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COMMENTARY

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Written Descriptions and Biotech Patents

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Patent rights serve as a foundation and lifeblood of biotechnology and pharmaceutical businesses, helping companies attract capital investment for product development, recoup the costs of expensive clinical trials and the Food and Drug Administration approval process, and achieve profitability.

Accordingly, actual or proposed changes to the patent system attract the scrutiny of the biotech and pharmaceutical industries, and lately there have been many high-profile ones.

The U.S. Supreme Court has taken a more active role in patent jurisprudence, recently deciding cases that affect the standards for a patentable invention,¹ the extra-territorial effects of U.S. patents,² the rights of licensees to challenge the validity of patents,³ the determination of whether a patentee is entitled to a permanent injunction against an infringer,⁴ and the doctrine of patent exhaustion.⁵

Congress has been debating extensive changes to the patent statute, including controversial changes to the manner in which courts calculate damages for patent infringement.⁶

The U.S. Patent and Trademark Office has attempted to promulgate controversial new rules to effectively limit the number of claims that an applicant would be permitted to prosecute in a patent application and limit the number of times an applicant would be permitted to re-file an application (as a "continuation" application).⁷ Numerous other rule changes have been proposed and published for public comment, but not yet implemented, by the PTO.

It was with comparative lack of fanfare that the PTO promulgated a revised set of "written description training materials" to be used by patent examiners, which also will affect biotechnology patent protection. This article addresses these training materials.

What Is the 'Written Description' Requirement?

A patent application comprises a patent specification that describes an invention and one or more claims that define the metes and bounds of the invention for which protection is sought. The patent statute requires that "The 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, or with which it is most nearly connected, to make and use the same."⁸

The requirement for an enabling disclosure provides a *quid pro quo* to the public for the granting of a patent monopoly because it requires that the patent applicant teach the public how to make and use the invention in a manner that permits its practice after the patent expires. Patent examiners must consider whether the specification achieves this mandate without requiring undue experimentation on the part of persons who would try to practice it.

There has been a continuing debate within the patent law community as to the exact nature of the written description requirement and its relationship to the requirement for an enabling disclosure.⁹ Historically, patent examiners have applied the written description requirement during prosecution to prevent a patent applicant from amending claims during the examination process to cover subject matter that the applicant did not clearly contemplate as his invention when he filed the application.

More controversial applications of the written description requirement arise from a number of relatively recent decisions by the U.S. Court of Appeals for the Federal Circuit, most of which involve biotechnology inventions. In these cases, the Federal Circuit has concerned itself not only with whether the patent application, as filed, evinced an original intention to claim the subject matter of an

amended claim, but also whether the description in the application evinced that the inventor was in possession of the invention that he originally or subsequently seeks to claim.

Thus, for example, the Federal Circuit used the written description requirement to invalidate claims to mammalian, vertebrate, or human insulin cDNAs, where the application exhibited a clear intention to claim such cDNAs, but only taught the sequence of a rat cDNA.¹⁰

In practice, written description issues often focus on whether a patent application that describes only one or a few working species of an invention (e.g., a rat insulin cDNA) contains an adequate description to support a patent claim directed to a genus that embraces the working examples actually disclosed, and variants of them (e.g., all mammalian insulin cDNAs).

A genus claim may be essential for preventing a patentee's competitors from exploiting the invention through simple design-around, such as synthesis of a simple chemical analog of a disclosed invention.

Notwithstanding the ongoing debate about the proper legal interpretation of the written description requirement, patent practitioners and patent examiners must, on a daily basis, perform their complementary tasks of drafting and examining patent applications for compliance with the requirement. For the foreseeable future, the written description requirement will play a major role in constraining the scope of biotechnology patents that are granted by the PTO and sustained by courts in litigation.

What Are 'Written Description Training Materials'?

In reaction to decisions such as the Eli Lilly cDNA case and to the challenge of handling numerous patent applications describing expressed-sequence tags and purporting to claim whole cDNAs that contained the ESTs, the PTO in 1998 published, for public comment, "interim written description guidelines" for the purpose of providing a general, systematic legal analysis for examiners to review applications under this area of the law.

These published materials included some specific examples — hypothetical fact situations — that were the subject of numerous objections during the public comment period.

In December 1999 the PTO issued Revised Interim Guidelines for Examination of Patent Applications Under 35 USC § 112, paragraph 1, "Written Description" Requirement. Importantly, these revised guidelines contained a general legal analysis of cases that pertained to the "written description" requirement but did not contain

practical examples (e.g., hypothetical or real-world fact patterns) from which the examiners should learn. Instead, the PTO incorporated such examples into "internal" examiner training materials that were not subject to a formal public comment process. The first such written description training materials also were published in 1999.

