notion of naturally occurring DNA sequences that forms the basis for *Myriad* invalidity, this broader notion does not appear to catch claim 1 of the reissue patent. The DNA sequence at issue in *Ambry*, which was synthesized in a lab and was claimed in the form of a primer, but which was identical to the naturally occurring gene in terms of the structure of its DNA sequence, was held to be naturally occurring and served as the basis for a finding of *Myriad* invalidity. Claim 1 of the reissue patent is distinguishable from the situation in *Ambry* because the gene that it claims differs from its naturally occurring counterpart, though only by a single nucleotide: the first codon of the naturally occurring gene ("GTG") has been replaced with an "ATG" codon in order to permit the gene to function in plants. As a result, the precise DNA sequence claimed cannot be found anywhere in nature. This is in contrast to the DNA sequence in *Ambry*: though it was patented in the form of a single strand of DNA that was much shorter than would have occurred in nature, an identical sequence, nucleotide for nucleotide, could still be found in a strand of naturally occurring DNA. To invalidate a claimed gene whose nucleotide sequence differs by one nucleotide from its naturally occurring analogue, and therefore cannot be said to be found anywhere in nature, would be to move beyond the factual situation contemplated by the *Ambry* decision, and the Tribunal declines to do so.

561. A second effect of the *Ambry* decision was to clarify that a claimed DNA sequence "with a function similar to that found in nature can only be patent eligible as a composition of matter if it has a unique structure, different from anything found in nature."[1003] This aspect of the *Ambry* decision need not be discussed here, given the Tribunal's finding that claim 1 of the reissue patent is not

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[1001] See the seven genes discussed by Respondents as beginning with the "ATG" codon at Respondents' Phase II Reply Memorial, dated 1 August 2014, para. 125

[1002] *University of Utah Research Foundation v. Ambry Genetics Corporation*, Nos. 2014-1361, -1366 (Fed. Cir. Dec. 17, 2014) (slip opinion)

[1003] *Id.*, at 9

structurally identical to a DNA sequence occurring in nature, and is thus not subject to *Myriad* invalidity on that basis.

G. Surrender and Intervening Rights ('665 Patent)

562. Respondents argue that 35 U.S.C. § 252 limits the continuous effect of the reissue of the '665 patent, giving rise to absolute intervening rights and barring Bayer's right to recovery for infringement of claim 1 of the '665 patent prior to its reissue. The Tribunal agrees.

1. Respondents' Position on Intervening Rights

563. Respondents note that 35 U.S.C. § 252 limits the continuous effect of reissue claims to those that are "substantially identical" to claims in the original patent. In its *Seattle Box* decision, the Federal Circuit held that substantial identity means "without substantive change."[1004] Since *Seattle Box*, it has been clear that this inquiry turns on "whether the scope of [the original and reissued] claims are identical."[1005] Both broadening[1006] and narrowing[1007] changes preclude a finding of continuity. The right of the alleged infringer to be free from liability prior to reissue is "absolute".[1008] Indeed, the "making of substantive changes in the claims is treated as an irrebuttable presumption that the original claims were materially flawed."[1009]

564. **No community exists between claim 1 of '665 and claim 1 RE44962**—Respondents argue that Bayer narrowed claim 1 of the '665 patent in two ways, precluding infringement by DNA encoding a protein sequence either: (i) beginning with "VAL" (the amino acid valine); or (ii) beginning with "MET" (the amino acid methionine) other than coded by the nucleotides "ATG". In its papers in the present Arbitration, Bayer expressly stated that it narrowed the scope of claim 1.[1010] In its reissue applications, Bayer stated that it narrowed claim 1 in an attempt to avoid invalidity under *Myriad*.[1011] Respondents assert that this makes the '665 patent "dead" for all purposes[1012] and that

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[1004] RLA-429: *Seattle Box Co. v. Industry Crating & Packaging, Inc.*, 731 F.2d 818, 827-28 (Fed. Cir. 1984)
[1005] RLA-656: *Laitram Corp. v. NEC Corp.*, F.3d 1342, 1346 (Fed. Cir. 1998)
[1006] See e.g. RLA-429: *Seattle Box Co. v. Industry Crating & Packaging, Inc.*, 731 F.2d 818, 828 (Fed. Cir. 1984)
[1007] See e.g. RLA-656: *Laitram Corp. v. NEC Corp.*, F.3d 1342, 1349 (Fed. Cir. 1998)
[1008] CL-505: *Marine Polymer Technologies, Inc. v. HemCon, Inc.*, 672 F.3d 1350, 1361-62 (Fed. Cir. 2012)
[1009] RLA-454: *Bloom Engineering Co. v. North American Manufacturing Co.*, 129 F.3d 1247, 1249 (Fed. Cir. 1997)
[1010] See e.g. Claimants' Phase II Reply Memorial, dated 1 August 2014, paras. 47, 49
[1011] R-364: Reissue Application Declaration, dated 29 August 2013
[1012] RLA-429: *Seattle Box Co. v. Indus. Crating & Packing, Inc.*, 731 F.2d 818, 827 (Fed. Cir. 1984)

there can be no legitimate dispute that no continuity exists between claim one of the '665 patent and claim 1 of the RE44962 patent.[1013]

565. **Equitable considerations irrelevant to absolute intervening rights**—Respondents object to Claimants' references to equity, on the grounds that Claimants have confused the doctrine of "absolute" intervening rights relating to the continued use of a product made prior to reissue with "equitable" intervening rights relating to the use of a product made after reissue, only the latter of which may require proof of reliance.[1014] The Federal Circuit has explained, in *BIC*, that "absolute" intervening rights under 35 U.S.C. § 252 of the Patent Act are indeed absolute, without any qualification and unconstrained by any "detrimental reliance" requirement.[1015]

566. Respondents argue that, in the last two decades, courts relying on the plain language of §252 and the Federal Circuit's ruling in *BIC* have repeatedly held that "there is no detrimental reliance requirement for infringement defendants claiming absolute intervening rights" and that "reliance on *Slimfold* is misplaced."[1016] As one court explained, citing *BIC*, "the Federal Circuit's dicta twenty years ago in *Slimfold* ... cannot be read to impose this requirement in light of the statutory language and subsequent precedent defining 'absolute' intervening rights."[1017]

567. Respondents view Bayer's reliance on District Court cases that predate *BIC* as contrary to the statutory language and subsequent precedent. Respondents also argue that the cases are irrelevant in any event, as in each of those cases, the court found that the scope of the original and reissued claims were identical, in contrast to the situation in the present Arbitration.[1018]

2. Claimants' Position on Intervening Rights

568. In Claimants' view, because reissued claim 1 is substantially identical to original claim 1 of the '665 patent, the reissue does affect Bayer's right to recovery for Dow's infringement of claim 1 for the entire period of infringement, even before reissue.[1019] Under 35 U.S.C. §252, the surrender of the original patent upon reissue "shall not affect any action then pending nor abate any cause of action then existing, and the reissued patent, to the extent that its claims are substantially identical

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[1013] Respondents' Phase II Post-Hearing Submission, dated 5 September 2014, para. 25
[1014] RLA-658: *Engineered Data Prods., Inc.*, 506 F. Supp. 2d at 468
[1015] RLA-453: *BIC Leisure Prods., Inc. v. Windsurfing Int'l, Inc.*, 1 F.3d 1214, 1221 (Fed. Cir. 1993)
[1016] RLA-659: *Sorensen v. Emerson Elec. Co.*, 2011 WL 6752559, at *4 (S.D. Cal. 22 Dec. 2011)
[1017] RLA-658: *Engineered Data Prods., Inc.*, 506 F. Supp. 2d at 468
[1018] Respondents' Phase II Post-Hearing Reply, dated 12 September 2014, para. 23
[1019] Claimants' Phase II Reply Memorial, dated 1 August 2014, para. 40

with the original patent, shall constitute a continuation thereof and have effect continuously from the date of the original patent." As a consequence, the patentee may collect damages for infringement of such a claim during the period between the issuance of the original patent and the reissue.[1020]

569. Claimants note that the Federal Circuit has explained that "[t]he reissue provisions of the Patent Act of 1952 ... are remedial in nature. They are based on fundamental principles of equity and fairness and should be so applied to the facts in any given case that justice will be done both to the patentee and to the public."[1021] In assessing substantial identity for the purpose of continuous effect after reissue, "[t]he standard applied is that of whether a particular change to the claims is substantive, such that the scope of the claims is no longer substantially identical."[1022] This standard is "a reasonable standard, for it implements the purpose of the [reissue] statute while enabling application to the facts of any given case that justice will have done."[1023] In the substantial identity context, "a § 252 determination is an equitable one."[1024] "There is no *per se* rule."[1025]

570. **Narrowed reissue claim**—Claimants argue that courts consider "[t]he major purpose of the [§ 252] inquiry [to be] 'to protect parties who have relied on the scope of the original claims from discovering that they have retroactively become infringers thanks to changes made on reexamination or reissue.'"[1026] "[A] court's primary concern should be with whether the scope of the claims has been broadened by the amendment."[1027] The Federal Circuit in *Slimfold* reasoned that "[the] amendment did not enlarge the scope of the claims, and [the accused infringer] did not demonstrate that it relied to its detriment on any aspect of the original claims that was changed by reissue" in finding claims substantially identical.[1028] Thus, according to Claimants, because in the present Arbitration, a narrowed reissued claim covers the accused product in the exact same way

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[1020] *Id.*, para. 43
[1021] CL-509: *In re Willingham*, 282 F.2d 353, 354 (C.C.P.A. 1960); CL-507: *Slimfold Mfg Corp. v. Kinkead Industries, Inc.* 810 F.2d 1113, 1116-17 (Fed. Cir. 1987)
[1022] CL-507: *Slimfold Mfg Corp. v. Kinkead Industries, Inc.*, 810 F.2d 1113, 1116 (Fed. Cir. 1987)
[1023] *Id.*, citing CL-509: *In re Willingham*, 282 F.2d 353, 354-55 (C.C.P.A. 1960)
[1024] CL-508: *Tennant Co. v. Hako Minuteman, Inc.*, 4 U.S.P.Q.2d 1167, 1987 WL 12207, at *3 (N.D. Ill. 1987), *motion for reconsideration granted*, 9 U.S.P.Q.2d 1157, 1988 U.S. Dist. LEXIS 16266 (N.D. Ill. July 12, 1988), *ruling on reconsideration rev'd*, 878 F.2d 1413 (Fed. Cir. 1989)
[1025] CL-503: *Laitram Corp. v. NEC Corp.*, 952 F.2d 1357, 1362-63 (Fed. Cir. 1991)
[1026] CL-508: *Tennant Co. v. Hako Minuteman, Inc.*, 4 U.S.P.Q.2d 1167, 1987 WL 12207, at *3 (N.D. Ill. 1987), *motion for reconsideration granted*, 9 U.S.P.Q.2d 1157, 1988 U.S. Dist. LEXIS 16266 (N.D. Ill. July 12, 1988), *ruling on reconsideration rev'd*, 878 F.2d 1413 (Fed. Cir. 1989)
[1027] *Id.*
[1028] CL-507: *Slimfold Mfg Corp. v. Kinkead Industries, Inc.*, 810 F.2d 1113, 1117 (Fed. Cir. 1987)

as the original claim did and the accused product infringes both, the fact that the claims were changed in the reissue has no effect whatsoever on an infringement claim.[1029]

571. Claimants argue that Dow's reliance on the *Seattle Box* is misplaced for this reason. While *Seattle Box* states that Congress limited claim continuity to "identical" claims, the case interprets the term "identical" in the former § 252 as "at most, 'without substantive change.'"[1030] Unlike the present Arbitration, *Seattle Box* involved a broadening, not a narrowing reissue and did not involve an intervening change in law.[1031]

572. **Equitable and fairness principles**—In Claimants' view, the facts here clearly cause the equitable and fairness principles underlying the substantial identity analysis to weigh in favor of a finding of substantial identity. Here, there was an intervening change in law (*Myriad*) nearly six years after Dow had infringed. Dow was not using the naturally occurring sequence with the GTG start codon that was removed from the claim in the reissue. In Claimants' view, Dow did not rely on the scope of the original claims: it was already infringing prior to reissue and was not caught unaware by a reissue that claimed broader rights than the original claim.[1032]

573. Claimants note that courts have disallowed an infringer to take advantage of a minor error in a patent by evading damages for infringement prior to reissue.[1033] In contrast, however, Bayer's original patent contained no error: Bayer sought reissue to pre-empt a potential invalidity argument based on an unforeseeable change in law.[1034] Claimants argue that a finding that the claim is not continued by the reissue would allow Dow to avail itself of the fortuity of a change in the law and unjustly appropriate Bayer's inventions.[1035]

574. Claimants argue that cases cited by Dow such as *Bloom* and *Kim*[1036] are inapposite because none involve a reissue precipitated by an intervening change in law. In finding a narrowing change to be substantive, the *Bloom* court found that the change was necessary to avoid existing prior art, not due to an intervening change in law.[1037]

[1029] CL-504: *Loral Corp. v. B.F. Goodrich Co.*, 1989 U.S. Dist. LEXIS 16865, at *75, (S.D. Ohio 1989)
[1030] RLA-429: *Seattle Box Co. v. Indus. Crating & Packing, Inc.*, 731 F.2d 818, 827-28 (Fed. Cir. 1984)
[1031] Claimants' Phase II Post-Hearing Submission, dated 5 September 2014, at 8
[1032] *Id.* at 7
[1033] See e.g. *Kelley Manufacturing Corp. v. Lilliston Corp.*, 636 F.2d 919, 920-21 (4th Cir 1980)
[1034] Claimants' Phase II Reply Memorial, dated 1 August 2014, para. 51
[1035] Claimants' Phase II Post-Hearing Submission, dated 5 September 2014, at 7-8
[1036] RLA-454: *Bloom Eng'g Co. v. N. Am. Mfg. Co.*, 129 F.3d 1247 (Fed. Cir. 1997); RLA-455: *Kim v. Earthgrains Co.*, 451 Fed. Appx. 922 (Fed. Cir. 2011) (unpublished opinion)
[1037] Claimants' Phase II Post-Hearing Submission, dated 5 September 2014, at 8

3. Tribunal's Determination: Absolute Intervening Rights Apply to the '665 Patent

575. The Tribunal is of the view that absolute intervening rights must be recognized under current law, with the result that Claimants are unable to recover for any infringement prior to the reissue.

576. The Tribunal sees some merit in Claimants' arguments concerning intervening rights because they reflect the equitable origin of the principles surrounding intervening rights and claim continuation. Adopting an equitable approach to the issue, the cases thus focused for a time on the concept of detrimental reliance.[1038]

577. A shift in the cases away from any notion of detrimental reliance became clear, however, with the *BIC* case, which held that "there is no detrimental reliance requirement for infringement defendants claiming absolute intervening rights."[1039] This case has clearly been followed, notably in *Engineered Data*[1040] and in *Sorensen*.[1041] In applying this standard, courts have found "narrowing" changes to claims to be "substantive", thus precluding a finding of claim continuity even if claim narrowing normally does not induce detrimental reliance. As indicated in *Engineered Data*, "the Federal Circuit has routinely applied the intervening rights defense to narrowing amendments"[1042] The wisdom of this development in the law surrounding intervening rights is not for this Tribunal to judge. The Tribunal applies the law as it finds it, and must therefore agree with Respondents that the law now makes intervening rights absolute where the reissued claim, even if narrower, is not substantially identical to the original claim.

578. Did the change to claim 1 of the reissue patent constitute a substantive change? The Tribunal has found that in the eyes of the law, the change brought to the relevant claim had the effect of rescuing it from the scope of *Myriad* invalidity. In other words, the change under scrutiny was one between invalidity and validity. Even if this is not necessarily determinative, certainly the legal impact of the change on validity strongly suggests that the change should be considered substantive. Accordingly, the Tribunal determines that the narrowing of claim 1 of the '665 patent in the course of its reissue constitutes a substantive change under U.S. patent law, giving rise to absolute intervening rights. Though the narrowing of the reissued claim was pertinent to other issues

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[1038] See e.g. CL-504, *Loral Corp. v. B.F. Goodrich Co.*, 1989 U.S. Dist. LEXIS 16865, at *143-44, (S.D. Ohio 1989), *rev'd on other grounds*, 899 F.2d 1228 (Fed. Cir. 1990); CL-508, *Tennant Co. v. Hako Minuteman, Inc.*, 4 U.S.P.Q.2d 1167, 1987 WL 12207, at *3 (N.D. Ill. 1987), *motion for reconsideration granted*, 9 U.S.P.Q.2d 1157, 1988 U.S. Dist. LEXIS 16266 (N.D. Ill. July 12, 1988), *ruling on reconsideration rev'd*, 878 F.2d 1413 (Fed. Cir. 1989)
[1039] RLA-453: *BIC Leisure Prods., Inc. v. Windsurfing Int'l, Inc.*, 1 F.3d 1214, 1221 (Fed. Cir. 1993)
[1040] RLA-658: *Engineered Data Prods., Inc.*, 506 F. Supp. 2d at 468
[1041] RLA-659: *Sorensen v. Emerson Elec. Co.*, 2011 WL 6752559, at *4 (S.D. Cal. 22 Dec. 2011)
[1042] RLA-658: *Engineered Data Prods., Inc.*, 506 F. Supp. 2d at 467-68

previously addressed in this Award, it cannot be regarded as pertinent here. Bayer is thus precluded from recovery for any infringement prior to the reissue.

H. Obviousness-Type Double Patenting ('024, '236, '477, and Reissue Patents)

579. In considering the issue of invalidity under the obviousness-type doctrine of double patenting, the Tribunal begins by noting that Respondents first raised the issue of double patenting in their Phase III Memorial.[1043] They did so despite having had the opportunity to raise this issue as an affirmative defense to patent infringement[1044] during the infringement and validity phase of this Arbitration as Claimants, throughout that phase, took the position that the '665 patent and its reissue covered *pat*,[1045] creating a potential double patenting situation with the Strauch '268 patent. Nevertheless, the Tribunal is of the view that double patenting is a matter that engages public policy,[1046] and that the Tribunal should therefore exercise its discretion in order to address this issue, independently of any issues of admissibility.

580. Additionally the Tribunal notes that, on 26 February and 11 August 2015, the USPTO rendered *ex parte* office actions granting re-examination of claim 1 of the RE44962 reissue patent on the grounds of double patenting; on 14 April 2015, the USPTO also granted re-examination petitions on the grounds of double patenting for the '024, '236, and '477 patents.[1047] Assuming for the purpose of discussion that Respondents' petitions to the USPTO were compatible with their agreement to arbitrate, the USPTO's re-examination decisions now before the Tribunal cannot be probative. They were made on an *ex parte* basis, and the issue cannot be considered as having been joined. While the 11 August decision (concerning the Schneider patent) may have been made by an examiner who had already interviewed Bayer and received submissions in the matter concerning the Strauch patents, these matters remain separate. The Tribunal must therefore proceed with an independent analysis of the double patenting issue. This situation, in which the Tribunal must decide an issue of double patenting that is also before the USPTO, would very likely have been avoided if re-examination had been requested on a much more timely basis, for example, when it

[1043] Respondents' Phase III Memorial, dated 16 October 2014, para 28; Claimants' Phase III Closing Presentation, dated 21 November 2014, slides 260-61

[1044] CL-646: *Symbol Techs., Inc. v. Opticon, Inc.*, 935 F.2d 1569, 1580 (Fed. Cir. 1991)

[1045] Notably, Respondents assumed that this was Bayer's position in the first paragraph of Respondents' Phase II Memorial, dated where they argued, with respect to written description, that in the '665 patent and its reissue "Bayer discloses only two DNA sequences (coding for a *pat* gene and a *bar* gene)" but does not "limit its claims to DNA with the structure (i.e., the sequence) of the DNA that it discloses. Instead, it claims all genes with the same function"

[1046] Respondents' Phase III Closing Presentation, dated 21 November 2014, slides 20-21 (citing U.S. Constitution Art. 1, § 2, cl. 2; RLA-462: *Sears, Roebuck & Co. v. Stiffel Co.*, 376 U.S. 225, 230 (1964))

[1047]

first became apparent to Respondents that a patent infringement claim was to be brought or was being brought.

581. Having considered the parties' submissions, the Tribunal has determined that the reissue patent should not be declared invalid for double patenting. The Tribunal has made this determination on the basis that the Strauch '268 patent and the reissue patent (i.e., the reissue of the '665 patent as RE44962) lack the common ownership that is necessary in order for double patenting to apply. This finding that double patenting does not apply renders consideration of whether obviousness may be found under the one-way or two-way test for double patenting unnecessary.

582. Before proceeding to its analysis of the common ownership issue, however, the Tribunal notes briefly that, if common ownership had been found to exist, such that double-patenting applied, the Tribunal would have declared the reissue patent to be invalid under the one-way obviousness test, because the earlier issued species claim for the DNA sequence of a *pat* gene in the Strauch patent would render obvious the later issued genus claim for the *bar* gene and its variants in the reissue patent. The parties appeared to be in agreement in their Phase III Post-Hearing Submissions that the reissue patent would be invalid under the one-way test because a genus claim is always rendered obvious by an earlier-issued species claim. Claimants did not appear to contest Respondents' arguments to this effect,[1048] and argued instead that the two-way test for double patenting ought to apply, rather than the one-way test.[1049] The parties also appeared to be in agreement regarding the requirements for applying this two-way test as an exception to the usual one-way test: first, the patent holder must have filed first for a basic invention (i.e., a genus claim) and then for an improvement (i.e., a species claim); second, the USPTO must have been solely responsible for a delay that caused the second-filed patent to issue first.[1050] In light of these requirements, the Tribunal is of the view that the two-way test would not apply, because the delay in the issuance of the earlier filed patent would not be attributed solely to the USPTO. Claimants argue that after being forced by the USPTO to divide their initial application in April 1989, their claim election for

[1048] Respondents' Phase III Post-Hearing Submission, dated 18 February 2015, para. 31 (citing RLA-374: *In re Goodman*, 11 F.3d 1046, 1053 (Fed. Cir. 1993) ("[T]he generic invention is 'anticipated' by the species of the patented invention."); RLA-715: *In re Berg*, 140 F.3d 1428, 1437 (Fed. Cir. 1998) (affirming rejection of genus claims as obvious in light of earlier species claims); RLA-716: *Barr Labs*, 251 F.3d 955, 971-72 (Fed. Cir. 2001) (holding later patent claim covering treatment of serotonin uptake in animals not patentably distinct from earlier patent claim covering treatment of depression in humans))

[1049] See e.g. Claimants' Phase III Post-Hearing Submission, dated 18 February 2015, paras. 7-8

[1050] Respondents' Phase III Post-Hearing Submission, dated 18 February 2015, para. 4 (citing RLA-715: *In re Berg*, 140 F.3d 1428, 1432, 1437 (Fed. Cir. 1998)); Claimants' Phase III Post-Hearing Submission, dated 18 February 2015 (citing CL-643: *In re Braat*, 937 F.2d 589, 593 (Fed. Cir. 1991))

the initial application was allowed on 8 March 1995 and they filed the '665 DNA claim (the precursor to the reissue patent), as well as two other divisionals, shortly afterward on 5 June 1995.[1051] Claimants do not, however, explain their reason for waiting to file until 1995 or respond to Respondents' argument[1052] that it was not necessary to wait until the claim election was allowed before filing the '665 patent. Because this delay would not, in the Tribunal's view, be attributed solely to the USPTO, the two-way test would not apply, giving way to the one-way test, under which, but for the absence of common ownership, a finding of obviousness-type double patenting would be justified. As discussed, however, the application of the one-way and two-way double patenting analysis is foreclosed by the Tribunal's finding that the Strauch patent and the reissue patent are not commonly owned.

583. The Tribunal thus proceeds with its analysis of common ownership, the point on which the double patenting issue turns in this Arbitration. The Tribunal notes that Respondents have stated in their Phase III Post-Hearing Submission that, in addition to the reissue patent, they also seek the invalidity of the '024, '236, and '477 patents on the grounds of double patenting.[1053] The Tribunal is of the view that the defense of double patenting regarding these three patents would be rejected for the same reasons as those set out below with respect to the reissue patent—that is, the lack of common ownership with the Strauch patents.

1. Respondents' Position on Common Ownership

584. Respondents argue that the reissue patent and the Strauch '268 patent fulfill the common ownership requirement for a finding of double patenting. In particular, Respondents note that the USPTO came to this conclusion in its recent office action in the re-examination of the reissue patent, which declared claim 1 invalid for double patenting.[1054]

585. In Respondents' view, the Strauch patent and the reissue patent are commonly owned by Bayer AG because each is held by one of Bayer AG's subsidiaries,[1055] and the USPTO's *Manual on Patent Examination Procedure* (*MPEP*) establishes that, where a "Parent Company owns 100% of Subsidiaries A and B, ... inventions of A and B are commonly owned by the Parent Company."[1056]

[1051] Claimants' Phase III Post-Hearing Submission, dated 18 February 2015, para. 20
[1052] Respondents' Phase III Post-Hearing Submission, dated 18 February 2015, paras. 20-22
[1053] *Id.*, paras. 6-8
[1054] R-740: USPTO Office Action in Ex Parte Re-examination, dated 26 February 2015
[1055] Respondents' Phase III Post-Hearing Reply, dated 27 February 2015, para. 2
[1056] R-720: MPEP § 706.02(l)(2)(I), dated March 2014, at 700-72

According to Respondents, Bayer is in the same position as the patentee in the *Geneva* case, where the patents that gave rise to double patenting had issued to different companies (Beecham and Glaxo Labs) but both ended up being held by one company (GlaxoSmithKline) following a corporate merger.[1057] Respondents further argue that the double-patenting analysis does not involve an element of intent, rendering irrelevant the question of whether the original respective owners of the Leemans patents and the Strauch patents (Hoechst and PGS) could have known what the other was patenting.[1058] In any event, Respondents note that Hoechst's application was public by 1988, and Hoechst had exclusively licensed the Leemans patents in 1992.[1059]

586. Respondents further argue that the common ownership requirement is fulfilled because Biogen is not a co-owner of the reissue patent. Respondents note that, on the issue of standing in Phase II of this Arbitration (Part 3.I.B of the award), Bayer argued that it alone had "all substantial rights" with respect to the patents-at-issue (including the reissue patent)[1060] and that Biogen is therefore not a co-owner because "[o]nly a 'party that has been granted all substantial rights under the patent is considered the owner.'"[1061] Additionally, Respondents argue that *In re Hubbell* and *In re Fallaux* establish that double patenting rejections are proper even when there is not complete identity of ownership.[1062] Respondents assert that the *Brookhart* and *Email Link* cases, which require complete identity of ownership, are inapposite because they apply not the test for double patenting common ownership but rather a narrower standard applied to the filing of a terminal disclaimer.[1063]

587. Finally, Respondents note that the double patenting rule exists "to prevent unjustified timewise extensions of ... a patent [term] no matter how the extension is brought about."[1064] They argue that, while Bayer could have filed a declaration and terminal disclaimer to cure double patenting,[1065]

[1057] RLA-722: *Geneva Pharms. Inc. v. GlaxoSmithKline PLC*, 213 F. Supp. 2d 597, 599, 600 n.7 (E.D. Va. 2002), (affirmed RLA-690: *Geneva Pharms, Inc. v. GlaxoSmithKline PLC*, 349 F.3d 1373, 1382 (Fed. Cir. 2003))
[1058] Respondents' Phase III Post-Hearing Reply, dated 27 February 2015, para. 2
[1059] R-484: PGS-Hoechst License Agreement, dated 24 April 1992; R-639: Strauch EP0275957, dated 27 July 1988
[1060] Claimants' Phase II Counter-Memorial, dated 10 July 2014, paras. 128-30
[1061] Respondents' Phase III Post-Hearing Reply, dated 27 February 2015 (citing RLA-793: *Speedplay v. Bebop*, 211 F.3d 1245, 1250 (Fed. Cir. 2000))
[1062] RLA-691: *In re Hubbell*, 709 F.3d 1140, 1148 (Fed. Cir. 2013); RLA-783: *In re Fallaux*, 564 F.3d at 1315 (Fed. Cir. 2009)
[1063] CL-670: *Ex parte Brookhart*, No. 2005-2463, 2005 Pat. App. LEXIS 2485 (B.P.A.I. Sept. 19, 2005); CL-645: *Email Link Corp. v. Treasure Island, LLC*, 2012 U.S. Dist. LEXIS 138042, at *11-12 (D. Nev. Sept. 25, 2012)
[1064] RLA-691: *In re Hubbell*, 709 F.3d 1140, 1145 (Fed. Cir. 2013)
[1065] RLA-794: 37 C.F.R. § 1.130

Bayer instead sought to extend the monopoly it enjoyed under the Strauch '268 patent by prosecuting the Leemans patent.[1066]

2. Claimants' Position on Common Ownership

588. Claimants argue that the common ownership requirement for double patenting is not fulfilled in the case of the Strauch '268 patent and the reissue patent. Claimants assert that double patenting cannot exist unless (1) there is at least one inventor common to both patents, or (2) the same entity (or entities) owns both patents.[1067] Because there is no inventor common to both patents,[1068] Claimants are of the view that double patenting can be established only if the patents are commonly owned. Claimants assert that to find common ownership in the present Arbitration would be to apply the double-patenting doctrine in an unprecedented manner, and that no sources have been presented that would suggest that patents issued to unrelated companies (i.e., Hoechst and PGS at the time of patenting), but which eventually came to be owned by sister subsidiaries, should be subject to double patenting.[1069]

589. Claimants argue that there is no common ownership because neither the parent company Bayer AG, nor its wholly owned subsidiaries Bayer CropScience AG (owner of the Strauch patent) and Bayer CropScience NV (owner of the reissue patent), have ever owned both the Strauch and the reissue patent at any time.[1070] In Claimants' view, patents and other assets owned by a parent and subsidiary, or two different subsidiaries of the same parent, are not owned by the same entity.[1071]

590. Claimants further argue that the Strauch patent and the reissue patent have never been commonly owned because complete identity of ownership is required in order to find common ownership for the purposes of double patenting. Claimants refer to the *Brookhart* case, in which double patenting was not found because a patent application co-owned by two parties and a patent owned by one of

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[1066] Respondents' Phase III Post-Hearing Reply, dated 27 February 2015, para. 2
[1067] RLA-718: MPEP, § 804
[1068] C-615: Strauch '268 Patent, at cover page (inventors: Strauch, Arnold, Alijah, Wohlleben, Pühler, Eckes, Donn, Uhlmann, Hein, and Wengenmayer); C-350: RE962 Reissue Patent, at cover page (inventors: Leemans, Botterman, De Block, Thompson, and Mouva)
[1069] Claimants' Remedies Post Hearing Submission, para. 1, n.3. *Accord* CL-672: *Federal Tel. Radio Corp. v. Assoc. Tel. Co.*, 99 F. Supp. 535, 543 (D. Del. 1951)
[1070] Claimants' Remedies Post Hearing Submission, para. 4
[1071] CX-236: *Dole Food Co v. Patrickson*, 538 U.S. 468, 474–75 (2003); CL-675: *United States v. Bennett*, 621 F.3d 1131, 1136 (9th Cir. 2010); CX-237: *Schreiber Foods, Inc. v. Beatrice Cheese, Inc.*, 402 F.3d 1198, 1200-03 (Fed. Cir. 2005); CL-645, *Email Link Corp. v. Treasure Island, LLC*, 2012 U.S. Dist. LEXIS 138042, at *11-12 (D. Nev. Sept. 25, 2012)

those two parties lacked common ownership.[1072] As a result, Claimants argue that there is no common ownership because the reissue patent has always been owned by two entities, Biogen and another (e.g., PGS at one time; Bayer CropScience NV at present), and neither of these companies has ever owned an interest in the Strauch patent.[1073]

591. Finally, Claimants argue that, in order for double patenting to apply, common ownership must have existed at the time that the later invention was made. Claimants advance this argument on the basis of a timing requirement that appears in the *MPEP*'s definition of common ownership for the purposes of determining prior art,[1074] as the *Brookhart* case "explicitly links the meaning of common ownership in a double patenting context to the definition in MPEP § 706.02(l)(2)."[1075]

3. Tribunal's Determination: No Common Ownership

592. The Tribunal is of the view that Respondents' double patenting defense should be rejected because the Strauch '268 patent and the reissue patent do not share common ownership or a common inventor. Claimants have noted that double patenting applies even if there is no common ownership of the patents, if the patents have an inventor in common,[1076] and the parties appear to agree that, in the present Arbitration, there is no inventor in common: Respondents have not contested Claimants' assertion to this effect.[1077] As a result, if double patenting is to apply, it must be on the basis of common ownership.

593. **Common ownership analysis in the context of related companies**—The Tribunal concludes that common ownership does not exist, based on the fact that the Strauch patent's and the reissue patent's respective ownership by Bayer CropScience AG and Bayer CropScience NV, two wholly owned subsidiaries of Bayer AG, should not result in the patents being deemed to be commonly owned. In arriving at this determination, the Tribunal does not necessarily suggest that the piercing of the corporate veil, such that patents held by related companies could be found to be commonly owned, has no place in the common ownership analysis for purposes of double patenting. Rather, the Tribunal, having examined the parties' submissions, is of the view that Respondents have not demonstrated that the particular facts of this Arbitration would support veil-piercing in order to

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[1072] CL-670: *Ex parte Brookhart*, No. 2005-2463, 2005 Pat. App. LEXIS 2485, at *4-5 (B.P.A.I. Sept. 19, 2005) (quoting CL-673: MPEP § 706(l)(2))
[1073] Claimants' Remedies Post Hearing Submission, para. 3
[1074] CX-289: MPEP §706.02(l)(2)
[1075] CL-670: *Ex parte Brookhart*, No. 2005-2463, 2005 Pat. App. LEXIS 2485, at *4-5 (B.P.A.I. Sept. 19, 2005)
[1076] RLA-718: MPEP, § 804
[1077] Claimants' Phase III Post-Hearing Submission, dated 18 February 2015, para. 2

discharge their burden of showing that the common ownership requirement of the double patenting analysis has been fulfilled.

594. The Tribunal acknowledges that the *MPEP*'s provisions on common ownership for the purposes of prior art may be taken to suggest a different result. These provisions on common ownership, which the *Brookhart* case has established as being relevant to the common ownership analysis for double patenting purposes,[1078] indicate that corporate-veil piercing may occur: they list, as an example of common ownership "provided for illustration only," that if a "Parent Company owns 100% of Subsidiaries A and B, ... inventions of A and B are commonly owned by the Parent Company."[1079] This example suggests that parents and wholly owned subsidiaries may be treated as a single entity for the purpose of establishing common ownership.

595. Though the Tribunal recognizes the expertise of the USPTO and the weight of the *MPEP* as a persuasive source, the Tribunal is of the view that, in the present Arbitration, it is justified in following the cases discussed below refusing to pierce the corporate veil rather than the *MPEP* provisions. In the *MPEP*, the example of corporate-veil piercing for the purposes of the common ownership analysis is not grounded by reference to any case law. By contrast, the case law analyzed below suggests a pattern of courts declining invitations to pierce the corporate veil, and at least in some cases, the courts rejecting the veil piercing are not generalist courts but rather ones specialized in appeals of patent cases, which rather diminishes the comparative weight that one might place on the *MPEP* on account of patent expertise.

596. While no case in the record deals with the common ownership requirement among related companies in the specific context of double patenting, one case cited by Claimants, *Email Link*, addresses this issue in the context of terminal disclaimer. The *Email Link* case established that a patent held by a parent and a patent owned by a wholly owned subsidiary lacked the necessary common ownership to qualify for terminal disclaimer.[1080] If the reasoning in *Email Link* applies to the present Arbitration, then the Strauch patent and the reissue patent, each held by a different wholly owned subsidiary of Bayer AG, would seem similarly to lack common ownership due to the corporate veil separating parent and subsidiary.

[1078] Respondents' Phase III Post-Hearing Reply, dated 27 February 2015, para. 2, n.4
[1079] R-720: MPEP § 706.02(l)(2)(I), dated March 2014, at 700-72
[1080] CL-645: *Email Link Corp. v. Treasure Island, LLC*, 2012 U.S. Dist. LEXIS 138042, at *11-12 (D. Nev. Sept. 25, 2012)

597. The Tribunal is of the view that the *Email Link* case is properly applied to determine common ownership for purposes of double patenting—and, therefore, that the Strauch and reissue patents do not satisfy the common ownership requirement—because of the close relationship between the notion of common ownership in double patenting and in the terminal disclaimer context at issue in *Email Link*. A terminal disclaimer operates in situations of two commonly owned patents that would give rise to double patenting; it may be sought by the common owner as a cure to invalidity based on double patenting.[1081] This link between double-patenting common ownership and terminal-disclaimer common ownership seems to be implied in the *Brookhart* case. In applying the definition of "common ownership" appearing in the *MPEP* provisions on prior art[1082] as the definition of common ownership for purposes of double patenting, the court in *Brookhart* notes that this application to double patenting is supported by the fact that the *MPEP* provisions on terminal disclaimer expressly refer to the prior art provisions as "examples of common ownership."[1083]

598. Furthermore, the Tribunal is not convinced that the *Fallaux*[1084] and *Hubbell*[1085] cases cited by Respondents support their assertion that the standard of common ownership when considering terminal disclaimer is more strict than the standard that should be applied when considering double patenting (i.e., that ownership by two wholly owned subsidiaries could constitute common ownership for double patenting, but not for purposes of terminal disclaimer). In both the *Fallaux* and *Hubbell* cases, double patenting was found, but terminal disclaimer was rejected, and Respondents therefore suggest that terminal disclaimer requirements for common ownership are stricter.[1086] In both cases, however, double patenting applied not because of common ownership of the two patents-at-issue, but rather because the two patents had an inventor in common; the findings in these cases are therefore not indicative of the relative strictness of common ownership standards in situations of double patenting versus terminal disclaimer. Common ownership was not found for purposes of either double patenting or of terminal disclaimer.[1087]

[1081] See e.g. Respondents' Phase III Post-Hearing Reply, dated 27 February 2014, para. 2, n.8 and accompanying text
[1082] CL-673: MPEP § 706(l)(2)
[1083] CL-670: *Ex parte Brookhart*, No. 2005-2463, 2005 Pat. App. LEXIS 2485, at *4-5 (B.P.A.I. Sept. 19, 2005) ("MPEP § 1490, which relates to the filing of a terminal disclaimer for the purpose of obviating a double patenting rejection of the obviousness type n3, explicitly links the meaning of common ownership in a double patenting context to the definition in MPEP § 706.02(l)(2). In our opinion, this is dispositive ....")
[1084] RLA-783: *In re Fallaux*, 564 F.3d at 1315 (Fed. Cir. 2009)
[1085] RLA-691: *In re Hubbell*, 709 F.3d 1140, 1148 (Fed. Cir. 2013)
[1086] See e.g. Respondents' Phase III Post-Hearing Reply, para. 2, nn.4, 7
[1087] The Tribunal also notes that the *Fallaux* case concerns an appeal by a patent holder to the Federal Circuit, seeking the application of the "two-way" double patenting analysis to the patents-at-issue. As the patent holder's appeal

599. A finding that the Strauch and reissue patents, held by two wholly owned subsidiaries of Bayer AG, are not commonly owned is also consistent with existing case law that indicates that a parent company is not deemed to own a wholly owned subsidiary's patents in other situations. In particular, Claimants cite *Schreiber*, a case about standing in which a parent company that assigned a patent (including all claims and causes of actions thereunder) to its wholly owned subsidiary was found to lack standing because it was no longer the owner of the patent.[1088]

600. In conclusion, the Tribunal is of the opinion that the Strauch patent and the reissue patent should not be considered as commonly owned on the basis that each of the two patents is held by a wholly owned subsidiary of Bayer AG. This lack of common ownership precludes a finding of double patenting.

601. **Requirement of complete identity for a finding of common ownership**—As discussed above, the Tribunal bases its determination that the Strauch and reissue patents are not commonly owned on the fact that each is held by a separate, wholly owned subsidiary of Bayer AG. In the alternative, however, if ownership by two wholly owned sister subsidiaries were found to constitute common ownership, the Tribunal also considers that the requirement for complete identity of ownership (i.e., a requirement that if one patent is co-owned, then the co-owners must also be owners of the other patent in order for double patenting to apply) would prevent a finding of common ownership. This is because Biogen can be considered a co-owner of the reissue patent, but not of the Strauch patent.

602. The *Brookhart* case establishes that, in order for common ownership for the purposes of double patenting to exist, all co-owners of either of the two patents-at-issue must have an interest in both patents.[1089] While Respondents cite the *Fallaux* and *Hubbell* cases to suggest that a less stringent test for common ownership than complete identity of ownership is required,[1090] as noted above with respect to the issue of related companies, these cases do not discuss the common ownership standard. In both cases, double patenting applied not because of common ownership of the two

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concerned only the application of the two-way test, the correctness or incorrectness of a finding of double patenting under the application of the standard, "one-way" double patenting analysis, which must, at first instance, have involved a finding of double patenting despite a lack of common ownership, was not at issue. Given the focus of the patent holder's appeal on the narrow question of the application of the two-way test, the Federal Circuit had no reason to address the question of common ownership in its decision

[1088] CX-237: *Schreiber Foods, Inc. v. Beatrice Cheese, Inc.*, 402 F.3d 1198, 1200-03 (Fed. Cir. 2005)

[1089] CL-670: *Ex parte Brookhart*, No. 2005-2463, 2005 Pat. App. LEXIS 2485, at *4-5 (B.P.A.I. Sept. 19, 2005) (quoting CL-673: MPEP § 706(l)(2))

[1090] RLA-691: *In re Hubbell*, 709 F.3d 1140, 1148 (Fed. Cir. 2013); RLA-783: *In re Fallaux*, 564 F.3d at 1315 (Fed. Cir. 2009)

patents-at-issue, but rather because the two patents had an inventor in common; the findings in these cases are therefore not indicative of the stringency of the common ownership test.

603. Given that a finding of common ownership would require a complete identity of ownership, the question becomes whether Biogen, which is not an owner of the Strauch patent, can be considered a co-owner of the reissue patent. [redacted][1092]

604. The Tribunal is of the opinion that Biogen can be considered a co-owner of the reissue patent. Respondents argue that Biogen is no longer a co-owner of the reissue patent because, as Bayer argued for the purpose of establishing standing, Bayer has "all substantial rights" with respect to the patents-at-issue (including the reissue patent).[1093] Respondents cite the *Speedplay* case, which states that "[a] party that has been granted all substantial rights under the patent is considered the owner."[1094] While this case provides that a grant of substantial rights is necessary to render a party an owner of a patent, it does not necessarily establish that the grantor of these substantial rights cannot remain an owner. Indeed, as an example of an indication to the contrary, section 706.02(I) of the *MPEP* defining common ownership states that "[a]s long as principal ownership rights to either the subject matter or the claimed invention reside in different persons or organizations common ownership does not exist. A license of the claimed invention to another by the owner where basic ownership rights are retained would not defeat ownership."[1095] When Biogen granted Bayer's predecessor [redacted], Biogen can be said to have retained "principal" or "basic" ownership rights. This situation is to be contrasted with a more fulsome grant of rights, likely in the form of an assignment, where the parties clearly intend that principal or basic ownership rights be given up. The Tribunal thus concludes that, as an alternative basis for denying invalidity based on double patenting, Biogen could be considered a co-owner of the reissue patent, preventing a finding of complete identity of ownership between the Strauch and reissue patents.

[1091] C-356: [redacted]
[1092] *Id.*, [redacted]
[1093] Claimants' Phase II Counter-Memorial, dated 10 July 2014, paras. 128-30
[1094] RLA-793: *Speedplay v. Bebop*, 211 F.3d 1245, 1250 (Fed. Cir. 2000)
[1095] R-720: MPEP § 706.02(I)(2)(I), dated March 2014

605. **Common ownership where patents issued to unrelated companies, and timing of common ownership**—In light of the Tribunal's conclusion that double patenting invalidity does not apply, it is unnecessary to consider the remaining two arguments advanced by Claimants regarding the Strauch patent and the reissue patent's lack of common ownership: (1) that double patenting does not apply where inventions were developed by, and patents issued to, different owners, and (2) that common ownership must have existed at the time that the later invention was made. In response to the first argument, however, the Tribunal briefly notes that the fact that the inventions were initially developed by, and that the relevant patents issued to, unrelated companies (Hoechst and PGS) before eventually being transferred to Bayer AG's subsidiaries does not seem to foreclose double patenting invalidity. In particular, while Claimants argue that there is no indication of any authority that applies double patenting in such a situation,[1096] Respondents cite the *Geneva* case, in which double patenting was found based on common ownership, despite the fact that the patents in question had originally issued to different companies.[1097]

606. **Dissent on double patenting** – Following the submission of a draft award for scrutiny by the ICC Court and the entry into the record, at the request of Respondents, of a new USPTO action, a dissent was recorded concerning the issue of double patenting. The majority arbitrators gave careful consideration to the dissent and found that it did not change their view of the matter.

607. First, the dissent appears to focus on what might happen "if the Tribunal had before it a definitive and conclusive USPTO ruling," possibly reflecting the MPEP provisions. Such is simply not the case. There is nothing at all odd about a tribunal relying on a careful reading of judicial decisions in the absence of a "definitive and conclusive ruling of double patenting by the PTO." *Ex parte* actions are not conclusive rulings, and the duty of this Tribunal is to apply legal principles as embodied in judicial decisions. This duty is in no way diminished in a situation such as this, where no cases have been cited that decide the exact point at issue (i.e., the common ownership requirement among companies in the specific context of double patenting). In this situation, the Tribunal's duty is still to apply the legal principles embodied in analogous cases such as *Schreiber* and *Email Link*, which reflect, in the patent context, the deeply-rooted position which the law normally takes as its starting point: separate corporate personality is the general principle and veil-piercing the exception. The majority arbitrators acknowledge the assistance that might be provided

[1096] Claimants' Remedies Post Hearing Submission, para. 1, n.3
[1097] RLA-722: *Geneva Pharms, Inc. v. GlaxoSmithKline PLC*, 213 F. Supp. 2d 597, 599, 600 n.7 (E.D. Va. 2002) (affirmed RLA-690: *Geneva Pharms, Inc. v. GlaxoSmithKline PLC*, 349 F.3d 1373, 1382 (Fed. Cir. 2003))

by the MPEP. However, an administrative manual cannot be elevated above the authoritative judicial decisions that set forth the legal principles which constrain application of the law by this Tribunal.[1098] In the American legal system, established norms elaborated through judicial precedent do not lose their authority simply because of an inconsistent pronouncement by an administrative body. This commonly accepted hierarchy of decision-making authority cannot be characterized (as suggested by the dissent) as imposing "an extraordinarily enhanced and unjustified standard of proof." In this connection, the majority notes the dissent's view that the USPTO "enjoys measurably greater expertise in this matter than does the Arbitral Tribunal." With respect, such an unsurprising assertion misses the point. The majority does not impugn the technical expertise of the USPTO, but simply declines to disregard the uncontroversial principle that responsibility for interpreting and applying the law rests with courts.

608. Second, the *Speedplay* case discussed in the dissent does indeed emphasize that ownership analysis, at least for the purpose of establishing standing, which is not the issue here, turns on "the substance of what was granted" rather than the characterization given to a transaction by the parties.[1099] Applying this standard, the court in *Speedplay* found that the single company licensee had standing to sue for infringement after receiving extensive rights described as follows: "exclusive worldwide, royalty-free, right and license under and to the Licensed Patents and the exclusive rights and license to manufacture, have manufactured, distribute, market, use and sell the Licensed Product and any other apparatus, instrument, device or product covered in whole or in part by the Licensed Patents." The company was also given the right to exercise the rights through agents and sub-licensees, and all rights terminated with the last to expire of the patents.[1100] The court concluded, under the facts of that case, that the licensor retained no substantial rights.[1101] While *Speedplay* does present some elements of similarity, it is certainly not controlling here. Under the agreement between Biogen and Bayer's predecessor PGS, [redacted]

[1098] The dissent takes issue with the majority's characterization of an illustration presented by the MPEP as just what it purported to be, an illustration. Yet the majority remains unable to see how an illustration by an administrative agency can create normative law in preference to legal principles established by court decisions, particularly in an area such as veil piercing which is so intensively fact specific. In some circumstances, a parent/subsidiary relationship will lend itself to disregard of the corporate veil. In other circumstances, the contrary would be true

[1099] RLA-793: *Speedplay v. Bebop*, 211 F.3d 1245, 1250 (Fed. Cir. 2000)

[1100] *Id*

[1101] *Id* at 1252

[redacted][1102] While the ownership provisions in the agreement could conceivably be described as mere characterization by the parties, the royalty provisions fundamentally distinguish this situation from the one at issue in *Speedplay*.

4. NON-MONETARY REMEDIES

609. In light of its findings of breach of the 1992 Agreement and infringement of the '236, '024, '477, and RE44962 reissue patents, the Tribunal will first consider the availability of an order of cessation and destruction as a remedy for contract breach under French law and the availability of an injunction as a remedy for patent infringement under U.S. law, and consider that neither is available to Claimants. The Tribunal will then consider whether declaratory relief is available under either French or U.S. law.

