04-1465
(Serial No. 09/619,643)

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

IN RE DANE K. FISHER AND RAGHUNATH V. LALGUDI

Appeal from the United States Patent and Trademark Office Board of Patent Appeals and Interferences in Appeal No. 2002-2046.

REPLY BRIEF FOR APPELLANTS DANE K. FISHER AND RAGHUNATH V. LALGUDI

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February 7, 2005

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

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Certificate of Interest

Counsel for Appellant Dane K. Fisher and Raghunath V. Lalgudi certify the following:

1. The full name of every party or amicus represented by me is:

   Dane K. Fisher
   Raghunath V. Lalgudi

2. The name of the real party in interest (if the parties named in the caption are not the real parties in interest) represented by me is:

   Monsanto Company

3. All parent corporations and any publicly held companies that own 10% or more of the stock of the party represented by me are:

   None.

4. The names of all law firms and the partners or associates that appeared for the parties or *amicus* now represented by me in the trial court or agency or are expected to appear in this Court are:

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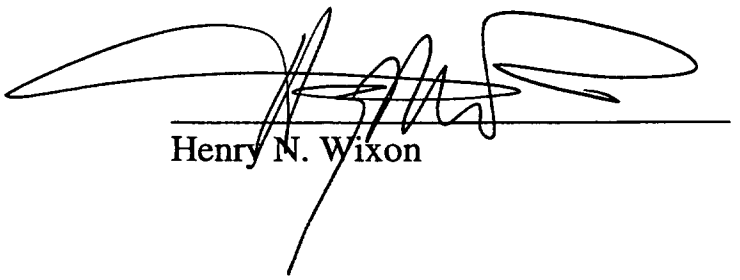

February 7, 2005
Date

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GLOSSARY OF DEFINED TERMS

(1) "Affymetrix" refers to *amicus curiae* Affymetrix, Inc.

(2) "Affymetrix Br." refers to the Brief for Affymetrix, Inc. in Support of Appellee.

(3) "Applicants" refers to the Appellants, Dane K. Fisher and Raghunath V. Lalgudi.

(4) "Lilly" refers to *amici curiae* Eli Lilly and Company, the Association for American Medical Colleges, Baxter Healthcare Corporation, National Academy of Sciences, Dow AgroSciences LLC, and American College of Medical Genetics.

(5) "Lilly Br." refers to the Brief for *Amici Curiae* Eli Lilly and Company, the Association for American Medical Colleges, Baxter Healthcare Corporation, National Academy of Sciences, Dow AgroSciences LLC, and American College of Medical Genetics.

(6) "Genentech" refers to *amicus curiae* Genentech, Inc.

(7) "Genentech Br." refers to the Brief of Genentech, Inc. as *Amicus Curiae* Supporting Affirmance and Supporting the United States Patent and Trademark Office.

(8) "PTO" refers to the Appellee, the Director of the United States Patent and Trademark Office.

(9) "PTO Br." refers to the Brief and Addendum for Appellee, Director of the United States Patent and Trademark Office.

I. Introduction.

The responsive briefs submitted by the PTO and *amici* demonstrate that there is no real dispute on two issues that are critical to this appeal. First, the briefs confirm, as the Applicants already have made clear, that "the threshold of utility" under 35 U.S.C. § 101 "is not high." (*See* PTO Br. at 16.) Second, the briefs confirm, as a matter of undisputed science, that geneticists regularly utilize ESTs corresponding to genes of unknown function in connection with a variety of important, "real world" scientific applications.

The absence of dispute on these key points narrows this appeal to two specific questions that are ripe for resolution:

- Whether the Board erred by applying a heightened utility standard that depends upon some undefined "spectrum" of knowledge concerning the function of a gene corresponding to an EST; and
- Whether the Board erred in concluding that the claimed ESTs lack utility under section 101, despite the undisputed existence of eight scientifically useful applications for the claimed ESTs and a commercially successful industry built upon the sale and licensing of ESTs corresponding to genes of unknown function, just like those at issue here.

The Board erred with respect to both issues. The decision to apply a heightened utility standard to the claimed ESTs simply cannot be squared with the minimal – i.e., "not high" – threshold for utility established by Congress. The Board's utility rejection also conflicts with the undisputed facts of this case. The record indisputably verifies that the claimed ESTs can be used in connection with a multitude of scientific applications that provide geneticists with one or more specific, substantial, and commercially valuable benefits – even though the ESTs correspond to genes with presently unknown functions. This showing is more than sufficient to satisfy the minimal threshold for utility under section 101. The Board's utility rejection should be reversed.

The PTO offers three primary arguments in an effort to justify the Board's flawed analysis. First, the PTO asserts that the claimed ESTs lack specific utility because all ESTs can be used as probes. This, however, is not the proper test. Under section 101, the specific utility prong only requires the existence of an ***identifiable*** benefit for the claimed invention; it does not require a benefit that is ***unique*** to the claimed invention. In any event, the utility requirement is satisfied here even under the PTO's more demanding test. Because each EST only will hybridize with a limited set of nucleic acid sequences – i.e., the gene from which the EST was derived and any sufficiently related nucleic acid sequences – all ESTs

cannot be used as probes for the exact same purpose. Therefore, each of the eight uses disclosed in the '643 Application ***are*** specific to the claimed ESTs.