Strikingly, even though the patent statute (including the "written description requirement") is written to be "technology-neutral," almost all the technology-focused examples in the written description training materials from 1999 pertain to biotechnology.

For instance, there were examples covering hypothetical patent applications pertaining to genes, ESTs, DNA fragments encoding a full-length open reading frame, nucleic acid molecules defined by their ability to hybridize to other molecules, allelic variants and protein variants, bioinformatics, antisense oligonucleotides, antibodies, and biological processes.

In January 2001 the PTO published Guidelines for Examination of Patent Applications Under the 35 U.S.C. § 112, paragraph 1, "Written Description" Requirement. These guidelines superceded the 1999 interim guidelines and again did not contain examples for training, but no new training materials were published. Thus, patent examination proceeded with examiners trained under the 1999 training materials until at least March 20, 2008, when revised training materials were published.

How Do the Training Materials Affect Patent Applicants?

At one level the written description training materials offer a measure of welcome certainty to patent applicants — at least until they are changed. For example, a patent attorney presented with an invention involving a novel DNA, protein or antibody molecule can use the training materials to counsel a client about the scope of protection that the PTO is likely to grant to the invention and can draft a patent application to contain at least the minimum descriptive material recommended by the PTO's training materials.

However, at another level the training materials can potentially take on a life of their own and undesirably hinder an applicant from obtaining broad patent claims to which the applicant may be entitled. Compliance with the written description requirement is a question of fact, necessitating a fresh evaluation of every unique case.

An invention that is described better than the hypothetical inventions in the training materials would potentially be entitled to broader patent protection. Ideally, the training materials are understood in this context as a guide for thinking about each case on its individual merits.

Practically speaking, however, the training materials, which have no force of law and are not even binding to the PTO, are likely to have a tremendous impact on the examination of a biotechnology patent application. All patent examiners work under considerable time pressure to complete their examination, and many patent examiners are relatively new PTO hires with little patent examining experience.

For these and other reasons, it is of tremendous value for examiners to have training examples from which, by factual analogy, they can reach a “yes” or “no” conclusion as to compliance with the written description requirement for the applications they examine. There are few practical guidelines for examining applications with superior descriptions to the descriptions in the brief hypotheticals of the training materials.

In practice a patent applicant may find it difficult to persuade a patent examiner that a patent application satisfies the written description requirement if the examiner has analogized the application to an example in the training materials that dictates a contrary conclusion.

If a patent applicant is unable to persuade a patent examiner that his rejected application is distinguishable from an example in the training materials that formed the apparent basis for rejection, the applicant may face the undesirable choice of narrowing his claims (and narrowing the scope of protection afforded by an eventual patent). Alternately, it may be forced into pursuing a time-consuming, expensive appeal of the rejection to the PTO’s Board of Appeals and Interferences.

Even the Board of Appeals is unlikely to overrule a patent examiner if it agrees that the written description rejection is consistent (by valid analogy) with the training materials. An unfavorable board decision can be appealed outside the PTO to the federal court system, which adds still further time and expense. For most applicants, only exceptionally important patent applications are pursued on appeal at this level in the face of rejection by an examiner that is sustained by the PTO’s Board of Appeals.

Because the written description training materials have no force of law, any decision by the Federal Circuit that is inconsistent with the training materials would supersede the training materials. However, the PTO is a federal agency that is afforded a measure of deference in its areas of expertise, particularly with respect to questions of fact. And compliance with the written description requirement is a question of fact, not a question of law.

In at least one notable decision that involved issues of compliance with the written description requirement, *Enzo Biochem Inc. v. Gen-Probe Inc.*, the Federal Circuit

suggested that deference to the PTO’s guidelines and training materials could be appropriate: “The PTO has issued guidelines governing its internal practice for addressing that issue. The Guidelines, like the Manual of Patent Examining Procedure, are not binding on this court but may be given judicial notice to the extent they do not conflict with the statute.”¹¹ In *Enzo* the court specifically cited to the “antibody example” in the PTO’s 1999 training materials.¹²

Analysis of the 2008 Revised Written Description Training Materials

According to John LeGuyander, director of Technology Center 1600 (Biotech) at the PTO, the revised written description training materials are the culmination of a team effort that involved significant input from the biotechnology specialists at the PTO. “For the current guidelines we had a technology center ... group director leading the effort, and we had some quality assurance specialists from the [technology center]. We had a representative from the solicitor’s office at PTO. We had ... an administrative patent judge from our Board of Appeals. We also had some lawyers from our policy division. It was kind of a team effort originally, and this last go-around to update the materials,”¹³ LeGuyander said.

