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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MERCK SHARP & DOHME CORP.,
Petitioner,

v.

WYETH LLC,
Patent Owner.

Case PGR2017-00016 (Patent 9,399,060)
Case PGR2017-00017 (Patent 9,399,060)[1]

Before TONI R. SCHEINER, GRACE KARAFFA OBERMANN, and ULRIKE W. JENKS, *Administrative Patent Judges.*

OBERMANN, *Administrative Patent Judge.*

DECISION
Denying Institution of Post Grant Review
35 U.S.C. § 324; 37 C.F.R. § 42.208

[1] This decision addresses issues common to both proceedings; therefore, we issue a single decision to be entered in each case. We refer to PGR2017-00016 as "PGR016" and PGR2017-00017 as "PGR017." For convenience, unless otherwise noted, citations are to papers and exhibits filed in PGR016.

I. INTRODUCTION

Petitioner filed a Petition for post grant review of claims 1–13 of U.S. Patent No. 9,399,060 (Ex. 1001, "the '060 patent"). Paper 1 ("Pet."). Patent Owner filed a timely Preliminary Response. Paper 8 ("Prelim. Resp."). Based on the information presented in the Petition and the Preliminary Response, we hold that Petitioner has not demonstrated adequately that the '060 patent is eligible for post grant review.

Accordingly, we deny the Petition.

Related Proceedings

Petitioner identifies as related matters three Petitions for *inter partes* review of U.S. Patent No. 8,562,999 ("the '999 patent"). Pet. 9 (citing Cases IPR2017-00378, IPR2017-00380, and IPR2017-00390). The claims in the '999 patent are directed to formulations containing polysaccharide-protein conjugates. The Board instituted trial in those three proceedings on June 13, 2017.

Petitioner states that it "is unaware of any other judicial or administrative matter that would affect, or be affected by, a decision in this proceeding." Pet. 9. However, Petitioner filed three requests for *inter partes* review of the '060 patent a few days after filing the instant Petition. *See* Cases IPR2017-01211, IPR2017-01215, and IPR2017-01223. Concurrently herewith, we issue decisions in those three related proceedings.

The '060 Patent (Ex. 1001)

The '060 patent issued from Application No. 14/322,057 ("the '057 application"), filed on July 2, 2014. The '057 application is a continuation of Application No. 13/439,111, filed April 4, 2012, now U.S. Patent No. 8,808,708; which is a continuation of Application No. 12/357,853, filed

January 22, 2009, now U.S. Patent No. 8,895,024; which is a continuation of Application No. 11/395,593, filed March 31, 2006, now abandoned; which claims the benefit of the filing date of U.S. Provisional Patent Application No. 60/669,605, filed April 8, 2005. We collectively refer to the non-provisional applications, filed prior to the '057 application, as "the non-provisional '060 parent applications." That history is important because this case turns on whether Petitioner shows sufficiently that at least one claim has an effective filing date after March 16, 2013—a showing necessary to demonstrate that the '060 patent is eligible for post grant review. Pet. 49–63.

The '060 patent, entitled "Multivalent Pneumococcal Polysaccharide-Protein Conjugate Composition," relates to an immunogenic composition comprising polysaccharide-protein conjugates containing capsular polysaccharides prepared from different *Streptococcus pneumoniae* serotypes. Ex. 1001, Abstract. The different serotypes represented in the immunogenic composition include serotypes 1, 3, 4, 5, 6A, 6B, 7F, 9V, 14, 18C, 19 A, 19F, and 23 F. *Id*. We adopt the parties' convention and refer to the 13-valent pneumococcal conjugate as the "13vPnC" vaccine. *See, e.g*., Pet. 1; Prelim. Resp. 32.

The polysaccharides were obtained from *S. pneumoniae* cell cultures that were harvested and then lysed to release cell-associated polysaccharides into the culture medium. *Id*. at 11:25–12:10. The polysaccharide containing lysate was clarified by continuous flow centrifugation followed by microfiltration. *Id*. at 12:25–27. The purification of the pneumococcal polysaccharide consisted of several steps including: concentration/diafiltration operations, precipitation/elution, column chromatography, and depth filtration. *Id*. at 12:30–34. These steps were repeated for each individual serotype.

