United States District Court,
N.D. California.

CARNEGIE MELLON UNIVERSITY and Three Rivers Biologicals, Inc,
Plaintiffs.
v.
HOFFMAN-LA ROCHE INC., Roche Molecular Systems, Inc., Roche Diagnostic Systems, Inc., Roche Biomedical Laboratories, Inc., Laboratory Corporation of America Holdings, Inc., the Perkin-Elmer Corporation, Chiron Corporation, and Cetus Oncology Corporation,
Defendants.

No. C95-3524 SI

June 27, 2001.

Owner of patent for recombinant DNA polymerase brought infringement action against alleged infringer. On alleged infringer's motion for summary judgment, the District Court, Illston, J., held that: (1) renewal of alleged patent infringer's motion for summary judgment was warranted; (2) retroactive deference to Patent and Trademark Office's (PTO) prosecution history was not warranted; and (3) certain claims in application for patent were invalid under written description requirement.

Motion granted.

6,017,745. Cited.

Daniel E. Alberti, Eugene J. Majeski, Ropers Majeski Kohn & Bentley, Redwood City, CA, Arland T. Stein, Reed Smith Shaw & McClay, Pittsburgh, PA, James M. Wagstaffe, Kerr & Wagstaffe, San Francisco, CA, for Carnegie Mellon University.

Daniel E. Alberti, Eugene J. Majeski, Ropers Majeski Kohn & Bentley, Redwood City, CA, Arland T. Stein, Reed Smith Shaw & McClay, Pittsburgh, PA, Walter P. DeForest, DeForest & Koscelnik, Pittsburgh, PA, for Three Rivers Biologicals, Inc.

Vanessa Wells, Heller Ehrman White & McAuliffe, Menlo Park, CA, Gidon D. Stern, S. Leslie Misrock, Stephen S. Rabinowitz, Pennie & Edmonds LLP, New York, NY, for Hoffmann-La Roche Inc., Roche Molecular Systems, Inc., Roche Diagnostic Systems, Inc., Roche Biomedical Laboratories, Inc., The Perkin-Elmer Corporation, Laboratory Corporation of America Holdings.

Tamu K. Sudduth, Harold J. McElhinny, Constance T.Y. McComb, Morrison & Foerster LLP, San Francisco, CA, for Cetus Oncology Corporation, Chiron Corporation.

ORDER GRANTING DEFENDANTS' RENEWED MOTION FOR SUMMARY JUDGMENT

ILLSTON**, District Judge.**

On March 16, 2001, the Court heard argument on the Roche FN1 defendants' motion for summary judgment on their counterclaim for declaratory judgment that claims 1-19, 22-40 and 43-45 of the '708 patent are invalid. Having carefully considered the arguments of counsel and the papers submitted, the Court GRANTS the motion for the reasons set forth below.

FN1. Hoffman-La Roche Inc., Roche Molecular Systems, Inc., Roche Diagnostic Systems, Inc., Roche Biomedical Laboratories, Inc., The Perkin-Elmer Corp., and Laboratory Corporation of America Holdings (collectively the "Roche defendants").

BACKGROUND

Plaintiffs Carnegie Mellon University ("Carnegie Mellon") and Three Rivers Biologicals, Inc. filed suit against several defendants alleging infringement of U.S. Patent No. 4,767,708 ('708 patent) and U.S. Patent No. 5,126,270 ('270 patent), both entitled "Enzyme Amplification and Purification." The patents-in-suit are directed to (1) recombinant plasmids for the controlled expression of an enzyme identified in the '708 patent as "DNA polymerase I," (2) processes related to the construction of such plasmids, and (3) processes related to the culturing of host cells containing such plasmids. FN2 The patents derive from the same original application. The Patent and Trademark Office ("PTO") issued the '708 patent from a "parent" application, No. 06/638, 638 ('638 application) filed on August 7, 1984, and the '270 Patent from a "continuation" application filed on November 5, 1987.

FN2. Claims 1, 25 and 39 are illustrative of the claims for the '708 patent:
1. A recombinant plasmid containing a cloned complete structural gene coding region isolated from a bacterial source for the expression of DNA polymerase I, under operable control of a conditionally controllable foreign promoter functionally linked to said structural gene coding region, said foreign promoter being functional to express said DNA polymerase I in a suitable bacterial or yeast host system.
25. A process for constructing a recombinant plasmid for the expression of DNA polymerase I, said DNA polymerase I including large and small fragments thereof ....
39. A host strain of cells containing a foreign plasmid capable of expressing DNA polymerase I to a level above the wild-type level in said host strain.
The Roche defendants deny the infringement charge and assert an affirmative defense that the claims of the '708 and '270 patents are invalid for numerous reasons, including failure to meet the written description requirement of 35 U.S.C. s. 112. *See* Roche Defts.' Answer to Second Amended Complaint para. 21. The Roche defendants asserted one counterclaim seeking declaratory judgment that, *inter alia,* the claims of the '708 and '270 patent are invalid. *See* id. at para.para. 25, 38.

