2014–1139 & 2014–1144

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

ARIOSA DIAGNOSTICS, INC. and NATERA, INC.,

Plaintiffs–Appellees,

DNA DIAGNOSTICS CENTER, INC.,

Counterclaim Defendant–Appellee,

v.

SEQUENOM, INC. and SEQUENOM CENTER FOR MOLECULAR MEDICINE, LLC,

Defendants–Appellants,

ISIS INNOVATION LIMITED,

Defendant

Appeals from the United States District Court for the Northern District of California in Nos. 3:11–cv–06391–SI, 3:12–cv–00132–SI, Judge Susan Illston

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BRIEF OF *AMICI CURIAE* THE WISCONSIN ALUMNI RESEARCH FOUNDATION, MARSHFIELD CLINIC, AND MCIS, INC. IN SUPPORT OF SEQUENOM'S PETITION FOR REHEARING EN BANC

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August 25, 2015

CERTIFICATE OF INTEREST

Counsel for *amici curiae* certifies the following:

The full names of the *amici curiae* represented by me are:

The Wisconsin Alumni Research Foundation
Marshfield Clinic
MCIS, Inc.

The names of the real parties in interest (if the parties named in the caption are not the real party in interest) represented by me are:

same

All parent corporations and any publicly held companies that own 10 percent or more of the stock of the *amici curiae* represented by me are:

Marshfield Clinic Health System, Inc. is the
parent corporation of Marshfield Clinic and MCIS, Inc.

The names of all law firms and the lawyers that appeared for the *amici curiae* now represented by me in the trial court or are expected to appear in this Court are:

PERKINS COIE LLP

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Dated: August 25, 2015 /s/Dan L. Bagatell
Dan L. Bagatell

TABLE OF CONTENTS

Certificate of Interest i

Table of Authorities iii

Introduction 1

Statement of Interest 2

Argument 3

A. The goal of the two-step *Mayo/Alice* framework is to ensure that patentees cannot effectively monopolize natural phenomena, laws of nature, and abstract ideas—no more and no less 3

B. Where an inventor claims only an application that makes practical use of a natural phenomenon, the claims do not monopolize the natural phenomenon itself and are patent-eligible under Section 101 5

C. The panel's analysis of *Mayo/Alice* Step Two was mistaken because isolation, amplification, and analysis of cffDNA in maternal fluids were *not* conventional 7

Conclusion 10

Certificate of Compliance 11

Proof of Service 12

TABLE OF AUTHORITIES

Cases **Pages**

Alice Corp. v. CLS Bank Int'l,
134 S. Ct. 2347 (2014) .....*passim*

Ass'n for Molecular Pathology v. Myriad Genetics, Inc.,
133 S. Ct. 2107 (2013) 3, 5

Diamond v. Chakrabarty,
447 U.S. 303 (1980) 4

Diamond v. Diehr,
450 U.S. 175 (1981) .....*passim*

Eibel Process Co. v. Minn. & Ont. Paper Co.,
261 U.S. 45 (1923) 8

Le Roy v. Tatham,
55 U.S. (14 How.) 156 (1853) 4

Mackay Radio & Tel. Co. v. Radio Corp. of Am.,
306 U.S. 86 (1939) 4

Mayo Collaborative Servs. v. Prometheus Labs., Inc.,
132 S. Ct. 1289 (2012) .....*passim*

Ochiai, *In re*,
71 F.3d 1565 (Fed. Cir. 1995) 8

Spormann, *In re*,
363 F.2d 444 (CCPA 1966) 8

Statutes

35 U.S.C. § 101 .....*passim*

35 U.S.C. § 103 .....2, 8

INTRODUCTION

Amici curiae The Wisconsin Alumni Research Foundation (WARF), Marshfield Clinic, and MCIS, Inc. submit this brief in support of Sequenom's petition for rehearing en banc.[1]

The panel opinion and Judge Linn's concurrence recognize that Drs. Lo and Wainscoat made a great scientific breakthrough but nevertheless conclude that the claimed invention fails the two-part test of *Mayo* and *Alice*. In particular, the panel reasons that (a) the claims rely on a natural phenomenon (the presence of cffDNA in maternal fluids) and (b) isolation, amplification, and analysis of DNA materials to detect genetic characteristics were mere well-understood, routine, and conventional activities. But even assuming both premises, *Mayo* and *Alice* need not and should not be read as tying this Court's hands and dooming Sequenom's claims.

