Amgen, Juno And The Fate Of Functional Genus Claims

By **Coy Stull, Katherine Leonard and Zayn Mohamed** (June 8, 2022)

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The U.S. Court of Appeals for the Federal Circuit issued two significant decisions last year that affect the protection of biotechnology through the use of functional genus claims — Amgen Inc. v. Sanofi[1] and Juno Therapeutics Inc. v. Kite Pharma Inc.[2][3]

The decisions are specifically focused on the two separate requirements imposed by Title 35 of the U.S. Code, Section 112(a): written description in Juno, and enablement in Amgen.[4]

In both cases, the Federal Circuit analyzed the disclosure of the patents and found the disclosure was not commensurate with the scope of the relevant claims. In addition to affecting the state of the law on Section 112, each of these decisions had an immediate economic impact on the parties involved.

The Juno decision overturned a $1.2 billion judgment.[5] The Amgen decision — and underlying decisions — allowed the continued marketing of Praluent, presumably in direct competition with Amgen's Repatha.[6]

Neither case is fully resolved. Amgen filed a petition for a writ of certiorari with the U.S. Supreme Court, and the Supreme Court has invited the solicitor general to file a brief expressing the view of the United States.[7] Juno is likely to file a petition for a writ of certiorari this month.[8]

Amgen and Enablement of Functional Genus Claims

The Amgen case has been pending since 2014 and has included two jury trials, two appeals to the Federal Circuit, two petitions for rehearing en banc and two petitions for a writ of certiorari, one of which is pending.[9]

The first Federal Circuit decision, in October 2017, addressed both written description and enablement.[10] Following the Federal Circuit's decision, Amgen filed its first petition for writ of certiorari with the Supreme Court, addressing only questions of written description. The petition was denied in 2019.[11]

The relevant Amgen patents claim antibodies that are "defined by their function: binding to a combination of sites (residues) on the PCSK9 protein, in a range from one residue to all of them; and blocking the PCSK9/LDLR interaction."[12] The shared specification of the patents discloses:

- The amino acid sequences for 26 antibodies, including the antibody marketed by Amgen as Repatha.[13]
- The three-dimensional structures for two antibodies and where those antibodies bind to PCSK9.
- Standard antibody-making techniques.[14]

At the second trial, five patent claims were in question and the issues of written description and enablement were tried to the jury. The jury invalidated only two of the five claims, both for lack of written description. The district court then granted judgment as a matter of law for lack of enablement of the three claims not found invalid by the jury.

Amgen appealed the JMOL for lack of enablement to the Federal Circuit, which affirmed. Using the In re: Wands[15] factors, the court found undue experimentation was required, because:

- The claims are far broader in functional diversity than the disclosed examples;
- The invention's field is unpredictable;
- The only way to discover undisclosed examples was through either trial and error or the road map, which "does not provide significant guidance or direction."

Following the Federal Circuit's decision, Amgen, again, filed a petition for rehearing en banc, which was denied in June 2021. Five months later, Amgen filed a petition for a writ of certiorari, which is pending.[16]

Juno and Written Description of Functional Genus Claims

The Juno case lacks the second iteration present in Amgen. The case was filed in 2017 and tried before a jury in December 2019. The jury found Kite willfully infringed Juno's patent and also found the patent claims had adequate written description and were enabled.[17]

Juno's patent claims are directed to chimeric antigen receptor T-cell therapies including an element, like a single-chain antibody variable fragment, or scFv, to bind a target, like CD19 — a protein on B-cell lymphoma and leukemia cells.[18] The specification disclosed two example scFvs: one targeting CD19 and one targeting prostate-specific membrane antigen, a protein on prostate cancer cells.

The Federal Circuit analyzed the Juno claims under the Ariad factors and found:

- The field was considered young and unpredictable with little existing knowledge and prior art;
- ScFvs were known at the time, but the two examples disclosed were not enough to be representative species; and
- ScFvs were known to have common structural similarities, but the disclosure failed to disclose structural features to guide which scFvs actually bind a target versus those that cannot.[19]

Following the court's decision, Juno filed a petition for rehearing en banc, which was denied in late January 2022. Shortly after, Juno filed for an extension of time — until June 13, 2022 — to file a petition for writ of certiorari, which was granted by the Supreme Court on March 7.[20]

How Does Disclosure and Functional Genus Claiming Promote Innovation?

