No. ____

In the Supreme Court of the United States

Immunex Corporation,

Petitioner,

v.

Sanofi-Aventis U.S. LLC, *et al.*,

Respondents.

On Petition for a Writ of Certiorari to United States Court of Appeals for the Federal Circuit

PETITION FOR A WRIT OF CERTIORARI

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QUESTIONS PRESENTED

The first two questions presented here are the same as those presented in *Arthrex, Inc. v. Smith & Nephew, Inc.*, No. 19-1458; *Smith & Nephew, Inc. v. Arthrex, Inc.*, No. 19-1452; and *United States v. Arthrex, Inc.*, No. 19-1434. The third question is new.

1. Whether, for purposes of the Appointments Clause, U.S. Const. Art. II, § 2, Cl. 2, administrative patent judges of the U.S. Patent and Trademark Office are principal officers who must be appointed by the President with the Senate's advice and consent, or "inferior Officers" whose appointment Congress has permissibly vested in a department head.

2. Whether, if administrative patent judges are principal officers, the Federal Circuit properly cured any Appointments Clause defect in the current statutory scheme prospectively by severing the application of 5 U.S.C. § 7513(a) to those judges.

3. Whether this Court granting Arthrex the relief it seeks would vitiate the court of appeal's prior forfeiture rule and deny the Patent Office Director the authority under 35 U.S.C. § 318(b) to issue a certificate cancelling Immunex's patent claims.

PARTIES TO THE PROCEEDINGS BELOW

Petitioner Immunex Corporation was the patent owner in the proceedings before the Patent Trial and Appeal Board and the appellant before the Federal Circuit.

Respondents Sanofi-Aventis U.S. LLC, Genzyme Corporation, and Regeneron Pharmaceuticals, Inc. were petitioners in the proceedings before the Patent Trial and Appeal Board and the cross-appellants before the Federal Circuit.

RULE 29.6 STATEMENT

Petitioner Immunex Corporation states that its parent corporation is Amgen Inc.

RELATED PROCEEDINGS

The following proceedings are directly related to this case within the meaning of Rule 14.1(b)(iii):

- *Immunex Corp. v. Sanofi et al.*, No. 2:17-cv-02613-SJO-PLA (C.D. Cal. filed April 5, 2017)

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PETITION FOR A WRIT OF CERTIORARI

Immunex Corporation respectfully petitions for a writ of certiorari to review the judgment of the United States Court of Appeals for the Federal Circuit in this case. As explained below, Immunex requests that the Court hold this petition pending disposition of the granted petitions for writs of certiorari from *Arthrex, Inc. v. Smith & Nephew, Inc.*, 941 F.3d 1320 (Fed. Cir. 2019). *See Arthrex, Inc. v. Smith & Nephew, Inc.*, No. 19-1458; *Smith & Nephew, Inc. v. Arthrex, Inc.*, No. 19-1452; and *United States v. Arthrex, Inc.*, No. 19-1434.

In 2011, Congress enacted a potent new mechanism for challenging patents through adversarial proceedings at the Patent Office known as inter partes review. *See* Leahy-Smith America Invents Act, Pub. L. No. 122-29, §6(A), 125 Stat, 284, 299 (2011). The Patent Office relied on that new procedure to hold Immunex's patent claims unpatentable. Immunex appealed but the Federal Circuit affirmed. The Patent Office has not, however, formally revoked Immunex's claims pending Immunex's appeals.

While Immunex's case was on appeal, the Federal Circuit held in another case that the administrative patent judges who conduct inter partes reviews hold the office in violation of the Appointments Clause. *See Arthrex, Inc. v. Smith & Nephew, Inc.*, 941 F.3d 1320 (Fed. Cir. 2019). The Federal Circuit attempted to remedy the constitutional defect by severing and invalidating administrative patent judges' tenure protections, which, the Federal Circuit held, rendered

them inferior officers. This Court granted certiorari in *Arthrex* to review (1) the Federal Circuit's holding that administrative patent judges are unconstitutionally appointed principal officers, and (2) the propriety of the court's severance remedy. Merits briefing in *Arthrex* is complete, and the case was argued on March 1, 2021.

During the appeal below, Immunex asked in its responsive briefing that its case be remanded in view of the Federal Circuit's decision in *Arthrex*. But the Federal Circuit, under the guise of forfeiture, has repeatedly refused to apply *Arthrex* to cases like this one where the appellant filed its opening brief before the *Arthrex* decision and thus did not challenge the appointments in its opening brief on appeal. That refusal, however, does not change the fact that if this Court ultimately affirms the Federal Circuit, Immunex's patent will have been adjudicated by an unconstitutionally appointed panel. Additionally, if this Court further reverses the appellate court's severance remedy, as Arthrex has urged, and holds that the constitutional defect is fixable only by Congress, then the Director of the Patent Office would no longer have the authority under 35 U.S.C. § 318(b) to issue the certificate finally revoking Immunex's patent. The resulting significant change in the law would vitiate the court of appeal's prior forfeiture rule.

OPINIONS BELOW

The Federal Circuit's decision in *Immunex Corporation v. Sanofi-Aventis U.S. LLC*, Nos. 2019-1749 and 2019-1777 is reproduced at pages 1a-24a of

the appendix to this petition for certiorari. The Patent Trial and Appeal Board's final written decisions are reproduced at pages 25a-94a of the appendix to this petition for certiorari.

JURISDICTION

The Federal Circuit had jurisdiction under 28 U.S.C. § 1295(a)(4)(A) and 35 U.S.C. § 141(c), and entered judgment on October 13, 2020. App. A. No petition for rehearing was filed. On March 19, 2020, the Court extended the time within which to file any petition for a writ of certiorari due on or after that date to 150 days from the date of the lower court judgment, order denying discretionary review, or order denying a timely petition for rehearing. The effect of that order was to extend the deadline for filing this petition for a writ of certiorari to March 12, 2021. This Court has jurisdiction under 28 U.S.C. § 1254(1).

CONSTITUTIONAL AND STATUTORY PROVISIONS INVOLVED

The Appointments Clause of the Constitution provides that the President

> shall nominate, and by and with the advice and consent of the Senate, shall appoint ambassadors, other public ministers and consuls, judges of the Supreme Court, and all other officers of the United States, whose appointments are not herein otherwise provided for, and which shall be established by law: but the Congress may by law vest the appointment of such inferior officers, as they

> think proper, in the President alone, in the courts of law, or in the heads of departments.

U.S. Const. art. II, § 2, cl. 2.

Title 35, Section 318, deals with final written decisions from the Patent Trial and Appeal Board in inter partes review cases. It provides, in relevant part, as follows:

> (a) Final Written Decision.—
>
> If an inter partes review is instituted and not dismissed under this chapter, the Patent Trial and Appeal Board shall issue a final written decision with respect to the patentability of any patent claim challenged by the petitioner and any new claim added under section 316(d).
>
> (b) Certificate.—
>
> If the Patent Trial and Appeal Board issues a final written decision under subsection (a) and the time for appeal has expired or any appeal has terminated, the Director shall issue and publish a certificate canceling any claim of the patent finally determined to be unpatentable, confirming any claim of the patent determined to be patentable, and incorporating in the patent by operation of the certificate any new or amended claim determined to be patentable.

35 U.S.C. § 318(a)-(b).

INTRODUCTION

In creating inter partes reviews as part of the America Invents Act, "Congress intended . . . to provide [a] 'quick and cost effective alternative[]' to litigation in the courts." *PPC Broadband, Inc. v. Corning Optical Commc'ns RF, LLC*, 815 F.3d 734, 741 (Fed. Cir. 2016) (quoting H.R. Rep. No. 112-98(I), at 48 (2011)). As part of this effort, Congress endowed administrative patent judges of the Patent Trial and Appeal Board with the authority to issue final decisions on patentability that are not reviewable by any superior executive officer and instead must be appealed directly to the Federal Circuit. This elimination of "intermediate administrative appeals" of inter partes reviews, Congress reasoned, would "substantially accelerate the resolution" of those proceedings. *Ethicon Endo-Surgery, Inc. v. Covidien LP*, 812 F.3d 1023, 1037 (Fed. Cir. 2016) (quoting 157 Cong. Rec. S1376 (Mar. 8, 2011) (statement of Sen. Kyl)).

Regardless of whether the resulting adjudicative regime achieves Congress's goal of expediency, it did so at the intolerable price of the regime's constitutionality.

Administrative patent judges of the Patent Trial and Appeal Board stand apart from the administrative law judges of every other federal agency. The administrative law judges of the SEC, the ITC, the FCC, and other agencies make provisional decisions that are subject to review by the head of the agency. Administrative patent judges, in contrast, have the authority to render final decisions on behalf

of the United States, without review by any higher executive-branch official—as a panel of judges did with respect to Immunex's patent in the case below. Under the Constitution's Appointments Clause, such a determinative act may be rendered only by a principal officer—appointed by the President and confirmed by the Senate. Administrative patent judges are not so appointed. The inter partes review system is therefore unconstitutional.

In *Arthrex, Inc. v. Smith & Nephew, Inc.*, the Federal Circuit correctly held that administrative patent judges are principal officers and therefore that Congress's decision to vest their appointment in the Secretary of Commerce violates the Appointments Clause. 941 F.3d at 1325. In an attempt to remedy the constitutional violation, the Federal Circuit severed and invalidated "the portion of the Patent Act restricting removal" of administrative patent judges. *Id.* This remedy, the court reasoned, rendered the judges "inferior officers" who may validly be appointed by the Secretary of Commerce. *Id.* The full Federal Circuit denied rehearing en banc, *see* 953 F.3d 760 (Fed. Cir. 2020), and all parties to the *Arthrex* case petitioned for certiorari. *See* No. 19-1434 (filed June 25, 2020); No. 19-1452 (filed June 29, 2020); No. 19-1458 (filed June 30, 2020).

Following the denial of rehearing en banc in *Arthrex*, the Federal Circuit vacated and remanded multiple pending cases in which the appellant had raised an Appointments Clause challenge in its opening brief in the Federal Circuit. The Board has stayed all such cases, holding them "in administrative abeyance until [this] Court acts on a petition for

certiorari" on the Appointments Clause issue. General Order in Cases Remanded Under *Arthrex, Inc. v. Smith & Nephew, Inc.*, 941 F.3d 1320 (Fed. Cir. 2019), 2020 WL 2119932, at *1 (P.T.A.B. May 1, 2020). The Government has since filed an omnibus petition for certiorari encompassing many of these cases. That petition requests that the Court hold these cases pending disposition of the petitions for certiorari in *Arthrex*. *See* Pet. for Certiorari at 26, *Iancu v. Luoma*, No. 20-74 (U.S. filed July 23, 2020). The Court has not yet acted on that petition.

This Court subsequently granted review of *Arthrex* on the following two questions:

1. Whether, for purposes of the Appointments Clause, U.S. Const. Art. II, § 2, Cl. 2, administrative patent judges of the U.S. Patent and Trademark Office are principal officers who must be appointed by the President with the Senate's advice and consent, or "inferior Officers" whose appointment Congress has permissibly vested in a department head.

2. Whether, if administrative patent judges are principal officers, the Federal Circuit properly cured any Appointments Clause defect in the current statutory scheme prospectively by severing the application of 5 U.S.C. 7513(a) to those judges.

Immunex now files this petition for certiorari on the same two questions over which this Court agreed to review *Arthrex*. For the reasons explained in Arthrex's merits briefing, this Court should affirm the Federal Circuit on the Appointments Clause issue, reverse the Federal Circuit on the severance remedy, and allow Congress to fix the constitutional infirmity

that is structurally embedded in the America Invents Act.

If the Court does so, then Immunex's third question presented comes into play. Arthrex's preferred remedy would effect a profound change in the law so as to vitiate the Federal Circuit's forfeiture rule. It would also render the whole inter partes review statute unconstitutional and thereby remove the Director's authority under 35 U.S.C. § 318(b) "to issue and publish a certificate canceling any claim of the patent finally determined to be unpatentable" by virtue of a now unconstitutional final written decision issued under 35 U.S.C. § 318(a).