Although the Supreme Court has held that natural phenomena, laws of nature, and abstract ideas are not patentable *per se*, it has also held that *practical applications* of those building blocks *are* patent-eligible. The *Mayo*/*Alice* test was designed to prevent clever draftsmen from effectively claiming natural phenomena, laws of nature, and abstract ideas in the guise of claiming practical applications. But the test must be applied with this distinction in mind, not to analyze "trans-

[1] No party or party's counsel has authored any portion of this brief, and only *amici* and their counsel have funded it.

formation" and "conventionality" in their own right. In this case, several claim limitations make clear that the claims neither expressly nor practically monopolize use of cffDNA, and that should be the end of the patent-eligibility analysis.

Mayo did not compel the panel's judgment of patent-ineligibility. In that case, the claimed steps were well known and commonly practiced. In this case, the steps of fractionating blood, amplifying paternally inherited DNA, and detecting paternally inherited nucleic acids had never been performed with cffDNA from maternal fluids because no one knew that such cffDNA existed. *Mayo* and *Alice* both require analyzing claim steps as an "ordered combination" rather than in isolation, and here the ordered combination of claim steps was neither routine nor conventional. To be sure, *Mayo* and *Alice* have imported a Section 103-like analysis into Section 101, but this Court has long recognized that it is *not* obvious to apply otherwise conventional steps to a raw material when the raw material is unknown, and the Supreme Court has similarly recognized that it is improper to treat newly discovered phenomena as prior art.

The Court should therefore grant rehearing en banc.

STATEMENT OF INTEREST

WARF is a non-profit organization that supports and promotes scientific research at the University of Wisconsin–Madison by patenting inventions and discoveries of university researchers and licensing them for commercial use.

Marshfield Clinic is a non-profit clinic whose mission is to serve patients through research and education as well as providing accessible, high-quality care. MCIS (an affiliate of Marshfield Clinic) produces medical information products and services that enable effective, efficient practice of medicine at an affordable cost.

Amici have no financial interest in the invention at issue in this case. They do have a strong interest, however, in the patent-eligibility question this case presents because they have commercialized other ground-breaking medical therapies and products and aim to continue doing so for the benefit of both their institutions and the public they serve. As others will explain, the panel's narrow view of patent-eligibility would eliminate a critical incentive to discover and exploit practical applications of natural phenomena, to the long-term detriment of everyone.

ARGUMENT

A. The goal of the two-step *Mayo/Alice* framework is to ensure that patentees cannot effectively monopolize natural phenomena, laws of nature, and abstract ideas—no more and no less

Although the Supreme Court has held that natural phenomena, laws of nature, and abstract ideas *themselves* are not patent-eligible, it has also consistently recognized that *practical applications* and *variations* of natural phenomena, laws of nature, and abstract ideas *are* patent-eligible. *See*, *e.g.*, *Ass'n for Molecular Pathology v. Myriad Genetics, Inc.*, 133 S. Ct. 2107 (2013) (cDNA held patent-eligible even though isolated, naturally occurring DNA segments were not); *Diamond v.*

Diehr, 450 U.S. 175 (1981) (method of curing rubber was patent-eligible even though it relied in part on a law of nature, the Arrhenius equation); *Diamond v. Chakrabarty*, 447 U.S. 303 (1980) (genetically engineered bacterium capable of breaking down crude oil was patent-eligible even though naturally-occurring bacteria were not); *Mackay Radio & Tel. Co. v. Radio Corp. of Am.*, 306 U.S. 86 (1939) ("While a scientific truth, or the mathematical expression of it, is not patentable invention, a novel and useful structure created with the aid of knowledge of scientific truth may be."); *Le Roy v. Tatham*, 55 U.S. (14 How.) 156, 175 (1853) ("A new property discovered in matter, when practically applied in the construction of a useful article of commerce or manufacture, is patentable," even though the discovery of a principle is not.).

The two-part *Mayo/Alice* framework was designed to make sure that patentees have claimed significantly more than abstract ideas, laws of nature, or natural phenomena themselves. *See Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1294, 1297 (2012); *Alice Corp. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2355 (2014). Simply put, a clever draftsman cannot avoid the exceptions to patent-eligibility by gussying up the claims with extra verbiage or trivial additional elements. *Mayo*, 132 S. Ct. at 1297; *Alice*, 134 S. Ct. at 2357. In *Mayo*'s words, a patent may not simply recite a law of nature and say to apply it. 132 S. Ct. at 1294. Likewise, a patent may not simply recite a natural phenomenon and say to use it.

