Nos. 17-2498, -2499, -2545, -2546

United States Court of Appeals for the Federal Circuit

ENZO LIFE SCIENCES, INC.,

Plaintiff-Appellant,

v.

ROCHE MOLECULAR SYSTEMS, INC., ROCHE DIAGNOSTICS CORPORATION, ROCHE DIAGNOSTICS OPERATIONS, INC., ROCHE NIMBLEGEN, INC., BECTON DICKINSON AND COMPANY, aka Becton Dickson and Company, BECTON DICKINSON DIAGNOSTICS INC., aka Becton Dickson Diagnostics, GENEOHM SCIENCES INC., ABBOTT LABORATORIES, ABBOTT MOLECULAR, INC.,

Defendants-Appellees.

APPEALS FROM THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE IN NOS. 1:12-CV-00106, 1:12-CV-00274, 1:12-CV-00275, 1:13-CV-00225; CHIEF JUDGE LEONARD P. STARK

COMBINED PETITION FOR PANEL REHEARING AND REHEARING EN BANC BY PLAINTIFF-APPELLANT ENZO LIFE SCIENCES, INC.

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CERTIFICATE OF INTEREST

Pursuant to Federal Circuit Rules 26.1, 35(e)(3), and 47.4, counsel for Plaintiff-Appellant Enzo Life Sciences, Inc. certifies the following:

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

   Enzo Life Sciences, Inc.

2. The name of the real party in interest (if the party is NOT identified in Question 3) represented by me is:

   None.

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

   Enzo Biochem, Inc.

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

   DESMARAIS LLP: Joseph C. Akalski; John M. Desmarais; Sean T. Doyle; Robert C. Harrits; Andrew G. Heinz; Alan S. Kellman; Xiao Li; Kerri-Ann Limbeek; Peter C. Magic; Kevin K. McNish; Jordan N. Malz; Jessica A. Martinez; Lindsey E. Miller; Ameet A. Modi; Lauren M. Nowierski; Jennifer Przybylski; Danielle A. Shultz; Michael P. Stadnick; Laurie N. Stempler; Edward B. Terchunian; Justin P.D. Wilcox; Wesley White

   FARNAN LLP: Brian E. Farnan; Joseph J. Farnan, III; Michael J. Farnan

5. The title and number of any case known to counsel to be pending in this or any other court or agency that will directly affect or be directly affected by this court's decision in the pending appeal include:

   None.

Dated: August 5, 2019

/s/ Justin P.D. Wilcox
Justin P.D. Wilcox

TABLE OF CONTENTS

TABLE OF AUTHORITIES

Pages

Cases

Statutes

STATEMENT OF COUNSEL

Based on my professional judgment, I believe the panel decision is contrary to the following precedents of this Court: *Wyeth & Cordis Corp. v. Abbott Laboratories*, 720 F.3d 1380 (Fed. Cir. 2018) (finding unpredictability in the art based on evidence that a skilled artisan must engage in a trial-and-error process to identify functional embodiments of the claims); *Alcon Research Ltd. v. Barr Laboratories, Inc.*, 745 F.3d 1180 (Fed. Cir. 2014) (requiring evidence beyond speculation or assumption that numerous variables would, in fact, affect the functionality of the claimed methods); and *Allergan, Inc. v. Sandoz Inc.*, 796 F.3d 1293 (Fed. Cir. 2015) (holding that patents need not prove inventions work, even if skilled artisans of the time would have been skeptical).

/s/ Justin P.D. Wilcox
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Counsel for Plaintiff-Appellant
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POINTS OF FACT OR LAW OVERLOOKED OR MISAPPREHENDED

This case arose on appeal from district court judgments that two patents were invalid for non-enablement. A panel of this Court affirmed those findings on narrow grounds: because the art was highly unpredictable, skilled artisans could not identify embodiments that functioned as claimed without undue experimentation. But the panel's decision misapplied the law of enablement. The record lacked any evidence of inoperative embodiments or the amount of testing that would be required to practice the asserted claims. Instead, the panel based its decision on testimony that skilled artisans of the time disbelieved (albeit mistakenly) that the claimed nucleic acid probes would function as intended. But a skilled artisan's disbelief is not evidence whether any embodiments would, in fact, fail to function as intended, nor is it evidence whether practicing the claims required undue experimentation. The panel also erroneously resolved factual disputes and inferences on summary judgment against the non-movant, Enzo. Moreover, as stated *supra*, the panel decision is contrary to multiple precedents of this Court.

INTRODUCTION

U.S. Patent Nos. 6,992,180 (the "'180 Patent") and 8,097,405 (the "'405 Patent") both claim nucleic acid probes for detecting particular genome sequences. Against the prevailing dogma of the time, the '180 Patent claimed probes with detectable, non-radioactive labels attached to a phosphate of a nucleic acid sequence. Because skilled artisans of the time mistakenly believed that phosphate-labeled probes would not function as claimed, a panel of this Court found the art highly unpredictable—despite underlying disputes of material fact—and, on that basis, concluded that the patents were not enabled under 35 U.S.C. § 112.

The panel erred. That skilled artisans disbelieved the claimed invention does not indicate whether any experimentation—let alone undue experimentation—would be necessary to dispel that belief. Moreover, the record lacks any evidence of inoperative embodiments. The prevailing disbelief of Enzo's claimed invention alone cannot establish by clear and convincing evidence that undue experimentation would be necessary to identify functional probes covered by the claims.

The panel decision also created intra-circuit conflicts with this Court's prior precedents that (1) a challenger must present actual proof of inoperability within a genus or class to find the claimed art unpredictable, and (2) a patent need not prove that the claimed invention works. The panel's decision contradicts both holdings

and should be vacated; Enzo's appeal should be reheard by the panel or *en banc* Court.

STATEMENT OF THE CASE

I. The Inventions Of The '180 And '405 Patents

Deoxyribonucleic acid (DNA) and ribonucleic acid (RNA) are nucleic acids, which are comprised of linked chains of nucleotides. Appx5829. Each nucleotide is composed of a sugar, phosphate, and nitrogenous base. *Id.* The nitrogenous bases of DNA and RNA nucleotides bind in specific pairings known as "Watson-Crick base pairs." Appx5830. Adenine pairs with thymine or uracil; guanine pairs with cytosine. Appx5829-5830. Two linked chains of nucleotides (or "polynucleotides") pair—or hybridize—if the arrangement of nucleotides in each strand results in sufficient Watson-Crick pairing of the bases. Appx6389.