The parties in Juno and Amgen, the Federal Circuit and various third parties have addressed the impact of the requirement of Section 112 on the promotion of invention. Essentially, there are two competing views, both claiming to promote innovation, albeit in drastically different ways.

For example, the patentee perspective is stated in Amgen's most recent Supreme Court petition:

> In the pharmaceutical and biotech industries, significant breakthroughs often involve identifying the mechanism for producing a desired effect and making a working embodiment. That mechanism, however, may have the same effect when implemented in any number of structurally similar compounds. "The central feature of patent law" in those fields thus is the genus claim — patent claims that use functional language or generic formula to cover embodiments of the invention (species) that share a common attribute or property. Such claims are essential to offering patent protection commensurate with the invention's scope. Drawing claims to cover only particular embodiments does not provide patent protection on the fruits of the inventor's investments.[21]

The competitor perspective is summarized by Federal Circuit Judge Alan D. Lourie, in a separate opinion denying Amgen's petition for rehearing en banc:

> [E]nablement is part of our law, and for good reason. One should not gain exclusivity over claimed subject matter without disclosing how to make and use it. And if one considers that one has invented a group of compositions defined by a genus but does not know enough to fully enable that genus, one would suppress innovation if one were able to claim such a broad genus, not enhance it. Amgen, by asserting such broad, unsupported claims is doing just that, by trying to control what it has not invented.[22]

These are not the only examples of the policy debate underlying the sufficiency of a patentee's disclosure for purposes of enablement and/or written description. Several amici briefs were filed as part of the appeals and petitions associated with the Amgen and Juno cases.[23]

Supreme Court Involvement

Assuming Juno files a petition for writ of certiorari raising a question similar to that in its petition for rehearing en banc, the three potential questions for the Supreme Court are as follows:

1. Whether enablement is a question of fact to be determined by the jury — or a question of law that the court reviews without deference?[24]

2. Whether the specification must enable those skilled in the art to reach the full scope of claimed embodiments without undue experimentation?[25]

3. Whether Title 35 of the U.S.Code Section 112(a) requires a written description separate from enablement?[26]

There are a few reasons the Supreme Court may or may not take up these questions. For the first question, the strangely divided nature of the Section 112(a) inquiry — enablement is a question of law whereas written description is a question of fact — was recently

questioned by the Federal Circuit itself in its 2021 Amgen Inc. v. Sanofi decision.[27]

And, in 2015, the Supreme Court decided on a similar issue of legal standard in Teva Pharmaceuticals USA, Inc. v. Sandoz, Inc. ("Should the [Federal Circuit] review the district court's factfinding de novo as it would review a question of law?").[28] The court could correct the incongruity by deciding the narrow question presented. Nevertheless, the court has also turned down cases raising a similar question of legal standard as recently as last year.[29]

The second question is regarding what legal test should apply to enablement. While this question is broader than the first, the Supreme Court has decided on similar questions in the past 15 years:

- The 2017 Nautilus Inc. v. Biosig Instruments Inc. decision;
- The 2016 Halo Electronics Inc. v. Pulse Electronics Inc. decision;
- The 2021 Bilski v. Kappos decision; and
- The 2007 KSR International Co. v. Teleflex Inc. decision.[30][31][32][33]

In these cases, the court disapproved of the legal tests applied by the Federal Circuit for indefiniteness, exceptional cases, unpatentable subject matter, and obviousness respectively.[34] Yet, as with the first question on legal standard, the Supreme Court has recently denied petitions presenting similar, but not identical, challenges.[35]

The third potential question presents a general challenge to the written description requirement. The Supreme Court turned down a similar challenge following the Federal Circuit's en banc decision in Ariad.

And, more recently, the court turned down Amgen's challenge of a similar issue in 2019, after the first trial and first Federal Circuit decision.

The most recent similar patent question decided by the Supreme Court is probably the 2017 TC Heartland LLC v. Kraft Foods Group Brands LLC decision,[36] which involved the requirements of the patent venue statute and its interplay with the general venue statute.