Although *Mayo* and *Alice* refer to "transformation" and "conventionality," the point was not to analyze those concepts for their own sake. Instead, the critical question is whether a patent impermissibly claims and prevents others from using a natural phenomenon, law of nature, or abstract idea itself, or instead permissibly claims a practical *application* of one of those things. *Compare Mayo*, 132 S. Ct. at 1305 (holding claims to method of medical treatment invalid because they "effectively claim[ed] the underlying laws of nature themselves"), *with id.* at 1298–99 (contrasting *Diehr*, in which the patenteees did not "seek to pre-empt the use of [the Arrhenius] equation" but instead "transformed the process into an inventive application of the formula" and sought "only to foreclose from others the use of that equation in conjunction with all of the other steps in their claimed process").

B. Where an inventor claims only an application that makes practical use of a natural phenomenon, the claims do not monopolize the natural phenomenon itself and are patent-eligible under Section 101

Myriad recognized that although isolated naturally occurring DNA is not patent-eligible, innovative methods of isolating or manipulating DNA may be. 133 S. Ct. at 2119–20 ("Had Myriad created an innovative method of manipulating genes while searching for the BRCA1 and BRCA2 genes, it could possibly have sought a method patent."). It also observed that practical *applications* of knowledge about gene sequences may be patentable even though the sequences themselves are not. *Id.* at 2120 ("[T]his case does not involve patents on new *applica-*

tions of knowledge about the BRCA1 and BRCA2 genes. Judge Bryson aptly noted that, '[a]s the first party with knowledge of the [BRCA1 and BRCA2] sequences, Myriad was in an excellent position to claim applications of that knowledge. Many of its unchallenged claims are limited to such applications.'").

Similarly here, the inventors could not have patented their discovery that maternal fluids contain cffDNA. Nor could they have patented naturally occurring cffDNA sequences. But they could have patented innovative methods of isolating cffDNA in maternal fluids, and they likewise were entitled to patent innovative practical applications of their discovery that cffDNA exists in maternal fluids.

In fact, the inventors did not purport to patent the cffDNA that appears in maternal fluids. Nor did they effectively patent naturally occurring cffDNA by claiming all practical uses of it. Instead, they claimed one specific application involving one fraction of the naturally occurring cffDNA. All of the claims are limited to detecting and using *paternally* inherited nucleic acids; none cover detecting or using *maternally* inherited nucleic acids. Moreover, the claims require the detection method to use both fractionation and amplification steps, and it was undisputed that there are practical alternative detection methods that do not involve fractionation and amplification of the cffDNA. Because Sequenom's claims neither expressly nor practically monopolize the cffDNA that naturally appears in maternal fluids, they are patent-eligible under 35 U.S.C. § 101.

C. The panel's analysis of *Mayo/Alice* Step Two was mistaken because isolation, amplification, and analysis of cffDNA in maternal fluids were *not* conventional

In invalidating the claims, the panel reasoned that (a) the claims were directed to the natural phenomenon of cffDNA in maternal fluids; and (b) other claim limitations such as fractionation of blood, amplification of DNA, and detection of nucleic acids were conventional. The second step of that analysis was mistaken.

To begin with, the analysis erred by isolating the steps rather than considering them as an "ordered combination," as taught by *Alice*, 134 S. Ct. at 2355, *Mayo*, 132 S. Ct. at 1298, and *Diehr*, 450 U.S. at 188. Methods of fractionating blood, amplifying DNA, and detecting nucleic acids may all have been known. But it was not known—much less conventional—to isolate, amplify, and analyze *cffDNA in maternal fluids* because no one thought cffDNA was present in maternal fluids.

Mayo does not compel the panel's result. There the Supreme Court expressly reiterated that an application of a law of nature to a new and useful end may be patented. 132 S. Ct. at 1293–94. The same is true for a new and useful application of a natural phenomenon. Moreover, although the Supreme Court invalidated the claims in *Mayo*, it did so on grounds readily distinguishable here. The claims there recited methods of optimizing treatment of certain gastrointestinal disorders using a known drug, and the claimed advance was the recognition that the level of the drug in the patient's blood level should be increased if below one threshold and

decreased if above another threshold. *Id.* at 1294–95. The Court deemed the optimal therapeutic ratio to be an unpatentable law of nature, and it discounted the other claim steps (administering the drug and determining its level in the blood) as well-understood, routine, and conventional steps that were already being performed by the relevant community. *Id.* at 1297–98. Here, in contrast, the other claim steps were *not* already being performed. Similar steps may have been conventional in other applications, but not in this context with this type of material.