In August 1997, the Roche defendants moved for summary judgment on their counterclaim with respect to the '708 patent. They argued that claims 1-19, 22-40 and 43-45 of the '708 patent are invalid under the written description requirement of 35 U.S.C. s. 112, as articulated by Regents of the University of California v. Eli Lilly & Co., 119 F.3d 1559 (Fed.Cir.1997). The Roche defendants did not submit expert evidence with that motion, instead relying exclusively on the '708 patent, its prosecution history, and the *Eli Lilly* decision. The Court denied the motion, holding that "the Court cannot find that no reasonable trier of fact might conclude that the '708 patent's written description is sufficient." Order (Feb. 3, 1998) 1:26-28.

In July 1999, the Roche defendants moved for summary judgment that certain claims of the '270 patent were invalid under the written description requirement. They once again relied on *Eli Lilly,* but also added an alternative "omitted element" argument pursuant to Gentry Gallery, Inc. v. Berkline Corp., 134 F.3d 1473 (Fed.Cir.1998). The Court found the *Gentry* argument persuasive and held that the '270 patent was invalid because it failed to incorporate lethality, which was an essential feature of the claimed invention. Order (Aug. 19, 1999) 10-11. The Court did not rule on whether the '270 patent also violated the requirements of *Eli Lilly*. *Id*. at 11.

Now before the Court is a renewed motion by the Roche defendants for summary judgment on their counterclaim for declaratory judgment that claims 1-19, 22-40 and 43-45 of the '708 patent are invalid under the written description requirement.

RELEVANT TECHNOLOGY FN3

FN3. This overview of DNA technology is excerpted from the Federal Circuit's decision in In re O'Farrell, 853 F.2d 894, 895-97 (Fed.Cir.1988).

Proteins are biological molecules of enormous importance. Proteins include enzymes that catalyze biochemical reactions, major structural materials of the animal body, and many hormones. Numerous patents and applications for patents in the field of biotechnology involve specific proteins or methods for making and using proteins. Many valuable proteins occur in nature only in minute quantities, or are difficult to purify from natural sources. Therefore, a goal of many biotechnology projects is to devise methods to synthesize useful quantities of specific proteins by controlling the mechanism by which living cells make proteins.

Protein molecules are composed of long chains of amino acids. To make a protein molecule, a cell needs information about the sequence in which the amino acids must be assembled. The cell uses DNA-deoxyribonucleic acid-to store this information. DNA molecules do not participate directly in the synthesis of proteins, but instead act as a permanent "blueprint" for the synthesis of a protein.

DNA is comprised of building blocks called nucleotides that are linked together to form a strand. Due to the orientation of nucleotides, each strand of DNA has a 5' end and a 3' end. The sequence and combination of nucleotides in DNA determines the sequence of amino acids in a particular protein. DNA predominantly exists in long-stranded structures called chromosomes, but can also be found in smaller circular structures called plasmids. The specific region of DNA that codes for the sequence of a particular protein is called a gene.

In order to make a selected protein by expressing its cloned gene in bacteria, several technical hurdles must be overcome. First the particular gene coding for the specific protein must be isolated for cloning. Next the isolated gene must be introduced into the host bacterium. This can be done by incorporating the gene into a cloning vector. A cloning vector is a piece of DNA that can be introduced into bacteria and will then replicate itself as the bacterial cells grow and divide. Plasmids are often used as cloning vectors due to their small size and ability to replicate in host cells. A recombinant plasmid is a plasmid that has been artificially constructed (i.e. cloned), rather than isolated from nature. Recombinant DNA technology can be used to modify plasmids by splicing in cloned genes and other useful segments of DNA containing control sequences.

The '708 patent is directed to a recombinant plasmid containing a gene that encodes the useful enzyme DNA polymerase I. The encoding gene is commonly referred to as the "polA" gene, and the enzyme it encodes, DNA polymerase I, is also known as the "pol I" enzyme. Furthermore, it is common in the art to refer to an enzyme by also naming the type of cell in which its encoding gene naturally exists. *See* Declaration of Steven J. Benkovic (Oct. 9, 1997) ("1997 Benkovic Decl.") para. 8. Thus, " *E. coli* DNA polymerase I" describes a DNA polymerase I enzyme that was produced by a polA gene which originated in an *E. coli* bacterial cell.

LEGAL STANDARD

[1] A party seeking to invalidate a patent must overcome a presumption that the patent is valid. 35 U.S.C. s. 282; United States Gypsum Co. v. National Gypsum Co., 74 F.3d 1209, 1212 (Fed.Cir.1996); Hybritech Inc. v. Monoclonal Antibodies, Inc., 802 F.2d 1367, 1375 (Fed.Cir.1986). This presumption places the burden on the challenging party to prove the patent's invalidity by clear and convincing evidence. United States Gypsum Co., 74 F.3d at 1212. Within this scheme of proof, "[s]ummary judgment is appropriate in a patent case, as in other cases, when there is no genuine issue as to any material fact and the moving party is entitled to judgment as a matter of law." Nike Inc. v. Wolverine World Wide, Inc., 43 F.3d 644, 646 (Fed.Cir.1994).