Second, the PTO contends that the claimed ESTs lack substantial utility because their use involves nothing more than the type of "use-testing" prohibited by *Brenner v. Manson*, 383 U.S. 519 (1966), or the type of "intermediates" barred by *In re Joly*, 376 F.2d 906 (C.C.P.A. 1967), and *In re Kirk*, 376 F.2d 936 (C.C.P.A. 1967) – i.e., uses that involve "insubstantial" benefits. However, unlike the process and compound at issue in *Brenner* – which had no known use other than as a target of further scientific research – the claimed ESTs can be used to locate, identify, and/or study ***other*** genetic molecules falling outside the scope of the claimed invention. Therefore, the claimed ESTs can be used for purposes other than mere "use-testing." Nor is there any basis to classify the claimed ESTs as the useless "intermediates" at issue in *Kirk* and *Joly*. The claimed ESTs have well-known uses that have nothing to do with making objects of unknown use. *Kirk* and *Joly* are inapplicable.

Third, the PTO maintains that public policy considerations warrant rejection of the '643 Application even if the claimed ESTs are found to satisfy the legal requirements for utility (an argument not raised by the Board below). The PTO's prediction of horrors resulting from reversal of the Board's decision – the rapid filing of millions of new patent applications, unworkable licensing nightmares, and

stifled genetic research – are not supported by the record, and even if they were, neither the courts nor Congress have articulated a public policy exception to the utility requirement of section 101. This Court must assess the patentability of the '643 Application pursuant to the requirements mandated by Congress, even if the PTO considers the end result "bad policy." Any modification of the utility requirement should be made by Congress.

Finally, in an effort to expand the narrow scope of this appeal, Lilly and Affymetrix ask the Court to affirm the Board's rejection of the '643 Application based on the alleged failure to satisfy the written description requirement of 35 U.S.C. § 112 and the subject matter requirements of 35 U.S.C. § 101. As a procedural matter, the Board relied on neither ground below, and, therefore, consideration of these newly raised arguments for the first time on appeal is improper. Nevertheless, Lilly and Affymetrix are incorrect on substantive grounds. The Board correctly found that disclosure of the actual nucleotide sequences for the five claimed ESTs was an adequate written description of the claimed invention. Similarly, Affymetrix's attempt to label ESTs as unpatentable "objects of nature" collides with well-established precedent holding that objects isolated and purified from naturally occurring genetic material are patentable.

II. The PTO Has Failed to Demonstrate That the Board's Utility Rejection Is Supported by Substantial Evidence.

In their opening brief, the Applicants highlighted the minimal nature of the utility requirement and further detailed eight scientific applications for the claimed ESTs disclosed in the '643 Application. In its responsive brief, the PTO concedes that the threshold necessary to establish utility is "not high." The PTO also agrees that the claimed ESTs can be used for each of the eight disclosed applications. Nonetheless, the PTO still seeks affirmance of the Board's utility rejection by contending that, under a deferential standard of review purportedly owed to the Board's decision, none of the disclosed uses for the claimed ESTs provides benefits that are specific or substantial. The PTO is incorrect.

A. The Court Should Not Afford the Board's Utility Rejection Deferential Review.

Perhaps recognizing the frailty of its position under section 101, the PTO contends that the Board's decision is entitled to deferential review under *Skidmore v. Swift & Co.*, 323 U.S. 134 (1944) because the agency purportedly "adopted reasonable interpretative guidelines [for assessing utility] that were followed in this case" (PTO Br. at 19) – guidelines that reflect the PTO's ***own*** construction of

section 101. The PTO's argument for deferential treatment under *Skidmore* is misplaced for at least two reasons.[1]

First, the PTO has adopted ***three*** substantially different constructions of the utility standard over the last decade alone. (*See* PTO Br. at 20-21.) This shifting-sands approach to section 101 weighs strongly against applying any deference to the Board's decision. *See Good Samaritan Hospital v. Shalala*, 508 U.S. 402, 417 (1993) (noting that "[t]he consistency of an agency's position" is a key factor to be considered under *Skidmore*); *Butterbaugh v. DOJ*, 336 F.3d 1332, 1341 (Fed. Cir. 2003) ("[T]he Supreme Court ... has suggested that shifting [agency] interpretations are entitled to less [deference]" under *Skidmore.*).

Second, deference would be inappropriate given the unreasonable nature of the Board's "spectrum" of knowledge utility test. *See Bayer AG v. Carlsbad Tech., Inc.*, 298 F.3d 1377, 1381 (Fed. Cir. 2002) (only "reasonable" agency decisions are entitled to *Skidmore* deference); *Merck*, 80 F.3d at 1550 (whether an agency is entitled to *Skidmore* deference depends, in part, on "the validity of its reasoning"). By crafting a new test that conditions the utility of an EST upon some undefined level of knowledge concerning gene function, the Board has adopted a test so ambiguous and impracticable that even the PTO cannot articulate with any

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[1] The PTO does not suggest – nor could it – that the Board's decision is entitled to the significant deference due under *Chevron U.S.A., Inc. v. NRDC*, 467 U.S. 837 (1984). *See Merck & Co. v. Kessler*, 80 F.3d 1543, 1549-50 (Fed. Cir. 1996).

reasonable certainty when the claimed ESTs – or any other EST – might be entitled to patent protection. (*See* PTO Br. at 10 (conceding that, under the Board's test, "the threshold level of knowledge of the gene required for 'substantial utility' may be difficult to ascertain"); *id.* at 24 ("If more were disclosed, some of the claimed molecules might meet the utility requirement...."); *id.* at 26 (suggesting that all ESTs lack utility by referring to the claimed ESTs as "akin to a manufactured copy of a portion of one's fingerprint," and then concluding that such a copy would never be patentable "because there is no specific benefit to the individual fingerprint").)