I. Injunction Following Finding of Termination

610. In Phase I of this Arbitration, Claimants asserted that termination of the 1992 Agreement required immediate cessation of the use of the *pat* gene and requested a cease and desist order. Claimants' application for injunctive relief did not differ materially from the request that the Arbitral Tribunal had already decided as a matter of interim measures.[1103] Indeed, the remedy ultimately sought by Claimants remained provisional, in that it would have consisted of an order directing Respondents "to cease and desist ... *pending final resolution of this Arbitration*."[1104] Although it is clear that this Tribunal had the power to revisit the issue and to grant interim relief at any stage of the proceedings, the basis and reasons for issuing such an order in the course of the proceedings would have had to be established. Claimants did not press this issue beyond their written submission, and the Tribunal found, as a matter of procedure, that the case for relief pending final resolution had not been made.[1105]

II. French Contract Law: Destruction of Product and Cessation of Use

611. At the outset of this Arbitration, Claimants took the position that French contract law provides the basis for an order of destruction and of cessation. In both their Phase III Reply and their Phase III Closing Presentation, however, Claimants moved toward a different position. In these latest

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[1102] C-356: [redacted]

[1103] Procedural Order No 2 (Decision on Interim Measures), 15 November 2013
[1104] Claimants' Reply, dated 27 February 2014 at 50 (emphasis added)
[1105] Procedural Order No 10, para 8

submissions, they emphasized a characterization of their request as a matter of "post-contractual obligations" sounding in tort. The Tribunal first considers the availability of an order of cessation and destruction under French contract law, and then turns to the issue of the applicability of the French regime of extra-contractual obligations.

A. Order for Cessation and Destruction under French Contract Law

612. The Tribunal is of the view that Claimants' request for an order of cessation and destruction should not be granted under French contract law.

1. Claimants' Position on French Contract Law

613. Claimants argue that, under French contract law, Dow must cease its use of the *pat* gene technology and destroy all existing products containing *pat*. As a consequence of the termination of a license, licensees are obliged to "immediately cease using the [licensed] product," and French law mandates the enforcement of the consequences of contractual termination in the form of post-contractual obligations to "liquidate the contractual situation."[1106]

614. In Claimants' view, "relief in kind" for contractual breach is the rule under French law: "when the damage results from a behavior or facts that are ongoing ... common sense requires ... that the court be allowed to impose cessation or at least the attenuation of future manifestations of the harm."[1107] The French courts' preference for in-kind remedies aims "to re-establish the situation that was compromised by the act attributed to the party that is liable,"[1108] and Claimants will suffer irreparable harm if Dow is permitted to commercialize *pat*-containing products.

615. **Destruction of *pat*-containing products**—With respect to destruction in particular, Claimants argue that French law is clear that destruction can be ordered as a remedy,[1109] that it is routinely ordered by French courts,[1110] and that it must be ordered where requested by the creditor: "the creditor is *entitled* to obtain the destruction of what has been made in violation of [an obligation

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[1106] CL-2: French Code of Intellectual Property, Article L.613-8; CL-470: A. Etienney, "Fasc 176 : Extinction du contrat – Effets, " *JurisClasseur*, at paras 4, 20 ff; Claimants' Phase III Memorial, dated 6 October 2014, paras. 15-16

[1107] CL-421: G. Viney, *La réparation en nature du dommage*, at 34; CL-422: G. Viney et P. Jourdain, *Traité de droit civil: Effets de la responsabilité*, at 26

[1108] CL-420: G. Viney et P. Jourdain, *Traité de droit civil: Effets de la responsabilité*, at 14-1

[1109] "A creditor is entitled to request that what was done through breach of the undertaking be destroyed": CL-1: French Civil Code, Article 1143

[1110] C-389: Second Gautier Witness Statement, para. 11, n 25; C-388: Galloux Second Witness Statement, para. 25

not to do], whether it be contractual or tortious ... and that *the court cannot refuse it to the creditor*."[1111]

616. In Claimants' view, a request for destruction under Article 1143 FCC does not amount to a request for specific performance because, under French law, a license agreement is an executory leasing contract, meaning that the leased technology must be returned when the lease is up.[1112] Cessation and restitution are commonly ordered after termination because the "lessee's obligation to make restitution remains contractual by a kind of survival of the obligation to the extinguished contract."[1113]

617. **Order opposable to MS Tech**—Claimants acknowledge that an order for destruction or cessation under French law may affect MS Tech, a third party not before the Tribunal. The *Cour de cassation* has recognized that injunctive orders affecting third parties can be issued to ensure that contractual obligations are respected.[1114] Furthermore, a judicial decision produces effects against a third party because it modifies the judicial order by its very existence.[1115] MS Tech draws its alleged rights to *pat* from Dow, and because Dow cannot have transferred a greater right to MS Tech than the right that Dow itself had, an injunction would not affect MS Tech's rights in a situation where Dow had no right to sublicense the *pat* gene.[1116]

618. **Inherent powers of Tribunal**—Claimants also assert that the Arbitral Tribunal has the inherent power to order cessation and destruction by virtue of the parties' arbitration agreement, in which the parties requested that the Tribunal determine the appropriate non-monetary relief for contractual breach.[1117]

2. Respondents' Position on French Contract Law

619. Respondents argue that, if French law applies to the request for an injunction, Claimants are not entitled to non-monetary relief. In Respondents' view, Bayer's request for the destruction of *pat*-containing materials under Article 1143 FCC amounts to a request for specific performance of the

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[1111] CL-427: Ph. Aynes & Ph. Stoffel-Munck, *Les Obligations* (LGDJ, 2013), para. 1129
[1112] CL-624: Azéma & Galloux; *Droit de la Propriété industrielle*, Précis Dalloz (7th ed. 2012), at 565
[1113] CL-629: Jourdain, RTD Civ. 2006, at 561
[1114] CL-630: Cass. civ. 3e, 4 mai 2006, n° 04-10051
[1115] CL-443: Guinchard, *Opposabilité de la chose jugée, corollaire de la relativité*, at 1100
[1116] Claimants' Phase III Closing Presentation, dated 21 November 2014, slide 22
[1117] Claimants' Phase III Memorial, dated 6 October 2014, para. 20; CL-361: Born, *International Commercial Arbitration*, at 3075

1992 Agreement[1118] that is incompatible with Bayer's invocation of the agreement's clause governing termination (*clause résolutoire*).[1119] Furthermore, the distinction drawn by Claimants between specific performance (*exécution forcée*) and reparation in kind (*réparation en nature*) is artificial: neither may be granted where an agreement has been terminated.[1120] Similarly, in Respondents' view, Claimants' argument that a lessee's obligation to make restitution remains contractual through a kind of survival following the extinction of the contract is artificial, because case law establishes that a party cannot request performance of any provision of a contract that no longer exists.[1121] Respondents assert that the case law cited by Claimants in which performance was ordered is inapposite, because it deals with tort remedies and cases where the contracts at issue had not been terminated.[1122]

620. In addition, Respondents argue that Article 1143 FCC applies only to negative obligations and that the alleged breach of the Article 4 the 1992 Agreement cannot be construed as a breach of a negative obligation.[1123]

621. Respondents also assert that the 1992 Agreement is not an executory license agreement requiring that the leased technology be returned following the lease, because case law has established that patent rights cannot be returned.[1124] Finally, Respondents assert that French law does not permit an order for destruction of material directly targeting a third party, and MS Tech, the owner of the Enlist E3 event that Bayer seeks to destroy, is such a third party.[1125]

3. Tribunal's Determination: Order for Cessation and Destruction Is Not Available under French Contract Law

622. In seeking the destruction of Dow's *pat*-containing products and the cessation of Dow's use of the *pat* gene under French law, Claimants' Phase III Memorial asks not for specific performance (*exécution en nature*), which is not available after termination, but rather for reparation in kind (*réparation en nature*), which doctrinal sources appear to recognize as an available head of remedy

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[1118] RLA-709: F. Leduc, Fasc. 201: Modalités de la réparation, *Jurisclassuer Civil Code*, 13 February 2006 (updated 2 June 2014), para. 29
[1119] CL-1: Article 1184 FCC; RLA-407: Cass. civ. 1ère, 5 juillet 2005, n° 04-15.808; RLA-408: Cass. com., 26 février 2002, n° 99-15.150
[1120] RLA-678: Commentary of Cass. Civ. 3, 13 Nov 1997
[1121] Cass. civ. 1ère, 6 mars 1996
[1122] Respondents' Phase III Closing Presentation, dated 21 November 2014, slides 211-12
[1123] R-630: Fifth Aynès Witness Statement, at 2
[1124] CL-51: Cass. req. 29 janvier 1907, Rec. D. 1997, at 396
[1125] R-388: Third Aynès Witness Statement, at 8

after termination.[1126] The Tribunal is of the view, however, that Claimants' request for reparation in kind must be rejected.

623. **Destruction of the products under Article 1143 FCC**—In seeking the destruction of Dow's *pat*-containing products as a remedy under French contract law, Claimants relied, throughout this Arbitration, solely on Article 1143 FCC, which provides that "a creditor is entitled to request that what has been done through breach of the undertaking be destroyed; and he may have himself authorized to destroy it at the expense of the debtor... ."[1127] This provision clearly contemplates the destruction of products made in breach of a contractual obligation. What the provision does not expressly say is whether destruction is contemplated as a matter of specific performance or as a matter of reparation.

624. The law now seems clear, however, that Article 1143 FCC concerns specific performance, not reparation, and so does not apply after termination.[1128] As a result, destruction of the *pat*-containing products is not available on the basis relied upon by Claimants. If a broader basis for a destruction order, beyond Article 1143 FCC, were to be considered, it would be akin to the basis proposed by Claimants for a cessation order, which the Tribunal considers below, and would have to be rejected for similar reasons.

625. **Cessation of use as reparation in kind under contract law**—The Tribunal accepts for the purpose of this discussion that the kind of cessation order being requested is recognized by French contract law and theoretically available under a doctrinal regime of reparation in kind.[1129] Reparation in kind is conceptually distinct from specific performance. While the purpose of specific performance is to restore legality by redressing the wrong that the contract breach constitutes, the purpose of reparation in kind is to repair the damage caused by the breach.[1130] Unlike specific performance, which in appropriate cases the judge cannot refuse, reparation in kind

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[1126] See e.g. Claimants' Phase III Memorial, dated 6 October 2014, paras. 17-18. For a source outlining the difference between the two concepts, see e.g. RLA-709: F. Leduc, Fasc. 201: Modalités de la réparation, *Jurisclasseur Civil Code*, 13 February 2006 (updated 2 June 2014), para. 28

[1127] CL-1: French Civil Code, at 149

[1128] RLA-709: F. Leduc, Fasc. 201: Modalités de la réparation, *Jurisclasseur Civil Code*, 13 February 2006 (updated 2 June 2014), para. 29 (and cases cited therein)

[1129] See e.g. CL-420: G. Viney et P. Jourdain, *Traité de droit civil, Effets de la responsabilité*, at 14-1; RLA-709: F. Leduc, Fasc. 201: Modalités de la réparation, *Jurisclasseur Civil Code*, 13 February 2006 (updated 2 June 2014), para. 28

[1130] See e.g. CL-420: G. Viney et P. Jourdain, *Traité de droit civil, Effets de la responsabilité*, at 14-1; RLA-709: F. Leduc, Fasc. 201: Modalités de la réparation, *Jurisclasseur Civil Code*, 13 February 2006 (updated 2 June 2014), para. 28

is a matter of judicial discretion.[1131] Reparation in kind, however, appears to be a rarity. Many of the sources cited by Claimants are actually about specific performance, which is not available after the contract has been terminated.[1132] Other cases concern restitution by one party of materials belonging to the other party following resolution under Article 1183 FCC.[1133] This concept of restitution does not, in the Tribunal's view, correspond to the remedy that Claimants are seeking here. As Respondents rightly suggest, patent rights "taken" in breach of a license agreement cannot be "returned" within the meaning of Article 1183 FCC.[1134]

626. The Tribunal is mindful of the fact that French contract law "favors in-kind over monetary remedies whenever possible," as Claimants put the matter in their Phase III Memorial.[1135] In the interest of precision, the Tribunal notes that what French law really favors is the enforcement of contracts through specific performance, over reparation.[1136] In other words, French law's preference is for restoring legality through forced performance where appropriate. In cases such as the present Arbitration, where specific performance is not available or possible, and where there may be a choice between reparation in kind and damages, the preference, if there is one, may well be for damages.

627. The Tribunal is also mindful of the fact that case law is not strictly needed to establish the availability of reparation in kind. The lack of cases supporting reparation in kind in the present case, however, does suggest that reparation in kind is not favored in practice. While Claimants argue that "cessation/restitution is routinely ordered even when the contract is dead,"[1137] among the four cases cited for this proposition, three involve restitution of materials, which is explicitly provided for under Article 1183 FCC. Of these three, two involve restitution of materials based on an explicit contract clause[1138] and one involves an agreement reached during trial to return

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[1131] RLA-709: F. Leduc, Fasc. 201: Modalités de la réparation, *Jurisclassuer Civil Code*, 13 February 2006 (updated 2 June 2014), para. 29

[1132] See e.g. Claimants' Phase II Reply Memorial, dated 1 August 2014, para. 13, citing CL-426: F. Terré, Ph. Simler et Y. Lequette, No. 1112; CL-427, Ph. Malaurie, L. Aynès & Ph. Stoffel-Munck, *Les obligations*, 5th ed, Defrénois (Paris, 2011), at 1130

[1133] CL-625: Paris Court of Appeals (1st Pôle, 2nd chamber), Feb. 14, 2013, No. 2012/09190; CL-626: Douai Court of Appeals, 2nd chamber, March 13, 2008, No. 0607477; CL-627: Orleans Court of Appeals, March 12, 2009

[1134] Respondents' Phase III Reply, dated 30 October 2014, para 66, citing CL-51: Cass. req., 29 January 1907, Rec. D. 1997, at 396

[1135] Claimants' Phase III Memorial, dated 6 October 2014, para 18

[1136] Claimants' Phase II Reply, dated 1 August 2014, para. 13, citing CL-426: F. Terré, Ph. Simler et Y. Lequette, No. 1112; CL-427, Ph. Malaurie, L. Aynès & Ph. Stoffel-Munck, *Les obligations*, 5th ed, Defrénois (Paris, 2011), at 1130

[1137] Claimants Phase III Reply, dated 23 October 2014, para 18

[1138] CL-625: Paris Court of Appeals (1st Pôle, 2nd chamber), 14 February 2013, No. 2012/09190; CL-626: Douai Court of Appeals, 2nd chamber, 13 March 2008, No. 0607477

materials.[1139] None of these three cases are of any assistance to Claimants. The fourth and final case[1140] is factually similar to the present dispute. This fourth case concerned a claim against a company that continued to use an invention subject to a French patent and a European patent application following the *résiliation* of the company's exclusive license to the patented technology. The court in this case issued an order prohibiting the making, offering for sale, or selling of the patented technology ("la fabrication, l'offre en vente et la vente des appareils issus du brevet") but this cessation order was granted as a matter of extra-contractual obligations, namely, under patent law. In the present Arbitration, therefore, the Tribunal has not been provided with a single case supporting the grant of the order sought in circumstances similar to those at issue in this case.

628. Claimants ultimately failed to convince the Tribunal that a cessation order would be appropriate in this case as a matter of reparation in kind under French contract law. The reasons outlined for the Tribunal's position would also apply to Claimants' request for destruction of *pat*-containing products had Claimants pursued it as a general matter of reparation in kind. As a result, the Tribunal concludes that Claimants' request for cessation and destruction under French contract law should not be granted, and will now turn to Claimants' argument regarding cessation and destruction under the French law of extra-contractual obligations.

B. Order for Cessation and Destruction under the French Law of Extra-contractual Obligations

629. Claimants' latest submissions have sought an order for cessation and destruction under the French law of extra-contractual obligations. This raises a question of governing law because Respondents disagree that French law applies to claims sounding in tort. The Tribunal agrees with Respondents that French law does not apply to issues of extra-contractual obligations, and therefore refuses to grant Claimants' request for an order of cessation and destruction on the basis of the French law of extra-contractual obligations.

1. Claimants' Position on the French Law of Extra-contractual Obligations

630. Claimants argue that, under French law, a request for cessation and destruction aims to stop a breach of a contractual nature that is on-going, despite the termination of the agreement: it is not an action

[1139] CL-627, Orleans Court of Appeals, March 12, 2009
[1140] CL-628, TGI Paris, June 15, 2006, 3rd ch. 2nd section, No. RG : 05/08697

to obtain performance of an obligation but rather to have unlawful behavior ceased at the post-contractual phase.[1141]

631. In Claimants' view, French law applies to post-contractual obligations because the 1992 Agreement was not merely a patent license but rather a hybrid or mixed license involving a limited and narrowly defined technology transfer agreement. The grant of "permission to do what would otherwise violate the provider's IP rights" was accessory to, and to enable use of, the transfer of technology and know-how existing as a bailment in the 1992 Agreement.[1142] French law governs these obligations stemming from usage of technology and know-how (in contrast to the patent claims governed by U.S. law). French law applies with respect to post-contractual obligations, in Claimants' view, because where a conflict of laws exists, deference is given to the law of the "center of gravity of the situation in dispute": a tortious act is dealt with under the law with the closest nexus to the "preexisting relationship between the parties." In the present case, Claimants argue this is French law, which governed the parties' relationship for two decades.[1143]

2. Respondents' Position on the French Law of Extra-contractual Obligations

632. Respondents argue that French law does not apply to Claimants' request for cessation and destruction of *pat*-containing products following termination of the contract. In their view, absent an obligation that survives the termination of the contract,[1144] which the 1992 Agreement does not provide, post-contractual liability in French law arises only under the law of extra-contractual, not contractual, obligations.[1145] Respondents note in particular the statement of Professor Galloux, Bayer's expert, that "acts of use conducted by Dow after the termination of the license agreement are acts of infringement and give rise to indemnification on the basis of general civil liability and Article L.615-7 of the French Intellectual Property Code,"[1146] as an indication that the law of extra-contractual, rather than contractual, obligations should apply post-termination.

633. Assuming that post-contractual obligations must be governed by the law of extra-contractual obligations, Respondents argue that French law does not govern extra-contractual obligations and cannot therefore apply to Claimants' request for post-termination cessation or destruction.

[1141] C-389: Second Gautier Witness Statement
[1142] CL-623: Bennett et al, Health and Agricultural Innovation: IP Handbook of Best Practices, chapter 7.3
[1143] C-529: Third Gautier Witness Statement, paras. 4-5
[1144] CL-417: V. G. Viney, *Traité de droit civil, Introduction à la responsabilité*, 3è éd., LGDJ 2008, n° 196
[1145] CL-418: J. Flour, J.L. Aubert et E. Savaux, *Les obligations*, vol. 3, 8è éd., Sirey 2013, n°179
[1146] C-388: Galloux Second Witness Statement, para. 13

Respondents refer to the 1992 Agreement's governing law clause, which provides that "[t]his Agreement shall be governed by and construed in accordance with the laws of France,"[1147] as narrowly drafted and necessitating an interpretation that restricts the application of French law to contractual issues. Respondents asserted at the hearing that merely stating that French law will govern a contract, or even any litigation arising out of a contract, would be insufficient to render the choice of law applicable to torts connected to the contract when the clause is interpreted in accordance with French law. This interpretation is due to the expectation that a normal construction of a governing law clause in French law will cover only contractual issues, and that the extension of a contract's governing law clause to related torts would require an express specification that torts connected to the contract would be covered by the clause.[1148]

634. Respondents argue that both U.S. and French law provide that U.S. law should apply. Under U.S. law, the federal patent system is a mandatory regime as a matter of U.S. public policy,[1149] prevailing over state law, including parties' contractual choice of law, to the extent that it is inconsistent.[1150] French law provides that "[t]he law applicable to a non-contractual obligation arising from an infringement of an intellectual property right shall be the law of the country for which protection is claimed,"[1151] defined as the law of the country where the accused conduct occurred,[1152] which in the present case would be U.S. law.

635. Respondents note that the Terms of Reference, which provide that "[t]he parties have agreed that U.S. law governs the claims for patent infringement,"[1153] make it clear that U.S. law, and not French law, applies to issues of patent infringement. Furthermore, the 1992 Agreement is not a *licence mixte* conferring rights to Bayer's know-how, such that continued use of the know-how would implicate French law. First, French law provides that U.S. law, as the law where protection is claimed or where the relevant conduct occurred, would govern a claim relating to know-how.[1154]

[1147] See e.g. Terms of Reference, dated 4 October 2013, para. 71
[1148] Transcript of Remedies Hearing, dated 21 November 2014, at 1177-82
[1149] RLA-69: *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 150, 152 (1989)
[1150] R-686: *Mitsubishi Motors Corp. v. Soler Chrysler-Plymouth, Inc.*, 473 U.S. 614, 637 n.19 (1985) (discussing antitrust law)
[1151] RLA-731: Rome II Regulation, Article 8(1))
[1152] RLA-732: Cass. civ. 1ère, 5 mars 2002, Sisro, Bull.civ. 2002, I. n° 75; RLA-733: Cass. civ. 1ère, 30 janvier 2007, Bull. civ. 2007, I, n° 44
[1153] Terms of Reference, dated 4 October 2013, para. 72
[1154] RLA-730: E.U. Regulation No. 772/2004 on Technology Agreements, Article 1(g); RLA-731: Rome II Regulation, Article 8(1); RLA-732: Cass. civ. 1ère, 5 mars 2002, Sisro, Bull.civ. 2002, I. n° 75

Respondents also assert that there is no evidence of an obligation not to use know-how or a breach of this obligation, or that the 1992 Agreement grants any rights to know-how.[1155]

3. Tribunal's Determination: Order of Cessation and Destruction Is Not Available under the French Law of Extra-contractual Obligations

636. The Tribunal is of the opinion that Claimants' request for cessation and destruction based on "post-contractual" obligations under French law should not be granted. Claimants' position regarding post-contractual obligations assumes that French law applies post-contractually based on a center of gravity argument tied to the parties' long-standing contractual relationship under French law.[1156] It relies exclusively on the French law of extra-contractual obligations as the basis for an order of cessation or destruction.

637. In determining whether French law governs extra-contractual obligations in the present Arbitration, the Tribunal refers to Article 21(1) of the ICC Rules, stating that "[t]he parties shall be free to agree upon the rules of law to be applied by the arbitral tribunal to the merits of the dispute" and that "[i]n the absence of any such agreement, the arbitral tribunal shall apply the rules of law which it determines to be appropriate." Accordingly, the Tribunal first turns to consider the governing law clause appearing in the parties' 1992 licensing agreement and cited in the section of the Terms of Reference concerning applicable law: "This Agreement shall be governed by and construed in accordance with the laws of France."[1157] The scope of this clause cannot be characterized as broad under any recognizable standard. The Tribunal therefore adopts Respondents' position that the proper construction of this clause is narrow and that, in the absence of any reference to extra-contractual obligations, it must be interpreted as referring only to contractual claims, to the exclusion of extra-contractual claims that are connected in some way with the contract. In interpreting the 1992 Agreement's governing law clause as narrow and therefore excluding extra-contractual obligations from its scope of application, the Tribunal gives particular consideration to the wording of the governing law clause as compared to the more broadly drafted arbitration clause that appeared alongside the governing law clause in Article 12 of the 1992 Agreement. While the arbitration clause subjected "[a]ny controversies or disputes in connection with this Agreement" to arbitration, the governing law clause provided more narrowly that only "[t]his Agreement shall be governed" by the laws of France. Based on this narrow drafting choice, the Tribunal concludes

[1155] Respondents' Phase III Reply, dated 30 October 2014, paras. 60-62
[1156] C-529: Third Gautier Witness Statement, paras. 4-5
[1157] See e.g. Terms of Reference, dated 4 October 2013, para. 71

that the governing law clause of the 1992 license agreement does not provide that French law should apply to extra-contractual obligations connected to the Agreement.

638. In the absence of a choice-of-law clause that addresses extra-contractual obligations, the Tribunal must determine whether it would be appropriate to apply French law to extra-contractual issues. Both parties have referred to principles of private international law which, though not necessarily binding, may usefully be considered in making that determination. The Tribunal is of the view that, on the facts of this case, the claim for applying French law outside the contractual realm does not measure up to the claim for applying U.S. law.

639. Respondents note that both the French and U.S. private international law regimes point to the law of the United States as the most appropriate to govern extra-contractual obligations in the present Arbitration.[1158] The relevant French law is found in the Rome II Regulation.[1159] Respondents refer to Article 8(1) of the Regulation, which provides that "[t]he law applicable to a non-contractual obligation arising from an infringement of an intellectual property right shall be the law of the country for which protection is claimed," where the United States is the country for which the protection is claimed. By contrast, Claimants refer to the general principle that tort claims are governed by the law of the country in which the damage occurs (Article 4(1)), which here also points to the United States, and rely on an exception to the general principle expressed in Article 4(2), which provides that, "Where it is clear from all the circumstances of the case that the tort/delict is manifestly more closely connected with a country other than that indicated in paragraphs 1 or 2, the law of that other country shall apply." The provision goes on as follows: "A manifestly closer connection with another country might be based in particular on a preexisting relationship between the parties, *such as a contract*, that is closely connected with the tort/delict in question." Claimants' argument is, in other words, that the Agreement, which the parties have subjected to French law, has governed the parties' relationship for two decades and thus brought the "center of gravity" to France.[1160] The Tribunal rejects this argument.

[1158] For France, see RLA-731: Rome II Regulation, Article 8(1)); RLA-732: Cass. civ. 1ère, 5 mars 2002, Sisro, Bull.civ. 2002, I. n° 75; RLA-733: Cass. civ. 1ère, 30 janvier 2007, Bull. civ. 2007, I, n° 44. For the United States, see e.g. RLA-69: *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141 (1989)

[1159] C-529: Third Gautier Witness Statement, paras. 4-5. The parties appear to be in agreement regarding the relevance of the Rome II Regulation to private international law analyses under French law: see Respondents' Phase III Closing Presentation, dated 21 November 2014, slide 13 (citing the Rome II Regulation as constituting the relevant French law principles on private international law)

[1160] C-529: Third Gautier Witness Statement, at 4-5

640. First, Claimants' reliance on Article 4(2), part of the Rome II Regulation's general provisions on non-contractual obligations, appears to be inapposite, given the existence of the more specific Article 8(1), which provides a rule aimed precisely at the type of non-contractual obligations at issue in the present Arbitration—those arising from an infringement of intellectual property—and indicates that U.S. law should apply. Second, the position taken by Claimants is difficult to square with the proper interpretation of the governing law clause found in the Agreement. If it were to follow Claimants' line of reasoning, the Tribunal would essentially be relying on the governing law clause to achieve indirectly a result that is inconsistent with the interpretation already given to that clause (i.e., that it extends only to claims sounding in contract). Third, looking at the circumstances of this case as a whole, it is clear that the factor connecting the extra-contractual claims to France is insufficient to bring them under the operation of French law. The only factor cited by Claimants is the Agreement itself, and nothing connects it to France except its narrowly drafted governing law clause. Setting this sole factor against the factors connecting the claims to the United States, notably the development of the impugned products and the patents-at-issue, it becomes abundantly clear that U.S. principles are the most appropriate.

641. Respondents' reference to U.S. conflict principles accords with this conclusion by emphasizing the public policy considerations in favor of a unified application of patent and related laws.[1161] The Tribunal comes to its conclusion, however, without the need to invoke the peremptory or mandatory operation of U.S. law.

642. The Tribunal concludes, under Article 21 of the ICC Rules, that U.S. law governs extra-contractual claims to the extent that they are not entirely subsumed under the "claims for patent infringement". By agreement, U.S. law governs the latter.[1162] As a result, the claims for cessation and destruction under the French law of extra-contractual obligations are rejected. Claimants' similar request for an injunction is considered in the next section on patent infringement under U.S. patent law.

III. U.S. Patent Law: Injunction

643. The Tribunal has determined above that non-monetary relief is unavailable under French law. In the present section, it considers the availability of non-monetary relief in the form of an injunction

[1161] RLA-69: *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 162 (1989). The Tribunal notes that similar considerations are reflected in the Rome II Regulation, which provides, at Article 8(3), that the application of "the law of the country in which protection is claimed" to "non-contractual obligations arising from an infringement of an intellectual property right" is non-derogable

[1162] Terms of Reference, dated 4 October 2013, para. 72

under U.S. law. As the parties made no suggestion that U.S. principles of extra-contractual obligations other than those found in patent law could usefully be brought to bear on the issues, the Tribunal will consider only U.S. patent law in determining whether non-monetary relief is available under U.S. law.

644. Claimants seek both cessation and destruction in respect of all infringing products under U.S. patent law.[1163] In view of the expiry of the '236, '024, and '477 patents during this Arbitration, and the Tribunal's indication that the '665 patent is invalid under *Myriad*, the focus of argument has been on the reissue patent, RE44962.

A. Claimants' Position on U.S. Patent Law

645. Claimants assert that the Tribunal has express statutory authority to grant an injunction against ongoing infringement to prevent the violation of patent rights.[1164] An injunction upon a finding of patent infringement may be granted under U.S. law if a four-factor test is satisfied by demonstrating: (1) that the patentee has suffered an irreparable injury; (2) that remedies available at law are inadequate to compensate for that injury; (3) that considering the balance of hardships between the plaintiff and defendant, a remedy in equity is warranted; and (4) that the public interest would not be disserved by a permanent injunction.[1165] Claimants argue that an injunction should be granted because these four criteria are fulfilled. They further note that injunctions are regularly issued in federal litigation[1166] and that Bayer and its predecessors have obtained injunctions for similar cases of patent infringement relating to herbicide-tolerant crops in the past.[1167]

646. **Irreparable injury**—Claimants assert that direct competition from an infringer can be grounds for an injunction because "the patentee suffers the harm—often irreparable—of being forced to compete against products that incorporate and infringe its own patented inventions."[1168] Claimants argue that the glufosinate resistance conferred by the *pat* gene drives consumer demand for Dow's infringing product because consumers in areas afflicted with "superweeds" are forced to purchase

[1163] Claimants' Phase III Reply, dated 23 October 2014, para. 1
[1164] CL-7: 35 U.S.C. § 283 (injunction may be granted "to prevent violation of any right secured by patent")
[1165] CL-334: *eBay Inc. v. MercExchange, L.L.C.*, 547 U.S. 388, 391 (2006)
[1166] See e.g. CL-607: *Broadcom Corp. v. Emulex Corp.*, 732 F.3d 1325, 1338 (Fed. Cir. 2013)
[1167] See e.g. CL-11: *Rhone-Poulenc Agro, SA v. DeKalb Genetics Corp.*, 272 F.3d 1335 (Fed. Cir. 2001), cert. granted, opinion vacated and remanded, 538 U.S. 974 (2003) (Exh. CL-586), opinion reinstated as modified, 345 F.3d 1366 (Fed. Cir. 2003) (Exh. CL-587)
[1168] CL-332: Douglas Dynamics, LLC v. Buyers Prods. Co., 717 F.3d 1336, 1344, 1345

glufosinate resistant seed.[1169] In the present case, the infringing Enlist E3 Soybean and Enlist Soybean will compete directly with Bayer and MS Tech's forthcoming three-gene FG72/LL soybeans and Bayer's existing single-gene LibertyLink soybeans, and Dow's forthcoming Enlist Cotton products will likewise compete with Bayer's products.[1170] Claimants note that Dow's internal documents have stated that [redacted].[1172]

647. Furthermore, Claimants argue that they will suffer irreparable harm by losing "first-mover" advantage if Dow's infringing product is brought out before their product. The Federal Circuit has acknowledged the loss of first-mover advantage as irreparable harm meriting an injunction in a case where neither the patentee's nor the infringer's product was yet available for sale.[1173] Claimants note that a competitor's head start in the herbicide-tolerant-crop market is a well-recognized injury[1174] [redacted]"[1175] and these benefits, if lost, cannot be recovered. Had Dow not infringed, its development of the soybean products could not have begun before 2023, with the expiry of Bayer's last *pat*-gene patent, and Bayer's would be the sole products on the market for years.[1176]

648. Finally, Claimants argue that they will suffer irreparable harm as a result of reputation loss if Dow is not enjoined. Dow's marketing has enabled its pat-containing Enlist brand [redacted] meaning that Claimants would have to compete against Dow in a market that has been conditioned to allow Dow to "take the leadership position" using Bayer's patented biotechnology.[1178]

649. **No adequate remedy at law**—Claimants argue that, due to the inadequacy of protecting a patentee's statutory "right to exclude through monetary remedies that allow an infringer to use an

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[1169] R-426: Rebuttal Declaration of Bakewell, para. 273; Claimants' Phase III Reply, dated 23 October 2014, para. 26
[1170] Claimants' Phase III Memorial, dated 6 October 2014, para. 28
[1171] C-183: [redacted] at 3; Claimants' Phase III Reply, dated 23 October 2014, para. 22
[1172] C-321: [redacted]
[1173] CL-333: *Edwards Lifesciences AG v. CoreValve, Inc.*, 699 F.3d 1305, 1315-16 (Fed. Cir. 2012)
[1174] CL-13: *Monsanto Co. v. E.I. DuPont De Nemours and Co.*, 2012 WL 5830580, at *1 (E.D. Mo. Nov. 16, 2012)
[1175] C-321: [redacted]
[1176] Claimants' Phase III Memorial, dated 6 October 2014, at para. 31
[1177] C-321: [redacted]
[1178] Claimants' Phase III Memorial, dated 6 October 2014, para. 33

invention against the patentee's wishes," injunctive relief is granted "in the vast majority of patent cases"[1179] and the rule that "the remedy at law, in order to exclude a concurrent remedy at equity, must be as complete, as practical, and as efficient to the ends of justice and its prompt administration, as the remedy in equity" applies to patent cases.[1180] In Claimants' view, monetary remedies available at law are inadequate in the present case.

650. First, Claimants argue that they will suffer harm due to future infringement, which cannot be compensated by money. Claimants are of the view that, in the absence of an injunction, Dow will continue to infringe, and the Federal Circuit has recognized that "future infringement ... may have market effects never fully compensable in money"[1181] because damages will not compensate for "a competitor's increasing share of the market ... that [the patentee] has in part created with its investment in patented technology."[1182] Claimants note that this position is supported by Dow's argument that the task of quantifying future damages is uncertain[1183] and by Dow's expert's assertion that damages for future infringement cannot be ascertained from Dow's projections and cannot be ascertained for new industries.[1184]

651. Second, Claimants argue that they will suffer "reputation loss" because the marketing strategy for Dow's product involves [redacted][1185] and that reputation loss is not compensable by money. The Federal Circuit has found reputation loss to be a sufficient reason to find remedies at law inadequate to compensate for infringement.[1186] Claimants also note that their previous grants of limited licenses in the past does not render a monetary remedy adequate: Claimants have never granted a right to sublicense *pat* as Dow did or attempted to sell its patents as in the *Verizon* case.[1187]

652. **Balance of hardship favors Bayer**—Claimants argue that the irreparable harm they will suffer in the absence of injunctive relief outweighs any harm to Dow. The Federal Circuit has established

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[1179] CL-334: *eBay Inc. v. MercExchange, L.L.C.*, 547 U.S. 388, 394-95 (2006)
[1180] CL-589: *City of Walla Walla v. Walla Walla Water Co.*, 172 U.S. 1, 12 (1898); Claimants' Phase III Memorial, dated 6 October 2014, para. 35
[1181] CL-353: *Reebok Int'l, Ltd. v. J. Baker, Inc.*, 32 F.3d 1552, 1557 (Fed. Cir. 1994)
[1182] CL-332: *Douglas Dynamics, LLC v. Buyers Prods. Co.*, 717 F.3d 1336, 1345
[1183] Respondents' Phase II Responsive Memorial on Damages, para. 99
[1184] Hearing Transcript, dated 20 November 2014, at 862:10-863:6, 890:2-23
[1185] C-321: [redacted]9
[1186] CL-332: *Douglas Dynamics, LLC v. Buyers Prods. Co.*, 717 F.3d 1336, 1345
[1187] RLA-34: *ActiveVideo Networks v. Verizon Comms.*, 694 F.3d 1312, 1339-40 (Fed. Cir. 2012); Claimants' Phase III Reply, dated 23 October 2014, para. 32

that "[o]ne who elects to build a business on a product found to infringe cannot be heard to complain if an injunction against a continuing infringement destroys the business so elected."[1188] Claimants assert that Dow was aware of the potential risks when it made the decision to develop[1189] infringing products and that this situation is not a hardship recognized in equity.[1190]

653. Claimants further note that the fact that Dow had non-infringing alternatives to the course of action that it took[1191] "would suggest that [the infringer] should halt infringement and pursue a lawful course of market conduct."[1192]

654. **Public interest best served by an injunction**—Claimants argue that the public interest is best served by granting an injunction, given the Federal Circuit's recognition of the "strong public policy favoring the enforcement of patent rights,"[1193] arising from the "importance of the patent system in encouraging innovation."[1194] In Claimants' view, an injunction is necessary to prevent Dow from being able to prematurely market *pat*-containing products as a result of infringing Claimants' patents, which would have the effect of taking market benefits away from the patentees.[1195]

655. Claimants further argue that the public will not be harmed by such an injunction because the glufosinate tolerance provided by Dow's infringing products as a solution to the problem of superweeds is already available to growers. Bayer currently sells glufosinate-tolerant soybeans and cotton, and has received USDA approval for two- and three-gene soybeans resistant to glufosinate, glyphosate, and HPPD-inhibitor herbicides, which will be available relatively soon. Bayer's products are marketed as solutions to superweeds that are difficult to control and use the same genes (*pat* and *dmmg*) as Dow's infringing products.[1196]

656. Claimants note that "public health" arguments have routinely been rejected by courts that have enjoined infringement of medical-device and pharmaceutical patents, even where practitioners

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[1188] CL-590: *Broadcom Corp. v. Qualcomm Inc.*, 543 F.3d 683, 704 (Fed. Cir. 2008) (citing CL-360: *Windsurfing Int'l Inc., v. AMF. Inc.*, 782 F.2d 995, 1003 n.12 (Fed. Cir. 1986))
[1189] CL-593: *Pfizer. Inc. v. Teva Pharm., USA. Inc.*, 429 F.3d 1364, 1382 (Fed. Cir. 2005)
[1190] CL-328: *Celsis In Vitro, Inc. v. CellzDirect, Inc.*, 664 F.3d 922, 931 (Fed. Cir. 2012)
[1191] Respondents' Phase III Memorial, dated 16 October 2014, paras. 69-70
[1192] CL-332: *Douglas Dynamics, LLC v. Buyers Prods. Co.*, 717 F.3d 1336, 1345
[1193] CL-594: *PPG Indus., Inc. v. Guardian Indus. Corp.*, 75 F.3d 1558, 1567 (Fed. Cir. 1996)
[1194] CL-328: *Celsis In Vitro, Inc. v. CellzDirect, Inc.*, 664 F.3d 922, 931-32 (Fed. Cir. 2012)
[1195] Claimants' Phase III Memorial, dated 6 October 2014, at para. 44
[1196] *Id.*, para. 45

have a preference for the infringing product,[1197] and that there is no evidence of a public interest in the present case that approaches the public's interest in pharmaceuticals and medical devices.[1198]

657. Finally Claimants also note that the injunction will not harm MS Tech because Dow and MS Tech's [redacted] agreement provides that Dow [redacted].[1199]

B. Respondents' Position on U.S. Patent Law

658. Respondents argue that Bayer is not entitled to an injunction under U.S. law because the'236, '024, and '477 patents have expired, the Arbitral Tribunal has proposed the exclusion of the '665 patent from Phase III of the Arbitration, and the only remaining patent asserted by Claimants, the RE44962 reissue patent, is invalid as a result of the prohibition on double patenting. Respondents further assert that Claimants do not fulfil the four-factor test in the *eBay* case for enjoining infringement of a patent.[1200]

659. **No irreparable injury**—Respondents argue that Claimants will suffer no irreparable harm relating to cotton products because Dow does not promote its cotton products as glufosinate tolerant.[1201] Regarding soybean products, Respondents note that direct competition between Bayer's products and Dow's products is only hypothetical[1202] and that Bayer has not yet resolved litigation with MS Tech in order to be allowed to sell the soybean products it alleges will compete with Dow's products.[1203] Respondents argue that Bayer cannot claim that harm is irreparable when it is alternately proposing that all harm can be remedied by money in the form of damages[1204] and that where Bayer has "divest[ed] itself of its [relevant business assets] in the United States. . . [the] harm to [the patentee] here is of a different nature than harm to a patentee who is practicing its invention and fully excluding others."[1205]

[1197] CL-596: *Shiley, Inc. v. Bentley Labs.. Inc.*, 601 F.Supp. 964, 970 (C.D. Cal. 1985), aff'd, 794 F.2d 1561 (Fed. Cir. 1986)
[1198] Claimants' Phase III Memorial, dated 6 October 2014, at paras. 46-47
[1199] C-208: Dow-MS Tech Agreement, [redacted]; Claimants' Phase III Closing Presentation, dated 21 November 2014, slide 61
[1200] Respondents' Phase III Memorial, dated 16 October 2014, para. 87
[1201] Claimants' Phase III Memorial, dated 6 October 2014, paras. 28-29
[1202] R-53: S[redacted] Deposition, at 65:12-19; 77:13-23; 80:9-25; 87:2-5
[1203] R-629: *M.S. Technologies, LLC v. Bayer CropScience AG*, No. 4:12-cv-455 (S.D. Iowa) (ECF No. 53) 24 September 2014 Order, para. 1
[1204] Respondents' Phase III Memorial, dated 16 October 2014, para. 88
[1205] RLA-707: *E.I. DuPont de Nemours & Co. v. Phillips Petroleum Co.*, 835 F.2d 277, 278 (Fed. Cir. 1987)

660. Furthermore, Respondents argue that Bayer has not established a sufficient causal nexus between the alleged harm and the alleged infringement.[1206] In their view, that Bayer's assertion that farmers with superweeds have "no choice" but to buy Bayer's glufosinate-resistant LibertyLink product shows only that glufosinate resistance drives the demand for Bayer's products.[1207] By contrast, Dow's products confer resistance to other insecticides and herbicides, and glufosinate resistance is their least important feature.[1208] Respondents conclude that multiple features will likely drive future demand, including the underlying germplasm, yields, price, but also other featured traits.[1209]

661. **Remedies are available at law**—In Respondents' view, Bayer's request in this Arbitration for monetary relief is an admission that its harms are quantifiable and compensable with money and precludes an injunction.[1210] Bayer's out-licensing of the asserted patents to major players in the industry also precludes the grant of an injunction to the licensor, Bayer, as it demonstrates that Bayer was willing to forgo exclusivity for some form of monetary compensation,[1211] and because the patentee, Bayer, has already invited competition from others for goods embodying the patented invention.[1212]

662. **Balance of hardship favors Dow**—Respondents argue that Bayer has failed to show any legally recognized irreparable harm. By contrast, an injunction would be devastating to Dow's seed business, much of which does not rely on the seeds' glufosinate tolerance, and this harm to the defendant must figure in the balancing of harms exercise according to the *eBay* case.[1213] Furthermore, in Respondents' view, the existence of non-infringing alternatives does not favor the granting of an injunction in the present case because these alternatives were not "ready for implementation" or "easily deliver[ed] to the market"[1214] as new genetically-modified crops take years to develop.[1215] Finally, Respondents note that in Procedural Order No. 2, the Arbitral Tribunal refused to grant Claimants' interim injunction on the grounds that it was not satisfied that

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[1206] RLA-476: *Apple, Inc. v. Samsung Elecs. Co.*, 695 F. 3d 1370, 1375 (Fed. Cir. 2012)
[1207] Respondents' Phase III Memorial, dated 16 October 2014, para. 88
[1208] Respondents' Phase III Reply, dated 30 October 2014, para. 53
[1209] Respondents' Phase III Closing Presentation, dated 21 November 2014, slide 183
[1210] Respondents' Phase III Memorial, dated 16 October 2014, para. 90
[1211] Respondents' Phase III Closing Presentation, dated 21 November 2014, slide 183
[1212] RLA-34: *ActiveVideo Networks*, 694 F.3d 1312, 1339-40 (Fed. Cir. 2012)
[1213] Respondents' Phase III Memorial, dated 16 October 2014, para. 91
[1214] CL-332: *Douglas Dynamics, LLC v. Buyers Prods. Co.*, 717 F.3d 1336, 1345 (Fed. Cir. 2003)
[1215] Respondents' Phase III Reply, dated 30 October 2014, para. 56

the harm suffered by Claimants substantially outweighed the harm to Respondents that would result from such an order.[1216]

663. **Harm to the public and third parties**—Respondents argue that an injunction on Dow's Enlist products would negatively affect the public interest in food security and farmers' interests in crop productivity. In their view, the use of Bayer's products is an inadequate solution to these problems. The forthcoming two- and three-gene soybean products have not yet received worldwide governmental approval and the Bayer products are not adequate replacements:[1217] the Enlist products are designed around Dow's 2,4-D technology, which is effective against superweeds, while Bayer has described its LibertyLink technology as being "high cost and poor performance,"[1218] costing twice as much as Respondents' products.[1219] Furthermore, as MS Tech owns E3, Bayer is seeking destruction of property belonging to a third party that is not before the Tribunal.[1220]

C. Tribunal's Determination: Injunction Is Not Available under U.S. Patent Law

664. It is common ground that, faced with a situation of ongoing infringement, the Tribunal has authority to grant an injunction to prevent a violation of patent rights.[1221] It is also common ground that, upon a finding of patent infringement, an injunction may be granted if the four-factor test set out in the *eBay* case is satisfied by demonstrating

> (1) that the patentee has suffered an irreparable injury;
>
> (2) that remedies available at law are inadequate to compensate for that injury;
>
> (3) that considering the balance of hardships ... a remedy in equity is warranted; and
>
> (4) that the public interest would not be disserved by a permanent injunction.[1222]

[1216] Procedural Order No. 2, dated 15 November 2013, para. 12; Respondents' Phase III Closing Presentation, dated 21 November 2014, slide 189
[1217] Respondents' Phase III Memorial, dated 16 October 2014, para. 92
[1218] Claimants' Phase III Memorial, dated 6 October 2014, paras. 14-20
[1219] R-426: First Bakewell Declaration, para. 113
[1220] CL-444: Duclos, *L'opposabilité, essai d'une théorie générale*, LGDJ 1984, no. 85
[1221] CL-7: 35 U.S.C. § 283 (injunction may be granted "to prevent violation of any right secured by patent")
[1222] CL-334: *eBay Inc. v. MercExchange, L.L.C.*, 547 U.S. 388, 391 (2006)

The parties diverge as to how these factors play out when applied to the facts of this case. The Tribunal is of the view that, on balance, the equitable factors do not favor the granting of injunctive relief in this case. The four factors are considered below.

Irreparable Harm

665. The Tribunal notes at the outset that Claimants have not attempted to make a case for irreparable harm in respect of the existing cotton products, because they are not intended to be glufosinate tolerant and are not advertised as such. Claimants acknowledge this expressly in respect of WideStrike Cotton.[1223] With respect to the soybean products, Claimants offer three grounds for a finding of irreparable harm: direct competition, loss of first-mover advantage, and loss of market reputation. The last two grounds are related and will be addressed together.

666. **Direct competition**—The parties' relationship in the market, and in particular the question of whether the parties are direct competitors, are important elements in the analysis. "Courts awarding ... injunctions, typically do so under circumstances where plaintiff practices its invention and is a direct market competitor."[1224] Claimants' contention is that Dow's products will compete, most importantly, with Bayer and MS Tech's three-gene soybeans and Bayer's existing 1-gene Liberty-Link soybeans. It is undeniable that there is a form of significant competition between the parties. The nature and extent of that competition, however, tip the balance in favor of Respondents.

667. The force of Claimants' argument in respect of the three-gene soybeans is seriously diminished as a result of its decision to divest itself of the relevant assets: Bayer does not own the allegedly competitive FG72 and FG72/LL; MS Tech does. As things stand, Bayer cannot sell those products.[1225] Those products, therefore, can provide it with a revenue stream only through license royalties.[1226] Accordingly, the harm to Bayer "is of a different nature than harm to a patentee who

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[1223] Claimants' Phase II Reply, dated 1 August 2014, para. 134

[1224] CL-333: *Edwards Lifesciences AG v. CoreValve, Inc.*, 699 F.3d 1305, 1315 (Fed. Cir. 2012) (citing RLA-483: *Advanced Cardiovascular Sys. v. Medtronic Vascular, Inc.*, 579 F.Supp.2d 554, 558 (D.Del.2008))

[1225] The most recent indication in the record is that Bayer and MS Tech are still in the process of resolving this point: R-629: M.S. Technologies, LLC v. Bayer CropScience AG, No. 4:12-cv-455 (S.D. Iowa) (ECF No. 53) 24 September 2014 Order, para. 1

[1226] R-38: *Bayer CropScience AG v. Dow AgroSciences LLC*, No. 12-256-RMBJS, 2013 WL 5539410, at *6 (D. Del. Oct. 7, 2013) (discussing divestment of FG72 and FG72/LL); C-57: Bayer-MS Tech Agreement, [redacted]: R-55: Bayer-MS Tech Agreement, [redacted]

is practicing its invention and fully excluding others."[1227] This is consistent with the holding in *Voda* that one cannot make a case for irreparable injury by "alleging irreparable harm to [one's] exclusive licensee, rather than [one]self."[1228] And even if one could make a case of irreparable injury in those circumstances, it would certainly help to have onboard the licensee in question. Here, Bayer's licensee, MS Tech, disagrees that the products will necessarily compete with Dow's offering.[1229]

668. **First-mover advantage and market reputation**—That loss of first-mover advantage and market reputation may cause significant injury in this market is undeniable. In Dow's own words, [redacted]

669. To the extent that Bayer is recognized as a competitor, it now has to compete in a market that has been wrongly conditioned to give the leadership position to Dow through use by Dow of Bayer's patented and infringed technology. Bayer understandably relies on *Edwards* in making its case on this particular factor: none of the competing products at issue in that case (heart valves) was on the market at the relevant time because FDA approval had not been secured at the time of the decision; yet the Federal Circuit found, in favor of the patentee, that an injunction may be necessary because "without exclusivity it would lose first-mover advantage and market share and reputation."[1231] The facts before this Tribunal are far more complex, however. This is not a straightforward situation of direct competition in which the Tribunal would be in a position to enforce exclusivity as between two market players; Bayer's claim to being Dow's competitor for the purpose of this analysis is irretrievably entangled with the place of MS Tech in this very particular market.