The ’060 patent explains that the purified polysaccharides are chemically activated with sodium periodate so that they are able to chemically interact with the carrier protein in order to form a glycoconjugate. *Id*. at 8:1–3. The ’060 patent explains that “different serotype saccharides follow different pathways for activation (hydrolysis or no hydrolysis prior to [sodium periodate] activation) and conjugation (aqueous or DMSO[2] reactions).” *Id*. at 24:9–12. For example, the ’060 patent explains that for the serotype 1 polysaccharide the chemical activation involves treating the purified polysaccharide with sodium carbonate to achieve partial deacetylation, followed by neutralization, and finally oxidation in the presence of sodium periodate. *Id*. at 13:50–56. For the serotype 3 polysaccharide the chemical activation process involves treating the purified polysaccharide with acetic acid to hydrolyze the polysaccharide, followed by adding sufficient magnesium chloride to achieve a final concentration of 0.1M, before proceeding to the oxidation step in the presence of sodium periodate. *Id*. at 16:39–47. The serotype 19A polysaccharide activation process involves adding sodium acetate before reaching the oxidation step with sodium periodate. *Id*. at 21:19–22.

The ’060 patent explains that the conjugation step involves lyophilizing the activated polysaccharide and then mixing in the lyophilized carrier CRM_{197} protein[3] and reconstituting the dried components before adding the crosslinking agent. *Id*. at 14:7–12. The lyophilized polysaccharide and

[2] “DMSO” is dimethylsulfoxide. Ex. 1001, 19:14.
[3] CRM_{197} (Wyeth, Sanford, N.C.) is a non-toxic variant (i.e., toxoid) of diphtheria toxin isolated from cultures of *Corynebacterium diphtheria* strain C7 (β197) grown in casamino acids and yeast extract-based medium. Ex. 1001, 8:19–22.

lyophilized CRM_{197} protein are reconstituted in either DMSO or in an aqueous buffer before proceeding to the conjugation reaction with sodium cyanoborohydride to obtain the polysaccharide-protein conjugate. *Id*. at 25:1–50, 26:28–52; *see* 16:58–67 (Example 4: Preparation of Serotype 3 Pneumococcal Saccharide CRM_{197} Conjugate).

The ’060 patent specification explains that the final immunogenic composition was formulated by combining the individual polysaccharide-CRM_{197} protein conjugates. The formulation contains 2–2.2 µg of each saccharide, except for 6B at 4–4.4 µg, approximately 29 µg CRM_{197} carrier protein; 0.125 mg of elemental aluminum (0.5 mg aluminum phosphate) adjuvant, as well as sodium chloride and sodium succinate buffer as excipient. *Id*. at 3:9–15, 29:60–30:41.

Illustrative Claims

Claims 1 and 2, reproduced below, illustrate the subject matter:

> 1. A multivalent immunogenic composition comprising polysaccharide-protein conjugates and a physiologically acceptable vehicle, wherein each of the conjugates comprises a capsular polysaccharide from a different serotype of *Streptococcus pneumoniae* conjugated to a carrier protein, wherein the serotypes comprise 4, 6B, 9V, 14, 18C, 19F, 23F and at least one additional serotype, wherein the additional serotype is serotype 3, and wherein the carrier protein is CRM_{197}.
>
> 2. The immunogenic composition of claim 1, wherein the additional serotypes consist of serotypes 1, 3, 5, 6A, 7F and 19A.

Ex. 1001, 35:16–26.

