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U.S. PATENT & TRADEMARK OFFICE

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March 22, 2000

Commissioner of Patents and Trademarks
Box 8
Patent and Trademark Office
Washington, DC 20231

Attention: Mark Nagumo, Steven Walsh, Linda Therkorn

Dear Sir:

I am writing on behalf of Genentech, Inc., in response to the request for public comment on the revised interim guidelines concerning the written description requirement under 35 USC §112 (64 FR 71427) and the revised utility examination guidelines (64 FR 71440). Genentech is a leading biotechnology company based in South San Francisco, California, with a corporate mission to use human genetic information to develop, manufacture and market pharmaceuticals to address significant unmet medical needs.

Genentech appreciates the opportunity to offer remarks on the two sets of interim guidelines and the training materials that accompany those guidelines. We also appreciate the substantive consideration given to the remarks provided by us and others in response to the initial solicitation for public comment on the written description guidelines. We were pleased to see that the initial version of the written description guidelines was modified significantly to reflect suggestions made by the public.

Overall, we believe the latest version of the guidelines, as amplified by the training materials, accurately reflects the standards of utility and written description. We believe that the guidelines, if implemented generally as suggested by the training materials, will help to ensure that patents granted by the Patent and Trademark Office (PTO) will justifiably be entitled to a presumption of validity.

That said, we continue to have a number of discrete concerns with each set of guidelines.

A. Comments on the Revised Written Description Guidelines

As we indicated in our response to the first version of the written description guidelines, we believe that significant problems can arise where a patent applicant has presented an open-ended claim to a DNA (or other nucleic acid) on the basis of a disclosure of only an incompletely characterized partial or complete DNA. Although the revised guidelines incorporate a better methodology for review of applications and claims presenting this fact pattern, and generally arrives at the correct result (e.g., in example 7, the PTO indicates that the examiner will reject an open-ended claim on the basis that the disclosure does not demonstrate possession of the invention defined in the claims), we remain concerned with the PTO's approach to assessment of written description for certain types of applications.

The first source of our concern arises from the commentary offered in paragraph 34 of Federal Register announcement for the written description guidelines, which states:

The Revised Interim Guidelines maintain the view that use of such terms as "gene" in the preamble of an EST claim may raise a written description issue if one skilled in the art would understand that a "gene" requires elements which are not sufficiently described. However, claims to "a DNA comprising SEQ. ID. NO: 1" are unlikely to raise a written description issue. The comments do not explain why there is a written description problem for a claim such as "a DNA comprising SEQ. ID. 1" when SEQ. ID. 1 is an EST, while there is no problem when SEQ. ID. 1 is a whole gene or a gene promoter. The only difference seems to be the utility of the DNA fragment.

We do not believe the comment represents a correct interpretation of the written description requirement in so far as it suggests that no problems can be envisioned under written description for a claim drawn to a "nucleic acid comprising sequence ID No: 1" that is based upon a disclosure of incompletely characterized DNA. The fundamental problem in the logic of the PTO's statement can be illustrated by considering the following claims mentioned in the comment:

1. "A gene comprising SEQ. ID No. 1"
2. "A DNA comprising SEQ. ID. No.1"

Claim 2, by definition, encompasses a larger number of species of compounds than generic claim 1. Claim 2 also literally encompasses the entire genus of compounds defined by claim 1. Yet, under the logic of the PTO comment in comment 34, a disclosure can fail to demonstrate possession of the genus defined by claim 1 (i.e., it fails to describe a class of genes that includes the recited sequence, along with other "gene" elements that are not specified in the claim) yet at the same time the same disclosure can demonstrate possession of the entire genus defined by claim 2, including the genus defined by claim 1. The PTO's suggestion that this result is a permissible application of the written description guidelines is perplexing. Stated simply, how can a disclosure that fails to demonstrate possession of a sub-genus be construed under any logical standard to demonstrate possession of a broader genus of compounds?