670. Even if this Tribunal were to find that, in the absence of Dow's Enlist E3, FG72/LL would likely be the first entrant into the competitive triple-gene soybean market, the irreparable harm factor, because of MS Tech's role, would not work in favor of injunctive relief.

[1227] RLA-707: *E.I. DuPont de Nemours & Co. v. Phillips Petroleum Co.*, 835 F.2d 277, 278 (Fed. Cir. 1987)
[1228] RLA-36: *Voda v. Cordis Corp.*, 536 F.3d 1311, 1329 (Fed. Cir. 2008) (citing RLA-33: *eBay Inc. v. MercExchange, L.L.C.*, 547 U.S. 388, 391 (2006))
[1229] R-53: S[redacted] Deposition, at [redacted]
[1230] C-321: [redacted]
[1231] CL-333: *Edwards Lifesciences AG v. CoreValve, Inc.*, 699 F.3d 1305, 1315-16 (Fed. Cir. 2012)

Remedies at Law

671. The second *eBay* factor asks whether remedies available at law are inadequate to compensate for the injury. Bayer's contention is that the harm caused by the infringement is not fully compensable with money. In approaching this factor, the Tribunal takes the position that Bayer's request for damages in the alternative is not, as suggested by Respondents, an acknowledgement that the harm is adequately compensable with money.[1232]

672. Dow relies heavily on the fact that Bayer has admittedly licensed the asserted patents to nearly every major player in the industry, which would normally negate the possibility of an injunction. That is because in such circumstances the patentee is taken to have invited competition from others for products embodying the patented invention. Bayer rightly insists, however, that it "has *never* given any party the type of broad sublicensing rights that Dow would have needed in order to create an authorized molecular stacked soybean product like E3."[1233] This is suggestive of the fact that what Bayer loses as a result of the infringement was never for sale; it puts Bayer in a position to credibly argue that the loss is not compensable with money. But this fact is not in and of itself sufficient to establish that monetary relief would not be adequate.

673. In its decision on provisional measures, based on written submissions and a procedural hearing, this Tribunal found that Claimants had failed to explain how they could not be made whole through the award of damages, before or after expiration in July 2014 of several of the patents-at-issue.[1234] At that stage of the proceedings, Claimants were able to show a likely impact of Respondents' use of the technology on the shaping of the relevant market and the Tribunal was prepared to accept that damages may not be easy to assess. But Claimants were unable to show that the alleged harm would not be adequately reparable by a monetary award.

674. The Tribunal has now heard the parties fully and in great detail about the harm caused to Bayer, and about the non-monetary and the monetary relief that may be appropriate. On the basis of the entire evidentiary record, the Tribunal is unable to find that the harm suffered is irreparable through monetary relief.

[1232] Respondents' Phase III Memorial, dated 16 October 2014, para. 88
[1233] Claimants' Phase III Memorial, dated 6 October 2014, para. 25
[1234] Procedural Order No. 2, dated 15 November 2013, para. 12

Balance of Hardships

675. In its decision on interim measures, the Tribunal indicated that it was not satisfied "that the harm likely to result absent the measures sought by Claimants 'substantially outweigh[ed]'" the harm that was likely to result to Respondents if the measures were granted.[1235] The Tribunal noted that the order sought "might have required Respondents to shut down much of their seed business."[1236] On the narrower order sought at the procedural hearing, which focused on Dow's Enlist products, the Tribunal found that it went to what could be Respondents' "most important project ever."[1237]

676. The criterion the Tribunal applies here is different in that it is much less focused on the period running to the end of these proceedings. The criterion applied here, however, similarly calls attention to the "balance of hardships". The Tribunal recognizes that "[o]ne who elects to build a business on a product found to infringe cannot be heard to complain if an injunction against a continuing infringement destroys the business so elected."[1238] But this just means that injunctive relief is available in the appropriate cases even if it destroys a business built on infringement. It does not exhaust the balance of hardships assessment.

677. In making this assessment, the Tribunal considers the significant disruption that injunctive relief would cause to Dow and its partners as well as the comparative benefit that Bayer may gain from a grant of injunctive relief as opposed to monetary relief. Having considered the facts of this case as a whole, the Tribunal feels that the granting of injunctive relief would cause more hardship to Respondents that denying it would to Claimants.

Public Interest

678. Public interest is the last of the specifically enumerated *eBay* factors and must be addressed in evaluating the appropriateness of granting the requested injunctive relief. This factor calls for a balancing of public interests considerations that are usually in tension. On the one hand, the public interest in maintaining a strong patent system generally favors injunctive relief. On the other hand, the public interest in product diversity and availability may tip the balance against injunctive relief.

[1235] *Id.*
[1236] *Id.*
[1237] *Id.*
[1238] CL-590: *Broadcom Corp. v. Qualcomm Inc.*, 543 F.3d 683, 704 (Fed. Cir. 2008) (citing CL-360: *Windsurfing Int'l Inc., v. AMF, Inc.*, 782 F.2d 995, 1003 n.12 (Fed. Cir. 1986))

The third-party effect of injunctive relief and its impact on the relevant market is also a relevant consideration in this balancing exercise.

679. Respondents argue that its products would provide benefits to the public, and are critical to the business success of MS Tech (the entity that actually owns Enlist E3). Bayer suggests that any gap created by the removal of Enlist E3 can be filled with glufosinate tolerant LibertyLink soybean and cotton. Claimants' contention, however, assumes without demonstration the fungibility of the products. Without downplaying the potential importance of glufosinate tolerance in the long run, the Tribunal is able to say, based on its assessment of the evidence, that a significant portion of this potential has yet to be realized.

680. The Tribunal notes that any injunction issued by this Tribunal would directly affect a third-party player in the market, MS Tech. MS Tech is not a party to this Arbitration but is a partner and competitor of both Bayer and Dow, a situation which brings a level of complexity to the relevant market relationships that would make the impact of injunctive relief on the market unpredictable. In the Tribunal's view, this peculiar element of the situation before it works against injunctive relief.

681. Although public interest is a relatively neutral factor on the facts of this case, it does play slightly against injunctive relief.

682. Having weighed the arguments presented and the evidence adduced in this case using the measure provided by the *eBay* factors, the Tribunal denies Claimants' request for injunctive relief in its entirety.

IV. Declaratory Relief

683. The parties on both sides in this Arbitration requested declaratory relief in the event of a ruling in their favor.[1239] The Arbitral Tribunal will grant declaratory relief regarding Claimants' contract and patent infringement claims insofar as they have succeeded. The Tribunal will also grant Respondents' request for declaratory relief in part by declaring that, by initiating and pursuing the Virginia litigation, Bayer breached the arbitration clause of the 1992 Agreement (as will be discussed below in Part 6.I); that the '665 patent is invalid in light of the *Myriad* decision; that absolute intervening rights apply to the '665 patent, such that Claimants are precluded from recovery in respect of this patent prior to the reissue of 24 June 2014; and that the '024 and '477

[1239] Terms of Reference, dated 4 October 2013, paras. 34, 68

patents were not infringed by the accused products WideStrike, WideStrike 3, Enlist Cotton, and Enlist Soybean. All other claims for declaratory relief will be denied.

5. MONETARY REMEDIES

684. Claimants have established a breach of the 1992 Agreement and are seeking monetary relief under French contract law, which governs the Agreement. Claimants have also established patent infringement and are seeking extra-contractual monetary relief under U.S. patent law.

685. **Form of monetary relief**—Claimants maintain that they are entitled to monetary relief under both the contract regime and the patent regime, and that all monetary relief should be awarded in the form of a lump-sum payment.[1240] Respondents agree that any damages for breach of contract must take the form of a lump sum.[1241] As for patent infringement damages, Respondents maintain that, in order to avoid speculation and to obviate the risk of double recovery, any such damages should be awarded in the form of a running royalty tied to product sales, rather than a single lump-sum payment covering past and future sales.[1242]

686. **Contract damages sought**—Claimants' damages expert, Mr. Jarosz, maintains that, for Enlist E3 and Enlist E3+IR, Bayer's damages for Dow's breach of contract associated with an [redacted] termination of the 1992 Agreement are between $538.6 million and $595.3 million, including prejudgment interest at the rate of 8 percent. Alternatively, Claimants' damages expert maintains that, for Enlist E3 and Enlist E3+IR, Bayer's damages for Dow's breach of contract associated with a 2012 termination are between $679.1 million and $750.6 million, including prejudgment interest. According to Mr. Jarosz, calculating Bayer's contract damages associated with a 2014 termination results in compensation of between $776.0 million and $857.7 million.

687. As concerns the remaining products at issue in the proceedings, Mr. Jarosz submits that Bayer's contract damages are $109.5 million, including prejudgment interest, for an April 2008 effective termination. For a 2012 effective termination date, Bayer's contract damages are assessed at $91.3 million, including prejudgment interest. Claimants' expert concludes that calculating Bayer's contract damages as of 2014 for these products results in compensation of $132.3 million.

[1240] C-528: Jarosz Fourth Witness Statement at 56. See also C-317: Jarosz First Witness Statement at 91-95; C-396: Jarosz Second Witness Statement at 106

[1241] Respondents' Phase III Post-Hearing Submission. dated 18 February 2015, para. 59

[1242] *Id.*

688. Respondents submit that breach of contract damages can total no more than $200,000. Respondents' damages expert, Mr. Bakewell, submitted a table that adjusted Mr. Jarosz's breach of contract damages to remove future sales and accused products that Respondents submit are not associated with the alleged breach of contract.[1243] To the extent that any royalty could be expected by Bayer in the context of a negotiation for an expanded sublicense right to cover Dow and MS Tech's collaboration, it would have to be less than [redacted] per bag.[1244]

689. **Patent infringement damages sought**—Mr. Jarosz submits that Claimants' total patent infringement damages represent a lump sum of $480.0 million to $591.8 million in head-start damages, assuming the infringement began in 2008, and a lump sum of $605.2 million to $746.3 million in head-start damages, assuming the infringement began in 2012. For non-head-start damages calculations, the total lump-sum payment, including prejudgment interest for all past and future sales of Dow's accused products as of 2008 is $225.6 million, and is $193.3 million as of 2012.

690. Alternatively, Mr. Jarosz submits that, should the Tribunal decide that the appropriate form of royalty for future sales is a running royalty, the reasonable running royalty for ongoing, voluntary, post-award sales of infringing soybeans by Dow should be, at least, [redacted] per acre for all covered soybean products sold after the date of the Tribunal's award in this case. The reasonable running royalty for ongoing, voluntary, post-award sales of infringing cotton by Dow should be, at least, [redacted] per acre for all covered cotton products sold after the date of the Tribunal's award.

691. Mr. Bakewell suggests that a reasonable royalty for patent infringement damages would be no greater than [redacted] per bag, which equates to [redacted] per acre for soybeans and [redacted] per acre for cotton. Applying this rate to [redacted] bags of accused products that have actually been sold to date yields [redacted] in reasonable royalty patent infringement damages.

692. **Enhanced damages**—Finally, Claimants are seeking enhanced damages, which under the Patent Act can go up, in this case, to an additional amount of $1.493 billion, representing twice the maximum patent infringement amount sought ($746.3 million with head start).[1245] Respondents

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[1243] C-426: Bakewell First Witness Statement, para. 314; C-631: Bakewell Third Witness Statement, para. 7, attachment G.5

[1244] C-426: Bakewell First Witness Statement, para. 232; C-631: Bakewell Third Witness Statement, para. 9

[1245] C-528: Jarosz Fourth Witness Statement at 66-67; Claimants' Post-Hearing Submission, dated 18 February 2015, para. 41

deny willful infringement, a finding of which is a condition for the award of enhanced damages under the Patent Act.[1246]

693. **Amount in dispute**—Adding together the maximum amounts of compensatory damages (the contract amount of $857.7 million for Enlist E3 and Enlist E3 + IR and $132.3 for the remaining products) and enhanced damages, the total amount in dispute is in excess of $2.483 billion, excluding costs and post-award interest.

694. **Double recovery**—The reference to, and applicability of, two distinct frameworks for monetary relief in these proceedings create a situation that raises potential issues of double recovery. It is common ground that double recovery for the same set of operative facts is prohibited by both French law and U.S. law.[1247] The Tribunal will address this issue after the principles of recovery under both regimes have been determined.

695. **Outline**—The Tribunal first determines and applies the principles of recovery under (I) French contract law and (II) U.S. patent law, then turns to (III) the calculation of monetary relief.

I. The Principles of Recovery under French Contract Law

696. When the matter is cast at a sufficiently high level of abstraction, the parties are in agreement as to the appropriate framework for contract damages under French law: the full compensation principle mandates that, if Dow is not enjoined, Bayer be put into the position it would have occupied had Dow not breached the 1992 Agreement. In view of the complexity of the science, market, and business arrangements at issue, however, the question loomed large in the proceedings as to how the evidence could lead to a reliable assessment of the position Bayer would be in "but for" Dow's breach.

697. As the proceedings unfolded, the evolving debate concerning monetary relief brought increased focus to what came to be referred to as the "Option B" analysis. Claimants explain that, before breaching the 1992 Agreement, [redacted]

[1246] See notably Respondents' Phase III Post-Hearing Reply, dated 27 February 2015, para.12
[1247] Claimants' Phase III Memorial, dated 6 October 2014, para. 3; C-317: Jarosz First Witness Statement at 22; Respondents' Phase III Closing Presentation, dated 21 November 2014, slide 60

[redacted][1248][redacted]

698. The way in which the Option B analysis connects to the assessment, for purposes of monetary compensation, of the position Bayer would be in "but for" Dow's breach was the subject of much debate between the parties. The core idea presented by Claimants is that Option B ultimately required the payment to Bayer of a [redacted] that the breaching path, from Dow's perspective, appeared to avoid. Option B represents the "but for" scenario, that is, what would have happened "but for" Dow's breach. Claimants therefore suggest that [redacted][1250]

699. There are a number of points that require clarification before Option B can be considered in the determination of contract damages. Following the remedies hearing, two related areas of inquiry were put to the parties by the Tribunal in the form of questions intended to direct post-hearing submissions. The questions are reproduced here:

> In respect of monetary damages arising out of contract breach, the parties agree that damage computation under French law is based on the principle of full compensation and that this principle encompasses not only lost profits but also lost opportunity. In light of the *French Société Commerciale Carribean Niquel v. Société Overseas Mining Investments Ltd.* case, please answer the following questions:
>
> **a)** Which of the two grounds of recovery (lost profits/lost opportunity) is at play in the so-called "Option B analysis" and how?

[1248] Claimants' Remedies Memorial, dated 6 October 2014, para. 52. See also Claimants' Phase I Reply, dated 7 November 2013, paras. 152-165; Claimants' Phase II Damages Reply, dated 11 August 2014, at 4-5
[1249] See R-55: 2007 Bayer-MS Tech Agreement at [redacted]
[1250] Claimants' Phase III Memorial, dated 6 October 2014, para. 72, n.118

b) How does this relate to the [redacted] figure featured in the "Option B analysis"?[1251]

700. In the *Niquel* case, the French courts emphasized the difference between lost profits and lost opportunity as distinct grounds of recovery that could not be treated as one and the same for substantive or procedural purposes.[1252] In answering the Tribunal's questions, Claimants further clarified their position on Option B viewed through the lens of lost opportunity. Respondents raised several objections to the Option B analysis and its characterization as lost opportunity. The parties' latest positions on recovery for breach of contract are laid out below.

A. Claimants' Position on Recovery for Breach of Contract

701. **General recovery principles and requirements**—Claimants begin by noting the parties' agreement concerning the full compensation principle that applies to contract breach under French law: "Under the French Civil Code, damages for breach of contract equal the harm an aggrieved party suffered and any benefit of which it was deprived."[1253] They then claim that the non-breaching party "is also entitled to restitution damages, measured by determining the reasonable value of the benefits conferred upon and received by the breaching party."[1254]

702. Claimants argue that the requirements of causation and certainty imposed by French law for recovery have been met. Concerning the requirement of foreseeability, Claimants' position is that it does not apply because the breach was intentional and purposeful,[1255] and that even if it did apply, the harm was both foreseeable and actually foreseen since the inception of the contractual relationship.[1256]

703. Concerning the harm to be established by the party seeking compensation, Claimants' position is that Dow breached a negative obligation, such that Claimants are automatically entitled to damages. This is because Article 1145 of the French Civil Code provides that "[w]here there is an obligation

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[1251] Tribunal's Letter to the Parties, dated 4 February 2015, at 4
[1252] Cass. civ. 1ère, *French Société Commerciale Caribbean Niquel v. Société Overseas Mining Investments Ltd.*, 29 juin 2011, n° 785 F-P+B+I
[1253] Claimants' Phase III Memorial, dated 6 October 2014, para. 49; Respondents' Phase II Responsive Memorial on Damages, dated 10 July 2014, para. 47
[1254] Claimants' Phase III Memorial, dated 6 October 2014, para. 49
[1255] CL-1/RLA-107: Civil Code, translated by Georges Rouhette with the assistance of Dr. Anne Rouhette-Berton, Arts. 1150-51
[1256] Claimants' Phase III Reply, dated 23 October 2014, para. 36; Claimants Phase II Damages Reply, dated 11 August 2014, at 17 ff.

not to do, he who violates it owes damages by the mere fact of the breach." Alternatively, Claimants' position is that they have established the harm.[1257]

704. **Harm and lost opportunity**—On the facts, Claimants argue that they have suffered harm, that they have been deprived of benefits, and that Dow has been unjustly enriched. When pressed to clarify their position in respect of the Option B analysis, Claimants explained that Option B quantifies the lost opportunity "to capture a portion of the net trait revenues generated by the future sales of E3 and E3+IR,"[1258] noting that under French principles, a lost opportunity is recoverable provided that the damage is not hypothetical. They rely on Professor Gautier's statement that the damage must be "real and serious" and that "a certain margin of chance is deemed to be compatible with the certainty of the damage, to the extent that the latter exists as something that is potential, that it has within it all the conditions for its materialization."[1259]

705. Claimants argue that the opportunity to gain from the [redacted] under their [redacted] agreement with MS Tech was lost as a result of Dow's decision to proceed with Option C, the breaching option, instead of Option B.

706. **Two-step test**—Once satisfied that an injury exists with "a reasonable degree of certainty,"[1260] Claimants argue, a court or tribunal applying the doctrine of lost opportunity under French law must apply a two-step test to assess the loss of opportunity damages. First, the court or tribunal must proceed to the "determination of the victim's situation if the legitimately invoked opportunity has been realized"; second, the court or tribunal must proceed with the assessment of "the opportunity itself, that is its degree of probability."[1261]

707. According to Claimants, Bayer would be owed [redacted] revenue to be generated through the commercialization of Enlist E3 and Enlist E3+IR had Dow chosen not to breach its contractual commitment to Bayer. As a result, Claimants argue, the [redacted] figure is Bayer's 'real' lost

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[1257] Claimants' Phase III Reply, dated 23 October 2014, para. 40
[1258] Claimants' Phase III Post-Hearing Submission, dated 18 February 2015, para. 30
[1259] C-389: Gautier Second Witness Statement at 20, quoting CL-45: G. Viney, P. Jourdain, and S. Carval, *Traité de droit civil, Conditions de la responsabilité,* 4th ed., LGDJ 2013, at 276, 282-83
[1260] Claimants' Phase III Post-Hearing Submission, dated 18 February 2015, para. 32, quoting C-389: Gautier Second Witness Statement at 20
[1261] Claimants' Phase III Post-Hearing Submission, dated 18 February 2015, para. 33, citing CL-683: Oudot. « La perte de chance: incertitude sur un préjudice certain », *Gaz. Pal.*, 26 February 2011.

opportunity and should constitute the basis upon which the Tribunal should compute any contractual damages to be paid to Bayer."

708. Concerning the second step of the lost opportunity damages analysis, Claimants first argue that the launch in 2016 of Dow's Enlist products is now virtually certain, given the fact that the required EPA approvals have been secured[1262] and constitute "the final step in the federal regulatory process for the enlist system."[1263] The only remaining area of potential uncertainty, Claimants allow, "is the extent to which trait revenues will be generated by Dow's products."[1264] In this respect, Claimants suggest that the Tribunal apply a discount rate of 10% (within a bracket ranging between 5% and 30%), as proposed by their expert Mr. Jarosz.[1265]

709. Claimants conclude that they asserted loss of opportunity in connection with Option B in their written submissions on remedies and that monetary damages for breach "should amount to Bayer's loss of opportunity to capture a [redacted] in E3/E3+IR future net trait revenues, diligently calculated by Dow itself and appropriately discounted by Bayer to account for unreasonable uncertainty."[1266]

B. Respondents' Position on Recovery for Breach of Contract

710. Respondents take the position generally that Claimants have failed to establish harm, causation, and foreseeability. They raise a number of objections to the Option B analysis in general and to the claim of lost opportunity in particular.

711. The proposed Option B analysis is based in large part on an email [redacted]

[1262] Claimants' Phase III Post-Hearing Submission, dated 18 February 2015, para. 36, citing C-533: EPA Press Release – Enlist Duo Herbicide, dated 15 October 2014
[1263] Claimants' Phase III Post-Hearing Submission, dated 18 February 2015, para. 36, citing C-532: Dow Press Release – EPA Registers Enlist Duo Herbicide, dated 15 October 2014
[1264] Claimants' Phase III Post-Hearing Submission, dated 18 February 2015, para. 37
[1265] Claimants' Phase III Post-Hearing Submission, dated 18 February 2015, para. 38; C-515: Jarosz Third Witness Statement at 11, n. 46; C-396: Jarosz Second Witness Statement at 83-84; C-528: Jarosz Fourth Witness Statement at 41
[1266] Claimants' Phase III Post-Hearing Submission, dated 18 February 2015, para. 40

[redacted]

712. **Harm not established**—Respondents take the view that Claimants have failed to establish actual harm, that Article 1145 of the French Civil Code does not apply to the obligation that was allegedly breached,[1268] and that if it did apply, Claimants must still prove the nature and extent of their alleged damages, which they have not.[1269]

713. **Causation not established**—Respondents argue generally that the Option B analysis does not meet the causation requirement for damages. French law, they argue, only compensates for harm that is the "direct and immediate consequence" of a breach of contract.[1270] The Option B analysis rests entirely "on the faulty assumption that DAS would have pursued (or was somehow obligated to pursue) Option B [redacted] had DAS not chosen to create the E3 event (a molecular stack with *pat*)."[1271]

714. **Alternative technologies**—According to Respondents, Options B and C were not the only paths open to Dow to reach the desired result. Notably, Dow could have worked on developing [redacted] as a selectable marker to replace *pat* in a new soybean event with *aad-12*, and MS Tech could have created a new *dmmg* event distinct from FG72 and could have bred it with Dow's Event 416.[1272]

715. **Alternative legal path**—Respondents claim that under the required "but for the breach" analysis, the Tribunal should posit that Dow would have negotiated a license with Bayer allowing it to do what it did with *pat*. In this scenario, there would have been no breach and thus no harm. Bayer's harm is therefore equal to the value of that hypothetical license at the time, and that is all Bayer is entitled to.[1273]

[1267] C-183: Email from [redacted]

[1268] R-630: Aynès Fifth Witness Statement, at 2-3

[1269] Respondents' Phase III Reply, dated 30 October 2014, para. 29

[1270] R-388: Aynès Third Witness Statement, at 10, citing CL-1/RLA-107: Civil Code, translated by Georges Rouhette with the assistance of Dr. Anne Rouhette-Berton, Art. 1151

[1271] Respondents' Phase III Post-Hearing Submission, dated 18 February 2015, para. 55

[1272] Respondents' Phase III Memorial, dated 16 October 2014, para. 18; Respondents' Phase III Post-Hearing Submission, dated 18 February 2015, paras. 43-46

[1273] This argument was developed particularly at the Phase III hearing: Phase III Hearing Transcript, dated 21 November 2014, at 1184 ff.

716. **Causation and basis for calculation**—Respondents point out that they are not party to the 2007 Bayer-MS Tech Agreement that provides for [redacted] and that the *pat* gene is not even present in FG72. The royalties in question are therefore related to the deregulation and commercialization of an event that has nothing to do with *pat* or with Dow.[1274] The money that MS Tech is obligated to pay Bayer for FG72 sales reflects the value to MS Tech of the 2007 Bayer deal, that is, primarily, the value of Bayer's agreement to develop and to deregulate marketable products using its international infrastructure.[1275] They argue more specifically that the Option B analysis runs afoul of the causation requirement because it: "(i) ignores that the 2007 agreement between Bayer and MS Tech had nothing at all to do with the *pat* gene; (ii) impermissibly calculates damages based on all of the traits in DAS's products, not just *pat*; and (iii) ignores that the agreement provided for [redacted] which is a fraction of total sales revenue."[1276]

717. **Damages uncertain and speculative**—Claimants' Option B damages, Respondents argue, are uncertain and speculative and so fall short of the general requirement that damages be "certain".[1277] Under a loss of opportunity analysis, damages may be awarded only if the opportunity was "real and serious".[1278] According to Respondents, the damages sought by Claimants are (i) based on a hypothetical joint venture relating to a different product not at issue; (ii) based on future sales of products that may never reach the market; and (iii) based on speculation as to the sales, pricing, and evolving value of glufosinate tolerance in the marketplace.[1279]

718. **Damages not foreseeable**—Unless it has been established that the breach was intentional, which Respondents deny, foreseeability is also a requirement for compensation under French contract law. Respondents argue that, in 1992, when the Agreement was entered into, it was not foreseeable "that a breach of Article 4 would somehow have denied Bayer a royalty stream pursuant to a contract between Bayer and a third party not signed until some 15 years later, and on products that could not have been imagined until some 15 years later.[1280]

[1274] Respondents' Phase III Memorial, dated 16 October 2014, para. 21
[1275] Respondents' Phase III Memorial, dated 16 October 2014, paras. 20-21
[1276] Respondents' Phase III Post-Hearing Submission, dated 18 February 2015, para. 56
[1277] Respondents' Post-Hearing Submission, dated 18 February 2015, para. 58; R-388: Aynès Third Witness Statement, at 10
[1278] Respondents' Post-Hearing Submission, dated 18 February 2015, para. 58; R-388: Aynès Third Witness Statement, at 11
[1279] Respondents' Phase III Post-Hearing Submission, dated 18 February 2015, para. 58
[1280] Respondents' Phase III Reply, dated 30 October 2014, para. 24; Respondents' Post-Hearing Memorial Submission, dated 18 February 2015, para. 58, n. 94

719. **Timing of, and reason for, option**—Respondents argue that Option C was chosen as the preferred course [redacted] Respondents claim that "had DAS chosen 'Option B' [redacted], no royalties would have been due Bayer" because [redacted]"[1281] According to Respondents, it is the fact that Dow did not partner with MS Tech on [redacted] Another difficulty with Option B, from Dow's perspective at the time, [redacted][1283] Respondents suggest, in essence, that Option B would not have [redacted] at the relevant time and that Dow chose Option C for reasons other than [redacted] by the November 2007 Bayer-MS Tech Agreement.[1284]

720. **Full compensation versus unjust enrichment**—A related argument advanced by Respondents against the Option B analysis is that Claimants, by considering Dow's projected income in their calculations, are going beyond the "full compensation" framework imposed by French contract law and seeking a restitution or disgorgement award based on a theory of unjust enrichment. The full compensation principle focusses on harm suffered by the breaching party and precludes recovery through disgorgement.[1285]

721. **Lost opportunity theory not timely**—Respondents argue that unjust enrichment was indeed the only basis for monetary recovery advanced by Claimants in these proceedings: "Bayer never pleaded," they write, "that 'Option B' was a claim for loss of opportunity. ... The Tribunal cannot, therefore, award damages for loss of opportunity."[1286] Respondents also argue that Claimants never asked for lost profits.[1287]

[1281] Respondents' Phase III Memorial, dated 16 October 2015, paras. 19-21, citing R-56: 2004 Bayer-MS Tech Agreement at [redacted]
[1282] C-183: [redacted]
[1283] *Id.*
[1284] R-55: 2007 Bayer-MS Tech Agreement
[1285] Respondents' Post-Hearing Submission, dated 18 February 2015, para. 53; R-388: Aynès Third Witness Statement at 10
[1286] Respondents' Post-Hearing Submission, dated 18 February 2015, paras. 49-51
[1287] *Id.*

C. Tribunal's Determination of the Principles of Recovery for Breach of Contract

722. After a detailed review of the governing principles and the evidentiary record, the Tribunal accepts that the Option B analysis provides an appropriate and reliable basis for the determination of an opportunity that Bayer lost as a result of Dow's breach.

723. **Grounds of recovery and procedural fairness**—The Tribunal begins by recognizing that Claimants' legal case for recovery under contract law has not been a model of clarity and consistency. The case made by Claimants certainly evolved as the proceedings unfolded, and ambiguities long remained present in Claimants' positions. The Tribunal was struck, for example, by this passage found in Mr. Jarosz's fourth and last statement: "I have been informed that the 'full compensation' principle entails compensating the victim for the breaching party's enrichment achieved as a result of the breach so as to 're-establish equilibrium'."[1288] This is so clearly erroneous as a statement of contract law[1289] that it must have been intended to encompass other grounds of recovery. For example, Claimants argued until the end that principles of French law governed the parties' relationship beyond the realm of contract law and into areas that might include the law of unjust enrichment. The impact this may have had on Mr. Jarosz's calculations is that Dow's enrichment related to E3 will have served in the assessment of Bayer's expected compensation. It is clear under French contract law that Dow's projected E3 earnings cannot be taken into account *qua* enrichment. As will be seen, however, E3 earnings can validly form the basis of the relevant assessment as a *proxy*, that is, as the best available evidence of the value of Bayer's lost opportunity relating to Option B.

724. In their discussion of lost opportunity as a ground of recovery, Respondents raise a due process argument, which the Tribunal takes seriously. They assert that the Tribunal "could only award damages for lost profits or losses of opportunity if Bayer carried its burden to properly plead and prove that it is entitled to such damages," and that Bayer did not do so.[1290] The Tribunal recognizes that Claimants' case was not as clear as one may have wished it to be, but Claimants did argue in terms of lost opportunity on several occasions in their written submissions as well as during the Phase III hearing.[1291] In June 2014, Respondents even adduced expert evidence, which the Tribunal

[1288] C-528: Jarosz Fourth Witness Statement at 11
[1289] See, e.g. R-388: Aynès Third Witness Statement at 10
[1290] Respondents' Post-Hearing Submission, dated 18 February 2015, para. 48
[1291] Claimants' Phase III Memorial, dated 6 October 2014, para. 61; Claimants' Phase III Reply, dated 23 October 2014, at 38; Claimants' Phase III Closing Presentation, dated 21 November 2014, slides 74, 81

found helpful, on the concept and methodology of loss of opportunity under French law.[1292] In addition, Respondents were given the opportunity—and took full advantage of that opportunity—to address lost opportunity in greater detail in respect of Option B through two rounds of simultaneous post-hearing submissions. The Tribunal is satisfied that Respondents had ample opportunity to present their position and to respond to Claimants' arguments on lost opportunity.

725. **Option B as loss of opportunity**—Claimants' position, which the Tribunal adopts, is that, by breaching the 1992 Agreement in the making of E3, Dow deprived Bayer of the opportunity to gain significant trait revenue from the non-breaching alternative that Dow considered at the time, an alternative referred to as Option B. Option B was the [redacted] By virtue of the 2007 Bayer-MS Tech Agreement, the transformants resulting from this breeding stack were subject to a royalty payable to Bayer of [redacted] Dow went for Option C, the breaching option, which did not involve [redacted]. Option C resulted in E3, which was made in breach of the 1992 Agreement. The path of [redacted] Option B, however, was never taken. The path would have led, by all accounts, to products at least equivalent in features and value to E3: Option B is at least equivalent to E3 because it [redacted]

726. **Option B and the "but for" scenario**—Respondents focus some of their arguments against the Option B analysis on the reasons why Dow chose to favor Option C [redacted]. They stress that there were [redacted] The relevant passage is reproduced here in its entirety:

[redacted]

[1292] R-388: Aynès Third Witness Statement, citing RLA-409: B. Fages, Droit des Obligations, n° 318-19; RLA-411: Cass. civ. 1ère, 30 avril 2014, n° 13-16380; RLA-414: Cass. civ., 1ère, 21 novembre 2006, n° 05-15.674; RLA-415: Cass. civ., 1ère, 15 janvier 2002, n° 98-15.247; RLA-416: Cass. civ., 2e, 12 juin 1987, n° 86-10.686; RLA-417: CA Versailles, 11 mars 2014, n° 12/08166; RLA-418: CA Paris, 7 mai 2003, n° 2001/06046

[redacted]

About five paragraphs up in the same email, [redacted]

[redacted]

727. The email makes it clear that the [redacted]. This much is acknowledged by Respondents.[1294] Indeed, [redacted] writes, elsewhere in his email: [redacted] The figures in the email also provide a clear basis for Claimants' representation of the basic financial difference between the two options as follows:[1295]

[redacted]

The document, in addition, certainly provides rich context for a consideration of the question whether Respondents' breach was intentional. An answer to this question is not necessary, however, for the purpose of the contract damages analysis. If the breach was intentional, the requirement of foreseeability for damages would not apply.[1296] As will be explained below, whether or not the foreseeability requirement applies, the Tribunal finds that it is met on the facts

[1293] C-183: [redacted]

[1294] Respondents' Phase III Memorial, dated 16 October 2014, para. 19 [redacted]

[1295] Claimants' Phase III Memorial, dated 6 October 2014, para. 55

[1296] CL-1/RLA-107: Civil Code, translated by Georges Rouhette with the assistance of Dr. Anne Rouhette-Berton, Arts. 1150-51

of this case. What is required for the contract damages analysis, however, is a clearer picture of Option B as a "but for" scenario.

728. Respondents placed much emphasis at the hearing on the "but for" scenario.[1297] They argued that, under a "but for" analysis, one must posit that Dow would have negotiated a license with Bayer allowing it legally to proceed as it did, and then there would have been no breach and thus no harm. Bayer's harm is therefore equal to the value of that license at the time and that is all Bayer is entitled to. There are a number of problems with this approach. First, when deciding on the "but for" scenario under a contract law analysis, the Tribunal is primarily guided by the evidence before it, not by the hypothetical license construct that is used for patent damages. The evidentiary record in this case is clear that, on one side, a license from Bayer was never the non-breaching option considered by Dow, and, on the other side, that Bayer has never actually granted to anyone, at any time, the kind of license Dow would have needed to make E3.[1298] Second, even if one were to assume with Respondents that "Bayer's harm is ... equal to the value of that license at the time," the Tribunal fails to see how this would advance Dow's case: the value of the license, assessed under a contract analysis rather than under the methodological constraints of U.S. patent law, would still be assessed by reference to the "but for" scenario, that is, the scenario in which there is no breach and no license. This would require direct reference to the non-breaching options, if any, that were available at the relevant time. A close analysis of the options available to Dow at the time will be undertaken under the patent analysis in Part 5.II.B.3, below. The conclusion of that analysis is that there was no alternative technology available to Dow at the relevant time.

729. The fact that there was no alternative technology available to Dow is strongly corroborated by the evidence showing that, in spite of its known and acknowledged cost to Dow, Option B [redacted] Since *dmmg* was the key component in the intended product, the alternatives had to involve MS Tech. [redacted]

[1297] Phase III Transcript, dated 21 November 2014, at 1184 ff.
[1298] Claimants' Phase III Memorial, dated 6 October 2014, paras. 64 ff.; Claimants' Phase III Reply, dated 23 October 2014, paras. 61-62
[1299] C-66: 2008 Dow-MS Tech Agreement, [redacted]

[redacted]

730. The Tribunal finds itself in a relatively rare situation where the documentary evidence chalks out in great detail what the parties were thinking and doing at the relevant time, what options they actually considered, pursued, and abandoned, why, and when. This allows the Tribunal to form an unusually clear picture of the "but for" scenario for the purpose of its contract damages analysis. That picture is formed based on the established facts surrounding the identification and formalization by Dow of its available options at the relevant time. In that picture, the Tribunal finds that the "but for" scenario is irremediably tied to Option B.

731. **The requirements of foreseeability and causation are met**—Respondents have emphasized that Dow is not a party to the 2007 Bayer-MS Tech Agreement that provides for the [redacted] and that the agreement concerns *dmmg*, not *pat*. The fact that the royalties were to flow from MS Tech in relation to the use of *dmmg*, however, has no relevance in this context. The contract royalties in question are used here as a reference for the measure of Bayer's loss resulting from Dow's breach. The Tribunal considers the loss suffered by Bayer; as long as the requirements of foreseeability (if applicable) and causation are met, the assessment of the damages need not be tied to Dow's payment obligations in any way. Respondents' argument amounts to what common law systems would characterize as a "remoteness" argument. Here, this argument should be broken down into issues of foreseeability and causation.

732. Respondents argue that the damages were not foreseeable at the time of the Agreement. Given the considerable time that elapsed between the making of the 1992 Agreement and its breach in 2008, the question of foreseeability deserves careful attention. Respondents put the point crisply as follows: when the Agreement was entered into, it was not foreseeable "that a breach of Article 4 would somehow have denied Bayer a royalty stream pursuant to a contract between Bayer and a third party not signed until some 15 years later, and on products that could not have been imagined until some 15 years later."[1301] The Tribunal takes the view, however, that what happened is quite precisely what the 1992 Agreement was designed to prevent.

733. This is apparent from the rather obvious fact that a licensor does not usually grant third-party sublicensing rights equal to the rights granted to the licensee because that would eliminate the right

[1300] R-108: Amendment to 2008 Dow-MS Tech Agreement, [redacted]
[1301] Respondents' Phase III Reply, dated 30 October 2014, para. 24; Respondents' Phase III Post-Hearing Submission, para. 58, n. 94

to control licensing and to capture value from downstream licensing. That is why the grant of commercial rights "will very likely not include the right to make, use or sell any of the components of the genetic construct alone or in combination, but only as an inextricably linked part of the specific transgenic plant."[1302] Here the sublicensing rights granted to Dow were, accordingly, very clearly limited to sublicensing transformants. The testimony of Dr. A[redacted], who helped develop and implement Hoechst's commercialization strategy early on, is instructive in this respect: "We intended to retain control of our own glufosinate technology" and "it was important for us to be able to control how the market would be shaped."[1303]

734. With respect more specifically to the licensing of the naked *pat* gene or of a construct containing it, the dealings between the parties about two years into the Agreement also demonstrate a keen awareness of the value associated with control over the technology and therefore the damage that was liable to result from a breach of Article 4. Soon after Mycogen had acquired LGI in 1994, Dr. W[redacted] contacted Hoechst to ask whether they would be willing to liberalize Article 4 to "allow us to license DNA constructs containing PAT."[1304] This requested amendment was denied by Hoechst for reasons to do with downstream control that the Tribunal finds were clear to all when the Agreement was entered into. From Hoechst's perspective, allowing Mycogen and its successors to grant licenses to constructs containing the *pat* gene "would mean that sublicensees of Mycogen [and its successors] will make transformations on their own behalf."[1305] What Dr. T[redacted] wrote in that letter is *exactly* what happened when Dow breached Article 4. This shows that harm was actually foreseen, in 1994, as liable to result from sublicensees handling the naked *pat* gene or a construct containing it on their own behalf and indicates that, if this was not actually foreseen two years earlier when the Agreement was entered into, it was certainly foreseeable at the time. To deny foreseeability because of the mere passage of time ("a contract ... not signed until some 15 years later") would be to rob agreements of their legal effect before their stipulated term has elapsed; and to deny the same because the products generating the trait revenue at issue were innovative ("on products that could not have been imagined until some 15 years later") would be to deny the effectiveness of contracts in the governance through time of intellectual property rights tied to patents. The Tribunal finds, therefore, that the harm was foreseeable.

[1302] C-182: R.S. Cahoon, Licensing Agreements in Agricultural Biotechnology, at 1011
[1303] C-141: A[redacted] Witness Statement, para. 12
[1304] C-38: Letter from Dr. W[redacted] to Dr. T[redacted], dated 26 April 1994, at 2
[1305] C-44: Letter of Dr. T[redacted] to Mr. C[redacted], dated 22 December 1994, at 1

735. Respondents generally argue that the Option B analysis fails to meet the causation requirement for damages. French law, they point out, only compensates for harm that is the "direct and immediate consequence" of a breach of contract.[1306] According to them, the Option B analysis rests entirely "on the faulty assumption that DAS would have pursued (or was somehow obligated to pursue) Option B.[1307]

736. Respondents are of course correct in assuming that they were not "somehow obligated to pursue" Option B. But analysis of the "but for" scenario does not entail a finding of obligation; it simply entails a determination of what a party would factually have done if the liability-generating path had not been chosen. The assumption that Dow "would have pursued" Option B finds a very strong basis in the evidence. As seen earlier, the evidence is quite clear that Option B, [redacted] Option B is the project that the evidence shows would most likely have been pursued, and as such provides the Tribunal with a reliable basis for an assessment of the situation Bayer would be in "but for" Dow's breach.

737. Respondents argue more specifically that the Option B analysis runs afoul of the causation requirement because it impermissibly leads to calculating damages based on all of the traits in Dow's products, rather than just *pat*. Again, what the Option B analysis achieves by reference to the [redacted] is a measure of Bayer's loss resulting from Dow's breach. Option B would have secured to Bayer the [redacted] by application of [redacted] of the 2007 Bayer–MS Tech Agreement.[1308] In its relevant portions, [redacted] reads thus:

[redacted]

[redacted]

[redacted]

[1306] R-388: Aynès Third Witness Statement, at 10, citing CL-1/RLA-107: Civil Code, translated by Georges Rouhette with the assistance of Dr. Anne Rouhette-Berton, Arts. 1151
[1307] Respondents' Phase III Post-Hearing Submission, dated 18 February 2015, para. 55
[1308] R-55: 2007 Bayer-MS Tech Agreement

The Agreement seems clear that the [redacted] that was to flow to Bayer is actually not tied to *dmmg* in particular. It is tied to [redacted] In our case, the royalty would therefore be tied to the new MS Tech event resulting from [redacted] There is no separate value attributed to *pat* in this arrangement, as Respondents correctly point out.[1309] The arrangement, however, provides a reliable measure of what Bayer stood to gain in the most likely non-breaching scenario, which Dow itself identified as Option B.

738. A related argument is that the money that MS Tech is obligated to pay Bayer for FG72-related sales reflects the value to MS Tech of the 2007 Bayer deal, that is, primarily, the value of Bayer's agreement to develop and to deregulate marketable products using its international infrastructure.[1310] The royalties in question are therefore related to the deregulation and commercialization of an event that has nothing to do with *pat* or with Dow.[1311] Here again, what the reference to the royalties achieves is a measure of Bayer's loss resulting from Dow's breach: there is no requirement that the loss in question be tied to the object of the breached contract as long as the loss is a foreseeable and direct consequence of the breach.

739. The point made here is important in the calculation of damages, however. The gains that Bayer lost the opportunity to secure through the Option B royalties are tied to the consideration MS Tech was to receive from Bayer under the 2007 Bayer-MS Tech Agreement. [redacted] Although Bayer has gone ahead with the performance of its obligations in respect of FG72, [redacted]

[1309] Respondents' Phase III Memorial, dated 16 October 2014, para. 21

[1310] *Id.*, paras. 20-21

[1311] *Id.*, para 21

[1312] In the present case, sources cited by Claimants' expert, Mr. Jarosz, indicate that the costs, within the United States, of deregulating [redacted] C-396: Jarosz Second Witness Statement at 10, n. 43, citing notably C-457: *ISAAA Publication – Stacked Traits in Biotech Crops* at 4 ("In countries like the USA and Canada, no separate or additional regulatory approval is necessary for commercializing hybrid stacks that are products of crossing a number of already approved biotech lines"). However, one of Respondents' experts indicates, when calculating the costs of design-around alternatives for Dow, that "[s]everal regulatory jurisdictions outside the U.S. require additional compositional and protein expression studies associated with breeding stacks of individually approved events" (R-618: W[redacted] Witness Statement, at para. 21). Dr. W[redacted] estimated that these studies would cost approximately [redacted]. While Dr. W[redacted] was not discussing the particular Option B [redacted] at issue here, the Tribunal considers that this [redacted] figure for the deregulation of a [redacted] can be used as a proxy for the costs of deregulating the Option B [redacted]

740. A final argument that could be addressed under causation is that Bayer's lost gains are not established because the path of the breeding stack was not in fact followed, such that Bayer never became entitled to the trait revenue. This may be viewed as a break in the chain of events that severs the harm from the breach for the purpose of causation analysis, and requires a closer look at the theory and methodology underlying loss of opportunity.

741. **Loss of opportunity: causation and certainty**—It is common ground that the loss of an opportunity is compensable under French law.[1313] In such cases it is crucial to distinguish between the value of the loss of an opportunity to secure a benefit, on the one hand, and the value of the benefit itself, if secured, on the other. In other words, "[i]f the opportunity was real and serious ... the compensation must be measured in terms of the lost opportunity as opposed to the benefit that the opportunity might have procured."[1314] In those cases, the benefit itself that the opportunity might have procured is normally too remote to be compensated as a loss under the general theory. Either it is seen as a consequence of the breach that is insufficiently "immediate and direct" for the purpose of causation,[1315] or it is considered a "potential" damage, one that is insufficiently "certain" and thus too speculative.[1316] Where it is the opportunity of a benefit rather that the benefit itself that is sought to be compensated, the loss of that opportunity may be considered "immediate and direct" for the purpose of causation even if the ultimate loss of the benefit (the opportunity of which was lost) would not be considered "immediate and direct" for that purpose.

742. Claimants' Option B damages, Respondents argue, are uncertain and speculative and so fall short of the general requirement that damages be "certain".[1317] According to Respondents, the damages sought by Claimants are (i) based entirely on a hypothetical joint venture between Dow and MS Tech relating to a different product than the one at issue; (ii) based on estimated future sales of products that are not on the market and may never reach the market; and (iii) based on speculation as to the volume of future sales, pricing, and evolving value of glufosinate tolerance in the marketplace.[1318]

[1313] See e.g. Respondents' Post-Hearing Submission, dated 18 February 2015, para. 58; Claimants' Phase III Post-Hearing Submission, dated 18 February 2015, para. 33

[1314] R-388: Aynès Third Witness Statement, at 10

[1315] CL-1/RLA-107: Civil Code, translated by Georges Rouhette with the assistance of Dr. Anne Rouhette-Berton, Art. 1151

[1316] RLA-409: B. Fages, *Droit des Obligations*, n° 319

[1317] Respondents' Phase III Post-Hearing Submission, dated 18 February 2015, para. 58: R-388: Aynès Third Witness Statement, at 10

[1318] Respondents' Phase III Post-Hearing Submission, dated 18 February 2015, para. 58

743. Under a loss of opportunity analysis, damages may be awarded only if the opportunity was "real and serious".[1319] "The loss of opportunity falls between certain damage and potential damage."[1320] "Where the opportunity invoked is too far in the future, uncertain, minimal or merely hypothetical, its loss cannot constitute a compensable harm."[1321] At the same time, "a certain margin of chance is deemed to be compatible with the certainty of the damage, to the extent that the latter exists as something that is potential, that it has within it all the conditions for its materialization."[1322]

744. The Tribunal rejects the arguments advanced by Respondents and finds that the opportunity to gain the net trait revenue in this case was both real and serious. Respondents first assert that Option B "was based entirely on a hypothetical joint venture between Dow and MS Tech relating to a different product than the one at issue."[1323] The Tribunal has already explained that there is no requirement that the harm should be tied to the object of the breached agreement, as long as the harm was a direct consequence of the breach. It is therefore irrelevant that the benefit, the opportunity of which was lost, would have been derived from a different contract concerning a different product. The Tribunal also noted, incidentally, that the product that would have resulted from Option B would have had *pat* as one of its components. As for the assertion that the joint venture between Dow and MS Tech was hypothetical, it is flatly contradicted by the record, notably by the 2008 Dow-MS Tech Agreement, [redacted].[1324]

745. Second, Respondents object that the Option B damages are "based on estimated future sales of products that are not on the market and may never reach the market."[1325] It is indeed in the nature of a lost opportunity that the opportunity was not realized. The record provides, however, Dow's estimates of future sales for Enlist E3 and Enlist E3+IR. In respect of these products it is difficult for Dow to contend that they "may never reach the market" when Dow publicly announces their imminent launch.[1326] It is also difficult for Dow to deny that these products represent the best

[1319] *Id.*; R-388: Aynès Third Witness Statement at 11
[1320] *Id.* at 10
[1321] *Id.* at 11
[1322] C-389: Gautier Second Witness Statement at 20, quoting CL-45: G. Viney, P. Jourdain, and S. Carval, *Traité de droit civil, Conditions de la responsabilité*, 4th ed., LGDJ 2013, at 276, 282-83
[1323] Respondents' Phase III Post-Hearing Submission, dated 18 February 2015, para. 58
[1324] C-66: 2008 Dow-MS Tech Agreement, [redacted]
[1325] Respondents' Phase III Post-Hearing Submission, dated 18 February 2015, para. 58
[1326] CL-684: Schafer, "Dow's Enlist Products on Track for 2016 Launch," AGWeb, dated 11 February 2015

possible proxy one could have for the products that would have resulted from Option B. The product concept is the same and the targeted market is the same.