Immunex therefore requests that the Court hold this petition pending disposition of *Arthrex*.

STATEMENT

This case arises from two inter partes review proceedings concerning Immunex's U.S. Patent No. 8,679,487 ("the '487 patent"). This patent covers antibodies that bind to the human interleukin-4 ("IL-4") receptor. Sanofi-Aventis U.S. LLC, Genzyme Corporation, and Regeneron Pharmaceuticals, Inc. (collectively, "Sanofi") filed three separate petitions for inter partes review of the '487 patent: the first challenging claims 1–17 (IPR2017-01129); the second challenging claims 1–14, 16, and 17 (IPR2017-01879); and the third again challenging claims 1–17 (IPR2017-01884). The Patent Trial and Appeal Board denied institution on the first petition. IPR2017-01129, Paper 19 (PTAB, Oct. 4, 2017). The PTAB instituted trial on the second petition and decided in its Final Written Decision that Sanofi failed to show

by a preponderance of the evidence that claims 1–14, 16, and 17 of the '487 patent were unpatentable over the asserted reference. IPR2017-01879, Paper 88 (PTAB, Feb. 14, 2019). The PTAB also instituted trial on the third petition and decided in its Final Written Decision that claims 1–17 are unpatentable as obvious over the combined Hart and Schering-Plough references. IPR2017-01884, Paper 96 (PTAB, Feb. 14, 2019).

After the Board issued its final written decision finding the challenged claims unpatentable, Immunex appealed the merits of the Board's unpatentability findings. After Immunex filed its opening brief, the Federal Circuit decided *Arthrex*. As explained above, the *Arthrex* court held that "the statute as currently constructed makes the APJs principal officers" and hence that the appointment scheme established by Congress is unconstitutional. 941 F.3d at 1325. The court also held that Arthrex properly raised its Appointments Clause challenge for the first time on appeal because raising it to the Board "would have been futile." *Id.* at 1339. Finally, as also explained above, the Federal Circuit also attempted to cure the constitutional violation by severing and invalidating "the portion of the Patent Act restricting removal of the APJs" which, the *Arthrex* court held, "render[ed] the APJs inferior officers and remed[ied] the constitutional appointment problem." *Id.* at 1325. As a result of the court's holding, administrative patent judges are removable at will by the Secretary of Commerce.

The day after issuing *Arthrex*, the Federal Circuit took immediate steps to limit its impact. The court

issued a precedential order precluding reliance on *Arthrex* in a pending appeal where the challenger had failed to anticipate the change of law and raise the issue in its opening brief or a pre-filing motion. *See Customedia Techs., LLC v. Dish Network Corp.*, 941 F.3d 1173, 1174 (Fed. Cir. 2019). The upshot is that the statutory inter partes review scheme operates exactly as before, with only around 100 pending cases impacted by the *Arthrex* decision. The vast majority of those pending cases are ones that—by sheer fortuity—involve a Final Written Decision issued *before* the *Arthrex* decision (and thus before the Federal Circuit's severance remedy took effect) and an opening brief filed *after* the *Arthrex* decision (meaning the appellant knew to raise an *Arthrex*-based challenge in its opening brief and thereby avoid the Federal Circuit's forfeiture rule).

With respect to Immunex's appeal, within a week of the Federal Circuit's *Arthrex* decision, Immunex argued in its response and reply brief that that court should vacate and remand the Board's final written decision in IPR2017-01884 because it was rendered by an unconstitutionally appointed panel of APJs. Immunex could not have raised *Arthrex*-related issues sooner because the *Arthrex* decision issued after Immunex's opening brief, and one week before Immunex's Response and Reply Brief was due. Both Sanofi and the Government as intervenor subsequently had a full opportunity to brief their responses on the Appointments Clause issue—and they did so in separately filed briefs. The Federal Circuit then held that Immunex's constitutionality argument was forfeited based on Immunex's not

raising an Appointments Clause challenge in its opening brief. *Immunex Corp. v. Sanofi-Aventis U.S. LLC*, 977 F.3d 121, 1223 n.10 (Fed. Cir. 2020).

REASONS FOR HOLDING THIS PETITION

Should this Court affirm the *Arthrex* decision, that result would mean that unconstitutionally appointed APJs adjudicated the patentability of Immunex's patent claims. And should this Court, as Arthrex urges, determine that only Congress can fix the constitutional infirmity, that decision would result in a substantial change in the law that vitiates the forfeiture rule the Federal Circuit applied to deny Immunex's request for relief. In that case, with the constitutional defect uncured, the inter partes review statute would be unconstitutional, and the Director would lack the authority to issue a certificate finally revoking Immunex's claims.

I. IF THE COURT IN *ARTHREX* AFFIRMS THE APPOINTMENTS CLAUSE RULING, THEN IMMUNEX'S CLAIMS WERE CANCELLED BY AN UNCONSTITUTIONALLY APPOINTED PANEL.

The final written decision, issued under 35 U.S.C. § 318(a), issued on February 14, 2019, well before the Federal Circuit's *Arthrex* decision. If this Court affirms *Arthrex's* Appointments Clause ruling, then the decision finding Immunex's claims are unpatentable would have been issued by an unconstitutionally appointed panel of administrative patent judges—judges who were not sufficiently supervised by the Director of the Patent Office.

Given that the Court has already granted certiorari to review whether the Patent Trial and Appeal Board that issued Immunex's final written decision was constitutionally appointed, it should hold this petition for treatment consistent with the outcome of the petitions for certiorari in *Arthrex, Inc. v. Smith & Nephew, Inc.*, No. 19-1458; *Smith & Nephew, Inc. v. Arthrex, Inc.*, No. 19-1452; and *United States v. Arthrex, Inc.*, No. 19-1434. If the Court affirms in *Arthrex*, the Court should grant this petition, vacate the decision below, and remand the case for treatment consistent with the outcome in *Arthrex*.

II. IF THE COURT ALSO REVERSES *ARTHREX'S* SEVERANCE REMEDY AND DETERMINES THAT ONLY CONGRESS CAN FIX THE STATUTE, THEN THAT SUBSTANTIAL CHANGE IN THE LAW VITIATES THE FEDERAL CIRCUIT'S FORFEITURE RULING.

The Federal Circuit set forth its forfeiture position with respect to *Arthrex* in *Customedia Technologies v. Dish Network Corp.*, 941 F.3d 1173 (Fed. Cir. 2020). There, it held that Appointments Clause challenges were forfeited unless raised in an opening brief, or a pre-briefing motion. The Federal Circuit was unmoved by change-of-law exceptions to its forfeiture jurisprudence. Because, as Arthrex has argued, the Federal Circuit's severance remedy is inadequate and raises a host of additional issues under the APA, this Court should reverse the Federal Circuit's severance remedy and hold that only Congress can fix the unconstitutional inter partes review statute. This

would effect a profound change in law that justifies reconsideration of the Federal Circuit's forfeiture position and a holding that an Appointments Clause challenge need not have been raised in an opening brief.

A. The Federal Circuit's forfeiture rule appears predicated in part on its choice of a surgical severance remedy.

The Federal Circuit in *Arthrex* chose to surgically sever a portion of Title 35 that is unrelated to the actual procedures for instituting and implementing inter partes review proceedings. The severance impacted approximately 100 cases decided immediately prior to Arthrex while having few (if any) practical effects on the actual operation of the inter partes review statute. As a result, most inter partes review litigants were able to carry on as if there had been no change in the law.

The Federal Circuit sought to further limit the impact of its unconstitutionality decision with its forfeiture rule—namely, that unless a party had raised an Appointments Clause challenge in its opening brief or pre-briefing motion, it forfeited any relief under *Arthrex*. *See Customedia Technologies,* 941 F.3d at 1174. As a result, the only cases eligible for relief, according to the Federal Circuit, are those that—by sheer fortuity—involve a Final Written Decision issued *before* the *Arthrex* decision (and thus before the Federal Circuit's severance remedy took effect) and an opening brief filed *after* the *Arthrex* decision (meaning those appellants were prompted to raise an *Arthrex*-based challenge in their opening

brief and thereby avoid the Federal Circuit's forfeiture rule). Those parties unfortunate enough to have a final written decision issued just *after* the *Arthrex* decision were still subject to the full weight of the inter partes review process under the plenary control of an unconstitutionally-appointed panel. In short, the Federal Circuit's forfeiture line is arbitrary and unfair to those parties that find themselves just outside the Federal Circuit's barrier.

The conditions in the case at hand amplify the unfair nature of the Federal Circuit's forfeiture line. In *Customedia*, the Federal Circuit held that an appellant must raise an Appointments Clause challenge in its opening brief or pre-briefing motion to prevent forfeiture of the issue on appeal (941 F.3d at 1174), presumably because the appellee or intervenor would not have an opportunity to respond to that issue in subsequent briefing under those circumstances. In this case, however, Immunex briefed the Appointments Clause issue before the Federal Circuit immediately after the *Arthrex* decision issued its Response and Reply Brief. Sanofi and the Government subsequently responded to the Appointments Clause arguments and alleged waiver of the issue in separate briefs, generating a complete record of the parties' positions. Therefore, there was no prejudice to the parties in asking the Federal Circuit to address the Appointments Clause challenge on appeal or at the very least hold the case pending this Court's opinion in *Arthrex*. The Federal Circuit instead allowed its inflexible forfeiture rule—based on timing alone—to foreclose Immunex's request for relief.

The Federal Circuit's own forfeiture jurisprudence includes an exception where there is an intervening change in the law that might have altered the result. *See, e.g.*, *In re Micron Technology, Inc.*, 875 F.3d 1091, 1097 (Fed. Cir. 2017) (summarizing precedent as showing that "the general approach, which is neither rigid nor context-independent, that is reflected in opinions from the Supreme Court and the circuit courts in various settings … [is that] a sufficiently sharp change of law sometimes is a ground for permitting a party to advance a position that it did not advance earlier in the proceeding when the law at the time was strongly enough against that position"). Setting aside whether the court's current forfeiture rule violated change of law exceptions in the first instance, if this Court reverses the court's severance remedy (as it should), then the change in law would be "sufficiently sharp" so as to require the court's reconsideration of its forfeiture rule. *See* Sec. II.C. *infra*.

B. The Court should reverse the Federal Circuit's severance remedy.

As Arthrex's opening brief explains (at pp. 45-64), the appeals court erred in severing administrative patent judges' tenure protections. The *Arthrex* panel itself recognized that the validity of administrative patent judges' appointments is "an issue of exceptional importance." 941 F.3d at 1327. If administrative actors are to have the power to revoke such important property rights, it is essential that the system in which they exercise that power complies with the law. And, while the Federal Circuit correctly found a constitutional violation here, its chosen

remedy was flawed for at least three reasons that continue to impact the Director's authority to cancel patent claims.

First, the Federal Circuit's remedy creates intractable problems of its own. Elimination of administrative patent judges' tenure protections is inconsistent with congressional intent because—as the relevant statutes demonstrate—Congress intended those judges to adjudicate cases impartially and independently, free from undue influence by other agency officials. Judicial severance of those provisions is therefore impermissible. *See Murphy v. Nat'l Collegiate Athletic Ass'n*, 138 S. Ct. 1461, 1482 (2018) (constitutionally flawed statutory provision is severable only if "the law remains fully operative without the invalid provision," such that the court can infer that Congress would have enacted the valid provisions independent of the invalid ones) (internal quotations omitted); Arthrex Pet. 16–24. As Arthrex explains, the Federal Circuit should have left the solution to Congress rather than attempting a judicial rewrite of the inter partes review statute. *See* Arthrex Pet. 33–34.

Second, even assuming the court's remedy was permissible—and it was not—the remedy does not fix the constitutional problem. Administrative patent judges, even if removable at will, remain empowered to issue final decisions on behalf of the executive branch and therefore remain principal officers. *See, e.g.*, *Ass'n of Am. R.R.s v. U.S. Dep't of Transp.*, 821 F.3d 19, 39 (D.C. Cir. 2016) (holding that Amtrak arbitrator was a principal officer because there was no "procedure by which [an] arbitrator's decision is

reviewable by" the agency head); Arthrex Pet. 25–33. Immunex incorporates Arthrex's arguments by reference and will not repeat them in detail here.