The second source of concern derives from comment (35) where the Office suggests that since it has issued numerous patents in the past that have claims that encompass large numbers of nucleic acids, there is not inherent problem with granting such claims based on a disclosure of an EST. We believe this reflects an unsupportable per se approach toward certain types of claims and disclosures. A claim cast in an open format may literally encompass billions of potential sequences, without any restriction as to size or functional characteristics of any particular sequence within the scope of the claim (other than possession of the common nucleotide sequence that is recited). As a result, relatively few sequences that fall within the scope of a claim in the form "nucleic acid comprising ..." are likely to have the same or similar functional attributes as the specific sequence that is defined in the claim. Merely sharing a common sequence element is not likely to impart to all the members of the purported genus common functional characteristics, as a matter of science or law. Therefore, such claims clearly raise a question with respect to written description, and in particular whether the applicant could possibly be said to have possession of such a multitude of functionally different compounds.

The third source of concern about how the guidelines will be implemented is based on a careful reading of examples 7 and 8. Example 7 presumes that the disclosure provides information regarding the sequence of an EST, but does not disclose the full sequence of the gene of which the EST is a part or any other characterizing information to demonstrate comprehension of the full gene. Example 7 indicates that an open-ended claim to any nucleic acid comprising the EST sequence would not meet the written description requirement. Example 8 provides a disclosure that reveals the complete open reading frame of a gene, and provides additional characterizing information regarding the class of proteins that share a significant homology to the disclosed sequence. In example 8, the disclosure thus provides several independent structural and functional characteristics other than the recited sequence of the nucleic acid that is subsequently

claimed in an open claim format. Examples 7 and 8 independent of the caveat to example 7 thus contrast a disclosure that reveals a completely characterized structure with a defined and defensibly supported specific utility (i.e., example 8) on the one hand to a disclosure which omits these multiple independent characterizations of the sequence of a "complete structure" with a demonstrated utility.

We are concerned that the caveat provided in example 7 distorts in an arbitrary manner the line that has been drawn between the two examples. The caveat suggests that if the applicant discloses that the identified sequence is an open reading frame, that fact standing alone will be able to demonstrate possession of a "complete" chemical structure, and on that basis, an open claim to any nucleic acid that includes that sequence will not face any problems under written description. Yet, the caveat does not mirror the fact pattern of claim 8 (i.e., a disclosure that includes additional independent characterizations of the sequence that demonstrate comprehension of what the complete structure is and its specific utility). In other words, instead of drawing a line between a disclosure that provides a sufficient characterization of a "complete" structure (i.e., sequence plus additional data), the caveat distorts the distinction and seems to suggest that disclosure of an open reading frame will in all circumstances demonstrate possession of a "complete" structure that can then be used to justify an open claim to any nucleic acid that includes that structure.

The caveat to example 7 and the *per se* characterizations provided in comment (34) are at odds with an otherwise well-reasoned outline for evaluation of compliance of claims with the written description guidelines. As a consequence, the procedure outlined in the guidelines for assessing whether or not a representative number of species has been disclosed for a generic claim could be rendered meaningless (i.e., one that presumes compliance with written description for a generic, open-ended claim to a DNA comprising a specified sequence).

We recommend making a number of changes to the training materials and the guidelines to correct these problems.

1. Delete the caveat accompanying example 7, but retain this example.
2. When the final guidelines are published, include a retraction of comments 34 and 35. The guidelines should not be "clarified" through the types of comments found in these two paragraphs.
3. In step II(A)(1), the PTO should direct examiners, when evaluating a generic claim, to take note of any structural and/or functional characteristics recited in the claim of the compounds that make up the

claimed genus. Doing so will facilitate evaluation of the specification in step (A)(2) to identify the "essential characteristics" of what the applicant describes as the "invention."