746. Thirdly and finally, Respondents argue that Option B damages are based on speculation as to the volume of future sales, pricing, and the evolving value of glufosinate tolerance in the marketplace.[1327] As concerns speculation, since an assessment of future benefits is required, it is obvious that it can only be based on current evidence about the future. The projections in the record concerning sales and pricing do not amount to speculation. The Tribunal considers them reliable because their preparation was not litigation-driven, and they were presumably considered by Dow to be sufficiently reliable for use in its business decisions.[1328] As concerns the evolving value of glufosinate resistance, for the purposes of contract damages, the Tribunal relies not on the value of glufosinate resistance but on the expected trait royalty of the entire products that would have resulted from Option B.

747. **Loss of opportunity: two-step methodology**—The Tribunal now turns to the methodology for the assessment of a lost opportunity. The opportunity that Bayer lost as a result of Dow's breach was to secure the [redacted], for a product that was ultimately never made. It is not contested that the product that would have resulted from Option B is equivalent to E3 [redacted] If Dow had decided against the breaching path, however, it is not certain that Option B would have become a reality. That is why the best theory put forward by Claimants under French law is that what it lost was not a benefit, but the opportunity of a benefit.

748. Once satisfied that an injury exists with "a reasonable degree of certainty,"[1329] a court or tribunal applying the doctrine of lost opportunity under French law must apply a two-step test to assess the loss of opportunity damages. First, the court or tribunal must proceed to the "determination of the victim's situation if the legitimately invoked opportunity has been realized"; second, the court or tribunal must proceed with the assessment of "the opportunity itself, that is, its degree of probability."[1330] This is in order ultimately to reflect the value not of the anticipated benefit itself but of the opportunity, that is, the chance that the benefit would have been realized. The trait

[1327] Respondents' Phase III Post-Hearing Submission, dated 18 February 2015, para. 58
[1328] C-396: Jarosz Second Witness Statement at 84
[1329] Claimants' Phase III Post-Hearing Submission, dated 18 February 2015, para. 32, quoting C-389: Gautier Second Witness Statement, at 20
[1330] Claimants' Phase III Post-Hearing Submission, dated 18 February 2015, para. 33, citing CL-683: Oudot, « La perte de chance: incertitude sur un préjudice certain », *Gaz. Pal.*, dated 26 February 2011

revenue forecast will therefore form the basis of a figure for the first step of the analysis. In a second step, the figure will have to be discounted to reflect the "chance" factor.

749. Claimants are somewhat unclear as to the proper basis for establishing the appropriate probability discount rate. They propose what Mr. Jarosz settles on generally to account for uncertainty in future cash flows.[1331] Explaining that a 30% discount rate would denote a high uncertainty, and 5%, a low uncertainty, Mr. Jarosz settles on a 10% discount rate, [redacted] Claimants argue that there is no reason to discount the amounts any further.[1333] Respondents are right, however, that the discount applied by Mr. Jarosz does "not attempt to account for the ... nature of any 'lost opportunity'."[1334] Indeed, what Mr. Jarosz does with the discount rates, in his own words, is to apply "basic financial principles and corporate [redacted] practices" to assess the current value of future flows. This exercise is necessary to calculate damages for any portion of lost profits that is in the future. It does not account for the difference between lost profit (past or future) and lost opportunity. Contrary to what Claimants appear to assume in this particular connection, lost profit cannot be assimilated to lost opportunity merely because the profits at issue are in the future. In other words, Mr. Jarosz's discount gets us through the first step of our analysis: it gives us an assessment of the current value of the relevant future gains. A further probability discount is therefore necessary to get us through the second step of our analysis, that is, to account for the chance that those gains as calculated, and taken as a whole, may not be realized. If we accept a percentage within the range suggested by Mr. Jarosz as an appropriate discount rate to get to the current value of future cash flows (first step), this figure must be further discounted to reflect the chance that Dow may not have gone for Option B at all, or that Option B would somehow not have turned into a successful product (second step).

750. Bearing in mind the required two-step analysis, the Tribunal concludes that it is appropriate to use the E3 trait revenue projections to calculate Bayer's lost gains as part of the first step of the analysis, provided that future flows are converted into current values, as seen above, and that the projections are divided by a factor of [redacted] The Tribunal notes that, in contrast to the hypothetical license negotiation under patent law discussed below, this royalty rate will be applied to all E3 trait

[1331] Claimants' Phase III Post-Hearing Submission, dated 18 February 2015, para. 38
[1332] C-528: Jarosz Fourth Witness Statement at 41
[1333] Claimants' Phase III Post-Hearing Submission, dated 18 February 2015, para. 38
[1334] Respondents' Post-Hearing Reply, dated 27 February 2015, para. 10

revenue projections worldwide, without need for inquiry into a nexus with the United States,[1335] in order to compensate Bayer for lost opportunity relating to projected sales outside the United States, notably of Enlist E3+IR in Latin America.[1336] This worldwide scope reflects the fact that the scope of the license under the 2007 Bayer-MS Tech Agreement, which gave rise to the [redacted] that would have been due to Bayer under Option B, was not restricted to the United States. In a second step, which the Tribunal will take when assessing and calculating damages, the Tribunal will determine the appropriate probability discount rate that reflects the chance factor. Before doing so, the Tribunal turns to the principles of recovery under U.S. Patent law.

II. The Principles of Recovery under U.S. Patent Law

751. As with the principles of recovery for breach of contract, there is no issue between the parties as to the appropriate principles governing patent damages, provided the matter is cast at a sufficiently high level of abstraction. Putting enhanced damages to the side, the general principle is compensatory, though the specific rules and methodology are distinct from those governing recovery for contractual breach.

752. Upon a finding of infringement, the Patent Act makes a monetary award mandatory.[1337] As all of the accused products have been found to infringe, the Tribunal must award no less than a reasonable royalty. This is what Claimants are seeking in these proceedings, to the extent it is not duplicative of the damages awarded for breach of contract.[1338] A reasonable royalty can be defined as the amount Claimants and Respondents would have agreed upon as a fee for use of the invention in a negotiation taking place at the time immediately preceding infringement.

753. In the determination of a reasonable royalty in patent infringement cases, guidance is provided by the case law in the form of a non-exhaustive list of factors. The list that is referred to by virtually all courts tasked with the assessment of a reasonable royalty under the Patent Act is the fifteen-factor list provided in the early 1970s in the *Georgia-Pacific* case.[1339] Factor 15 contemplates a hypothetical negotiation construct that has become standard methodology for establishing the terms of a hypothetical license:

[1335] C-396: Jarosz Second Witness Statement at 90
[1336] C-317: Jarosz First Witness Statement at 20; R-22: R[redacted] First Witness Statement, para. 9
[1337] CL-8: 35 U.S.C. § 284
[1338] See notably Claimants' Phase III Memorial, dated 6 October 2004, part VI
[1339] RLA-91: *Georgia-Pacific Corp. v. U.S. Plywood Corp.*, 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970)

> The amount that a licensor (such as the patentee) and a licensee (such as the infringer) would have agreed upon (at the time the infringement began) if both had been reasonably and voluntarily trying to reach an agreement; that is, the amount which a prudent licensee – who desired, as a business proposition, to obtain a license to manufacture and sell a particular article embodying the patented invention – would have been willing to pay as a royalty and yet be able to make a reasonable profit and which amount would have been acceptable by a prudent patentee who was willing to grant a license.[1340]

The hypothetical license is intended to allow Respondents to practise the patents-in-suit in all of the accused products from the moment of infringement to the moment of expiry.

754. The Tribunal notes, with respect to the date of infringement, that it has determined that the date of breach and the effective date of termination of the License Agreement was [redacted] License coverage ends with termination, which determines the beginning of infringement.[1341] On that basis the Tribunal has established that infringement began for all products, at least for some of the patents, on [redacted].[1342] It is also established that infringement would necessarily end for all products on 26 September 2023, the date of expiry of the Reissue patent.[1343]

755. To establish the reasonable royalty under the hypothetical license construct, the damage experts have both structured their analyses using a quantitative framework and a qualitative framework. Under the quantitative framework, they both adopt three approaches commonly used to value intangible assets and to determine a reasonable fee for access to those assets: the "licensing comparables" approach (or market approach), the "incremental benefit" approach (or income

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[1340] The other factors are the following: (1) The royalties received by the patentee for the licensing of the patent in suit, proving or tending to prove an established royalty; (2) The rates paid by the licensee for the use of other patents comparable to the patent in suit; (3) The nature and scope of the license, as exclusive or non-exclusive; or as restricted or non-restricted in terms of territory or with respect to whom the manufactured product may be sold; (4) The licensor's established policy and marketing program to maintain his patent monopoly by not licensing others to use the invention or by granting licenses under special conditions designed to preserve that monopoly; (5) The commercial relationship between the licensor and licensee, such as, whether they are competitors in the same territory in the same line of business; or whether they are inventor and promotor; (6) The effect of selling the patented specialty in promoting sales of other products of the licensee; the existing value of the invention to the licensor as a generator of sales of his non-patented items; and the extent of such derivative or convoyed sales; (7) The duration of the patent and the term of the license; (8) The established profitability of the product made under the patent; its commercial success; and its current popularity; (9) The utility and advantages of the patent property over the old modes or devices, if any, that had been used for working out similar results; (10) The nature of the patented invention; the character of the commercial embodiment of it as owned and produced by the licensor; and the benefits to those who have used the invention; (11) The extent to which the infringer has made use of the invention; and any evidence probative of the value of that use; (12) The portion of the profit or of the selling price that may be customary in the particular business or in comparable businesses to allow for the use of the invention or analogous inventions; (13) The portion of the realizable profit that should be credited to the invention as distinguished from non-patented elements, the manufacturing process, business risks, or significant features or improvements added by the infringer; (14) The opinion testimony of qualified experts

[1341] Letter from the Tribunal to the Parties, dated 25 September 2014

[1342] See Part 3.II.B&C

[1343] See Table at Part 3.II.C

approach), and the "design-around" approach (or cost approach). Mr. Jarosz, however, has proposed an additional, or alternative, quantitative framework incorporating "head-start" damages. The Tribunal's treatment of the principles of recovery under U.S. patent law therefore proceeds as follows. The Tribunal first looks at Mr. Jarosz's (A) head-start quantitative framework, which it rejects, then at (B) the agreed quantitative framework (looking in detail at (1) licensing comparables, (2) incremental benefit, and (3) design around), and then at (C) the qualitative framework, which contextualizes the negotiation and makes adjustments to the values established using the quantitative framework, based on qualitative factors that may have been overlooked in the quantitative analysis. Having established the royalty values per acre, the Tribunal then turns to the pros and cons of (D) a lump sum versus a running royalty, deciding in favor of a lump sum, before looking at the issue of (E) the enhancement of damages and deciding against enhancement.

A. Head-Start Quantitative Framework

756. Mr. Jarosz considers two quantitative frameworks for determining Bayer's patent infringement damages. The head-start quantitative framework, or approach, yields higher numbers. It calculates the value to Dow of the "head start" provided by its infringement, which enables Dow to launch the covered products more than a decade earlier than would have been possible without the infringement.[1344]

1. Claimants' Position on Head Start

757. The head-start damages approach is the first approach suggested by Mr. Jarosz, who explains that the ability to begin development and commercialization prior to the expiration of the patents-at-issue has significant value. Obtaining permission to begin such development would likely involve substantial compensation, he explains, as it allows for the launch of products that would otherwise be unavailable until much later in time. Head-start damages attempt to quantify the value of such permission.[1345] Even allowing for some degree of uncertainty reflected in Dow's estimates of the net present value of its own projects, there is little doubt that Dow expects to derive significant financial returns from the accused products—returns that would not be available in the absence of the alleged infringement and that will extend long after Bayer's patents expire.[1346]

[1344] C-528: Jarosz Fourth Witness Statement at 12
[1345] C-528: Jarosz Fourth Witness Statement at 20
[1346] *Id.* at 21-22, referring to C-396: Jarosz Second Witness Statement, Tab 29 (estimates)

758. Claimants rely on the *Monsanto v. E.I. Du Pont De Nemours and Company* case, where DuPont was found to have infringed a Monsanto patent by incorporating a patented gene into a gene stack in soybeans to produce a next generation soybean that was resistant to RoundUp (glyphosate), and where the jury awarded to Monsanto $1 billion in damages despite the fact that DuPont had not, at the time of the decision, made a single sale of the accused product.[1347]

759. Mr. Jarosz submits that in this case, the source of harm associated with Dow's patent infringement and contract breach is the fact that Dow's unauthorized use of Bayer's *pat* gene has enabled Dow to begin the process of commercialization of a number of important products well before the time that it would have been permitted to begin such development in the absence of infringement or contract breach.

760. Claimants explain that Dow should not have begun development of E3 until 2023, when RE44962 expires. Based on Mr. R[redacted] testimony, [redacted] leading to a product being ready in 2030 at the earliest. As a result of the infringement, Dow is now expected to have triple herbicide resistant seeds commercially available some 15 years earlier than its own development of such product would have permitted.[1348]

761. Claimants insist that they seek a remedy for past and current infringement, not for infringement occurring after the expiration of the RE44962 patent in 2023; and that the fact that the accused products are not yet for sale is no bar to taking into account the harm caused by the infringement.[1349]

2. Respondents' Position on Head Start

762. Respondents argue that head-start damages are not a cognizable basis for awarding damages under U.S. patent law, which prohibits the extension of patent monopolies. Mr. Bakewell also submits that Mr. Jarosz's head-start theory is inaccurate and unreliable because it is based upon speculative assessments of future sales and the unreasonable assumption that Dow would have no alternative to infringement other than to wait more than a decade to use *pat*.[1350]

[1347] R-317: *Monsanto Co. v. Bayer Bioscience, N.V.*, 4:00-CV-01915-ERW, 2006 U.S. Dist. Lexis 97254 at 25 (E.D. Mo., 28 August 2006)
[1348] Claimants' Phase III Reply, dated 23 October 2014, at 19
[1349] *Id.*
[1350] R-617: Bakewell Second Witness Statement, para. 189

763. According to Respondents, the claim for head-start damages as articulated and calculated by Claimants violates two fundamental tenets of patent law. First, it indirectly and impermissibly seeks what amounts to post-expiration royalty payments and thus the extension of patent monopoly.[1351] Second, it violates the "entire market value rule" because the head-start damages calculations have the effect of covering the entire projected revenue for Dow products containing *pat*, as opposed to the revenue that can be attributed to the contribution of *pat*.[1352]

3. Tribunal's Determination: Head-Start Quantitative Framework Rejected

764. From a business perspective, the ability to begin development and commercialization of a product before the expiration of the relevant patents has undeniable value. One would expect that obtaining permission to begin such development would involve compensation, as Mr. Jarosz explains, since it allows for the launch of a product or set of products that would otherwise be unavailable until much later in time, and can generate value beyond the expiration of the relevant patents.[1353] Head-start damages attempt to quantify the value of such permission.[1354] Respondents take the view, however, that head-start damages are not a cognizable basis for awarding damages under U.S. patent law, which does not recognize unjust enrichment, prohibits the extension of patent monopolies, and demands apportionment under the so-called "entire market value rule".[1355] Mr. Bakewell also presented the head-start approach as inaccurate and unreliable because it is based upon speculative assessments of future sales and the unreasonable assumption that Dow would have no alternative to infringement other than to wait more than a decade to use *pat*.[1356] The Tribunal rejects the claim for head-start damages because the facts of this case do not support it.

765. On one side, it is clear that unjust enrichment is not a valid basis for a remedy under U.S. patent law. As Respondents point out, disgorgement of profits has not been a permitted measure of recovery for patent infringement for over 60 years.[1357] The Supreme Court established in *Aro Manufacturing* that the Patent Act was amended in 1946 "precisely to eliminate the recovery of profits as such and allow recovery of damages only"; only the patentee's losses can be recovered,

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[1351] Respondents' Phase III Memorial, dated 16 October 2014, at 65
[1352] Respondents' Phase III Reply, dated 30 October 2014, para. 45
[1353] C-528: Jarosz Fourth Witness Statement at 21-22, referring to C-396: Jarosz Second Witness Statement at Tab 29 (estimates)
[1354] C-528: Jarosz Fourth Witness Statement at 20
[1355] Respondents' Phase III Memorial, dated 16 October 2014, paras. 65-66
[1356] R-617: Bakewell Second Witness Statement, para. 189
[1357] Respondents' Phase III Memorial, dated 16 October 2014, para. 67; Respondents' Phase III Reply, dated 30 October 2014, para. 45

"without regard to the question whether the defendant has gained or lost by his unlawful acts."[1358] Claimants' damage expert, Mr. Jarosz, does rely on Respondents' gains, or projected gains, as the basis of his assessment of the head-start damages, which he characterizes as "the benefits provided to DAS as a consequence of its premature development of accused products."[1359] Contrasting the approach that excludes head start suggested by Mr. Bakewell, he writes: "unlike the head-start approach, this approach fails to capture or reflect the substantial benefits that have been conferred upon DAS by reason of its premature development of the accused products."[1360]

766. An infringer's benefits, or projected benefits, may well track the patentee's losses or provide assistance in the evaluation of losses such as diverted sales. Thus, there are many circumstances in which the infringer's benefits may usefully serve as part of the evidentiary record where the patentee seeks recovery of lost profits as a result of infringement. In such cases, however, the benefits are used as a proxy to measure lost profits; they are not recoverable *qua* benefits. Respondents' benefits, as benefits, cannot be recovered under this regime.

767. On the other side, Claimants have not sought, and could not have sought, to recover lost profits under the patent regime.[1361] They rely heavily on the outcome in the *Monsanto* case, where DuPont had infringed a Monsanto patent by incorporating a patented gene into a gene stack to produce a new generation of soybeans that were resistant to Monsanto's Roundup, a glyphosate herbicide.[1362] In that case, DuPont began development of the accused product in 2008 without a license from Monsanto, whose relevant patent did not expire until 2014. The jury awarded $1 billion to Monsanto as a lump-sum royalty even if DuPont had not yet made a single sale of the accused product. The jury's verdict was challenged on appeal, but before completion of the appeal, and before the commercial success of the accused product could be established, DuPont and Monsanto settled on an up-front, lump-sum payment of $1.75 billion that ensured DuPont's ability to go forward with its plans in respect of the disputed product.[1363] Claimants argue that the lump sum recognizes DuPont's head start in the development of the new soybean product.

[1358] RLA-702: *Aro Mfg Co v. Convertible Top Replacement Co*, 377 U.S. 476, 505-06 (1964)
[1359] C-515: Jarosz Third Witness Statement at 5
[1360] *Id.* at 28
[1361] Bayer sells no competing product: CL-536: *Rite Hite Corp. v. Kelly Co.*, 56 F.3d 1538, 1548 (Fed. Cir. 1995) ("if the patentee is not selling a product, by definition there can be no lost profits")
[1362] C-535: *Monsanto Co. v. E.I. DuPont de Nemours*, 4:09-cv-686 (ERW) (E.D. Mo.), Trial Transcript
[1363] R-317: *Monsanto Co. v. Bayer Bioscience, N.V.*, 4:00-CV-01915-ERW, 2006 U.S. Dist. Lexis 97254 at 25 (E.D. Mo., 28 August 2006)

768. The jury award in the *Monsanto* case is of limited interest here because the Tribunal does not have the benefit of a judicial decision on the legal challenge brought against it. In that case, Monsanto actually relied on the *Bic Leisure* case[1364] in making its claim for head-start damages.[1365] In the *Bic Leisure* case, however, the patentee was seeking lost profits, and the head start apparently served to account for lost profits. As counsel for DuPont stressed during the *Monsanto* trial, before the jury was called in, "lost profits ... is where there's competition, so the sales by the accused infringer [are] taking away sales of the patent holder, which of course will never be the case here."[1366] It is one thing to incorporate in a lost profit analysis a consideration of the projected, post-expiration sales that the patentee has demonstrably lost as a direct result of the infringer's head start; it is another thing to incorporate a head-start element as part of a reasonable royalty analysis.

769. **Head-start framework rejected**—While the Tribunal appreciates the logic behind Claimants' head-start theory, it is unable to find sufficient support in the *Monsanto* case, or anywhere else, for an extension of this theory to the assessment of a reasonable royalty, in a case where the patentee is not seeking lost profits. Claimants are not seeking lost profits here; they are seeking a royalty, which must end upon expiration and cannot be "projected" beyond the life of the relevant patent.[1367]

B. Agreed Quantitative Framework

770. Putting head start to the side, the Tribunal now turns to the evaluation of the infringing technology by applying the methodology traditionally applied to the evaluation of a reasonable royalty in U.S. patent law. Before turning to the qualitative factors outlined in *Georgia Pacific* for the determination of a reasonable royalty, both parties use the same three approaches, which are in common use, for the purpose of quantitative analysis: (1) the licensing comparables (market) approach, (2) the incremental benefit (income) approach, and (3) the design-around (cost) approach. Consistent with the work of the experts, the Tribunal will derive minimum royalty values from the first approach. The Tribunal will rely on the second approach, which was emphasized by both sides, to establish base values per acre for the royalty. The third approach will allow the Tribunal to control the base values by looking at the design around cost, which is often seen as a logical cap for the royalty. The Tribunal concludes, with respect to this third approach, that alternatives to infringement other than Option B were not available to Dow.

[1364] RLA-739: *Bic Leisure Inc. v. Windsurfing Int'l Inc.*, 687 F. Supp. 135 (S.D.N.Y. 1988)
[1365] C-535: *Monsanto Co. v. E.I. DuPont de Nemours*, 4:09-cv-686 (ERW) (E.D. Mo.), Trial Transcript, at 17:15-25
[1366] *Id.* at 23:4-10
[1367] RLA-70: *Brulotte v. Thys Co.*, 379 U.S. 29, 32-33

1. Licensing Comparables Approach

771. Following the licensing comparables approach, an appropriate price for the use of the patents-at-issue may be identified through the examination of the terms of actual transfers of rights (i.e., licenses) involving somewhat comparable technology. Inferences are drawn from those other transactions to identify terms for a hypothetical license to which reasonable, prudent parties would agree. In applying this approach, the more comparable the "other" transactions are to the hypothetical transaction under consideration, the more useful the information.

i. Claimants' Position on Licensing Comparables

772. Claimants make a number of points that place the comparison exercise in a broader context. First, "Bayer has never granted the unfettered sublicensing rights Dow would have needed to create the infringing E3 and E3+IR Products."[1368] In fact Dow requested these very rights more than once, Claimants insist, and Bayer refused.[1369] Mr. Jarosz refers to the fact that for patent infringement, Mr. Bakewell appears to have framed his hypothetical negotiation such that Dow would be permitted to create events containing the *pat* gene. He notes however, that Dow breached the 1992 Agreement, not by creating an event containing the *pat* gene, but by sublicensing the *pat* gene to MS Tech. Mr. Jarosz thus considers that Mr. Bakewell does not properly consider the sublicensing rights in his analysis.

773. Second, Claimants argue that, although Bayer has granted seed companies the right to sell glufosinate tolerant seeds, this is entirely different from granting "royalty free licenses to glufosinate tolerance" (as seed companies would have to pay for the latter).[1370] Third, even when Bayer's predecessors did grant relatively broader rights to glufosinate resistance technology, they always received valuable consideration in one form or another.[1371]

774. Claimants also argue that, contrary to Dow's claim in this arbitration that glufosinate resistance technology has no value of its own, Dow actually champions this technology before U.S. regulatory

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[1368] Claimants Phase III Reply, dated 30 October, at 14
[1369] Claimants Phase I Reply Memorial, dated 27 March 2014, paras. 146-51
[1370] Claimants Phase III Reply, dated 30 October 2014, at 16
[1371] *Id.*

agencies,[1372] and concludes internally that "glufosinate tolerance in soybeans and cotton will be a very important additional tool for broadleaf weed control."[1373]

775. Mr. Jarosz considers the [redacted] and the [redacted] to be the most comparable to the hypothetical license between Bayer and Dow. Both licenses involve Bayer granting a license to include glufosinate-resistance in a stack of soybean products based on a royalty per acre of licensed products planted by [redacted], based on the overall worldwide amount of glufosinate-resistant corn and glufosinate-resistant soybean acreage.[1376] Claimants clarify that the other [redacted] license raised by Dow[1377] is a selectable marker license which cannot be considered more comparable.[1378]

ii. Respondents' Position on Licensing Comparables

776. According to Respondents, the agreements that are most comparable to the hypothetical license between Bayer and Dow are Bayer's and its predecessors' licenses involving the glufosinate tolerance trait. These licenses typically involved [redacted],[1379] which is a reflection of Bayer's strategy to maximize adoption of the glufosinate tolerance trait and develop an ecosystem for glufosinate.[1380] [redacted]

777. For his comparable licenses analysis, Mr. Bakewell relies on 13 *pat* licenses given by Bayer and its predecessors going back to 1992.[1381] Respondents point out that, unlike the licenses singled out by Mr. Jarosz, all of these are gene licenses as opposed to deregulated event licenses.[1382] They argue that event licenses are not comparable because the cost to bring events to market is much

[1372] C-396: Jarosz Second Witness Statement at 11, n. 44
[1373] Claimants' Phase III Reply at 18-19; C-321: [redacted]
[1374] C-353: [redacted]
[1375] C-354: [redacted]
[1376] C-317: Jarosz First Witness Statement at 78
[1377] R-437: [redacted]
[1378] Claimants' Phase III Reply, dated 30 October 2014, at 18
[1379] R-631: Bakewell Third Witness Statement, para. 6
[1380] R-426: Bakewell First Witness Statement, para. 254 (see table)
[1381] R-617: Bakewell Second Witness Statement, para. 30
[1382] Respondents' Phase III Closing Presentation, dated 21 November 2014, slide 86, referring to Phase III Hearing Transcript at 684:10-15

lower to the licensee: event licenses provide the licensee with a finished, deregulated product that is significantly more valuable due to years of research and millions of dollars invested to achieve deregulation.[1383] Respondents reject Claimants' reference to the 2007 Bayer-MS Tech Agreement, which only highlights, according to them, the importance of regulatory work, since Bayer's contribution is mostly tied to deregulation and its consideration is [redacted].[1384]

778. Of the 13 agreements listed by Mr. Bakewell, Respondents single out[1385] two license agreements as the most useful for comparison purposes: the [redacted]

iii. Tribunal's Determination of Licensing Comparables

779. The licensing comparables approach invites valuation of the hypothetical license by reference to comparable real-world licenses. This exercise is notoriously difficult because a host of more or less visible factors have an influence on royalty levels in any market and any particular commercial relationship. In circumstances that lend themselves to this approach, it has the advantage of providing fixed, independent markers in the valuation exercise.

780. In these proceedings, Respondents relied heavily on the theory that Bayer's business model for glufosinate technology is essentially geared toward the sale of its herbicide. Fostering adoption of glufosinate resistance is therefore a means for Bayer to achieve its goal of selling its glufosinate herbicide. In that context, Respondents argue, Bayer's interest is essentially to give away glufosinate resistance technology as broadly as possible in order to build the ecosystem in which sales of its glufosinate herbicide will thrive.[1388]

781. The Tribunal notes at the outset that the evidence relied upon by Respondents to assert that Bayer "granted over 100 royalty free licenses to glufosinate tolerance"[1389] only shows that Bayer granted

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[1383] Respondents' Phase III Memorial, paras. 59-60
[1384] Respondents' Phase III Memorial, dated 16 October 2014, para. 61
[1385] Respondents' Phase III Closing Presentation, dated 21 November 2014, slides 87-88
[1386] R-431: [redacted]
[1387] R-437: [redacted]
[1388] Respondents' Phase III Memorial, dated 16 October 2014, para. 51; Respondents' Phase II Responsive Memorial on Damages, dated 10 July 2014, paras. 8-15, 72-74, 81
[1389] Respondents' Phase III Memorial, dated 16 October 2014, para. 51. See also *id.*, para. 13 (Bayer "licensed out its pat technology to over 100 entities free of charge")

seed companies the right to sell glufosinate-tolerant corn seed, which is different from free licenses to glufosinate tolerance in general.[1390] And even if it were to accept that Respondents' theory was at some point in time a relatively accurate representation of Bayer's strategy, the Tribunal finds it largely irrelevant. First, a strategy that promotes the growth of a glufosinate technology ecosystem may well be viewed as an investment not only in the development of the herbicide market but also in the trait and seed market, since the two go hand in hand. Second, no economic actor is bound to its own business model over time. A pricing strategy adopted over a certain period of time does not necessarily define market values for the present or into the future.

782. The Tribunal finds the licensing comparables approach to be of relatively limited use in the circumstances of this case, because the evidence adduced by the parties yielded not a single license that grants a right analogous to the right at issue in the hypothetical negotiation. The right that Respondents require to cure infringement in this case is not merely, as they represent, a minor, one-off extension of the 1992 Agreement to permit sublicensing for the creation of a single event,[1391] or "the equivalent of MS Tech securing its own license to the *pat* gene for just one event."[1392] What is required is a right that Bayer has never granted to anyone. In order to make E3 legally, Dow would have required the right to sublicense the naked *pat* gene. That said, the licensing comparables approach can be of some assistance in the task of establishing a lower bound, or a floor, for the value of *pat*.

783. In their latest submission, Respondents single out[1393] two license agreements as the most useful for comparison purposes: [redacted][5] and conclude on that basis that the value of *pat* must range between $0 and [redacted] per unit.[1396] The [redacted] As Mr. Jarosz clearly demonstrates, however, [redacted] agreement on which Mr. Bakewell relies is part of a complex set of agreements "all of which serve as compensation for one another."[1397] The [redacted]

[1390] See Claimants' Phase III Reply, dated 23 October 2014, para. 64
[1391] See e.g. Respondents' Phase III Memorial, dated 16 October 2014, para. 53
[1392] *Id.*
[1393] Respondents' Phase III Closing Presentation, slides 87-88
[1394] R-431: [redacted]
[1395] R-437: [redacted]
[1396] Respondents' Phase III Reply, dated 30 October 2014, paras. 32-35
[1397] C-528: Jarosz Fourth Witness Statement at 31

[redacted].[1398] As concerns the [redacted], it is for use of the *bar* gene as a "Selectable Marker" and as a "Discovery Use Tool."[1399] There is a royalty of [redacted] per unit on sales of seeds for events made using *bar* as a selectable marker.[1400] [redacted] does not thereby have the right to make glufosinate resistant events for commercial herbicide tolerance use. The agreement does contemplate the stacking of an event made using the *bar* gene as a selectable marker, with the [redacted] event, but in that case, [redacted] must pay a [redacted] royalty for commercial herbicide tolerance use, in addition to the [redacted] for selectable marker use.[1401] Converted to acres, Mr. Bakewell's maximum [redacted] per unit figure becomes [redacted] per acre for soybean and [redacted] per acre, he writes, for cotton.[1402] This figure for cotton is the result of a conversion error, however, and would be [redacted] per acre for cotton if the [redacted] per unit were applied to a cotton seed bag, which is larger and covers many times the acreage covered by a bag of seeds for soybean.[1403] As the per-acre value for cotton should be at least equal to the per acre-value for soybean, the Tribunal assumes that Mr. Bakewell's suggested value is [redacted] per acre for cotton as well as for soybean.

784. Turning now to the licenses singled out by Mr. Jarosz, they are deregulated event licenses,[1404] which cannot form the basis of a straightforward comparison with a gene license. As Respondents emphasize, a great deal of resources must be invested if an event is to be created and deregulated, an investment that must be reflected in the event license royalty.[1405] At the same time, a gene of interest that has the potential to bring value, as a component, to a large number of different events, can conceivably be worth as much or even more than such events, even after they have been deregulated. And since an event with the *pat* gene had already been deregulated, the likelihood that it would prevent or stall the deregulation of other events containing it was very low.[1406] Mr. Jarosz focuses in particular on three licenses. The first license, [redacted]

[1398] Claimants' Phase III Reply, dated 23 October 2014, at 17; R-431 [redacted]
[1399] R-437: [redacted]
[1400] *Id.*, [redacted]
[1401] *Id.*, [redacted]
[1402] R-617: Bakewell Second Witness Statement at 3
[1403] Claimants' Phase III Closing Presentation, slides 157-61
[1404] Phase III Hearing Transcript at 684:10-15
[1405] Respondents' Phase III Closing Presentation, dated 21 November 2014, slides 82-86
[1406] C-396: Jarosz Second Witness Statement at 63

[redacted] What has not been mentioned is that the license also secures [redacted] Taking these and other licenses into account, Mr. Jarosz concludes that a lower bound for a per-acre royalty for both cotton and soybean would be [redacted] per acre.

785. The Tribunal notes that no license was provided that can be considered truly comparable to the licence that is the subject of the hypothetical negotiation. While recognizing that there is no truly comparable license, the Tribunal nevertheless finds that the recent licenses reviewed above can still be of use for the specific purpose of providing the basis for an assessment of a minimum value for the licensing of *pat*. This value is clearly higher than that suggested by Mr. Bakewell, whose focus on a figure of [redacted] based on a selectable marker license, is difficult to understand. The value is also slightly lower than that suggested by Mr. Jarosz, whose approach relies on deregulated event licenses. Bearing this factor in mind, and taking into account the fact that the *pat* gene had already gone through a deregulation process at the relevant time, the Tribunal settles on a [redacted] per acre figure *as a minimum* for both soybean and cotton. This figure corresponds to the minimum royalty negotiated with [redacted] The latter agreement is particularly significant because it contains [redacted]. As explained by Mr. Jarosz,[1410] by granting an [redacted] Bayer essentially established a floor for its own licensing, making the cost of conceding a lower price to a third party like Dow prohibitive.

2. Incremental Benefit Approach

786. This approach seeks to identify the gains enjoyed by the infringer attributable to use of the patent. In particular, it calls for an evaluation of the benefits of practicing the patent versus the benefits of practicing the next-best, non-infringing alternative. The analysis involves consideration of two

[1407] C-353: [redacted]
[1408] C-354: [redacted]
[1409] C-209: 2007 Bayer-MS Tech Agreement, [redacted]
[1410] C-396 : Jarosz Second Witness Statement at 68

building blocks, the first being a determination of the benefits associated with the use of the patents-at-issue, and the second being a determination of the portion of benefits that are attributable to the patents-at-issue as distinct from the contributions of non-patented technologies or considerations.

i. Claimants' Position on Incremental Benefit

787. Mr. Jarosz disagrees with Mr. Bakewell that glufosinate resistance has limited value in Dow's triple-stack herbicide products. Mr. Jarosz explains that Dow's position is not consistent with the fact that Dow went to the trouble and expense of including glufosinate-resistance in its triple-stacked products, with statements made by Dow to the U.S.D.A. regarding the importance of glufosinate-resistance, and with Dow's efforts to [redacted].[1411]

788. Mr. Jarosz also takes issue with Mr. Bakewell's apportionment of [redacted] for glufosinate-resistance in a multi-stack with 2,4-D and glufosinate resistance,[1412] which is at odds with Dow's [redacted]. That document states that the Enlist trait in soybeans [redacted] and [redacted] and that Dow [redacted]

789. Mr. Jarosz values the benefits associated with the use of the technology by referring to Dow's internal valuations of the Enlist products and the sales of WideStrike.[1414] Mr. Jarosz then isolates the value of glufosinate in these products on the basis of Dow's own numbers.[1415]

ii. Respondents' Position on Incremental Benefit

790. Under the incremental benefits approach, assets or businesses are valued based on the value of future economic benefits. Although this valuation method is fairly common, Mr. Bakewell finds that it is "not appropriate when a nexus cannot be established between a revenue stream and the footprint of the invention in the marketplace."[1416] Accordingly, Mr. Bakewell does not suggest a

[1411] C-528: Jarosz Fourth Witness Statement at 23
[1412] In Mr. Bakewell's view, [redacted] R-426: Bakewell First Witness Statement, para. 20
[1413] *Id.* at 24
[1414] C-317: Jarosz First Witness Statement at 83
[1415] *Id.* at 84
[1416] R-426: Bakewell First Witness Statement, para. 260

value under this approach, except to take issue with Mr. Jarosz's calculations[1417] and to suggest that the incremental value that can be attributed to glufosinate resistance is zero or near zero.[1418]

791. More generally, the objections made to the head-start element in Mr. Jarosz's evaluation concerning the entire market rules are also made here: the projected income forming the basis of Mr. Jarosz's calculations relate to products for which consumer demand is not driven by the technology at issue.[1419] Respondents also argue that Claimants' approach to income in this case amounts to a claim for unjust enrichment, which is not a valid basis for patent damages.[1420]

iii. Tribunal's Determination of Incremental Benefit

792. The incremental benefit approach calls for an evaluation of the benefit to Respondents of practicing the patents versus the benefit of practicing the next-best, non-infringing alternative. There are therefore two variables here: the benefit of the next-best, non-infringing alternative, and the benefit of practicing the patent. The next-best, non-infringing alternative is discussed below under design-around. The Tribunal considers under the present rubric the benefit of practicing the patents.

793. As concerns the benefits of practicing the patents-at-issue, the methodology for the establishment of a reasonable royalty requires that the focus of the analysis be placed on the relative value contributed by the infringed technology rather than the value of the benefit brought to Respondents by the infringing product as a whole.[1421] The latter is often expressed in terms of the so-called "entire market value rule".

794. The entire market value rule allows, as an exception, the entire product in which the infringing component is found to be used as the royalty base. In order for the rule to apply, however, the patentee must prove that the patented feature drives demand for the entire product, which Claimants have not seriously attempted to do here. As established in *Laser Dynamics*, "patentees may not calculate damages based on sales of the entire product, as opposed to the smallest salable patent-practicing unit, without showing that the demand for the entire product is attributable to the patented feature."[1422] Even if the Tribunal were to consider that the infringing seeds are the smallest patent-practicing units in this case and therefore the relevant royalty *base*, the general principle

[1417] *Id.*, para. 261
[1418] *Id.*, para. 264
[1419] Respondents' Phase III Reply, dated 30 October 2014, para. 45
[1420] Respondents' Phase III Memorial, dated 16 October 2014, para. 67
[1421] R-617: Bakewell Second Witness Statement, para. 37
[1422] RLA-570: *LaserDynamics, Inc. v. Quanta Computer, Inc.*, 694 F.3d 51, 67-68 (Fed. Cir. 2012)

remains one of apportionment, which must then be effected through the royalty *rate*. This is clearly established in the *VirnetX* case:

> In other words, the requirement that a patentee identify damages associated with the smallest salable patent-practicing unit is simply a step toward meeting the requirement of apportionment. Where the smallest salable unit is, in fact, a multi-component product containing several non-infringing features with no relation to the patented feature (as VirnetX claims it was here), the patentee must do more to estimate what portion of the value of that product is attributable to the patented technology. To hold otherwise would permit the entire market value exception to swallow the rule of apportionment.[1423]

795. Even if one could possibly argue that this "rule of apportionment" should not apply to lost profits, a head of damages that may respond to a simple "but for" analysis, Claimants have not sought lost profits as patent damages in this case. Needless to say, they have not sought, or at least cannot have sought, restitution for unjust enrichment either, a remedy that is not available under U.S. patent law.[1424] It is easily seen that a failure to apply this rule of apportionment can have the same effect, at least in some cases, as a disgorgement remedy. Claimants can only recover, therefore, a reasonable royalty that reflects the contribution of *pat* to the infringing products. As Mr. Jarosz himself puts it, "the important question is the portion of the overall value that is attributable to the patented technology."[1425]

796. To establish the high end of his range for the incremental value of *pat*, Mr. Jarosz relied on two Dow documents. One is a specific page of a [redacted]. The second document is a [redacted]. They are reproduced here.

[1423] RLA-737: *VirnetX Inc. v. Cisco Systems Inc.*, 2013-1489, 2014 U.S. App. LEXIS 17748, at 29 (Fed. Cir. 16 Sept. 2014)
[1424] Respondents' Phase III Memorial, dated 16 October 2014, para. 67
[1425] C-317: Jarosz First Witness Statement at 83

[redacted]

797. Mr. Jarosz took from the [redacted] a total trait value for E3 of [redacted] and subtracted what he took, in the [redacted], to be the total value of the combined GlyTol/*aad-12* trait, [redacted][1428] The difference between the total trait value in E3 and the value of the combined GlyTol/*aad-12* trait could be interpreted as the incremental value to Dow of the glufosinate tolerance conferred by *pat* and found in E3.[1429] [redacted]0 [redacted][1431] [redacted]

1426 [redacted]

1427 [redacted]

1428 C-317: Jarosz First Witness Statement at. 84

1429 *Id.*

1430 R-427: [redacted] First Witness Statement at 5-7

1431 See also R-426: Bakewell First Witness Statement, para. 264

1432 R-427: [redacted] First Witness Statement at 8

[redacted] the Tribunal finds that Mr. P[redacted] testimony has cast enough doubt on Mr. Jarosz's interpretation of the document for the Tribunal to reject it as a reliable basis for a [redacted] valuation.

798. It does not follow that *pat* has no incremental value in products that are marketed and sold as glufosinate resistant. Putting the [redacted] what Mr. P[redacted] testimony shows is obvious to all: glufosinate resistance in soybeans that are not advertised or sold as glufosinate resistant can have but only limited value. The market this Tribunal needs to focus on, however, matures a year after this document. It is a market in which Dow has already succeeded, in [redacted], in creating the E3 molecular stack, in which the need for triple resistance products has become clear to all, and in which Dow is about to formalize a partnership with MS Tech for E3.

799. Mr. Bakewell's guidance in the determination of *pat*'s incremental value is somewhat less than helpful. Relying mostly on his interviews with Dow employees, he concludes that the glufosinate resistance trait fee in both soybean and cotton should be $0.[1434] As Mr. Jarosz demonstrates, this is very difficult to square with reality. First, Mr. Bakewell's conclusion is difficult to reconcile with Dow's own statements to the USDA that "glufosinate is an excellent tool to include in a weed management program,"[1435] and that "transgenic crops with resistance to broad-spectrum, non-selective herbicide [are] perceived as a better approach for weed management," which "was soon realized with the development of glyphosate and glufosinate tolerant crops."[1436] This position is also taken internally. [redacted] The position is also impossible to square with Dow's decisions in relation to E3 and the considerable investment it has made in its development, deregulation, and marketing. Second, Mr. Bakewell's conclusion seems surprising in light of decisions made by other industry players like Monsanto, [redacted] and Syngenta to include glufosinate resistance in

[1433] R-427: [redacted]
[1434] R-426: Bakewell First Witness Statement, paras. 264, 269
[1435] C-84: Petition for Determination of Nonregulated Status for Herbicidal Tolerant DAS-444Ø6-6 Soybean at 210
[1436] C-320: USDA-APHIS Petition for Nonregulated Status of DAS-8191Ø-7 Cotton, at 187
[1437] C-430, [redacted]

some of their triple-stack seeds.[1438] Third, scientific studies showing the effectiveness of a glufosinate approach remain unchallenged, and Dow represented to the USDA in 2011 that "[t]here is only one report of a weed biotype that has developed resistance to glufosinate, goosegrass (*Eleusine indicia*) in Malaysia (Heap, 2011)."[1439] Other studies suggest that glufosinate can outperform a derivative of 2,4-D, 2,4-DB, on waterhemp in soybean, and has better coverage than 2,4-D in relation to weeds affecting cotton crops.[1440] Fourth, there is some independent evidence that users recognize the value of glufosinate. A survey of cotton growers has shown that the highest perceived value for seed-trait combinations were for those that included a glufosinate tolerance trait.[1441] As calculated by Mr. Jarosz, for the Stoneville brand, farmers on average rated the value of the Bollgard II/LibertyLink stack 23 percent higher than that of the Bollgard II/RoundupReady Flex stack; for the FiberMax brand, farmers on average rated the value of the Glytol/LibertyLink/Bollguard II stack 21 percent higher than that of Bollgard II/RoundupReady Flex.[1442]

800. Particularly damaging to Dow's position is its recognition that resistance to broad-spectrum, non-selective herbicides such as glyphosate and glufosinate constitutes the better approach to weed management.[1443] This recognition undermines its position about platform traits in general, and about the relative value of 2,4-D resistance in E3. Mr. Z[redacted], the Global Corn and Soybeans Trait Management and Licensing Lead for Bayer CropScience, has thus testified that the combination of glyphosate and glufosinate resistance will together constitute a new "platform" going forward.[1444] One can see the logic in this suggestion without putting the value of glufosinate resistance anywhere near the value of glyphosate resistance. But the value of glufosinate resistance, whether characterized as second or third trait in the stack, cannot be very different from that of 2,4-D resistance. The evidence in the record as a whole tends to show that the value to Dow of 2,4-D

[1438] C-431: R. Johnson, "Dicamba Moves Forward," Monsanto Company, dated 22 January 2009; C-433: Syngenta and Bayer Petition 12-215-01p for Determination of Non-regulated Status of Herbicide Tolerant Event SYHT0H2 Soybean (Glycine max), at 11-12, 80

[1439] C-84: Petition for Determination of Nonregulated Status for Herbicidal Tolerant DAS-444Ø6-6 Soybean at 210

[1440] C-434: Kevin Bradley, Reid Smeda, and Raymond Massey, "Management of Glyphosate-Resistant Waterhemp in Corn and Soybean," MU Guide IPM1030, October 2008, http://extension.missouri.edu/explorepdf/agguides/pests/ipm1030.pdf (accessed August 11, 2014); C-435: Rand M. Merchant, Lynn M. Sosnoskie, A. Stanley Culpepper, Lawrence E. Steckel, Alan C. York, L. Bo Braxton, and Jill C. Ford, "Weed Response to 2,4-D, 2,4-DB, and Dicamba Applied Alone or with Glufosinate," *The Journal of Cotton Science*, Vol. 17, Issue 2 (2013), 212-218

[1441] C-436: *Cotton Market Share Study*, dated August 2013, at 17

[1442] C-396: Jarosz Second Witness Statement at 53-54

[1443] C-320: USDA-APHIS Petition for Nonregulated Status of DAS-8191Ø-7 Cotton at 187

[1444] C-397: Z[redacted] Third Witness Statement, para. 14

resistance—apart from the fact that it owns it outright—is due in no small measure to the fact that the application of 2,4-D herbicide is easily combined with the application of glyphosate, [redacted].[1445] This advantage is not insignificant, but it must be put in perspective.