A motion for summary judgment may be granted when "the pleadings, depositions, answers to interrogatories, and admissions on file, together with the affidavits, if any, show that there is no genuine issue as to any material fact and that the moving party is entitled to a judgment as a matter of law." Fed.R.Civ.P. 56(c). The moving party bears the initial burden of "informing the district court of the basis for its motion" and identifying the matter that "it believes demonstrate[s] the absence of a genuine issue of material fact." Celotex Corp. v. Catrett, 477 U.S. 317, 323, 106 S.Ct. 2548, 2553, 91 L.Ed.2d 265 (1986). If the moving party meets this burden, the nonmoving party must then set forth "specific facts showing that there is a genuine issue for trial." Fed.R.Civ.P. 56(e); *see also* T.W. Elec. Serv., Inc. v. Pacific Elec. Contractors Ass'n, 809 F.2d 626, 630 (9th Cir.1987). "Rule 56(c) requires the moving party to show not only the absence of a disputed issue of fact but also that he is entitled to judgment as a matter of law ... [T]herefore, the court must ... consider the burden of proof on the issue and where it will rest at trial ... Where the moving party has the burden-the plaintiff on a claim for relief or the defendant on an affirmative defense-his showing must be sufficient for the court to hold that no reasonable trier of fact could find other than for the moving party." Calderone v. United States, 799 F.2d 254, 259 (6th Cir.1986) (quotations omitted).

[2] The evidence presented by the parties in support of or opposition to a motion for summary judgment must be admissible. *See* Fed.R.Civ.P. 56(e). In evaluating this evidence, the Court does not make credibility determinations or weigh conflicting evidence, and draws all inferences in the light most favorable to the nonmoving party. T.W. Elec. Serv., 809 F.2d at 630-31 (citing Matsushita Elec. Indus. Co. v. Zenith Radio Corp., 475 U.S. 574, 106 S.Ct. 1348, 89 L.Ed.2d 538 (1986)); Ting v. United States, 927 F.2d 1504, 1509 (9th Cir.1991).

DISCUSSION

[3] [4] In their renewed motion for summary judgment, the Roche defendants again rely on Regents of the University of California v. Eli Lilly, 119 F.3d 1559 (Fed.Cir.1997), to argue that the '708 patent is invalid because it fails to satisfy the written description requirement of 35 U.S.C. s. 112. Unlike their first motion for summary judgment, the Roche defendants now offer the Declaration of Professor Robert A. Bambara

(July 2, 1999) ("1999 Bambara Decl."), which sets forth facts and expert opinions to support the argument that the '708 patent squarely violates the *Eli Lilly* standard for written descriptions. Plaintiffs counter that the Court must defer to the PTO's original decision to issue the '708 patent, which implicitly includes a determination that the written description requirement was met.FN4 Furthermore, plaintiffs argue that *Eli Lilly* does not apply, and assuming it does apply, that the '708 patent satisfies the *Eli Lilly* standard for written descriptions of DNA technology patents.

FN4. As a procedural matter, plaintiffs argue that the Roche defendants' motion is improper under Local Rules governing motions for reconsideration of a prior order. Oppo. 24. However, the Roche defendants are making a renewed motion for summary judgment, not a motion for reconsideration. "A moving party may renew a motion for summary judgment notwithstanding denial of an earlier motion by showing a different set of facts or some other reason justifying renewal of the motion." Advanced Semiconductor Materials Am., Inc. v. Applied Materials, Inc., 922 F.Supp. 1439, 1442 (N.D.Cal.1996) (citing William W. Schwarzer et al., Federal Civil Procedure Before Trial para. 14:367 (1995)). The Court finds that the Roche defendants have presented new evidence to justify renewal of the prior motion for summary judgment, and thus, the renewed motion is proper.

[5] [6] [7] [8] The written description requirement is contained in 35 U.S.C. s. 112, which states: "[t]he specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains ... to make and use [the invention]." The requirement serves "to ensure that the inventor had possession, as of the filing date of the application relied on, of the specific subject matter later claimed by him." In re Alton, 76 F.3d 1168, 1172 (Fed.Cir.1996) (citing In re Wertheim, 541 F.2d 257, 262 (Cust. & Pat.App.1976)). Whether the specification for a challenged claim meets this requirement is a question of fact to be assessed on a case-by-case basis. Vas-Cath Inc. v. Mahurkar, 935 F.2d 1555, 1561, 1563 (Fed.Cir.1991); Eli Lilly, 119 F.3d at 1566.FN5

FN5. The written description requirement is separate from the enablement and best mode requirements, which are also contained in 35 U.S.C. s. 112. In re Alton, 76 F.3d at 1176; Vas-Cath, 935 F.2d at 1563-64. In order to be considered enabling, a patent must give persons of ordinary skill in the relevant art enough information to practice the invention disclosed in the specification without undue experimentation. In re Goodman, 11 F.3d 1046, 1050 (Fed.Cir.1993). The best mode requirement mandates that the inventor disclose the best mode known to him or her at the time the patent application is filed. Spectra-Physics, Inc. v. Coherent, Inc., 827 F.2d 1524, 1535 (Fed.Cir.), *cert. denied,* 484 U.S. 954, 108 S.Ct. 346, 98 L.Ed.2d 372 (1987). With the written description requirement, "the question is not whether [one skilled in the art] would be so enabled but whether the specification discloses the compound to him, specifically, as something appellants actually invented." In re Ruschig, 54 C.C.P.A. 1551, 379 F.2d 990, 995 (Cust. & Pat.App.1967). *See also* In re DiLeone, 58 C.C.P.A. 925, 436 F.2d 1404, 1405 (Cust. & Pat.App.1971) ("[I]t is possible for a specification to enable the practice of an invention as broadly as it is claimed, and still not describe that invention.").