Evidence Relied Upon

Petitioner raises ten distinct grounds of unpatentability; six in PGR016 (Pet. 10–11) and four in PGR017 (PGR017, Paper 1, 9). Our decision to deny

the Petitions in both cases turns on a threshold question of whether the '060 patent is eligible for post grant review. Pet. 49–63; PGR017, Paper 1, 43–57. Petitioner raises essentially the same arguments and evidence in support of post grant review eligibility in both cases. *Id*. That common eligibility issue is dispositive and fully supports denial of both Petitions. Accordingly, we expressly decline to reach the merits of any ground of unpatentability asserted in PGR016 or PGR017.

The Petition is supported by a declaration of Dennis L. Kasper, M.D. Ex. 1007; PGR107, Ex. 1008. Based on Dr. Kasper's statement of qualifications and curriculum vitae, filed in each proceeding, for the purposes of this decision, we hold that he is qualified to opine from the perspective of a person of ordinary skill at the time of the invention. *See* Ex. 1007 ¶¶ 4–12; PGR017, Ex. 1008 ¶¶ 4–12 (Dr. Kasper's statement of qualifications); *see also* Ex. 1007, Exhibit A; PGR017, Ex. 1008, Exhibit A (Dr. Kasper's curriculum vitae).

II. ANALYSIS

Post grant review is available only for patents "described in section 3(n)(1)" of the Leahy-Smith America Invents Act ("AIA"), Pub L. No. 112-29, 125 Stat. 284 (2011). AIA § 6(f)(2)(A). Those are patents that issue from applications "that contain[] or contained at any time . . . a claim to a claimed invention that has an effective filing date in section 100(i) of title 35, United States Code, that is on or after" "the expiration of the 18-month period beginning on the date of the enactment of" the AIA. *Id.* § 3(n)(1).

Because the AIA was enacted on September 16, 2011, post grant review is available only for patents that issue from applications that, at one point, contained at least one claim with an "effective filing date," as defined by 35

U.S.C. § 100(i), on or after March 16, 2013. Our rules require a petitioner for post grant review to certify that the challenged patent is available for post grant review. 37 C.F.R. § 42.204(a) ("The petitioner must certify that the patent for which review is sought is available for post-grant review . . . ."). Petitioner includes the requisite certification, and further, asserts that each challenged claim has an effective filing date of July 2, 2014, which is the actual filing date of the '057 application. Pet. 5, 9.

Petitioner advances two independent arguments in support of a finding that at least one challenged claim of the '060 patent has an effective filing date after March 16, 2013. First, Petitioner argues that none of claims 1–13 is enabled by any of the non-provisional '060 parent applications; therefore, none can trace priority to a date earlier than the actual filing date of the '057 application. Pet. 51–61. Second, Petitioner argues that claims 8 and 13 lack written description support in any non-provisional '060 parent application; accordingly, Petitioner argues that neither claim is entitled to priority through those applications. Pet. 62–63.

We assess those two arguments in turn below. As an initial matter, however, we observe that no claim term requires express construction for purposes of this decision. *See, e.g., Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (only claim terms in controversy need be construed, and then only to the extent necessary to resolve the dispute).

No Post Grant Review Eligibility
Based on Lack of Enablement of Claims 1–13

Petitioner's first basis for asserting post grant review eligibility relates to enablement. In Petitioner's view, claims 1–13 have an effective filing date after March 16, 2013, because none are enabled by any non-provisional '060

parent application. Pet. 51–61. Specifically, Petitioner argues that claim 1, upon which the other claims depend, is "open-ended" and, therefore, embraces multivalent immunogenic compositions having any number of the "nearly 100 pneumococcal serotypes" identified at the time of the invention—"so long as the composition includes the eight serotypes recited in the claim." Pet. 51. Petitioner argues that none of the '060 parent applications inform "how to construct a large fraction of the immunogenic pneumococcal conjugates captured by claim 1"; therefore, according to Petitioner, those applications fail to enable claim 1. *Id*. at 52 (citing Ex. 1007 ¶ 136). Petitioner also contends that the '060 patent applications "provide no guidance as to the number and identity of serotypes that could be added to 13vPnC." *Id*.

