

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

KELONIA THERAPEUTICS, INC.,
Petitioner,

v.

INTERIUS BIOTHERAPEUTICS, INC.,
Patent Owner.

PGR2024-00008
Patent 11,767,366 B1

Before SHERIDAN K. SNEDDEN, SUSAN L. C. MITCHELL, and
TIMOTHY G. MAJORS, *Administrative Patent Judges*.

SNEDDEN, *Administrative Patent Judge*.

DECISION

Denying Petitioner's Request on Rehearing of Decision on Institution
37 C.F.R. § 42.71(d)

I. INTRODUCTION

Kelonia Therapeutics, Inc. (“Petitioner”) requests rehearing of the Board’s Decision (Paper 11) (“Decision” or “Dec.”) denying institution of post-grant review of claims 1–30 of U.S. Patent No. 11,767,366 B1 (“the ’366 patent,” Ex. 1001). Paper 12 (“Request for Rehearing” or “Req. Reh’g.”).

In our Decision, we declined to institute post-grant review because we determined that Petitioner had not met its threshold burden to show that at least one of the challenged claims is, more likely than not, unpatentable based on the grounds advanced in the Petition. More specifically, we found that the Petition did not sufficiently show that Perkins or Perkins in combination with RCSB PDB discloses or teaches a sufficiently limited class of mutant VSV-G envelope proteins to anticipate or render obvious Patent Owner’s claimed I182E and I182D mutations.¹ Dec. 22–26, 34–38. Petitioner seeks reconsideration of our Decision because it argues that we misapprehended or overlooked Petitioner’s arguments and evidence that a person of ordinary skill in the art (“POSA”) would have routinely and rationally narrowed the list of mutant VSV-G envelope proteins in Perkins to Patent Owner’s claimed I182E and I182D mutations using the crystal

¹ In our Decision, we determined that “Perkins [(Ex. 1005)] is prior art to the ’366 patent only to the extent that the subject matter disclosed in Perkins is likewise described in the Perkins Provisional [(Ex. 1006)]” and “do not consider Petitioner’s arguments that rely on subject matter unsupported by the Perkins Provisional.” Dec. 19. We consider Perkins in the same manner in the instant decision.

structures of the VSV-G protein bound to LDL-R in RCSB PDB.² Req. Reh'g. 1–3.

For the reasons that follow, Petitioner's Request for Rehearing is *denied*.

II. LEGAL STANDARD

Pursuant to 37 C.F.R. § 42.71(d):

A party dissatisfied with a decision may file a single request for rehearing without prior authorization from the Board. The burden of showing a decision should be modified lies with the party challenging the decision. The request must specifically identify all matters the party believes the Board misapprehended or overlooked, and the place where each matter was previously addressed in a motion, an opposition, or a reply.

When reconsidering a decision on institution, we review the decision for an abuse of discretion. 37 C.F.R. § 42.71(c). An abuse of discretion exists where a “decision [i]s based on an erroneous conclusion of law or clearly erroneous factual findings, or . . . a clear error of judgment.” *PPG Indus. Inc. v. Celanese Polymer Specialties Co.*, 840 F.2d 1565, 1567 (Fed. Cir. 1988).

A rehearing request is not an opportunity for the requesting party to reargue its case or merely to express disagreement with the underlying decision. Nor is it an opportunity for the moving party to present new arguments that were not in its original submissions.

² Petitioner states that “[a]lthough the Decision is also incorrect with respect to Grounds 1 and 2, Petitioner’s rehearing focuses on Grounds 3 and 4 for the sake of efficiency.” Req. Reh’g 1, n.1. Accordingly, we do not further address Petitioner’s Grounds 1 and 2.

III. ANALYSIS

A. Evidence Regarding Reasons to Select the I182 Mutation in Perkins

Petitioner contends the Decision overlooked evidence that a POSA would have narrowed the list of VSV-G envelope protein mutations in Perkins to a mutation at I182. Req. Reh’g 1–2, 4–11. Petitioner argues that the Decision engaged in “an erroneous obviousness analysis, which is an abuse of discretion” by failing to consider “whether a POSA would have selected the position of I182 out of the 13 listed positions for making a mutation in Perkins” before considering “whether a POSA would have selected the ‘E’ or ‘D’ mutation for I182.” *Id.* at 6 (emphasis omitted); *see also* Reply 1–3, 5.

