

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GUARDANT HEALTH, INC.,
Petitioner,

v.

UNIVERSITY OF WASHINGTON,
Patent Owner.

IPR2022-01158
Patent 10,752,951 B2

Before JOHN G. NEW, ZHENYU YANG, and TINA E. HULSE,
Administrative Patent Judges.

YANG, *Administrative Patent Judge.*

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

Guardant Health, Inc. (“Petitioner”) filed a Petition (Paper 3, “Pet.”), seeking an *inter partes* review of claims 1–28 of U.S. Patent No. 10,752,951 B2 (Ex. 1001, “the ’951 patent”). University of Washington (“Patent Owner”) filed a Patent Owner Preliminary Response. Paper 12 (“Prelim. Resp.”). With our authorization (Ex. 1061), Petitioner filed a Reply (Paper 13), and Patent Owner filed a Sur-reply (Paper 15).

We have authority under 35 U.S.C. § 314, which provides that an *inter partes* review may not be instituted “unless . . . there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a).

For the reasons provided below, we determine Petitioner has satisfied the threshold requirement set forth in 35 U.S.C. § 314(a). Accordingly, we institute an *inter partes* review of all challenged claims based on all grounds raised in the Petition. *See SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1359–60 (2018).

A. *Real Parties in Interest*

Petitioner identifies itself, Guardant Health, Inc. as its real party in interest. Pet. 9. Patent Owner identifies the University of Washington and TwinStrand Biosciences, Inc. as the real parties in interest. Paper 8, 1.

B. *Related Matters*

According to the parties, the ’951 patent is asserted against Petitioner in *TwinStrand Biosciences, Inc. et al. v. Guardant Health, Inc.*, 1-21-cv-01126 (D. Del.). Pet. 9; Paper 8, 1.

Petitioner also filed a petition in IPR2022-01159, challenging claims 1, 6, 7, and 9–26 of the '951 patent. In a concurrently issued decision, we deny review in that case.

The parties further identify IPR2022-00449, IPR2022-00450, IPR2022-00816, IPR2022-00817, and IPR2022-00935 as related proceedings. Pet. 9; Paper 8, 1–2. In those cases, Petitioner challenged claims of patents related to the '951 patent. Pet. 9. We instituted review in IPR2022-00817 but denied the other petitions. Petitioner has requested Precedential Opinion Panel review of our decisions denying institution in IPR2022-00449, IPR2022-00450, and IPR2022-00816.¹ Those requests are currently pending.

C. The '951 Patent and Related Background

The '951 patent relates to methods of lowering the error rate of massively parallel DNA sequencing using duplex consensus sequencing (“DCS”). Ex. 1001, code (54), 17:17–19.

The '951 patent states massively parallel DNA sequencing “offer[ed] the unique ability to detect minor variants within heterogeneous mixtures.” *Id.* at 1:33–42. It notes the rapid development of clinical applications of deep sequencing in “prenatal screening for fetal aneuploidy, early detection of cancer and monitoring its response to therapy with nucleic acid-based serum biomarkers.” *Id.* at 1:43–50 (internal citations omitted). Deep sequencing, however, according to the '951 patent, had limitations, including “a practical limit of detection . . . imposed by errors introduced during sample preparation and sequencing,” resulting in “approximately 1% of bases

¹ Petitioner did not seek rehearing of our decision denying institution in IPR2022-00935. That case, thus, has concluded.

[being] incorrectly identified.” *Id.* at 1:61–2:8. The ’951 patent states “[t]his background level of artifactual heterogeneity establishes a limit below which the presence of true rare variants is obscured.” *Id.* at 2:9–11.

The ’951 patent acknowledges several attempts aimed at improving the accuracy and sensitivity of sequencing. *Id.* at 2:12–33. But, according to the ’951 patent, “significant technical artifacts” still result in error rates far higher than the “true mutation frequency.” *Id.* at 2:33–39.