The Petition is deficient, however, for failure to show sufficiently that a person of ordinary skill in the art could not identify the structure of any particular serotype without undue experimentation. Our reviewing court instructs that undue experimentation is analyzed by applying the factors set forth in *In re Wands*, 858 F.2d 731 (Fed. Cir. 1988). Petitioner unpersuasively argues that the *Wands* factors are "illustrative, not mandatory." Pet. 50 (citing *Amgen, Inc. v. Chugai Pharm. Co*., 927 F.2d 1200, 1213 (Fed. Cir. 1991)). For reasons stated by Patent Owner, notwithstanding the *Amgen* decision, the *Wands* factors are applicable in this case. Prelim. Resp. 16–17. Petitioner's failure to adequately address the *Wands* factors supports denial of the Petitions in both IPR016 and IPR017.

The *Wands* factors require an analysis that is focused on the guidance and working examples presented in the disclosure of the patent application at

issue.[4] Instead of providing a cogent analysis grounded in the *Wands* factors, including any guidance or working examples set forth in the '060 parent applications, Petitioner generally refers to statements regarding unpredictability previously made by Patent Owner during prosecution of foreign counterparts of the '060 patent, as well as statements made during domestic prosecution of a related patent application, which, Patent Owner counters, "are taken out of context." Prelim. Resp. 20; *see* Pet. 52–54, 59. The Petition fails to explain satisfactorily how those statements regarding unpredictability of arriving at the claimed invention from the prior art rise to the level of admissions pertaining to the disclosures of the '060 parent applications to enable the subject matter of any challenged claim. Nor does the Petition provide adequate reasons why those statements substitute for an analysis tethered to the *Wands* factors.

Petitioner's arguments relating to undue experimentation, moreover, rest on unsupported opinions of Dr. Kasper. For example, without citing any objective proof, Dr. Kasper opines that "[m]erely generating conjugates of serotypes of unknown polysaccharide structure would have required months of undue experimentation" and, for many serotypes, that endeavor "would have taken years." Pet. 58 (Ex. 1007 ¶ 146). We agree with Patent Owner that neither Dr. Kasper nor Petitioner directs us to objective support for that naked opinion. Prelim. Resp. 17 (citing Ex. 1007 ¶ 146; Pet. 58). One's expertise, even when draped with a skilled-artisan veil, does not entitle a

[4] Petitioner lists the *Wands* factors without addressing them adequately: "(1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims." Pet. 50 (quoting *In re Wands*, 858 F.2d at 737).

naked opinion to much weight. *See Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 281, 294 (Fed. Cir. 1985) ("Lack of factual support for expert opinion going to factual determinations" is sufficient to "render the testimony of little probative value in a validity determination.").

Further, as Patent Owner observes, even if we accept Dr. Kasper's "unsubstantiated calculation" regarding the length of time it would have taken an ordinary artisan to generate conjugated serotypes, Petitioner's argument fails because "neither Dr. Kasper nor Petitioner explains why such experiments would be undue." Prelim. Resp. 18; *see Cephalon, Inc. v. Watson Pharms., Inc.*, 707 F.3d 1330, 1339 (Fed. Cir. 2013) ("Unsubstantiated statements indicating that experimentation would be 'difficult' and 'complicated' are not sufficient" to show that the "experimentation would be undue."). The test for enablement is "not merely quantitative." *PPG Indus. v. Guardian Indus. Corp.*, 75 F.3d 1558, 1564 (Fed. Cir. 1996) (citation omitted). On the contrary, "a considerable amount of experimentation is permissible, if it is merely routine." *Id*.

Dr. Kasper's opinion that claim 1 "covers over **4 million** possible combinations," when one selects additional serotypes from among "the top 30 most prevalent serotypes," does not withstand scrutiny. Pet. 52 (citing Ex. 1007 ¶ 135) (emphasis in original). Even Petitioner acknowledges that, at least as early as 1983, three serotypes (25, 16, and 24F) were recognized as most prevalent and, therefore, would have been understood as leading "candidates for a pneumococcal vaccine." Pet. 56. Dr. Kasper does not explain "why generating conjugates for three serotypes would amount to undue experimentation." Prelim. Resp. 18. Further, of the "nearly 100 distinct pneumococcal serotypes" that "had been identified" at the time of the

invention, there is agreement that 66 structures were known and only "34 serotypes [structures] had not yet been reported." Pet. 56 (citing Ex. 1055, Ex. 1060, 4–9); Prelim Resp. 18.