Hybridization enables scientists to detect certain DNA or RNA sequences. A labeled polynucleotide that can form a sufficiently complementary sequence of base pairs with a target nucleic acid will hybridize with the target and enable scientists to detect the label of the hybridized polynucleotide to confirm the presence of the target. Appx5830-5831; Appx15266. A labeled polynucleotide that is both hybridizable and detectable is called a probe. Appx6264.

By the 1982 priority date of the '180 and '405 Patents,[1] nucleic acid hybridization was well understood. Appx5831; Appx15266-15267. The construction and use of radioactively labeled probes—which substituted a radioactive isotope for an atom in the nucleic acid—was also well understood. *Id.*

The construction and use of non-radioactive probes was a nascent field. In 1981, Dr. David Ward demonstrated that non-radioactive labels could be attached at specific base moieties (known as "Ward positions") to create probes. Appx4129-4133. The prevailing—and mistaken—perception in the art, however, was that attaching non-radioactive labels anywhere on a nucleic acid sequence other than a Ward position would compromise the hybridizability or detectability of the intended probe. Appx5831-5832; Appx15266-15267.

The inventors of the '180 and '405 Patents recognized the error of this perception. A polynucleotide with a non-radioactive label at a non-Ward position could nonetheless contain sufficient base pairing "informational content" to hybridize and function as a probe. Appx12189-12191. And skilled artisans[2] at the time understood how to construct nucleic acid sequences complementary to target

[1] Both patents claim priority to U.S. Patent Application No. 06/391,440, filed on June 23, 1982.

[2] The parties agreed that the relevant skilled artisan was a scientist with a doctorate in chemistry, biochemistry, biophysics, molecular biology, or a similar field.

sequences to optimize hybridization, and they understood how to detect probes once hybridized. Appx5832; Appx15267; Appx15269-15270; Appx12805; Appx12807.

The claims of the '180 Patent describe a phosphate-labeled probe—*i.e.*, a polynucleotide, labeled at the phosphate molecule(s), that can hybridize to and detect a complementary nucleic acid. The claims of the '405 Patent describe *in situ* and liquid phase hybridization of non-radioactive probes labeled at non-Ward positions. Both patent specifications are, in relevant part, identical.[3] Appx90 n.6.

The specifications disclose examples of phosphate-, sugar-, and base-labeled polynucleotides that function as probes—*i.e.*, polynucleotides that hybridize to and detect complementary nucleic acid sequences. For example, Example V discloses creating phosphate-labeled probes by using carbodiimide chemistry to couple polybiotinylated poly-L-lysine or biotinyl-1,6-diaminohexane to phosphate moieties within polynucleotides. Appx446 33:30–44; Appx477 5:40–54; Appx5845-5846; Appx5861-5862; Appx5282; Appx5296; Appx5300; Appx5468-5474; Appx5446-5461; Appx12223; Appx12230; Appx12232; Appx12582-12588; Appx15318-15319.

[3] All relevant disclosures in the specifications also appear in the original application. *See* Appx5049-5191; Appx11797-11939.

II. District Court Proceedings

In 2012, Enzo filed suits against the Defendants—Roche Molecular Systems, Inc., Roche Diagnostics Corp., Roche Diagnostics Operations, Inc., and Roche Nimblegen, Inc. ("Roche"); Becton Dickinson and Company, Becton Dickinson Diagnostics Inc. ("BD"); and Abbott Laboratories and Abbott Molecular, Inc. ("Abbott")—alleging infringement of the '180 Patent. Appx1212-1216; Appx2833-2836; Appx1964-1967. In 2013, Enzo filed a second suit against Abbott alleging infringement of the '405 Patent. Appx3973-3977.

The district court granted summary judgment that all claims of the '180 Patent are invalid as non-enabled under 35 U.S.C. § 112. Appx23; Appx59-77; Appx99-117; Appx14950-14951. The district court subsequently granted summary judgment that all claims of the '405 Patent are also invalid as non-enabled. Appx78-98.

III. Federal Circuit Proceedings

Following briefing and oral argument, a panel of this Court affirmed the decisions of the district court that the '180 and '405 Patents are invalid for lack of enablement. *Enzo Life Sci., Inc. v. Gen-Probe Inc.*, No. 17-2498, slip op. at 2 (Fed. Cir. June 20, 2019) (hereinafter, "Panel Op."). Applying Third Circuit law, the panel reviewed the summary judgment decisions *de novo*. *Id.* at 8. The panel concluded that the asserted claims of the '180 Patent require a particular functionality—"the labeled polynucleotides must be hybridizable and detectable upon hybridization"—

and that the patent failed to teach a skilled artisan "whether the many embodiments of the broad claims would exhibit that required functionality." *Id.* at 10–11.

Based on factors previously articulated by this Court in *In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988), the panel found that a skilled artisan would engage in undue experimentation to identify probes with the required functionality. Panel Op. 11–15. In reaching this conclusion, the panel considered the guidance and examples disclosed by the patent, the skill of those in the art, and the breadth of the claims. *Id.* But the lynchpin of the panel's analysis was its finding of high unpredictability in the art based entirely on testimony that skilled artisans of the time believed (albeit mistakenly) that phosphate-labeled polynucleotides would not be hybridizable or detectable as probes. *Id.* at 14. The panel did not address other evidence—including disputes of material fact—regarding the predictability of the art. *Id.*

ARGUMENT

I. In Finding The Art Highly Unpredictable, The Panel Ignored Factual Disputes And Presumed Facts Against Non-Movant Enzo

"Enablement is a question of law based on underlying factual findings," such as facts related to the *Wands* factors. *MagSil Corp. v. Hitachi Glob. Storage Techs., Inc.*, 687 F.3d 1377, 1381 (Fed. Cir. 2012). Summary judgment of invalidity based on non-enablement is inappropriate when there are underlying factual disputes. *E.g.*, *Transocean Offshore Deepwater Drilling, Inc. v. Maersk Contractors USA, Inc.*, 617 F.3d 1296, 1306–07 (Fed. Cir. 2010). In the present case, the district court found

disputed whether the specification disclosed "phosphate-labeled polynucleotides capable of hybridization and subsequent detection." Appx49-51. The panel, however, failed to consider this conflicting evidence and, instead, presumed facts about the predictability of the art based solely on testimony that does not support those presumptions.