Petitioner argues further that

[t]o the extent the Decision required *RCSB PDB* or *Perkins* to have an explicit teaching as to why a POSA would have selected I182 (*see* Decision, 35-37), that is legal error because a “suggestion, teaching, or motivation to combine the relevant prior art teachings to achieve the claimed invention does not have to be found explicitly in the prior art references sought to be combined, but rather ‘may be found in any number of sources, including common knowledge, the prior art as a whole, or the nature of the problem itself.’”

Req. Reh’g 7 (emphasis omitted, citing *Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1362 (Fed. Cir. 2007)). Petitioner contends “*Perkins* expressly identified I182 in a limited list of positions for making a mutation. *RCSB PDB* provided three-dimensional (‘3D’) context for where that position was located in relation to the LDL-R, which was discussed by *Perkins*.” *Id.*

We disagree that we overlooked evidence that a POSA would have narrowed the list of VSV-G envelope protein mutations in Perkins to a mutation at I182. In our Decision, we first recognized Petitioner’s

arguments and citations to Dr. Rose’s testimony by summarizing them. *See* Dec. 29–30. More specifically, we stated that

Petitioner contends that a “POSA would also have had a good reason to focus on Perkins’ express disclosure of a I182 mutation.” *Id.* at 72 (citing Ex. 1002 ¶ 208). According to Petitioner, “a POSA could have easily checked the 13 amino acid positions disclosed in Perkins for making a mutation” based on the published crystal structures of the VSV-G bound to the LDL-R. *Id.* at 72–73 (Ex. 1025, 1; Ex. 1002 ¶ 208). In doing so, “a POSA would have recognized that I182 is the closest out of the 13 disclosed amino acid positions in Perkins to an important aspartic acid residue in the CR3 domain” and that “I182 was the only amino acid out of the 13 disclosed amino acid positions that could potentially interact with a second negatively charged amino acid in the CR3 domain.” *Id.* at 73 (citing Ex. 1018, 7 (describing that “D108 and D112 on CR3” as “two acidic residues which belong to the octahedral calcium cage”)); Ex. 1002 ¶ 209 (Dr. Rose stating that “I182 was the only amino acid out of the 13 disclosed amino acid positions in Perkins that was close ($\sim 4.388 \text{ \AA}$) to a second negatively charged amino acid in the CR3 domain, D110.”). Petitioner contends that a “POSA would thus have concluded that I182 [is] one of the best of the 13 disclosed amino acid positions in Perkins for disrupting the interaction with the CR3 domain” and thus satisfying the disclosure in Perkins that, “[i]n particular embodiments, the mutated envelope protein includes at least one mutation that inhibits the envelope protein’s ability to bind its native target, while preserving the envelope protein’s fusogenic properties.” *Id.* at 70, 73 (Ex. 1006, 16; Ex. 1002 ¶¶ 205, 210 (Dr. Rose opining that a POSA would have been motivated to modify Perkins based on the VSV-G crystal structures in the RCSB PDB)).

Id.

In our Decision, we explained that we considered the list of VSV-G envelope protein mutations in Perkins and found persuasive Patent Owner’s argument that “Perkins discloses a large genus of mutant VSV-G

polypeptides containing at least 254 species.” Dec. 35. We found Patent Owner’s argument persuasive because Perkins discloses embodiments with “mutations at I182 among a group of 20 other possible locations for modifications,” 13 of which are mutations of specific amino acids that “can be changed to any of the 19 other natural amino acids.” *Id.* Perkins discloses further that modifications at each of those 20 possible sites can be combined such that “one, two, or more” of the mutations can be made together in other embodiments (Ex. 1006, 17–18), or in other words, “each species [is] combinable to create a vast number of species.” Dec. 35. In addition to the locations of modifications expressly listed in Perkins, Perkins adds yet another option in which “the mutated VSV-G envelope protein is as described in Nikolic et al.” (Ex. 1006, 18), which “describes the crystal structures of VSV G bound to its native LDL-R receptor” that RCSB PDB depicts in entries 5OY9 and 5OYL (Dec. 18).