The unworkable nature of the utility test fashioned by the Board is further demonstrated by the considerably divergent views of the PTO and *amici* concerning when ESTs have the required utility under the Board's vague standard. (*See* PTO Br. at 39 (utility may exist even with no knowledge of the "coding function of the underlying gene"); Affymetrix Br. at 1-2 (any EST that corresponds to a gene of unknown function "does not have patentable utility"); (Genentech Br. at 21 ("rare case" that an EST has utility without "some experimental demonstration of the biological functions or the biological role of the claimed gene"); Lilly Br. at 21 (utility requires disclosure of the "sequence and function or real-world significance of the encoded protein").) The absence of agreement in these briefs speaks volumes.

The Applicants agree with Genentech that "[c]larity regarding the utility requirement for inventions arising from genomics research is essential." (Genentech Br. at 6.) Here, however, the PTO's ever-changing and unworkable application of the utility standard confirms that the Board's decision is not entitled to deference, and strongly reinforces the critical need for this Court to articulate the proper test for utility to be applied to the ESTs at issue here and in other applications.

B. The Parties Agree That the Threshold Necessary to Establish the Patentable Utility of the Claimed ESTs "Is Not High."

In its decision rejecting the '643 Application, the Board suggested that *Brenner* and its progeny marked a fundamental shift away from the minimalist view of utility espoused by the courts for nearly two centuries. The PTO now appears to have abandoned that position. In its brief, the PTO agrees with this Court's recent post-*Brenner* pronouncements that the Applicants' burden to demonstrate utility under section 101 "is not high." (PTO Br. at 16 ("[T]he threshold of utility is not high.").) *See Juicy Whip, Inc. v. Orange Bang, Inc.*, 185 F.3d 1364, 1366 (Fed. Cir. 1999) ("The threshold of utility is not high: An

invention is 'useful' under section 101 if it is capable of providing some identifiable benefit.") (citing *Brenner* as direct authority).[2]

C. The Responsive Briefs Confirm That Geneticists Regularly Use ESTs Corresponding to Genes of Unknown Function In Important Scientific Applications.

The Applicants explained in their opening brief how the hybridization properties of the claimed ESTs could be used to screen genetic samples for the presence or absence of specific genetic molecules in connection with a variety of different research applications. The PTO does not dispute these assertions. (*See* PTO Br. at 12 (conceding that "all of the alleged utilities could be asserted for any EST"); *id.* at 14 ("[T]he fact that any EST can act as a probe that can base pair with its complement is not disputed...."); *id.* at 45 ("Fisher's compounds can be used in research procedures....").) In fact, the PTO expressly admits that use of the claimed ESTs:

> might allow those of skill in the art to learn such things as where an associated gene might be on a chromosome, or whether there are similar compounds in other organisms, or whether an associated gene is expressed at a particular time in

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[2] Despite these concessions, the PTO dedicates three pages of its brief to Justice Story's centuries-old discussion of the utility requirement in *Lowell v. Lewis*, 15 F. Cas. 1018 (C.C. Mass. 1817). (PTO Br. at 17-19.) Although "[t]he Story view of utility ... has been generally accepted by the courts," 1-4 CHISUM ON PATENTS § 4.02[1], the Applicants merely cited *Lowell* to illustrate the historically low standard ascribed to the utility requirement. Therefore, the PTO's lengthy discussion about whether Justice Story's often-cited analysis was dicta is irrelevant.

the life cycle of the organism, or expressed more in some tissue than others.

(PTO Br. at 45.)

The *amici* offer similar admissions, confirming that:

- When used to screen genetic samples, the claimed ESTs will hybridize with their complementary gene sequence (*see, e.g.*, Affymetrix Br. at 7, 9; Lilly Br. at 21);
- The eight disclosed uses for the claimed ESTs are "well-known" in the field of genetics (Genentech Br. at 13; *see also* Affymetrix Br. at 7; Lilly Br. at 10); and
- Geneticists regularly utilize ESTs corresponding to genes of unknown function in connection with critical scientific applications. (*See* Affymetrix Br. at 3, 9-16.)[3]

Affymetrix – which describes itself as the "worldwide leader in providing commercial DNA microarrays" (Affymetrix Br. at 1) – provides a particularly instructive summary detailing how its customers use microarrays as "valuable tool[s]," for example, to develop genetic profiles relating to various cancers and

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[3] Lilly incorrectly asserts that the Applicants failed to argue below that the claimed ESTs could be used as a source of primers. (*Compare* Lilly Br. at 14 *with* JA0209 (arguing that the claimed ESTs can be used as "Probes for Other Molecules or Source for Primers") and JA0013-14 (Board noting that use as "probes or as a source for primers" was one of the asserted utilities that "received the most attention in the briefing in this appeal").)

lifespan studies. (*Id.* at 9-16.) While Affymetrix appears to suggest that these examples support the Board's utility rejection, just the opposite is true.