A. The Testimony Cited By The Panel Does Not Support Any Inference About The Experimentation—If Any—Needed To Practice The Claims

The panel concluded that the '180 Patent was not enabled because the panel found the art highly unpredictable. Panel Op. 14–15. That finding of unpredictability was based on the testimony of two Enzo experts and one inventor that skilled artisans of the time mistakenly believed that probes with nonradioactive labels attached at locations other than the Ward positions would not hybridize or be detectable. *Id.* But the predictability of the art only matters insofar as it informs whether a skilled artisan must engage in undue experimentation to practice the claims. *In re Wands*, 858 F.2d at 736–37. "The question of undue experimentation is a matter of degree, and what is required is that the amount of experimentation not be 'unduly extensive.'" *Cephalon, Inc. v. Watson Pharm., Inc.*, 707 F.3d 1330, 1338 (Fed. Cir. 2013). Here, the testimony cited by the panel does not establish the amount of experimentation necessary to practice the claims—only that some

unspecified amount of testing may be required to dispel the mistaken belief that the claimed inventions would not work.

For example, the panel relied on Dr. Backman's testimony that "it was commonly thought" that labels at non-Ward positions "would interfere with or disrupt the hybridization process." Panel Op. 14 (citing Appx4728 ¶ 74). The panel also cited named inventor Dr. Rabbani's testimony that the inventors' more aggressive modification of the nucleic acid was considered "breaking the dogma." *Id.* (citing Appx6465 31:12–33:13). Dr. Sherman also testified that skilled artisans "would have been dissuaded" from testing or using non-Ward–labeled polynucleotides, *id.* (citing Appx8454 150:8–15), and would have had to test a non-Ward–labeled probe—not "to predict whether it would actually hybridize"—but to "assure against the prevailing wisdom that it could work." *Id.* (citing Appx8454-8455 150:17–18). Critically, none of the testimony cited by the panel establishes the ***amount*** of testing necessary to dispel the mistaken dogma.

Moreover, the cited testimony does not indicate either (1) how much experimentation would have been required to practice the claims of the '180 Patent, or (2) what skilled artisans of the time would have considered a typical amount of experimentation. Without those fundamental facts, the panel simply could not assess whether undue experimentation was necessary to practice the claims. And, even assuming that some limited amount of testing was required to dispel the mistaken

dogma, neither the panel nor the Defendants cited any precedent holding that a need to test an embodiment once, or even handful of times, to dispel mistaken notions about the art constitutes undue experimentation. *Cf. Crown Operations Int'l, Ltd. v. Solutia, Inc.*, 289 F.3d 1367, 1381 (Fed. Cir. 2002) (disputed facts preclude summary judgment where the necessary experimentation may be as limited as "try[ing] two possibilities").

B. Enzo Proffered Evidence That Whether A Phosphate-Labeled Probe Was Hybridizable And Detectable Was Not Unpredictable

In finding the art highly unpredictable, the panel overlooked contrary evidence offered by Enzo that the hybridizability and detectability of labeled polynucleotides was not, in fact, unpredictable. For example, the patent specification discloses how to label polynucleotides at the phosphate and maintain hybridization and detection: The sequence of the "DNA or RNA probes" should "substantially match[] the DNA or RNA sequence of genetic material to be located and/or identified" and should contain "preferably at least about one special [*i.e.*, labeled] nucleotide per 5-10 of the nucleotides in the probe." Appellant Br., ECF No. 44, at 34 (citing Appx456 54:18–45; Appx5863-5865; Appx5880; Appx5884-5895; Appx4983). Enzo identified evidence that other elements of the claimed probes, such as "variation in sequence, [or] position in the sequence at which the label or linkage was placed[,] . . . would be very unlikely to affect [probe] functionality." *Id.* at 35 (citing Appx5884-5885). One of the inventors testified that

"there's no reason that the phosphate, right, can interfere with the hybridization," Reply, ECF No. 62, at 9 (citing Appx5298 301:3–6), and, as the panel noted, "[n]ucleic acid hybridization was well understood" by the patents' priority date. Panel Op. 4. Significantly, one of Defendants' experts testified that disclosure of a non-radioactively labeled polynucleotide ***necessarily discloses*** a polynucleotide that is detectable when hybridized. Appellant Br. at 58 (citing Appx12138-12139 173:23–174:4).

The Defendants—who bore the burden of proving nonenablement by clear and convincing proof, *Cephalon*, 707 F.3d at 1336—presented no evidence regarding the predictability of particular phosphate-labeled probes to hybridize or be detected. Defendants relied solely on the mistaken disbelief that phosphate-label probes would not work. In fact, Defendants failed to offer proof of any inoperable phosphate-labeled probes. *See* Reply 8–10 (Defendants' arguments about unpredictability of and failed implementation of hybridizable, detectable probes were based on evidence regarding base—not phosphate—labeling). Thus, no record evidence exists that, once a skilled artisan dispelled his skepticism of the functionality of phosphate-labeled probes, the skilled artisan would have needed to unduly experiment to identify phosphate-labeled probes that function as intended. As a result, the panel erroneously shifted the burden of proof to Enzo to prove enablement. *See Cephalon*, 707 F.3d at 1337–38.

C. The Panel Failed To Construe The Facts Regarding Predictability Of The Art In Enzo's Favor

At summary judgment, disputes of fact must be resolved and inferences must be drawn in the non-movant's favor—here, Enzo. *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 255 (1986).

The panel failed to do so when it found the art highly unpredictable based only on the ignorance of skilled artisans at the time and did not credit evidence offered by Enzo that the '180 Patent disclosed how to make functional phosphate-labeled probes. Based on the evidence adduced, it is as likely that all claimed phosphate-labeled polynucleotides would hybridize and be detectable as it is that only some would exhibit the intended functionality. In addition, the district court already concluded that a genuine dispute of material fact exists as to whether Example V disclosed "phosphate-labeled polynucleotides capable of hybridization and subsequent detection." Appx49-50. At the very least, similar factual disputes exist as to the predictability of the art and the extent of experimentation necessary for skilled artisans to dispel their mistaken perceptions and identify phosphate-labeled polynucleotides that hybridize and are detectable as probes.