We also considered Dr. Rose’s testimony about the crystal structures depicted in RCSB PDB, namely that

a person of ordinary skill in the art would have been motivated to modify *Perkins* based on the VSV-G crystal structures in the *RCSB PDB*. *Perkins* taught that mutations to VSV-G “inhibit binding of VSV-G to the low-density lipoprotein receptor (‘LDL-R’), while preserving the VSV-G protein’s fusogenic function,” and expressly disclosed making a mutation at I182. (See, e.g., Ex. 1005 at 19:29-20:2, 20:29-21:14, 21:16-27; Ex. 1006 at 16.) The VSV-G crystal structures in the *RCSB PDB* taught that I182 is nearby negatively charged amino acids on the LDL-R. Thus, a person of ordinary skill in the art would have been motivated to incorporate a mutation which negated an interaction with the negatively charged residues in the LDL-R. (Ex. 1005 at 19:29–20:2; Ex. 1006 at 16.)

Dec. 37.

We did not find Dr. Rose’s testimony persuasive because, as discussed above, “Perkins provides a list of many mutations and combination[s] thereof, but provides no direction as to which of the many possible choices is likely to be successful.” *Id.* at 37–38. Thus, we were not persuaded that choosing an embodiment with a mutation at I182 from Perkins’s other listed embodiments with 20 possible locations for modifications, combinations of modifications at 20 possible locations, and the mutations described in Nikolic and depicted in RCSB PDB is an “easily traversed, small or finite number of alternatives that *KSR* suggested might support an inference of obviousness.” *Id.* at 35. In view of these findings, we noted that we did not “find sufficient evidentiary support for a determination that the navigation of RCSB PDB crystal structures to achieve the missing limitation would have been ‘*evidently and indisputably* within the common knowledge of those skilled in the art.’” *Id.* at 38.

B. Evidence Regarding Reasons to Select the “E” and “D” Mutations for I182

Petitioner contends the Decision “legally erred in discounting Dr. Rose’s] testimony that a POSA would have selected the claimed species (‘I182E’ and ‘I182D’) based on a POSA’s knowledge (and common sense) regarding the advantages of the E and D mutations.” Req. Reh’g 2. Petitioner argues that, “in an abuse of discretion,” the Decision dismissed Dr. Rose’s testimony that “provides substantive analysis with evidence specifically demonstrating what a POSA would have appreciated from the prior art 3D crystal structure of VSV-G.” *Id.* at 14. According to Petitioner, “[t]he Decision rejected Petitioner’s reasons for why a POSA would have selected the ‘E’ and ‘D’ mutations to I182 because it found that that *Perkins* discloses a I182A mutation and not a I182D or I182E mutation,” and

“Petitioner engaged in ‘improper hindsight reasoning.’” *Id.* at 11–12.

Petitioner argues that while “[t]he Decision cites to Patent Owner’s argument suggesting that Petitioner only cited to Exhibits 1024 and 1027 to support its contention that a POSA would have ‘immediately recognized that I182 is nearby aspartic acid residues on the LDL-R that may be negatively charged,’” “it is the crystal structure itself—a 3D prior art structure—that provides context for the location of I182 and the nearby calcium cage aspartic acid residues that Dr. Rose testified would have been important to a POSA, with reference to cited evidence in Nikolic (Ex. 1018).” *Id.* at 12 (emphasis omitted).

We disagree that we overlooked evidence related to whether a POSA would have selected an I182E or I182D mutation. In our Decision, we first recognized Petitioner’s arguments and citations to Dr. Rose’s testimony by summarizing them. *See* Dec. 30. More specifically, we stated that

Petitioner contends that a POSA would have had a reasonable expectation of success in making the I182E and I182D mutations because

While not required by claim 1, a POSA would have reason to believe that a I182E mutation would have resulted in a defect in LDL receptor binding. (Ex. 1002 at ¶ 214.) Additionally, while not required by claim 1, a POSA would not have believed that a I182E mutation would lead to a loss of VSV-G protein fusogenic function. (Ex. 1002 at ¶ 214.) A POSA would have appreciated that I182 is located in a different portion of the VSV-G crystal structure than the domains that were known to be involved in fusion. (See, e.g., Ex. 1018 at 4 (FIG. 3); Ex. 1002 at ¶¶ 215–216.)