The ’951 patent states “[i]t would be desirable to develop an approach for tag-based error correction.” *Id.* at 2:64–65. According to the ’951 patent, its approach, termed duplex consensus sequencing (“DCS”), “greatly reduces errors by independently tagging and sequencing each of the two strands of a DNA duplex.” *Id.*, Abstract. It explains that, because the two strands are complementary, true mutations are found at the same position in both strands. *Id.*

In one embodiment, the DCS method of the ’951 patent involves tagging both strands of duplex DNA with a random, yet complementary double-stranded nucleotide sequence, known as a single molecule identifier (SMI) sequence. *Id.* at 21:41–45. After PCR amplifying the individually tagged strands, “a family of molecules is obtained that arose from a single DNA molecule.” *Id.* at 21:51–67. According to the ’951 patent, “members of the same PCR ‘family’ are then grouped together by virtue of having a common (i.e., the same) SMI tag sequence. The sequences of uniquely tagged PCR duplicates are subsequently compared in order to create a PCR consensus sequence,” called single strand consensus sequence (SSCS). *Id.* at 21:67–22:13.

The '951 patent discloses SSCs from two complementary strands of duplex DNA can be identified by virtue of the complementary SMIs to identify the “partner SMI.” *Id.* at 22:14–17. “Following partnering of two strands by virtue of their complementary SMIs, the sequences of the strands are compared. Sequence reads at a given position are kept only if the read data from each of the two paired strands is in agreement.” *Id.* at 22:21–25.

D. Illustrative Claim

Independent claim 1 is illustrative of the claimed subject matter and is reproduced below.

1. A method, comprising:

- (a) providing a sample comprising a set of double-stranded polynucleotide molecules, each double-stranded polynucleotide molecule including first and second complementary strands;
- (b) tagging said double-stranded polynucleotide molecules with a set of duplex tags;
- (c) sequencing at least some of said tagged strands to produce a set of sequence reads;
- (d) sorting sequence reads into paired sequence reads and unpaired sequence reads, wherein (i) each paired read corresponds to sequence reads generated from a first tagged strand and a second differently tagged complementary strand derived from an original parent polynucleotide molecule in said set, and (ii) each unpaired read represents a first tagged strand having no second differently tagged complementary strand derived from an original parent polynucleotide molecule represented among said sequence reads in said set of sequence reads; and
- (e) quantifying at least two of (i) said paired sequence reads, (ii) said unpaired sequence reads, (iii) read depth of said paired sequence reads and (iv) read depth of said unpaired sequence reads.

Id. at 37:36–59.

E. Asserted Challenges to Patentability

Petitioner asserts the following challenges to patentability:

Claim(s) Challenged	35 U.S.C. §	References
1–28	102	Eltoukhy ²
1–28	103	Eltoukhy

Petitioner relies on the declaration of John Quackenbush, Ph.D., as support for its Petition. Ex. 1002. Patent Owner relies on the declaration of Joshua P. Earl, Ph.D., as support for its Preliminary Response. Ex. 2002.

II. ANALYSIS

A. Claim Construction

In an *inter partes* review, we construe a claim term “using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. [§] 282(b).” 37 C.F.R. § 42.100(b) (2020). Under that standard, the words of a claim “are generally given their ordinary and customary meaning,” which is “the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc).

The parties agree that, for purposes of this Decision, no claim term needs specific construction beyond its plain and ordinary meaning. Pet. 10; Prelim. Resp. 6–7. Petitioner, however, seeks to provide context of certain claim terms (Pet. 11–13), to which Patent Owner offers responses (Prelim. Resp. 7–11).

² WO 2015/100427, published July 2, 2015 (Ex. 1040, “Eltoukhy”).

Specifically, Petitioner contends that “sequence reads” are produced by sequencing at least some of the tagged strands, whereas “consensus sequences” are generated by collapsing sequence reads. Pet. 11 (citing Ex. 1001, 4:45–47, 20:50–22:25, 23:29–57, 24:46–48, claim 1, claim 6). Patent Owner does not disagree. *See* Prelim. Resp. 7 (“There is no dispute that a POSA would understand that a ‘consensus sequence’ of the ’951 patent specification is generated from ‘sequence reads.’”), 8 (“[A] POSA would understand that ‘consensus sequences’ are generated from ‘sequence reads.’”). On the current record, we are persuaded that “[t]he claims of the ’951 patent as well as the specification make clear that a ‘sequence read’ is different and distinct from a ‘consensus sequence.’” *See* Pet. 11.