These disputes are material. Indeed, the panel's analysis of the *Wands* factors turned on finding the art highly unpredictable. "Given the unpredictability of the art at the time," the panel found that the guidance in the specification to be insufficient. Panel Op. 11–12. "[I]n light of the unpredictability in the art," the panel also found

Example V to be an insufficient working example. *Id.* at 12–13. "Given such unpredictability in the art," the panel further found the breadth of the claims "particularly concerning." *Id.* at 14–15. Because the panel's erroneous finding that the art is highly unpredictability infected the rest of its analysis, the panel decision should be vacated and Enzo's appeal reheard.

II. The Panel's Decision In This Case Created Intra-Circuit Conflicts

In finding the art highly unpredictable based on a mistaken skepticism of skilled artisans, and therefore the '180 Patent non-enabled, the panel's decision creates a conflict between its precedential opinion in this case and its prior precedential decisions in *Wyeth & Cordis Corp. v. Abbott Laboratories*, 720 F.3d 1380 (Fed. Cir. 2018), *Alcon Research Ltd. v. Barr Laboratories, Inc.*, 745 F.3d 1180 (Fed. Cir. 2014), and *Allergan, Inc. v. Sandoz Inc.*, 796 F.3d 1293 (Fed. Cir. 2015).

Wyeth concerned a class of compounds called rapamycin with particular immunosuppressive and antirestenosis effects achieved by binding two proteins within a specific location. 720 F.3d at 1382–83. The *Wyeth* Court found the asserted claims invalid for lack of enablement because a skilled artisan would have had to unduly experiment to identify compounds in the claimed class of rapamycins that exhibited the particular functionality. *Id.* at 1385–86. As here, the Court's decision

rested on the large number of possible embodiments within the claimed genus and the unpredictability of the art. *Id.*

The facts demonstrating unpredictability of the art in *Wyeth*, however, critically differ from the record in this case. "Wyeth's own witnesses testified that even minor alterations to the . . . molecule could impact its immunosuppressive and antirestenotic properties." *Id.* at 1384–85. To practice the claims, "it would be necessary to first synthesize and then screen *each* candidate compound." *Id.* at 1385 (emphasis in original). Wyeth's own scientist testified that "you really can't tell whether they work" without testing. *Id.* Thus, the *Wyeth* Court found the art highly unpredictable because skilled artisans could not predict which candidate compounds would exhibit the desired functionality; a skilled artisan ***must test each*** possible embodiment.

Under the holding of the present case, however, for a court to find non-enablement, skilled artisans need ***only disbelieve*** the claimed embodiments would exhibit the intended functionality. Unlike *Wyeth*, the record here does not indicate whether some phosphate-labeled polynucleotides would fail to function as intended. *Supra* Argument I.B. Nor does the record indicate how much testing a skilled artisan must perform to overcome the mistaken disbelief in the functionality of phosphate-labeled probes. *Supra* Argument I.A. Practicing the claims at issue in *Wyeth* required "an iterative, trial-and-error process" to identify compounds that function

as desired, 720 F.3d at 1386, whereas practicing the claims at issue in this case may have required as few as one experiment—the record does not clearly or convincingly indicate—to dispel mistaken dogma.

This Court's decisions in *Alcon* and *Allergan* further highlight the conflict between *Wyeth* and the present case. Much like the panel's decision in this case, the lower court in *Alcon* concluded that the claims were too broad and the art too unpredictable. 745 F.3d at 1185. The lower court relied "on testimony that many 'variables' . . . including pH, buffer, buffer concentration, preservatives, chelating agents, and other excipients *may* affect the chemical stability," including testimony that "when 'you have a lot of variables on top of one another, the experimentation gets out of control quickly.'" *Id.* at 1189 (emphasis in original).

But the defendant in *Alcon*—like the Defendants here, *supra* Argument I.B—"adduced no evidence . . . that changing any of the 'variables' . . . would render Alcon's claimed invention inoperable." 745 F.3d at 1189. Without such evidence, testimony about variables that ***may*** affect the functionality of the claimed methods amounted to "unsubstantiated conclusory statement[s]" that are "not sufficient" to show "any experimentation, let alone undue experimentation." *Id.* at 1189–90.

The *Allergan* Court addressed claims for chemical treatments of glaucoma. 796 F.3d at 1298–99. Against the then-prevailing dogma, the claimed treatment included lower and higher concentrations, respectively, of bimatoprost and

benzalkonium chloride ("BAK"), yet purported to be as effective as prior treatments with fewer side effects. *Id.* at 1298.

On appeal, the defendants argued that the claims were not enabled because "the skilled artisan would not accept without doubt the asserted utility of the claimed formulation" and emphasized that "the prior art taught that BAK would not increase the permeability of bimatoprost." *Id.* at 1310. In other words, a skilled artisan would not have believed that the claimed invention would function as intended. In the present case, based solely on such disbelief, the panel concluded that the patents failed to teach "whether the many embodiments of the broad claims would exhibit that required functionality." Panel Op. 10–11. The *Allergan* Court, however held that such skepticism does not render claims non-enabled: "a patent does not need to guarantee that the invention works for a claim to be enabled." 796 F.3d at 1310 (quoting *Alcon*, 745 F.3d at 1189).

Prior to the present case, this Court's *Wyeth*, *Alcon*, and *Allergan* holdings were consistent. If a defendant offers proof of unworkable species within a broadly claimed genus, then, as in *Wyeth*, the claims may be non-enabled due to a need to unduly experiment to identify workable embodiments. Absent such proof, a defendant's speculation about variables that may affect the claimed functionality is insufficient, as in *Alcon*. And absent such proof, a skilled artisan's disbelief in the

viability of the claims did not control the outcome because, as in *Allergan*, a patent need not guarantee that the invention works.

Here, however, Defendants failed to offer such proof, yet the panel found the art highly unpredictable based solely on the mistaken disbelief of skilled artisans. Under this panel's decision, seemingly ***any*** experimentation necessary to ***confirm*** the functionality of patent claims may be presumed to be ***undue*** experimentation. Compounding that error, the panel ignored genuine disputes of material fact and thereby deviated from the bedrock principle that such disputes preclude summary judgment. *E.g.*, *Transocean*, 617 F.3d at 1306–07. The panel erred in finding the art highly unpredictable and thereby created an intra-circuit conflict between this case and the Court's prior decisions. The panel decision should be vacated and Enzo's appeal reinstated.