[9] [10] In order to satisfy the written description requirement, the patent specificationmust convey with reasonable clarity to those skilled in the art that the inventor was in possession of the invention. In re Gosteli, 872 F.2d 1008, 1012 (Fed.Cir.1989) ("[T]he description must clearly allow persons of ordinary skill in the art to recognize that [the inventor] invented what is claimed."); *see also* Eli Lilly, 119 F.3d at 1566;

Vas-Cath, 935 F.2d at 1563. "One shows that one is 'in possession' of the invention by describing the invention, with all its claimed limitations .... by such descriptive means as words, structures, figures, diagrams, formulas, etc." Lockwood v. American Airlines, Inc., 107 F.3d 1565, 1572 (Fed.Cir.1997) (emphasis omitted). *See also* In re Wertheim, 541 F.2d 257, 262 (Cust. & Pat.App.1976) ("The primary consideration is factual and depends on the nature of the invention and the amount of knowledge imparted to those skilled in the art by the disclosure."). Expert testimony eliciting industry standards can work to "expand the breadth of the actual written description." In re Alton, 76 F.3d 1168, 1176 (Fed.Cir.1996).

A. Administrative Deference to the Patent and Trademark Office

[11] As stated earlier, a party challenging a patent must overcome the presumption that the patent is valid by offering clear and convincing proof of the patent's invalidity. 35 U.S.C. s. 282; United States Gypsum Co., 74 F.3d at 1212; Hybritech, 802 F.2d at 1375. The challenging party's burden also includes overcoming deference to the PTO's findings and decisions in prosecuting the patent application. Deference to the PTO is due "[w]hen no prior art other than that which was considered by the PTO examiner is relied on by the attacker." American Hoist & Derrick Co. v. Sowa & Sons, 725 F.2d 1350, 1359 (Fed.Cir.), *cert. denied,* 469 U.S. 821, 105 S.Ct. 95, 83 L.Ed.2d 41 (1984). Conversely, no such deference is due when the party challenging the patent raises prior art or evidence that was not considered by the PTO in its decision and evaluation of the patent application:

When an attacker simply goes over the same ground traveled by the PTO, part of the *burden* is to show that the PTO was wrong in its decision to grant the patent. When new evidence touching validity of the patent not considered by the PTO is relied on, the tribunal considering it is not faced with having to *disagree* with the PTO or with *deferring* to its judgment or with taking its expertise into account.

Id. at 1360 (emphasis in original).

[12] In this case, the Roche defendants present evidence and legal arguments that the PTO examiner did not consider when issuing the '708 patent in 1988. *Eli Lilly* was decided long after the '708 patent issued, and therefore the patent examiners could not have considered its legal requirements.FN6 The legal rules relating to DNA technology patents are rapidly evolving, along with our understanding of the science underlying these claims. *See* Amgen, Inc. v. Chugai Pharmaceutical Co., Ltd., 927 F.2d 1200, 1206-07 (Fed.Cir.1991); Eli Lilly, 119 F.3d at 1568-69. The patent examiners in 1988 also did not have access to or consider the facts, theories and arguments raised here by defendants' expert Dr. Robert Bambara. The Roche defendants are not retreading "the same ground traveled by the PTO" when it issued the '708 patent. Accordingly, the Court finds that administrative deference is neither appropriate nor required.

FN6. The PTO has acknowledged that it was not applying the teachings of *Eli Lilly* during the period which the '708 patent issued. *See* Rabinowitz Decl., Ex. 6 (Q. Todd Dickinson, Address to New York Intellectual Property Law Ass'n (May 28, 1999), at 6). The PTO also recently published final guidelines for applying the written description requirement which reflect its current implementation of the holding of *Eli Lilly*. *See id*. at Ex. 7 (Guidelines for Examination of Patent Applications Under the 35 U.S.C. s. 112, para. 1 "Written Description" Requirement, 66 Fed.Reg. 1099-1111 (Jan. 5, 2001)).

Plaintiffs note that the PTO on January 25, 2000 issued U.S. Patent No. 6,017,745 ('745 patent), which is based on the same specification as the specification in the '708 patent; and plaintiff Carnegie Mellon

University has brought a separate infringement suit in this district based on the '745 patent, *Carnegie Mellon Univ. v. Hoffman-La Roche et al.,* C 01-0415. According to plaintiffs, the PTO issued the '745 patent after full consideration of *Eli Lilly* and this Court's orders concerning the written descriptions of the '708 and '270 patents. Oppo. 4 and Exs. 5 and 6. Thus, plaintiffs argue, "[s]ince the same written description exists in the '745 patent and the '708 patent, the issuance of the '745 patent constitutes a determination by the PTO that the written description found in the '708 patent supports claims ... to which administrative deference is due." Id. at 5.

The issuance of the '745 patent does not require retroactive administrative deference in evaluating the validity of the '708 patent. Plaintiffs have raised this argument before in a motion for leave to reconsider this Court's Order finding the '270 patent invalid. The Court rejected the argument then, finding that "the issuance of the new '745 patent gives rise to the presumption of validity in the '745 patent but does not affect the '270 patent. Issuance of the '745 patent neither imputes knowledge to nor alters the level of administrative deference that must be given to the patent examiner who allowed the '270 patent nine years ago." Order (Mar. 9, 2000) 3:13-16. Plaintiffs did not cite authority then, and do not do so now, to support the argument that retroactive deference is warranted.