Claim terms need only be construed to the extent necessary to resolve the controversy. *Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d 1355, 1361 (Fed. Cir. 2011). On this record and for purposes of this Decision, we see no need to address the construction of any other claim term.

B. Analysis

Petitioner contends that Eltoukhy anticipates and renders obvious claims 1–28 of the ’951 patent. Pet. 35–61. On its face, the ’951 patent claims priority to a series of applications, including application No. 15/660,785 (Ex. 1031, “the ’785 application”), filed on July 26, 2017, and application No. PCT/US2013/032665 (Ex. 1029, “Schmitt”), filed on March 15, 2013. Ex. 1001, code (60). It is undisputed that Schmitt, the ’785 application, and the ’951 patent share the same specification. *See* Pet. 34 (Petitioner asserting Patent Owner “used a copy of the published [Schmitt] ’665 PCT” in filing the ’785 application); Prelim. Resp. 30 (Patent Owner asserting Schmitt “has an identical specification as the ’951 patent”).

In other words, Exhibits 1029 and 1031 have identical disclosures, and we refer to both as Schmitt.

Eltoukhy is a PCT application published on July 2, 2015, after the filing date of Schmitt. *See* Ex. 1040, code (43). Nevertheless, Petitioner asserts that Eltoukhy qualifies as prior art because the challenged claims are not entitled to a priority date that predates Eltoukhy's publication date.

Pet. 13. Specifically, Petitioner argues that

[T]he '785 application does not provide support under section 112 for a method for "(d) sorting sequence reads into paired sequence reads and unpaired sequence reads" and "(e) quantifying at least two of (i) said paired sequence reads, (ii) said unpaired sequence reads, (iii) read depth of said paired sequence reads and (iv) read depth of said unpaired sequence reads," recited in claim 1 and required by claims 1–28 of the '951 patent.

Id. at 15–28. Petitioner also contends that the '785 application lacks written description support for numerous dependent claims. *Id.* at 15, 28–34. As a result, Petitioner concludes that the claims of the '951 patent are not entitled to an effective filing date that predates Eltoukhy or earlier than July 26, 2017, the filing date of the '785 application. *Id.* at 34.

Petitioner asserts that Eltoukhy discloses each limitation of each challenged claim. *Id.* at 35–61. In addition, Petitioner argues that the challenged claims would have been obvious over Eltoukhy, because despite "minor differences in verbiage of [the challenged] claims vis-à-vis Eltoukhy, no patentable distinction can be made in view of the Eltoukhy claims and disclosure read as a whole from the perspective of a POSA." *Id.* at 35.

Patent Owner argues that we should deny institution under § 325(d) because the examiner considered § 112 support during examination of the '951 patent. Prelim. Resp. 11–24. Patent Owner also contends that Eltoukhy

does not qualify as prior art because the challenged claims are entitled to at least the filing date of Schmitt, which antedates Eltoukhy. *Id.* at 30–51.

Patent Owner further faults Petitioner for “remaining *completely silent*” on “how Eltoukhy is an *enabling* disclosure.” *Id.* at 52.

For the reasons explained below, we find Petitioner’s arguments more persuasive.

1. Discretionary Denial under § 325(d)

Institution of an *inter partes* review is discretionary. *See Cuozzo Speed Techs., LLC v. Lee*, 579 U.S. 261, 273 (2016) (explaining that because § 314 includes no mandate to institute review, “the agency’s decision to deny a petition is a matter committed to the Patent Office’s discretion”); *see also Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1367 (Fed. Cir. 2016) (stating that under § 314(a), “the PTO is permitted, but never compelled, to institute an IPR proceeding”).