Third, severing administrative patent judges' removal protections renders them unable to preside over inter partes review proceedings consistent with the Administrative Procedure Act. It follows that, unless and until this Court steps in to correct the Federal Circuit's misguided remedy, every order or decision the Board issues will be invalid under the APA.

The Federal Circuit has long held that inter partes reviews are "formal administrative adjudications" subject to the requirements of 5 U.S.C. §§ 554 and 556. *See Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1080 (Fed. Cir. 2015); *see generally Dickinson v. Zurko*, 527 U.S. 150 (1999) (APA governs proceedings before the Patent and Trademark Office). Section 556 of Title 5, which governs formal adjudications under the APA, requires such adjudications to be conducted by one of three categories of actors: "(1) the agency; (2) one or more members of the body which comprises the agency; or (3) one or more administrative law judges appointed under [5 U.S.C. §] 3105." 5 U.S.C. § 556(b). Administrative patent judges are not the Patent and Trademark Office, and they are not members of a body comprising the Office. And administrative law judges must be subject to the removal protections of 5 U.S.C. § 7521. But—because the Federal Circuit decreed that administrative patent judges are not subject to those removal protections—they are, by definition, not "administrative law judges" within the meaning of § 556. And, because they are not, they can

no longer decide inter partes reviews pursuant to § 556.

The APA-related issues are examined in more detail in a Petition by Rovi Guides, Inc., which Immunex incorporates by reference and will not repeat here. *Rovi Guides, Inc. v. Comcast Cable Communications, LLC* (No. 20-414), Petition of Sept. 30, 2020.

* * *

These principles dictate that the tenure protections applicable to administrative patent judges—the protections the Federal Circuit purported to remove—are not severable from the remainder of the statute. Excising those provisions renders the judges unable to perform one of their primary duties under the statute: issuing final written decisions in inter partes reviews. *See* 35 U.S.C. § 6(c).

Congress would not have written a statute that provides for inter partes reviews to be overseen by judges who lack the authority to decide them. Accordingly, the Federal Circuit erred in concluding that administrative patent judges' removal protections are severable from the remainder of the statute. As this Court observed in *Alaska Airlines*, "Congress could not have intended a constitutionally flawed provision to be severed from the remainder of the statute if the balance of the legislation is incapable of functioning independently." 480 U.S. at 684.

The consequences of the Federal Circuit's erroneous remedial holding could hardly be more serious. Now that administrative patent judges are

removable at will, there is *no one*, other than the Director of the Patent and Trademark Office (i.e., the agency head himself), who is qualified to sit on an inter partes review panel. That, in turn, means that the Board cannot issue valid final written decisions at all. *See* 35 U.S.C. § 6(c) (inter partes reviews must "be heard by at least 3 members of the Patent Trial and Appeal Board"). In other words, the Federal Circuit's cure was as bad as the disease: in attempting to fix a *constitutional* problem with the inter partes review regime, the court inadvertently created an insurmountable *statutory* obstacle to the regime's continued operation. And until that error is rectified, every single decision the Board renders will be invalid, and the Director continues to lack the authority under 35 U.S.C. § 318(b) to issue certificates finally cancelling any patent claim.

The Court should thus reverse the Federal Circuit's severance remedy and hold that only Congress can fix the unconstitutional inter partes review statute.

C. If this Court reverses the Federal Circuit's severance remedy, it would constitute a profound change in the law that would vitiate the Federal Circuit's forfeiture holding.

Should this Court agree with Arthrex and Immunex that the Federal Circuit's severance remedy is insufficient, that holding would vitiate the Federal Circuit's forfeiture rule because the resulting change in law would be so profound and sharp as to

have far a greater impact than the Federal Circuit originally envisioned.

If one provision of a statute is found unconstitutional, the remainder of the statute must also be invalidated if it is "evident that Congress would not have enacted those provisions which are within its power, independently of those which are not." *Murphy*, 138 S. Ct. at 1482 (alterations omitted) (quoting *Alaska Airlines, Inc. v. Brock*, 480 U.S. 678, 684 (1987)); *accord Seila Law LLC v. CFPB*, 140 S. Ct. 2183, 2208–09 (2020). "In conducting that inquiry, [courts] ask whether the law remains 'fully operative' without the invalid provisions." *Murphy*, 138 S. Ct. at 1482 (quoting *Free Enter. Fund*, 561 U.S. at 509). If the answer to that question is no, severance is improper, because "Congress could not have intended a constitutionally flawed provision to be severed from the remainder of the statute if the balance of the legislation is incapable of functioning independently." *Alaska Airlines*, 480 U.S. at 684. Moreover, courts "cannot rewrite a statute and give it an effect altogether different from that sought by the measure viewed as a whole." *Murphy*, 138 S. Ct. at 1482 (quoting *Railroad Ret. Bd. v. Alton R. Co.*, 295 U.S. 330, 362 (1935)); *see also Bowsher v. Synar*, 478 U.S. 714, 735 (1986) (declining to sever a portion of a law because doing so "would lead to a statute that Congress would probably have refused to adopt").

In the inter partes review proceedings at issue here, the administrative patent judge panels that the Federal Circuit found to have been unconstitutionally appointed sit at the heart of the adjudicatory process. They decide whether to institute a proceeding, they

resolve multiple disputes over the course of the year-long trial, they preside over the final hearing, and they render final decisions on patentability. *See* 35 U.S.C. §§ 6, 311-318. There are few aspects of the proceeding over which they do not have authority. They even have jurisdiction over parallel disputes in the agency involving the same patent, like reissue or reexamination proceedings. *See* 35 U.S.C. § 315(d); 37 C.F.R. § 42.122(a). If Appointments Clause defect is not remedied by severance of the tenure provision, then the entire inter partes review scheme should be invalidated as well, including the Director's authority under 35 U.S.C. § 318(b) to issue a certificate cancelling claims in a patent.

Such change would invoke the recognized exception to the rule of forfeiture where "there have been judicial interpretations of existing law after decision below and pending appeal—interpretations which if applied might have materially altered the result." *Hormel v. Helvering*, 312 U.S. 552, 558-59 (1941) (internal citation omitted). This Court has repeatedly refused to find forfeiture where there was an intervening change of law. "(T)he mere failure to interpose [a constitutional] defense prior to the announcement of a decision which might support it cannot prevent a litigant from later invoking such a ground." *Curtis Publ'g Co.* v. *Butts*, 388 U.S. 130, 143 (1967); *see also Hormel* v. *Helvering*, 312 U.S. 552, 558-559 (1941) (no forfeiture where "there have been judicial interpretations * * * pending appeal * * * which if applied might have materially altered the result"). In such cases, the "failure to raise the claim in an opening brief reflects not a lack of diligence, but

merely a want of clairvoyance." *Joseph v. United States*, 135 S. Ct. 705, 706 (2014) (Kagan, J., dissenting from denial of certiorari).

The Federal Circuit's current forfeiture rule would be inconsistent with controlling law if this Court grants Arthrex the relief it seeks. It would effectively require Immunex and similarly situated parties to have predicted a substantial change in law effected by the Federal Circuit, and subsequently this Court. But clairvoyance is not the standard—a party cannot forfeit an argument or a constitutional claim that has not yet been recognized. *See, e.g.*, *Freytag v. Commissioner*, 501 U.S. 868, 894-895 n. 2 (1991) (effective waiver must be one of a "known right or privilege," and "[a] right that cannot be waived cannot be forfeited by other means").

Further, if the Court goes on to reverse the severance remedy, then this case would involve precisely the sort of intervening change of law to which the exception applies. Before *Arthrex*, the Federal Circuit had characterized the administrative patent judges as "subordinate officers" to whom the Director could delegate his authority to institute inter partes reviews. *Ethicon Endo-Surgery, Inc. v. Covidien LP*, 812 F.3d 1023, 1032 (Fed. Cir. 2016). In fact, prior to its decision in Arthrex, the Federal Circuit had repeatedly reaffirmed that view—by summary affirmance—and rejected the very same Appointments Clause challenge it ultimately accepted in *Arthrex*. *See Trading Techs. Int'l, Inc. v. IBG LLC*, 771 F. App'x 493 (Fed. Cir. 2019) (summary affirmance rejecting Appointments Clause challenge); *Bedgear, LLC v. Fredman Bros. Furniture Co.*, 779 F.

App'x 748 (Fed. Cir. 2019) (summary affirmance rejecting Appointments Clause challenge); *In re DBC*, 545 F.3d 1373, 1380 (Fed. Cir. 2008) (holding that Congress's 2008 vesting of appointment authority in the secretary of Commerce "eliminat(ed) the issue of unconstitutional appointments going forward"), cert. denied, 558 U.S. 816 (2009). Even this Court has denied *certiorari* in a case presenting the same Appointments Clause question. *Smartflash LLC v. Samsung Elecs. Am., Inc.*, 139 S. Ct. 276 (2018); Petition for Writ of Certiorari at 18, Smartflash LLC, No. 18-189, 2018 WL 3913634 (U.S. Aug. 9, 2018).

Therefore, it was not apparent that it would have been appropriate, much less fruitful, for Immunex to raise an Appointments Clause challenge in its opening brief. And granting Arthrex the relief it seeks would require reconsideration of the Federal Circuit's forfeiture rule. If *SAS Institute*'s alteration of the institution process constitutes a change in law that avoided an opening brief rule, then reconsideration of the entire proceeding here also must qualify. *See SAS Institute, Inc. v. Iancu*, 138 S. Ct. 1348, 1359-60 (2018).

III. THE COURT SHOULD HOLD THIS PETITION PENDING DISPOSITION OF *ARTHREX*.

The Court should hold this petition pending resolution of *Arthrex*. The Court's disposition of *Arthrex* will affect the proper disposition of this case. For example, if the Court holds—as Arthrex and Immunex have argued—that the *Arthrex* court correctly found an Appointments Clause violation,

but that its severance remedy was impermissible, then administrative patent judges have been and will remain improperly appointed principal officers who could not have lawfully presided over inter partes review proceedings. The entire inter partes review statute would be unconstitutional. This would include 35 U.S.C. § 318(a), which directs the Board to issue final written decisions, and § 318(b), which requires the Director of the Patent Office to issue a certificate cancelling the claims found by the Board to be unconstitutional.

Here, pending final resolution of Immunex's appeal, the Patent Office has not yet issued a certificate under §318(b) cancelling Immunex's claims. Nor should it if this Court holds this petition pending its disposition of *Arthrex*.

Holding this petition pending this Court's disposition of the Appointments Clause issue will ensure that the proceedings comply with the Constitution and the relevant statutes. This petition should thus be held pending resolution of *Arthrex* and then disposed of accordingly. *See, e.g.*, *Emerson Elec. Co. v. Sipco, LLC*, 2020 WL 3146672, at *1 (U.S. June 15, 2020) (granting, vacating, and remanding after holding petition pending the Court's disposition of *Thryv, Inc. v. Click-To-Call Techs., LP*, 140 S. Ct. 1367 (2020)).

CONCLUSION

The petition for a writ of certiorari should be held pending this Court's disposition of the petitions for a writ of certiorari in *Arthrex* and any further proceedings in this Court, and then disposed of as appropriate in light of the Court's decision in *Arthrex*. In the alternative, the petition for a writ of certiorari should be granted.

Respectfully submitted,

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APPENDICES

APPENDIX A

United States Court of Appeals
for the Federal Circuit

IMMUNEX CORPORATION,

Appellant

v.

SANOFI-AVENTIS U.S. LLC, GENZYME CORPORATION, REGENERON PHARMACEUTICALS, INC.,
Cross-Appellants

ANDREI IANCU, UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE,
Intervenor

2019-1749, 2019-1777

Appeals from the United States Patent and Trademark Office, Patent Trial and Appeal Board in Nos. IPR2017-01879, IPR2017-01884.

