Patenting Biologics and Other Therapeutics in the United States: Another Strike Against Claims with Functional Limitations

March 11, 2021

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Recently, functional patents for biologics and other pharmaceuticals have faced higher scrutiny in the United States regarding the written description and/or enablement requirements.

In 2017, in *Amgen v. Sanofi*, 872 F.3d 1367 the United States Court of Appeals for the Federal Circuit ("the Court") pronounced that the written description requirement defined in U.S Code § 112(a) was not met where a genus of antibody is claimed by the antigen to which it binds, overturning the longstanding practice of allowing claims based on the "newly characterized antigen" test .

In a second decision between the parties, rendered in *Amgen Inc. et al v. Sanofi, Aventisub LLC, et al.,* 2020-1074 (Fed. Cir.), the Court also found the antibody claims at issue did not meet the enablement requirement set out in U.S Code § 112(a) because practicing the patented claims would require undue experimentation.

At issue in this case were specific claims of Amgen's 8,829,165 ("the '165 patent") and 8,859,741 ("the '741 patent") patents. A claim of the '165 patent is reproduced below to exemplify the kind of claims at issue:

> An isolated monoclonal antibody, wherein, when bound to PCSK9, the monoclonal antibody binds to at least one of the following residues: S153, I154, P155, R194, D238, A239, I369, S372, D374, C375, T377, C378, F379, V380, or S381 of SEQ ID NO:3, and wherein the monoclonal antibody blocks binding of PCSK9 to LDLR.

In coming to its decision, the Court noted that for a claim to be invalid for lack of enablement it must be clear that a person of ordinary skill in the art would not be able to practice the claimed invention without undue experimentation. The Court further noted that while a claim that requires a functional limitation can in some cases meet the enablement requirement, where the functional limitation is described using broad functional language, the bar for meeting enablement is raised. With respect to the claims at issue, the Court found that "the functional limitations here are broad, the disclosed examples and guidance are narrow, and no reasonable jury could conclude under these facts that anything but 'substantial time and effort' would be required to reach the full scope of claimed embodiments."

With respect to the specific claims at issue, the Court stated:

> [T]he specification here did not enable preparation of the full scope of these double-function claims without undue experimentation. The binding limitation is itself enough here to require undue experimentation… [T]he scope of the claims encompasses millions of candidates claimed with respect to multiple specific functions, and that it would be necessary to first generate and then screen each candidate antibody to determine whether it meets the double-function claim limitations.

The Court did make clear however, that it may be possible to enable an entire genus stating it did "not hold that the effort required to exhaust a genus is dispositive".

The importance of enablement and written description requirements can also be seen in small molecule chemical patents. Earlier this year, the U.S. Supreme Court refused to review an appellate decision invalidating genus claims directed to

small molecules used in the treatment of Hepatitis C virus infection. Idenix (a Merck subsidiary) patent 7,608,597 ("the '597 patent") was at issue, and Gilead's blockbuster drugs Sovaldi and Harvoni were initially found infringing. Damages of an astounding $2.5 billion, the largest infringement damages in history, were originally awarded to Idenix in a jury trial. The claims in question were directed to a method of treating a Hepatitis C virus infection comprising administering "an effective amount of a purine or pyrimidine β-D-2'-methyl-ribofuranosyl nucleoside or a phosphate thereof". The District Court of Delaware invalidated the '597 patent for lack of enablement since the compounds claimed in the '597 patent would include billions of possible compounds. Even with some narrower structural limitations in the formula, the Court found that it would require significant work to synthesize and screen the full scope of the compounds encompassed by the claims in order to identify those satisfying the functional limitation of being effective in the treatment of Hepatitis C. The Court of Appeals for the Federal Circuit affirmed the decision and added that the '597 patent further does not meet the written description requirement. Specifically, the Court of Appeals held that the patent does not show that the patentee actually possessed certain compounds effective in the treatment of Hepatitis C.

This series of decisions further highlights the significance of sufficient written disclosure enabling and detailing the full scope of a genus functional claim.

Practical considerations for drafting

Currently in the US, claims that encompass broad functional limitations that render the scope of a claim broader than the guidance and examples provided in the specification for how to make and use the claimed invention may not meet the written description or enablement requirements. These requirements are not consistent with other jurisdictions requiring a hybrid approach. Specifically, in the context of antibody and compound genus claims, it will be necessary to, in addition to including desired broad functional limitations which are still permissible in jurisdictions such as Europe and Canada, to include narrower embodiments for US patents. As many examples as available that meet the functional limitations should be included and functional limitations should be described tailored to the antibodies or compounds described. Claims directed to features of the antibody itself such as the nucleic or amino acid sequences of the CDR or antibody should also be included in case functional claims are not available. Similarly, in chemical patents, claims directed to specific or narrower embodiments of compounds useful for the purpose of the invention should be included as fallback positions. These requirements to the extent possible should also be met in priority applications to ensure priority claims are valid (more details available here). Accordingly, it may be necessary to file multiple priority applications to ensure that patents are enabled as early as possible during the priority year.