For good or for bad, *Mayo* and *Alice* appear to have added a Section 103-like obviousness gloss to the patent-eligibility analysis under Section 101. But this Court's obviousness jurisprudence confirms the patent-eligibility of claims like Sequenom's. In *In re Ochiai*, 71 F.3d 1565 (Fed. Cir. 1995), this Court reversed the Board and held that a process for making a cephem compound was not obvious when neither the acid used as the starting material nor the cephem compound ultimately produced was known in the prior art. That was so even though acylation reactions in general were conventional. In this Court's words:

> One having no knowledge of this acid could hardly find it obvious to make any cephem using this acid as an acylating agent, much less the particular cephem recited in claim 6. In other words, it would not have been obvious to those of ordinary skill in the art to choose the particular acid of claim 6 as an acylating agent for the known amine for the simple reason that the particular acid was unknown but for Ochiai's disclosure in the '429 application.

Id. at 1569–70; *see also In re Spormann*, 363 F.2d 444, 448 (CCPA 1966) ("That

which may be inherent is not necessarily known. Obviousness cannot be predicated on what is unknown."). Similarly here, the base cffDNA material was neither known nor obvious, and it follows that isolation, amplification, and analysis of that material was not obvious, either. *Cf. Eibel Process Co. v. Minn. & Ont. Paper Co.*, 261 U.S. 45, 67–68 (1923) (upholding validity of claims to paper-making process where key part of invention involved discovery of unknown fact: "The invention was not the mere use of a high or substantial pitch to remedy a known source of trouble. It was the discovery of the source not before known, and the application of the remedy, for which Eibel was entitled to be rewarded in his patent.").

The old "assume a can opener" joke teaches the same lesson. It goes like this. A physicist, a chemist, and an economist are stranded on a desert island. A can of food washes ashore, but they but have no can opener. The physicist devises an ingenious plan relying on leverage and gravity. The chemist proposes a clever plan based on heat and pressure. To which the economist responds, "Let's assume we have a can opener, and from there the solution is easy." The joke, of course, is that in the real word, we *cannot* assume the existence of a can opener and deduce from there. By the same token, the analysis of "conventionality" should not presume that the presence of cffDNA in maternal fluids was known.

In effect, the panel opinion treats that natural phenomenon as a known element of the prior art. But it was not known, and that fact must not be disregarded.

In *Diehr*, the dissenting Justices argued that a natural law (or phenomenon) should be "treated for § 101 purposes as though it were a familiar part of the prior art." 450 U.S. at 204, 216 (Stevens, J., dissenting). But the majority rejected that approach, emphasizing that "[i]t was inappropriate to dissect the claims into old and new elements and then ignore the presence of the old elements in the analysis." *Id.* at 189 (further noting, in n.12, that the dissenters' approach "would, if carried to its extreme, make all inventions unpatentable because all inventions can be reduced to underlying principles of nature which, once known, make their implementation obvious."). Nothing in *Mayo* or *Alice* reversed that principle.

CONCLUSION

A patent covers patent-eligible subject matter if it claims a particular practical method of using a material found in nature and does not effectively clam the material itself or all practical uses thereof. Sequenom's claims satisfy that constraint. Because the panel's contrary holding is mistaken and likely to deal a grave blow to the medical diagnostics and pharmaceutical industries and to patients whose health depends on medical innovations, the Court should grant rehearing en banc.

Respectfully submitted,

PERKINS COIE LLP

by /s/Dan L. Bagatell
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Counsel for *Amici Curiae* WARF, Marshfield Clinic, and MCIS

CERTIFICATE OF COMPLIANCE

1. This brief complies with the length limitation of Federal Rule of Appellate Procedure 35(g).

2. This brief complies with the typeface requirements of Federal Rule of Appellate Procedure 32(a)(5) and the type style requirements of Federal Rule of Appellate Procedure 32(a)(6). The brief has been prepared in a proportionally spaced typeface using Microsoft® Word and 14-point Times New Roman type.

Dated: August 25, 2015. /s/Dan L. Bagatell

Dan L. Bagatell

PROOF OF SERVICE

In accordance with Federal Rule of Appellate Procedure 25 and Federal Circuit Rule 25, I certify that I caused this brief to be served via the Federal Circuit's CM/ECF system on counsel of record for all parties.

I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct.

Dated: August 25, 2015.

/s/Dan L. Bagatell
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