Under § 325(d), in determining whether to institute an *inter partes* review, “the Director may take into account whether, and reject the petition or request because, the same or substantially the same prior art or arguments previously were presented to the Office.” Our § 325(d) analysis employs a two-prong framework: (1) whether the arguments presented in the petition are the same or substantially the same as those previously presented to the Office; and (2) if so, whether the petitioner has demonstrated a material error by the Office in its prior consideration of those arguments. *Advanced Bionics, LLC v. MED-EL Electromedizinische Geräte GmbH*, IPR2019-01469, Paper 6 (“*Advanced Bionics*”), 8 (PTAB Feb. 13, 2020) (precedential).

Patent Owner argues that “[t]he Office also previously concluded—multiple times—that the specification provides support for sorting and quantifying paired and unpaired sequence reads, and quantifying read depth of paired and unpaired sequence reads.” Prelim. Resp. 16. Patent Owner, however, points to no evidence, and our examination of the file histories of the ’951 patent and several related applications yields no record, showing the examiner discussing written-description support for steps (d) and (e) of claim 1 (i.e., the sorting and quantifying limitations).

Instead, as we understand it, Patent Owner asserts that because the same examiner assessed claims in the related applications for § 112 support (*id.* at 12–18), and because he “was aware of” the sorting and quantifying limitations (*id.* at 18–21), he must have considered and found written-description support for those limitations. Regardless of the soundness of Patent Owner’s logic, it falls short of the requirement under § 325(d).

Indeed, under the statute, we consider whether the same or substantially the same arguments “previously were *presented* to the Office.” 35 U.S.C. § 325(d) (emphasis added). Here, we find no evidence in the record where the issue of written-description support for the sorting and quantifying limitations was presented to the Office previously. Instead, Patent Owner asks us to speculate that the examiner considered the issue. We cannot and will not do so.

Because Patent Owner has not satisfied the first prong of *Advanced Bionics*, we do not need to proceed further in our analysis. Thus, under the circumstances of this case, we decline to deny the Petition under § 325(d).

2. Disclosure of Eltoukhy

Eltoukhy discloses “methods and systems for determining genetic variants (e.g., copy number variation) in a polynucleotide sample.”

Ex. 1040, Abstract. Eltoukhy states that many of the known methods were able to reduce the errors introduced by the sample preparation and sequencing processes for the molecules that were converted and sequenced, but were “not able to infer the counts of molecules that were converted but not sequenced.” *Id.* ¶¶ 4, 5. Eltoukhy explains that because “this count of converted b[ut] unsequenced molecules can be highly variable from genomic region to region, these counts can dramatically and adversely affect the sensitivity that can be achieved.” *Id.* ¶ 5.

According to Eltoukhy, its method solves this issue by tagging and counting both halves of double-stranded DNA and estimating the number of unseen molecules based on the number of Pairs (i.e., molecules where both strands were identified) and Singlets (i.e., molecules where only one strand was identified) detected in a particular region. *Id.* ¶ 6.

3. Effective Filing Date of the Challenged Claims

In an IPR, although Petitioner has the ultimate burden of persuasion to prove unpatentability, Patent Owner must demonstrate entitlement to a priority date when Patent Owner relies on that priority date to overcome an anticipation or obviousness argument. *See Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1379–80 (Fed. Cir. 2015); *see also In re NTP, Inc.*, 654 F.3d 1268, 1276 (Fed. Cir. 2011) (“[A] patent’s claims are not entitled to an earlier priority date because the patentee claims priority. Rather, for a patent’s claims to be entitled to an earlier priority date, the

patentee must demonstrate that the claims meet the requirements of 35 U.S.C. § 120.” (citations omitted)).

On the current record, and for purposes of this Decision, we find Patent Owner has not shown sufficiently that the claims of the ’951 patent are entitled to an effective filing date earlier than July 26, 2017, the filing date of the ’785 application. Thus, Eltoukhy qualifies as prior art. *See* Pet. 13–34. For this analysis, we focus on step (d) of claim 1, “sorting sequence reads into paired sequence reads and unpaired sequence reads” (“the sorting limitation”).