III. The Panel's Holding That The '405 Patent Is Also Invalid Should Be Vacated For The Same Reasons

The panel did not conduct an independent review of the enablement disclosures of the '405 Patent. Because the claims of the '405 Patent "are broader than the asserted claims of the '180 patent," the panel concluded that "the claims are not enabled for the same reasons." Panel Op. 15–16. Thus, the panel's decision on the '405 Patent also should be vacated and Enzo's appeal reinstated for the same reasons.

CONCLUSION

Accordingly, this Court should vacate its affirmance of invalidity of the '180 and '405 Patents and rehear, before the same panel or *en banc*, Enzo's appeal from the judgments of the district court.

Respectfully submitted,

Dated: August 5, 2019

/s/ Justin P.D. Wilcox

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CERTIFICATE OF SERVICE

I hereby certify that on this 5th day of August 2019, I served the foregoing COMBINED PETITION FOR PANEL REHEARING AND REHEARING EN BANC OF PLAINTIFF-APPELLANT ENZO LIFE SCIENCES, INC., on all counsel of record by filing the document with the United States Court of Appeals for the Federal Circuit using the CM/ECF system.

Dated: August 5, 2019

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CERTIFICATE OF COMPLIANCE WITH TYPE-VOLUME LIMITATION, TYPEFACE REQUIREMENTS, AND TYPE STYLE REQUIREMENTS

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Dated: August 5, 2019

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ADDENDUM

United States Court of Appeals for the Federal Circuit

ENZO LIFE SCIENCES, INC.,
Plaintiff-Appellant

v.

ROCHE MOLECULAR SYSTEMS, INC., ROCHE DIAGNOSTICS CORPORATION, ROCHE DIAGNOSTICS OPERATIONS, INC., ROCHE NIMBLEGEN, INC., BECTON, DICKINSON AND COMPANY, AKA BECTON DICKSON AND COMPANY, BECTON DICKINSON DIAGNOSTICS INC., AKA BECTON DICKSON DIAGNOSTICS, GENEOHM SCIENCES INC., ABBOTT LABORATORIES, ABBOTT MOLECULAR, INC.,
Defendants-Appellees

2017-2498, 2017-2499, 2017-2545, 2017-2546

Appeals from the United States District Court for the District of Delaware in Nos. 1:12-cv-00106-LPS, 1:12-cv-00274-LPS, 1:12-cv-00275-LPS, 1:13-cv-00225-LPS, Chief Judge Leonard P. Stark.

SEALED OPINION ISSUED: June 20, 2019
PUBLIC OPINION ISSUED: July 5, 2019*

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* This opinion was originally filed under seal and has been unsealed in full.

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Before PROST, *Chief Judge,* REYNA and WALLACH, *Circuit Judges.*

PROST, *Chief Judge*.

Enzo Life Sciences, Inc. ("Enzo") appeals the decision of the U.S. District Court for the District of Delaware granting summary judgment against Enzo and holding that the asserted claims are invalid for lack of enablement.

We affirm as to non-enablement and do not reach the other issues presented on appeal.

I

Deoxyribonucleic acid ("DNA") and ribonucleic acid ("RNA") are nucleic acids. They are made of a series of building blocks, called nucleotides, linked together in a chain. A single nucleotide is made up of a sugar, a phosphate, and a nitrogenous base. DNA nucleotides have one of four nitrogenous bases: adenine (A); guanine (G); cytosine (C); and thymine (T). RNA has the same bases, except it uses uracil (U) instead of thymine (T).

A polynucleotide refers to multiple nucleotides linked together in a chain.[1] The nucleotides located at each end of a polynucleotide chain are referred to as terminal nucleotides. All other nucleotides in a polynucleotide chain are referred to as internal nucleotides.

Two strands of polynucleotides can pair with each other, i.e., hybridize, through hydrogen bonding between the bases on each polynucleotide strand. The bases T and U pair with A, while G pairs with C. This is referred to as complementary base pairing or "Watson-Crick base pairing," and this pairing is how the now-familiar double helix shape is formed. Two polynucleotide strands will hybridize if the arrangement of nucleotides in each strand is such that enough bases can pair with each other. For example, whether two strands will hybridize depends in part on the number of complementary base pairs that exist between the two polynucleotides.

Hybridization techniques are used to detect the presence of certain nucleic acid sequences of interest, i.e., target sequences, such as genetic alterations. In such procedures,

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[1] An oligonucleotide is simply a shorter polynucleotide (e.g., just a few nucleotides in length).

scientists use a hybridization "probe"—i.e., a labeled polynucleotide that is hybridizable and remains detectable after hybridization occurs—that is sufficiently complementary to the target sequence. The probe will hybridize with the target sequence if the target sequence is present, and the label on the probe then allows scientists to detect the hybridized probe.

Nucleic acid hybridization was well understood by June 1982, which is the claimed priority date of the patents at issue in this appeal. The prevailing method of labeling probes at that time was via radioactive labeling. Radioactive labeling generally involved replacing certain atoms in the nucleotide sequence with corresponding radioactive isotopes.

Non-radioactive labeling was just developing at the time of the claimed inventions. In 1981, Dr. David Ward and others at Yale University successfully developed a non-radioactive probe by attaching a label to a polynucleotide via a chemical linker at a base position of a nucleotide. *See* J.A. 4129–33 (publication by Dr. Ward and others titled "Enzymatic synthesis of biotin-labeled polynucleotides: Novel nucleic acid affinity probes"). Dr. Ward demonstrated that attaching labels at certain positions of the nucleotide ("the Ward positions") would not disrupt the polynucleotide's ability to hybridize and be detected upon hybridization.

In December 1981, Enzo licensed the exclusive rights to the patent portfolio covering Dr. Ward's discovery. *See* J.A. 4258–75. Shortly thereafter, in June 1982, Enzo filed a patent application covering non-radioactive labeling at additional positions on a nucleotide. The two patents in this appeal issued from applications filed in 1995 that claim priority from this 1982 application.

Both patents in this appeal generally relate to the use of non-radioactively labeled polynucleotides in nucleic acid hybridization and detection applications. The patents

share the same specification in relevant part. *See* J.A. 90 n.6.