In TC Heartland, the court found the statute was more restrictive than the Federal Circuit's interpretation.[37] Whereas, in Juno, the Supreme Court may likely be asked to make the requirements of Section 112(a) more permissive — removing the written description requirement.

In the Meantime

Assuming the Supreme Court does not take up any of the three questions, do functional genus claims still stand a chance? A dichotomy of outcomes is presented in two recent district court decisions involving biotechnology inventions.

In the January Baxalta Inc. v. Genentech Inc.[38] decision in the U.S. District Court for the District of Delaware, U.S. Circuit Judge Timothy Dyk — sitting by designation — granted a motion for summary judgment for lack of enablement of functional genus claims to certain antibodies.

Specifically, Judge Dyk noted that "[t]here are millions of candidate antibodies within the genus and a dearth of working examples of those that satisfy the claim limitations."[39]

Conversely, in the 2021 Trustees of University of Pennsylvania v. Eli Lilly and Co.[40] decision, U.S. District Court for the Eastern District of Pennsylvania denied summary judgment motions of invalidity for lack of enablement and written description.

The court determined that "a jury could reasonably conclude that the [in the pha] describes a representative number of species" and further that "the jury could find that the [patent] provides significant guidance, that the working examples are relevant to the method of [the claim], and that any experimentation necessary would be merely routine."[41]

Consequently, even if the Supreme Court does not intervene in either Amgen or Juno, functional genus claims may still survive — at least through summary judgment.

While a single case holding is not likely the shift in the Section 112 inquiry patent owners are seeking with Supreme Court intervention, it is an indication that individual facts in a biotechnology patent case are still important — that there is no categorical rule for functional genus claims.[42] At least, not yet.

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[1] Amgen Inc. v. Sanofi, Aventisub LLC, 987 F.3d 1080 (Fed. Cir. 2021).

[2] Juno Therapeutics, Inc. v. Kite Pharma, Inc., 10 F.4th 1130 (Fed. Cir. 2021).

[3] Petition for Writ of Certiorari at 6, Amgen Inc. v. Sanofi, Aventisub LLC, No. 21-757 (U.S. petition for cert. filed Nov. 18, 2021), 2021 WL 5506421 at *6 ("Genus claims are 'patent claim[s] that cover[ ] a group of potential products that incorporate the basic advance of the patented invention.'" (citing D. Karshtedt, M. Lemley & S. Seymore, The Death of the Genus Claim, 35 Harv. J.L. & Tech. (forthcoming 2021) (manuscript at 67) (rev. Apr. 19, 2021), https://ssrn.com/abstract=3668014)).

[4] See Ariad Pharms., Inc. v. Eli Lilly & Co., 598 F.3d 1336, 1344 (Fed. Cir. 2010).

[5] See Juno, 10 F.4th at 1342.

[6] Supplemental and Second Amended Complaint for Patent Infringement and Declaratory Judgment of Patent Infringement at 11–18, Amgen Inc. v. Sanofi, Aventisub LLC, No. 14-1317 (D. Del. Jan. 29, 2016); compare REPATHA® Full Prescribing Information, https://www.pi.amgen.com/-/media/Project/Amgen/Repository/pi-amgen-com/repatha/repatha_pi_hcp_english.pdf, with PRALUENT® Full Prescribing Information, https://www.regeneron.com/downloads/praluent_pi.pdf.

[7] See Petition for Writ of Certiorari, Amgen Inc. v. Sanofi, Aventisub LLC, No. 21-757

(U.S. petition for cert. filed Nov. 18, 2021), 2021 WL 5506421; see also Invitation to the Solicitor General, Amgen Inc. v. Sanofi, 142 S.Ct. 1666 (U.S. Apr. 18, 2022) (No. 21-757).

[8] See Order granting Application (21A461) extending the time to file until June 13, 2022, Juno Therapeutics, Inc. v. Kite Pharma, Inc., No. 21A461 (U.S. Mar. 7, 2022).

[9] Petition for Writ of Certiorari, Amgen Inc. v. Sanofi, 139 S.Ct 787 (2019), cert denied.

[10] See Amgen Inc. v. Sanofi, Aventisub LLC, 872 F.3d 1367 (Fed. Cir. 2017). In addition to ruling on certain evidentiary issues, the CAFC found that the "newly characterized antigen" test — applied by the District Court and the PTO at that time — "flouts basic legal principals of the written description requirement[.]" Id. at 1378.