Petitioner argues that the ’785 application lacks the requisite disclosure supporting the sorting limitation. Pet. 17–20. According to Petitioner, nowhere in the ’785 application does it recite the term “sorting.” *Id.* at 17. Acknowledging that “adequate support under § 112 does not strictly require *ipsis verbis* description,” Petitioner asserts that the ’785 application “simply fails to describe” the sorting limitation. *Id.*

Petitioner also points to Patent Owner’s arguments in IPR2022-01152 (“1152 IPR”). In that case, TwinStrand Biosciences, Inc., a real party in interest of Patent Owner, challenged Petitioner’s U.S. Patent No. 11,118,221 (“the ’221 patent”). Pet. 9. According to Petitioner, Patent Owner pointed to “family grouping [in Schmitt] as relevant to sorting paired and unpaired reads.” *Id.* at 17 (citing IPR2022-01152, Paper 2, 45). Petitioner contends Patent Owner’s position in 1152 IPR is wrong. *Id.* at 17–20.

Patent Owner disagrees. Prelim. Resp. 30–38. According to Patent Owner, Schmitt’s disclosure of grouping families indeed provides support for the sorting limitation. *Id.* at 36. In addition, Patent Owner contends that

Figure 10 in Schmitt provides the necessary written description support.³ *Id.* at 30–36.

As explained below, based on the current record, and for purposes of this Decision, we find Petitioner’s argument more persuasive. Below, we discuss Schmitt’s disclosures of family grouping before turning to Figure 10.

a. Family Grouping

Patent Owner argues that Schmitt discloses the sorting limitation. Prelim. Resp. 36. Schmitt discloses that, after tagging and amplifying the DNA molecules, “a family of molecules is obtained that arose from a single DNA molecule, members of the same PCR ‘family’ are then grouped together [i.e., sorted] by virtue of having a common (i.e., the same) SMI tag sequence.” Ex. 1029 ¶ 99. Schmitt further discloses that “a set of sequenced SMI-DNA products generated in the methods described above may be grouped into families of paired target nucleic acid strands based on a common set of SMI sequences.” *Id.* ¶ 79. Relying on these disclosures, Patent Owner argues that “Schmitt describes sorting the sequence reads into

³ Patent Owner argues that “Petitioner completely ignored Figure 10 of the ’951 patent.” Prelim. Resp. 30. An *inter partes* review can be instituted only “on a ground that could be raised under section 102 or 103 and only on the basis of prior art consisting of patents or printed publications.” 35 U.S.C. § 311. Thus, whether the ’951 patent provides written-description support for the challenged claims is not part of our analysis here. To ascertain the priority date of the challenged claims, however, we must consider whether the priority documents, including Schmitt and the ’785 application, meet the written-description-support requirement under § 112. Because Schmitt, the ’785 application, and the ’951 patent share the same specification, including the figures, we interpret Patent Owner’s argument as faulting Petitioner for not discussing Figure 10 in the priority documents.

groups of paired reads, *with the remaining reads that have no ‘group’ being the sorted unpaired reads.*” Prelim. Resp. 36 (citing Ex. 1029 ¶¶ 79, 99).

The Board previously addressed Patent Owner’s similar argument in 1152 IPR. *TwinStrand Biosciences, Inc. v. Guardant Health, Inc.* IPR2022-01152, Paper 11 (Dec. 13, 2022) (“1152 DDI”). In that case, Patent Owner challenged claims of the ’221 patent, owned by Petitioner. *Id.* at 2. The ’221 patent issued from a child application of Eltoukhy, the prior art asserted in the instant proceeding. *Compare* the ’221 patent (IPR2022-01152, Ex. 1001), code 63 (showing the ’221 patent claims priority to PCT/US2014/072382), *with* Ex. 1040, code 21 (showing Eltoukhy is the published application PCT/US2014/072382).

Relevant to our Decision here, both claim 18 of the ’221 patent challenged in 1152 IPR and claim 1 of the ’951 patent challenged here recite the sorting limitation. *Compare* the ’221 patent (1152 IPR, Ex. 1001), limitation 18(f), *with* Ex. 1001, limitation 1(d). In addition, both claims similarly define claim terms “sequence reads,” “paired reads,” and “unpaired reads.” *Compare* the ’221 patent, limitation 18 (d), *with* Ex. 1001, limitation 1(c) (similarly defining “sequence reads”); *Compare* the ’221 patent limitation 18(f), *with* Ex. 1001, limitation 1(d) (similarly defining “paired reads” and “unpaired reads”).