4. In step II(A)(2), the PTO should reinforce the sentence that reads "[t]he analysis of whether the specification complies with the written description requirement requires the examiner to determine the correspondence between what applicant has described as the essential identifying characteristic features of the invention, i.e., what the applicant has demonstrated." The PTO should emphasize that when evaluating generic claims, particularly where there is a significant degree of unpredictability in the art, the examiner should ensure that the claims recite enough of the characteristics that are shared by the class of compounds that the applicant characterizes as the invention, and that this is necessary to permit proper evaluation of whether a sufficiently representative number of species in the genus has been disclosed.
5. In step II(A)(3)(a)(2), the Office should direct examiners to carefully evaluate generic claims that encompass multiple distinct classes of inventions in unpredictable arts to ensure proper application of the standard articulated in this section. Specifically, examiners should carefully review a generic claim that encompasses multiple independent classes of inventions that do not share a common utility to determine if the disclosure shows a representative number of species for each discrete classes of inventions literally encompassed by the claim. If there is not a sufficiently representative disclosure of species in each of the discrete classes of products encompassed by the claim, the claim should be rejected, and the applicant invited to narrow the claim to better define the class of compounds to a genus of compounds that shares a common utility and whose possession is clearly supported by the disclosure.

This is a particularly important step for inventions in unpredictable arts. Demonstration of possession of a partial structure will not ordinarily support a claim by a patent applicant that encompasses other distinct inventions having a utility that is materially different from the utility of the class of compounds identified in the specification. Thus, disclosure of a compound that is useful as a probe or as a marker for a gene does not ordinarily demonstrate possession of a gene or of a complete coding region of a gene without additional information in the disclosure. Following an examination process that does not challenge a generic claim

that literally encompasses the other discrete categories of invention would make the evaluation process illogical.

We note that example 6 illustrates this concept in operation, but the guidelines do not include a step that directs examiners to conduct this type of inquiry. Similarly, example 7 works through the elements of this concept by noting the discrete classes of nucleic acid inventions that are encompassed by the generic claim in example 7 (i.e., the claim encompasses "any full length gene which contains the sequence, any fusion constructs or cDNAs"). Despite this, the analytical underpinning of this process is not reflected in the guidelines.

Accordingly, we encourage the PTO to add clarifications to step II(A)(3)(a)(2) and the flowchart in the training materials to provide a more structured review of open-ended generic claims in unpredictable arts consistent with these remarks.

6. Footnote 51 either should be deleted or limited to a clarification that if the amino acid sequence for a polypeptide whose utility has been identified, then the question of possession of a class of nucleotides encoding that polypeptide can be addressed as a relatively routine matter using the understanding of the genetic code. The form in which this footnote has been presented is not particularly helpful to the analysis in the guidelines.

B. Comments on the Revised Utility Examination Guidelines

We welcome and support the decision of the PTO to reevaluate the utility examination guidelines and to produce additional clarifying examples that can be used in training examiners in the proper application of the utility requirement. We also believe the guidelines as revised generally present a workable process for evaluating utility. Our comments with regard to the utility examination guidelines focus on three issues.

Before addressing our specific concerns, we believe it is important to emphasize that the utility of a particular gene or polypeptide rarely can be demonstrated until there has been a sufficient characterization of the function of a gene or its expression product, including through relevant biological assays. In most instances, the ability of a person skilled in the art to make predictions of utility for a polypeptide based on homology alone will be extremely limited. Instead, particularly for a polypeptide that has a biological activity upon which a utility has been based, it will be necessary to express the polypeptide and to confirm that it possesses the relevant biological characteristics. Simply put, computer-based homology analysis should not be regarded as a generally

reliable predictor of the biological function – and hence, the utility – of genes or polypeptides. There may be particular cases where homology alone will be sufficient basis on which to credibly predict the function of a novel DNA or protein. But we believe an applicant should be required during examination to make that showing – to establish through competent evidence that a person of ordinary skill in the art would regard the ascribed function of the molecule to be a credible one based solely on its homology to some other known molecule.