Decided: October 13, 2020

ELDORA ELLISON, Sterne Kessler Goldstein & Fox, PLLC, Washington, DC, argued for appellant. Also represented by DAVID HOLMAN, DAVID WILLIAM ROADCAP, JON WRIGHT.

LAUREN FORNAROTTO, McKool Smith, P.C., New York, NY, argued for cross-appellants. Also represented by JOHN FRANKLIN GARVISH, II, MATTHEW CAMERON, GEOFFREY SMITH, JOEL LANCE THOLLANDER, Austin, TX; ERIC SORENSEN HANSEN, MIKE MCKOOL, Dallas, TX; NOAH SAMUEL FRANK, GEORGE W. HICKS, JR., NATHAN S. MAMMEN, Kirkland & Ellis LLP, Washington, DC.

FRANCES LYNCH, Office of the Solicitor, United States Patent and Trademark Office, Alexandria, VA, argued for intervenor. Also represented by SARAH E. CRAVEN, THOMAS

W. KRAUSE, FARHEENA YASMEEN RASHEED.

Before PROST, Chief Judge, REYNA and TARANTO, Circuit Judges.

PROST, Chief Judge.

This is a consolidated appeal from two Patent Trial and Appeal Board ("Board") decisions in inter partes reviews ("IPRs") of U.S. Patent No. 8,679,487 ("the

'487 patent"), owned by Immunex Corp. ("Immunex"). Sanofi-Aventis U.S. LLC, Genzyme Corp., and Regeneron Pharmaceuticals, Inc. (collectively, "Sanofi") challenged the '487 patent, which covers isolated human antibodies that bind the hu-man interleukin-4 receptor. The Board invalidated all challenged claims in one of the IPRs, No. IPR2017-01884. Immunex appeals, contesting the construction of the claim term "human antibodies." In the other IPR, No. IPR2017-01879, involving a subset of the same claims, the Board did not invalidate the patents for reasons of inventorship. Sanofi appeals, contesting the Board's inventorship determination. We consolidated the cases in the nature of an appeal and a cross-appeal. For the reasons below, we agree with the Board's claim construction in No. IPR2017-01884 (here, "the appeal"). Accordingly, we affirm that invalidity decision. Because this leaves valid no claims at issue in the second IPR, we dismiss Sanofi's inventorship appeal from No. IPR2017-01879 (here, the "cross-appeal").

BACKGROUND

I

The '487 patent is directed to antibodies that bind to the human interleukin-4 ("IL-4") receptor, the resulting inhibition of which is significant for treating various inflammatory disorders, such as arthritis, dermatitis, and asthma. *See* '487 patent col. 3 ll. 15–31; J.A. 3–4.

Claim 1 reads:

> An isolated *human antibody* that competes with a reference antibody for binding to

> human IL-4 interleukin-4 (IL-4) receptor, wherein the light chain of said reference antibody comprises the amino acid sequence of SEQ ID NO:10 and the heavy chain of said reference antibody comprises the amino acid sequence of SEQ ID NO:12.

'487 patent (emphasis added). This appeal concerns what "human antibody" means in this patent.

First, the relevant science. Antibodies are proteins. Like all proteins, they are composed of numerous individual amino acids chained together in a particular sequence. Antibodies are roughly Y-shaped, made of four chains—two "heavy" and two "light." Each chain can be further divided into a "variable region" and a "constant region." And each variable region contains three relatively small "complementarity-determining regions" (CDRs) situated at the tips of the Y. The remainder of the variable regions are the "framework regions."

Particular antibody regions have particular biological implications. For instance, it is primarily the CDRs that give an antibody its ability to bind selectively to specific targets (i.e., antigens), despite making up just a sliver of its structure. *See* J.A. 1501, 7042–43. To that end, an antibody's exact amino acid sequence determines what the antibody binds to, which affects the antibody's therapeutic usefulness. The amino acid sequence of an antibody also determines whether the human immune system recognizes and rejects it as "non-human." Amino acid sequences that are human in origin—that is, sequences "consistent with the amino acid sequences of antibodies produced naturally by the human

immune system," *see* Appellant's Br. 4—can avoid triggering immune responses.

Early efforts at therapeutic antibody development started with mice. For example, researchers could inject a mouse with an antigen, the mouse would generate antibodies to the antigen, and those antibodies would be harvested. In that case, the entire amino acid sequence was murine (i.e., from mice). These antibodies, disappointingly, tended to plague patients with "undesirable and harmful immune reactions." *See* Appellant's Br. 7–8. Too much of each antibody was "mouse" in origin, to the consternation of the human immune system.

Through various techniques, the proportion of an antibody that is recognized as "mouse" can be decreased. In "chimeric" antibodies, for instance, the constant regions tend to be human in origin, and the variable regions, including the CDRs, tend to be nonhuman—making the antibodies' amino acid sequences *mostly* human in origin. Appellant's Br. 8–9. In "humanized" antibodies, *only* the CDRs are nonhuman—the antibodies' amino acid sequences, including the portions responsible for immune reaction, are *almost entirely* human in origin.[1] Further, fully human antibodies can be made in which even the CDRs are human in origin.

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[1] One of Immunex's examples describes the amino acid sequences of a "chimeric" antibody as 66% human and a "humanized" antibody as 97% human. Appellant's Br. 8.

Here, some of the disclosed embodiments are "partially human" and some are "completely human." E.g., '487 patent col. 19 ll. 38–44, col. 21 ll. 6–14. Among the former, the specification's embodiments specifically include humanized and chimeric antibodies. *Id.* at col. 18 ll. 36–37, col. 19 ll. 21–37.

The claim construction dispute is this: in the context of this patent, must a "human antibody" be *entirely* human? Or may it also be "partially human," including "humanized"?

II

Amid infringement litigation, Sanofi filed three IPR petitions challenging claims 1–17 of the '487 patent. Two were instituted.

In one final written decision, the Board concluded that claims 1–17 were unpatentable as obvious over two references, Hart and Schering-Plough. *Sanofi-Aventis v. Immunex*, No. IPR2017-01884, Paper 96, 2019 WL 643041 (P.T.A.B. Feb. 14, 2019) ("*Final Written Decision*").

Hart describes a commercially available murine antibody that purportedly meets all the limitations of claim 1— except that it is fully murine, not human at all. *Final Written Decision*, 2019 WL 643041, at *7–8. But Schering-Plough teaches humanizing such murine antibodies by "grafting" their CDRs onto an otherwise fully human antibody. *Id.* Sanofi therefore argued that the claims were obvious in light of the humanized antibody that would result from this combination. Further, Sanofi argued in a second obviousness ground that the gap between "humanized" and "fully human" could be closed using

the teachings of a third reference, Hoogenboom. J.A. 1095. The Board reached only the first ground, finding that the "humanized" antibody met its construction of "human antibody." *Final Written Decision*, 2019 WL 643041, at *9, *12. On appeal, Immunex insists only that the Board erred in this construction.

In the second final written decision, the Board concluded that Sanofi had not shown by a preponderance of the evidence that claims 1–14, 16, and 17 were anticipated by one of Immunex's own publications. *Sanofi-Aventis v. Immunex*, No. IPR2017-01879, Paper 88 (P.T.A.B. Feb. 14, 2019). Sanofi appealed, contending that the Board erred in determining that the disclosure was not § 102(e) prior art "by another." We consolidated Immunex's appeal and Sanofi's appeal in the nature of an appeal and a cross-appeal, respectively. *See* Order (July 10, 2019), ECF No. 21.

We have jurisdiction under 28 U.S.C. § 1295(a)(4)(A).

DISCUSSION

I

First, we consider the applicable claim construction standard in light of a post-briefing terminal disclaimer.

After appellate briefing was complete, Immunex filed with the Patent and Trademark Office ("PTO") a terminal disclaimer of its patent. The PTO promptly accepted it, and Immunex's patent therefore expired

on May 26, 2020, just over two months before oral argument.

Immunex then filed a citation of supplemental authority under Federal Rule of Appellate Procedure 28(j), apprising us of (but not explaining the reason for) its terminal disclaimer and asking us to change the applicable claim construction standard. *See* Citation of Suppl. Authority (Apr. 10, 2020), ECF No. 66. Sanofi and the PTO insist that Immunex has waived the *Phillips* issue. We need not reach waiver, determining for the following reasons that the BRI standard applies.

Today, in all newly filed IPRs, the Board applies the *Phillips* district-court claim construction standard. 37 C.F.R § 42.100(b) (2020); *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc).[2] But when Sanofi filed its IPRs, the Board applied this standard only to expired patents. To unexpired patents, it applied the broadest reasonable interpretation ("BRI") standard. 37 C.F.R. § 42.100(b) (2016); *In re CSB–Sys. Int'l, Inc.*, 832 F.3d 1135, 1341–42 (Fed. Cir. 2016). Immunex, with its letter, now urges us to apply *Phillips*, citing *Wasica Finance GmbH v. Continental Automotive Systems, Inc.*, 853 F.3d 1272, 1279 (Fed. Cir. 2017), and *In re CSB–System International*, 832 F.3d 1335. But unlike here,

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[2] *See* Changes to the Claim Construction Standard for Interpreting Claims in Trial Proceedings Before the Patent Trial and Appeal Board, 83 Fed. Reg. 51,340 (Oct. 11, 2018) (codified at 37 C.F.R. pt. 42). The new standard applies only to petitions filed on or after November 13, 2018.

the patents in *Wasica* and *CSB* had expired before the Board's decision.

We have also applied the *Phillips* standard when a patent expired on appeal. *See* PTO Resp. Letter (Apr. 30, 2020), ECF No. 72 (citing *Apple Inc. v. Andrea Elecs. Corp.*, 949 F.3d 697, 707 (Fed. Cir. 2020)). But we do not read *Andrea Electronics* to mean that whenever a patent expires on appeal, at any time and for any reason, *Phillips* applies. In *Andrea Electronics*, the patent's term expired as expected. It was not cut short by a litigant's terminal disclaimer. And, importantly, the expected expiration happened before appellate briefing began. The parties knew this at the outset, as the expiration date was part of the record before the Board, and were able to fully brief the consequences. Not so here, where the patentee shortened the term abruptly after the parties had already fully briefed claim construction under the BRI standard.[3]

This court "shall review the decision from which an appeal is taken on the record before the Patent and Trademark Office." 35 U.S.C. § 144. Our predecessor court has refused to consider terminal disclaimers filed after the Board's decision. *In re Thorington*, 418

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[3] Further, Immunex did not request further briefing on the implications of a possible pivot to *Phillips*. And beyond noting that a district court has already more narrowly construed the claim term at issue (albeit not in a final judgment), it did not advance any argument that our review should come out differently under *Phillips*.

F.2d 528, 533–34 (CCPA 1969); *In re Heyl*, 379 F.2d 1018 (CCPA 1967). In this situation, we do the same.

Accordingly, in this case we will review the Board's claim construction under the BRI standard.

II

Next, we address the Board's claim construction. Immunex contends that the Board erred by construing the term "human antibody" to encompass not only "fully human" but also "partially human" antibodies.

Claim 1 of the '487 patent recites a "human antibody." The Board determined that the BRI of "human antibody" "includes both fully human and partially human antibodies." *Final Written Decision*, 2019 WL 643041, at *7. As relevant to its obviousness rejection, the Board's construction includes "humanized" antibodies. *Id.* at *9. According to Immunex, however, "humanized" is not "human." For the reasons below, we disagree with Immunex and agree with the Board.

A

We review the Board's claim construction de novo and any underlying factual findings for substantial evidence. *Kaken Pharm. Co. v. Iancu*, 952 F.3d 1346, 1350 (Fed. Cir. 2020) (citing *Teva Pharms. USA, Inc. v. Sandoz, Inc.*, 574 U.S. 318 (2015); *Wasica*, 853 F.3d at 1278). In this case, claim terms are given their "broadest reasonable construction in light of the specification of the patent." 37 C.F.R. § 42.100(b) (2016); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2142 (2016).