801. With respect to soybean, Mr. Bakewell's conclusion from the [redacted] was that the glyphosate resistance trait was worth [redacted] per unit; of the remaining [redacted] $0 was attributed to glufosinate resistance and [redacted] to 2,4-D resistance. As explained above, this conclusion is incompatible with the bulk of the evidence in the record. With respect to cotton, [redacted][6] entirely to 2,4-D, thus leaving a $0 value for glufosinate. This surprising result can only be explained by an erroneous assumption that WideStrike 3 Cotton already includes the commercial level of glufosinate resistance that would allow it to be marketed, labeled, and sold as glufosinate resistant.[1447] In fact, although WideStrike 3 Cotton does contain the *pat* gene, it is not intended for use with glufosinate herbicides because it does not have the commercial level of resistance found in products like LibertyLink.[1448]

802. Mr. Z[redacted] offered a different perspective when he testified that, of a [redacted] royalty per acre for a stack of 2,4-D and glufosinate resistance traits, [redacted] could be attributed to glufosinate resistance and [redacted] to 2,4-D resistance, a [redacted] ratio.[1449] Mr. Jarosz applied this ratio to Mr. Bakewell's [redacted] figure, coming to a value scenario for *pat* of [redacted] per unit, leaving [redacted] for 2,4-D resistance.[1450] Translated to acres, this would mean [redacted] per acre for glufosinate resistance.[1451]

[1445] R-427: [redacted] First Witness Statement at 4

[1446] R-426: Bakewell First Witness Statement, para. 270 [redacted]

[1447] This assumption is clear from Mr. Bakewell's chart in paragraph 269 of his declaration (R-426: Bakewell First Witness Statement)

[1448] C-453: DAS WideStrike Product Safety Assessment, dated 23 April 2012, at 4 ("However, because the tolerance to glufosinate-ammonium herbicides provided by the pat gene in WideStrike Insect Protection is not equivalent to the glufisinate ammonium herbicide tolerance of LibertyLink cotton. The use of glufosinate-ammonium herbicides on WideStrike cotton is not labeled")

[1449] C-316: Z[redacted] Second Witness Statement at 9

[1450] C-396: Jarosz Second Witness Statement at 56

[1451] C-396: Jarosz Second Witness Statement at 56 (the Tribunal converts the [redacted] figure (which Mr. Jarosz erroneously presents as a per acre figure) to the actual per acre figure)

Mr. Jarosz also applies Mr. Z[redacted] ratio for cotton (of a [redacted] royalty figure, [redacted] is attributed to *pat* and [redacted] to *aad-12*,[1452] a[redacted] ratio) to the [redacted] per acre value for the combined 2,4-D and glufosinate trait in cotton,[1453] coming to a value for cotton of [redacted] per acre.[1454]

803. The Tribunal is mindful of the fact that Mr. Z[redacted] ratios are suggested in a negotiation context where *pat* is the first trait and *aad-12* the second.[1455] These ratios, therefore, do not translate exactly to the context of our hypothetical negotiation, where glyphosate purportedly remains the "platform" trait. The Tribunal is also mindful of the fact that some of the evidence considered above concerns an evolving market situation that has in part developed after the time when the hypothetical negotiation is to have taken place, which is at the very beginning of [redacted]. Mr. Bakewell does take the position that, aside from the application of prejudgment interest, a January 2012 hypothetical negotiation date would have no impact on the royalty rate,[1456] but the Tribunal still takes [redacted] as the date of the hypothetical negotiation. Thus, although the hindsight gained in respect of industry adoption of the glufosinate trait in herbicide resistance stacking strategies suggests a higher incremental value for glufosinate resistance than for 2,4-D,[1457] the Tribunal considers that, at the time of the hypothetical negotiation between the parties, this was the case only for cotton, not for soybeans. Taking into account the relative position of each party at the relevant time, the Tribunal is satisfied that the value of the glufosinate trait in the triple-stacked soybean was equal to the value of the 2,4-D trait. In cotton, however, Bayer was in a dominant position, being the market leader, and could command a higher premium.[1458] In addition, the superweed problem is known to be more pressing in cotton, which increases recognition of the importance of the glufosinate resistance trait.[1459]

804. **Incremental value in soybean**—For the reasons stated above and after a careful review of the evidence, the Tribunal determines the incremental value of *pat* in soybean starting from [redacted]

[1452] C-316: Z[redacted] Second Witness Statement at 9
[1453] C-426: Bakewell First Witness Statement at 270 [redacted]
[1454] C-396: Jarosz Second Witness Statement at 57
[1455] C-316: Z[redacted] Second Witness Statement, paras. 19-20
[1456] R-617: Bakewell Second Witness Statement, para. 36
[1457] On industry adoption, see in particular C-442: Emily Waltz, "Glyphosate Resistance Threatens Roundup Hegemony", *Nature Biotechnology*, Vol. 8, No 6, June 2010 (Table 1, showing publicly known stacking projects in industry)
[1458] C-316: Z[redacted] Second Witness Statement, para. 22
[1459] C-431: R. Johnson, "Dicamba Moves Forward," Monsanto Company, dated 22 January 2009

[redacted] cited by both Mr. Bakewell and Mr. Jarosz,[1460] which establishes a total trait value of [redacted] per unit for the three-gene molecular stack which is at the center of this arbitration, in the United States. Of this total U.S. trait value, both Mr. Bakewell and Mr. Jarosz allocate a value or [redacted] per unit for glyphosate resistance,[1461] and argue over the attribution of the remaining [redacted] trait value. Mr. Bakewell says that all of it can be attributed to 2,4-D resistance, which is incompatible with the bulk of the evidence, and Mr. Jarosz says that most of it, [redacted] per unit, can be attributed to glufosinate resistance,[1462] which likely places undue reliance upon post-2008 market developments. Converted at a rate of [redacted] which the parties agree upon,[1463] the total trait value is, approximately, [redacted] per acre. Once converted, the figure of [redacted] for glyphosate resistance becomes [redacted] per acre. The Tribunal takes account, however, of the "erosion" effect explained by Mr. Z[redacted], whereby some of the value of a platform trait, [redacted] dollars, "bleeds" over to the value of another trait in a double stack.[1464] For the triple stack at issue, which has two traits added to the platform trait, the Tribunal applies a [redacted] erosion figure, which translates to a [redacted] per acre value for glyphosate, leaving a [redacted] per acre value to be divided between *pat* and *aad-12*. The Tribunal, having reviewed all of the evidence, determines that the incremental value of *pat* in the soybean triple stack at issue was equal to that of 2,4-D, namely [redacted] per acre. Following Mr. Jarosz and Mr. Z[redacted] in assuming an equal division of incremental value between the parties as trait provider and seed company,[1465] the royalty in soybean resulting from the incremental value analysis works out to [redacted] per acre.

805. **Incremental value in cotton**—As regards cotton, the Tribunal starts from the [redacted] used by both Mr. Bakewell and Mr. Jarosz, which lists the U.S. net unit price for a variety of cotton traits.[1466] The document shows a [redacted] per unit net price of traits in WideStrike 3 Cotton (which confers tolerance to glyphosate and several insect species—and already contains *pat* without displaying commercial-level resistance to glufosinate) and a [redacted] per unit net price of traits in a stack of WideStrike 3 Cotton with Enlist Cotton (which adds commercial-level tolerance to 2,4-D

[1460] [redacted]
P[redacted] First Witness Statement at 8; C-317: Jarosz First Witness Statement at 84; C-426: Bakewell First Witness Statement, para. 264

[1461] C-426: Bakewell First Witness Statement, para. 264; C-396: Jarosz Second Witness Statement at 56

[1462] C-396: Jarosz Second Witness Statement at 56 (with Tribunal correction to units)

[1463] Phase III Hearing Transcript, dated 21 November 2014, at1141:22-1142:3; C-317: Jarosz First Witness Statement at Tabs 29, 30; C-528: Jarosz Fourth Witness Statement at Tabs 16, 17, 18, 21, 22, 23

[1464] C-316: Z[redacted] Second Witness Statement, para. 32

[1465] C-317: Jarosz First Witness Statement at 83; C-316: Z[redacted] Second Witness Statement, para. 33

[1466] C-441: [redacted] C-426: Bakewell First Witness Statement, para. 270; C-396: Jarosz Second Witness Statement at 57

and glufosinate). The [redacted] per unit translates to a [redacted] per acre value,[1467] of which the Tribunal allocates, based on a consideration of the totality of the evidence, [redacted] per acre to commercial-level resistance to glufosinate. This represents the value of commercial-level glufosinate resistance added to a stack (WideStrike 3 Cotton) that already contains *pat* as a result of its use as a selectable marker. Assuming, again, an equal division of incremental value between the parties as trait provider and seed company,[1468] the royalty in cotton resulting from the incremental value analysis is therefore [redacted] per acre. This value, however, does not account for the value of *pat* as a selectable marker. For the value of *pat* as a selectable marker at the relevant time, the Tribunal relies on the closest comparator in the record, which is the [redacted] for use of the *bar* gene as a "Selectable Marker" and as a "Discovery Use Tool."[1469] It provides for a royalty of [redacted] on sales of seeds for events made using *bar* as a selectable marker.[1470] This translates to [redacted] per acre. This value provides the royalty rate per acre for WideStrike 3 Cotton as infringing product, and must be added to the [redacted] value to reflect not only the trait value but also the selectable-marker value of *pat* in the stack comprising WideStrike 3 Cotton and Enlist Cotton. The royalty resulting from the application of the incremental value approach is therefore [redacted] per cotton acre.

3. Design-Around Approach

806. The design around approach examines the costs that the infringer would have incurred to generate the benefits of the patent, as closely as possible, without practicing the patent. In essence, it evaluates the cost of avoiding infringement by adopting the non-infringing, next best alternative.

807. As the proceedings unfolded, the debate brought particular focus to the non-infringing alternatives, if any, available to Respondents at the time of the hypothetical negotiation. Following the Phase III hearing, questions intended to direct post hearing submissions were put to the parties by the Tribunal under the design-around rubric, as follows:

[1467] C-426: Bakewell First Witness Statement, para. 270 [redacted])

[1468] C-317: Jarosz First Witness Statement at 83; C-316: Z[redacted] Second Witness Statement, para. 33

[1469] R-437: [redacted]

[1470] R-437: [redacted]

With respect to the 'design around' issue, please

a) clarify as a general matter what constitutes an 'available' alternative (i.e., what must an alternative be in order to be 'available'?) and

b) why specifically are the particular 'design around' alternatives identified by Respondent in this case to be considered as available or unavailable, as the case may be?[1471]

808. In answering the Tribunal's questions, the parties refined their respective position regarding the legal and the technological landscape relevant to the assessment of the non-infringing options that Dow might have considered and acted upon when it took the infringement path. Although framed in terms of the hypothetical license construct for patent damages, these refined statements of position are also helpful to the Tribunal in step 2 of the loss of opportunity analysis for contract damages, that is, in the assessment of the value of the lost opportunity corresponding to Option B.

809. The parties appear to agree that the principles set out in the Federal Circuit's *Grain Processing* case apply to the determination of the availability of non-infringing alternatives.[1472] The "critical time period for determining availability of an alternative is the period of infringement for which the patent owner claims damages, i.e., the accounting period." An availability analysis must consider whether an acceptable alternative to the infringing product was "on the market" at this critical time, and it is noted that "[s]witching to a noninfringing substitute *after* the accounting period does not alone show availability of the noninfringing substitute *during* this critical time." Where "an alleged alternative is not on the market during the accounting period, a trial court may reasonably infer that it was not available as a noninfringing substitute at that time." In such a case, the infringer has "the burden to overcome this inference by showing that the substitute was available during the accounting period."[1473]

810. Factors that have been considered in determining availability include whether (i) the defendant could readily obtain the materials needed to implement the non-infringing alternative; (ii) the non-infringing alternative was known; and (iii) the defendant had the necessary equipment, know-how, and experience to make the non-infringing alternative. The Federal Circuit in *Grain Processing* found that a non-infringing alternative process for producing food additives that had never been

[1471] Letter from the Tribunal to the Parties, dated 4 February 2015
[1472] RLA-533: *Grain Processing Corp. v. Am. Maize-Prods. Co.*, 185 F.3d 1341, 1353 (Fed. Cir. 1999). See notably Claimants' Phase III Post-Hearing Submission, dated 18 February 2015, paras. 48-52; Respondents' Phase III Post-Hearing Submission, dated 18 February 2015, para. 42
[1473] RLA-533: *Grain Processing Corp. v. Am. Maize-Prods. Co.*, 185 F.3d 1341, 1353-54 (Fed. Cir. 1999)

performed before, but which could be implemented in two weeks' time, was available. The court also warned, however, that "speculation or conclusory assertions will not suffice" to overcome the inference of unavailability, that courts must "proceed with caution in assessing proof of the availability of substitutes not actually sold during the period of infringement," and that "substitutes only theoretically possible" cannot limit lost profits.[1474]

811. In their latest submissions, Respondents narrowed down the candidates put forth as non-infringing alternatives to four: [redacted]

i. Claimants' Position on Design-Around Alternatives

812. In Claimants' view, Dow's four proposed non-infringing alternatives were not available during the accounting period.

813. **Alternatives not on market**—Claimants argue that, as deregulated events, the four non-infringing alternatives were not on the market at the relevant time. Claimants note that "[a] product lacking the advantages of that patented can hardly be termed a substitute 'acceptable' to the customer who wants those advantages,"[1476] and argue that a single- or double-stack would not be acceptable because the parties are racing to commercialize the world's first three-gene soybean. Any proposed non-infringing alternative would thus need to be a "triple stack" with tolerance to glufosinate, glyphosate, and at least one other type of herbicide, and Claimants note that such a three-gene soybean has never been marketed.[1477] Accordingly, in their view, there was no alternative on the market at the date asserted by Claimants as the beginning of the accounting period ([redacted] the date on which they allege that infringement began).[1478] Claimants also note, however, that should the Tribunal find that infringement began only in 2012, it remains the case that Dow's

[1474] *Id.*
[1475] Respondents' Phase III Post-Hearing Submission, dated 28 February 2015, paras. 44-46
[1476] CL-566, *Panduit Corp. v. Stahlin Bros. Fibre Works, Inc.*, 575 F.2d 1152, 1162 (6th Cir. 1978) ("[t]here are substitute products for virtually every patented product; the availability of railroads and box cameras should not of itself diminish royalties payable for infringement of the right to exclude others from making and selling the Wright airplane or the Polaroid camera")
[1477] Claimants' Phase III Post-Hearing Submission, dated 18 February 2015, paras. 54-55
[1478] RLA-533: *Grain Processing Corp. v. Am. Maize-Prods. Co.*, 185 F.3d 1341, 1353 (Fed. Cir. 1999)

proposed alternatives lacked the regulatory approval in the U.S. that would allow them to be on the market at that time.[1479]

814. **Inference of unavailability**—Claimants argue that, because Dow's proposed non-infringing three-gene soybean alternatives were not on the market during the accounting period, the inference that follows is that none of the four alternatives were available, with the burden shifting to Dow to overcome this inference of unavailability.[1480] According to Claimants, Dow has not met this burden.

815. In Claimants' view, Dow would have to "design or invent around the patented technology to develop" its proposed alternatives, which "weighs against a finding of availability."[1481] Claimants note that in the *Micro Chemical* case, the infringer did not have an available noninfringing alternative because it had "expended 984 hours to design the [alternative] machine and another 330 to test it,"[1482] that Dow required [redacted] to design and test the infringing Enlist E3 soybean,[1483] and that Dow has emphasized that it [redacted][4] suggesting that it would take Dow [redacted] to invent, develop, and test a noninfringing three-bean soybean having commercial levels of herbicide tolerance and favorable yield characteristics.[1485] Claimants also note that Dow's claims that it can easily design around the infringed patents are based on Mr. Bakewell's expert testimony citing the testimony of Dr. W[redacted] who in turn bases his opinion on unidentified "DAS employees".[1486] Claimants caution that "speculation or conclusory assertions will not suffice to overcome the inference" that the proposed alternative was not available.[1487]

816. Furthermore, according to Claimants, Dow and MS Tech contracted to make [redacted][1488] at a time when both parties knew that Option B would require substantial royalty payments to Bayer. Claimants assert that this agreement would make

[1479] Claimants' Phase III Post-Hearing Submission, dated 18 February 2015, paras. 54-55
[1480] RLA-533: *Grain Processing Corp. v. Am. Maize-Prods. Co.*, 185 F.3d 1341, 1353 (Fed. Cir. 1999)
[1481] CL-691: *Micro Chem., Inc. v. Lextron, Inc.*, 318 F.3d 1119, 1123 (Fed. Cir. 2003)
[1482] *Id.*
[1483] R-22: R[redacted] First Witness Statement, para. 10
[1484] Respondents' Phase III Memorial, dated 16 October 2014, para. 59; R-426: Bakewell First Expert Statement, paras. 171-73
[1485] Claimants' Phase III Post-Hearing Submission, dated 18 February 2015, para. 58
[1486] R-617: Bakewell Second Witness Statement at 26, 27; R-618: W[redacted] First Witness Statement, paras. 16, 21, 22
[1487] RLA-533: *Grain Processing Corp. v. Am. Maize-Prods. Co.*, 185 F.3d 1341, 1353 (Fed. Cir. 1999)
[1488] C-66: 2008 Dow-MS Tech Agreement, dated 4 April 2008, [redacted]

little commercial sense if Dow's proposed alternatives, which would not require royalty payments, could have been used, suggesting that Dow could not easily design around Bayer's patents.[1489]

817. Claimants also argue that the fact that Dow had notice of the patents before the accounting period weighs against a finding that Dow's hypothetical non-infringing soybeans were available, citing the *Edwards* case, where infringers with notice of the relevant patents did nothing to avoid infringement and it was found that no available alternative existed.[1490] Claimants argue that Dow licensed the patents in 1992 and understood the restrictive nature of Article 4 of the 1992 Agreement, that Dow's predecessor asked to "liberalize" Article 4 to allow for gene sublicensing but that Bayer's predecessor refused, that Dow had actual notice of its breach in 2011, that the 1992 Agreement was terminated in January 2012, and that throughout these events, Dow took no actions to avoid infringement.[1491]

818. Claimants contrast the situation in the present case with the one in the *Grain Processing* case, where an available alternative was found and the alternative (i) was made in response to a finding of infringement, (ii) was actually used thereafter, and (iii) took only a matter of two weeks to achieve.[1492]

ii. Respondents' Position on Design-Around Alternatives

819. The Federal Circuit has held that the amount it would have cost a defendant to implement a non-infringing alternative product "of necessity, would limit the hypothetical negotiation" and "effectively cap the reasonable royalty award."[1493] Respondents propose four non-infringing alternatives, all of which they argue are available. They note that the only testimony in the record regarding availability was from Respondents' expert witness Dr. W[redacted] and that it is uncontradicted, as Bayer offered no rebuttal testimony and chose not to cross-examine Dr. W[redacted]. Respondents assert that Claimants' argument that Dow would have implemented all viable design-around options to avoid infringement should fail because Dow believed that it had a license to the patented technology, and therefore that it was not infringing. Similarly, with regard to Claimants' argument that Dow would not have considered the expensive Option B [redacted] if better

[1489] Claimants' Phase III Post-Hearing Submission, dated 18 February 2015, para. 60
[1490] CL-33: *Edwards Lifesciences AG v. CoreValve, Inc*, 99 F.3d 1305, 1314 (Fed. Cir. 2012)
[1491] Claimants' Phase III Post-Hearing Submission, dated 18 February 2015, para. 61
[1492] RLA-533: *Grain Processing Corp. v. Am. Maize-Prods. Co.*, 185 F.3d 1341, 1346 (Fed. Cir. 1999)
[1493] RLA-532: *Riles v. Shell Exploration and Prod. Co.*, 298 F.3d 1302, 1312 (Fed. Cir. 2002); RLA-533: *Grain Processing Corp. v. American Maize-Products Co.*, 185 F.3d 1341, 1347 (Fed. Cir. 1999)

options were available, Respondents note that they considered Option B [redacted]

820. [redacted] **alternative containing** [redacted]—The first alternative proposed by Respondents is [redacted]. Respondents argue that before work on E3 had even started, [redacted]

821. Respondents argue that the availability of [redacted] is not affected by the fact that it would take the same of time to develop as it took for Enlist E3, as it is only the "economic relationship between the patented method and non-infringing alternative methods, of necessity, [that] would limit the hypothetical negotiation,"[1499] and Respondents' calculations of the additional cost of [redacted] already account for this economic relationship. Similarly, the fact that an event containing [redacted] has never been deregulated should not weigh against availability, according to Respondents, as all new events, even those containing genes previously approved in other events must go through the deregulation process.[1500]

822. [redacted] **alternatives** [redacted] **as selectable markers)**—The second alternative proposed by Respondents is [redacted]

[1494] Respondents' Phase III Post-Hearing Reply, dated 27 February 2015, para. 8
[1495] R-618: W[redacted] First Witness Statement, para. 16
[1496] *Id.*, para. 16(a); R-636: U.S. Patent Appl. Pubs. 2011/0195845, para. 24
[1497] C-53[redacted]
[1498] R-618: W[redacted] First Witness Statement, paras. 14-16; R-617: Bakewell Second Witness Statement, para. 73
[1499] RLA-532: *Riles v. Shell Exploration & Prod. Co.*, 298 F.3d 1302, 1312 (Fed. Cir. 2002)
[1500] Respondents' Phase III Post-Hearing Reply, dated 27 February 2015, para. 8

[redacted]

823. In response to Claimants' arguments regarding the unavailability of an event containing [redacted] Respondents note that [redacted] was mentioned only as a back-up selectable marker.[1502]

iii. Tribunal's Determination of Design-Around Alternatives

824. The design-around approach calls for an evaluation of the cost to Respondents of finding, obtaining, or creating a non-infringing alternative to practicing the patents-at-issue. In the context of the hypothetical negotiation, the logic of this approach is, to use Mr. Jarosz's description, that "a rational accused infringer would pay only the amount that it would cost to obtain (or internally develop) and implement the substitute technology."[1503] For Mr. Bakewell, this valuation approach is based on the premise that no party involved in an arms' length transaction would be willing to pay more to use the property than the cost to replace or recreate the property.[1504]

825. **Principles**—The parties appear to agree that the principles set out in the Federal Circuit's *Grain Processing* case apply to the determination of the availability of non-infringing alternatives.[1505] The Tribunal will therefore briefly summarize the relevant principles from *Grain Processing*, as discussed by the parties.[1506]

826. The "critical time period for determining availability of an alternative is the period of infringement for which the patent owner claims damages, i.e., the accounting period." An availability analysis must consider whether an acceptable alternative to the infringing product was "on the market" at

[1501] R-618: W[redacted] First Witness Statement, paras. 17-21
[1502] Respondents' Phase III Post-Hearing Reply, dated 27 February 2015, para. 8
[1503] C-317: Jarosz First Witness Statement at 85
[1504] R-426: Bakewell First Witness Statement, para. 276
[1505] RLA-533: *Grain Processing Corp. v. Am. Maize-Prods. Co.*, 185 F.3d 1341, 1353 (Fed. Cir. 1999)
[1506] See notably Claimants' Phase III Post-Hearing Submission, dated 18 February 2015, paras. 48-52; Respondents' Phase III Post-Hearing Submission, dated 18 February 2015, para. 42

this critical time, and it is noted that "[s]witching to a noninfringing substitute *after* the accounting period does not alone show availability of the noninfringing substitute *during* this critical time."[1507]

827. Where "an alleged alternative is not on the market during the accounting period, a trial court may reasonably infer that it was not available as a noninfringing substitute at that time." In such a case, the infringer has "the burden to overcome this inference by showing that the substitute was available during the accounting period." Factors that have been considered in determining availability include whether (i) the defendant could readily obtain the materials needed to implement the non-infringing alternative; (ii) the non-infringing alternative was known; and (iii) the defendant had the necessary equipment, know-how, and experience to make the non-infringing alternative. The Federal Circuit in *Grain Processing* found that a non-infringing alternative process for producing food additives that had never been performed before, but which could be implemented in two weeks' time, was available. The court also warned, however, that "speculation or conclusory assertions will not suffice" to overcome the inference of unavailability; that courts must "proceed with caution in assessing proof of the availability of substitutes not actually sold during the period of infringement"; and that "substitutes only theoretically possible" cannot limit lost profits.[1508]

828. **Proposed alternatives**—As the parties appear to be in agreement that the four non-infringing alternatives advanced by Respondents were not on the market during the accounting period,[1509] the Tribunal begins by noting that, in accordance with the *Grain Processing* case, Respondents bear the burden of overcoming an inference of unavailability.[1510]

829. The Tribunal now considers the availability of the first proposed alternative, [redacted] At the relevant time, Claimants note that Dow's internal documents indicate that [redacted]

[1507] RLA-533: *Grain Processing Corp. v. Am. Maize-Prods. Co.*, 185 F.3d 1341, 1353 (Fed. Cir. 1999)
[1508] *Id.* at 1353-54
[1509] See e.g. Claimants' Phase III Post-Hearing Submission, dated 18 February 2015, paras. 54-55; Respondents' Phase III Post-Hearing Submission, dated 18 February 2015, para. 42 (arguing that an alternative not on the market may still be found to be available)
[1510] RLA-533: *Grain Processing Corp. v. Am. Maize-Prods. Co.*, 185 F.3d 1341, 1353 (Fed. Cir. 1999)

[redacted] In the Tribunal's view, Dow's choice of [redacted] despite these contractual issues is a significant indication that the [redacted] was not available.

830. Dr. W[redacted], the only witness on the issue of availability, provides a clear sense of the situation at the time when *pat* was chosen. He writes: [redacted] None of this was true of [redacted] at the relevant time, as noted by Claimants, and for this reason, the Tribunal is of the view that the [redacted] cannot be considered an available alternative to *pat*. There was no evidence at the relevant time of [redacted] being able to confer glufosinate resistance in soy.[1512]

831. The Tribunal thus turns to the breeding stack alternatives. Claimants have conceded that the stacking of Dow's Event 416 (containing *aad-12* and *pat*) with an event containing MS Tech's *dmmg* gene by traditional breeding would have been permissible under the 1992 Agreement.[1513] The *dmmg* event used to create the breeding stack would have to contain a selectable marker, and Respondents have advanced three non-infringing possibilities: either an optimized version of the *dmmg* gene could be created and could serve as its own selectable marker, or else, the [redacted] could be used. The only hurdles, therefore, are MS Tech's willingness to create, and the work, delay, and cost involved in creating, the required *dmmg* event; the work, delay, and cost involved in deregulating the event; and the work, delay, and cost involved in breeding.

832. The Tribunal is of the view that the breeding stack involving the use of the [redacted]e as a selectable marker cannot be considered available. Claimants noted that, while Dr. W[redacted] expert statement indicated that [redacted] The Tribunal finds

[1511] Claimants' Phase III Memorial, dated 6 October 2014, paras. 59-60; C-183: [redacted]

[1512] R-618: First W[redacted] Witness Statement, paras. 14-15; Claimants' Phase III Post-Hearing Reply, dated 27 February 2015, para. 14

[1513] See e.g. Claimants' Phase I Closing Presentation, dated 17 April 2014, slide 87

[1514] R-618: First W[redacted] Witness Statement, para. 21(b)

[1515] Respondents' Phase III Post-Hearing Reply, dated 27 February 2015, para. 8

that Respondents have essentially abandoned their arguments concerning the availability of this option.

833. The other two [redacted] options [redacted] however, require more substantial consideration. Regarding the option that would use an [redacted], the Tribunal is not convinced by Claimants' argument that this option is unavailable simply because Dr. W[redacted] listed alternative [redacted] in the event that it would not be possible to use [redacted].[1516] In the Tribunal's view, the citation of "alternatives" or "backups" does not, in itself, reflect on the likelihood of the [redacted] success as [redacted], as these alternatives, and the acknowledgement of the possibility that [redacted] may not be able to be used, may have been provided simply out of prudence. In this light, Dr. W[redacted] uncontradicted evidence suggests, rather, that [redacted]. The Tribunal appreciates the value of Dr. W[redacted] evidence on this point. It finds, however, that Respondents have not succeeded in delivering themselves of their burden of convincing the Tribunal that this alternative, which was not on the market, was available. Respondents have not sufficiently addressed either the effect that [redacted] would have on availability, a point emphasized by Claimants, or the degree of likelihood of being able to create the required [redacted], and then the required event containing it.

834. Similarly, while the Tribunal appreciates the value of Dr. W[redacted] evidence on the availability of [redacted], the Tribunal is not persuaded that this non-infringing alternative was available at the relevant time. In particular, the Tribunal is not satisfied of the connection between, on the one hand, [redacted], and, on the other, the availability of [redacted] at the relevant time according to the estimates of [redacted].[1517] Given the crucial points emphasized by Claimants that [redacted]

[1516] Claimants' Phase III Closing Presentation, dated 21 November 2014, slide 191, citing R-618: First W[redacted] Witness Statement, para. 21(a)
[1517] R-618: First W[redacted] Witness Statement, paras. 16, 21

[redacted] further insight into the basis of Dr. W[redacted] conclusion that Respondents had [redacted] at the relevant time would be required.

835. Placing Respondents' suggested alternatives against the backdrop of the Option B and Option C paths, described earlier in the context of the Tribunal's analysis of the principles of recovery for contract breach, further confirms the Tribunal's finding. The record is clear that Dow gave serious consideration to [redacted]. Neither option could be described as ideal: Option B involved [redacted]; Option C [redacted]

Claimants are right in saying that this agreement would make little commercial sense if Dow's suggested alternatives, which would not require royalty payments, could have been used.[1521] In the view of the Tribunal, this strongly suggests that, had there been alternatives that one could consider available at the relevant time, they would have been pursued.

836. **Proposed alternatives not available**—Not only were the proposed alternatives not seriously pursued at the time when Dow decided in favor of the breaching path, but even after September 2014, when the Tribunal provisionally indicated that Dow was in breach of the 1992 Agreement, there was no indication from Respondents that alternatives were actually being pursued. As the Federal Circuit once held, there is no available non-infringing alternative, but rather only the possibility of coming up with an alternative, where an infringer had the ability, resources, and desire to design around the relevant patents and "could probably figure out a way to avoid infringement," but that the available "design around was not as good as it would like."[1522] Not only is there insufficient evidence that the alternatives would have been acceptable in the market at the relevant time,[1523] but the evidence suggests that the alternatives were not and are not acceptable to Dow.[1524]

[1518] *Id.*, para. 15
[1519] Claimants' Phase III Memorial, dated 6 October 2014, paras. 59-60; Claimants' Phase III Post-Hearing Submission, dated 18 February 2015, para. 61; C-183: [redacted]
[1520] C-66: 2008 Dow-MS Tech Agreement [redacted]
[1521] Claimants' Phase III Post-Hearing Submission, dated 18 February 2015, para. 60
[1522] CX-262: *Mars, Inc. v. Coin Acceptors, Inc.*, 527 F.3d 1359, 1372-73 (Fed. Cir. 2008)
[1523] Claimants' Phase III Post Hearing Reply, dated 27 February 2015, para. 16
[1524] *Id.* para. 14

The Tribunal thus finds that none of the [redacted] non-infringing alternatives suggested by Respondents are available.

837. **Next-best non-infringing alternative is Option B**—This is not to say that a non-infringing alternative did not or does not exist. Respondents suggested the [redacted] alternatives in the hope of showing that it could not only design around the patents, but could also avoid the non-infringing alternative it had itself identified. The next-best, non-infringing alternative here is recognized by Dow, in these proceedings, and is clearly established by the evidentiary record. In their submissions, Respondents recognize that, [redacted] Upon finalizing its decision to take the path of breach [redacted] The consideration given to Option B despite this drawback, and not given to any of the other alternatives that Respondents have discussed in the Arbitration, is an indication that, at the time, none of the other design-around alternatives that Dow has proposed were available alternatives. The Tribunal therefore finds that the value of the license cannot exceed the cost to Dow of Option B.

C. Qualitative Framework and Hypothetical Negotiation: Determination of Adjustments

838. Beyond regular references to the hypothetical negotiation construct, the parties have not laid much emphasis upon the qualitative factors outlined in *Georgia Pacific*. Both Mr. Jarosz and Mr. Bakewell use them as a list of factors that may or may not call for an adjustment to the baseline figures they come to by application of their quantitative analysis,[1527] as the quantitative framework they use tends to factor in most of the considerations outlined in *Georgia Pacific*, as both damages experts acknowledge.[1528] The Tribunal follows their approach.

[1525] Respondents' Phase III Memorial, dated 16 October 2014, para 19
[1526] C-66: 2008 Dow-MS Tech Agreement, [redacted]
[1527] C-317: Jarosz First Witness Statement at 90
[1528] *Id.* at 90-94; R-426: Bakewell First Witness Statement, paras. 114-16

839. The dominant theme in the damage expert evidence was the discrepancy between the traditional quantitative framework used by both Mr. Bakewell and Mr. Jarosz, and the head-start theory added on by the latter. The head-start theory, which the Tribunal rejects on the facts of this case, can nevertheless serve to highlight some of the issues to the consideration of which one might be drawn in a hypothetical negotiation scenario and to which the Tribunal now turns

840. **Scope of the hypothetical license**—The license at issue in the hypothetical negotiation construct is a non-exclusive, one-way, bare license to the patents-in-suits.[1529] Mr. Bakewell and Mr. Jarosz agree that no patent damages are owed with respect to sales that have no nexus with the United States,[1530] but differ as to whether the required nexus exists with respect to sales outside the United States, in Canada and Latin America. The fact that field tests of the products sold in Canada and Latin America occurred in the United States, mentioned by Mr. Jarosz to support his inclusion of Canadian and Latin American sales in his calculations without further explanation,[1531] is insufficient, on its own, to persuade the Tribunal of a nexus with the United States. The Tribunal considers that Claimants had the burden of showing a nexus and failed to advance any arguments as to why field testing would constitute such nexus.

841. The Tribunal thus adopts the view of Mr. Bakewell that no nexus exists with respect to products sold in Latin America and Canada that are also produced outside the United States, meaning that the only Canadian and Latin American sales with a nexus to the United States would be the [redacted].[1532] The hypothetical negotiation will therefore concern a U.S. license, and the royalty rate will not be applied to sales of the accused products in Canada or Latin America, with the exception of [redacted]

842. **The hypothetical negotiation**—The following assumptions for the hypothetical negotiation are uncontested: (1) the patent is known to be valid and enforceable at the time infringement commences; (2) the patent is known to be infringed; (3) the patent holder is willing to issue a

[1529] C-426: Bakewell First Witness Statement, para. 304; C-317: Jarosz First Witness Statement, at 90 (non-exclusivity of license); C-396: Jarosz Second Witness Statement, at 62-63 (bare license)
[1530] R-426: Bakewell First Witness Statement, para. 335; C-396: Jarosz Second Witness Statement at 85
[1531] C-396: Second Jarosz Witness Statement at 85; C-84: Petition for Determination of Nonregulated Status for Herbicidal Tolerant DAS-444Ø6-6 Soybean at 5. 75 (field testing of E3 products in the United States)
[1532] R-441: K[redacted] Witness Statement; R-617: Bakewell Second Witness Statement, attachment G-3.3

license; (4) the licensee is willing to take a license; and (5) the appropriate relevant business facts are known and considered.[1533]

843. At the time of the hypothetical negotiation, which is just before infringement, Dow had invested significant resources in Option C, which became E3, and was about to consummate and formalize its breach and infringement through its agreement with MS Tech, in the clear knowledge that its other main option, Option B, [redacted] At this point in time, Option B very much remains [redacted] As for Bayer, [redacted]. The commercial reality at the time is that MS Tech needed a multinational partner to take a product through regulatory approvals and to market, and wanted to keep avenues open with both Bayer and Dow. Bayer and Dow, however, would rather have kept each other out of the picture. It is in this context that we are to assume that both parties were willing to agree to a license following a hypothetical negotiation scenario.

844. The Tribunal has established a floor in both soybean and cotton of [redacted] for the royalty by applying the licensing comparables method, noting that no licence in the record grants the right that Dow requires to carry on practicing the patents-at-issue. In order to understand the significance of this right, consideration of the business context of the relevant market is necessary. In that context, the reason why Bayer never granted a right to sublicense the bare *pat* gene is easily understood. Bayer deliberately licensed the technologies at issue in silos.[1535] The intended result of this deliberate business strategy is clearly illustrated by the facts of this case: it was legally impossible, directly or indirectly, for Dow and MS Tech to fuse *dmmg* and *pat* in a molecular stack. When Respondents argue that the value of the right at issue in the hypothetical negotiation is "the equivalent of MS Tech securing its own license to the *pat* gene for just one event"[1536] and that "this is a fraction of the rights in the comparable licenses,"[1537] they completely ignore the business context that informs the value of the right in question, which the Tribunal can take into account under *Georgia Pacific* factor 4: "The licensor's established policy and marketing program to

[1533] C-317: Jarosz First Witness Statement, at 22-23; R-426: Bakewell First Witness Statement, paras. 251, 303
[1534] Respondents' Phase III Memorial, dated 16 October 2014, para. 19
[1535] Claimants' Phase III Closing Presentation, dated 21 November 2014, slides 3-7
[1536] Respondents' Phase III Memorial, dated 16 October 2014, para. 53
[1537] *Id.*

maintain his patent monopoly by not licensing others to use the invention or by granting licenses under special conditions designed to preserve that monopoly under the eBay factors." The value to Bayer of the license at issue in the hypothetical scenario, therefore, is not just about the independent value of *pat* as a technology or about the value-added it brings to a particular product like E3, but rather about the value represented by Bayer's control of the development and commercialization of products containing the technology it invented and about the ability to secure a downstream revenue stream.

845. The hypothetical negotiation is also about the value of the license to Dow. On the eve of infringement, the value of the license to Dow is the value of being able to carry on with E3 and to stay the course instead of shifting gear and pursuing the alternative option it has itself identified, which is Option B. As should now be clear, the cost to Dow of Option B essentially consists in the [redacted] owed to Bayer under that option. The value to Dow of practicing the patents-at-issue with E3, therefore, is the difference between the benefit of E3 and the benefit it would have derived under Option B. Using the benefit of E3 as an appropriate proxy for the benefit of Option B, the cost to Dow of switching, or "design around" cost would be [redacted] of E3, which we identified as [redacted]; the cap for the royalty is therefore established at [redacted]

846. As Mr. Bakewell rightly points out, however, consideration of these factors can threaten the principle of apportionment because it builds into the royalty rate a portion of value that does not come from the infringing technology. It may also be viewed as creating a hold-up or a lock-in effect whereby sunk costs make the infringer a hostage in the negotiation. The incremental benefit analysis applied by the Tribunal, however, works entirely on the basis of apportionment, and takes general (as opposed to relationship-specific) market factors into account that do not have a hold-up or lock-in effect. This method was used as the central analysis of both Mr. Jarosz and Mr. Bakewell. Applying the incremental benefit method, the Tribunal determined a value of [redacted]

847. Following Mr. Bakewell and Mr. Jarosz, the Tribunal now looks at the qualitative *Georgia Pacific* factors to ensure that they have been sufficiently considered in the quantitative analysis and, if not, if any adjustment to the royalty basis is warranted. None of the factors are indicative of an adjustment, according to Mr. Bakewell, except for factor 3, which concerns the scope of the

license.[1538] His baseline royalty, he explains, is based on global non-infringing alternatives and global (as distinguished from U.S.-only) licenses [redacted], so that a downward adjustment is called for.[1539] According to Mr. Jarosz, the qualitative factors do not suggest an adjustment, except for factor 11, which relates to the extent of use. The products that contain Bayer's technology, he explains, are very important to Dow as part of its agricultural sciences business, and this suggests an upward impact.[1540] The Tribunal finds that both factors put an upward pressure on the royalty rates. Concerning the scope of the license, the fact bears repeating here that Bayer has deliberately avoided granting—and indeed has actually refused to grant Dow's predecessor—the bare license to *pat* that Dow needs here for Enlist E3 and Enlist E3+IR.[1541] Because of its infringement, Dow is now getting from Bayer, through this arbitration, a license that Bayer has never wanted to grant and has never granted to anyone, at any time. Concerning the extent of use, Respondents themselves persuasively made the case to this Tribunal, when they successfully resisted Claimants' request for interim measures, of how crucial the *pat* gene was to Dow's entire seed business.[1542] Taking these two elements into account and their particularly significant impact in soybean, while staying well below the mid-range of the figures suggested by Mr. Jarosz [redacted] per acre for soybean and [redacted] per acre for cotton[1543]), the Tribunal responds to this factor by increasing the base royalty figures it has determined by [redacted] for both Enlist E3 and Enlist E3+IR, to reflect the scope of the license and the extent of use, and by [redacted] for Enlist Soybean and Enlist Cotton, to reflect the extent of use only. The reasonable royalty is therefore finally established at [redacted] for Enlist E3 and Enlist E3+IR, at [redacted] for Enlist Soybean, and at [redacted] for Enlist Cotton. The reasonable royalty for the use of *pat* as a selectable marker in WideStrike 3 Cotton remains at the base figure of [redacted].

D. Lump Sum versus Running Royalty

848. Having established the per acre values required for the reasonable royalty, the Tribunal now turns to the question of whether it should be granted as a running royalty or as a lump sum.

[1538] C-426: Bakewell First Witness Statement, paras. 289-91
[1539] *Id.*, paras. 289-91
[1540] C-317: Jarosz First Witness Statement at 93
[1541] Claimants' Phase III Reply, dated 27 February 2015, paras. 61 ff; Claimants' Phase III Closing Presentation, dated 21 November 2014, slides 91-94
[1542] Respondents' Opposition to Claimants' Request for Interim Measures, dated 30 October 2013, at 59-61
[1543] C-528: Jarosz Fourth Witness Statement, at 64

849. Claimants submit that the reasonable royalty in this arbitration should be awarded in the form of a lump-sum payment.[1544] Respondents maintain that, in order to avoid speculation and to obviate the risk of double recovery, any patent damages should be awarded in the form of a running royalty tied to product sales, rather than a single lump-sum payment covering past and future sales.[1545]

850. A running royalty has the obvious advantage of tracking the relative success of the infringing products and of adjusting the compensation over time on that basis, which can result in a remedy that achieves greater accuracy. The purely administrative aspects of implementing a running royalty in this case would be facilitated by the existing channels established under other agreements for purposes of sales reporting and royalty payments.[1546] Respondents emphasize the considerable risk that a lump sum may ultimately prove to be too low or too high in view of the relative success of the products. This risk may be a factor that plays in favor of a running royalty, but it is assumed equally by both sides,[1547] and is not materially different from the risk assumed by tribunals around the world deciding, on a day-to-day basis, contract claims related to future profits.

851. A lump-sum royalty also has its advantages. One significant advantage provided by a lump sum in relation to products that combine several technologies, like Enlist E3, is to ensure that compensation is not dependent on development or commercialization issues that are not related to the infringed technology. A lump-sum payment may also be less likely to create distortions in deployment and pricing decisions for the product. A lump-sum royalty has the added advantage of avoiding the prospect of future disputes over monitoring and compliance in relation to royalty payment obligations. This advantage is particularly significant in an arbitral context, where the exercise of post-award decisional authority brings its own complications.

852. Most importantly, a running royalty would make it practically impossible for the Tribunal to ensure that there is no measure of double recovery in this case (rather than obviating the risk of double recovery, as Respondents suggest).[1548] Since a running royalty is not an available form of remedy in contract law, the damages awarded to Claimants under the contract law regime will necessarily take the form of a lump-sum award. Awarding the reasonable royalty under the patent regime in

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[1544] *Id.* at 56. See also C-317: Jarosz First Witness Statement at 91-95; C-396: Jarosz Second Declaration at 106
[1545] Respondents' Phase III Post-Hearing Submission, dated 18 February 2015, para. 59
[1546] See e.g. Phase III Hearing Transcript, dated 20 November 2014, at 734:16-24, 736:18-22; R-23: K[redacted] First Witness Statement, para. 26 ([redacted])
[1547] Claimants Remedies Memorial, para 14
[1548] Respondents' Phase III Post-Hearing Submission, para. 59

the form of a running royalty would simply deprive the Tribunal of the common basis it needs for comparing the recovery under each regime.

853. **Form of royalty to be a lump sum**—For these reasons, the Tribunal determines that the reasonable royalty under the patent regime will take the form of a lump-sum payment.

E. Enhancement of Damages

854. Having determined that the reasonable royalty will take the form of a lump sum, the Tribunal turns, finally, to the issue of enhanced damages. Claimants have sought enhanced damages, which, under U.S. patent law, can represent, in addition to the base damages, as much as twice the awarded amount as compensation.

1. Claimants' Position on Enhancement of Damages

855. Claimants argue that the two prongs of the *Seagate* test for damages enhancement are met.

856. **Objective willful infringement**—In terms of the first, objective prong of the *Seagate* test, Claimants argue that there was an objectively high likelihood that Respondents' accused products infringed Claimants' patents based on the fact that Respondents did not receive a preliminary or other ruling, or offer evidence that they had sought the advice of counsel, concerning whether their accused products, which were acknowledged to contain *pat*, infringed Claimants' patents. In this respect, Claimants note that Respondents' initial and primary defense was a license defense, and that Respondents offered no rebuttal to Claimants' evidence that the accused products practiced the asserted claims of '236, '447, and '024 patents.[1549]

857. Claimants further note that the defenses on which Respondents rely must be realistically reasonable based on the risk presented by the patent,[1550] and argue that Respondents' defenses were unreasonable. According to Claimants, Respondents' infringement defense with respect to the '665 reissue patent was premised on the fact that the claim covers only the *bar* gene, even though the USPTO had stated expressly that the claim also covers the *pat* gene.[1551] In Claimants' view, Respondents' invalidity defenses ran counter to a statutory presumption and the patents' history of examination by the USPTO. Furthermore, Respondents raised an enablement defense that had been

[1549] Claimants' Phase III Memorial, dated 6 October 2014, paras. 98-99
[1550] RLA-556: *Bard Peripheral Vascular, Inc. v. WL Gore & Assoc., Inc.*, 682 F.3d 1003 (Fed. Cir. 2012)
[1551] Respondents' Phase II Responsive Memorial, dated 1 July 2014, paras. 38-44

rejected in prior district court and Federal Circuit litigation of the '236 patent,[1552] and a written description defense under the *Eli Lilly* case that was rejected by the USPTO during original and reissue prosecution in June 2014, where claim 1, then known as claim 63, was upheld.[1553]

858. **Subjective willful infringement**—Regarding the second, subjective prong of the *Seagate* test, Claimants assert that Respondents knew or should have known that Respondents' conduct infringed Claimants' patents. Claimants argue that Dow's motive for structuring its E3 product in a manner that violated Article 4 of the 1992 Agreement was [redacted] Claimants further argue that copying constitutes strong evidence of willfulness[1556] and note that Respondents copied the gene described by amino acid sequence in Claimants' patents verbatim. Respondents also have not offered the opinion of counsel, which could assist in establishing the subjective belief that they were not infringing a valid claim.[1557] Finally, Claimants note that they provided Respondents with written notice of breach and infringement on 9 November 2011,[1558] and sued Respondents in January 2012, but that Respondents did not alter their conduct, continuing to ready their other accused products for the market, and that Respondents continued to do so despite the view expressed in the Tribunal's letter of 25 September 2014, indicating that Respondents' license and invalidity defenses will be formally ruled meritless.[1559] Claimants note that post-verdict infringement is generally recognized as willful.[1560]

859. ***Read* factors**— If a finding of willful infringement is made under the *Seagate* test, the nine *Read* factors must then be considered in order to determine whether to enhance damages and by what

[1552] CL-349: *Plant Genetic Sys. v. Dekalb Genetics Corp.*, 175 F.d 246 (D. Conn. 2001); CL-350: *Plant Genetic Sys. v. Dekalb Genetics Corp.*, 315 F.3d 1335 (Fed. Cir. 2003)
[1553] R-374: Office Action, 10 December 2002, at 5
[1554] C-183: [redacted]
[1555] C-76: [redacted]
[1556] CL-555: *State Indus., Inc. v. Mor-Flo. Indus, Inc.*, 883 F.2d 1573, 1582 (Fed. Cir. 1989)
[1557] CL-355: *SRI Int'l v. Adv. Tech. Labs.*, 127 F.3d 1462, 1465 (Fed. Cir. 1997)
[1558] C-86: Letter from Bayer to Dow, dated 9 November 2011
[1559] Claimants' Phase III Memorial, dated 6 October 2014, para. 105
[1560] CL-610: *Paice LLC v. Toyota Motor Corp.*, 609 F. Supp. 2d 620, 626-27 (E.D. Tex. 2009) ("Once judgment is entered, ongoing infringement by the adjudged infringer is willful")

amount.[1561] Claimants argue that, in the present Arbitration, all nine *Read* factors weigh in favor of enhanced damages.[1562]

2. Respondents' Position on Enhancement of Damages

860. Respondents argue that the two prongs of the *Seagate* test are not met and that even if they were, the *Read* factors do not weigh in favor of the award of enhanced damages in this case.