A

U.S. Patent No. 6,992,180 ("the '180 patent") relates to non-radioactive labeling of polynucleotides where the label is attached at the *phosphate* position of a nucleotide. The claims are not directed to any specific polynucleotide, nor do they focus on the chemistry or linker used to attach a label, the number of labels to attach to a polynucleotide, or where within the polynucleotide to attach those labels. Instead, the claims encompass *all* polynucleotides with labels attached to a phosphate, as long as the polynucleotide remains hybridizable and detectable upon hybridization. Claim 1 of the '180 patent is representative:

> 1. An oligo- or polynucleotide which is complementary to a nucleic acid of interest or a portion thereof, said oligo- or polynucleotide comprising ***at least one modified nucleotide or modified nucleotide analog*** having the formula
>
> Sig-PM-SM-BASE
>
> wherein PM is a phosphate moiety, SM is a furanosyl moiety and BASE is a base moiety comprising a pyrimidine, a pyrimidine analog, a purine, a purine analog, a deazapurine or a deazapurine analog wherein said analog can be attached to or coupled to or incorporated into DNA or RNA ***wherein said analog does not substantially interfere with double helix formation or nucleic acid hybridization***, said PM being attached to SM, said BASE being attached to SM, and ***said Sig being covalently attached to PM*** directly or through a non-nucleotidyl chemical linkage, and wherein said Sig comprises a non-polypeptide, non-nucleotidyl, ***non-radioactive label moiety which can be directly or indirectly***

> ***detected when attached to PM or when said modified nucleotide is incorporated into said oligo- or polynucleotide or when said oligo- or polynucleotide is hybridized to said complementary nucleic acid of interest or a portion thereof***, and wherein Sig comprises biotin, iminobiotin, an electron dense component, a magnetic component, a metal-containing component, a fluorescent component, a chemiluminescent component, a chromogenic component, a hapten or a combination of any of the foregoing.

'180 patent claim 1 (emphases added).

"Sig" represents a signaling moiety (i.e., a label); PM represents a phosphate moiety; SM represents a sugar moiety; and BASE represents a base moiety.

B

The asserted claims of U.S. Patent No. 8,097,405 ("the '405 patent") fall into two categories: (1) *in situ* hybridization claims; and (2) liquid phase hybridization claims.

The *in situ* hybridization claims (claims 63, 64, 65, 95, 103, 128, and 144) describe a process that uses a probe non-radioactively labeled at any non-Ward position to identify chromosomes. *In situ* hybridization is where probes are hybridized to a target that is fixed, usually on a glass slide. Claim 64 is exemplary.

The liquid phase hybridization claims (claims 196 and 198) describe a process that uses a non-radioactively labeled probe to hybridize and detect a target sequence in a liquid medium, rather than on a glass slide. These claims cover using probes labeled non-radioactively at *any position* on the nucleotide, *including* the three Ward positions. The asserted liquid phase hybridization claims depend from claim 189.

C

This consolidated appeal involves four district court cases.[2] The '180 patent is at issue in all four cases, while the '405 patent is at issue only in the cases against Abbott.

In January 2012, Enzo filed suit against Roche Molecular Systems, Inc., Roche Diagnostics Corp., Roche Diagnostics Operations, Inc., and Roche Nimblegen, Inc. (collectively, "Roche") alleging infringement of the '180 patent. J.A. 1212–16 (Compl.) (Case No. 1:12-cv-106). In March 2012, Enzo filed separate suits against Becton, Dickinson and Co., Becton Dickinson Diagnostics Inc., and GeneOhm Sciences, Inc. (collectively, "BD"); and Abbott Laboratories and Abbott Molecular, Inc. (collectively, "Abbott") alleging infringement of the '180 patent. J.A. 2833–36 (Compl.) (Case No. 1:12-cv-275 against BD); J.A. 1964–67 (Compl.) (Case No. 1:12-cv-274 against Abbott). In February 2013, Enzo filed a second suit against Abbott alleging infringement of the '405 patent. J.A. 3973–77 (Compl.) (Case No. 1:13-cv-225).

In June 2017, in the cases against Roche and BD, the district court denied summary judgment with respect to written description, but granted summary judgment in favor of the defendants, holding that all asserted claims of the '180 patent were invalid as not enabled. *See* J.A. 59–77, 99–117. The district court entered partial final judgment of invalidity pursuant to Federal Rule of Civil Procedure 54(b) with respect to the claims of the '180 patent in the cases against BD and Roche. J.A. 14–18 (BD), 5–9 (Roche).

In the two Abbott cases, Enzo agreed that the district court's earlier enablement ruling as to the '180 patent would be deemed to apply to the claims of that patent

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[2] Appeal Nos. 17-2354 and 17-2355 were dismissed by agreement of the parties in those appeals. ECF No. 98.

asserted against Abbott. J.A. 23, 14950–51. As to the '405 patent, in August 2017, the district court denied Abbott's motion as to written description but granted summary judgment in favor of Abbott, holding the claims invalid for lack of enablement. J.A. 78–98. The district court entered final judgment of invalidity of all asserted claims of the '180 and '405 patents on September 1, 2017. J.A. 10–13, 23–26.

Enzo timely appealed each judgment. This court consolidated the appeals. We have jurisdiction under 28 U.S.C. § 1295(a)(1).

II

In reviewing a grant of summary judgment, we apply the law of the regional circuit. *Vasudevan Software, Inc. v. MicroStrategy, Inc.*, 782 F.3d 671, 676 (Fed. Cir. 2015). The Third Circuit reviews a district court's grant of summary judgment de novo. *Melrose, Inc. v. City of Pittsburgh*, 613 F.3d 380, 387 (3d Cir. 2010). "Summary judgment is appropriate only where, drawing all reasonable inferences in favor of the nonmoving party, there is no genuine issue as to any material fact and . . . the moving party is entitled to judgment as a matter of law." *Id.* (quoting *Ruehl v. Viacom, Inc.*, 500 F.3d 375, 380 n.6 (3d Cir. 2007)). "[U]nless there is sufficient evidence favoring the nonmoving party for a jury to return a verdict for that party," there is no need for a trial, and summary judgment is appropriate. *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 249 (1986).

III

The enablement requirement asks whether "the specification teach[es] those in the art to make and use the invention without undue experimentation." *In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988). To satisfy this requirement, "[t]he specification must contain sufficient disclosure to enable an ordinarily skilled artisan to make and use the entire scope of the claimed invention at the time of filing."

MagSil Corp. v. Hitachi Glob. Storage Techs., Inc., 687 F.3d 1377, 1381 (Fed. Cir. 2012). "Enablement is a question of law based on underlying factual findings." *Id.* at 1380.