Each example involves a microarray that incorporates ESTs corresponding to genes of unknown function, thereby demonstrating that an EST is useful in "real world" genetic applications, even in the absence of knowledge about the function of the corresponding gene. (*Id.* at 11 (describing microarray designed using barley ESTs); *id.* at 14-15 (discussing cancer research studies using ESTs corresponding to genes of unknown function); *id.* at 15-16 (highlighting lifespan studies using ESTs corresponding to genes of unknown function).) Indeed, Affymetrix itself admits that "[a] microarray is a ***useful*** device that allows the simultaneous monitoring of thousands of genetic sequences, including ... ***ESTs of unknown function***." (*Id.* at 21 (emphasis supplied).)[4]

D. The Undisputed Record Confirms That the Claimed ESTs Satisfy the Utility Requirement of 35 U.S.C. § 101.

Given the lack of any meaningful dispute surrounding the many uses for the claimed ESTs, the PTO instead focuses its brief on arguments intended to convince the Court that those uses are incapable of providing a single benefit that is both specific and substantial. These arguments cannot withstand scrutiny.

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[4] Despite its present stance, Genentech previously agreed that ESTs corresponding to genes of unknown function have patentable utility. (*See* Genentech Br. at 5 n.5 (acknowledging that Genentech has filed "several" patent applications directed to ESTs corresponding to genes of unknown function.)

1. The Claimed ESTs Have Specific Utility.

The PTO repeatedly argues that the claimed ESTs lack specific utility because "the utilities alleged are the same for anyone [sic] of the thousands of corn ESTs Monsanto discloses" and "could similarly be asserted for any EST from any other plant or animal." (PTO Br. at 13.) Notably, this argument derives from the PTO's own training materials, which define a use as not specific if it is "applicable to the broad class of the invention" and conclude, based on that definition, that a "gene probe" and "chromosome marker" lack specific utility. (MPEP § 2107.)

Nothing in *Brenner* or its progeny supports the PTO's sweeping rule that the specific utility prong requires the existence of a use that is inapplicable to all other inventions falling within the same "broad class." Rather, the decisions of this Court make clear that the requirement of specific utility merely demands an "identifiable benefit" – i.e., one that is not vague or unknown. *Juicy Whip*, 185 F.3d at 1366 ("An invention is 'useful' under section 101 if it is capable of providing some identifiable benefit."); *see Kirk*, 376 F.2d at 941 (finding that "nebulous expressions" of use such as "biological activity" are "so general as to be meaningless"). That requirement certainly is met here.[5]

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[5] There is no legitimate basis for the PTO's claim "that Fisher's utilities are similar to the generalized, nebulous assertions of 'biological activity' that were insufficient in *Kirk*." (PTO Br. at 15-16.) The Applicants have asserted a number of specific and "well-known" uses for the claimed ESTs that extend well beyond the "nebulous assertions" at issue in *Kirk*.

The requirement of specific utility is met even under the PTO's far more demanding test. Despite the PTO's effort to label all ESTs as generic probes capable of performing the exact same function, the record confirms that, when used as a probe, each of the claimed ESTs will hybridize in a genetic sample ***only*** with a limited set of related nucleic acid sequences – the gene corresponding to the EST and any sufficiently related nucleic acid sequences. As matter of scientific truth, ***all*** other ESTs ***cannot*** be used to probe for the same limited set of sequences. The claimed ESTs have specific utility.[6]

2. The Claimed ESTs Have Substantial Utility.

Even in the face of record evidence conclusively demonstrating that geneticists regularly utilize ESTs corresponding to genes of unknown function, the PTO maintains that the claimed ESTs lack substantial utility: (1) under the "use-testing" prohibition established by *Brenner*; (2) because the claimed ESTs purportedly are "intermediates" of the type barred by *Kirk* and *Joly*; and

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[6] The PTO's application of the specific utility prong highlights the agency's imposition of heightened utility demands on EST patents. For instance, if the PTO's version of the utility standard were applied equally to other fields, a novel semiconductor chip would have no utility merely because the chip has the same utility as other semiconductor chips. Likewise, a patent application directed to a new type of microscope would be subject to a utility rejection simply because all microscopes "[have] the specific benefit of magnifying other objects clearly." (PTO Br. at 25.)

(3) because any benefit derived from use of the claimed ESTs is meaningless in the absence of "some" additional testing.[7]

(a) The Claimed ESTs Have Utility Beyond Mere "Use-Testing."

The PTO incorrectly suggests that the claimed ESTs are mere "object[s] of scientific research" that are "directly analogous to [the chemical composition found to lack utility] in *Brenner*." (PTO Br. at 12, 15.) This case does not involve a chemical composition like that at issue in *Brenner* – which had ***no*** known use other than as a target of serious scientific research. *See Brenner*, 383 U.S. at 529-32. Rather, the claimed ESTs can be used in a myriad of different applications to locate, identify, and/or study ***other*** genetic molecules. Therefore, efforts to develop analogies between the utterly useless compound at issue in *Brenner* and the useful claimed ESTs are unfounded.

Lilly attempts to avoid this necessary conclusion by arguing that use of the claimed ESTs to locate other molecules is still "use-testing" because those molecules also fall within the literal scope of the "claimed invention." (*See* Lilly Br. at 10-11, 18-19.) *Brenner* only held, however, that the utility of a particular

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[7] The PTO further argues that SEQ ID NO. 5 lacks utility because "every reading frame was peppered with termination or stop codons." (PTO Br. at 34.) This argument lacks merit inasmuch as that claimed sequence still can be utilized as a probe for uses disclosed in the '643 Application, regardless of whether the sequence is "peppered with" termination or stop codons.

compound cannot be based upon uses directed to studying the properties of that ***same*** compound (i.e., "use-testing"). The decision does not stand for the far broader proposition that utility cannot derive from the use of one claimed species (e.g., an EST) to study a ***different*** compound (e.g., the full-length gene), even if the claimed species is part of the compound under investigation.