861. **Objective willful infringement**—According to Respondents, a finding of objectively willful infringement is precluded on the basis that Respondents have proffered objectively reasonable defenses to infringement, even if those defenses were ultimately unsuccessful. Respondents argue that they put forward multiple, independent invalidity defenses, with which three patent law experts agreed.[1563] These defenses were that all patents-at-issue were invalid for lack of written description because they disclosed the sequence of only two genes, but claimed a diverse genus of genes performing the same function; that the '665 reissue patent covered the naturally occurring pat gene, making it invalid under *Myriad*; that Claimants' construction of the '665 reissue patent emphasized the patent's indefiniteness; that almost all of Claimants' claims were lacking enablement; that the *Bayer II* court had already found that Respondents had the right to make, use, and sell Enlist E3 soybean, which should constitute *res judicata*; and finally, that the '665 patent did not cover *pat*, but rather was a *bar* gene patent.[1564] While Claimants have argued that certain of these defenses were raised unsuccessfully in past litigation, Respondents note that USPTO examiners rejected Bayer's broad, functionally defined genus claims pending in the '665 patent application, and that the only genus claims that survived the USPTO were those in the '236, '477, and '024 patents that issued prior to *Eli Lilly*.[1565] In the *DeKalb* case, the courts invalidated numerous claims in the '236 patent for lack of enablement, and found the rest of them not to be infringed, never addressing the defenses Respondents raise here.[1566]

862. Respondents also argue that Claimants did not devise the Article 4 sublicensing theory of breach of the 1992 Agreement—based on which the Tribunal proceeded to Phase II—until Claimants'

[1561] CL-416: *Read Corp. v. Portec, Inc.*, 970 F.2d 816, 827 (Fed. Cir. 1992)
[1562] *Id.*; Claimants' Phase III Memorial, dated 6 October 2014, paras. 109-17
[1563] R-445: Edgar Witness Statement, paras. 59-60; R-447: Godici Witness Statement, para. 25; R-446: Farnan Witness Statement, paras. 13-14
[1564] Respondents' Phase III Memorial, dated 16 October 2014, para. 80
[1565] RLA-374: '665 Patent Office Action, dated 10 December 2002, at 5; Respondents' Phase I Memorial, dated 2 June 2014, paras. 97-102
[1566] RLA-5: *Plant Genetic Sys., N.V. v. DeKalb Genetics Corp.*, 315 F.3d 1335, 1344-46 (Fed. Cir. 2003)

Phase I Reply Memorial of February 2014, and accordingly that there was no "objectively high likelihood that [Dow's] actions constituted infringement" because Claimants did not articulate their theory of breach until two years after the termination notice.[1567]

863. **Subjective willful infringement**—Under the subjective prong of the *Seagate* test, Respondents argue that Claimants have not provided clear and convincing evidence that Respondents knew or should have known that their activities infringed a valid patent. Respondents note that simply knowing of Claimants' patents prior to this Arbitration, particularly in the context of a license to the patented technology, does not render their actions subjectively willful, because even before *Seagate*'s more stringent two-pronged test was elaborated, it was acknowledged that an "accused infringer's knowledge of asserted patent, without more, [was] insufficient to support a conclusion of willfulness."[1568] Respondents also argue that they did not copy the asserted Leemans patents, but rather used the "plant optimized" Strauch gene and protein provided to Respondents by Hoechst in 1991.[1569] Respondents further note that there is "no affirmative obligation to obtain an opinion of counsel" and that the Federal Circuit has prohibited "adverse inference[s] or evidentiary presumption[s]" on the grounds of the lack of an opinion of counsel.[1570] Finally, Respondents argue that continuing to move forward with the Enlist E3 product in the absence of any judgment is not evidence of willfulness.[1571]

864. ***Read* factors**—Respondents argue that, were the *Seagate* test to be satisfied, the *Read* factors do not mandate in favor of any enhancement of damages.[1572]

3. Tribunal's Determination: No Enhancement of Damages

865. Applying the two-pronged threshold test for the enhancement of damages set out by the *Seagate* case, the Tribunal is of the view that Claimants' claim for enhanced damages must be rejected. The first prong of the *Seagate* test requires a patentee to show by clear and convincing evidence that

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[1567] Respondents' Phase III Memorial, dated 16 October 2014, para. 79
[1568] RLA-741: *Norian Corp. v. Stryker Corp.*, 363 F.3d 1321, 1332 (Fed. Cir. 2004)
[1569] R-618: W[redacted] First Witness Statement, paras. 8-13
[1570] RLA-563: *In re Seagate Tech., LLC*, 497 F.3d 1360, 1371 (Fed. Cir. 2007); RLA-703: *Knorr-Bremse Systeme GmbH v. Dana Corp.*, 383 F.3d 1337, 1345-46 (Fed. Cir. 2004)
[1571] Respondents' Phase III Memorial, dated 16 October 2014, para. 84
[1572] *Id.*, para. 85

the infringer acted despite an objectively high likelihood that its actions constituted infringement of a valid patent.[1573]

866. Claimants have rightly focused their arguments regarding objective willfulness on the issue of the reasonableness of Respondents' defenses.[1574] The Federal Circuit case law applying *Seagate*, notably the *Spine Solutions* case, has found that the objective willfulness standard "tends not to be met where an accused infringer relies on a reasonable defense to a charge of infringement," raising substantial questions, as assessed in light of the record of the case.[1575] The only other ground raised by Claimants as a possible basis for a finding of objectively willful infringement was that Respondents did not obtain an opinion of counsel regarding infringement,[1576] but the Tribunal notes that *Seagate* has established that there is "no affirmative obligation to obtain an opinion of counsel."[1577]

867. In determining whether Respondents' infringement was objectively willful, the Tribunal must therefore have regard to the reasonableness of Respondents' defenses in light of the record of the case. The Tribunal is of the view that Respondents presented a number of defenses that raised issues requiring substantial analysis, in particular the license defense, issues of claim construction relating to the '665 patent, and invalidity defenses including written description. It determines that Respondents raised certain reasonable defenses, and that, given the *Seagate* jurisprudence, infringement should not be considered objectively willful.

868. Given the Tribunal's determination that Respondents' infringement was not objectively willful, the threshold test set out in *Seagate* is not met, and the Tribunal rejects Claimants' request for enhancement of damages. It is therefore not necessary for the Tribunal to proceed to the second prong of the threshold test set out in *Seagate*, that is, the question of subjective willful infringement,[1578] or to consider, if the *Seagate* test were met, whether, and in what amount, enhanced damages should be awarded in light of the *Read* factors.[1579]

[1573] RLA-563: *In re Seagate Tech., LLC*, 497 F.3d 1360, 1371 (Fed. Cir. 2007) (en banc)
[1574] Claimants' Phase III Memorial, dated 6 October 2014, paras. 98-101; Claimants' Phase III Reply, dated 23 October 2014, para. 80
[1575] RLA-562: *Spine Solutions, Inc. v. Medtronic Sofamor Danek USA, Inc.*, 620 F.3d 1305, 1319-20 (Fed. Cir. 2010)
[1576] Claimants' Phase III Memorial, dated 6 October 2014, paras. 98-101
[1577] RLA-563: *In re Seagate Tech., LLC*, 497 F.3d 1360, 1371 (Fed. Cir. 2007) (en banc)
[1578] *Id.*
[1579] CL-416: *Read Corp. v. Portec, Inc.*, 970 F.2d 816, 827 (Fed. Cir. 1992)

III. Determination and Calculation of Monetary Relief

869. Having established the broad principles of recovery for both contract breach and patent infringement, as well as the key values for a reasonable royalty, the Tribunal now turns to the detailed calculation of monetary relief under both heads of recovery, building on the determinations in Parts 5.I and 5.II. The Tribunal first determines breach of contract damages and patent infringement damages separately, before turning to the issue of double recovery.

870. One question is common to patent and contract damages, however, and can be determined here as a preliminary matter: the appropriate discount rate for projections of future cash flows.

871. **Discount rate for projections of future cash flows**—In the calculation of both patent and contract damages, projections are used to assess the future sales of certain products. They are used to establish a reasonable royalty in the case of patent damages and to assess the "but for" scenario in the case of damages for breach of contract. In his calculations, Mr. Jarosz generally applies a discount rate to assess the current value of future flows. As he points out, this is in line with "basic financial principles and corporate [redacted] practices."[1580] Mr. Bakewell criticizes the discount rate proposed by Mr. Jarosz because it is drawn from practices that are not sufficiently specific to the relevant, narrow segment of the industry, but he stops short of suggesting a rate that would be more appropriate.[1581] To establish his discount rate of 10%, Mr. Jarosz explains that a 30% discount rate would denote a high uncertainty and 5% a low uncertainty. [redacted] In light of this, as well as Mr. Bakewell's failure to provide a more appropriate discount rate (and reasons for favoring it), the Tribunal accepts Mr. Jarosz's evidence and his proposed rate. A discount rate of 10% is therefore used in the calculation of both patent and contract damages.

872. The Tribunal now turns to the calculation of the patent damages, in the form of a lump-sum royalty.

A. Determination and Calculation of Damages for Breach of Contract

873. There are four outstanding issues that need to be determined before contract damages can be calculated. The first is the question of pre-award interest, the second is the rate of the probability

[1580] C-528: Jarosz Fourth Witness Statement at 41
[1581] C-631: Bakewell Third Witness Statement at 22-24
[1582] C-528: Jarosz Fourth Witness Statement at 41, n. 142

discount that will be applied to reflect the chance factor in the loss of opportunity analysis, the third is the deregulation costs that Bayer would have had to assume for Option B, and the fourth relates to the royalty base.

874. **Pre-award interest on contract damages**—The Tribunal first looks at the question of pre-award interest on breach of contract damages. Claimants are seeking pre-award simple interest on contract damages at a rate of 8%, referring to the law of the seat.[1583] The relevant Indiana statute, they explain, provides for a range from 6% to 10% and limits prejudgment interest to a maximum period of 4 years.[1584] According to Respondents' most recent submissions, the law governing the merits of the contract claims—in this case French law—provides the standards governing the award of prejudgment interest. Under French law, interest accrues from the time of judgment.[1585] Respondents recognize, however, that prejudgment interest may be awarded as a head of compensatory damages if there is a reason for compensation, which could be the passage of time.[1586] If the Tribunal were to award prejudgment interest, Respondents argue that it should do so by reference to the legal rate of interest set by the French authorities and applicable to post-judgment interest, which is currently 0.04%.[1587] They view this rate as a reliable indication of the rate of interest that can reasonably be expected under French law.[1588]

875. Claimants have been consistent in their position that the law of the seat provides appropriate standards for the award of prejudgment interest.[1589] Respondents also took the position that in this case the law of the seat provides appropriate standards when, in Phase I, they sought prejudgment interest on their costs. They stated, at that time, that "the law of Indiana, the seat of the arbitration, mandates that prejudgment interest shall be awarded at a rate no less than 6% per annum and not more than 10% per annum," and that "to fully compensate DAS, the Tribunal should award interest on all costs paid by DAS to date at a rate fixed by the Tribunal between 6% and 10%, as provided by Indiana law, the *lex arbitri*."[1590] In Phase III, however, Respondents attempted to distinguish

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[1583] C-515: Jarosz Third Witness Statement at 14, 23; Claimants' Phase III Closing Presentation, dated 21 November 2014, slides 222 ff.
[1584] See e.g. C-515: Third Jarosz Witness Statement at 16
[1585] Respondents' Phase III Reply, dated 30 October 2014, para. 22, n. 42
[1586] Phase III Hearing Transcript, dated 21 November 2014, at 1187-91; CL-1/RLA-107: Civil Code, translated by Georges Rouhette with the assistance of Dr. Anne Rouhette-Berton, Art. 1153-1; RLA-728: Cass. civ. 1ère, 16 mars 1966, Bull. Civ. 1966, I, No. 190
[1587] RLA-729: JORF No. 0031, 6 February 2014, Texte n° 2, Décret n° 2014-98 du 4 février 2014
[1588] Respondents' Phase III Closing Presentation, dated 21 November 2014, slide 225
[1589] C-515: Jarosz Third Witness Statement at 14, 23; Claimants' Phase III Closing Presentation, dated 21 November 2014, slides 222 ff.
[1590] Respondents' Phase I Costs Submission, dated 13 May 2014, at para. 12

the award of prejudgment interest on costs from the award of prejudgment interest on damages, as follows: "It is true that DAS sought pre-award interest under Indiana law on its Phase I cost submissions. However, with respect to prejudgment interest on compensatory damages (as opposed to pre-judgment interest on costs), 'arbitrators have in general looked to the substantive law governing the parties' underlying claims for standards regarding interest.'"[1591]

876. The source upon which Respondents rely, however, does not draw any distinction at all between prejudgment interest on compensatory damages and prejudgment interest on costs.[1592] And even if there could well be a valid basis to make that distinction, it is, here, flatly inconsistent with Respondents' position regarding pre-award interest on the Virginia litigation costs, which Respondents have maintained through to the end of the proceedings should be governed by standards drawn from Indiana law, even if those costs, in the context of this Arbitration, are clearly sought to be recovered as compensatory damages based on breach of contract (i.e., breach of the arbitration clause).[1593] Respondents also recognize that the purpose of prejudgment interest is full compensation, and assert that interest within the range provided by the law of the seat (6% to 10%) is necessary "to fully compensate DAS."[1594] Respondents cannot maintain this position, as they attempt to do in Phase III, and at the same time take the position that a rate of 0.04% interest is good enough to achieve full compensation for Bayer.

877. There is no need here for the Tribunal to take a position on the law that should govern the award of prejudgment interest on contract damages in the absence of an agreement between the parties. The Tribunal considers that the parties did agree to the standards they drew from the law of the seat. In the course of the proceedings, they both accepted the range from 6% to 10% as appropriate to achieve the objective of full compensation. In Phase III, Respondents did not deny this procedural agreement but tried instead to introduce a narrow interpretation of this agreement, one that would free up logical space for a separate and distinct position respecting contract damages. Respondents ultimately failed, however, to advance a credible interpretation and to articulate a coherent position to the Tribunal. Instead, they suggested a distinction, based on commentary that does not support it, between interest on costs and interest on contract damages, a distinction that is

[1591] Respondents' Phase III Memorial, dated 16 October 2014, para. 33 n. 57
[1592] RLA-298: Gary B. Born, *International Commercial Arbitration*, Volume II (Kluwer Law International 2013) at 3105
[1593] Respondents' Phase I Costs Submission, dated 13 May 2014, paras. 19-29; Respondents' Phase III Costs Submission, dated 14 May 2015, para. 9
[1594] Respondents' Phase I Costs Submission, dated 13 May 2014, para. 12, unamended by Respondents' Phase III Memorial, dated 16 October 2014 or by Respondents' Phase III Costs Submission, dated 14 May 2015, para. 52

inconsistent with their position, reiterated in their final cost submissions, regarding interest on the Virginia litigation costs. The Tribunal is thus forced to discard as incoherent Respondents' Phase III arguments on prejudgment interest and to revert to the application of the standards the parties have drawn from the law of the seat and on which they have agreed concerning prejudgment interest. Those agreed standards are: full compensation to be achieved through simple interest calculated at a rate between 6% and 10% over a period capped at 4 years. The Tribunal applies these standards not because they were drawn from the law of the seat but because the parties have agreed on them.

878. In determining the appropriate rate within the agreed range, the Tribunal notes, as it did in respect of patent damages, that the simple interest being requested does not usually achieve full compensation as closely as would compound interest and thus resists any market pressure to go below the proposed 8%, which stands at mid-range. For these reasons, the Tribunal settles on a rate of 8% for pre-award interest on the breach of contract damages.

879. **Probability discount rate for the loss of opportunity analysis**—Another variable that must be determined before the Tribunal can proceed to a calculation of the loss of opportunity damages. As explained earlier, loss of opportunity under French law calls for a two-step analysis. First, the Tribunal must proceed to the "determination of the victim's situation if the legitimately invoked opportunity has been realized"; second, the Tribunal must proceed with the assessment of "the opportunity itself, that is its degree of probability."[1595] Thus, the Tribunal will first establish the gains the opportunity of which was lost, which in this case consist of the value to Bayer of Option B. This will be determined using the total trait value of E3 and E3+IR as proxy, multiplying by [redacted] in the Option B scenario, and subtracting the deregulation costs that Bayer would have had to bear under the Option B scenario. The Tribunal will then discount this Option B value to reflect the probability that it may not have been realized as the "but for the breach" scenario.

880. Had it not been for the breach, the likelihood of Option B being pursued and carried through to market is best reflected in the design-around analysis conducted earlier by the Tribunal in the hypothetical license negotiation context. The Tribunal concluded in that context, based on a thorough analysis of Dow's options, that none of the design-around alternatives Respondents put

[1595] Claimants' Phase III Post-Hearing Submission, dated 18 February 2015, para. 33, citing CL-683: Oudot, « La perte de chance: incertitude sur un préjudice certain », *Gaz. Pal.*, 26 February 2011

forward was available, while Option B was not only available, but also constituted Dow's benchmark and backup plan for the E3 project. This was clearly recognized by Respondents in their submissions to this Tribunal.[1596] As the Tribunal also noted, in its [redacted] The facts are clear that, in Dow's own evaluation, its next-best, non-infringing alternative was always Option B.

881. In those circumstances, the probability of Option B being realized as the "but for" scenario is very high indeed. Since Respondents themselves identified and pursued Option B [redacted], the likelihood that Dow would not have turned to it, or that Dow would have abandoned the triple-stack project in soybean entirely, is extremely small. Option B was not as attractive as the breaching path at the time, but Dow did stand to gain significantly from it. There may also be a small measure of uncertainty related to possible difficulties that could have been encountered in the breeding program, but there is no evidence that this was at all likely.

882. The most significant area of uncertainty, therefore, relates to the commercial success of the project. As with E3, Option B is set in an industry in which the trait business is at times described, notably by Bayer, as "high-risk", and the commercialization of events, as "unpredictable".[1598] At the same time, the smooth progression of Enlist E3 and Enlist E3+IR as a product line, including deregulation during these proceedings and imminent launch, can legitimately be taken as an advanced proof of concept for Option B, which, it is useful to recall, [redacted] Dow and MS Tech will have spent, by Respondents' own estimates, more than [redacted] on developing Enlist E3 and Enlist E3+IR, which [redacted][1599] Dow's massive and continued investment in these products would be difficult to square with anything approaching a high-risk rating and the revenue estimates already account for a measure of risk. There is no evidence suggesting that Option B might fail where Enlist E3 and Enlist E3+IR would succeed. The bulk of the evidence in the record tends to suggest that Enlist E3 and Enlist E3+IR are on a path to a resounding success and that Option B would have been on the same path had Dow not breached its license agreement. Having weighed the evidence carefully, and recognizing that a small measure of uncertainty is already accounted for in the 10% current value

[1596] Respondents' Phase III Memorial, dated 16 October 2014, para. 19
[1597] C-66: 2008 Dow-MS Tech Agreement, [redacted]
[1598] C-144: Z[redacted] First Witness Statement, para. 49
[1599] R-22: R[redacted] First Witness Statement, para. 12; Respondents' Opposition to Claimants' Request for Interim Measures, dated 30 October 2013, para. 181

discount that will be applied to projections and future flows, the Tribunal settles on a further 15% probability discount to reflect the possibility that Option B may not have been realized, had it not been for the breach of contract.

883. The Tribunal recognizes that Enlist E3+IR, a breeding stack of E3 and Dow's Event 419 (insect-resistance traits Cry1F and Cry1Ac, plus *pat*),[1600] brings an additional layer of uncertainty. Even within the non-breaching Option B scenario, [redacted], it is possible that Dow would have chosen a different path for insect resistance. The Tribunal accounts for this further uncertainty by applying an additional probability discount of 5% to acres associated with Enlist E3+IR.[1601]

884. **Deregulation costs**—Respondents usefully drew attention to the fact that the gains Bayer lost the opportunity to secure through the Option B [redacted] must be viewed in light of the consideration MS Tech was to receive from Bayer under the 2007 Bayer-MS Tech Agreement. Under that agreement, [redacted]

885. The deregulation cost associated with a breeding stack consisting of two deregulated events is not the same, however, as the cost of deregulating the event resulting from a molecular stack. Where two events have already been deregulated, a new event resulting from cross-breeding the two events does not normally require further deregulation.[1602] As Claimants have already incurred the cost of deregulating FG72, they have incurred the cost of deregulation for which they were responsible (unless Claimants would also have been responsible for deregulating Dow's Event 416 and Event 419, which nothing in the record seems to indicate).

[1600] R-22: R[redacted] First Witness Statement, para. 17

[1601] C-183: [redacted]

[1602] C-396: Jarosz Second Witness Statement at 10, n. 43, citing C-457, ISAAA Publication – Stacked Traits in Biotech Crops, at 4; Exh. CL-549, 3 C.F.R. 340.1 (Definitions) ("Regulated article. … Excluded are recipient microorganisms which are not plant pests and which have resulted from the addition of genetic material from a donor organism where the material is well characterized and contains only non-coding regulatory regions")

886. As Dr. W[redacted] testified in his witness statement when discussing the costs relating to deregulating events resulting from cross-breeding in relation to design-around alternatives, however, "[s]everal regulatory jurisdictions outside the U.S. require additional compositional and protein expression studies associated with breeding stacks of individually approved events."[1603] He estimated the cost of such studies at approximately [redacted] The Tribunal accepts this evidence, noting that Claimants have adduced no evidence to the contrary. It takes the proposed figure [redacted], and will accordingly deduct [redacted] from Bayer's gains from the projected Option B [redacted] relating to Enlist E3, and a further [redacted] from Bayer's gains from the projected Option B [redacted] relating to Enlist E3+IR.

887. **Royalty base**—Before proceeding to the calculations, the Tribunal will discuss the royalty base, in terms of number of acres, to which the royalties for contract damages, determined above, will be applied. Subject to the adjustment discussed below, the Tribunal adopts the numbers of soybean acres set out by Mr. Jarosz in his First Witness Statement at Tabs 9-16,[1604] and apportions a share of this total number of acres to Enlist E3 and Enlist E3+IR, according to the percentage of Dow's market attributed to each product in Mr. Jarosz's Second Witness Statement at Tab 16.[1605] Unlike the patent damages, which will be discussed below, the contract damages relate only to the Enlist E3 and Enlist E3+IR products, which contain the E3 event that was created in breach of the 1992 Agreement.

888. As discussed above in Part 5.I.C, no U.S.-nexus requirement applies to the royalty base used for the calculation of contract damages, and therefore all Canadian and Latin American sales, as well as U.S. sales, will be reflected in the royalty base. One downward adjustment to the number of acres in the royalty base is required however. Based on the evidence cited by Mr. Bakewell,[1606] which has not been contested by Mr. Jarosz beyond his statement it has no net effect when coupled with adjustments relating to a "ramp-up" effect,[1607] the number of acres attributed to Regional Seed

[1603] R-618: W[redacted] First Witness Statement at 21
[1604] C-317: Jarosz First Witness Statement
[1605] C-396: Jarosz Second Witness Statement. See also *id.*, Tab 9 (calculating acres attributable to Enlist E3 and Enlist E3+IR based on these percentages); C-515: Jarosz Third Witness Statement at 13, n. 46 (Mr. Jarosz's description of his methodology)
[1606] C-617: Bakewell Second Witness Statement at 71, citing notably C-440: [redacted]
[1607] C-528: Jarosz Fourth Witness Statement at 54

Companies (RSC) must be reduced by [redacted] to account for the fact that this proportion of RSC sales do not relate to the accused products.

889. Finally, while the Tribunal notes that Mr. Bakewell has objected that "Mr. Jarosz's allocation of planted acres on a per-product basis is based on revenue, not units,"[1608] as Respondents have not presented corrected numbers or an alternative methodology for calculation of acres, the Tribunal makes no adjustment to Mr. Jarosz's calculations based on this factor. Similarly, while Mr. Bakewell suggests that "Mr. Jarosz does not consider the gradual shift in product mix and the necessary ramp-up period of products containing the *pat* gene and therefore overestimates sales of the accused products in earlier years,"[1609] no attempt has been made by Mr. Bakewell or by Respondents to present adjusted calculations that would account for this factor. While Mr. Jarosz did attempt to put forward calculations accounting for the "ramp-up" effect,[1610] these aimed only to show that the ramp-up, when coupled with a reduction in the number of RSC acres included in the royalty base, had no net effect; they related only to the Enlist E3 product and were premised on internal documents cited by Mr. Bakewell that assumed a different total royalty base than Mr. Jarosz's calculations did. Mr. Jarosz's numbers cannot, therefore, serve as the basis for calculating a ramp-up effect across all accused products, in the absence of more detailed calculations from the parties. The Tribunal notes, additionally, that the original projections presented by Mr. Jarosz do demonstrate, for example, an increase in Enlist E3's importance (coupled with a decrease in Enlist Soybean's importance) within Dow's royalty base over time, indicating that Mr. Jarosz's numbers do appear to account, at least to some degree, for the entry of the newer Enlist E3 product on the market.

890. **Outline of calculations**—The Tribunal now proceeds to the calculation of the breach of contract damages under the loss of opportunity theory. As outlined in the tables presented below, the Tribunal begins by calculating the total number of acres forming the relevant royalty base for each product, for each year in which the royalty would apply, that is, from the projected launch of the products in 2016 to the expiry of the 2007 Bayer-MS Tech Agreement [redacted].[1611]

[1608] C-617: Bakewell Second Witness Statement at 71
[1609] *Id.*
[1610] C-528: Jarosz Fourth Witness Statement at 54, Tabs 14 ff.
[1611] C-209, Bayer-MS Tech Agreement of 2007 [redacted]

891. The annual Dow royalty base determined for Enlist E3 and Enlist E3+IR reflects the sum of projected Dow, Stine, and RSC sales, measured in acres, in the United States, Canada, and Latin America, as documented in the tables below. Note that all of these numbers are obtained by multiplying the total Dow U.S., Canadian, or Latin American soybean acres for the year[1612] by the U.S., Canadian, or Latin American market share for the relevant product for that same year.[1613] RSC acres must be further multiplied by [redacted], to account for the fact that this proportion of RSC sales do not relate to Enlist E3 and Enlist E3+IR.

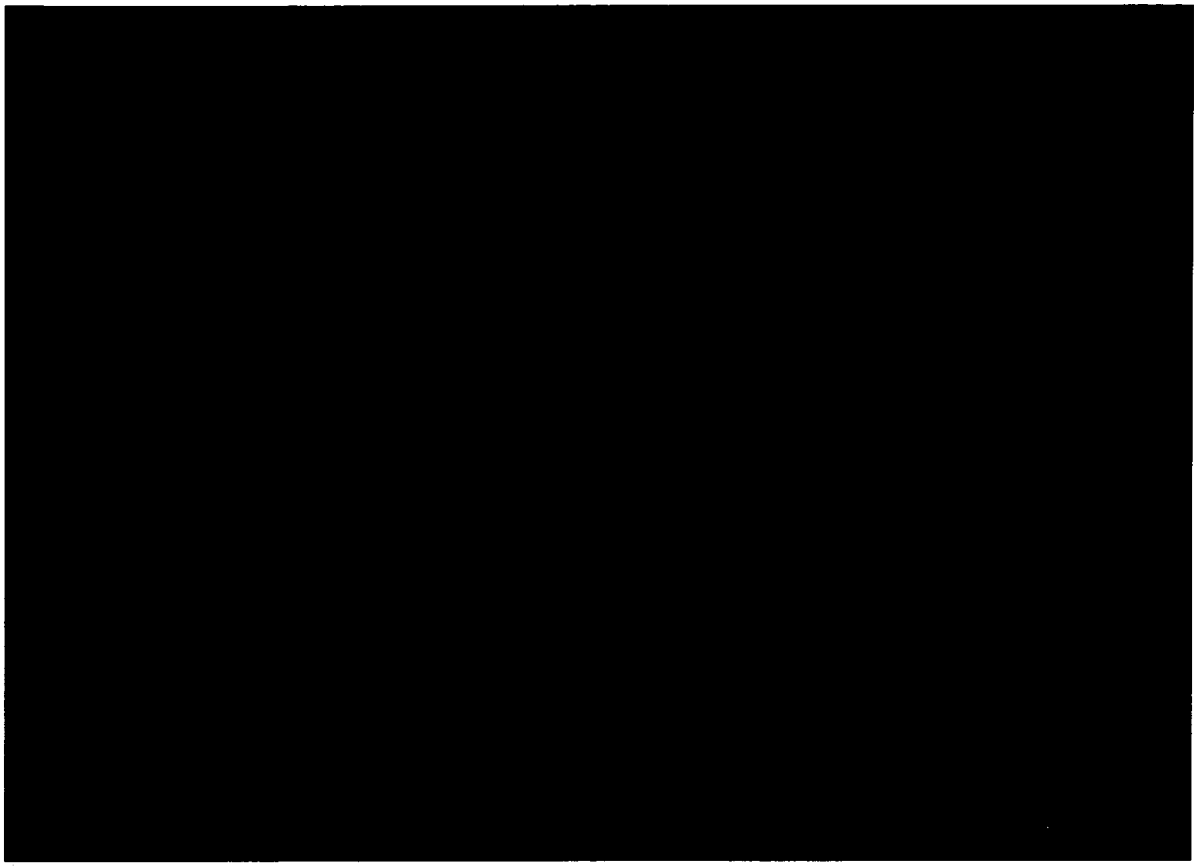
892. The total royalty bases, in acres, must then be multiplied by the royalty rates for each product, as determined by the Tribunal, to generate a total annual royalty, also recorded in the tables. Note that the Tribunal has determined that a royalty of [redacted] per acre applies to U.S. sales, based on a net trait value of [redacted] per bag in the U.S., as recorded in a Dow internal document cited by Claimants and Respondents.[1614] This same document specifies a [redacted] per bag net trait value in Canada, which the Tribunal has converted to a [redacted] per acre net trait revenue, arriving at a [redacted] per acre royalty due on Canadian acres. This "Canadian" rate, [redacted] has also been applied to Latin American sales, for which no separate rate is indicated in the internal Dow document. Note also that the royalty rates applicable to the RSC and Stine acres are multiplied by [redacted] to reflect the fact that Dow itself is expected to receive [redacted] on such sales.

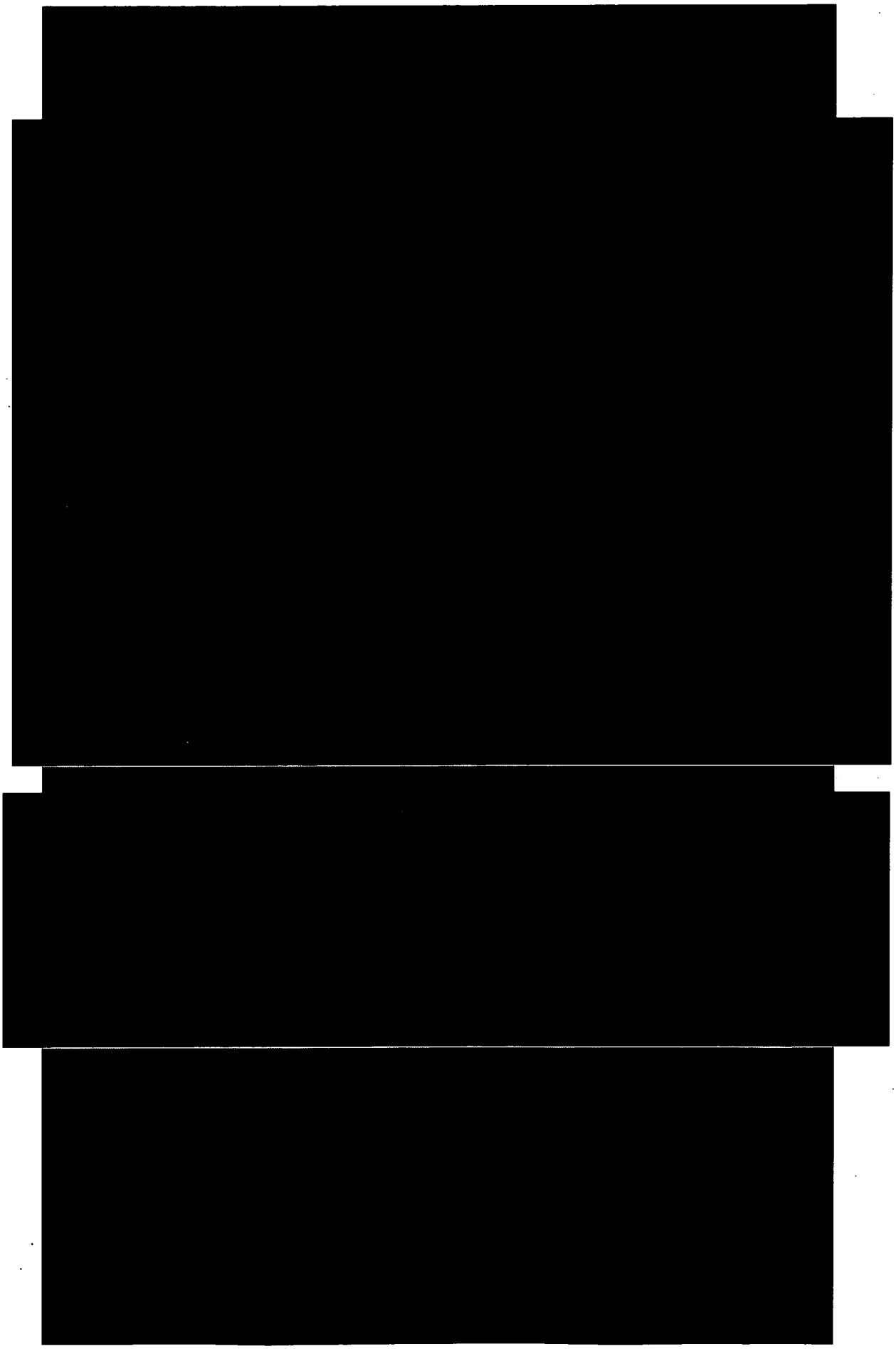
893. The annual royalties must then be adjusted to arrive at their value on [redacted] by applying the 10% discount for the present value of future dollars determined by the Tribunal above. For 2016 to 2030, the discount factors for an infringement date of [redacted] as provided by Mr. Jarosz are used.[1615] The discount factors used, as well as the discounted royalties for each year, are recorded in the tables below.

894. Next, the deregulation costs of [redacted] determined by the Tribunal must be subtracted from the total discounted royalties for Enlist E3, and [redacted] in deregulation costs must be subtracted from the total discounted royalties for Enlist E3+IR. The net amounts of royalties for Enlist E3 and Enlist E3+IR, less deregulation costs, are recorded in the tables below, and are then reduced by the probability discount rate of 15% and 20%, respectively, as was determined by the Tribunal, to arrive at a total amount of royalty owed for each product. As a final step, prejudgment

[1612] C-396: Jarosz Second Witness Statement, Tab 9
[1613] *Id.*, Tab 16
[1614] [redacted]
[1615] See e.g. C-515: Jarosz Third Witness Statement, Tab 10

interest of 8%, simple interest, for four years (or a total of 32%) must be calculated. The prejudgment interest owing, as well as the total amount of the discounted royalties plus interest, is recorded in the tables below.





$53,875,000 is pre-award interest. Interest is simple interest computed at a rate of 8% from [redacted] for a maximum period of 4 years.

B. Determination and Calculation of Damages for Patent Infringement

896. **Pre-award interest**—Before turning to the calculation of the royalty itself, the Tribunal looks at the question of pre-award interest on patent damages.

897. Claimants seek pre-award simple interest on patent damages, referring to the statutory provisions on prejudgment interest of the law of the seat of arbitration.[1616] The Indiana statute in question, they explain, provides for a range of interest rates from 6% to 10% and limits the award to simple interest for a maximum period of 4 years.[1617] Claimants ask the Tribunal to apply 8% simple interest for up to 4 years on the patent damages. Respondents do not contest that prejudgment interest can be awarded on the patent damages or that the law of the seat may provide an appropriate standard. They object, however, to prejudgment interest being awarded on projected sales.

898. The authority of the Tribunal to award prejudgment interest is not contested in this case. If the Tribunal looks to the substantive law governing the merits of the claim, section 284 of the Patent Act clearly provides for this authority: "the court shall award the claimant damages adequate to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by the infringer, together with interest and costs as fixed by the court." Both parties have referred to U.S. patent cases for general principles concerning the award of interest.[1618] The Tribunal therefore finds the parties to be in agreement that the Tribunal has authority to award prejudgment interest in line with the broad compensatory principles followed in U.S. patent law.

899. The more detailed standards for the award of interest, to which the Tribunal might refer for guidance concerning such questions as caps, rates, and compounding, were not the subject of much focus in the proceedings. Claimants seek only simple interest over a period of up to four years. On that basis the Tribunal need not consider the possibility of compound interest and will limit any award of interest to 4 years. This leaves the question of the rate of interest.

[1616] C-515: Jarosz Third Witness Statement at 14, 23; Claimants' Phase III Closing Presentation, dated 21 November 2014, slides 222 ff.
[1617] CL-307: IC 34-51-4-8
[1618] Claimants' Costs Submission, dated 14 May 2015, paras. 4 n. 9, 52, Table 2; Respondents' Phase I Costs Submission, dated 13 May 2014, para. 5; Respondents' Costs Submission, dated 14 May 2015, para. 53

900. Respondents have not objected to Claimants' references to the range of 6% to 10% or to Claimants' suggested rate of 8%. Respondents in fact consider this range to be a reasonable basis for ensuring that a party is made whole, since they themselves suggest it in the context of their request for interest on costs.[1619] The Tribunal uses this range as a matter not of *lex arbitri* but of party agreement. In determining the rate within the range, the Tribunal notes that the simple interest being sought does not usually achieve full compensation as closely as would compound interest and accordingly puts to the side any notion that the rate should be set closer to the bottom of the agreed range. The Tribunal therefore settles on a rate of 8% for pre-award, simple interest on patent damages.

901. Concerning the amounts to which interest should be applied, Claimants cite to the patent case *Nickson Indus* for the proposition that "prejudgment interest shall ordinarily be awarded absent some justification for withholding such an award."[1620] Respondents argue that awarding prejudgment interest on projected future sales would be incompatible with the compensatory basis for awarding them. They cite *Oiness v. Walgreen*, a patent case in which the court held that "[t]he trial court abused its discretion by awarding prejudgment interest on Oiness' entire damages award, including the projection of future damages."[1621] The Tribunal notes, however, that in *Oiness v. Walgreen*, the patentee had sought lost profits for past and projected sales, not a reasonable royalty. In this Arbitration, Claimants are not seeking lost profits and the Tribunal has settled on the principle of a lump-sum royalty. The royalty is established by application of a methodology focused on a hypothetical negotiation between the parties on the eve of infringement, in [redacted] Within the hypothetical negotiation construct, the royalty is here hypothesized as coming due on the eve of infringement. This is the reason why the figures in the projections are subject not only to prejudgment interest, but also to a discount aimed at bringing the numbers in those projections all the way down to their [redacted] value. This discount ensures that the award of prejudgment interest on sums calculated by reference to projected sales does not run afoul of the principle of compensation.

902. **Royalty base**—The Tribunal now briefly discusses the royalty base to which the royalties for patent damages will be applied, as it differs, in some key respects, from the royalty base discussed above with respect to contract damages. Notably, unlike contract damages, it is not restricted to

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[1619] Respondents' Phase I Costs Submission, dated 13 May 2014, para. 5; Respondents' Phase III Costs Submission, dated 14 May 2015, para. 53

[1620] CL-346: *Nickson Indus., Inc. v Rol Mfg. Co.*, 847 F.2d 795, at 800 (Fed. Cir. 1988)

[1621] RLA-699: *Oiness v. Walgreen Co.*, 88 F.3d 1025, 1033 (Fed. Cir. 1996)

sales relating to Enlist E3 and Enlist E3+IR but rather extends to all accused products. Subject to the adjustments discussed below, the Tribunal adopts the numbers of soybean acres set out by Mr. Jarosz in his First Witness Statement at Tabs 9-16,[1622] as apportioned among Enlist Soybean, Enlist E3, and Enlist E3+IR according to the percentage of Dow's market attributed to each product in Mr. Jarosz's Second Witness Statement at Tab 16.[1623] The Tribunal notes that while Dow's Event 419 (Insect Resistant Soybean), which is the event that was stacked by cross-breeding with E3 to create Enlist E3+IR, was found to infringe Bayer's patents in Part 3, above, neither party has given any indication that Dow will market Event 419 (other than in a stack with E3, as Enlist E3+IR) and no projected acreage has been calculated for Event 419 as distinct from Enlist E3+IR.

903. For cotton, the Tribunal has based its calculations of the number of acres relating to past WideStrike and WideStrike 3 sales on the numbers given by Mr. Jarosz in Tab 27 of his Second Witness Statement, supplemented by Mr. Bakewell's numbers for 2008 and 2013 in Attachment G-2.2 of his Second Witness Statement, as Mr. Bakewell's calculations account for the [redacted] start date of infringement and 1 October 2013 end date of infringement with the expiry of the '236 patent (note, however, that infringement began again on 24 June 2014, with the reissue of the '665 patent as RE44962).[1624] For future sales of cotton, the Tribunal adopts Mr. Bakewell's 14% downward adjustment to Mr. Jarosz's total numbers of cotton acres,[1625] which Mr. Jarosz has approved.[1626] The Tribunal apportions these acres between the WideStrike and Enlist Cotton products using the market-share percentages set out in Tab 24 of Mr. Jarosz's Second Witness Statement.[1627]

904. As with the contract damages royalty base, the number of acres attributed to Regional Seed Companies (RSC) in the patent damages royalty base is reduced by [redacted] to account for the fact that this proportion of total RSC sales do not relate to the accused produts. A further adjustment, one that was not applicable to contract damages, must also be made however. As mentioned above in Part 5.II.C on patent damages, all soybean and cotton acres attributed to Latin America must be removed from the royalty base due to a lack of nexus with the United States. Similarly, all numbers

[1622] C-317: Jarosz First Witness Statement
[1623] C-396: Jarosz Second Witness Statement. See also *id.*, Tab 9 (calculating acres attributable to Enlist E3 and Enlist E3+IR based on these percentages); C-515: Jarosz Third Witness Statement at 13, n. 46 (Mr. Jarosz's description of his methodology)
[1624] C-396: Jarosz Second Witness Statement; C-617: Bakewell Second Witness Statement
[1625] C-617: Bakewell Second Witness Statement, Attachment 3.3
[1626] C-528: Jarosz Fourth Witness Statement at 53
[1627] C-396: Jarosz Second Witness Statement

relating to Canadian cotton sales must be removed, and all numbers relating to Canadian soybean sales must be decreased by [redacted].

905. Finally, as discussed above with respect to contract damages, no adjustment is made for the "ramp-up" factor discussed by Mr. Bakewell.

906. **Outline of calculations**—The Tribunal now takes the values determined in Part 5.II for the establishment of the reasonable royalty for patent infringement and proceeds to calculating the royalty for the accused products, applying the current value discount and the interest determined above.

907. As outlined in the tables presented below, the Tribunal begins by calculating the total number of acres forming the relevant royalty base for each product, for each year in which the royalty will apply, that is, from the projected launch of the products in 2016 to the expiry of the RE44962 patent in 2023. There is no table for Enlist E3+IR as there were no projected sales of this product within the U.S. or Canada, and the royalty for Enlist E3+IR is therefore $0. Similarly, there is no table and no royalty associated with Event 419 (Insect Resistant Soybean) as the parties have not made any projections of sales of products containing this event on its own (as opposed to the stack combining this event with E3 that is Enlist E3+IR).

908. The annual Dow royalty base determined for each of the soybean products reflects the sum of (1) the total Dow U.S. soybean acres for the year[1628] multiplied by the percentage of the Dow U.S. market share allocated to the relevant product for that year;[1629] and (2) the total Dow Canadian soybean acres for the year[1630] multiplied by the percentage of the Dow Canadian market share allocated to the relevant product for that year[1631] and further multiplied by [redacted].[1632] The annual Stine and RSC royalty base for each year reflects the sum of (1) the total Stine U.S. soybean acres for the year[1633] multiplied by the percentage of the Stine U.S. market share allocated to the relevant product for that year;[1634] (2) the total RSC U.S. soybean acres for the year[1635] multiplied by the

[1628] C-396: Jarosz Second Witness Statement, Tab 9
[1629] *Id.*, Tab 16
[1630] C-396: Jarosz Second Witness Statement, Tab 9
[1631] *Id.*, Tab 16
[1632] To reflect that only [redacted] of Canadian soybean-product sales have the requisite nexus with the United States; note that Latin American sales have been excluded entirely due to the lack of this nexus
[1633] *Id.*, Tab 9
[1634] *Id.*, Tab 16
[1635] *Id.*, Tab 9

percentage of the RSC U.S. market share allocated to the relevant product for that year[1636] and further multiplied by [redacted];[1637] (3) the total Stine Canadian soybean acres for the year[1638] multiplied by the percentage of the Stine Canadian market share allocated to the relevant product for that year[1639]and further multiplied by [redacted];[1640] and finally (4) the total RSC Canadian soybean acres for the year[1641] multiplied by the percentage of the RSC Canadian market share allocated the relevant product for that year[1642] and further multiplied by [redacted]

909. With respect to cotton, the annual royalty base for each year of past sales of WideStrike ([redacted]) is the sum of the WideStrike and WideStrike 3 sales recorded for these years by Mr. Jarosz and Mr. Bakewell.[1645] For future sales of cotton, the annual royalty base for each product is calculated by multiplying the total Dow U.S. cotton acres for the year[1646] by the percentage of the Dow U.S. market share allocated to the relevant product for that year.[1647]

910. The total royalty bases, in acres, which are recorded in the tables below, must then be multiplied by the royalty rates for each product, as determined by the Tribunal, to generate a total annual royalty, also recorded in the tables. Note that the royalty rates applicable to Stine and RSC acres are multiplied by [redacted] to reflect the fact that Dow itself is projected to receive only a [redacted] royalty on such sales.[1648] Note also that, while the parties have accounted for the fact that infringement with respect to the WideStrike products began only on [redacted] and not at the beginning of the year, and that infringement ended on 1 October 2013, not at the end of the year, neither party appears to have incorporated the start date for WideStrike's infringement of the RE44962 patent

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[1636] *Id.*, Tab 16
[1637] To reflect that only [redacted] of the RSC sales relate to accused products
[1638] C-396: Jarosz Second Witness Statement, Tab 9
[1639] *Id.*, Tab 16
[1640] To reflect that only [redacted] of Canadian soybean-product sales have the requisite nexus with the United States; note that Latin American sales have been excluded entirely due to the lack of this nexus
[1641] C-396: Jarosz Second Witness Statement, Tab 9
[1642] *Id.*, Tab 16
[1643] To reflect that only [redacted] of the RSC sales relate to accused products
[1644] To reflect that only [redacted] of Canadian soybean-product sales have the requisite nexus with the United States; note that Latin American sales have been excluded entirely due to the lack of this nexus
[1645] C-396: Jarosz Second Witness Statement, Tab 27; C-617: Bakewell Second Witness Statement, Attachment G-2.2. As discussed above, the Bakewell numbers for [redacted] and 2013 were used, as these accounted for the date on which infringement began [redacted]) and temporarily ended (1 October 2013); the Jarosz numbers for 2014 were used as Mr. Bakewell did not address these
[1646] C-617: Bakewell Second Witness Statement, Attachment 3.3
[1647] C-396: Jarosz Second Witness Statement, Tab 24
[1648] See e.g. C-317: Jarosz First Witness Statement, Tabs 9, 10, 13, 14, 16

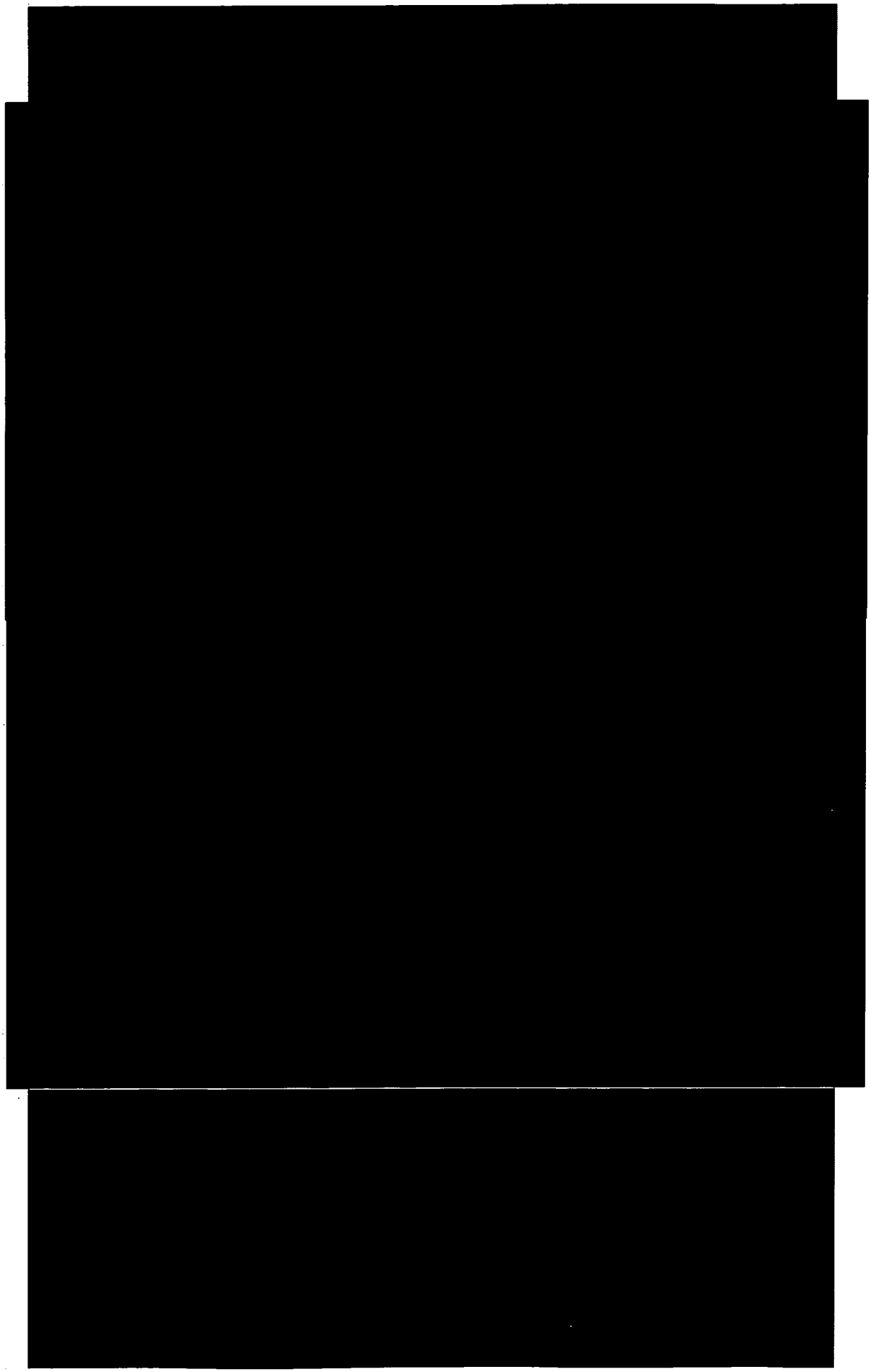
(24 June 2014)[1649] or the end date for infringement with respect to all products (26 September 2023) into its calculations. The Tribunal takes the 24 June 2014 start date into account by prorating the WideStrike royalty for the year 2014 based on the number of infringing days that year (190 out of 365, or 52%), which has the effect of treating only 52% of the sales that year as infringing, as an approximation of the effects of infringement beginning on 24 June. Similarly, the 2023 royalty rate for each accused product is prorated based on the number of infringing days that year (269 out of 365, or 74%) to approximate the effects of infringement stopping on 26 September 2023.