In 1152 IPR, Patent Owner asserted that the combination of Schmitt and other prior art renders obvious the claims of the ’221 patent. 1152 DDI, 6–7. Regarding the sorting limitation 18(f), Patent Owner relied on the teachings of Schmitt. *Id.* at 14, 20. Specifically, Patent Owner pointed to two steps in Schmitt for teaching the sorting limitation: “(1) the grouping of reads into families based on their SMI tag; and (2) the subsequent grouping

of those families into paired families based on the orientation of their tag.”
Id. at 21.

The Board in 1152 IPR found Patent Owner did not sufficiently demonstrate Schmitt discloses the sorting limitation 18(f). *Id.* The Board explained that the first step groups reads based on their SMI tag without regard to whether they have a complementary sequence, and thus, does not disclose sorting sequence reads into paired reads and unpaired reads, as recited in limitation 18(f). *Id.*

Regarding the second step, although it “may result in the sorting of SSCSs into paired reads,” the Board continued, Patent Owner did not show it teaches or suggests that the reads are also sorted into “unpaired reads” as recited in limitation 18(f). *Id.* The Board rejected Patent Owner’s argument that the generation of duplex consensus sequences necessarily “requires” the sorting of unpaired reads. *Id.* The Board pointed out that Schmitt uses the complementary nature of the SMI sequences to identify and form double-stranded consensus sequences, and “there is no corollary disclosure suggesting the identification or sorting of reads that lack a complementary strand.” *Id.* Furthermore, the Board explained that because Schmitt only uses sequence reads having a complementary sequence in complete agreement to generate consensus sequences, complementary strands nonetheless may not be paired due to sequencing errors in the SMI. *Id.* at 17–18, 22.

In the instant case, the parties advance substantially the same arguments as they did in 1152 IPR. *Compare id.* at 14–22, with Pet. 17–23; Prelim. Resp. 36–38; Reply 3–4. After reviewing the record, we apply the same reasoning here as the Board did in 1152 DDI.

Indeed, Patent Owner argues that Schmitt describes sorting sequence reads into groups of paired reads and unpaired, relying on the same Schmitt disclosures here as it did in 1152 IPR: (1) the grouping of sequence reads into families based on a common SMI tag; and (2) the grouping of those families into families of paired target nucleic acid strands. Prelim. Resp. 36. According to Patent Owner, “Schmitt describes sorting the sequence reads into groups of paired reads, *with the remaining reads that have no ‘group’ being the sorted unpaired reads.*” *Id.* (emphasis added).

Petitioner contends that the first grouping is based on the sequence reads having the same SMI tag and “is agnostic to whether the reads are paired or unpaired.” Pet. 17. We are persuaded by this argument and find the first grouping does not relate to sorting sequence reads into groups of paired reads and unpaired reads, as claimed. *See* 1152 DDI, 21.

Regarding the second grouping, even if we accept that it describes sorting sequence reads into paired reads,⁴ we find Patent Owner has not shown sufficiently that it describes sorting sequence reads into unpaired reads, as claimed.

As the Board pointed out in 1152 DDI, the figures⁵ and disclosures Patent Owner relies on “merely show the grouping of families of reads with

⁴ Petitioner argues that, to the extent Schmitt discusses pairing, such pairing occurs at the SSCS level, and “there is no ‘sorting’ of sequence reads that were used to generate the SSCS into paired . . . reads as now claimed.” Pet. 18. We do not address this issue because, on the current record, Patent Owner has not shown sufficiently that Schmitt discloses sorting sequence reads into unpaired reads. We, however, encourage each party to fully develop its respective positions during trial.

⁵ We address Figure 10 separately below. *See infra* Section II.B.3.b.

the same SMI into paired families. They do not depict or describe reads that lack a complementary strand, i.e., much less the sorting of such reads.”