"To prove that a claim is invalid for lack of enablement, a challenger must show by clear and convincing evidence that a person of ordinary skill in the art would not be able to practice the claimed invention without 'undue experimentation.'" *Alcon Research Ltd. v. Barr Labs., Inc.*, 745 F.3d 1180, 1188 (Fed. Cir. 2014) (quoting *In re Wands*, 858 F.2d at 736–37).[3] In analyzing undue experimentation, we consider factors such as: "(1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims." *In re Wands*, 858 F.2d at 737.

In our view, the issue in this appeal is not simply whether the specification enables labeling; the question is whether it enables creation of a labeled probe that is both hybridizable and detectable upon hybridization. Many of the alleged factual disputes raised by Enzo and many of the arguments raised by Appellees relate to the details of *creating* the labeled polynucleotide. For example, Roche and BD contend that the specification fails to sufficiently disclose internal phosphate labeling. But even if we assume that the specification teaches one of skill in the art how to create the broad range of labeled polynucleotides covered by the claims, as explained below, the specification still fails to teach one of skill in the art which combinations will

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[3] In this case, the parties agree that the relevant person of ordinary skill in the art is a scientist with a doctorate in chemistry, biochemistry, biophysics, molecular biology, or a similar field. Appellant's Br. 30 (noting the parties' agreement).

produce a polynucleotide that is hybridizable and detectable upon hybridization, as required by the claim language.

With this focus on the functionality required by the claims, we agree with Appellees that our decision in *Wyeth and Cordis Corp. v. Abbott Laboratories*, 720 F.3d 1380 (Fed. Cir. 2013), controls this case. In *Wyeth*, we affirmed a grant of summary judgment and held the asserted claims invalid for lack of enablement because it would have required undue experimentation to determine which compounds in the claimed class would have the required functionality. *Id.* at 1385–86. The claims in *Wyeth* were construed to require a compound having certain functionality (e.g., immunosuppressive effects). *Id.* at 1383. The claims covered a class of compounds that met those functional requirements. *Id.* at 1385. The patentee's witnesses testified that minor alterations to the molecule disclosed in the specification could impact the required functionality. *Id.* The patent challengers in that case thus argued that a person of ordinary skill in the art would need to screen each compound to determine what candidates would have the claimed functionality. *Id.* We agreed. *Id.* We noted the breadth of the claims, the limited guidance provided in the specification, the large number of possible candidates falling within the claimed genus (tens of thousands), and the fact that it would be necessary to first synthesize and then screen each of those candidates to determine whether it had the required functionality. *Id.* We further noted that one of the patentee's scientists had confirmed the unpredictability in the art by testifying that one would need to test each compound to understand whether it would have the desired functionality. *Id.* We thus concluded that there was no genuine dispute that practicing the full scope of the claims would require undue experimentation. *Id.*

The facts in this appeal largely mirror those in *Wyeth*. As in *Wyeth*, the asserted claims here require not just a particular structure, but a particular functionality (i.e., the labeled polynucleotides must be hybridizable and

detectable upon hybridization). As explained below, the specification fails to teach one of skill in the art whether the many embodiments of the broad claims would exhibit that required functionality.

The scope of the claims is quite broad. Claim 1 of the '180 patent encompasses all phosphate-labeled polynucleotides that are hybridizable and detectable. The claim places almost no limitations on the structure of the claimed polynucleotide, other than the fact that the label is attached to the phosphate portion of the nucleotide. It does not restrict the chemistry used to attach the label, the chemical linker used, the number of labels within a probe, or the location of the labels on the probe (i.e., whether they are terminal or internal). As to the type of non-radioactive label used, the claim provides broad categories, such as any "electron dense component" or "magnetic component."

The specification's guidance as to how such variables would or would not impact the functionality of the claimed probes is sparse. For example, Enzo directs our attention to a sentence in the specification that states that "[a] particularly important and useful aspect of the special nucleotides of this invention is the use of such nucleotides in the preparation of DNA or RNA probes." '180 patent col. 54 ll. 18–20; *see also id.* col. 54 ll. 18–33 (describing generally how a probe works). Enzo's expert, Dr. Backman, explained that a skilled artisan would have understood this reference to using the polynucleotide as a "probe" as meaning a polynucleotide that is capable of hybridizing and being detected upon hybridization. J.A. 5840–41 ¶ 57 (Backman Decl.). But at the time of the invention, the art was highly unpredictable. As Enzo's expert explained:

> At the time of the inventions of the '180 patent, it was commonly thought that the addition of a non-radioactive label to a nucleic acid sequence at positions other than a few known as 'non-disruptive positions' . . . would interfere with or disrupt the

> hybridization process, rendering the nucleotide ineffective for diagnostic purposes.

J.A. 4728 ¶ 74 (Backman Opening Report).

Given the unpredictability of the art at the time and the serious doubts held by those of skill in the art regarding whether labels could be attached to non-Ward positions without disrupting hybridization, merely stating that a labeled polynucleotide will work as a probe is not sufficient to enable one of skill in the art to know that it would indeed function as a probe—i.e., be hybridizable and detectable upon hybridization.

Enzo also presents Example V as an example of an internal phosphate-labeled polynucleotide that is hybridizable and detectable. Appellant's Br. 32–33. Example V states in full:

> Biotin and polybiotinylated poly-L-lysine were coupled to oligoribonucleotides using a carbodiimide coupling procedure described by Halbran and Parker, *J. Immunol.*, 96 373 (1966). As an example, DNA (1 ug/ml), 1 ml) in tris buffer pH 8.2, sheared with 0.1 N sodium hydroxide was denatured by boiling for 10 minutes and quick cooling in an ice bath. Biotinyl-1,6-diaminohexane amide (2 mg, 6 umol) or polybiotinylated poly-L-lysine (2 mg) and l-ethyl-3-diisopropylaminocarboimide HCl (10 mg, 64 umol) were added, and the pH readjusted to 8.2. After 24 hours at room temperature in the dark, the mixture was dialyzed against 10 mM tris buffered saline. DNA was precipitated ethanol.

'180 patent col. 33 ll. 33–44.