Not surprisingly, the revised training materials again are predominantly focused on biotechnology. According to LeGuyander, the biotechnology examiners were immediately trained with the revised training materials (attendance was mandatory), but training of other technology art units will be at the discretion of the leaders of those units.

LeGuyander explained that changes to the law, reflected in court decisions interpreting the written description statute, were one factor that motivated the revisions to the training materials. “It is a little combination of what case law is still in effect on written description as well as what has come down the pike specific for biotech in particular.”¹⁴

There are at least three examples in the revised training materials based explicitly on important appellate decisions issued after the original training materials were published.

One example, pertaining to “partial protein structure,” was based on the facts and holding in *In re Wallach*, 378 F.3d 1330, 71 U.S.P.Q.2d 1339 (Fed. Cir. 2004); another, pertaining to “antibodies to a genus of proteins,” was based on the facts and holding in *Noelle v. Ledermann*, 355 F.3d 1343 (Fed. Cir. 2004). The third, pertaining to hypothetical patent claims directed to a method of screening for new drug compounds, the compounds themselves, and methods

of using the compounds, was based in part on the fact pattern in *University of Rochester v. G.D. Searle & Co. Inc.*, 358 F.3d 916 (Fed. Cir. 2004).

Changes in biotechnology, and in the types of patent applications that the PTO is receiving for examination, also were clearly a motivation for promulgating new guidelines. The revised training materials provide five new biotech-focused examples, some of which are completely novel to the training materials.

Another pervasive theme in the revised training materials that is likely to be a point of contention between applicants and examiners is an increased emphasis on correlation between structure and function in the context of biological macromolecule inventions, polypeptides and the nucleic acids that encode them. On the one hand, there appears to be an increased recognition at the PTO that the description of the structure of a single molecule, e.g., the sequence of a gene or protein, can provide sufficient information to claim a wide variety of sequence variants by structure.

For example, a single amino acid sequence (e.g., of a polymerase enzyme) defines the structure of a genus of variants that share at least 85 percent or 95 percent sequence identity with the reference sequence. Standing alone, this recognition would assist patent applicants that seek broader protection or certain biomolecule inventions.

However, structural written description is not the only patentability requirement, and the PTO may conclude that structure alone is not always sufficient for defining a patentable invention. The revised training materials contain reminders to examiners that they pertain to written description issues only and that the examiners must consider questions of enablement separately.

In the context of biomolecules, patent examiners sometimes reject claims directed to a genus of variants/analogues of the biomolecules if the examiner believes that a patent applicant has not taught how to use substantially all the variants/analogues that are claimed. For instance, the examiner may question whether all the variants that share 85 percent or 95 percent sequence identity with a polymerase enzyme are useful.

The addition of a functional limitation to a patent claim may alter the examiner's conclusion with respect to enabling disclosure. For example, a patent examiner may be more accepting of a patent claim directed to variants of an enzyme (e.g., a polymerase) that have at least 95 percent sequence identity to the sequence of a wildtype polymerase if the claim is restricted to variants that have the same enzymatic activity (e.g., polymerase activity) as

the wildtype enzyme. A functional limitation in the claim excludes variants that the examiner considers to be not useful.

However, the combination of structural and functional claim limitations potentially raise new written description concerns at the PTO under the revised training materials. LeGuyander explained: "Part of the reason why so many of these examples are specific to biotechnology is that the generic language normally utilized to claim an invention simply doesn't apply to biotech, for which claimants must use functional language. This, of course, raises the question of whether or not a patent applicant has adequately described — in broad terms — what exactly it is they are claiming, and that really is the crux of why the written description is so important."¹⁵

In the revised training materials the PTO teaches examiners to evaluate whether there is a disclosure of either an "art-recognized" (known) correlation between the disclosed function and structure of a protein invention, or whether the disclosure provides teachings that demonstrate a correlation between the function and structure. This increased focus on structure-function is a noteworthy development in the revised training materials. The original training materials focused their analyses on whether a representative number of species of the genus were provided in the specification to demonstrate that the applicants were in possession of the claimed genus, and the correlation between structure and function was secondary, if considered at all.