Plaintiffs are concerned that "the Court could invalidate the '708 patent by finding the written description to be insufficient ... and then later reverse itself (in the case involving the '745 patent) to find that the same written description in the '745 patent ... is sufficient." Oppo. 9. However, the present motion relates to the validity of the '708 patent, which, as discussed above, was issued without consideration of the evidence presently before the Court. The implications for the '745 patent, if any, FN7 must await resolution of the case involving the '745 patent.

FN7. The Federal Circuit has examined the relationship between the PTO's reexamination of a patent and a district court action challenging the same patent's validity:
[L]itigation and reexamination are distinct proceedings, with distinct parties, purposes, procedures, and outcomes .... The awkwardness presumed to result if the PTO and court reached different conclusions is more apparent than real. The two forums take different approaches in determining invalidity and on the same evidence could quite correctly come to different conclusions. Furthermore, we see nothing untoward about the PTO upholding the validity of a reexamined patent which the district court later finds invalid. This is essentially what occurs when a court finds a patent invalid after the PTO has granted it. Once again, it is important that the district court and the PTO can consider different evidence. Accordingly, different results between the two forums may be entirely reasonable.

Ethicon, Inc. v. Quigg, 849 F.2d 1422, 1427-28 (Fed.Cir.1988).

B. Written Description Requirement

[13] The claims of the '708 patent are directed to a recombinant plasmid "containing a cloned complete structural gene coding region isolated from a bacterial source for the expression of DNA polymerase I." The Roche defendants argue that the claims of the '708 patent are not supported by the specifications in the '638 parent application. They contend that the '638 application describes only recombinant plasmids isolated from *E. coli* containing the encoding gene region for *E. coli* DNA polymerase I. Analogizing this case to the Federal Circuit decision *Eli Lilly,* the Roche defendants argue that this narrow description does not demonstrate that the named inventors possessed the broader claimed subject matter of the '708 patent-that is, recombinant plasmids constructed from any source that contains the polA gene, including bacterial sources

other than *E. coli,* for the expression of DNA polymerase I.

Plaintiffs argue that *Eli Lilly* is not applicable to this case because the patent-in-suit does not claim a novel DNA sequence, and even if it were applicable, the '708 patent is valid under the standards of *Eli Lilly* because the supporting specifications describe the claimed subject matter in broad terms and *E. coli* is representative of the genus of bacteria that produces DNA polymerase I.

1. Applicability of *Eli Lilly*

A line of Federal Circuit decisions leading up to *Eli Lilly* has discussed the application of patent law in the field of DNA technology. *See* In re DiLeone, 58 C.C.P.A. 925, 436 F.2d 1404, 1405 (Cust. & Pat.App.1971) ("What is needed to meet the description requirement will necessarily vary depending on the nature of the invention claimed."). In the first decision to evaluate the requirements for conception of a gene sequence, the Federal Circuit held that a gene-a DNA sequence-is a chemical compound which has been "conceived" only if it is specified in such a manner as to distinguish it from other genes. Amgen, Inc. v. Chugai Pharmaceutical Co., Ltd., 927 F.2d 1200, 1206 (Fed.Cir.1991); *accord* In re Deuel, 51 F.3d 1552, 1559 (Fed.Cir.1995) ("The fact that one can conceive a general process in advance for preparing an undefined compound does not mean that a claimed specific compound was precisely envisioned and therefore obvious. A substance may indeed be defined by its process of preparation [but only] ... when it has already been prepared by that process and one therefore knows that the result of that process is the stated compound.").

The Federal Circuit has rejected arguments that a gene can be described or conceived by reference to the amino acid sequence (i.e. the protein) that the gene encodes for, or to the biological function that the resulting protein enables. *See* Fiers v. Revel, 984 F.2d 1164, 1170 (Fed.Cir.1993) (description requires "more than a mere statement that [DNA encoding sequence] is part of the invention and references to a potential method for isolating it; what is required is a description of the DNA itself."); In re Bell, 991 F.2d 781 (Fed.Cir.1993) (prior art disclosing amino acid sequence and describing general technique for isolating the encoding gene did not render claim for the gene per se unpatentable due to obviousness); Amgen, 927 F.2d at 1206 ("It is not sufficient to define [a gene] solely by its principal biologicalproperty, e.g., encoding human erythropoietin, because an alleged conception having no more specificity than that is simply a wish to know the identity of any material with that biological property.").

Relying on this jurisprudence, the Federal Circuit in *Eli Lilly* turned to the written description requirement of s. 112 and held that an adequate written description of a gene requires "a precise definition, such as by structure, formula, chemical name, or physical properties." Eli Lilly, 119 F.3d at 1566 (quoting Fiers, 984 F.2d at 1171).