With this general comment in mind, we believe the guidelines and the training materials present a generally workable approach to evaluating utility, as well as illustrations that seem to reflect a correct conclusion on utility.

First, we do not believe the process outlined in the utility examination guidelines, which directs examiners to determine if a well-established utility exists for a claimed invention before reviewing the specification for a specific asserted utility, is a workable or desirable approach. Rather, we believe that the applicant should be required to identify the specific utility for the claimed invention, and the PTO should structure their review – as was the case in the previous version of the guidelines – based upon the applicant's characterization of the utility of the claimed invention. Accordingly, the guidelines should direct examiners to determine if a specific utility for the claimed invention has been disclosed in the specification, and if not, then to require the applicant to identify the specific utility. The applicant can then respond by, for example, identifying a well-established utility for the invention, or by explaining why the utility of the claimed invention would be immediately apparent to a person skilled in the art.

Similarly, we do not believe the guidelines provide a workable approach in situations where an applicant has not provided a specific and substantial utility. In step B(2)(3)(b), the Office appears to be requiring examiners to demonstrate that where an applicant has not recited a specific and substantial utility in the specification, the burden is on the examiner to provide "a prima facie showing of no specific and substantial utility ... that it is more likely than not that a person skilled in the art would not be aware of any well-established credible utility that is both specific and substantial." This approach reflects an overly complicated and ultimately unnecessary exercise that will unduly burden the examination process. The only time this requirement should arise is when a patent applicant has failed to disclose a specific and substantial utility in the specification. This should be a very rare and unusual situation. As discussed above, if the examiner reviews the specification and finds that there is no recitation of specific utility in the disclosure, the examiner should note this and shift the burden to the applicant to come forward with a specific utility for the claimed invention.

This situation is fundamentally different from the situation where a specific utility is not credible. In the credibility assessment, it is entirely appropriate for the examiner to come forward with a scientifically valid and supportable showing that explains why the asserted utility is not credible. Ultimately, credibility will be a fact-driven determination where it is appropriate to require the examiner to provide a sound basis for contesting an asserted utility.

Second, the three prong assessment of utility to ensure that the utility is specific, substantial and credible is an appropriate way to assess whether the applicant has disclosed a utility for the claimed invention that shows that a "specific benefit exists in its currently available form." In the training materials, the PTO attempts to clarify the meaning of the three prongs, and does so in a generally satisfactory manner. We believe it would be helpful to expand on these general explanations, particularly those concerning specificity of a utility to the claimed invention so as to emphasize that a specific utility is one that can be confirmed by an affirmative representative. We also recommend that the substantiality prong of the inquiry be focused on identifying throw-away utilities that are not representative of the characteristics of the claimed invention.

Third, we believe the training examples should be supplemented by an example concerning a nucleotide sequence that does not have the unusual characteristics of example 10. Example 10 provides several differentiating and unique characteristics independent from the recited sequence. The PTO should instead provide an example that resembles the fact pattern of example 7 of the training materials for written description, and work through how utility would be assessed for that example. Alternatively, we would encourage the PTO to provide an example that recites a sequence with only homology at the approximately 85% level without any other characterizing features. Such examples would appear to present more relevant examples for the training materials.

C. Concluding Remarks

We commend the PTO for the effort it has invested in refining these examination guidelines and the training materials. We believe the PTO should not hesitate to take an aggressive stance on application of these standards to inventions in the biotechnology sector. It would be particularly useful for the PTO to have a role in developing the case law surrounding application of these two standards for nucleic acid-related applications, specifically by pursuing test cases before the Federal Circuit. Taking such an approach will yield valuable longer term benefits to our industry than to simply shift the focus of clarification of these standards to inter-partes litigation.

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Thank you for your consideration.

Very truly yours,
GENENTECH, INC.

A handwritten signature in black ink that reads "Sean Johnston". The signature is written in a cursive, slightly slanted style.

Sean A. Johnston
Vice President, Intellectual Property