The new focus on an art-recognized correlation between structure and function in the revised training materials may cause an examiner to reject a claim for lack of adequate written description that, under the original training materials, would not have been rejected.

For example, the fact pattern for the "product claimed by its function" example is identical in the original and revised training materials; however, in the revised training materials the PTO completely reversed its determination of whether the disclosures satisfy the written description requirement.

The evaluation of an art-recognized correlation between structure and function is considered in the analysis for the majority of the PTO revised examples and is particularly emphasized in the examples relating to DNA hybridization, protein variants, product claimed by its function and percent identity. The PTO views this analysis as so important for evaluating the written description requirement that two fact patterns are provided for the percent identity example, one that disclosed an art-recognized correlation between structure and function and one that does not.

The new emphasis on structure-function relationships in the revised training materials undoubtedly will be an area of contention between patent applicants seeking broad protection for their inventions and patent examiners seeking to properly apply the written description requirement of the statute, in the manner that they have recently been trained, because they represent a stark change in thinking by the PTO.

LeGuyander acknowledged: "Previously what we had told the examiner was that if you have a 'percent identity' or 'hybridization by the sequence' that you are trying to claim [together with] functional language, you met written description, and we've reversed that now. Our position is now that functional language may not necessarily provide you [with] or put you in possession of written description. It depends again on the particular protein or the DNA you are talking about whether or not you have adequately described where the functional components of the protein are and that one would know how to manipulate that to get coverage over a broader scope by referencing percent identity or by referencing some form of functionality without specifying a particular sequence."¹⁶

Unquestionably, the revised written description training materials will have an immediate and direct impact on the nature and scope of patent claims that are granted to patent applicants, and they will now receive close scrutiny by biotechnology companies and the patent attorneys that represent them. And of course, the training materials will eventually change again as the technology evolves and the law evolves to keep up with it.

As LeGuyander explained, "For all of our training, it is constantly a work in progress, so at some point in the future — and I can't tell you exactly when that will be — it depends upon again the case law, how important the case law [is], how precedential the case law is, advances in the technology — I can guarantee you that at some point in the future we're going to be revising these and other training as well."¹⁷

Notes

¹ In *KSR International v. Teleflex*, 127 S.Ct. 1727 (2007), the court issued its first opinion in more than 20 years addressing the statutory requirement that a patentable invention must not be obvious in view of prior art.

² In *Microsoft v. AT&T*, 127 S. Ct. 1746 (2007), the court issued an opinion restricting the extraterritorial effects of U.S. patents with respect to certain copying activities that occur abroad.

³ In *MedImmune v. Genentech*, 549 U.S. 118 (2007), the court held that a licensee in "good standing" (not in breach) was permitted to file a declaratory judgment action to challenge the validity of a patent.

⁴ In *eBay Inc. v. MercExchange LLC*, 126 S.Ct. 1837 (2006), the court reversed Federal Circuit precedent that a patentee is generally entitled to an injunction against an infringer absent "exceptional circumstances" and held that a traditional four-factor test applied by courts in equity also should be applied with respect to patent disputes, just as they are applied to other disputes.

⁵ *Quanta Computer v. LG Elecs.*, 128 S. Ct. 2109 (June 9, 2008).

⁶ See, e.g., H.R. 1908, 110th Cong. (2007), and S. 1145 110th Cong. (2007), which include provisions that could limit patent damages by requiring a court to conduct an analysis of a patent's specific contribution over prior art.

⁷ In *Tafas v. Dudas*, 511 F. Supp. 2d 652 (E.D. Va. 2007), plaintiff GlaxoSmithKline successfully challenged the implementation of these rules in federal court on the ground that the rules were substantive in nature (rather than merely "procedural") and therefore exceeded the PTO's rulemaking authority. The PTO has appealed the court's decision to enjoin the new rules, and is seeking greater rule-making authority from Congress.

⁸ 35 U.S.C. § 112, ¶ 1.

⁹ See, e.g., *Enzo Biochem. v. Gen-Probe Inc.*, 323 F.3d 956, 976 (Fed. Cir. 2002) (J. Radar dissenting in part).

¹⁰ See *Univ. of Cal. v. Eli Lilly & Co.*, 119 F.3d 1559 (Fed. Cir. 1997).

¹¹ See *Enzo*, 323 F.3d at 964.

¹² *Id.*

¹³ Telephone interview with John LeGuyander, director of Technology Center 1600, May 2, 2008.

¹⁴ *Id.*

¹⁵ *Id.*

¹⁶ *Id.*

¹⁷ *Id.*

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