The patents-in-suit in *Eli Lilly* generically claimed several different recombinant plasmids, each containing the cDNA gene for the expression of human, mammalian or vertebrate insulin. Eli Lilly, 119 F.3d at 1562-63, 1567. However, the supporting specifications for the claims recited only a method of preparing the claimed cDNA, identified the cDNA by the protein it encodes, or described the cDNA encoding rat insulin as a purported description of the broad class of cDNA encoding vertebrate or mammalian insulin. Id. at 1567-68. Defendant Eli Lilly argued that the claims were invalid because the inventors never actually described the claimed cDNA for the expression of human, mammalian and vertebrate insulin. Plaintiff UC Regents pointed to two "descriptions" of cDNA in the application and argued that they were sufficient to encompass the claims: the description of the method for obtaining human cDNA, and the description of cDNA encoding rat insulin. The Federal Circuit found these descriptions insufficient to satisfy the written

description requirement.

The Federal Circuit held that a description of a general method of producing human insulin cDNA was insufficient to satisfy the written description requirement. Eli Lilly, 119 F.3d at 1567 ("Describing a method of preparing a cDNA or even describing the protein that the cDNA encodes ... does not necessarily describe the cDNA itself."). Turning to the second description, the Federal Circuit held that a description of rat insulin cDNA is not a description of the "broad classes" of vertebrate or mammalian insulin cDNA. Id. at 1568-69. The court noted that "[a] written description of an invention involving a chemical genus, like a description of a chemical species, 'requires a precise definition, such as by structure, formula, [or] chemical name,' of the claimed subject matter sufficient to distinguish it from other materials." Id. at 1568.

Plaintiffs assert that *Eli Lilly* does not apply here because this case does not present a claim to a novel gene. Oppo. 17 ("In the '708 patent, the claims related to the method of constructing the plasmid. The gene was not claimed to be novel."). The '708 patent does not claim the polA gene or DNA polymerase I. Plaintiffs' expert Dr. Benkovic noted that prior art had already extensively characterized DNA polymerase I by its chemical and physical properties, particularly the nick-translation (5'-3' exonuclease activity) and proof-reading (3'-5' exonuclease activity) functions. 1997 Benkovic Decl. para. 6; *see also* 1999 Bambara Decl. para. 14. The novelty of the claimed invention was an enhanced process for expressing DNA polymerase I at high yield using a newly modified recombinant plasmid.

This Court is not persuaded by plaintiffs' attempt to limit *Eli Lilly* to claims involving novel genes. The Federal Circuit applied the written description requirement broadly to "claims to genetic material" and "[a]n adequate written description of a DNA." Eli Lilly, 119 F.3d at 1566, 1569. The court specifically highlighted the distinct nature of DNA as it considered whether particular types of description adequately demonstrate that the inventor possessed the claimed DNA. *See id*. at 1568 (definition of DNA by function "is only a definition of a useful result rather than a definition of what achieves that result. Many such genes may achieve that result."); *id*. at 1567 ("Describing a method of preparing a cDNA or even describing the protein that the cDNA encodes ... does not necessarily describe the cDNA itself."); *id*. at 1568 (distinguishing claims to genetic material from claims involving chemical materials: "In claims to genetic material, however, a generic statement such as 'vertebrate insulin cDNA' ... is not an adequate written description ... because it does not distinguish the claimed genus from others."). There is nothing in the *Eli Lilly* decision to suggest that the Federal Circuit's observations about the nature of DNA was applicable only to novel DNA and not to any DNA sequence.

Although the '708 patent did not claim the polA gene, a gene encoding sequence was nonetheless central to the claimed subject matter. Claim 1 was directed to a "recombinant plasmid containing a cloned complete structural gene coding region ... *under operable control of a conditionally controllable foreign promoter functionally linked to said structural gene coding region* ...." The '638 application announced that "an important feature of this invention [was] that the cloned polA gene fragment contains essentially none of or at the most only a portion of the activity of its natural promoter." '638 application, at 3. The application continues to describe the particular restriction enzyme used to cut the natural promoter sequence from the polA gene and also suggests effective artificial promoters to replace the removed promoter. Id. at 4. This surgical description reveals that the nucleotide sequence of the polA gene-as modified and fused to the claimed recombinant plasmid-is vital to the claimed subject matter. The recombinant plasmid is novel because it contains the gene encoding sequence for DNA polymerase I *with* a modified promoter. In order to demonstrate possession of the invention, the inventor must describe this recombinant DNA. *Eli Lilly* 's standards for descriptions of DNA are applicable.

2. Written Description for the '708 Patent

The '638 application only describes a recombinant plasmid constructed out of the *E. coli* polA gene.FN8 By contrast, the claims of the '708 patent are generically directed to recombinant plasmids constructed out of polA genes from any bacterial source. Applying *Eli Lilly*, the Roche defendants argue that the '638 application's narrow written description is inadequate to support the generic claims of the '708 patent. Motion 15.

FN8. The specification describes the novel recombinant plasmid for the production of DNA polymerase I as pMP5. pMP5 is constructed by enzymatically excising the polA gene coding region from transducing phage NM825, an *E. coli* bacterial strain, using expression vector pHUB2. See '638 application, p. 2, lines 1-2; p. 11, lines 15-19; Fig. 1 and Col. 9, ll. 23-32..

Plaintiffs argue that the written description in the '638 application was not limited to *E. coli,* but rather used "generic terms ... understandable by those skilled in the art and reasonably conveyed to those skilled in the art that the inventor had possession of the invention as claimed in the patent when the application was filed." Oppo. 16. Plaintiffs' expert Dr. Benkovic noted that, at the time the '638 application was filed, those skilled in the art understood the term "DNA polymerase I" from the application to refer to "DNA polymerase I expressed from gene coding regions from bacterial sources." 1997 Benkovic Decl. para. 8. According to Dr. Benkovic, the abstract in the '708 patent "uses the term DNA polymerase I without limiting the gene for its expression to any specific bacterial source, but rather states the gene coding region to be used in the known *polA* gene from bacterial sources." Id. at para. 11.