We review the Board's claim construction according to the Supreme Court's decision in *Teva*. Accordingly, we review the Board's evaluation of the intrinsic record de novo. *See Teva*, 574 U.S. at 331; *Knowles Elecs. LLC v. Cirrus Logic, Inc.*, 883 F.3d 1358, 1361–62 (Fed. Cir. 2018). But "[w]e review underlying factual determinations concerning extrinsic evidence for substantial evidence." *In re Cuozzo Speed Techs., LLC*, 793 F.3d 1268, 1279–80 (Fed. Cir. 2015), *aff'd sub nom. Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131 (2016); *Teva*, 574 U.S. at 331–32; *Knowles*, 883 F.3d at 1361–62.

B

First, we turn to the intrinsic record. *Personalized Media Commc'ns, LLC v. Apple Inc.*, 952 F.3d 1336, 1340 (Fed. Cir. 2020) ("When construing claim terms, we first look to, and primarily rely on, the intrinsic evidence, including the claims themselves, the specification, and the prosecution history of the patent, which is usually dispositive." (quoting *Sunovion Pharms., Inc. v. Teva Pharms. USA, Inc.*, 731 F.3d 1271, 1276 (Fed. Cir. 2013))). As discussed below, the intrinsic evidence supports the correctness of the Board's construction.

1

We begin claim construction by looking to the language of the claim itself. *Allergan Sales, LLC v. Sandoz, Inc.*, 935 F.3d 1370, 1374 (Fed. Cir. 2019). But nothing in the claim's language restricts "human antibodies" to those that are fully human. This is not surprising: antibodies, amid a rapidly evolving

scientific background, are a frequent subject of claim-construction disputes that stretch beyond plain meaning. *E.g.*, *Baxalta Inc. v. Genentech, Inc.*, 972 F.3d 1341, 1345–49 (Fed. Cir. 2020) (construing "antibody"); *UCB, Inc. v. Yeda Rsch. & Dev. Co.*, 837 F.3d 1256, 1259–61 (Fed. Cir. 2016) (construing "monoclonal anti body"); *Biogen Idec, Inc. v. GlaxoSmithKline LLC*, 713 F.3d 1090, 1095–97 (Fed. Cir. 2013) (construing "anti-CD20 antibody"). Nor is the claim context helpful, as the dependent claims provide no further guidance.

Accordingly, we consult the rest of the intrinsic record. Indeed, the specification is key—it is "highly relevant to the claim construction analysis" and the "single best guide to the meaning of a disputed term." *Phillips*, 415 F.3d at 1315 (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)); *see also In re Translogic Tech., Inc.*, 504 F.3d 1249, 1256–58 (Fed. Cir. 2017) (endorsing *Phillips* "best practices" in the BRI context).

Many patentees *do* expressly define "human antibody." *See, e.g.*, *Abbott GbmH & Co. v. Centocor Ortho Biotech, Inc.*, 870 F. Supp. 2d 206, 247 (D. Mass. 2012) (noting ex press definition of "human antibody"). Here, however, we are without an express definition. But the usage of "human" throughout the specification confirms its breadth.

The specification contrasts "partially human" with "fully" or "completely human." *E.g.*, '487 patent col. 19 ll. 41–44, col. 20 ll. 57–60, col. 21 ll. 1–2. For example, the specification states that "[a]ntibodies of the invention include, but are not limited to, partially human (preferably fully human) monoclonal antibodies." *Id.* at col. 20 ll. 57–60. And elsewhere, it

notes that "[t]he desired antibodies are at least partially human, and preferably fully human." *Id.* at col. 19 ll. 41–44.

Still further, the specification reads:

> A method for producing an antibody comprises immunizing a non-human animal, such as a transgenic mouse, with an IL-4R polypeptide, whereby antibodies directed against the IL-4R polypeptide are generated in said animal. Procedures have been developed for generating *human antibodies* in non-human animals. *The antibodies* may be partially human, or preferably completely human.

'487 patent col. 19 ll. 38–44 (emphases added). Again, here the specification makes clear that "human antibodies" is a broad category encompassing both partially and completely human antibodies.[4]

Immunex disagrees with this reading: it protests that the phrase "the antibodies," as italicized above, refers not to "human antibodies"—one sentence

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[4] Immunex, disagreeing that "fully" was necessary to convey an antibody's "completely human" nature, quotes approvingly a district court's remark in the accompanying litigation that "when human" nature, quotes approvingly a district court's remark in the accompanying litigation that "when one purchases . . . a German Shepherd, one assumes, absent further context, that the seller will not deliver . . . a poodle-Shepherd mix." Appellant's Br. 24 (quoting J.A. 9035). But to the extent that canine metaphors are apt, more on the nose is that "brown dogs" plainly include "partially brown" dogs, such as a mostly brown dog with a white spot.

back—but to "antibodies directed against the IL-4R polypeptide"—two sentences back. We are unpersuaded. Immunex's proposed interpretation would contort the logical and grammatical reading of the passage.

The specification also repeatedly clarifies that *some* "human" antibodies are "fully human":

> Examples of antibodies produced by immunizing such transgenic mice are the *human monoclonal antibodies* designated 6-2 (described in example 6); 12B5 (described in example 8); and MAbs 63, 1B7, 5A1, and 27A1 (all described in example 9). Monoclonal antibodies 6-2, 12B5, 63, 1B7, 5A1, and 27A1 *are fully human antibodies*, and are capable of inhibiting activity of both IL-4 and IL-13.

'487 patent col. 21 ll. 6–13 (emphases added); *see also id.* at col. 43 ll. 26–27 ("[Antibody] 12B5 was determined to be an IgG1 antibody, and to be *fully* human." (emphasis added)). If "human antibodies" were already understood to mean "fully human," no clarification would be necessary. This usage confirms that a reader would take "human monoclonal antibodies" to be broader.

Consistent with this usage, the abstract and the summary each simply refer to "human" antibodies. *See* '487 patent Abstract ("Particular antibodies provided herein include human monoclonal antibodies generated by procedures involving immunization of transgenic mice. Such human antibodies may be raised against human IL-4 receptor."); *id.* at col. 2 ll. 42–46 ("Particular antibodies

provided herein include human monoclonal antibodies generated by procedures involving immunization of transgenic mice. Such human antibodies may be directed against human IL-4 receptor, for example.").

Accordingly, the language of the specification confirms a broadest reasonable interpretation of "human antibodies" that includes those that are partially human—including "humanized" antibodies.

2

Next, we turn to the prosecution history. The Board found the prosecution history to be "equivocal, at best." *Final Written Decision*, 2019 WL 643041, at *6. Immunex insists that the Board undervalued the prosecution history. Appellant's Br. 32. We agree—here the prosecution history is relevant and informative. But it supports the Board's construction.

First, we note that Immunex used both "fully human" and "human" within the same claim set in another patent application in the same family.[5] "[T]he prosecution of related patents may be relevant to the construction of a given claim term." *Teva Pharms. USA, Inc. v. Sandoz, Inc.*, 789 F.3d 1335, 1343 n.5 (Fed. Cir. 2015). And here, Immunex

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[5] One claim read: "An isolated antibody that competes for binding to human IL-4 receptor with a fully human control antibody . . . ." J.A. 6086 (emphasis added). A dependent claim then recited: "The isolated antibody . . . wherein said isolated antibody is a human . . . antibody." J.A. 6087 (emphasis added).

provides no convincing explanation for its simultaneous use of the two terms beyond what is apparent: they are not interchangeable.

Second, "there is a strong presumption against a claim construction that excludes a disclosed embodiment." *Nobel Biocare Servs. AG v. Instradent USA, Inc.*, 903 F.3d 1365, 1381 (Fed. Cir. 2018) (quoting *In re Katz Call Processing Pat. Litig.*, 639 F.3d 1303, 1324 (Fed. Cir. 2011)). We noted above that the specification's embodiments include partially human antibodies—both humanized and chimeric. And the prosecution history here illustrates why the presumption against their exclusion from the claims is not overcome.

As initially filed, claim 1 recited simply "an isolated antibody." J.A. 2409. The word "human" was added later, at the same time that dependent claim 11, which recited "a human, partially human, humanized, or chimeric antibody," was canceled.[6] J.A. 2233–34. Immunex does not dispute that its originally filed claim covered humanized and chimeric embodiments as well as fully human ones.

Immunex suggests instead that the amendment "surrender[ed]" the partially human embodiments. *E.g.*, Appellant's Br. 26; *see also id.* at 36 (arguing that Immunex "unambiguously amended the claims

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[6] Immunex insists that the Board incorrectly "perceived an overlap between claim terms ['human' and 'partially human'] when there is no evidence supporting such overlap." Appellant's Br. 39. We are unconvinced. Indeed, most of the claim terms overlap. The list also included "humanized" and "chimeric"; these overlap with "partially human."

to remove antibodies that are not fully human"). We disagree. "Because the claim language does not require the exclusion of those embodiments, and there is no basis in the intrinsic record for excluding them," Immunex "has not overcome [the] presumption" against their exclusion. *Nobel Biocare*, 903 F.3d at 1381; *see also, e.g.*, *Baxalta*, 972 F.3d at 1348 ("[D]isavowal must be clear and unmistakable.").

As the Board noted, "human" was added to overcome an anticipating reference that disclosed *nonhuman* murine antibodies—a far cry from "humanized" antibodies. *Final Written Decision*, 2019 WL 643041, at *5; Appellee's Br. 45–46.[7]

We agree with the Board that nothing indicates that Immunex added "human" to limit the scope to *fully* human. There was no apparent need to do so in light of the rejection, and no evidence that anyone understood Immunex to be casting aside subject matter that was not at issue. *Final Written Decision*, 2019 WL 643041, at *5–6.

Immunex points out that the examiner subsequently issued a new obviousness rejection, combining Mosley with Jakobovits's "fully human" antibodies. As Immunex argues, the examiner must have understood human antibodies to mean only "fully human" antibodies because the examiner "repeatedly referred to 'fully human' antibodies while describing Jakobovits." *See* Appellant's Br. 34. But this argument shows only that "fully human"

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[7] Immunex did not dispute this characterization of the Mosley rejection by Sanofi or the Board.

antibodies are "human," which is undisputed. Further, given that Jakobovits *itself* uses the term "fully human" to describe its own disclosure,[8] we decline to treat as significant the examiner's adoption of that term in making the rejection. Nothing supports reading Immunex's claim as limited to fully human antibodies just because the particular combination of prior art used to reject it included antibodies that were fully human.

Third, in a post-amendment office action, the examiner expressly wrote that the amended "human" antibodies encompassed "humanized" antibodies. J.A. 2211. Immunex suggests without substantiation that this was a "copy and paste error." *See* Appellant's Br. 36. But if so, Immunex made no effort to disabuse the examiner of this understanding. And, while hardly dispositive, this uncontested characterization is consistent with the Board's construction.

Accordingly, the prosecution history also supports the Board's construction.

C

Next, we address the role of extrinsic evidence in the Board's construction.

Immunex argues that the Board "failed to establish how a person of ordinary skill in the art would have understood the term 'human antibody.'" Appellant's Br. 47. That is, Immunex contends that

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[8] Jakobovits begins: "The ability to produce a diverse repertoire of fully human monoclonal antibodies (mAbs) may have significant applications to human therapy." J.A. 6452.

the Board did not adequately consult its extrinsic evidence—its experts' testimony, product catalogs, and a selection of journal articles—to establish whether "human antibody" had an established meaning to a person of ordinary skill in the art, independent of the specification. We disagree.

It is true that we seek the meaning of claim terms from the perspective of the person of ordinary skill in the art. The key, however, is that we look to how that person would have understood a term *in view of the specification*. *See, e.g.*, *In re Am. Acad. of Sci. Tech Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004) ("[C]laims are to be given their broadest reasonable interpretation consistent with the specification, and claim language should be read in light of the specification as it would be interpreted by one of ordinary skill in the art." (cleaned up)).