Appellees contend that Example V is not a working example. During prosecution, Enzo admitted that Example V is a "'paper', rather than [a] 'working example[].'" J.A. 4703 (stating in an amendment made during prosecution that "Applicants have determined that the examples

set forth . . . [except certain examples other than Example V] are 'paper', rather than 'working examples'"); J.A. 6657 (same). Additionally, Enzo's expert testified that he was not aware of Enzo having ever tested a phosphate-labeled probe for hybridizability and detectability. J.A. 8547–48 p. 84 l. 5–p. 85 l. 16 (Backman deposition); J.A. 8551–52 p. 124 l. 10–p. 125 l. 11 (Backman deposition); *see also* J.A. 6441 p. 133 ll. 6–15 (Backman deposition) ("Q: . . . is there any bench experiment disclosed in the '180 patent in which the '180 inventors attempted to determine whether the product of Example V, that is, the Sig moiety attached to an oligo- or polynucleotide could be detected after it had hybridized to a compl[e]mentary nucleic acid of interest? A. . . . no, they did not do an actual bench experiment to that effect."); *id.* p. 131 ll. 7–19. Regardless, even viewing Example V as a working example, Example V is insufficient to enable the breadth of the claims here, especially in light of the unpredictability in the art.[4]

The deficiencies in the description as to enablement cannot be cured in this case by looking to the knowledge of those skilled in the art at the time of the invention. Although "a specification need not disclose what is well known in the art," that rule is "not a substitute for a basic enabling disclosure." *Genentech, Inc. v. Novo Nordisk A/S*, 108 F.3d 1361, 1366 (Fed. Cir. 1997). As we have said before, a patentee "cannot simply rely on the knowledge of a person of ordinary skill to serve as a substitute for the missing information in the specification." *ALZA Corp. v. Andrx Pharm.,*

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[4] Nothing stated herein would necessarily disallow proper constructive examples, which are intended to fulfill both written description and enablement requirements. *Atlas Powder Co. v. E.I. du Pont De Nemours & Co.*, 750 F.2d 1569, 1577 (Fed. Cir. 1984) ("Use of prophetic examples, however, does not automatically make a patent nonenabling.").

LLC, 603 F.3d 935, 941 (Fed. Cir. 2010). And, more importantly, all parties acknowledge that serious doubts existed in the art as to whether the use of non-radioactive probes at non-Ward positions would be useful as probes. For example, an inventor of the '180 patent who is also Enzo's CEO explained that, at the time, it was thought "aggressive chemical modification of nucleic acid would lead to destruction of his [sic] content." J.A. 6470 p. 1265 l. 5–p. 1266 l. 15 (Dr. Rabbani deposition); *see also* J.A. 6465 p. 31 l. 12–p. 33 l. 13 (Dr. Rabbani explaining how more aggressive modification of the nucleic acid was considered "breaking the dogma"). Enzo's expert, Dr. Backman, also pointed out the view of the art at the time, stating that "[a]t the time of the inventions of the '180 patent, it was commonly thought that the addition of a nonradioactive label to a nucleic acid sequence at positions other than [the Ward positions at the base] would interfere with or disrupt the hybridization process." J.A. 4728 ¶ 74 (Backman's Opening Report); J.A. 4184 ll. 10–24 (Dr. Rabbani deposition). Indeed, Enzo's expert explained that for one of skill in the art to be comfortable that a particular polynucleotide would work as a probe, "they would need to actually make the compound and test it in a hybridization experiment, which they would have been dissuaded from doing because of Ward." J.A. 8454 p. 150 ll. 8–15 (Sherman deposition) (discussing a polynucleotide labeled at the terminal phosphate and using carbodiimide chemistry and biotin); *see also* J.A. 8456 ll. 3–11 (Sherman deposition) ("Q: . . . But if they had been motivated to make this probe, non-Ward labeled probe, your view is that they would have to make it and test it in order to predict whether it would actually hybridize as of June 1982, right? A: Well, they would have to make it and assure against the prevailing wisdom that it could work."); J.A. 8454–55 p. 150 l. 17–p. 151 l. 18 (Sherman deposition).

Given such unpredictability in the art, and considering the testimony of Enzo's expert that each labeled

polynucleotide would need to be tested to determine whether it is hybridizable and detectable upon hybridization, the breadth of the claims here is particularly concerning in the enablement inquiry. *See In re Fisher*, 427 F.2d 833, 839 (CCPA 1970) ("In cases involving unpredictable factors, such as most chemical reactions and physiological activity, the scope of enablement obviously varies inversely with the degree of unpredictability of the factors involved."). Appellees contend that millions of embodiments of the claims exist based on the many variables involved in creating one of the claimed labeled polynucleotides. Enzo disputes this number, arguing it is improperly inflated because it counts every possible polynucleotide sequence that could exist as a separate embodiment. Even assuming Enzo is correct that the length and sequence of the polynucleotide do not give rise to separate embodiments, the other variables (such as the type of label, the type of linker used to attach the label, and the location of the labels within the polynucleotide) still result in an extremely large number of possible embodiments. Indeed, Enzo's expert explained that the number of possible polynucleotides that would fit within the limitations of claim 1 would be at least "tens of thousands." J.A. 6438 p. 120 l. 20–p. 121 l. 11 (Backman deposition).

In sum, even if Example V describes one working embodiment with the claimed functionality, undue experimentation would still be required with regard to the many other embodiments of the claims based on the number of possible embodiments and the unpredictability in the art. *See Genentech*, 108 F.3d at 1366 ("Patent protection is granted in return for an enabling disclosure of an invention, not for vague intimations of general ideas that may or may not be workable.").

We conclude by briefly addressing the asserted claims of the '405 patent. Those claims are broader than the asserted claims of the '180 patent; rather than covering only *phosphate*-labeled polynucleotides, they also cover labeling

at other locations on a nucleotide. Like the claims of the '180 patent, the asserted claims of the '405 patent require the claimed polynucleotides to be hybridizable and detectable upon hybridization. Because the specification does not enable the narrower scope of polynucleotides claimed in the '180 patent, it also cannot enable the broader scope of polynucleotides claimed in the '405 patent. As such, even though the asserted claims of the '405 patent pertain to certain processes, the claims are still not enabled for the reasons described with respect to the '180 patent.

In sum, viewing the evidence in the light most favorable to Enzo, we agree with the district court's grant of summary judgment.

IV

For the foregoing reasons, we affirm the district court's grant of summary judgment that the asserted claims of the '180 patent and the '405 patent are invalid for lack of enablement.

AFFIRMED