[11] See Petition for Writ of Certiorari, Amgen Inc. v. Sanofi, 139 S.Ct 787 (2019), cert denied.

[12] Amgen Inc. v. Sanofi, Aventisub LLC, 987 F.3d 1080, 1083 (Fed. Cir. 2021).

[13] See id. (citing U.S. Patent No. 8,829,165 col 85 ll. 1–43 (filed Apr. 10, 2013); see also Repatha®, www.repatha.com (last visited June 1, 2022).

[14] Amgen Inc. v. Sanofi, No.14-cv-1317-RGA, 2019 WL 4058927, at *10 (D. Del. Aug. 28, 2019).

[15] See generally In re Wands, 858 F.2d 731, 737 (Fed. Cir. 1988).

[16] Petition for Writ of Certiorari, Amgen Inc. v. Sanofi, Aventisub LLC, No. 21-757 (U.S. petition for cert. filed Nov. 18, 2021), 2021 WL 5506421.

[17] See Jury Verdict Form, at 3, 4, Juno Therapeutics, Inc. v. Kite Pharma. Inc., No. 2:17-cv-07639-GW-KS (C.D. Cal. Dec. 13, 2019), ECF No. 593.

[18] The relevant independent claim was: 1. A nucleic acid polymer encoding a chimeric T cell receptor, said chimeric T cell receptor comprising (a) a zeta chain portion comprising the intracellular domain of human CD3 ζ chain, (b) a costimulatory signaling region, and (c) a binding element that specifically interacts with a selected target, wherein the costimulatory signaling region comprises the amino acid sequence encoded by SEQ ID NO:6.

U.S. Patent No. 7,446,190 (filed. May 28, 2002).

[19] See Juno Therapeutics, Inc. v. Kite Pharma, Inc., 10 F.4th 1130, 1335–37 (Fed. Cir. 2021).

[20] See Order granting Application (21A461) extending the time to file until June 13, 2022, Juno Therapeutics, Inc. v. Kite Pharma, Inc., No. 21A461 (U.S. Mar. 7, 2022).

[21] Petition for Writ of Certiorari at 29–30, Amgen Inc. v. Sanofi, Aventisub LLC, No. 21-757 (U.S. petition for cert. filed Nov. 18, 2021), 2021 WL 5506421 at *29 (citations and quotations omitted); see Amgen Inc. v. Sanofi, Aventisub LLC, 850 F. App'x 794, 797 (Fed. Cir. 2021).

[22] Amgen Inc. v. Sanofi, Aventisub LLC, 850 F. App'x 794, 796 (Fed. Cir. 2021) (denying

petition for rehearing en banc).

[23]See Brief for GlaxoSmithKline PLC as Amici Curiae Supporting Petitioners, Amagen Inc. v. Sanofi, Aventisub LLC, No. 21-757 (U.S. petition for cert. filed Nov. 18, 2021); see also Brief for Intellectual Property Professors as Amici Curiae Supporting Petitioners, Amagen Inc. v. Sanofi, Aventisub LLC, No. 21-757 (U.S. petition for cert. filed Nov. 18, 2021); see also Brief for Association of University Technology Managers, Inc., Biogen Inc., Bristol-Myers Squibb Co., Corning Inc., Merck Sharp & Dohme Corp, and St. Jude Children's Research Hospital, Inc. as Amici Curiae Supporting Petitioners, Amagen Inc. v. Sanofi, Aventisub LLC, No. 21-757 (U.S. petition for cert. filed Nov. 18, 2021); see also Brief for City of Hope as Amici Curiae Supporting Petition for Rehearing, Juno Therapeutics, Inc. v. Kite Pharma, Inc., No. 2020-1758 (Fed. Cir. Oct. 27, 2021); see also Brief for St. Jude Children's Research Hospital, Inc., Albert Einstein College of Medicine, and The University of Texas MD Anderson Cancer Center as Amici Curiae Supporting Rehearing or Rehearing en banc, Juno Therapeutics, Inc. v. Kite Pharma, Inc., No. 2020-1758 (Fed. Cir. Oct. 27, 2021); see also Brief for Amagen Inc. and Association of University Technology Managers, Inc. as Amici Curiae Supporting Panel Rehearing or Rehearing en banc, Juno Therapeutics, Inc. v. Kite Pharma, Inc., No. 2020-1758 (Fed. Cir. Oct. 27, 2021).