While extrinsic evidence may sometimes illuminate a well-understood technical meaning, *Teva*, 574 U.S. at 331–32, that does not mean that litigants can introduce ambiguity in a way that disregards language usage in the patent itself. The patent drafter controls the content of the specification, writes the claims, and responds to office actions. The drafter, then, is in the best position to anticipate ambiguity or questions of scope and to write the patent accordingly. Indeed, we give the intrinsic evidence "priority," *see, e.g.*, *Knowles*, 883 F.3d at 1361–62, over extrinsic evidence with which it is "inconsistent," *Tempo Lighting, Inc. v. Tivoli, LLC*, 742 F.3d 973, 977 (Fed. Cir. 2014) (emphasis omitted); *see, e.g.*, *Celgene Corp. v. Peter*, 931 F.3d 1342, 1350–51 (Fed. Cir. 2019) (holding that the Board "was correct to not allow the extrinsic evidence, including

expert testimony, to trump the persuasive intrinsic evidence" (cleaned up)).

Immunex's extrinsic evidence included the testimony of its two experts, who discussed their views in light of a handful of journal articles, catalogs, and other documents. The Board cited this evidence, and clearly considered it. *Final Written Decision*, 2019 WL 643041, at *6–7. But the Board found nothing credible to call its interpretation into question. To the contrary, it credited a prior art reference and expert testimony that were squarely consistent with "humanized" being understood as a subset of "human." *See id.* at *6 (citing J.A. 5099–100 ¶¶ 9–10 as "Ex. 1477").[9] To the extent that the Board credited this evidence, and therefore necessarily rejected Immunex's conflicting evidence, we owe it deference. *See Teva*, 574 U.S. at 331–32.

At any rate, the intrinsic evidence here decides the issue. Extrinsic evidence may be of assistance if the intrinsic record is equivocal, leaving us looking for further guidance. *See Helmsderfer v. Bobrick Washroom Equip., Inc.*, 527 F.3d 1379, 1382 (Fed. Cir. 2008). But here, the meaning of "human antibody" as discerned from the intrinsic evidence squarely

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[9] Immunex belittles this reference, Riechmann, published in 1988 in the prominent journal Nature, as being "long-outdated" by 2001. Appellant's Br. 54–55. Nonetheless, Riechmann, being cited in the specification, is intrinsic evidence. See V-Formation, Inc. v. Benetton Grp. SpA, 401 F.3d 1307, 1310–11 (Fed. Cir. 2005). Immunex does not contest that Riechmann uses "human" to describe antibodies that are other than fully human. Yet Immunex was apparently untroubled by Riechmann's nomenclature when drafting its patent.

conflicts with the meaning that Immunex would distill from its selected extrinsic evidence. *Id.* ("A court may look to extrinsic evidence so long as the extrinsic evidence does not contradict the meaning otherwise apparent from the intrinsic record."). Accordingly, the intrinsic record trumps.

D

Finally, we turn to the matter of the Board's departure from an earlier court's claim construction.

In litigation that prompted this IPR, a district court construed "human" to mean "fully human" only. *See Immunex Corp. v. Sanofi*, No. CV 17-02613 SJO, 2018 WL 6252460, at *12–14 (C.D. Cal. Aug. 24, 2018). That claim construction order issued two months before the oral hearing in this IPR, and the parties discussed it in their briefing and at oral argument before the Board.

The Board did not adopt the district court's construction. After conducting a full analysis of the parties' arguments, the Board concluded that it reached a different interpretation "based on the broader applicable case law." *Final Written Decision*, 2019 WL 643041, at *7.

Immunex chides the Board for not explaining more fully its departure from the district court's narrower *Phillips*-based construction. Citing *Power Integrations, Inc. v. Lee*, 797 F.3d 1318, 1326 (Fed. Cir. 2015), Immunex contends that the Board must explain in detail why, under a broader legal standard, it reaches a broader construction than a district court does.

The Board's misstep in *Power Integrations*, however, was not merely failing to explain the difference between a *Phillips* construction and the BRI. Rather, the Board there both "failed to acknowledge the district court's claim construction" and "devoted a substantial portion of its analysis" to an issue not raised by the parties, focusing on a "red herring" and failing to adequately address the *substance* of the patentee's primary argument. *Id.* at 1324–25; *see also id.* at 1323 (stating that the Board "fundamentally misconstrued [the] principal claim construction argument"). Indeed, the problem was not that the Board's construction was broader. Rather, the Board had left unaddressed a specific interpretive aspect of the claim term upon which its anticipation determination was based, stymying review. *See id.* at 1325 (concluding that the Board's opinion "provides . . . an inadequate predicate upon which to evaluate its decision to reject claim 1 . . . as anticipated").

Regardless, in *Power Integrations* we reiterated that the Board "is not generally bound by a previous judicial construction of a claim term." *Id.* at 1326; *see also Mayne Pharma Int'l Pty. Ltd. v. Merck Sharp & Dohme Corp.*, 927 F.3d 1232, 1242 (Fed. Cir. 2019) ("[W]e are not persuaded that the Board erred in discounting the district court's construction because the court construed the claims under the narrower, *Phillips* standard."). And we emphasized that the Board need not "in all cases assess a previous judicial interpretation of a disputed claim term." *Power Integrations*, 797 F.3d at 1327. Rather, we require the Board to provide "reasoning in sufficient detail to permit meaningful appellate review." *Id.* And the Board's opinion was sufficiently detailed to permit

meaningful appellate review. We conclude that the Board did not err by not saying more.

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In summary, the Board's construction was correct. Accordingly, we affirm the Board's invalidity judgment predicated on that claim construction.

III

Last, we turn to Sanofi's cross-appeal. Sanofi had alleged in its petition for IPR2017-01879 that certain claims of the '487 patent were anticipated by the disclosure of mAb 6-2, an isolated human antibody, in an earlier publication of Immunex's. That reference, U.S. Patent Application Publication No. 2002/0002132 ("the '132 publication"), is within the same prosecution family as the '487 patent. But Sanofi contested the listed inventorship, insisting that mAb 6-2 was invented "by another"—namely, by research technician Norman Boiani, not the '487 patent's inventors—and therefore that the this disclosure was prior art under § 102(e). The Board disagreed, concluding that Mr. Boiani was not an inventor of mAb 6-2. Sanofi cross-appeals this determination.

Because we affirm the Board's invalidity judgment in the other IPR, which implicates the same claims, it is unnecessary to reach this issue.

CONCLUSION

We have considered the parties' other arguments but find them unpersuasive.[10] For the foregoing reasons, we affirm the Board's judgment holding the '487 patent invalid as obvious. We dismiss the cross-appeal.

AFFIRMED-IN-PART, DISMISSED-IN-PART

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[10] Additionally, in its reply brief, Immunex raised an Appointments Clause challenge to the Board's authority, citing *Arthrex* and asking us to vacate and remand accordingly. *See Arthrex, Inc. v. Smith & Nephew, Inc.*, 941 F.3d 1320 (Fed. Cir. 2019). But under *Customedia Technologies, LLC v. Dish Network Corp.*, 941 F.3d 1173, 1174 (Fed. Cir. 2019), failure to raise this challenge in the opening brief constitutes forfeiture.

APPENDIX B

Paper No. 88
Entered: February 14, 2019

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SANOFI-AVENTIS U.S. LLC, GENZYME CORP., and REGENERON PHARMACEUTICALS, INC.,
Petitioner,
v.
IMMUNEX CORPORATION,
Patent Owner.

Case IPR2017-01879
Patent 8,679,487 B2

Before JAMES T. MOORE, GRACE KARAFFA OBERMANN, and TINA E. HULSE, Administrative Patent Judges.
HULSE, Administrative Patent Judge.

FINAL WRITTEN DECISION

35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

Sanofi-Aventis U.S. LLC, Genzyme Corp., and Regeneron Pharmaceuticals, Inc. (collectively, "Petitioner") filed a Petition requesting an *inter partes* review of claims 1–14, 16, and 17 of U.S. Patent No. 8,679,487 B2 (Ex. 1001, "the '487 patent"). Paper 1 ("Pet."). Immunex Corporation ("Patent Owner") filed a Preliminary Response to the Petition. Paper 10 ("Prelim. Resp."). With our authorization, Petitioner filed a Reply to the Preliminary Response (Paper 13), and Patent Owner filed a Surreply (Paper 15). On February 15, 2018, we instituted an *inter partes* review of claims 1–14, 16, and 17 on one anticipation ground. Paper 19 ("Dec. Inst."), 15.

Patent Owner filed a response to the Petition. Paper 35 ("PO Resp."). Petitioner filed a Reply. Paper 49 ("Reply"); Paper 86 (public version). With our authorization, Patent Owner filed a Surreply (Paper 63, "Surreply"), and Petitioner filed a Sur-Surreply (Paper 72, "Sur-surreply").

The parties also filed motions to exclude certain evidence. Paper 60 (Patent Owner's motion); Paper 65 (Petitioner's motion). The parties filed responsive papers to those motions. Paper 70 (Petitioner's opposition); Paper 77 (Patent Owner's reply); Paper 68 (Patent Owner's opposition); Paper 76 (Petitioner's reply).

An oral hearing was held on November 14, 2018, a transcript of which has been entered in the record. Paper 82 ("Tr.").

We have authority under 35 U.S.C. § 6(c). This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73.

For the reasons that follow, we determine Petitioner has not shown by a preponderance of the evidence that claims 1–14, 16, and 17 of the '487 patent are unpatentable over the reference asserted here.

A. Related Proceedings

Patent Owner has asserted the '487 patent against Petitioner in a pending lawsuit styled *Immunex Corp. v. Sanofi*, No. 2:17-cv-02613 (C.D. Cal., filed April 5, 2017). Pet. 9; Paper 7, 2.

Petitioner also filed a petition for *inter partes* review of the '487 patent on different grounds in IPR2017-01884. Pet. 9; Paper 7, 2. We instituted trial and enter a Final Written Decision in that proceeding concurrently with this decision.

Patent Owner also identifies certain applications and patents that "claim or may claim the benefit of the priority of the filing date of [the '487 patent]." Paper 7, 1–2.

B. The '487 Patent

The '487 patent relates to compositions and methods for treating certain conditions induced by interleukin-4 (IL-4) by administering an IL-4 antagonist to a patient with such a condition. Ex. 1001, 3:9–14. IL-4 has a broad spectrum of biological activities, including growth co-stimulation of T cells,

mast cells, granulocytes, megakaryocytes, and erythrocytes. *Id.* at 1:29–36. IL-4 binds to specific cell surface receptors called interleukin-4 receptors (IL-4R). *Id.* at 1:49–51. Binding of IL-4 to IL-4R results in transduction of a biological signal to cells, including various immune effector cells. *Id.* IL-4 has been implicated in a number of disorders, including allergy and asthma. *Id.* at 2:1–2, 4:11–31.

Different IL-4 antagonists may act at different sites or by different mechanisms of action. *Id.* at 10:47–48. According to the '487 patent, examples include antagonists that interfere with binding of IL-4 to cell surface receptors or that inhibit signal transduction. *Id.* at 10:48–50. The site of action may be intracellular, on a cell surface, or extracellular. *Id.* at 10:50–53. Antagonists may bind to either IL-4 or to the receptor. *Id.* at 10:53–54. Examples of IL-4 antagonists include IL-4 receptors, antibodies that bind to IL-4 or IL-4R, other IL-4 binding molecules, and IL-4 muteins. *Id.* at 10:36–38.

Blocking antibodies that interfere with the binding of IL-4 to IL-4R may be raised against either IL-4 or IL-4R. The antibodies can be screened in conventional assays for their ability to interfere with binding of IL-4 to IL-4R. *Id.* at 18:40–45. Because it has been found that IL-4R is a component of certain multi-subunit IL-13 receptor complexes, some antibodies raised against IL-4R may interfere with the binding of IL-13 to those complexes. *Id.* at 18:50–57. Those antibodies may inhibit both IL-4 induced biological activity and IL-13 induced activity and therefore may be used in treating conditions induced

by either or both cytokines. *Id.* at 18:58–62. Such conditions include IgE-mediated conditions, asthma, allergic conditions, allergic rhinitis, and dermatitis. *Id.* at 18:62–65.