In any event, even if *Brenner* could be read that broadly, the '643 Application discloses uses for the claimed ESTs that involve genetic molecules ***not*** covered by claim 1 of the '643 Application. For example, there is no question that the claimed ESTs can be used to locate not only the genes to which they correspond, but also homologous (i.e., similar, but not perfectly complementary) nucleic acid sequences that can fall outside the literal scope of claim 1. (*See* JA0043:16-JA0046:25; JA0059:11-JA0060:13.) Nor is there any dispute that claimed ESTs can be used to isolate gene promoters, which also fall outside the literal scope of claim 1. (*See* JA0060:14-JA0061:26.) Accordingly, because the claimed ESTs can be used to locate genetic molecules that do not fall literally within the scope of claim 1, use of the claimed ESTs cannot be characterized as mere "use-testing" by any measure.[8]

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[8] Lilly's argument that the claimed ESTs are "nothing like a microscope" because "rather than being a research tool to study other objects, the claimed invention itself is the object of Fisher's asserted research plans" (Lilly Br. at 18-19) rests upon the same incorrect assumption that the claimed ESTs only can probe molecules falling within the scope of claim 1.

(b) The Claimed ESTs Are Not "Intermediates."

The PTO's effort to analogize the claimed ESTs and the "intermediates" deemed unpatentable in *Kirk* and *Joly* (PTO Br. at 39) also fails. The intermediates at issue in those cases were objects that had ***no*** known use other than as compounds that could be used to ***make*** other compounds with no known use. *See Kirk*, 376 F.2d at 943 ("[A]pplicants' statement of utility is to the effect that the novel compounds claimed herein are useful in making other novel compounds which have no known use."); *Joly*, 376 F.2d at 907-08 (finding compound had no use other than to make steroids of no known use). Here, by contrast, there is no dispute that each of the claimed ESTs can be used in a number of scientifically proven applications that have nothing to do with making useless compounds. Therefore, *Kirk* and *Joly* are inapposite.

(c) The Utility of an EST Does Not Depend on Whether the EST Correlates With a Known Trait or Gene Function.

Throughout its brief, the PTO repeatedly contends that an EST necessarily lacks substantial utility until correlated to a particular trait or gene function. Until then, according to the PTO, the mere hybridization between the EST and its corresponding gene provides no immediate benefit in the absence of significant additional testing and experimentation. (*See, e.g.*, PTO Br. at 29.)

The Applicants' opening brief refuted this argument in detail. (*See* Opening Br. at 37-40, 44-49.) An additional example further illustrates the fallacy of this argument. If one of the claimed ESTs hybridizes with its complementary sequence when introduced into a sample taken from a plant of unknown genetic origin, that fact alone immediately provides geneticists with valuable information – that the plant shares a common genetic heritage with maize. The claimed ESTs need not be correlated with any particular trait or gene function to be useful.[9]

3. The Specific and Substantial Utility of the Claimed ESTs Is Confirmed by Undisputed Evidence of Commercial Success.

The specific and substantial utility of the claimed ESTs is confirmed by the existence of an enormous market directed to the sale and licensing of ESTs that correspond to genes of unknown function. The PTO acknowledges the existence of this vast industry (*see* PTO Br. at 38 ("ESTs of unknown significance are sold. ...")), but contends that the Board properly dismissed this evidence because there

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[9] In a related argument, Lilly concedes that the claimed ESTs can be used as molecular markers, but contends that such use is "insubstantial" because other markers might be used in a less "indirect and cumbersome" manner. (Lilly Br. at 12.) Of course, the proper focus is not whether use of the claimed ESTs might be more "cumbersome" and "indirect" than the use of other molecules: "An invention need not be the best or the only way to accomplish a certain result and it need only be useful to some extent and in certain applications...." *Carl Zeiss Stiftung v. Renishaw PLC*, 945 F.2d 1173, 1180 (Fed. Cir. 1991).

purportedly is no nexus between the commercial success of the EST industry as a whole and the specific ESTs at issue here.[10]

This undisputed evidence of commercial success cannot be cast aside as irrelevant merely because ESTs typically are sold in "batches" and "the claims [of the '643 Application] are not directed to EST databases, clone sets, or microarrays." (PTO Br. at 38.) The PTO cites no case – and Applicants are not aware of one – where this or any other court has ruled that evidence of commercial success is relevant to a finding of utility only with respect to items that have commercial value when sold individually. That a claim may cover commercially insignificant amounts of a compound is not a barrier to a finding of utility. *Cf. SmithKline Beecham Corp. v. Apotex Corp.*, 365 F.3d 1306, 1310 (Fed. Cir. 2004) (finding that "[p]atent eligibility under § 101 is simply not an issue in this case"

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[10] The Board wrongly suggests that evidence of commercial success is relevant to establish utility in an infringement action but irrelevant in a proceeding before the Board. (PTO Br. at 37.) Common sense and precedent dictate that the same evidence of commercial success is relevant in both types of proceedings. *See Brenner*, 383 U.S. at 546 (noting outside the infringement context that the test for utility is closely "related to the world of commerce rather than to the realm of philosophy") (citation omitted); *Raytheon Co. v. Roper Corp.*, 724 F.2d 951, 959 (Fed. Cir. 1983) ("[P]roof of ... utility is further supported when ... the inventions ... have on their merits been met with commercial success.").