Critically lacking in the Petition, moreover, is any showing that "the conjugation chemistry known in the prior art or taught in the '060 specification," which is essentially identical to the disclosures of the '060 parent applications, "would not work for these and other serotypes." *Id*. And the Petition lacks cogent argument sufficient to persuade us that Patent Owner was required to disclose in the '060 parent applications every possible additional serotype that would have been immunogenic when conjugated with CRM_{197}. *In re Goffe*, 542 F.2d 564, 567 (C.C.P.A. 1976) ("To demand that the first to disclose shall limit his claims to what he has found will work or to materials which meet the guidelines specified for 'preferred' materials . . . would not serve the constitutional purpose of promoting progress in the useful arts."); *see In re Fuetterer*, 319 F.2d 259, 266 (C.C.P.A. 1963) (holding that to ask otherwise, would require the patent applicant "to do research on the 'literally thousands' of inorganic salts and determine which of these are suitable for incorporation into his claimed combination, apparently forgetting that he has not invented, and is not claiming, colloid suspending agents but . . . a combination.").

Dr. Kasper's conclusory statements do not support adequately Petitioner's argument pertaining to undue experimentation, in view of the guidance and working examples reflected in the '060 parent applications, which describe how to conjugate serotypes to CRM_{197} and, further, disclose tests to determine whether a resulting composition is immunogenic. Ex. 1001,

4:23–33:4.[5] On this record, and in the context of that disclosure, Petitioner fails to establish that claims 1–13 lack enablement in the ’060 parent applications. Pet. 49–61. The examples set forth in the ’060 parent applications provide adequate guidance enabling “the generation and characterization of a representative multivalent composition of the granted claims,” for example, “the specific 13-valent composition encompassed by claims 1–13.” *Id*. at 21; Ex. 1001, 11:25–28:67 (Examples 1–16).

No Post Grant Review Eligibility Based on Lack of Written Description Support for Claims 8 and 13

Petitioner also asserts post grant review eligibility based on the argument that claims 8 and 13 lack written description support in the non-provisional ’060 parent applications. Pet. 62–63. On that basis, Petitioner alleges that the effective filing date of claims 8 and 13 is the actual filing date of the ’057 application. *Id*. at 62. We address claims 8 and 13 in turn.

Claim 8 requires the composition of claim 1, further comprising “one or more antigens.” Petitioner, in an attempt to persuade us of lack of written description support, directs us to content in the ’060 parent applications that describes in detail various antigens suitable for use in the invention. Pet. 62 (quoting Ex. 1005, 22). Petitioner’s argument pertaining to lack of written description for the “antigens” of claim 8 is unpersuasive in view of the plain disclosure of the ’060 parent applications. *See* Ex. 1001, 10:47–11:15 (providing ample written description support for the antigens of claim 8). In

[5] The parties agree that the non-provisional ’060 parent applications share essentially the same written description as the ’060 patent. Pet. 3; Prelim. Resp. 7. Accordingly, for ease of reference, we cite to the ’060 patent disclosure when assessing whether the disclosure of any ’060 parent application enables or supports the claims identified by Petitioner.

light of the lengthy disclosure of suitable antigens set forth in the '060 parent applications (*id*.), we agree with Patent Owner that Petitioner fails to show sufficiently a lack of written description support for the "antigens" of claim 8. Prelim. Resp. 25–27.