The '487 patent identifies examples of IL-4R human monoclonal antibodies (MAbs) produced by immunizing transgenic mice. The examples are designated MAbs 6-2, 12B5, 63, 1B7, 5A1, and 27A1. *Id.* at 21:6–11. MAbs 12B5, 63, and 1B7 are preferred fully human antibodies capable of inhibiting activity of both IL-4 and IL-13. *Id.* at 21:11–15.

The '487 patent presents the encoded amino acid sequence of the variable region of the light chain MAb 12B5 in SEQ ID NO:10, and of the variable region of the heavy chain in SEQ ID NO:12. *Id.* at 22:36–41.

C. Illustrative Claim

Petitioner challenges claims 1–14, 16, and 17 of the '487 patent, of which claim 1 is the only independent claim. Claim 1 is illustrative and is reproduced below:

> 1. An isolated human antibody that competes with a reference antibody for binding to human IL-4 interleukin-4 (IL-4) receptor, wherein the light chain of said reference antibody comprises the amino acid sequence of SEQ ID NO:10 and the heavy chain of said reference antibody comprises the amino acid sequence of SEQ ID NO:12.

Ex. 1001, 77:26–31.

D. The Asserted Ground of Unpatentability

We instituted trial on the ground that claims 1–14, 16, and 17 of the '487 patent are unpatentable as anticipated by the '132 Publication[1] under 35 U.S.C. § 102(e).[2]

II. ANALYSIS

A. Person of Ordinary Skill in the Art

Petitioner asserts that a person of ordinary skill in the art would have had at least a Ph.D. or an M.D. with research experience in immunology, biochemistry, cell biology, molecular biology, or a related field or at least 2–3 years of professional experience in one or more of those fields. Pet. 22–23. According to Petitioner, such a person would have had an understanding of "how one generates antibodies to a chosen antigen from animals (*e.g.*, mice), and how one isolates human antibodies by generating human antibodies directly from transgenic animals or

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[1] John D. Pluenneke, US 2002/0002132 A1, published Jan. 3, 2002 ("the '132 Publication," Ex. 1016).

[2] The Leahy-Smith America Invents Act ("AIA"), Pub. L. No. 112-29, which was enacted on September 16, 2011, made amendments to 35 U.S.C. § 102. AIA § 3(b). Those amendments became effective eighteen months later on March 16, 2013. Id. § 3(n). Because the application from which the '487 patent issued was filed before March 16, 2013, any citations to 35 U.S.C. § 102 in this Decision are to the pre-AIA version of the statute

transforming animal antibodies into human antibodies." *Id.* at 23 (citing Ex. 1200 ¶ 22). Patent Owner does not address the level of ordinary skill in the art in its Patent Owner Response.

We agree with and adopt Petitioner's uncontested definition of the level of ordinary skill in the art. We further note that the prior art itself corroborates this finding and demonstrates the level of skill in the art at the time of the invention. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (explaining that specific findings regarding ordinary skill level are not required "where the prior art itself reflects an appropriate level and a need for testimony is not shown" (quoting *Litton Indus. Prods., Inc. v. Solid State Sys. Corp.*, 755 F.2d 158, 163 (Fed. Cir. 1985))).

B. Claim Construction

In an *inter partes* review, the Board interprets claim terms in an unexpired patent according to the broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b) (2016);[3] *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2142 (2016) (affirming applicability of broadest reasonable construction

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[3] A recent amendment to this rule does not apply here, because the Petition was filed before November 13, 2018. See "Changes to the Claim Construction Standard for Interpreting Claims in Trial Proceedings Before the Patent Trial and Appeal Board," 83 Fed. Reg. 51,340 (Oct. 11, 2018) (to be codified at 37 C.F.R. pt. 42).

standard to *inter partes* review proceedings). Under that standard, and absent any special definitions, we generally give claim terms their ordinary and customary meaning, as would be understood by one of ordinary skill in the art at the time of the invention. *See In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). Any special definitions for claim terms must be set forth in the specification with reasonable clarity, deliberateness, and precision. *See In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994).

Petitioner proposes constructions for the claim terms "human" and "antibody." Pet. 32–35. Patent Owner asserts that no claim construction is necessary to reach a decision on the Petition. PO Resp. 7.

Based on the arguments and evidence presented during trial, we determine that it is unnecessary to construe any claim terms expressly for purposes of this Decision. *See Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d 1355, 1361 (Fed. Cir. 2011) ("[C]laim terms need only be construed 'to the extent necessary to resolve the controversy.'" (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

C. Anticipation by the '132 Publication

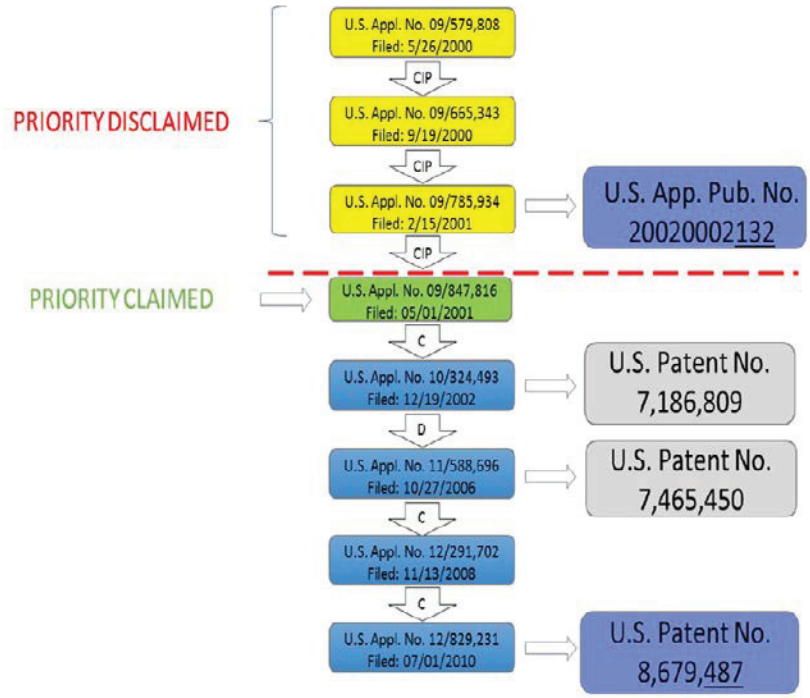
Petitioner asserts that claims 1–14, 16, and 17 of the '487 patent are anticipated by the '132 Publication. Pet. 40–61. Patent Owner opposes Petitioner's assertion. PO Resp. 7–46. Having considered the arguments and evidence presented during trial, we determine that Petitioner has not established by a preponderance of the evidence that

the challenged claims are anticipated by the '132 Publication under 35 U.S.C. § 102(e).

1. The '132 Publication (Ex. 1016)

The '132 Publication, entitled "Use of Interleukin-4 Antagonists and Compositions Thereof," identifies John D. Pluenneke as the sole inventor and is the publication of U.S. Application No. 09/785,934 ("the '934 application"). Ex. 1016, [21], [54], [76]. The '934 application is the parent of U.S. Application No. 09/847,816, to which the '487 patent claims priority. Ex. 1001, [60]. Patent Owner, however, expressly disclaimed priority to the '132 Publication (and the earlier applications) during prosecution of the '487 patent. Ex. 1002, 145.

Petitioner provides an illustration, reproduced below, of the chain of applications leading to the '487 patent, including the disclaimed applications:



Pet. 3. The illustration shows the '816 application is a continuation-in-part of the '132 Publication. Here, the disclosure of the '132 Publication is a subset of that of the '487 patent. *See* Ex. 1203 (redline comparison of the disclosures of the '132 Publication with the '487 patent). For example, the '487 patent adds a portion of Example 6, all of Examples 8 and 9, and the disclosure of SEQ ID NOS: 4–26. Pet. 37 n.6.

In particular, the '132 Publication discloses as Example 6 a hybridoma cell line designated "6-2" that secretes mAb 6-2. Ex. 1016 ¶ 246. Paragraph 246 states:

> One hybridoma cell line generated by procedures described above (see example 4) is designated 6-2. The anti-IL- 4R monoclonal antibody secreted by this hybridoma is a blocking antibody, as determined in a conventional plate binding assay, and thus functions as an IL-4 antagonist. The monoclonal antibody produced by 6-2 also exhibits the ability to reduce an IL-13-induced biological activity.

Id.

2. Analysis

Anticipation requires that "each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *In re Robertson*, 169 F.3d 743, 745 (Fed. Cir. 1999) (citation omitted). "To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill.'" *Id.* (citation omitted).

Regarding claim 1, Petitioner asserts that the '132 Publication discloses, expressly or inherently, each limitation of the claim. For example, Petitioner contends that the '132 Publication's teaching of mAb

6-2, which was isolated and screened according to Examples 4–6, discloses "an isolated human antibody." Pet. 40–42 (citing Ex. 1016 ¶¶ 232–241, 243, 246). Petitioner further contends that the mAb 6-2 antibody of the '132 Publication inherently "competes with a reference antibody for binding to human IL-4 interleukin (IL-4) receptor, wherein the light chain of said reference antibody comprises the amino acid sequence of SEQ ID NO:10 and the heavy chain of said reference antibody comprises the amino acid sequence of SEQ ID NO:12." *Id.* at 43–49; Ex. 1200 ¶¶ 128–129. Specifically, Petitioner's expert, Dr. Gerard Zurawski, testifies that he confirmed experimentally that the mAb 6-2 antibody competes with the claimed reference antibody (i.e., mAb 12B5). Ex. 1200 ¶¶ 79–106. Dr. Zurawski states that he used the competition assay described in Perez de la Lastra (1999), which was endorsed by Patent Owner during a European Opposition proceeding. *Id.* ¶ 97.

In response, Patent Owner argues that the '132 Publication does not qualify as prior art under § 102(e) because it does not disclose an invention "by another," as required by § 102(e). PO Resp. 7–35. Patent Owner also argues that the '132 Publication does not anticipate because Petitioner has failed to show the '132 Publication enables how to make the mAb 6-2 recited in the claims. *Id.* at 37–46.

Based on the arguments and evidence presented during trial, we first consider the issue of whether the '132 Publication discloses the work of the '487 patent inventors. Because this issue is dispositive, we do not

reach Patent Owner's assertion that the '132 Publication is not enabling. *See* PO Resp. 37–46.

a. Legal Background

Under § 102(e), a claim is anticipated if "the invention was described in . . . an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent." Thus, "there are two conditions expressed in section 102(e): (1) the application for the reference patent must have been by one who is legally 'another' and (2) the filing date must be 'before the invention . . . by the applicant.'" *In re Land*, 368 F.2d 866, 879 (CCPA 1966). To overcome a prior art reference under §102(e), the applicant or patentee may antedate the invention by establishing prior conception and reduction to practice relative to the filing date of the prior application. *In re Costello*, 717 F.2d 1346, 1351 (Fed. Cir. 1983). Alternatively, the applicant or patentee may "establish that the relevant disclosure [in the prior application] describes their own invention." *Id.*

Thus, determining whether the prior application has a different inventive entity on its face than the challenged patent does not end the inquiry. We must also determine "whether the portions of the reference relied on as prior art, and the subject matter of the claims in question, represent the work of a common inventive entity." *EmeraChem Holdings, LLC v. Volkswagen Grp. of Am., Inc.*, 859 F.3d 1341, 1345 (Fed. Cir. 2017) (quoting *Riverwood Int'l Corp. v. R.A. Jones & Co.*, 324 F.3d 1346, 1356 (Fed. Cir. 2003)); *see*

also Costello, 717 F.2d at 1349 ("An applicant may also overcome a reference by showing that the relevant disclosure is a description of the applicant's own work. The pertinent inquiry is under 35 U.S.C. § 102(e).").

In *Dynamic Drinkware, LLC v. National Graphics, Inc.*, 800 F.3d 1375 (Fed. Cir. 2015), the Federal Circuit explained the shifting burden of production in an *inter partes* review with respect to showing whether a reference is prior art. *Id.* at 1379–80. Here, although the burden of persuasion never shifts to Patent Owner, Petitioner satisfied its initial burden of production by arguing that the '132 Publication anticipates the challenged claims under § 102(e). *See id.* at 1379 (stating the petitioner satisfied its initial burden of production by arguing that the prior art anticipated the claims under § 102(e)(2)). The burden of production then shifted to Patent Owner to argue or produce evidence that the '132 Publication does not anticipate or that the '132 Publication is not prior art. Having argued and produced evidence that the '132 Publication is not prior art because it is not enabling and is not work "by another," the burden of production shifted back to Petitioner to prove that the '132 Publication actually anticipates and constitutes prior art under § 102(e). *See id.* at 1380.