1152 DDI, 21 (footnote omitted).

In addition, Schmitt discloses “PCR consensus sequences arising from two complementary strands of duplex DNA can be identified *by virtue of the complementary SMIs* (Figure 3) to identify the ‘partner SMI.’”

Schmitt ¶ 100 (emphasis added); *see also id.* ¶ 105 (“[T]he complementary nature of the double-stranded SMI sequences was used to identify pairs of consensus groups that arose from complementary DNA strands.”).

Indeed, as Patent Owner acknowledges, in a pilot experiment, after grouping PCR duplicates based on the same SMI tag, “29,409 SMI partner pairs were found, indicative that fewer than 1% of tags had their corresponding partner tag present in the library.” Prelim. Resp. 36 (quoting Schmitt ¶ 105 (emphasis added by Patent Owner)). Patent Owner contends this sentence describes “unpaired sequence reads (i.e., the >99% of the sequence reads without a partner pair).” *Id.* at 36–37. We are not persuaded.

Schmitt states that “[s]equence reads were considered only when the read data from each of the two strands is in perfect agreement.” *Id.* ¶ 105. It is undisputed sequence errors occur in the SMI. *See* Reply 3 (citing Ex. 2020, 50); 1152 DDI, 18 (discussing Patent Owner’s admission of “sequencing errors in the barcode [i.e., SMI] itself”). Thus, we agree with the Board’s reasoning in 1152 DDI that “the inability to form a SMI partner pair [c]ould result from the error in the SMI tag—not the lack of a complementary strand.” 1152 DDI, 19.

Patent Owner argues that “sequence reads with errors in the SMI or barcode are still *unpaired sequence reads* because they do not have a

corresponding partner pair.” Prelim. Resp. 37. Claim 1, however, defines “unpaired read” as “represent[ing] a first tagged strand *having no second differently tagged complementary strand derived from an original parent polynucleotide molecule.*” Ex. 1001, 37:50–53. On this record, we decline to equate the claimed “unpaired read” with a sequence having no SMI partner “in perfect agreement.” Thus, we are not persuaded by Patent Owner’s argument that all sequence reads not grouped as partner pairs are necessarily unpaired reads.

In sum, on the current record and for purposes of this Decision, we find Patent Owner has not shown sufficiently that the disclosures it cites (*see* Prelim. Resp. 36–38)⁶ supports the sorting limitation.

b. Figure 10

Patent Owner faults Petitioner for “completely ignor[ing] Figure 10” of Schmitt. Prelim. Resp. 30. Relying on the declaration of Dr. Earl (Ex. 2002), Patent Owner argues that Figure 10 “provides three pages of Python Code for an embodiment of the claimed method, and discloses the claimed steps of sorting sequence reads, including sorting paired and unpaired sequence reads.” *Id.* at 30–31 (citing Ex. 2002 ¶¶ 22–36). Based on this record, we are not persuaded.

“Figure 10 is a Python Code that may be used to carry out methods described [in Schmitt] according to one embodiment.” Schmitt ¶ 21. Dr. Earl explains that “the python code of Figure 10 is designed to identify sequence

⁶ We note that Patent Owner cites Schmitt paragraphs 120–137 (Example 4) as supporting the sorting limitation. *See* Prelim. Resp. 36. Patent Owner, however, does not provide any explanation on this point. We encourage both parties to thoroughly explain their respective positions during trial.

reads with ‘SMI’s’ (tags) in the header, and search all of the sequence reads ‘for the partner SMI’ (i.e., the complementary strand mate).” Ex. 2002 ¶ 24 (quoting Ex. 2010,⁷ 1:5–7). Dr. Earl testifies that “because “[t]he program states that ‘[r]eads with paired SMIs are kept’ . . . a POSA would have understood that the program identifies and tracks the paired sequence reads.” *Id.* (quoting Ex. 2010, 1:5–7). Dr. Earl also testifies that “[a] POSA would have further understood that Figure 10 conveys quantifying unpaired sequence reads via simple subtraction of the number of paired sequence reads from the number of total sequence reads.” *Id.* ¶ 34 (citing Ex. 2010, 3:120–25).