with respect to a claim directed to a single molecule, even though a significant volume of the molecule was required "to contribute any commercial value").[11]

The record also is devoid of any support for the PTO's suggestion that the success of the EST industry somehow has resulted from factors such as "extensive and judicious advertising, activity in putting the goods upon the market, and large commissions to dealers." (PTO Br. at 37.) ESTs have commercial value based on their usefulness to geneticists – not because of any creative sales, marketing, or commission programs. (*See, e.g.*, Genentech Br. at 2 (citing the usefulness of genomic information, without mention of any marketing efforts, as the basis for Genentech's decision to "pay[] significant fees to access private databases").)

III. The PTO Cannot Justify the Board's Erroneous Application of the Utility Standard on Public Policy Grounds.

As a backstop to the Board's flawed legal analysis under section 101, the PTO presses a number of new policy justifications in an effort to demonstrate that it would be "bad public policy" to extend patent protection to ESTs corresponding to genes of unknown function. (*See* PTO Br. at 43 ("[I]ssuing a patent on Fisher's compounds now would hurt, rather than help, progress in the field."); *id.* at 14

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[11] Indeed, acceptance of the PTO's argument would lead to the odd conclusion that evidence of commercial success has no bearing on the utility of claims directed to single ESTs corresponding to genes of unknown function, while the same evidence would support a finding of utility with respect to a claim directed to a "batch" of the same individually "useless" ESTs.

("Monsanto's position in this case would be poor patent policy with unfortunate consequences for the genetics field in general and the future of corn production in particular."). These newly raised policy arguments cannot serve as a basis to affirm the Board's utility rejection.

A. The PTO Has Neither the Expertise Nor the Authority to Reject the '643 Application on Public Policy Grounds.

In *Diamond v. Chakrabarty*, a group of *amici* forecast "a gruesome parade of horribles" that allegedly would result from a ruling upholding the validity of patents directed to genetically modified organisms. 447 U.S. 303, 316-17 (1980). Despite the "forceful[]" nature of the policy arguments presented, the Supreme Court expressly declined to include those "potential hazards" in its assessment of patentability under 35 U.S.C. § 101, noting that:

> we are without competence to entertain these arguments – either to brush them aside as fantasies generated by fear of the unknown, or to act on them. The choice we are urged to make is a matter of high policy for resolution within the legislative process after the kind of investigation, examination, and study that legislative bodies can provide and courts cannot.

Chakrabarty, 447 U.S. at 316-17.

The same result applies here. Despite more than a decade of intense debate that has centered on the same supposed "parade of horribles" raised by the PTO here (PTO Br. at 19-21), Congress has done nothing to remove ESTs from patent coverage or to treat ESTs differently from any other type of invention for patentability purposes. Neither the plain language of section 101 nor its legislative

history provides any basis to affirm the Board's decision based upon the policy considerations now urged by the PTO. *See Chakrabarty*, 447 U.S. at 316-17 (admonishing that courts should be mindful "not [to] read into the patent laws limitations and conditions which the legislature has not expressed") (citation omitted); *In re Alappat*, 33 F.3d 1526, 1542 (Fed. Cir. 1994) (same).

B. The Record Does Not Support the PTO's Newly Raised Policy Considerations.

Even if the Court were inclined to address issues of public policy, the record does not demonstrate that reversal of the Board's decision will result in the bleak picture painted by the PTO. The agency cites no evidence to support its sweeping claim that reversal of the Board's utility rejection will cause millions of new EST patent applications to flood through the doors of the Patent Office. To the contrary, given the financial realities of maintaining large patent portfolios, it is far more likely that EST researchers will limit their patent filings to the most promising ESTs found in the most genetically important organisms.[12]

The PTO also fails to identify record support showing that patents covering ESTs corresponding to genes of unknown function will lead to an unreasonably

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[12] Any potential for large numbers of patent application filings directed to ESTs – however remote – largely results from the PTO's own arbitrary regulations, which severely limit the number of ESTs that can be claimed in a single application. *See* MPEP § 803.04 (precluding applicants from claiming any more than 10 nucleotide sequences per patent application).

complex and expensive maze of licensing requirements, thereby establishing "too many tollbooths on the road to innovation." (PTO Br. at 44.) The need to negotiate complex, multiple licenses is not unique to the field of genetics. In fact, the same argument could be made with respect to any industry that involves multiple machines and/or processes incorporating numerous patented technologies (e.g., semiconductor fabrication). This Court has not precluded a finding of utility in those other similarly situated industries based on the potential for expensive and complex licensing requirements, and should not do so here either.

The mere fact that patents covering ESTs corresponding to genes of unknown function may preclude certain genetic research in the absence of a license also is not a ground for finding lack of utility. Again, this same argument could apply to any other field inasmuch as the very nature of a patent grant is the time-limited right to exclude others from practicing the patented invention. Moreover, the PTO and *amici* fail to explain why the same companies that presently facilitate research by licensing their "private databases" of ESTs (*see* Genentech Br. at 2) would suddenly stop offering licenses to those databases if ESTs are found to have legal utility.