Plaintiffs' argument and Dr. Benkovic's opinions do not demonstrate that the '638 application adequately described the claimed recombinant plasmid for purposes of the written description requirement. It was known in the art that many different species of bacteria synthesized DNA polymerase I.1997 Benkovic Decl. para. 7; 1999 Bambara Decl. para. 29. It was also known that the gene which expresses DNA polymerase I "is not a single gene, but rather is a family of distinct genes that differ from one bacterial species to another." 1999 Bambara Decl. para. 16. Thus, a generic reference to a bacterial gene that expresses DNA polymerase I speaks nothing of the "structure, formula, chemical name, or physical properties" of the particular gene that distinguishes it from other genes.FN9 Without a description of these properties, it would not be possible to also describe a recombinant plasmid containing the encoding region of the polA gene with a modified or transplanted promoter. *See* Eli Lilly, 119 F.3d at 1568 ("[N]aming a type of material generally known to exist, in the absence of knowledge as to what that material consists of, is not a description of that material."); Amgen, 927 F.2d at 1206 ("It is not sufficient to define [a DNA sequence] solely by its principal biological property.").

FN9. Furthermore, the fact that prior art had established the chemical and physical properties of the *enzyme* DNA polymerase I does not describe the particular encoding *gene*. *See* In re Deuel, 51 F.3d at 1558 ("A prior art disclosure of the amino acid sequence of a protein does not necessarily render particular DNA molecules encoding the protein obvious because the redundancy of the genetic code permits one to hypothesize an enormous number of DNA sequences coding for the protein.").

The '638 application also provides a preferred embodiment of the invention describing the novel

recombinant plasmid using the encoding fragment of the known *E. coli* polA. *See* '638 application, para. . 11-12. Plaintiffs argue that *E. coli* polA is representative of the genus of bacterial polA genes encoding DNA polymerase I, and thus, reference to *E. coli* polA is adequate to support a generic claim directed to polA from any bacterial source. *Eli Lilly* recognized that claims to a genus of DNAs may be supported by a description of representative members of that genus:

A description of a genus of cDNAs may be achieved by means of a recitation of a representative number of cDNAs, defined by nucleotide sequence, falling within the scope of the genus or of a recitation of structural features common to the members of the genus, which features constitute a substantial portion of the genus.

Eli Lilly, 119 F.3d at 1568-69; *see also* Utter v. Hiraga, 845 F.2d 993, 998 (Fed.Cir.1988) ("A specification may ... contain a written description of a broadly claimed invention without describing all species that claim encompasses."); In re Grimme, 47 C.C.P.A. 785, 274 F.2d 949, 952 (Cust. & Pat.App.1960) ("[I]t has been consistently held that the naming of one member of such a group is not, in itself, a proper basis for a claim to the entire group. However, it may not be necessary to enumerate a plurality of species if a genus is sufficiently identified in an application by ' *other appropriate language*.' ") (emphasis added).

Eli Lilly did not provide guidance as to the "ways a broad genus of genetic material may be properly described." Eli Lilly, 119 F.3d at 1569. As persuasive authority, plaintiffs cite the PTO's Final Guidelines relating to the written description requirement after *Eli Lilly*. Oppo. 7-8. However, the PTO's guidelines do not support plaintiffs' argument. According to the PTO:

The written description requirement for a claimed genus may be satisfied through sufficient description of a *representative number* of species .... of the *entire* genus .... Satisfactory disclosure of a 'representative number' depends on whether one of skill in the art would recognize that the applicant was in possession of the necessary common attributes or features of the elements possessed by the members of the genus in view of the species disclosed. *For inventions in an unpredictable art, adequately written description of a genus which embraces widely variant species cannot be achieved by disclosing only one species within the genus*. [citing, e.g., *Eli Lilly*].

Guidelines for Examination of Patent Appl. Under the 35 U.S.C. s. 112, "Written Description Requirement," 66 Fed. R. 1099, 1106 (Jan. 5, 2001), attached at Oppo., Ex. 3 (emphasis supplied). The guidelines suggest that recombinant DNA technology is an "unpredictable art" where claims to a genus of DNA cannot be supported by description of only one member of the genus. As Dr. Bambara noted, there are numerous types of bacterial sources for the polA gene, and the polA gene comes from "a family of distinct genes that differ from one bacterial species to another." 1999 Bambara Decl. para. 16.

Plaintiffs nonetheless argue that there is at least a genuine dispute of material fact that *E. coli* polA is representative of polA from all bacterial sources. Oppo. 7-8. Dr. Benkovic opines:

(I) "one skilled in the art would understand the DNA polymerase I being described in the '638 application ... by its physical and chemical properties without description of the nucleotide base sequences of DNA polymerase I,"

(ii) "DNA polymerase I can be obtained from a bacterial source, such as *E. coli, B. subtilis,* or *M. luteus,* and was known to come from such bacterial sources," and

(iii) "those skilled in the art used the term DNA polymerase I to refer to DNA polymerase I expressed from gene coding regions from bacterial sources."