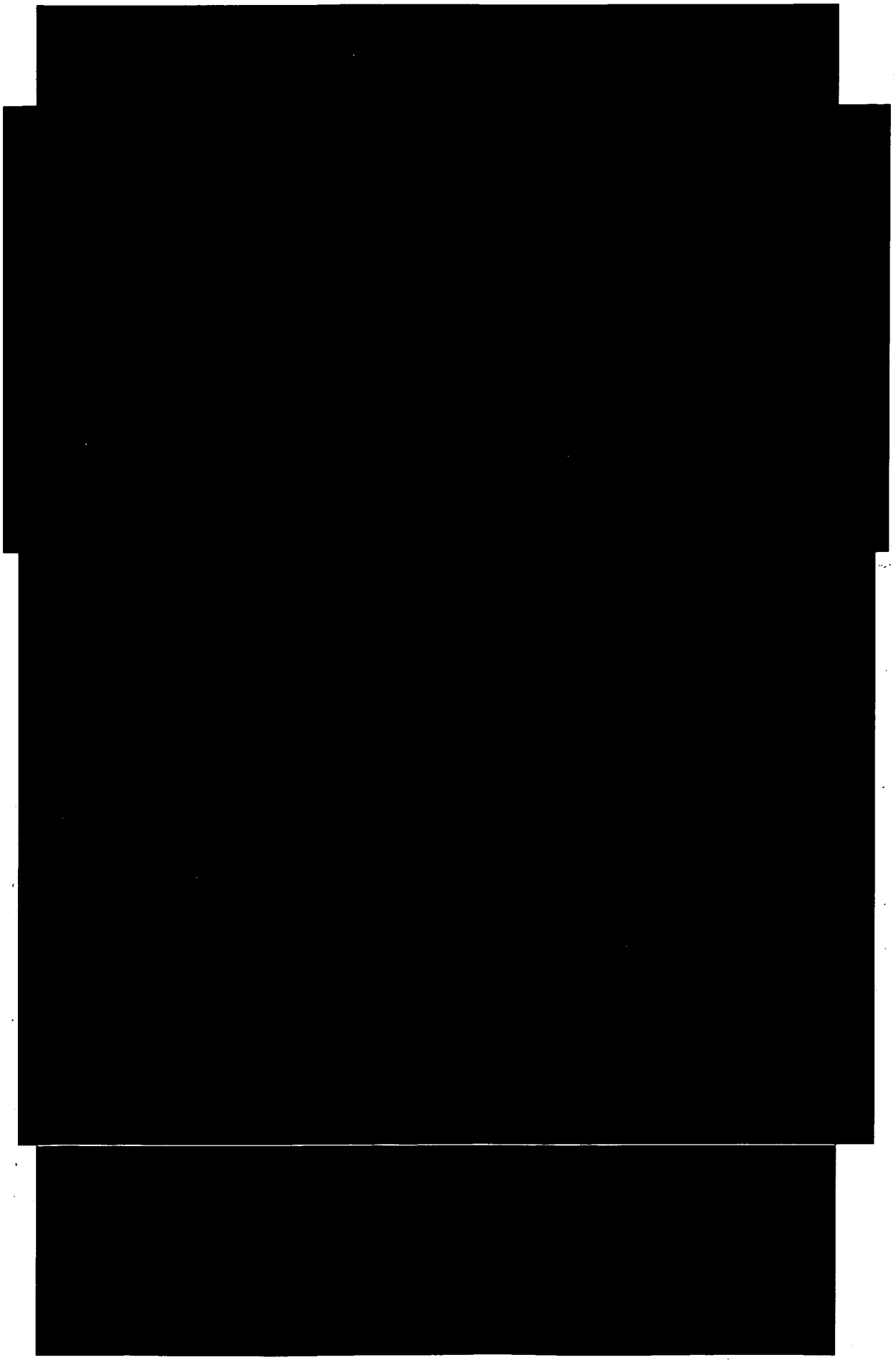
911. The annual royalties must then be adjusted to arrive at their value on [redacted], the date of first infringement of the patents, by applying the 10% discount determined by the Tribunal for the present value of future dollars above. For 2016 to 2023, the discount factors for an infringement date of [redacted] as provided by Mr. Jarosz are used[1650] though the 2023 value is adjusted slightly, in order to take a mid-period-of-infringement cash flow (as 2023 infringement will occur from 1 January 2023 to 26 September 2023), rather than a mid-year cash flow. This 10% discount rate is also applied to discount royalties owing on past sales of WideStrike products back to the [redacted] date on which infringement began, by applying Mr. Jarosz's methodology (assuming a mid-year cash flow and 365 days a year), though discount factors for years in which infringement did not occur for the entire year were adjusted to account for a mid-period-of-infringement cash flow, rather than a mid-year cash flow. The discount factors used, as well as the discounted royalties for each year are recorded in the tables below.

912. As a final step, pre-award interest of 8%, simple interest, for four years (or a total of 32%) must be calculated for each of the royalties that had been discounted to a present value for [redacted]. The pre-award interest owing, as well as the total amount of the discounted royalties plus interest, is recorded in the tables below.

[1649] Note that for all other products, which are subject to future damages only, infringement is assumed to start at the beginning of 2016

[1650] See e.g. C-515: Jarosz Third Witness Statement, Tab 10





913. **The Tribunal's determination of the reasonable royalty**—Based on the above calculations, the Tribunal determines the amount of the lump-sum reasonable royalty as follows: $13,733,000, of which $3,329,000 is pre-award interest, for the WideStrike and WideStrike 3 products; $13,359,000, of which $3,240,000 is pre-award interest, for Enlist Cotton; $27,657,000, of which $6,705,000 is pre-award interest, for Enlist E3; $0 for Enlist E3+IR and Insect Resistant Soybean; and $13,088,000, of which $3,173,000 is pre-award interest, for Enlist Soybean. Interest is simple interest computed at a rate of 8% from [redacted] for a maximum period of 4 years.

C. Double Recovery

914. As briefly explained earlier, the applicability of two frameworks for monetary relief in these proceedings creates potential issues of double recovery. The parties agree that double recovery for the same harm arising out of the same set of operative facts is prohibited by both French law and U.S. law.[1651] The damages under both frameworks having been calculated, the Tribunal now turns to this issue.

915. Although Claimants acknowledge that, in principle, they are not entitled to recover twice, the details of how the Tribunal should apply the relevant principle became the subject of an exchange in the Phase III post-hearing submissions, where Respondents insisted on a running royalty reflecting future sales and a lump-sum for past violations.[1652] This approach fails to account for the fact that contract damages, which must be awarded as a lump sum, are bound to reflect losses calculated on the basis of future flows. Awarding both a lump sum and a running royalty, as the Tribunal determined earlier, would deprive the Tribunal of the comparative basis it needs to ensure that double recovery does not result from this Award. Claimants recognize this difficulty and acknowledge that, in order to ensure that there is no double recovery, the Tribunal may have to distinguish between the products-at-issue.[1653]

916. With this in mind, the Tribunal notes that the range of products at issue under the two theories is different. More precisely, of all the products in this case, only two—Enlist E3 and Enlist E3+IR—are involved in the claim of breach of contract. Of course the breach of contract by Respondents triggered the termination of the license agreement, which in turn removed license protection in respect of patents that had also been and are still being practiced by Respondents in cotton as well

[1651] Claimants' Phase III Post-Hearing Submission, dated 18 February 2015, para. 43; Respondents' Phase III Post-Hearing Submission, dated 18 February 2015, para. 64
[1652] Respondents' Phase III Post-Hearing Submission, dated 18 February 2015, paras. 59-62
[1653] Claimants' Phase III Post-Hearing Submission, dated 18 February 2015, para. 42

as in double-stack soybean products. Although the operative facts are the same, the harm—the economic loss—resulting from infringement in cotton and double-stack soybean products is quite distinct and independent from the harm resulting from the license violation and infringement related to Enlist E3 and Enlist E3+IR. This is confirmed by Mr Bakewell, who writes: "Four of the six accused products are disassociated with the alleged breach. Accordingly, it is improper for Mr. Jarosz to include those other products (i.e., Enlist soybean, WideStrike Cotton, WideStrike 3 Cotton, and Enlist Cotton) in his contract damages estimates."[1654]

917. The Tribunal is therefore satisfied that double recovery can potentially arise only in respect of Enlist E3 and Enlist E3+IR. Enlist E3 and Enlist E3+IR are at issue under both the patent infringement and the contract regime. The recovery mandated by French contract law is broader that the recovery allowed as a reasonable royalty under patent law. The contract law damages clearly cover the measure of damages associated with the economic harm that is compensable under the patent regime. For this reason, the Tribunal keeps the reasonable royalty related to Enlist E3 and Enlist E3+IR separate in the Award. For these products, the Tribunal will order payment of the reasonable royalty amount, topped by the difference between the royalty and the contract damages. The Tribunal perceives no other respect in which recovery under breach of contract and patent infringement theories could be duplicative, and none has been called to the Tribunal's attention.

6. COSTS

918. This part concerns both the costs of this arbitration and the so-called Virginia litigation costs. The Tribunal begins with the latter.

I. Virginia Litigation Costs

919. The Tribunal will first address the issue of the costs of the proceedings in the U.S. District Court for the Eastern District of Virginia, referred to in this Arbitration as the Virginia litigation. In the context of these arbitral proceedings, the determination of the Virginia litigation costs has been viewed as a contractual issue.[1655] This issue was addressed by the parties in Phase I of the Arbitration and was reserved for decision in this Award alongside the issue of costs resulting from

[1654] R-617: Bakewell Second Witness Statement at para 150
[1655] Terms of Reference, dated 4 October 2013, para. 70

the present Arbitration. The parties re-stated their position in their final submissions on costs at the end of Phase III.[1656]

920. The Tribunal notes that its authority to award costs in relation to the Virginia litigation is not contested.[1657] As the claim for the Virginia litigation costs was initiated by Respondents, the Tribunal first lays out Respondents' position and then Claimants' position before proceeding to a determination.

A. Respondents' Position on Virginia Litigation Costs

921. Respondents argue that they should be awarded their costs and fees incurred in the Virginia litigation, amounting to [redacted], as damages for Claimants' breach of the arbitration clause in Article 12 of the 1992 Agreement. Respondents argue that Claimants were found to have breached the arbitration clause in the Virginia litigation, where Judge Jackson characterized certain of Bayer's arguments opposing arbitration as "illogical and imprudent" and noted that Bayer "cite[d] no legal authority for [its] assertion" that the Patent Act prohibited arbitration of patent claims unless the parties expressly stated their intent to arbitrate such claims.[1658]

922. Respondents further argue that the Virginia litigation was not a victory for Claimants: the court found that Bayer's claims were arbitrable. The stay ordered by the district court was a result of this finding of arbitrability,[1659] and was not due to the fact that the court believed that the arbitration would be resolved quickly.[1660] Furthermore, the fact that the court decided to stay the case rather than to dismiss it is, in Respondents' view, irrelevant.[1661]

923. Regarding Claimants' argument in favor of parallel arbitration and litigation proceedings, Respondents note that the court in the Virginia litigation rejected Bayer's interpretation of the *Promega* case[1662] as addressing whether patent infringement claims fall within the scope of an arbitration clause in a license agreement, because this issue was never raised by the parties in the *Promega* case. The *Genentech* case[1663] raised by Claimants in this Arbitration similarly does not

[1656] Procedural Order No. 10, dated 23 May 2014, para. 10
[1657] Terms of Reference, dated 4 October 2013, para. 70
[1658] R-10: *Bayer CropScience AG v. Dow AgroSciences LLC*, No. 2:12-cv-00047-RAJ-TEM (E.D. Va.), Memorandum Opinion & Order, dated 13 July 2012, at 20-21
[1659] *Id.* at 16-22
[1660] Respondents' Costs Reply, dated 21 May 2015, paras. 6-7
[1661] Respondents' Costs Submission, dated 14 May 2015, para. 15
[1662] CL-29: *Promega Corp. v. Life Technologies Corp.*, 674 F.3d 1352 (Fed. Cir. 2012)
[1663] CL-28: *Sanofi-Aventis Deutschland GmbH v. Genentech, Inc.*, 716 F.3d 586, 592 (Fed. Cir. 2013)

concern whether a patent infringement claim should be referred to arbitration pursuant to a license agreement. Rather, in that case, the issue was whether a U.S. court's finding of non-infringement disposed of all the issues in a pending arbitration concerning the breach of a license agreement governed by German law. Respondents conclude that even if these cases provided a good faith basis for Bayer to contest its obligation to arbitrate, Claimants had a contractual duty to submit their patent claims to arbitration under Article 12 of the 1992 Agreement, that this obligation was breached, and that the question of good faith is irrelevant.[1664]

924. Respondents also argue that, once referred to arbitration by the district court, Claimants refused to commence arbitration, claiming that Dow must commence arbitration at Bayer's place of business in Germany; as a result, Respondents had to file a second motion, and incur additional costs, and the district court ordered Bayer to commence arbitration in accordance with Article 12 of the 1992 Agreement and in a delay of at least seven months.[1665] Once Bayer had commenced arbitration, it returned to the district court repeatedly, including to make a request to lift the stay of the Virginia litigation, which it pressed even after the Arbitral Tribunal had been constituted on 8 August 2013,[1666] a request that the district court denied, but which generated expenses for Respondents, including traveling to Norfolk, Virginia, for a hearing.[1667] Respondents note that Claimants also unsuccessfully petitioned the ICC Court to appoint a single arbitrator[1668] and nominated an arbitrator with a clear conflict, due to his firm's ties with the parties, who unilaterally declined his nomination.[1669]

[1664] Respondents' Costs Submission, dated 14 May 2015, paras. 15-16

[1665] R-112: *Bayer CropScience AG v. Dow AgroSciences LLC*, No. 2:12-cv-00047-RAJ-TEM (E.D. Va.), Defendants' Memorandum in Support of Their Motion for an Order of Clarification Regarding Initiation of Arbitration Proceedings, dated 27 July 2012, para. 8

[1666] Letter from the ICC Court (A. Fessas) to the Parties and Tribunal, dated 8 August 2013

[1667] R-41: *Bayer CropScience AG v. Dow AgroSciences LLC*, No. 2:12-cv-00047-RAJ-TEM (E.D. Va.), Plaintiff's Status Report, dated 27 February 2013, at 3, 5-6; R-42: *Bayer CropScience AG v. Dow AgroSciences LLC*, No. 2:12-cv-00047-RAJ-TEM (E.D. Va.), Plaintiff's Status Report, dated 27 June 2013; R-43: *Bayer CropScience AG v. Dow AgroSciences LLC*, No. 2:12-cv-00047-RAJ-TEM (E.D. Va.), Plaintiff's Memorandum in Support of Lifting the Stay, dated 7 August 2013; R-44: *Bayer CropScience AG v. Dow AgroSciences LLC*, No. 2:12-cv-00047-RAJ-TEM (E.D. Va.), Order, dated 11 September 2013

[1668] R-355: *Bayer CropScience AG v. Dow AgroSciences LLC*, No. 2:12-cv-00047-RAJ-TEM (E.D. Va.), Defendant's Reply Memorial in Further Support of Their Motion to Maintain the Stay Pending Arbitration or, in the Alternative, to Dismiss the Complaint, dated 9 August 2013, at 2-3

[1669] R-359: *Bayer CropScience AG v. Dow AgroSciences LLC*, No. 2:12-cv-00047, RAJ-TEM, DAS's Reply Memorandum in Further Support of Their Motion to Maintain the Stay Pending Arbitration or, in the Alternative, to Dismiss the Complaint, dated 3 May 2012

925. Finally, Respondents argue their successful request to bifurcate this arbitral proceeding was not a delay tactic, but was rather made to save costs and time.

B. Claimants' Position on Virginia Litigation

926. Claimants argue that they are entitled to all their costs incurred in the Virginia litigation, amounting to [redacted]. In Claimants' view, their initiation of the Virginia litigation was a valid attempt to bring about the resolution of the dispute.[1670] According to Claimants, the choice was made to file a complaint for patent infringement with the district court because, having terminated the 1992 Agreement containing the arbitration agreement shortly before, the matter in controversy from Claimants' standpoint was Dow's infringement of Bayer's patents.[1671] The issue as to whether the license agreement should be held to be in force was simply a defense to patent infringement claims that Dow could submit, and the arbitration agreement in Article 12 of the 1992 Agreement arguably only encompassed contractual claims, not patent infringement claims. Claimants took the position in the present Arbitration that "Article 12 of the 1992 Agreement does not extend to patent disputes; yet, ... consent[ed] to the jurisdiction of the Tribunal with respect to the patent infringement claims."[1672]

927. Claimants further argue that Respondents' resistance to the district court litigation was a delay tactic. In Claimants' view, the court stayed the Virginia litigation based on Respondents' promise that arbitration proceedings would be swift, taking about two weeks,[1673] but that Respondents aimed to delay resolution of the dispute while Bayer's patents expired. Nine months after the stay, the Arbitral Tribunal had still not been formed[1674] and Claimants had to file of a status report with the district court on 27 February 2013, followed by brief on 7 August 2013, urging the district court to lift the stay. On the following day, however, the Tribunal was formed, and from that point on, Bayer engaged fully in the Arbitration.[1675] Claimants refer to Dow's statement before the Tribunal that "litigating a complex multi-patent case ... typically takes more than four years,"[1676] while Dow

[1670] Claimants' Costs Submission, dated 14 May 2015, para. 11
[1671] *Id.*, para. 7. Claimants cite CL-28: *Sanofi-Aventis Deutschland GmbH v. Genentech, Inc.*, 716 F.3d 586, 592 (Fed. Cir. 2013) as a case decided after Bayer filed the Virginia litigation but that supports their position that, by "electing to terminate the license," a party is "free to litigate infringement in the United States"
[1672] Claimants' Letter to the Tribunal, dated 11 October 2013
[1673] R-9: Virginia Litigation Hearing Transcript, dated 3 July 2012, at 8:20-9:17
[1674] C-545: *Bayer CropScience AG v. Dow AgroSciences LLC*, No. 2:12-cv-00047-RAJ-TEM (E.D. Va.), Plaintiff's Status Report, dated 27 February 2013, at 1-4
[1675] Claimants' Costs Submission, dated 14 May 2015, para. 9
[1676] R-49: Virginia Litigation Hearing Transcript, dated 10 September 2013, at 13:16-21

had stated in district court that this Tribunal's "decision is to be rendered within six months after the signature of the terms of reference,"[1677] as an example of its strategy of delay.

928. Claimants also note that no finding was made, during the Virginia litigation, that they had "breached" the arbitration clause in Article 12 of the 1992 Agreement.[1678]

C. Tribunal's Determination: Respondents Awarded Virginia Litigation Costs

929. The claim for recovery was initially made by Respondents, who alleged a breach by Claimants of the arbitration agreement, being article 12 of the 1992 Agreement.[1679] It is not contested that the Tribunal may award, as damages for breach of contract, costs and fees incurred in litigation brought by one of the parties in violation of an arbitration agreement.[1680] This was reflected as follows in the Terms of Reference: "Did Bayer breach the Licence Agreement by commencing litigation in the Virginia Federal Court [i.e., U.S. district court], and if so, what is the proper measure of damages for such breach?"[1681] Respondents then provided details of the Virginia litigation costs in their Phase I Costs Submission.

930. In their Phase I Costs Submission, Claimants also sought their Virginia litigation costs, but did not elaborate on the legal basis for the claim.[1682] In detailing their claim for these costs, they made arguments to the effect that they initiated the Virginia litigation in good faith, in view of some of the U.S. case law pertaining to the arbitration of patent infringement cases. These arguments can be interpreted as referring to standards governing the allocation of costs in arbitration rather than situating the issue within a breach of contract framework. And indeed, Claimants do address the Virginia litigation costs under the same principles as those governing the recovery of the costs of the arbitration.[1683] In their final submission on costs, however, Claimants appear to revert to a breach of contract analysis: "there would have been no costs in the Virginia litigation (or this Arbitration) if Dow had not breached the 1992 Agreement."[1684]

[1677] *Id.* at 6:2-7:8
[1678] Claimants' Costs Reply, dated 21 May 2015, para. 14
[1679] Respondents' Answer to the Request for Arbitration, dated 29 October 2012, paras. 53-54, 83(d)
[1680] RLA-309: P. Fouchard, E. Gaillard & B. Goldman, *La convention d'arbitrage*, "Exécution en nature de l'obligation de déférer aux arbitres les litiges visés par la convention d'arbitrage" (Litec 1996) n° 631 n. 10
[1681] Terms of Reference, dated 4 October 2014, at para. 70
[1682] Claimants' Phase I Costs Submission, dated 13 May 2014, para. 2
[1683] Claimants' Costs Submission, dated 14 May 2015, paras. 2, 5-11
[1684] Claimants' Costs Reply, dated 21 May 2015, para. 14

931. The Tribunal begins with the question of whether Claimants breached the arbitration agreement by starting the Virginia litigation.

932. Claimants' position in this arbitration has been that "Article 12 of the 1992 Agreement does not extend to patent disputes."[1685] More specifically, Claimants took the position that Dow's "license defense" was within the scope of the arbitration agreement, but that Bayer's infringement claims were not, so that Dow's defense should be arbitrated simultaneously with a parallel U.S. district court proceeding on the patent infringement claims.[1686] This has not raised a question of jurisdiction in this Arbitration because, at the beginning of the proceedings, Claimants consented to the jurisdiction of the Tribunal with respect to the patent infringement claims independently of the arbitration agreement.[1687] Claimants insist that the question of breach has not been judicially determined in the Virginia litigation, while Respondents claim that it has.[1688]

933. The court in the Virginia litigation certainly did address the issue of whether the arbitration clause between the parties compelled them to submit to arbitration not only contract claims, but also patent infringement claims.[1689] Claimants argue that, because the court reserved jurisdiction when compelling arbitration, purportedly to ensure that the parties would proceed swiftly with the arbitration, the court did not conclusively determine the issue. The Tribunal rejects this argument, finding that the court did proceed to a judicial determination of the issue. In his memorandum opinion, Judge Jackson first discusses the issue of whether the parties have effectively subjected the "arbitrability" question to the final determination of the Tribunal and concludes, after a review of persuasive precedents, that he is not prepared to take that position. He then reverts to the "general rule" that whether particular disputes are "arbitrable" under a contractual arbitration clause is a question for the court to decide.[1690] He then proceeds to deciding the issue as follows:

> The Court next addresses whether it should compel arbitration in this case and which claims should be subject to arbitration. In order to make this determination, the Court may employ a three-part test, examining: "(1) whether the parties have made an agreement to arbitrate; (2) the scope of the agreement; [and] (3) whether the federal statutory claims are arbitrable." (*Woolridge*, 2006 WL 3424469, at * 1). In the instant case, Defendants have

[1685] Claimants' Letter to the Tribunal, dated 11 October 2013
[1686] Claimants' Costs Reply, dated 21 May 2015, para. 44
[1687] Claimants' Letter to the Tribunal, dated 11 October 2013
[1688] Claimants' Costs Reply, dated 21 May 2015, para. 13; Respondents' Costs Submission, dated 14 May 2015, para. 9
[1689] R-10, *Bayer CropScience AG v. Dow AgroSciences LLC*, No. 2:12-cv-00047-RAJ-TEM (E.D. Va.), Memorandum Opinion & Order, dated 13 July 2012, at 16 ff.
[1690] *Id.* at 16-17

> satisfied the three prongs in order to compel arbitration. First, the parties clearly have agreed to arbitrate based on the Arbitration Clause in the License Agreement. See License Agmt. at Art. 12. Second, the scope of that Arbitration Clause is very broad, namely "[a]ny controversies or disputes *in connection with* this Agreement." License Agmt. at Art. 12 (emphasis added). As already noted, the parties do not dispute that the alleged breach and termination of the License Agreement are arbitrable issues. Third, under 35 U.S.C. § 294, patent infringement claims are expressly arbitrable. Therefore, the Court finds that both the alleged breach and termination of the License Agreement and the patent infringement claims are subject to arbitration here.[1691]

934. This determination is entirely consistent with the court reserving jurisdiction to monitor the parties' behavior. Depending on how matters were going to unfold, the court may have found, for example, that one of the parties had ultimately waived an otherwise perfectly valid right to arbitrate. This has no impact on the scope of the arbitration agreement found in the 1992 Agreement as judicially determined in the Virginia litigation.

935. There is no need here to comment on the issue of the appropriate allocation of tasks between judicial and arbitral authority on this particular point because the Tribunal agrees with Judge Jackson's finding that the scope of the arbitration agreement extends to the patent infringement claims in this case. In adopting this view, the Tribunal takes particular note of the considerable difference in breadth between the arbitration and choice of law clauses in the 1992 Agreement.[1692] The Tribunal also rejects any notion that the termination of the 1992 Agreement could somehow have deprived the agreement to arbitrate of its continued effects.[1693] Claimants insist that the court did not specifically determine whether the arbitration agreement was breached. Under a basic breach of contract analysis, however, Claimants must be found to have breached the arbitration agreement by submitting their patent infringement claims to a judicial forum, and the Tribunal so finds.

936. It will not be necessary to determine which law provides the appropriate contract framework for the recovery of the costs because, as Respondents suggest (and Claimants do not contest), "the law of all of the possible jurisdictions at issue here is consistent in holding that an arbitration clause is a contractual obligation, the breach of which gives rise to a cause of action for damages."[1694]

937. Claimants cite cases, however, to show that there was nothing "striking" or "inconceivable" about their position on the scope of the arbitration agreement, with a view to establishing that Bayer's

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[1691] *Id.*
[1692] See comparison of the breadth of these two clauses above in Part 4.II.B.3
[1693] Claimants' Costs Reply, dated 21 May 2015, paras. 52-53, 64
[1694] Respondents' Phase I Costs Submission, dated 13 May 2014, para. 13, n. 17

position was taken and maintained in good faith. Given this reference to good faith, the Tribunal pauses to look briefly at French law in this context, without making a determination as to its applicability. Reference was made earlier in this Award to the provisions of the French Civil Code dealing with "intentional" breach.[1695] Under French law, one who breaches intentionally is liable for any harm caused directly by the breach, not only foreseeable harm. [1696] In relation to Respondents' Virginia litigation costs, the Tribunal finds that the question of good faith can have no impact because the legal fees and costs being sought as damages were clearly foreseeable as liable to result from the breach of the arbitration agreement.

938. Were Respondents' Virginia litigation costs the direct result of Claimants' breach? It stands to reason that they were. There would have been no Virginia litigation and no associated costs had Claimants performed their main obligation under the agreement to arbitrate, and Respondents' costs were incurred as a direct result of the breach. The Tribunal will therefore award Respondents their Virginia litigation costs.

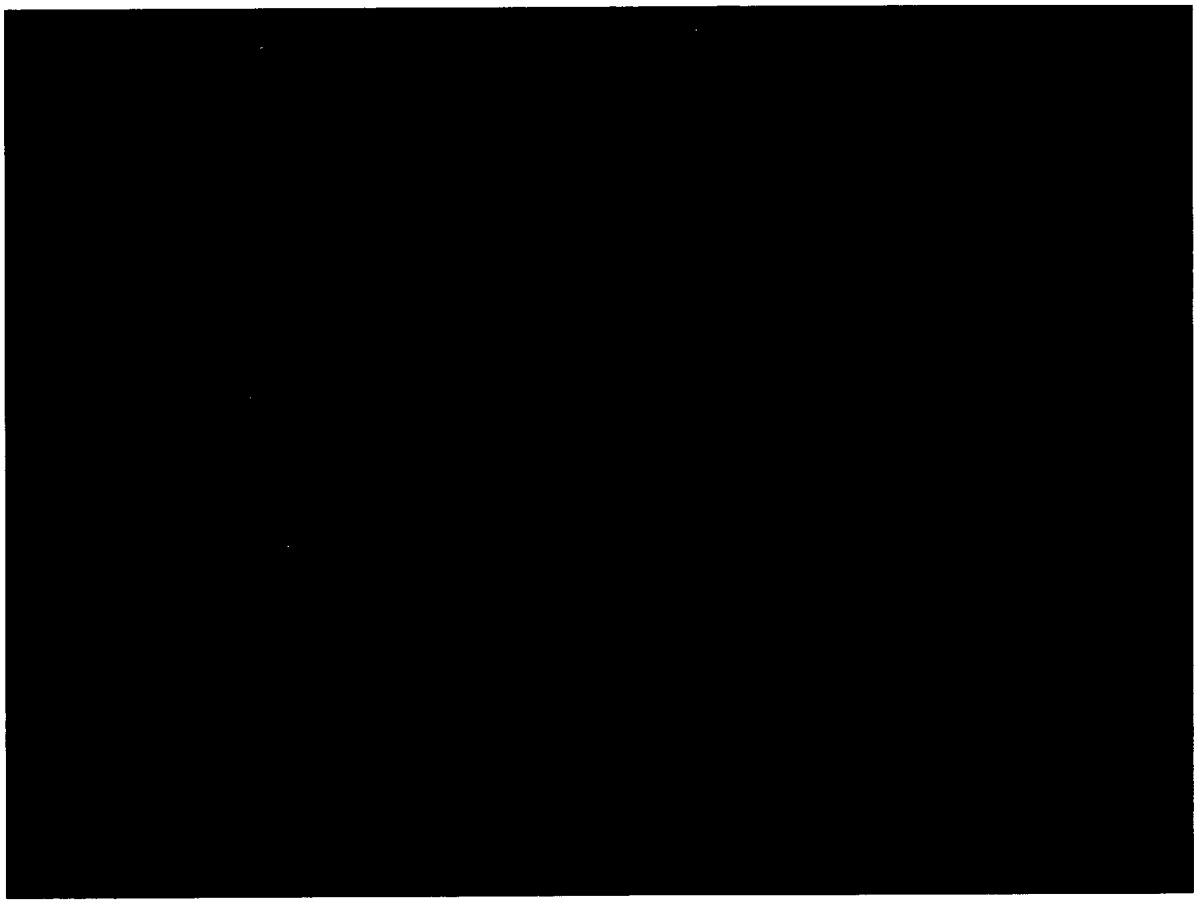
939. The Tribunal now turns briefly to Claimants' request that they be awarded their costs. As indicated earlier, the legal basis for this request is not entirely clear from the submissions. If Claimants' submissions are to be read as seeking damages for breach of contract, the focus would be placed on characterizing Respondents' breach of the 1992 Agreement, which the Tribunal determined in Part II of this Award, as having caused the entire dispute, including the Virginia litigation. The Virginia litigation costs, however, were incurred in addition to the costs of this Arbitration. The Tribunal finds, therefore, that insofar as Respondents' breach of the 1992 Agreement can be viewed as a cause of the Virginia litigation costs, the chain of causation was clearly broken by Claimants' breach of the agreement to arbitrate. If Claimants' submissions are to be read, instead, as seeking the allocation in their favor of "the costs of the arbitration" under Article 37 of the ICC Rules, then the Tribunal finds that Claimants' Virginia litigation costs are not part of "the costs of arbitration." They are, rather, costs that were incurred by Claimants in furtherance of a breach of the agreement to arbitrate.

[1695] CL-1/RLA-107: Civil Code, translated by Georges Rouhette with the assistance of Dr. Anne Rouhette-Berton, Arts. 1150-51

[1696] *Id.*

940. Respondents have provided sufficient detail of their costs in connection with the Virginia litigation. For the foregoing reasons, the Tribunal will award the entirety of Respondents' Virginia litigation costs, in the amount sought of $697,584.92.

941. The parties are in agreement that pre-award simple interest on these amounts is appropriate, with a view to achieving full compensation, at a rate within a range from 6% to 10%.[1697] The Tribunal will apply a rate 8% on the amounts detailed by Respondents from the time they were incurred to the date of the Award, as shown in the table below.



[1697] Claimants' Costs Submission, dated 14 May 2015, paras. 4 n. 9, 52, Table 2; Respondents' Phase I Costs Submission, dated 13 May 2014, para. 5; Respondents' Costs Submission, dated 14 May 2015, para. 53

II. The Costs of the Arbitration

942. The parties are in agreement as to the legal principles governing the allocation of costs.[1698] The costs of arbitration include arbitrators' fees and expenses, and "the reasonable legal and other costs incurred by the parties for the arbitration."[1699] Reasonable costs are "objectively necessary and fitting, given the factual and legal complexity of the case including the anticipated time it would take."[1700]

943. Article 37 of the ICC Rules grants the Arbitral Tribunal a broad discretion with respect to costs, stating that the Tribunal "shall fix the costs of the arbitration and decide which of the parties shall bear them or in what proportion they shall be borne by the parties" and "may take into account such circumstances as it considers relevant, including the extent to which each party has conducted the arbitration in an expeditious and cost-effective manner." Other considerations may include whether a party (1) "brought exaggerated, unmeritorious or legally untenable claims"; (2) "made unnecessarily lengthy submissions or pleadings"; (3) "raised new or unsubstantiated arguments late in the proceedings"; or (4) "misused the procedure to cause extensive and unwarranted delays."[1701]

944. As a matter of practice, "the prevailing party is presumptively entitled to a costs award,"[1702] with tribunals often applying a success-rate percentage, whereby parties recover an amount of their reasonable costs proportionate to the success of their claims and defenses. However, it is widely accepted that, even as to prevailing parties, costs will not be awarded where a party increases the costs of the arbitration by, *inter alia*, asserting unsuccessful motions for interim relief,[1703] propounding overbroad document requests,[1704] or engaging in other conduct that has the effect of increasing the costs of its adversary,[1705] such as asserting unmeritorious arguments.

[1698] See e.g. Claimants' Costs Submission, dated 14 May 2015, para. 2; Respondents' Costs Submission, dated 14 May 2015, para. 5 (both referring to the legal principles as set out in Respondents' prior cost submission of 13 May 2014)
[1699] 2012 ICC Arbitration Rules, Article 37(1)
[1700] RLA-302: Final Award in ICC Case 8486 (Extracts)
[1701] RLA-299: J. Fry, S. Greenberg & F. Mazza, *The Secretariat's Guide to ICC Arbitration: A Practical Commentary on the 2012 ICC Rules of Arbitration from the Secretariat of the ICC International Court of Arbitration* at 3-1488.
[1702] *Id.*
[1703] RLA-212: Final Award in ICC Case 10951 (Extract), at 8
[1704] RLA-209: Michael W. Bühler, "Costs of Arbitration: Some Further Considerations" at 4-5
[1705] RLA-304: W. Craig, W. Park & J. Paulsson, *International Chamber of Commerce Arbitration* (Oceana Publications, Inc., 3d ed. 1998)

945. As noted by Respondents, a party seeking to recover its costs in an international arbitration proceeding should provide a reasonable level of detail concerning the basis for those costs and how they were incurred.[1706] The evidence must provide enough detail to demonstrate that the claimed fees relate to the arbitration, and that they are reasonable.[1707]

946. Claimants have put the Tribunal in a difficult position by providing relatively limited detail of the costs that they seek to recover. The Tribunal cannot be in any doubt as to the reality of the bulk of these costs, having had, together with Respondents' counsel, first-hand experience of much of the work that was accomplished. The precise payment dates provided by Claimants for the bulk of the invoiced amounts relating to fees and costs do provide a modest measure of corroboration for the amounts claimed. However, some of the claimed items will have to be discarded by the Tribunal for lack of detail.

947. Concerning the reasonableness of the claimed costs, by being forthcoming with the detail of their own costs, for example, by providing invoices relating to legal fees and exhibits breaking down legal fees, including hours worked and rates billed, and costs by month,[1708] Respondents have provided a useful point of reference to the Tribunal. Given the corresponding lack of detail found in Claimants' submission, the Tribunal will verify that Claimants' costs for each phase of the arbitration are of a similar order of magnitude as the total claimed by Respondents.

948. Finally, the Tribunal may award interest on the payment of a prevailing party's reasonable legal and other costs in order to fully compensate that party. The parties in this Arbitration are in agreement that pre-award simple interest at a rate between 6% and 10% would be appropriate.[1709]

949. Before going into the different phases of arbitration, the Tribunal notes that counsel for both Claimants and Respondents have presented their case in a manner that the Tribunal finds generally reasonable and appropriate in view of the considerable stakes in this Arbitration.

[1706] *Id.*, § 21.04, at 394.
[1707] RLA-339: Michael Bühler & Thomas H. Webster, *Handbook of ICC Arbitration: Commentary, Precedents, Materials* (London, Sweet & Maxwell 2005), § 31-75, at 377
[1708] Respondents' Costs Submission, dated 14 May 2015, Tabs A-E
[1709] Claimants' Costs Submission, dated 14 May 2015, para. 4 n. 9, 52; Respondents' Costs Submission, dated 14 May 2015, para. 53

A. Phase I (Contract Claims) Costs

950. With respect to the costs relating to Phase I of the Arbitration, the Tribunal is of the view that Claimants are entitled to half of their reasonable costs.

1. Claimants' Position on Phase I Costs

951. Claimants argue that Respondents should be held accountable for Bayer's Phase I costs, amounting to [redacted], due to Respondents' breach of contract and their conduct during the Arbitration, which according to Claimants, caused delay, multiplied the issues, and relied on untenable defenses. Claimants argue that Respondents advanced untenable defenses, drawing comparisons with a case in which DuPont was sanctioned for taking an extreme position in litigation by making statements that were contradictory when compared with its internal documents.[1710] In Claimants' view, Respondents took an extreme position in this Arbitration beginning with its contention that sublicensing of the naked *pat* gene to a third party was permitted under the 1992 Agreement as there "are no limitations on what ... DAS ... can do with the glufosinate resistance technology."[1711] This position contradicts Dow's internal documents, which indicated, [redacted]

952. Similarly, Claimants argue that contemporaneous internal documents indicate that [redacted] Yet Dow later argued in the Arbitration that, as an alternative to Option C, it could have [redacted] despite the evidence that Option B would have given rise to royalties.[1715]

953. Finally, Claimants argue that Respondents increased the costs of the Arbitration by re-argumentation of issues relating to contract breach, despite the Tribunal's directions that, in Phase

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[1710] CL-703: *Monsanto Co. v. E.I. DuPont de Nemours & Co.*, 748 F.3d 1189 (Fed. Cir. 2014)
[1711] C-87: Respondents' Response to Bayer's Notice of Breach, dated 13 January 2012
[1712] C-53: [redacted]
[1713] C-183: [redacted]
[1714] Respondents' Phase III Reply, dated 6 October 2014, para. 14
[1715] Claimants' Costs Submission, dated 14 May 2015, para. 18

III, Respondents' should assume breach of the 1992 Agreement and despite the Tribunal's denial of Respondents' request for reconsideration.[1716]

954. In response to Respondents' arguments relating to Claimants' request for interim measures, Claimants note that though interim measures are an extraordinary remedy that are seldom granted, time was of the essence in this dispute, as Dow has continued with production and advertising with respect to the infringing products during the arbitration[1717] and requested reconfiguration of the Arbitration to postpone remedies issues until the November 2014 hearing, aiming, in Claimants' view, to make it more difficult for the Tribunal to order Dow to discontinue its efforts.[1718] Regarding Respondents' argument concerning Claimants' request for document production, Claimants emphasize that Respondents' work collecting and producing documents related only to 360 individual documents.[1719]

2. Respondents' Position on Phase I Costs

955. Respondents' costs relating to Phase I total [redacted] Respondents argue that they should be awarded (or credited with) costs and expenses associated with Phase I of this proceeding, other than Bayer's sublicensing claim, if Bayer ultimately prevails on that claim. If so, the fact that Bayer prevailed only on one of its contract claims, the sublicensing theory of breach,[1720] should weigh against an award of costs to Bayer as Respondents incurred the lion's share of their costs addressing the other contract claims that were abandoned or rejected by the Tribunal.[1721]

956. Respondents argue that Claimants' manner of litigating their claims multiplied Respondents' costs, weighing in favor of a cost award for Respondents. Respondents argue that Bayer filed a Request for Interim Measures even though there was no urgency to the relief it sought, as Bayer had waited nearly two years after it commenced the Virginia Action to seek interim relief, and noted that it was "amenable to hav[ing] the Request be held in abeyance or possibly withdrawn" if Bayer could obtain the procedural timetable it desired.[1722] Furthermore, in Respondents' view, Bayer sought interim relief based in substantial part on its claim that Dow was infringing the '665 patent, which

[1716] See e.g. Respondents' Phase II Opening Presentation, dated 25 August 2014, slides 115-17; Respondents' Phase II Closing Presentation, dated 26 August 2014, slides 149, 150; Phase II Hearing Transcript, dated 26 August 2014, at 598:3-599:4; Tribunal's Post-Phase II Letter to the parties, dated 25 September 2014, at 5
[1717] See e.g. C-532: "Dow Chemical Co Investor Forum", dated 12 November 2014
[1718] Respondents' Costs Reply, dated 21 May 2015, para. 20
[1719] Claimants' Phase I Costs Reply, dated 16 May 2014, para. 35
[1720] Procedural Order No. 10, dated 23 May 2014, at 4-6
[1721] Respondents' Costs Reply, dated 21 May 2015, para. 13
[1722] R-50: Letter from Bayer to the Tribunal, dated 11 October 2013, at 2

Bayer had admitted to the USPTO was invalid a month before the interim measures request was made. Furthermore, near the end of the 7 November 2013 interim measures hearing, for which Respondents had prepared a comprehensive response, Bayer abandoned its request for injunctive relief with respect to the Herculex and WideStrike products, claiming that it was concerned only with Dow's Enlist products, which will not be on the market until at least 2017. Finally, Bayer claimed that it would suffer irreparable harm absent injunctive relief despite having no rights to sell the allegedly competing product, FG72.[1723]

957. Respondents also argue that Claimants' reformulation of their contract claims needlessly increased the expenses of the arbitration. Up to Claimants' opening memorial of 2 September 2013, Bayer focused on patent infringement claims and had articulated only its "stacking" theory of breach,[1724] the only theory of breach on which it relied in its notice of termination and in the Virginia litigation.[1725] Bayer later, however, advanced many new arguments or variations on prior arguments, even as late as its closing arguments on Phase I. Respondents note in particular that, following Respondents' Phase I Memorial, Bayer effectively abandoned the "stacking theory" and the requirement that the parties "own" any Transformants, adopting in its Phase I Reply, the "sublicensing theory" on which it has tentatively prevailed.[1726] Furthermore, in its closing presentation at the Phase I hearing, Bayer relied on new authorities (i.e., *Cook v. Boston Scientific*) that it had never cited in any of its prior written submissions.[1727]

958. Finally, Respondents argue that Claimants' document requests were broad, essentially seeking all documents relating to the development of the products at issue without stating with specificity how the documents were relevant as required by Article 3.3 of the IBA Rules. Respondents note that the Redfern Schedule for Phase I was nearly 50 pages long, consisting almost entirely of disputes concerning Bayer's requests, and that the Tribunal rejected or significantly narrowed all 19 of the disputed Bayer document requests.[1728] Respondents note that they incurred significant costs litigating the document requests and collecting documents responsive to those requests while awaiting the Tribunal's ruling on the Redfern Schedule.

[1723] Respondents' Costs Submissions, dated 14 May 2015, para. 22
[1724] R-14: Letter from Bayer CropScience AG to DAS, dated 9 November 2011
[1725] Respondents' Costs Reply, dated 21 May 2015, para. 17
[1726] Claimants' Phase I Reply, dated 27 February 2014, paras. 138-71
[1727] Claimants' Phase I Closing Presentation, dated 17 April 2014, slides 100-102
[1728] Redfern Schedule with Tribunal Rulings, Annex to Procedural Order No. 4, dated 23 December 2013, at 42 (Bayer's Document Request No. 19)

959. In response to Claimants' argument that Respondents adopted an extreme position with respect to their rights under the 1992 Agreement, Respondents note that none of the contemporaneous sources cited by Claimants contradict Respondents' position regarding the scope of Article 4. Finally, regarding re-litigation of issues, Respondents note that they briefly addressed their license defense again in their Phase II submissions, with few additional costs for the parties, given that the Tribunal had ruled on the license defense only in a provisional and tentative manner following Phase I, and that the license defense, if accepted, would constitute a full defense to patent infringement.[1729]

3. Tribunal's Determination: Claimants Awarded Half of Reasonable Phase I Costs

960. The Tribunal starts with the presumption that Claimants are entitled to their costs because they were the prevailing party in Phase I. They successfully demonstrated that Respondents breached the 1992 Agreement and that termination was valid and effective under the governing law. The reasons advanced by Respondents as weighing against a full award of costs mostly concern procedural incidents that fall within the range of what one might reasonably expect in a case such as this one. Of the factors suggested by Respondents, the Tribunal accepts two.

961. The first factor is the way in which the claim for breach of contract was presented. As Respondents have emphasised, Claimants' case on the issue of breach has not been a model of focus, clarity, and consistency. This has forced Respondents to present arguments and evidence on a broader spectrum of issues and theories of breach than would normally be necessary. The theory of breach upon which Claimants ultimately prevailed was only one of several other theories propounded by Claimants and ultimately abandoned or rejected by the Tribunal.

962. The second factor concerns Claimants' request for interim measures, which the Tribunal rejected following a procedural hearing on 7 November 2013. Because of the initial breadth of the request and the considerable stakes it raised for Dow's seed business, Respondents were forced to allocate important resources to this request. Near the end of the interim measures hearing, Bayer abandoned its request for injunctive relief with respect to the Herculex and WideStrike products.[1730]

963. The Tribunal does not accept Claimants' argument that Respondents forced the bifurcation of the proceedings with the tactical and reprehensible objective of gaining time and "running the clock" on the patents. There was an implacable procedural logic to hearing the license defense first, which Claimants themselves clearly articulated in the Virginia litigation. Speaking of Dow's license

[1729] Respondents' Costs Reply, dated 21 May 2015, paras. 18-21
[1730] Respondents' Costs Submissions, dated 14 May 2015, para. 22

defense and its relation to the patent infringement claims, Bayer represented as follows: "Their defense is that they have a license ... So if that's true, then they would have that license and there would be no infringement action. It's definitely a predicate to the infringement ..."[1731]

964. Taking these factors into account, the Tribunal will reject Respondents' claim and allow Claimants to recover from Respondents half of the costs that have not been discarded by the Tribunal. From the total claim of [redacted], the Tribunal first sets aside the claimed amount of $455,000 in ICC costs, which will be dealt with separately. The Tribunal then discards, for lack of substantiation, two items from Claimants' list of cost items for Phase I. One is a charge of [redacted] for a consulting expert named [redacted] and one of [redacted] for a consulting expert named [redacted] The Tribunal was given no indication of their area of expertise or of the services they performed. The total amount claimed minus the claimed ICC costs and these two items is [redacted], or [redacted], rounded to the dollar. This amount is lower than Respondents' Phase I costs and so deemed reasonable by the Tribunal. Half of this amount, which the Tribunal will award, is $4,712,928.

B. Phase II (Patent Claims) Costs

965. With respect to the costs relating to Phase II of the Arbitration, the Tribunal is of the view that Claimants are entitled to all of their reasonable costs.

1. Claimants' Position on Phase II Costs

966. Claimants argue that they are entitled to all costs with respect to Respondents' patent infringement, totaling [redacted].