[24] Petition for Writ of Certiorari at i, Amgen Inc. v. Sanofi, Aventisub LLC, No. 21-757 (U.S. petition for cert. filed Nov. 18, 2021), 2021 WL 5506421 at i.

[25] Id.

[26] Plaintiffs-Appellees' Petition for Panel Rehearing or Rehearing En Banc at 8, Juno Therapeutics, Inc. v. Kite Pharma, Inc., No. 2020-1758 (Fed. Cir. Oct. 27, 2021).

[27] Amgen Inc. v. Sanofi, Aventisub LLC, 850 F. App'x 794, 797 (Fed. Cir. 2021) (denying petition for rehearing en banc) ("One can reasonably ask, as Amgen does, why enablement is a question of law when written description, which sits side by side with the enablement requirement, is not. They both relate to the disclosure in the patent specification").

[28] See Teva Pharms. USA, Inc. v. Sandoz, Inc., 574 U.S. 318, 321–22 (2015).

[29] See Brief in Opposition at 2, Amgen Inc. v. Sanofi, Aventisub LLC, No. 21-757 (U.S. petition for cert. filed Nov. 18, 2021); see also Amgen Inc. v. Sanofi, Aventisub LLC, 850 F. App'x 794, 798 (Fed. Cir. 2021) (denying rehearing en banc)("Indeed, despite being repeatedly asked over the decades this court has existed, the Supreme Court has not seen fit to take up this question. It has, however, made clear that interpretation of claim scope, a question inexorably intertwined with enablement, is a question of law.").

[30] Nautilus, Inc. v. Biosig Instruments, Inc., 572 U.S. 898 (2014).

[31] Halo Elecs., Inc. v. Pulse Elecs., Inc., 579 U.S. 93 (2016).

[32] Bilski v. Kappos, 561 U.S. 593 (2010).

[33] KSR Int'l Co. v. Teleflex Inc., 550 U.S. 398 (2007).

[34] Petition for Writ of Certiorari at 29, Amgen Inc. v. Sanofi, Aventisub LLC, No. 21-757 (U.S. petition for cert. filed Nov. 18, 2021), 2021 WL 5506421 at *29 ("The Federal Circuit's reach-the-full-scope test is a court-made solution to a non-existent problem. This Court has repeatedly overturned the Federal Circuit's efforts to supplant commonsense statutory

standards with specialized tests of its own devising."); see, e.g., Nautilus, Inc. v. Biosig Instruments, Inc., 572 U.S. 898, 901, 910 (2014) ("insolubly ambiguous" test for indefiniteness); KSR Int'l Co. v. Teleflex Inc., 550 U.S. 398, 415, 419 (2007) ("teaching, suggestion, or motivation" test for obviousness).

[35] See Brief in Opposition at 35–36, Amgen Inc. v. Sanofi, Aventisub LLC, No. 21-757 (U.S. petition for cert. filed Nov. 18, 2021) (listing cases).

[36] TC Heartland LLC v. Kraft Foods Grp. Brands LLC, 137 S.Ct. 1514 (2017).

[37] See id. at 1517–21.

[38] Baxalta Inc. v. Genentech, Inc., No. 17-509-TBD, 2022 WL 420479 (D. Del. Jan. 13, 2022).

[39] Id. at *2.

[40] Trustees of Univ. of Pa. v. Eli Lilly and Co., No. 15-6133, 2021 WL 7918978 (E.D. Pa. Nov. 19, 2021).

[41] Id. at *4, *6.

[42] See Petition for Writ of Certiorari at 3, 13, Amgen Inc. v. Sanofi, Aventisub LLC, No. 21-757 (U.S. petition for cert. filed Nov. 18, 2021), 2021 WL 5506421 at *3, *13 (about death of genus claims); see also Brief in Opposition at 28, Amgen Inc. v. Sanofi, Aventisub LLC, No. 21-757 (U.S. petition for cert. filed Nov. 18, 2021) (about overblowing death of functional claims).