Pet. 75; *see also* Ex. 1002 ¶ 215 (Dr. Rose opining that a POSA “would have appreciated that I182 is located in a different portion of the VSV-G crystal structure than the domains that

were known to be involved in fusion” (citing Ex. 1018, 4 (FIG. 3)).

Id.

In our Decision, we noted that “[t]here is no dispute that Perkins does not disclose the recited I182E or I182D mutations. Petitioner does not, and we do not, identify any teaching or suggestion in Perkins that would guide a POSA to make the specific I182E or I182D mutations.” Dec. 36. We agreed with Patent Owner that Perkins’s disclosure of an I182A mutation shows that Petitioner’s position that a POSA would have incorporated a mutation that “negated an interaction with the negatively charged residues in the LDL-R” is based on improper hindsight reasoning because it shows that a POSA would not have had “only two options . . . to incorporate in lieu of isoleucine at position 182 and oppose an interaction with negatively charged residues through anionic repulsion.” *Id.* We noted further that “Petitioner attempts to fill that gap with reliance on RCSB PDB, Dr. Rose’s testimony (Ex. 1002 ¶¶ 195–219), and general knowledge of a person of ordinary skill in the art (Ex. 1022, 76–77; Ex. 1012, 120; Ex. 1023, 10). Pet. 64–76.” *Id.*

We considered Petitioner’s arguments and Dr. Rose’s testimony, but did not find them persuasive because “[t]he RCSB PDB provides data for a POSA to produce and observe crystal structures, but does not itself contain any teaching or suggestion directing a POSA to create the I182E or I182D specified by the challenged claims. Rather, that suggestion is supplied by the bare testimony of Dr. Rose.” Dec. 36. More specifically, we considered Dr. Rose’s testimony that

A person of ordinary skill in the art would have had only two options out of the naturally occurring amino acids—glutamic acid (E) and aspartic acid (D)—to incorporate in place of isoleucine at position 182 to oppose an interaction with

negatively charged residues through anionic repulsion. (Ex. 1022 at 76-77; Ex. 1023 at 10). In my opinion, it would have been common sense for a person of ordinary skill in the art to make a I182E mutation in view of the finite number of options that would be known to introduce anionic repulsion and ablate the interaction with the LDL receptor.

Id. at 37. We did not find this testimony persuasive and concluded that “Petitioner comes to the claimed I182E or I182D mutations by retracing the path of the inventor with hindsight accuracy supported only by the bare testimony of Dr. Rose.” *Id.* at 38.

IV. CONCLUSION

On rehearing, we see no error in our findings of fact or conclusions of law. For the reasons given, Petitioner has not demonstrated that we abused our discretion in denying institution of a post-grant review of claims 1–30 of the ’366 patent. To the extent that Petitioner merely reargues its case or expresses disagreement with our Decision (*see, e.g.*, Req. Reh’g 8–11, 13–14), we do not find these arguments persuasive because they do not satisfy the standards for assessing requests for rehearing of institution decisions under 37 C.F.R. §§ 42.71(c) and (d).

V. ORDER

Accordingly, it is

ORDERED that Petitioner’s Request for Rehearing is *denied*.

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For PETITIONER:

Naveen Modi
Eric Dittmann
Scott Peachman
Chetan Bansal
PAUL HASTING LLP
naveenmodi@paulhastings.com
ericdittmann@paulhastings.com
scottpeachman@paulhastings.com
chetanbansal@paulhastings.com

For PATENT OWNER:

Linnea Cipriano
Craig Lytle
GOODWIN PROCTER LLP
lcipriano@goodwinlaw.com
clytle@goodwinlaw.com