967. Claimants argue that Respondents' non-infringement defenses were without merit: Respondents admitted that it was "undisputed that the Accused products use the *pat* gene"[1732] but did not stipulate their infringement and instead required Claimants to go through the exercise of proving that Respondents' had infringed Claimants' claims, where the evidence was undisputed that 9 out of the 10 asserted claims covered the accused products.[1733] With respect to the tenth claim, Claimants argue that Respondents' asserted claim construction (that claim 1 of the RE962 patent was a *bar* gene patent that did not cover *pat*) was untenable, contradicted by evidence in the patent file,

[1731] Ex. R-9, Virginia Litigation Transcript of Hearing, dated 3 July 2012, at 18:24-19:5
[1732] C-323: Respondents' Responses and Objections to Claimants' Requests to Produce, at 29
[1733] See e.g. Claimants' Phase II Opening Presentation, dated 25 August 2014, slides 3-41

Respondents' own expert, and supported only by an explanation that the official file contained a "typo".[1734]

968. Claimants also argue that Respondents' procedural defenses were without merit. Claimants note that they had to incur costs on multiple occasions to dispute Respondents' repeated *res judicata* defense.[1735] In responding to the Tribunal's post-hearing questions on damages, Respondents argued that "Bayer never asserted its 'Option B' theory as one of a lost opportunity," barring damages in connection with the "Option B" theory,[1736] when this argument was contradicted by Claimants' pleadings.[1737] Finally, Respondents raised a "standing" defense that was not raised in Respondents' Answer or the Terms of Reference, or in the Virginia litigation, and which did not apply in the context of voluntary arbitration.[1738]

969. Finally, Claimants argue that Respondents' invalidity defenses were meritless. In Claimants' view, Respondents' "enablement" defense was meritless because courts had held that the claims of the '236 patent asserted in the present Arbitration exclude monocot plants from their scope and Claimants set forth undisputed evidence to establish that the other claims exclude monocot plants.[1739] Claimants argue that the written description defense lacked merit because Dow's overly broad claim construction ignored intrinsic evidence and claim scope, failing to take into account three limitations placed on all claims, and three further limitations relating to the '665 patent and its reissue.[1740] Furthermore, according to Claimants, Respondents relied on hypothetical genes found in a database with a similar appearance to *pat* but which have not been tested for biological function, and Respondents' expert witnesses knew of this shortcoming.[1741] Regarding the "indefiniteness" defense, Claimants argue that Dow knew that its contention, that "variant thereof retaining said activity" was indefinite, was untenable because it had itself told the USPTO that "high levels of identity (>70%) are usually found between the products of genes encoding resistance

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[1734] *Id.*, slides 56-57; R-447: Godici First Witness Statement, paras. 116-17; Phase II Hearing Transcript, dated 26 August 2014, at 517:4-7

[1735] Claimants' Phase I Closing Presentation, dated 11 April 2014, slides 240-57; Claimants' Phase II Post-Hearing Submission, dated 5 September 2014, at 1-2

[1736] Respondents' Phase III Post-Hearing Reply, dated 18 February 2015, para. 48

[1737] See e.g. Claimants' Phase III Reply, dated 23 October 2014, para. 38

[1738] *Id.*, paras. 63-67 (35 U.S.C. § 281 does not apply in this "voluntary arbitration" action under 35 U.S.C. § 294)

[1739] CL-349: *Plant Genetic Sys., Inc. v. DeKalb Genetics Corp.*, 175 F. Supp. 2d 246, 267-68 (D. Conn. 2001), *affirmed* CL-350: *Plant Genetic Sys., Inc. v. DeKalb Genetics Corp.*, 315 F.3d 1335, 1344-45 (Fed. Cir. 2003); Claimants' Phase II Responsive Memorial, dated 1 July 2014, paras. 85-100

[1740] Claimants' Phase II Post-Hearing Reply, dated 12 September 2014, at 1-3

[1741] Phase II Hearing Transcript, dated 25 August 2014, at 278:12-15

to the same antibiotic in different *Streptomyces* species."[1742] Furthermore, Claimants assert that Respondents ignored the evidence enabling a person of skill to understand the claim.[1743] Claimants also argue that Respondents' double-patenting argument lacked merit and was not included in the Terms of Reference or Respondents' Phase II submissions, having been raised late in the proceedings only after its primary patent defenses had been rejected, despite the order of proceedings and presentation of evidence set forth in the Procedural Timetables and Orders.[1744] Finally, Claimants assert that Respondents multiplied the pleadings by seeking to stay the arbitration after the Phase III hearing was complete. In response, the Tribunal held that a stay would be inappropriate; that any potential benefits of a stay were "clearly outweighed by drawbacks relating to the considerable time, effort, and costs already invested by the parties"; and "the parties clearly agreed to submit to arbitration all infringement, validity and enforceability issues arising from their dispute over the patents-at-issue."[1745]

970. In response to Respondents' argument regarding document exchange, Claimants note that the fact that the Tribunal overruled some of Bayer's document requests is typical in any arbitration and that the Tribunal overruled some of Dow's document requests as well; that there was nothing atypical in the level of detail provided by Claimants in response to Dow's document requests; and that Respondents have not quantified the costs that they allege in this respect.[1746] With respect to the reissue patent, Claimants note that the Tribunal asked the parties to assume that Respondents' argument that the reissue constituted a new patent claim had failed, and argue that Respondents' were not prejudiced, because the reissued claim is virtually identical to the '665 patent's claim 1, and Dow lodged the exact same non-infringement and invalidity defenses against the '665 claim as it did against the reissue claim.[1747]

971. In response to Respondents' arguments regarding redaction of documents, Claimants note that, while they initially produced certain third party documents with redactions, on 5 June 2014, Claimants informed the Tribunal that they had obtained permission to produce the documents from all third parties except [redacted],[1748] then provided the unredacted documents to Respondents on 9

[1742] C-371: Dow's Response to a USPTO Office Action, dated 23 April 2014
[1743] CL-706: *Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 135 S.Ct. 831, 843 (2015)
[1744] Claimants' Costs Submission, dated 14 May 2015, para. 38
[1745] Procedural Order No. 13, 22 December 2014, paras. 12-13
[1746] Claimants' Costs Reply, dated 21 May 2015, paras. 22-23
[1747] Respondents' Phase II Memorial, dated 2 June 2014, para. 19; Claimants' Costs Reply, dated 21 May 2015, paras. 24-26
[1748] Letter from Claimants to Tribunal, dated 5 June 2014

and 10 June 2014. Respondents were given an extension of time to file their next memorial; there was no unfair prejudice to Respondents' ability to defend themselves, and Respondents have not quantified any alleged extra costs.[1749]

2. Respondents' Position on Phase II Costs

972. Respondents argue that they should be awarded their costs and fees associated with Bayer's infringement claims, which total [redacted] including claims relating to the remedies submissions and hearings (Phase III), because their defenses were meritorious, and because they assert that Bayer increased the time, expense, and effort that DAS expended to defend itself.

973. Respondents argue that Bayer propounded improper discovery requests that did not comply with the IBA Rules, with its request of 28 April 2014, which included over 90 requests and certain ones that the Tribunal had already rejected in Phase I as improper. In particular, Request No. 18 was identical to Request No. 13 in its Phase I document requests, seeking a broad range of documents concerning soybean field studies, which the Tribunal had rejected. The Tribunal denied more than half of the 92 requests.[1750] Further, in a letter of 30 May 2014, Bayer asserted that Respondents' document production was deficient and required production of the missing documents by midnight of that day,[1751] necessitating a search by Respondents of their own document production to identify the documents that Dow had already produced, a task that Respondents view as being Bayer's. Finally, Respondents argue that they had to seek the Tribunal's intervention to receive an adequate level of detail with regard to Bayer's privilege claims.[1752]

974. Respondents also argue that Claimants hindered Dow's ability to defend itself by refusing to provide Dow with unredacted copies of key documents at the center of Claimants' remedies case in Claimants' opening Phase II Memorial. Notably, Claimants redacted 12 highly probative license agreements involving the *pat* and *bar* genes, the expert report of John Jarosz, and the Second Witness Statement of [redacted] Z[redacted].[1753] Furthermore, Respondents assert that Claimants had already provided the purportedly confidential licenses and information to Mr. Jarosz, Claimants' outside expert who was under the same confidentiality obligations as Dow under the parties'

[1749] Claimants' Costs Reply, dated 21 May 2015, paras. 31, 32
[1750] Annex to Procedural Order No. 9, dated 16 May 2014, at 2-122
[1751] Letter from C. Gaspar to R. Sills, dated 30 May 2014, at 4
[1752] Procedural Order No. 9B, dated 29 May 2014
[1753] Letter from R. Sills to the Tribunal, dated 4 June 2014, at Tabs A, B

stipulated protective order.[1754] Respondents argue that Claimants' conduct forced them to seek relief from the Tribunal, and that, in a hearing before the President of the Tribunal, Claimants conceded that an order from the Tribunal would relieve Claimants of their remaining duties of confidentiality.[1755]

975. Respondents further argue that Claimants introduced a new infringement claim in their opening Phase II Memorial, based on the RE44962 patent,[1756] a claim that is not specifically mentioned in the Terms of Reference, but which Respondents had to defend against on a highly accelerated schedule. Respondents note that Claimants stated before the USPTO that the '665 patent was invalid in order to obtain the RE44962 patent,[1757] but continued to press their infringement claim concerning the '665 patent, including the assertion that the patent claim was valid in light of *Myriad* as the claim did not apply to human DNA, requiring Respondents to defend against this claim.[1758]

976. Finally, Respondents argue that Claimants advanced key arguments regarding the construction and validity of claim 1 of the RE44962 patent that were contradicted by their expert witness Dr. Sherman. Dr. Sherman, they argue, conceded that, under Bayer's construction of claim 1 of RE44962, the term "variant" would sweep in the naturally occurring *bar* gene, which Bayer admitted to the USPTO was unpatentable, as well as the naturally occurring *pat* gene.[1759]

977. In response to Claimants' arguments that Respondents should have stipulated to infringement, Respondents argue that it would have made no sense to stipulate infringement of the'665 patent or RE44962, because those patents cover the *bar* gene, which Respondents do not use. Respondents note that Claimants ignore, notably, the repeated instances in the prosecution history with respect to these patents where the examiner refused Bayer's request for a claim broader than just *bar* and the fact that Bayer cancelled all its claims to *pat* DNA and amino acid sequences during prosecution.[1760] Furthermore, Respondents are of the view that there was no call to "stipulate" to infringing the '477 and '024 either because infringement of those patents was dependent on the

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[1754] *Id.*, paras. 3, 4
[1755] Respondents' Costs Submission, dated 14 May 2015, para. 44
[1756] Claimants' Phase II Memorial, dated 2 June 2014, paras. 193-211
[1757] R-364: Reissue Application Declaration, dated 29 August 2013
[1758] Respondents' Costs Submissions, dated 14 May 2015, paras. 36-37; Claimants' Phase II Responsive Memorial, dated 1 July 2014, paras. 106-108
[1759] Phase II Hearing Transcript, dated 25 August 2014, at 183:14-184:13, 187:4-8, 195:19-25
[1760] Respondents' Phase II Responsive Memorial, dated 1 July 2014, paras. 38-44

timing of transformation, and transformations took place at a time when Respondents were under license or before the issuance of certain patents.[1761]

978. Regarding written description, Respondents argue that their defense had merit given that Claimants conceded that only two PPT acetyltransferase genes are disclosed by structure in Bayer's patents. There are other PPT acetyltransferase genes, they argue, and there is no known structural relationship between them and the two that Bayer actually possessed and disclosed.[1762] Regarding indefiniteness, Respondents argue that a functional construction of Claimants' patent—as Claimants seek—would leave one of skill in the art without a "reasonably certain" understanding of the claimed structure.[1763] Regarding the enablement defense, Respondents note that, in light of *PGS v. DeKalb*, Respondents did not challenge Bayer's dicot claims as not enabled, but rather challenged other claims that they viewed as covering all plants (both dicots and monocots) or DNA that must be enabled in monocots. They further note that the dicot claims were found enabled by the court in *PGS v. DeKalb* only by virtue of the fact that Bayer more narrowly amended those claims for the specific purpose of excluding monocots, which did not occur with respect to the claims challenged by Respondents.[1764]

979. Regarding Claimants' arguments with respect to procedural defenses, Respondents note that neither side incurred significant costs arbitrating these defenses, as they were not the subject of lay or expert testimony and were, for the most part, straightforward legal issues. With regard to standing, Respondents argue that, in the pending re-examination, Claimants have adopted Respondents' position with respect to standing, [redacted] and that Claimants cannot therefore attack Respondents' argument as meritless.[1765] Regarding *res judicata*, Respondents argue that it was not frivolous to rely on the finding of a Federal Circuit court that Respondents had a valid sublicense to develop and sell E3 under the 2008 Dow-MS Tech Agreement.[1766] Regarding double-patenting, Respondents argue that the defense was raised in a timely manner, in light of the Tribunal's 25 September 2014 letter, indicating that the parties should assume for purposes of the remedies phase that RE44962 covers the *pat* gene, and that while

[1761] *Id.*, paras. 48-53
[1762] Respondents' Phase II Post-Hearing Submission, dated 5 September 2014, paras. 18-20
[1763] Respondents' Costs Reply, dated 21 May 2015, para. 28
[1764] Respondents' Phase II Memorial, dated 2 June 2014, paras. 147-55
[1765] Respondents' Costs Reply, dated 21 May 2015, Tab 2 (Excerpt of RE44962 USPTO Reexamination, Bayer's Reply to Office Action, dated 21 April 2015)
[1766] Respondents' Costs Reply, dated 21 May 2015, para. 36

double-patenting was not mentioned in the Terms of Reference, neither was the infringement claim based on the reissue patent.[1767] Finally, regarding Respondents' stay request, Respondents note that the USPTO has decided, in its first office action, that the RE44962 patent should not have been granted because of the prohibition on double patenting.[1768]

980. Finally, regarding Claimants' claim for reimbursement of costs related to defending its patents before the USPTO, Respondents note that there is no authority to suggest that an arbitration agreement is violated by petitioning the USPTO to initiate an *ex parte* re-examination, which is, in effect, a dispute between Bayer and the USPTO, and is a statutorily mandated public law function distinct from the Tribunal's private law function vis-à-vis the parties. Respondents further note that Claimants themselves went to the USPTO during the arbitration by applying to the USPTO for a reissue, and that the USPTO has recognized Respondents' petition as meritorious, rejecting claim 1 of the RE44962 patent.[1769]

3. Tribunal Determination: Claimants Awarded Reasonable Phase II Costs

981. Claimants seek to recover all of their costs with respect to Phase II, totaling [redacted] Respondents are also seeking recovery of their costs to the extent they prevail. They also state that, even if the Tribunal were to find in favor of Claimants, the latter's conduct weighs against awarding costs.

982. The Tribunal starts with the presumption that Claimants are entitled to their costs because they were the prevailing party in the patent infringement phase of the proceedings.

983. Respondents draw attention to Claimants' behavior in the document exchange process leading up to Phase II, where Claimants made a large number of document requests which the Tribunal denied or allowed only in part. In view of the accelerated schedule that was being followed, this may have been onerous for some at the time, but with the benefit of hindsight, and bearing in mind the complexity of the case, the Tribunal takes the view that there was nothing highly unusual about the way in which the Phase II document production process unfolded. The only incident where the Tribunal is prepared to credit Respondents' allegation is when Bayer withheld or redacted a significant number of documents, alleging duties of confidentiality owed to third parties that, as later came to light, a Tribunal order could lift. The President of the Tribunal did eventually order

[1767] *Id.*, para. 37
[1768] *Id.*, para. 38
[1769] *Id.*, paras. 39-41

production when Respondents sought relief from the Tribunal. Any prejudice Dow may have suffered as a result, however, was immediately averted through an amendment to the timetable that gave Respondents the preparation time that they had lost, without giving Claimants extra time or causing a change in the basic structure of the timetable.[1770]

984. Respondents also take issue with the fact that Claimants introduced a "new" infringement claim in their opening Phase II Memorial, based on the RE44962 patent,[1771] which Respondents had to defend against on an accelerated schedule. The Tribunal has already found that there is nothing in this claim that was not already present in the previous patent. Any extra preparation would therefore have been limited to the relatively contained arguments on the issue of intervening rights.

985. Based on the foregoing, the Tribunal rejects Respondents' claim of cost recovery for Phase II and finds in favor of Claimants. The Tribunal discards two items for lack of detail, however. They are associated with consulting experts [redacted], for a combined amount of [redacted]. Starting from the total claimed amount of [redacted] for Phase II and subtracting the discarded amount of [redacted] as well as the ICC costs in the amount of $470,000.00 (which will be treated separately), we come to an amount, rounded to the dollar, of $6,066,441, which the Tribunal will award to Claimants. This is compatible with the costs incurred by Respondents for the same phase.[1772]

C. Phase III (Remedies) Costs

986. With respect to the costs relating to Phase II of the Arbitration, the Tribunal is of the view that Claimants are entitled to half of their reasonable costs.

1. Claimants' Position on Phase III Costs

987. Claimants argue that they are entitled reimbursement for all costs relating to the Phase III hearing and briefing, totaling [redacted] because they are of the view that Respondents made a number of unreasonable arguments in their Phase III submissions and at the Phase III hearing.

[1770] See Procedural Timetable No. 4, dated 6 June 2014

[1771] Claimants' Phase II Memorial, dated 2 June 2014, paras. 193-211

[1772] Respondents aggregated their costs for Phases II and III and came to a total of $[redacted] Claimants claim approximately the same amount for Phase II as for Phase III. On a similar ratio, Respondents Phase II costs are approximated at [redacted] of the combined Phase II and Phase III costs, that is, $[redacted]

988. In particular, Claimants point to Respondents' argument that a reasonable royalty for patent infringement amounted to $0,[1773] despite precedents such as the *Monsanto v. DuPont* case where Monsanto was awarded $1 billion in infringement damages for a far shorter head start and the parties then negotiated a settlement for at least $1.75 billion.[1774] Claimants also argue that Dow relied on a [redacted] as being a comparable license[1776] when this license referred to usage as a selectable marker, rather than commercial usage and was therefore not comparable, with Respondents' expert witness replacing a former reference to the license as covering a "selectable marker" with a reference to the license as covering "Patents, gene".[1777] Additionally, according to Claimants, Dow's argument that an injunction may not issue because Bayer and Dow are not competitors was frivolous in light of testimony from executives of both parties that the companies competed,[1778] particularly in the race to be the first entrant in the triple-herbicide-tolerant market.[1779] Finally, Claimants argue that Respondents' arguments that damages must be capped at [redacted] due to the existence of "design around" alternatives were not supported by law or fact,[1780] and note that Respondents would not have risked litigation and liability if a "design around" alternative had been available at such a low cost.[1781]

989. Claimants also argue, in response to the claim that their theories "changed at every turn", that Respondents have not shown any unfair prejudice. Due to the bifurcation of the proceedings, Claimants obtained access to the internal Dow financial documents only relatively late in the proceedings and that these documents were necessary for Claimants' case. Respondents' expert witness has authored an article acknowledging the relevance of estimates of future revenue to calculating patent damages,[1782] and the documents were also required for calculation of contract

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[1773] Respondents' Phase III Closing Presentation, dated 21 November 2014, slide 68
[1774] C-102: Reuters, "Monsanto, DuPont strike $1.75 billion licensing deal, end lawsuits", dated 26 March 2013
[1775] R-437: [redacted]
[1776] Respondents' Phase III Closing Presentation, dated 21 November 2014, slide 88
[1777] R-617: Bakewell Second Witness Statement, Attachment D ("Bar gene for use as a selectable marker"); R-631: Bakewell Third Witness Statement, Attachment D ("Patents, gene")
[1778] Phase I Hearing Transcript, dated 12 April 2014, at 1070:17-24 [redacted]): C-144: Z[redacted] First Witness Statement, paras. 36-60
[1779] C-437: [redacted]
[1780] Claimants' Phase III Closing Presentation, dated 21 November 2014, slides 173-97 (arguing in particular that Dow did not offer evidence to support assertion that products were available in 2008 or 2012, that the products were acceptable, that regulatory approval had been sought, or of any costs or delays associated with the alternatives, other than reference to the views of Dow's employees; arguing that damages need not necessarily be capped by design around alternatives)
[1781] Claimants' Costs Submission, dated 14 May 2015, para. 47
[1782] CX-294: Bakewell, *Valuation of Patent Damages*, at 10

damages under French law, as Claimants were entitled to [redacted].[1783] Claimants also assert that Dow was aware of the contents of these documents and knew of the Option B/Option C issues since at least [redacted].[1784] And while the Option B analysis could not be quantified until Claimants received the necessary Dow documents, Claimants note that they had explained the Option B/Option C issues in Phase I of the Arbitration.[1785] Claimants further argue that their damages theories have not changed, but rather that their calculations had to be updated due to newly considered financial evidence as well as the inclusion of prejudgment interest. Finally, Claimants note that Respondents had the opportunity to make their arguments fully in their two written memorials in advance of the hearing, as well as at the hearing, where they had the opportunity to cross-examine Claimants' witnesses, and in their post-hearing submissions; Respondents could also have asked the Tribunal for more time or extra briefing if either were required.[1786]

2. Respondents' Position on Phase III Costs

990. Respondents argue that they should be awarded their fees and costs for Phase III, and in the alternative, that Claimants should not be awarded their costs, because Claimants' manner of litigating their claims increased Respondents' efforts and expense.

991. Respondents further argue that Claimants constantly shifted their French contract and U.S. patent damages theories, analyses, and calculations. Respondents note that Claimants' first damages submission of 2 June 2014 claimed damages of "no less than $125 million" would constitute full compensation for either breach of contract or patent infringement, using the "reasonable royalty" analysis under U.S. patent law.[1787] Mr. Jarosz also presented a "preliminary" analysis valuing Respondents' "head start" in bringing Enlist E3 to market at $62.2 million, but Claimants did not claim this "head start" as an independent basis for Bayer to obtain damages.[1788]

992. In their Phase II Reply Memorial, Claimants' claim for contract damages was for up to $311.4 million, and Claimants no longer argued that contract and patent damages were the same and should both be calculated using the "reasonable royalty" analysis under U.S. patent law. Instead, Bayer

[1783] Claimants' Costs Reply, dated 21 May 2015, para. 38
[1784] C-183: [redacted]
[1785] Claimants' Phase I Reply, dated 28 February 2014, para. 156
[1786] Claimants' Costs Reply, dated 21 May 2015, paras. 40, 41
[1787] C-317: Jarosz First Witness Statement at 94
[1788] *Id.*, Tab 35

introduced its "Option B" analysis for the first time. Mr. Jarosz also increased the "head start" estimate to $329.9 million, and Claimants claimed for the first time that the *pat* gene constituted "know how" under French law and that DAS was thus obligated to return it to Bayer and destroy all of its *pat*-containing products.[1789] Claimants' Phase III Memorial expanded the contract damages claim through to 2030, and deemed patent damages, formerly the sole basis of the damage claim, to be an "alternative basis for recovery", with Mr. Jarosz describing "head start" damages as one of two forms of reasonable royalty damages, and increasing the estimate of the "head start" to "between $362.9 and $447.4 million."[1790] Finally, in Claimants' Phase III Reply, submitted less than a month before the Phase III hearing, Claimants contended for the first time that they were entitled to patent damages of up to $746 million, which was a combination of Mr. Jarosz's "reasonable royalty" and his "head start" damage calculations.[1791]

3. Tribunal Determination: Claimants Awarded Half of Reasonable Phase III Costs

993. The Tribunal again begins by recognizing that Claimants prevailed to an extent in Phase III and are presumptively entitled to recover their costs.

994. The Tribunal recognizes, however, that the changing calculations, theories, and analyses propounded by Claimants and their damages expert made Respondents' defense on remedies significantly more challenging than one would normally expect. The Tribunal was also on the receiving end of these changes and experienced the same challenge as it combed through the four reports by Mr. Jarosz with a view to ascertaining which of the elements from the earlier reports had been (or not been) superseded by the later reports. At the same time, the Tribunal notes that Respondents' position, maintained through the proceedings based on their damages expert's reports, and according to which *pat* has an incremental value of $0 or close to $0, was not helpful to the Tribunal in the performance of its task.

995. Additionally, the Tribunal notes that Claimants' requests for non-monetary remedies, in the form of injunctive relief under U.S. patent law and an order for cessation and destruction under French contract law, were unsuccessful. The Tribunal also notes that Claimants failed in their attempt to establish that the patent damages should be enhanced, although it gives limited weight to this factor. The claim for enhanced damages certainly raised the stakes in the arbitration and did take up

[1789] C-396: Jarosz Second Witness Statement at 104; Claimants' Phase III Reply, dated 23 October 2014, paras. 12-15
[1790] C-515: Jarosz Third Witness Statement at 17, 18, 20
[1791] C-528: Jarosz Fourth Witness Statement at 7, Tab 10

resources in the proceedings. These resources, however, are not proportionate to the amounts that enhanced damages can represent. Putting enhanced damages to the side, the Tribunal also recognizes that a significant portion of the contract and patent damages sought by Claimants was ultimately denied by the Tribunal.

996. In consideration of these factors, the Tribunal will reject Respondents' claim and allow Claimants to recover from Respondents half of their costs for Phase III that have not been discarded by the Tribunal.

997. Regarding Claimants' costs related to the USPTO action, Respondents argue that, since a petition to the USPTO to initiate an *ex parte* re-examination is not a breach of the arbitration agreement, Claimants' costs in this respect are not recoverable in the arbitration. The petition initiates a public law matter between Bayer and the USPTO, which is distinct from the Tribunal's private law function vis-à-vis the parties. The Tribunal will accordingly discard the amounts claimed in respect of the USPTO proceeding, which total [redacted].

998. The Tribunal will also discard a cost item of [redacted] associated with a consulting expert named [redacted], whose area of expertise and work was not explained to the Tribunal. Starting from the total claimed amount of [redacted] for Phase III and subtracting the USPTO costs of [redacted], the discarded amount of [redacted] as well as the ICC costs in the amount of $280,000.00 (which will be treated separately), we come to an amount of [redacted], or, rounded to the dollar, [redacted]. This is also compatible with the costs incurred by Respondents for the same phase.[1792] Half of this amount, which the Tribunal awards, is $2,614,474.

D. ICC Costs

999. The remaining costs to be awarded are the costs of the arbitration itself; in other words: (i) the ICC administrative expenses; and (ii) the fees and expenses of the arbitrators, including the fees and expenses of the administrative secretary. At its session of 1 October 2015, the ICC Court fixed the (i) the ICC administrative expenses and (ii) the fees of the arbitrators, which, together with the expenses incurred by the Arbitral Tribunal, amount to $2,410,000. The Tribunal determines that

[1792] Respondents aggregated their costs for Phases II and III and came to a total of $[redacted] Claimants claim approximately the same amount for Phase II and Phase III. On a similar ratio, Respondents Phase III costs are approximated at [redacted] of the combined Phase II and Phase III costs, that is, $[redacted]

Respondents ought to bear an appropriate percentage of this amount, which has been advanced in equal shares by the parties.

1000. The Tribunal determines this percentage by reference to the overall proportion of Claimants' other costs that will be awarded. This is because the ICC system does not provide a breakdown of the costs according to the different phases of arbitration and the breakdown of the other costs incurred and ultimately supported by the parties can serve as a fair proxy for the breakdown of the ICC costs. The other costs (after discarding amounts for consultants, for USPTO costs and for advances paid to ICC, which are dealt with here) are: [redacted]. Only half of the amounts for Phases I ($4,712,928) and Phase III ($2,614,474) will be awarded, for a total, with Phase II, of $13,393,843, representing approximately 65% of Claimants' reasonable costs. Respondents will therefore bear 65% of the ICC costs fixed by the ICC Court (which totaled $2,410,000), that is, an amount of $1,566,500. Respondents have already paid $1,205,000 to the ICC in the form of an advance on costs and will therefore be ordered to pay Claimants the difference between the amount that Respondents have advanced ($1,205,000) and the amount that Respondents are to bear ($1,566,500) that is: $361,500. No pre-award interest will be awarded on advances on costs, the payment of which flows from a separate obligation, with its distinct rationale and timeframe.

E. Pre-award Interest on the Reasonable Legal and Other Costs

1001. Claimants seek pre-award interest on their reasonable legal and other costs recovered from Respondents. Concerning the scope of this claim, as indicated in the previous paragraph, to the extent that the claim was intended to cover the payment of advances on costs to the ICC, the claim is denied.

1002. The Tribunal finds the parties to be in agreement that pre-award simple interest on the reasonable legal and other costs recovered by a prevailing party is appropriate, with a view to achieving full compensation, at a rate within a range from 6% to 10%.[1793]

1003. Claimants, however, have failed to substantiate their claim of pre-award interest on this portion of the Award. Appended to Claimants' Costs Submission is a table, Table B, showing "the dates that Bayer made payments on certain invoiced costs" together with the number of interest-bearing days

[1793] Claimants' Costs Submission, dated 14 May 2015, paras. 4 n. 9, 52. Table 2: Respondents' Phase I Costs Submission, dated 13 May 2014, para. 5; Respondents' Costs Submission, dated 14 May 2015, para. 53

for a hypothetical award date and the resulting amount for an 8% rate.[1794] The Tribunal has not been convinced of the linkage between the dates on which Bayer made payments and the phases of the arbitration—or the Virginia litigation—to which these payments relate.

1004. The Tribunal is forced to conclude that Claimants' claim for pre-award interest on its costs has not been substantiated and must therefore be denied.

7. POST-AWARD INTEREST

1005. Claimants are seeking post-award interest on the amounts due to them from the date of the Award until the date of payment.[1795] Post-award interest is normally granted for reasons that are similar to the reasons for granting pre-award interest. The overarching reason in both cases is the principle of full compensation. In other words, interest contributes to the objective of making the aggrieved party whole.

1006. The parties to this Arbitration have recognized the principle of full compensation in connection with the award of interest when they made their submissions on costs following Phase I. The parties were also agreed that full compensation could be achieved through the award of simple interest at a rate between 6% and 10%. Respondents' suggestion that French law might apply to pre-award interest was not made in respect of post-award interest. The Tribunal will therefore rely on the agreement between the parties that reference to the principle of full compensation is appropriate and that such compensation could be achieved through simple interest at a rate to be determined by the Tribunal within the aforementioned range. As with pre-award interest, the Tribunal sees no reason for departing from the mid-range of 8%. The Tribunal will therefore award simple interest at a rate of 8%.

1007. In addition to facilitating full compensation, post-award interest has the advantage of encouraging prompt payment. The award debtor, however, is customarily given a period of time to make payment before interest obligations are triggered. The Tribunal will set this period at 30 days from the date of notification of the Award, and order that interest on any amount outstanding at the end of the period will accrue from the date of the Award.

[1794] Claimants' Costs Submission, dated 14 May 2015, Table B n. 1
[1795] Term of Reference, 4 October 2013, paras 34, 70

8. FINAL AWARD

1008. For the reasons given in this Award, the Tribunal HOLDS, DECLARES, DETERMINES, and ORDERS:

Breach of Contract

i) The claims and issues pertaining to the breach and termination of the 1992 Agreement are not precluded by operation of the doctrine of issue preclusion or, to the extent it applies, by the doctrine of claim preclusion;

ii) Respondents breached the 1992 Agreement on 4 April 2008 by effectively sublicensing the *pat* gene to a third party;

iii) The termination of the 1992 Agreement was validly effected by Claimants and operated from 4 April 2008;

Patent Infringement

iv) The standing requirement raised by Respondents does not apply to these proceedings or otherwise provide the Tribunal with grounds for refusing to exercise jurisdiction over the patent infringement issues in this arbitration;

v) Claimants' assertion of infringement based on claim 1 of the reissue patent does not constitute a new claim under Article 23(4) of the ICC Rules and is properly before the Tribunal;

vi) Respondents are not precluded under the French law doctrine of estoppel from raising patent invalidity defenses;

vii) Respondents' *Myriad* invalidity defense succeeds in respect of the '665 patent;

viii) Respondents' double patenting defense ('024, '236, '477, and reissue patents) fails for lack of common ownership or inventor;

ix) Absolute intervening rights apply to the '665 patent, such that Claimants are precluded from recovery in respect of this patent prior to the reissue of 24 June 2014;

x) All other patent infringement defenses, namely, written description ('024, '236, '477, and '665 (and reissue) patents), enablement ('024, '477, and '665 (and reissue) patents), and indefiniteness ('665 patent and reissue), fail;

xi) As a matter of claim construction, the *pat* gene is covered by claim 1 of the '665 patent and its reissue;

xii) As a matter of claim construction, the claims-at-issue of the '024, '477, '665, and RE44962 patents do not cover monocot plant cells;

Remedies

xiii) Claimants' request for a cessation and destruction order under French law is denied;

xiv) Claimants' request for injunctive relief under U.S. patent law is denied;

xv) Claimants' claim for a lump-sum reasonable royalty, to cover Respondents' non-exclusive, past and future practice of the patents-in-suits, is allowed in the amount of $67,837,000, as follows:

a. $13,733,000, of which $3,329,000 is pre-award interest, for Widestrike and Widestrike 3;
b. $13,359,000, of which $3,240,000 is pre-award interest, for Enlist Cotton;
c. $13,088,000, of which $3,173,000 is pre-award interest, for Enlist Soybean;
d. $27,657,000, of which $6,705,000 is pre-award interest, for Enlist E3;
e. $0 for Enlist E3+IR; and
f. $0 for Insect Resistant Soybean;

xvi) Claimants' claim for breach of contract damages is allowed in the amount of $374,731,000, as follows:

a. lost opportunity damages have been established in the amount of $402,388,000, of which $97,548,000 is pre-award interest;

b. a discount of $27,657,000, representing the total reasonable royalty amount for E3 and E3+IR, indicated at xv) d. & e. above, is applied to the contract damages to prevent double-recovery;

Costs

xvii) Respondents' contract claim for their Virginia litigation costs is accordingly allowed in its entirety, in the amount of $864,156, of which $166,571 is pre-award interest;

xviii) Respondents' other claims for cost recovery are denied;

xix) Claimants' claim for recovery of their own Virginia litigation costs is denied;

xx) Claimants' claim for recovery of their reasonable legal and other costs under Article 37 of the ICC Rules is allowed in the amount of $13,393,843, as follows:

a. $4,712,928 for the breach of contract phase;
b. $6,066,441 for the patent infringement phase; and
c. $2,614,474 for the remedies phase;

xxi) Claimants' claim for pre-award interest on their reasonable legal and other costs is denied;

xxii) Claimants' claim for recovery of advances paid to the ICC toward the ICC administrative expenses and the fees and expenses of the arbitrators, including the fees of the Tribunal secretary, is allowed in the amount of $361,500;

Summary of Payment Obligations

xxiii) Respondents shall pay to Claimants the sum of $455,459,187, as follows:

Lump-sum reasonable royalty, pursuant to paragraph xv), above	$67,837,000
Damages for breach of contract, with double-recovery discount, pursuant to paragraph xvi), above	$374,731,000
Reasonable legal and other costs, pursuant to paragraph xx), above	$13,393,843
Recovery of ICC costs and fees pursuant to paragraph xxii), above	$361,500
Compensation of amount owed Respondents for their Virginia litigation costs pursuant to xvii), above	($864,156)
TOTAL	$455,459,187

Post-award Interest

xxiv) All amounts due to be paid pursuant to this Award shall be paid within 30 days of the date of notification of this Award, and any amount that then remains outstanding shall bear simple interest at the rate of 8% from the date of this Award until full payment;

Other Claims

xxv) All other claims and counterclaims, not specifically addressed herein, are denied.

Place of Arbitration: Indianapolis, Indiana (U.S.A.)

Date: 9 October 2015

William W. Park

Professor William W. Park
Co-arbitrator

George A. Bermann

Professor George A. Bermann
Co-arbitrator
(Dissenting as to double patenting)

Fabien Gélinas

Professor Fabien Gélinas
President

PARTIAL DISSENT

1. Apart from the matter addressed below – namely, Respondents' assertion that the reissue patent, '962, is invalid on the ground of double patenting – I subscribe to the Award of the Tribunal in this case. I write only to record briefly my dissent from the ruling in respect of double patenting and briefly set forth my reasons for doing so.

Introduction

2. I assume at the outset that Respondents bear the burden of proving double patenting. However, for reasons set out below, I find that Respondents have met both the production burden and the burden of persuasion applicable to them.

3. The Award rejects Respondents' double patenting challenge to the validity of the reissue patent on two independent grounds.

4. The first ground, as set out in the Award (para 592), is that, in order to meet the one-way obviousness test for double patenting, the Strauch patent and the reissue patent must be commonly owned, and that this requirement is not established in the present case.

5. According to the Award's second ground (para. 601), even if common ownership were to be established, a finding of double patenting is foreclosed because a further requirement for double patenting – namely, a complete identity of ownership – must be shown, and cannot be shown in the present case.

6. I do not find either of these grounds of decision convincing.

Common Ownership

7. It is conceded that, absent a common inventor, double patenting cannot be found under the one-way obviousness test unless the same entity or entities own both patents at issue.[1] The question then is how to give effect to the common ownership requirement in the double patenting context. Respondents assert, and it is not contested, that the Strauch patent is owned by Bayer CropScience AG and that the reissue patent is owned by Bayer CropScience NV, both of which are wholly-owned Bayer AG subsidiaries.[2]

8. Respondents' position that under these circumstances the two patents have common ownership finds very substantial support in the record. The Patent and Trademark Office's (PTO's) Manual on Patent Examination Procedure (MPEP) expressly states that if "[a] Parent Company owns 100% of Subsidiaries A and B ... inventions of A and B are commonly owned by the Parent Company."[3] This formulation is significant. The Manual does not state that, under the stated circumstances, the inventions *may be considered as*

[1] MPEP, sec. 804.
[2] Respondents' Phase III Post-Hearing Reply, dated February 27, 2015, para. 2.
[3] R-720: MPEP § 706.02(l)(2)(I), dated March 2014, at 700-72.

commonly owned by the parent company; it states that they *are* commonly owned by the parent company.

9. By contrast, the Award (para. 593) proceeds on the assumption that a conclusion of double patenting requires some additional factual showing that would justify "veil-piercing" and concludes that unidentified facts of the present case fail to support such veil-piercing. But, whether or not it may be required to support "veil-piercing" in other contexts, a showing of exceptional circumstances is simply unnecessary under the MPEP. I cannot dismiss as readily as the Award does the fact that this case presents exactly what the MPEP, by way of deliberate guidance not only to examiners but also to parties, specifically identifies as constituting common ownership: "[if a] Parent Company owns 100% of Subsidiaries A and B, ... inventions of A and B are commonly owned by the Parent Company."[4] The MPEP also leaves no room for Bayer's further arguments that a finding of common ownership is excluded because neither Bayer CropScience AG nor Bayer CropScience NV ever owned both the Strauch and the reissue patent at the same time.[5]

10. I recognize that the MPEP represents general guidance only rather than a determination specific to the present case. However, it undoubtedly represents an official statement of policy on double patenting by the PTO, a body that, in my view, enjoys measurably greater authority and expertise in this matter than does the Arbitral Tribunal. The PTO has seen fit to include in the MPEP an illustration that is a paradigm for the present case. The fact that the scenario identified – "[a] Parent Company owns 100% of Subsidiaries A and B" – is presented as an *"illustration only,"* as pointed out in the Award (para. 594), means nothing more than that this is *not the only* scenario in which common ownership may be found. It does not to any degree weaken the conclusion that this scenario does itself represent common ownership.

11. To be sure, it is this Tribunal's responsibility to determine independently whether Claimants have established the causes of action pursued in these proceedings. But this is a complex case the ultimate outcome of which depends on a host of specific findings and on the way in which these findings are integrated. It is for the Tribunal to make these findings and determine the result to which, once integrated, they properly lead. On many – indeed most – findings in this case (especially those related to breach of contract), the Tribunal is as well-positioned as any body could be to reach an authoritative determination, and it is also entirely well-placed to determine authoritatively how the findings it reaches are to be legally integrated so as to produce a result on the matters in dispute. But not all issues that are the subject of findings are alike. On some issues, it is appropriate for the Tribunal, even while exercising independent judgment, to take very seriously into account pertinent data provided by bodies that enjoy a special authority and expertise in the issue at hand and whose own independence and impartiality is not in doubt. The matter of double patenting is precisely such an issue in this case. It should be borne in mind that clear statements of policy by the competent authorities are not only expressions of how those authorities reason, but also expressions of the way in which private parties are to guide their own conduct, i.e. expressions on which they are entitled to rely. Accordingly, in my view, independent judgment not only permits, but requires, the Tribunal to accord substantial weight to relevant indications by the PTO.

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[4] R-720: MPEP § 706.02(I)(2)(I), dated March 2014, at 700-72.

[5] Claimants' Remedies Post Hearing Submission, para. 4.

12. There is in fact in this picture more than the MPEP. It is common ground that on February 27, 2015, a Patent Office examiner saw sufficient merit to the challenge of double patenting to issue an office action, granting leave for reexamination of the grant to Claimant of patent protection under the reissue patent.[6] To be sure, as the Award emphasizes (para. 580), the examiner's determination was made on an *ex parte* basis. But the Award appears to proceed on the assumption that only a definitive and conclusive ruling of double patenting by the PTO is entitled to respect. But if in fact the Tribunal had before it a definitive and conclusive PTO ruling to that effect, it would properly – absent some extraordinary circumstance – consider the issue of double patenting to have already been decided, and definitively so. In the case of a reexamination grant, we cannot of course say for certain that the doubts animating the ruling will ultimately prevail. But neither should we proceed exactly as if the grant of leave had never been issued. Indications given by the PTO do not need to be conclusive in order to be given proper weight.

13. To demand a definitive and conclusive ruling of double patenting by the PTO in order to justify a finding of double patenting amounts, in my view, to imposing on the Respondent an extraordinarily enhanced and unjustified standard of proof. I address the standard of proof issue more fully below.

14. My conclusion that the evidence points to double patenting is importantly reinforced by the fact that, at Respondents' request,[7] the same examiner again granted leave for reexamination of the reissue patent, this time for double patenting in connection with a different Bayer patent, the Schneider patent.[8] Respondents' challenge to the reissue patent in the *Schneider* case presents essentially the same operative facts on the common ownership issue. By the time the examiner made her determination in *Schneider*, she had before her all of Claimant's argumentation in favor of denying a finding of double patenting in the challenge to the reissue patent in connection with the Strauch patent. It is not of great consequence to me that the two cases are separate, since both the examiner and the operative facts are the same and because it is not contested by Claimants that they presented their arguments to the examiner both orally on April 8, 2015 and in writing on April 21, 2015. Claimants have given no indication that they had less than a full opportunity to be heard in presenting their position on double patenting and on refuting Respondents' assertions in that regard. I am confident that if Claimants felt they did not have such an opportunity to be heard, they would have so informed the Tribunal in no uncertain terms. I am not prepared to assume that, in deciding whether to remit the grant of the patent in the second case, the examiner chose to disregard the argumentations that the Claimants advanced to that same examiner in the practically identical first case – which happen to be the same argumentations that Claimants also have advanced in these proceedings. That would be a highly inappropriate assumption.

15. The Award overcomes all of these indications by reference to several judicial decisions. Many of the cases upon which Bayer relies arise entirely outside the double patenting context, for example, on the question of standing to sue.[9] The only cases that, in my

[6] R-740: PTO Office Action in Ex Parte Reexamination, dated February 26, 2015; Respondents' Post-Hearing Reply (Feb. 27, 2015), para. 1. Respondents had filed for reexamination of the reissue patent on November 7, 2014.

[7] Respondents filed this second request for reexamination of the reissue patent on June 1, 2015.

[8] PTO Office Action in Ex Parte Reexamination, dated August 11, 2015.

[9] CX-237: *Schreiber Foods, Inc. v. Beatrice Cheese, Inc.*, 402 F.3d 1198, 1200-03 (Fed. Cir. 2005).

judgment, can plausibly be viewed as supporting Bayer's position are the *Brookhart*[10] and *Email Link*[11] cases. But Respondents are, in my judgment, correct, and the award concedes (para. 596), that neither of these cases deals with the issue of common ownership in the double patenting context. They deal with common ownership in the context of so-called "terminal disclaimers." A terminal disclaimer is a special procedure by which a patent owner is allowed to disclaim the period of a second issued patent that extends beyond the expiration of a first patent. This shortening obviates a charge of double patenting and, as a result, the unenforceability of the later patent. Significantly, an important rationale for the common ownership requirement in terminal disclaimers is to protect purported infringers from harassment by multiple infringement suits.[12] If there were not a common ownership requirement, the alleged infringer would still be subject to actions by multiple parties due to the multiple ownership that a terminal disclaimer invites – a situation that the requirement of common ownership in the terminal disclaimer context was specifically meant to avoid. In short, under a terminal disclaimer, a later patent will be allowed exceptionally to expire at the same time as the earlier patent, a privilege that presupposes that the patents are commonly owned.

16. It is necessary in deciding the matter before this Tribunal to consider all relevant factors and give each of them appropriate weight. I referred earlier to the question of standard of proof. I believe that the award fails to do that. Although Respondents bear the burden of proof of double patenting, they need only demonstrate that the preponderance of the evidence supports that conclusion. To impose what amounts to a higher standard of proof is not, in my judgment, appropriate. For all the reasons indicated above, I conclude that Respondents have met their burden.

17. It is not irrelevant in this regard that, as the Award states (para. 579), double patenting is highly problematic from a public policy viewpoint. Due precisely to its public policy dimension, the double patenting issue calls for greater caution than I believe the Award the exercises in denying Respondents' demonstration that double patenting has occurred.

18. I note in concluding this section that, according to the Award (para. 582), "if common ownership had been found to exist, such that double-patenting applied, the Tribunal would have declared the reissue patent to be invalid under the one-way obviousness test, because the earlier issued species claim for the DNA sequence of a *pat* gene in the Strauch patent would render obvious the later issued genus claim for the *bar* gene and its variants in the reissue patent." I find that "common ownership [has indeed] been found to exist" and that the reissue patent is accordingly invalid on account of double patenting.

19. The language of the Award just quoted indicates that common ownership alone is the decisive consideration in determining whether there is or is not double patenting. However, the Award nevertheless goes on to assume that, even if common ownership were established, an additional requirement – "complete identity" – needs to be met.

Complete Identity

[10] CL-670: *Ex parte Brookhart*, No. 2005-2463, 2005 Pat. App. LEXIS 2485 (B.P.A.I. Sept. 19, 2005).
[11] CL-645: *Email Link Corp. v. Treasure Island, LLC*, 2012 U.S. Dist. LEXIS 138042, at *11-12 (D. Nev. Sept. 25, 2012).
[12] In re Hubbell, 709 F.3d 1140, 1145 (Fed. Cir. 2013).

20. I therefore turn to the alternative ground for rejecting the double patenting thesis. As noted, according to that ground, a finding of double patenting is foreclosed in this case because, even if common ownership were to be established, a further requirement for double patenting – namely, a complete identity of ownership – must be shown and it simply cannot be shown in the present case. This is because the Award finds Biogen to be a co-owner of the reissue patent, but not of the Strauch patent.

21. I leave aside the question of whether the "complete identity" requirement set out in the *Brookhart* case – as noted, a terminal disclaimer case – is equally applicable to a simple double patenting case. But even if, contrary to any indication to this effect by the PTO, common ownership is not sufficient, and "complete identity" must also be established, I find on balance that it is established in this case.

22. Biogen is concededly not a co-owner of the Strauch patent. Its situation in regard to the reissue patent is admittedly subject to debate. On the one hand, [redacted], Biogen was named as co-owner of the reissue patent.[13] On the other hand, [redacted].[14] The question is whether what Biogen granted amounts to ownership of the reissue patent for present purposes. In answering that question in the negative, the Award in my opinion gives insufficient weight to the *Speedplay* case, which states that "[a] party that has been granted all substantial rights under the patent is considered the owner,"[15] as well as to the fact that in Phase II of these proceedings, Bayer took the position that it alone had "all substantial rights" respecting the patents at issue, including the reissue patent.[16] The court in *Speedplay* emphasized the practicality of the analysis ("A party that has been granted all substantial rights under the patent is considered the owner regardless of how the parties characterize the transaction that conveyed those rights.") It relied on an earlier decision in which it stated that what mattered in this context was "the substance of what was granted."[17] The Award (para. 604) suggests that even if the grantee becomes owner under these circumstances, the grantor still remains owner. I do not regard that as the more plausible reading of *Speedplay*, according to which, as a result of such a grant, the grantee not only becomes *an* owner, but becomes *the* owner.

23. I am reinforced in my view, as before, by the fact that the examiner in the *Schneider* case, after hearing and reading Claimants' full argumentation, including their assertion that the presence of Biogen should defeat "complete identity," ordered patent reexamination notwithstanding. And, as on the common ownership issue, dealt with above, I believe that the public policy dimension of double patenting militates in favor of a more pragmatic and realistic assessment of the common ownership circumstances than the Award conducts.

24. I thus find that Biogen's presence in this case does not defeat a finding of identity of patent holders for double patenting purposes.

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[13] C-356[redacted].
[14] *Id.*, [redacted]
[15] RLA-793: *Speedplay v. Bebop*, 211 F.3d 1245, 1250 (Fed. Cir. 2000).
[16] Claimants' Phase II Counter-Memorial, dated July 10, 2014, paras. 128-30.
[17] *Vaupel Textilmaschinen KG v. Meccanica Euro Italia S.P.A.*, 944 F.2d 870, 874, 873-76, 20 U.S.P.Q.2D (BNA) 1045, 1048, 1047-50 (Fed. Cir. 1991).

Patents '024, '236 and '477

25. It appears that, following the PTO's grant of Respondents' petition for reexamination of the grant of the reissue patent, the PTO granted like petitions with respect to Bayer's '024, '236 and '477 patents, on the basis of the same double patenting challenge.[18] As I understand it, Claimants do not suggest that the circumstances surrounding the grant of these three patents differ from those surrounding grant of the reissue patent.

26. I therefore cannot help but conclude that patents '024, '236 and '477 are likewise invalid.

Conclusion

27. I acknowledge that Respondents could have asserted their challenge to the patents in question at an earlier point in time and that, had they done so, the PTO might well by now have made a final determination, a determination that I would hope this Tribunal would have treated as binding. But as the Award rightly states (para. 579), "double patenting is a matter that engages public policy," and must be addressed and taken extremely seriously, notwithstanding this circumstance.

28. For all these reasons, I feel compelled to dissent from the Award's conclusion on the matter of double patenting. I consider the reissue patent – and for like reasons the '024, '236 and '477 patents – to be invalid on double patenting grounds, and to be unenforceable to the extent that they are relied on to find that Respondents have committed an infringement of the relevant Bayer patents

George A. Bermann, co-arbitrator

[18]Respondents' Phase III Post-Hearing Submission, dated February18, 2015, paras. 6-8.