Finally, policy considerations not raised by the PTO actually weigh in favor of reversing the Board's utility rejection. For example, the PTO's present view of the utility requirement – which will force the sometimes lengthy suppression of a

newly discovered EST until *after* the function of the gene corresponding to the EST becomes known – will defeat one of the critical purposes of the patent laws: "to encourage dissemination of information concerning discoveries and inventions." *Brenner*, 383 U.S. at 533.[13] Acceptance of the Board's test for utility (which requires discovery of the EST ***and*** discovery of the corresponding gene function) also may lead to a marked increase in complicated and expensive inventorship disputes. *See Kirk*, 376 F.2d at 958-59 (J. Rich dissenting) (recognizing dilemma caused by conditioning patentability upon "two inventions to get one patent which may be made by different people at different times").

IV. The New Written Description and "Object of Nature" Arguments Raised By the *Amici* Should Be Rejected on Procedural and Substantive Grounds.

In an apparent effort to direct the Court's attention away from the narrow focus of this appeal, Lilly and Affymetrix seek to inject new issues into this case that purportedly provide additional grounds to affirm the Board's rejection of the '643 Application. Lilly asks the Court to take the admittedly "uncommon" step of

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[13] Public disclosure of an EST prior to discovery of the corresponding gene function might preclude later patenting based on this Court's "long line of cases" holding that "[t]he discovery of a new property or use of a previously known composition, even when that property and use are unobvious from the prior art, cannot impart patentability to claims to the known composition." *See In re Crish*, 2004 U.S. App. LEXIS 26518, at *14 (Fed. Cir. Dec. 21, 2004) (*quoting In re Spada*, 911 F.2d 705, 708 (Fed. Cir. 1990)); *see also* 35 U.S.C. § 102(b) (establishing one-year statutory bar potentially implicated by public disclosure).

affirming rejection *sua sponte* on written description grounds under 35 U.S.C. § 112. (*See* Lilly Br. at 23-33.) Similarly, Affymetrix invites the Court to affirm rejection because the '643 Application allegedly seeks to patent a "product of nature" in violation of 35 U.S.C. § 101. (Affymetrix Br. at 16-21.) Both new arguments must fail.

A. The New *Amici* Arguments Should Be Rejected as Procedurally Improper.

Permitting new attacks against the patentability of the '643 Application based on grounds ***not*** relied upon by the Board (or raised in either party's opening brief) would run contrary to the clear mandate of 35 U.S.C. § 144. That statutory provision, which provides in relevant part that "the Federal Circuit shall review the decision from which an appeal is taken on the record before the Patent and Trademark Office," precludes the Court from doing exactly what the *amici* ask here – to justify the Board's decision by manufacturing new, alternative grounds on appeal:

> In appeals from the Board, we have before us a comprehensive record that contains the arguments and evidence presented by the parties, including all of the relevant information upon which the Board relied in rendering its decision. That record, when before us, is closed, in that the Board's decision must be justified within the four corners of that record. The record before us on appeal thus dictates the parameters of our review. ***We cannot look elsewhere to find justification for the Board's decision.***

In re Gartside, 203 F.3d 1305, 1314 (Fed. Cir. 2000) (citations omitted).[14]

"Third parties generally have no standing to seek direct judicial review of PTO decisions concerning a patent application." *See* 4-11 CHISUM ON PATENTS § 11.06[3] n. 4 (citing *Hallmark Cards, Inc. v. Lehman*, 959 F. Supp. 539 (D.D.C. 1997).) Therefore, this effort to contest the '643 Application based upon newly raised grounds appears to be nothing more than a backdoor attempt by the *amici* to accomplish indirectly what they cannot do directly. Without any right to contest the merits of the '643 Application by initiating a separate proceeding before the Board or a court, the *amici* should be precluded from raising those new arguments here on appeal as well.

B. The New *Amici* Arguments Should Be Rejected on Substantive Grounds.

Reversal of the Board's utility rejection is required even if the Court considers the merits of these new objections raised by the *amici*.

First, there is no legitimate reason to disturb the Board's well-reasoned conclusion that the Applicants "have provided an adequate written description of

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[14] Notably, the *amici* fail to cite a single case where this Court raised the written description requirement *sua sponte* to reject the patentability of a patent application. Applicants are aware of just one decision – issued two decades ago – where this Court *sua sponte* raised section 101 as a basis to reject patentability. *See Titanium Metals Corp. v. Banner*, 778 F.2d 775 (Fed. Cir. 1985).

nucleic acid molecules with the sequences set forth in SEQ ID NO: 1 though SEQ ID NO: 5." (JA0025-26.) As interpreted by the Board, claim 1 covers:

> a nucleic acid molecule, separated from substantially all other molecules normally associated with it in its native state, selected from the group consisting of the nucleic acid molecule defined by the 429 nucleotide sequence set forth in SEQ ID NO: 1, the 413 nucleotide sequence set forth in SEQ ID NO: 2, the 365 nucleotide sequence set forth in SEQ ID NO: 3, the 414 nucleotide sequence set forth in SEQ ID NO: 4, and the 333 nucleotide sequence set forth in SEQ ID NO: 5, with or without any preceding or trailing nucleotides, or other molecules."

(JA0005.) The specification of the '643 Application describes this invention by providing the exact nucleotide sequences required by the claim (i.e., SEQ ID NOS: 1-5), as well as other important information about the sequences including the vectors that comprise the claimed sequences (JA0084:16-JA0091:23) and the libraries from which the claimed sequences were originally purified (JA0028:11-JA0031:20.)