Petitioner presents a similarly ineffective argument regarding claim 13, which depends from claim 1 and, further, specifies a composition "formulated as a single 0.5 ml dose comprising 2.2 μg of each polysaccharide, except for 6B at 4.4 μg, and 125 μg aluminum phosphate adjuvant." Ex. 1001, 36:26–29. The additional features of claim 13 are explicitly taught in the '060 parent applications. *Id*. at 9:64–10:39, 29:58–30:67. For reasons stated by Patent Owner, we agree that Petitioner's argument that the '060 parent applications fail to support certain unclaimed features of the invention (such as buffer or protein concentrations (Pet. 63)) is meritless. Prelim. Resp. 27–29. Applying Petitioner's logic, "omission from a claim of any detail set forth in the patent specification" would result in invalidity for lack of written description support, "without reference whatsoever to whether the detail" omitted from the claim would have been understood as conventional or routine to a person of ordinary skill in the art. *Id*. at 29.

On this record, Petitioner fails to establish that claim 8 or 13 lacks written description support in the '060 parent applications. Pet. 62–63.

Other Arguments Supporting Denial of the Petition

Patent Owner asserts that the Petition is defective for failure to address enablement, written description, and the level of skill in the art from the perspective of an ordinary artisan at the particular filing date of each non-provisional '060 parent application. Prelim. Resp. 14–15. Specifically, Patent Owner directs us to Petitioner's failure "to explain why the timeline for

generating a conjugate of a serotype of unknown polysaccharide structure would remain unchanged at each of the filing dates of" those applications. *Id*. at 18. On that point, even Petitioner acknowledges that the level of ordinary skill in this particular field of endeavor, including one's understanding of "the universe of clinically relevant serotypes," would not "remain static" during the relevant span of time. Pet. 57 (quoting Ex. 1007 ¶ 144). Yet the Petition does not clearly articulate the level of ordinary skill in the art applicable at the time of filing for each of the '060 parent applications filed before March 16, 2013. Instead, Petitioner focuses on the state of the art as of the earliest possible priority date of the non-provisional '060 parent applications; namely, "April 8, 2005." Pet. 11 (heading "A"). Petitioner's failure to address each relevant date bolsters our holding that Petitioner fails to show sufficiently that the '060 patent is post grant review eligible.

Patent Owner further argues that the Examiner assigned the '060 patent pre-AIA status during patent prosecution; therefore, in Patent Owner's view, the patent should enjoy that same status in the context of post grant review. Prelim. Resp. 9–10 (citing non-binding Board decisions in which pre-AIA status assigned during patent prosecution was deemed probative of non-eligibility for post grant review). The '060 patent, in fact, was assigned pre-AIA status and examined under pre-AIA first-to-invent provisions. *Id*. (citing Ex. 1002, 302 (checking "No" indication in the AIA status box)). That circumstance is consistent with our holding that Petitioner fails to demonstrate adequately that the '060 patent is eligible for post grant review. *See Mylan Pharms. Inc. v. Yeda Research & Dev. Co. Ltd*., PGR2016-00010, Paper 9, 7 (PTAB Aug. 15, 2016) (Examiner's acknowledgement during prosecution that

a patent application is entitled to a pre-AIA priority date may be a factor supporting a finding that the patent is ineligible for post grant review).

Finally, Patent Owner contends that only patents that claim "new" subject matter, added by amendment on or after March 16, 2013, are eligible for post grant review—that is, "new" relative to any claim submitted in a parent application—and that the Petition is deficient for failure to address that issue. Prelim. Resp. 8, 11–12. On that basis, Patent Owner asserts that the Board is compelled to deny the Petition because the AIA was never intended to apply to "transition" or "straddle" patents such as the '060 patent. *Id*. We decline to reach that issue because other deficiencies in the Petition, discussed above, are dispositive and fully support our decision to deny institution of post grant review.

III. CONCLUSION

Based on the information in the Petition and the Preliminary Response, we hold that Petitioner has not demonstrated adequately that the '060 patent is eligible for post grant review.

IV. ORDER

It is

ORDERED that the Petition is *denied* and no trial is instituted.

PGR2017-00016 (Patent 9,399,060)
PGR2017-00017 (Patent 9,399,060)

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