As we understand it, Dr. Earl testifies that Figure 10 shows grouping of families of reads (based on a common SMI tag) with other families of reads (based on the partner SMI) into paired families. As explained above, however, due to sequence errors that can occur in the SMI, “the inability to form a SMI partner pair [may] result from the error in the SMI tag—not the lack of a complementary strand.” *See supra* Section II.B.3.a (quoting 1152 DDI, 19). Thus, on this record at this stage of the proceeding, we are not persuaded by Dr. Earl’s testimony that all sequence reads not grouped as partner pairs are necessarily unpaired reads.

c. Summary

In sum, Patent Owner has not shown sufficiently that Schmitt provides adequate written description support for the sorting limitation, especially the sorting of unpaired reads. In other words, Patent Owner has

⁷ Exhibit 2010 is an annotated copy of Figure 10, in which Dr. Earl “inserted line numbers for ease of reference to specific portions of the figure’s Python Code.” Ex. 2002 ¶ 22.

not demonstrated the challenged claims are entitled to the priority of Schmitt. Thus, on this record and for purposes of this Decision, we find Petitioner has met its burden in showing that Eltoukhy qualifies as prior art. *See* Pet. 13–34.

4. Alleged Anticipation by and Obviousness over Eltoukhy

Petitioner asserts Eltoukhy anticipates and renders obvious claims 1–28 of the ’951 patent. Pet. 18–64. Petitioner provides detailed analysis, mapping each claim limitation to the disclosures of Eltoukhy. *Id.* Patent Owner does not dispute those arguments at this stage of the proceeding. Based on the current record, we find Petitioner’s analyses persuasive and adopt them as our own findings.

Patent Owner, however, contends that Petitioner’s anticipation argument is legally deficient because it does not explain “how Eltoukhy is an *enabling* disclosure.” Prelim. Resp. 52. But, as Patent Owner acknowledges, there is a presumption of enablement for prior art. *See id.*; *see also Amgen Inc. v. Hoechst Marion Roussel, Inc.*, 314 F.3d 1313, 1354–55 (Fed. Cir. 2003) (holding a patent challenger is entitled to rely on the presumption of enablement of a prior art patent, and patent owner bears the burden of proving nonenablement); *In Re Antor Media Corp.*, 689 F.3d 1282, 1289 (Fed. Cir. 2012) (holding the same presumption and burden apply to prior art publication). Here, Patent Owner has not presented any evidence or argument to show that Eltoukhy is not enabled.

Thus, based on this record, we determine Petitioner has established a reasonable likelihood that it would prevail in its assertion that Eltoukhy anticipates the challenged claims. Moreover, because “anticipation is the epitome of obviousness,” we determine Petitioner has established a

reasonable likelihood that it would prevail in its assertion that the challenged claims are unpatentable as obvious over Elthoukhy, as well. *See Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1373 (Fed. Cir. 2019) (“[I]t is well settled that a disclosure that anticipates under § 102 also renders the claim invalid under § 103, for anticipation is the epitome of obviousness.”) (internal quotations and citations omitted).

III. CONCLUSION

Based on the current record, and for the reasons explained above, we find Petitioner has demonstrated a reasonable likelihood that it would prevail with respect to at least one claim challenged in the Petition. We therefore institute an *inter partes* review of all challenged claims on all asserted grounds.

At this stage of the proceeding, the Board has not made a final determination as to the construction of any claim term or the patentability of any challenged claim. Our view with regard to any conclusion reached in the foregoing could change upon further development of the record during trial.

Any argument not raised in a timely Patent Owner Response to the Petition, or as permitted in another manner during trial, shall be deemed waived even if asserted in the Preliminary Response. In addition, nothing in this Decision authorizes Petitioner to supplement information advanced in the Petition in a manner not permitted by the Board’s Rules.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review is hereby instituted on all challenged claims of the ’951 patent based on all the asserted grounds set forth in the Petition; and

FURTHER ORDERED, pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4(b), notice is hereby given of the institution of a trial commencing on the entry date of this decision.

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