1997 Benkovic Decl. para.para. 7, 8, 12, 16. Based on these observations, Dr. Benkovic concludes that one skilled in the art would read the '708 patent "to describe the gene coding region for expression of DNA polymerase I as part of the invention, whether it comes from *E. coli* or another bacterial source." *Id.* at para. 12.

This Court disagrees with plaintiffs and finds that Dr. Benkovic's declaration does not raise a genuine dispute that the '638 application satisfies the written description requirement. Dr. Benkovic does not describe the common characteristics in the family of bacterial polA genes, and does not declare that *E. coli* polA possesses any of these common characteristics. *See* Eli Lilly, 119 F.3d at 1569 ("A description of a genus of cDNAs may be achieved by means of a recitation of a representative number of cDNAs ... *falling within the scope of the genus or of a recitation of structural features common to the members of the genus* ....") (emphasis added). Dr. Benkovic fails to show that a description of a recombinant plasmid constructed from *E. coli* polA encompasses the many other possible recombinant plasmids containing the polA gene from other bacteria that can be used to encode DNA polymerase I. *See* also 1999 Bambara Decl. para. 28 ("There is absolutely nothing in the '638 Application to show that the applicants possessed *any* of the polA genes from thousands of bacteria *other* than *E. coli*."), para. 29 ("Without these other polA genes, [scientists] could not construct plasmids for expressing DNA polymerase I enzymes of bacteria other than *E. coli*.").

At best Dr. Benkovic's declaration shows that one skilled in the art would understand the relevant technology of the claimed invention. However, it does not demonstrate that the inventors actually possessed recombinant plasmids containing encoding regions with modified promoters for all bacterial polA genes. *See* In re Alton, 76 F.3d at 1175 (if a person of ordinary skill in the art reading the application would understand the inventor to have been in possession of the claimed invention at the time of filing, the adequate written description requirement is met); Hoechst Celanese Corp. v. BP Chemicals Ltd., 844 F.Supp. 336, 340 (S.D.Tex.1994) ("[T]he test is whether the artisan would have known, from reading the description, that the *inventor* ... had possession of this invention.").

[14] [15] [16] As further evidence of a genuine dispute, plaintiffs cite the prosecution history of the '708 patent, which "establishes that the Patent Office considered at length whether the written disclosure in the '638 application was adequate [and] .... allowed the claims only after finding that the written description ... was broad enough to support gene coding regions for DNA polymerase I from bacterial sources other than *E. coli*." Oppo. 15. The prosecution history plaintiffs cite reveals only that the PTO considered whether the '638 application met the enablement requirement, not the written description requirement. The enablement requirement is also found in 35 U.S.C. s. 112, but is separate from the written description requirement. *See* Union Oil Co. of Cal. v. Atlantic Richfield Co., 208 F.3d 989, 1004 (Fed.Cir.2000); In re Wilder, 736 F.2d 1516, 1520 (Fed.Cir.1984), *cert. denied,* 531 U.S. 1183, 121 S.Ct. 1167, 148 L.Ed.2d 1025 (1985). The enablement requirement provides that a patent must give persons of ordinary skill in the relevant art enough information to practice the invention disclosed in the specification without undue experimentation. In re Alton, 76 F.3d at 1172 n. 5 (citing Atlas Powder Co. v. E.I. du Pont De Nemours & Co., 750 F.2d 1569, 1576 (Fed.Cir.1984)). It is possible that "a specification may enable one skilled in the art to make and use an invention and yet still not describe it." Union Oil, 208 F.3d at 1004. "The purpose of the 'written description' requirement is broader than to merely explain how to 'make and use'; the applicant must also convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession *of the invention*." Vas-Cath, 935 F.2d at 1563-64. The prosecution history cited by plaintiffs therefore does not

raise a genuine dispute that the specifications in the '638 application satisfy the written description requirement.

Plaintiffs offer one remaining "piece of evidence" to attempt to raise a genuine dispute that the specifications in the '708 patent satisfy the written description requirement: "The PTO found the written description in the '745 patent (which is the same as that in the '708 patent) to be adequate to cover methods of production of polymerase beyond polymerase from *E. coli* and issued the '745 patent on January 25, 2000." Oppo. 14. This evidence is not material to the question whether the '708 patent contains an adequate written description. The decision of the PTO concerning the '745 patent does not affect the key inquiry here: whether the '708 patent satisfies the written description requirement by demonstrating that plaintiffs possessed the inventions they claimed in the '708 patent. The PTO's issuance of the '745 patent, thus, does not raise a genuine dispute of *material* fact that the '708 patent does not satisfy the written description requirement.

On the existing record, the Court concludes that no reasonable jury could find that the '638 application adequately satisfies the written description requirement. A reasonable person skilled in the art could not determine from reading the application that the inventors were in possession of "recombinant plasmid containing a cloned complete structural gene coding region isolated from [any] bacterial source for the expression of DNA polymerase I."

CONCLUSION

For the foregoing reasons, the Court GRANTS the Roche defendants' renewed motion for summary judgment on their counterclaim for declaratory judgment that claims 1-19, 22-40, and 43-45 of the '708 patent are invalid under the written description requirement of 35 U.S.C. s. 112.

IT IS SO ORDERED.

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