This Court's decisions in *In re Wallach*, 378 F.3d 1330 (Fed. Cir. 2004) and *Regents of Univ. of Cal. v. Eli Lilly & Co.*, 119 F.3d 1559 (Fed. Cir. 1997) do not require a different result merely because claim 1 also covers other molecules that include the claimed EST sequences. In *Wallach*, the Court addressed a claim directed to an entire DNA molecule coding for a particular protein "for which [the applicants] provided only a partial [amino acid] sequence." *See Wallach*, 378 F.3d at 1334. In contrast, claim 1 of the '643 Application covers a "nucleic acid

molecule" defined by the five nucleotide sequences expressly disclosed in their entirety in the specification. (JA0005.) There simply is no *Wallach* problem of inadequate disclosure here.

Claim 1 also is very different from the genus claim at stake in *Lilly*. As construed, claim 1 covers a nucleic acid molecule that consists of five distinct species. The claim is not directed to a genus that includes "innumerable" species as Lilly suggests (Lilly Br. at 25), merely because the five claimed species also may "comprise" other "preceding or trailing nucleotides, or other molecules." Any claim that includes open-ended transitional terms potentially covers "innumerable" undisclosed products, but it has long been settled that such terms do not transform the claim into an inappropriately broad genus claim. *See Ex Parte Davis*, 80 U.S.P.Q. 448, 450 (B.P.A.I. 1948) (use of the transitional term "comprising" leaves the claims "open for the inclusion of unspecified ingredients ***even in major amounts***") (emphasis supplied); *accord PPG Indus. V. Guardian Indus.*, 156 F.3d 1351, 1354 (Fed. Cir. 1998).

Equally unavailing is Affymetrix's argument that EST's are "products of nature" ineligible for patent protection under 35 U.S.C. § 101. (Affymetrix Br. at 16-20.) Affymetrix's citation of archaic, centuries-old case law ignores the recent and repeated pronouncements of this Court holding that genetic molecules isolated and purified from their naturally occurring state are indeed patentable. *See, e.g.,*

Wallach, 378 F.3d at 1335; *Fiers v. Revel*, 984 F.2d 1164, 1169 (Fed. Cir. 1993); *Amgen v. Chugai Pharm. Co.*, 927 F.2d 1200, 1207-09 (Fed. Cir. 1991).

Affymetrix's attempt to label ESTs as unpatentable "objects of nature" simply because they are purified from naturally occurring genetic material squarely conflicts with this precedent. Indeed, acceptance of Affymetrix's position would result in monumental changes for the biotechnology and pharmaceutical industries that have relied for decades on this Court's assurances that molecules purified from naturally occurring genetic material – like the claimed ESTs here – are entitled to patent protection.[15]

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[15] Affymetrix attempts to draw a distinction between the "substantially purified" language used in claim 1 of the '643 Application and the "isolated, purified, and synthesized" language purportedly utilized in other DNA claims. However, Affymetrix itself admits that "substantially purified" means "[to] separate[] from substantially all other molecules normally associated with it in its native state." (Affymetrix Br. at 20.) This is precisely what is required to "isolate and purify" a genetic molecule so as to make it eligible for patent protection. *See Wallach*, 378 F.3d at 1335; *Fiers*, 984 F.2d at 1169; *Amgen*, 927 F.2d at 1207-09.

V. Conclusion.

For the foregoing reasons and those set forth in Applicants' opening brief, the Court should reverse the Board's utility and enablement rejections of the '643 Application.

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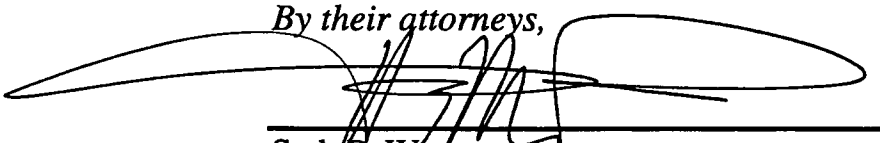
By their attorneys,



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CERTIFICATE OF SERVICE

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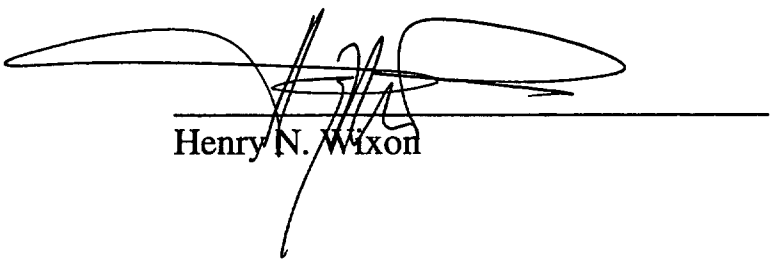
CERTIFICATE OF COMPLIANCE WITH RULE 32(a)

I, Henry N. Wixon, certify that the foregoing brief complies with the type-volume limitation set forth in FED. R. APP. P. 32(a)(7)(B). Specifically, this brief contains 6,910 words, excluding the parts of the brief exempted by FED. R. APP. P. 32(a)(7)B)(iii), as determined by the word count feature of the word processing program used to create this brief. I further certify that the foregoing brief complies with the typeface requirements set forth in FED. R. APP. P. 32(a)(5) and the type style requirements of FED. R. APP. P. 32(a)(6). Specifically, this brief has been prepared using a proportionately spaced typeface using Microsoft 2000, in 14-point Times New Roman font.



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