Under these legal guidelines, we consider the arguments and evidence presented by the parties as to whether the '132 Publication is § 102(e) prior art.

b. Whether the '132 Publication Is § 102(e) Prior Art

The '132 Publication lists John D. Pluenneke as its sole inventor.

Ex. 1016, [76]. The '487 patent lists Richard Armitage, Jose Carlos Escobar, and Arvia E. Morris as the inventors. Ex. 1001, [75]. Thus, we agree with Petitioner that, on its face, the '132 Publication has a different inventive entity than the '487 patent. *See* Reply 1. As explained above, however, that does not end the analysis. *See EmeraChem*, 859 F.3d at 1345. We must now determine whether the portions of the '132 Publication relied upon for anticipation represent the work of the '487 patent inventors.[4] *See id.*

i. The Scope of the Petition

As an initial matter, the parties dispute the scope of the Petition and what Petitioner relies on to show the '132 Publication anticipates the challenged

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[4] Patent Owner asserts that we exceeded our statutory authority under 35 U.S.C. § 314(a) by instituting trial despite describing the evidence it presented with its Preliminary Response as "compelling." PO Resp. 46–47. As explained in our Decision on Institution, however, Patent Owner's testimonial evidence raised a genuine issue of material fact that was viewed in the light most favorable to Petitioner for the purposes of the Decision on Institution. Dec. 14 (citing 37 C.F.R. § 42.108(c)).

claims. Patent Owner contends that Petitioner relies solely on the '132 Publication's disclosure of mAb 6-2 for anticipation. PO Resp. 12; Surreply 12–13. Petitioner, on the other hand, argues that the Petition is broader than that, and encompasses antibodies "like mAb 6-2." Tr. 51:6– 52:6.

The parties appear to agree that the Petition relies on twenty-seven paragraphs from the '132 Publication: ¶¶ 16, 17, 131, 145, 149, 151, 180, 183, 218–220, and 232–247. *See* PO Resp. 12; Tr. 52:4–6 (Petitioner's counsel referring to the "27 relied-upon paragraphs"). Although we recognize the Petition relies on various portions of the '132 Publication for background and context, when considering the Petition as a whole, we agree with Patent Owner that the Petition relies solely on mAb 6-2 for purposes of anticipation.[5]

Throughout the Petition, Petitioner focuses on the '132 Publication's disclosure of mAb 6-2 as anticipating. Pet. 6 (arguing "the '487 Patent ensnares its own prior art patent publication—the '132 Publication—which discloses mAb 6-2"); *id.* at 12 ("Specifically, this Petition relies on Patent Owner's

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[5] We note the Petition appears to cite paragraphs from the '132 Publication other than the "relied-upon paragraphs." See, e.g., Pet. 19 (citing Ex. 1016 ¶¶ 10, 155). Those citations, however, also describe background information regarding the field of technology. Thus, even including those additional paragraphs, our finding that the Petition relies solely on mAb 6-2 for anticipation remains the same.

own '132 Publication—which was filed February 15, 2001 and is prior art to the '487 Patent based on its purported May 1, 2001 priority date—the '132 Publication's disclosure of the fully human anti-hIL-4R antibody referred to specifically as mAb 6-2, and testing of mAb 6-2 to demonstrate that it inherently satisfies the challenged claims."); *id.* at 37–39 (focusing on mAb 6-2 when describing the scope of the '132 Publication).

To the extent the Petition refers to antibodies "like mAb 6-2" (*see* Pet. 38; Tr. 50:6–51:10), it does so as background for its argument that the '132 Publication teaches how to make, screen, and test mAb 6-2:

> In addition to disclosing the 6-2 antibody, the '132 Publication also discloses how the 6-2 antibody was made, screened, and tested. This includes: (1) disclosure of the generation of transgenic mice in Example 3; (2) disclosure of how to generate and screen for anti-hIL-4R mAbs like mAb 6-2 from transgenic mice as shown in Examples 1 and 4; and (3) disclosure of how to assay generated antibodies like mAb 6-2 for IL-4 and IL-13 blocking activity as described in Example 5.

Pet. 38 (citations omitted). Thus, we are not persuaded that the Petition relies on antibodies "like mAb 6-2" for its argument that the '132 Publication anticipates the claims. Rather, the Petition relies solely on the '132 Publication's disclosure of mAb 6-2

for anticipation. Indeed, counsel for Petitioner admitted as much during the oral hearing:

> JUDGE HULSE: [C]an you point us to something in the actual analysis of the grounds, where you were relying on something other than [mAb] 6-2?
>
> MR. GARVISH: No, Your Honor, because we didn't need to. Our argument was mAb 6-2, and the inherency that was related to mAb 6-2. Our petition is broader than that, it includes the 27 relied-upon paragraphs, and it includes monoclonal antibodies like 6-2 as described in the petition.
>
> JUDGE HULSE: As described in the background section of the petition, right. But you[r] argument itself relies on mAb 6-2?
>
> MR. GARVISH: That's correct, Your Honor.

Tr. 51:24–52:9.

Thus, when considering whether the "relied-upon portions" of the '132 Publication are the work of another, we focus—as Petitioner has—on the disclosure of mAb 6-2.

ii. Whether the '132 Publication's Disclosure of mAb 6-2 Represents the Work of Another

To satisfy its burden of production to show the '132 Publication's disclosure of mAb 6-2 is not the work of

another, Patent Owner submits declarations from the '487 patent inventors, declarations from two corroborating witnesses who worked with the inventors, and various contemporaneous meeting minutes. *See* PO Resp. 11–12. Relying on this evidence, Patent Owner asserts that the portions of the '132 Publication disclosing mAb 6-2 represent solely the work of the '487 patent inventors. *Id.* at 16–30. Moreover, Patent Owner submits the disclaimer declaration of John D. Pluenneke—the named inventor identified on the '132 Publication— and asserts that he is not the inventor of mAb 6-2.[6] *Id.* at 13– 16.

Each of the '487 inventors testifies that they worked together in the late 1990s to co-chair the Therapeutic Antibodies Group at Immunex.

Ex. 2006 ¶ 9 (Escobar); Ex. 2007 ¶ 9 (Armitage); Ex. 2008 ¶ 9 (Morris). The purpose of the Group was to "develop antibodies directed against IL-4 receptor (IL-4R) capable of (i) blocking IL-4 binding to IL-4R and (ii) blocking IL-4-mediated and IL-13-mediated signaling." Ex. 2006 ¶ 9;

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[6] We are cognizant of the testimony of Patent Owner's expert, Stephen Kunin, said to be "an expert in U.S. patent practice and procedure." PO Resp. 3, Ex 2038. This panel, however, chooses not to address Mr. Kunin's testimony, as we need not reach it for purposes of this Decision. *See also* 37 C.F.R. § 42.65(a).

The '487 patent inventors testify that the relied-upon portions of the '132 Publication reflect the joint work of the '487 patent inventors. Ex. 2006 ¶¶ 13–17; Ex. 2007 ¶¶ 13–17; Ex. 2008 ¶¶ 13–17. In particular, the inventors testify that they prepared a hybridoma called "fusion 6" and a hybridoma cell line called "6-2." Ex. 2006 ¶ 15; Ex. 2007 ¶ 15; Ex. 2008 ¶ 15. The cell line secreted an anti-IL-4R antibody called 6-2 that was tested to show it blocks IL-4 from binding to IL-4R and blocks both IL-4 and IL-13 induced biological activity. Ex. 2006 ¶ 15; Ex. 2007 ¶ 15; Ex. 2008 ¶ 15.

To corroborate the inventors' testimony, Patent Owner submitted contemporaneous meeting minutes that the inventors prepared after monthly group meetings. *See, e.g.*, Ex. 2013, 1 ¶ 3 (public summary of Ex. 2013 at Ex. 2018); Ex. 2014, 1 ¶¶ 2, 4, 5 (public summary of Ex. 2014 at Ex. 2019); Ex. 2016, 3 ¶ 2 (public summary of Ex. 2016 at Ex. 2021). Patent Owner also submitted the testimony of research associates Norman Boiani and Teri Aldrich, who worked in Mr. Escobar and Dr. Morris's laboratories, respectively. Ex. 2009 ¶ 3; Ex. 2006 ¶ 9; Ex. 2010 ¶ 8; Ex. 2008 ¶ 9. Mr. Boiani and Dr. Aldrich testify that they worked under the inventors' supervision and carried out experiments relating to mAb 6-2 under the inventors' direction and control. Ex. 2008 ¶ 9; Ex. 2009 ¶ 9.

As further support, Patent Owner submits the testimony of Mr. Pluenneke, who testifies that the relied-upon portions of the '132 Publication, including the disclosure of mAb 6-2, do not reflect his work. Ex.

2011 ¶ 8. He testifies that he "did not work on making anti IL-4R antibodies" and "did not work together with [the '487 patent inventors] to make hybridoma 6-2 or antibody 6-2." *Id.* Mr. Pluenneke testifies that he did not contribute to the conception of hybridoma 6-2 or mAb 6-2. Ex. 2032 ¶ 9. Rather, Mr. Pluenneke testifies that he invented what is claimed in the '132 Publication (i.e., a method for treating septic arthritis by administering an IL-4 antagonist). Ex. 2011 ¶ 8; Ex. 2032 ¶ 8; Ex. 1016, 25.

Having considered the evidence presented by Patent Owner, we find Patent Owner has satisfied its burden of production to show the '132 Publication is not § 102(e) prior art. We find the testimony of the '487 patent inventors—as corroborated by the declarations of Mr. Boiani and Dr. Aldrich, the contemporaneous meeting minutes, and the disclaimer declaration of Mr. Pluenneke—to be persuasive evidence that the relied- upon portions of the '132 Publication represent the work of the '487 patent inventors. *See In re Mathews*, 408 F.2d 1393, 1396 (CCPA 1969) (finding applicant's declaration and prior art inventor's disclaimer declaration sufficient to overcome § 102(e) rejection).

The burden now shifts back to Petitioner to rebut Patent Owner's evidence and show the '132 Publication qualifies as § 102(e) prior art. In response, Petitioner challenges the sufficiency of Patent Owner's evidence and asserts that Mr. Boiani was a necessary contributor of mAb 6-2, thereby making the '132 Publication's disclosure "by another." Reply 2–3. We are not persuaded by Petitioner's arguments.

Regarding the sufficiency of the evidence, Petitioner argues the testimony of Patent Owner's declarants is conclusory and lacks corroboration by contemporaneous documentary evidence. Reply 8. Petitioner argues the declarants lack credibility because they contradicted each other and their sworn declarations. Reply 10. For example, Petitioner argues that the inventors testified in their declarations that the relied-upon portions of the '132 Publication (including Example 3) represent the collective work of the inventors, and yet the inventors testified during cross-examination that Example 3 was not their work. *Id.* (citing Ex. 1234, 174:22–175:2; Ex. 1232, 126:5–16, 136:17–137:1); Sur-surreply 2–5 (citing Ex. 1233, 102:3–15; Ex. 1234, 174:22–175:2; Ex. 1235, 198:18–23). Example 3 teaches the generation of transgenic mice, which the '487 patent inventors testified they obtained from third-party Medarex. Ex. 1016 ¶¶ 232–236; Ex. 2006 ¶ 13; Ex. 2007 ¶ 13; Ex. 2008 ¶ 13. Petitioner also notes that much of Example 3 in the '132 Publication (Ex. 1016 ¶¶ 232–236) was copied verbatim from U.S. Patent No. 6,984,720 (Ex. 1240), which is a prior art patent to Medarex. Sur-surreply 3–4; *see also* Reply 15.

In response, Patent Owner asserts that the witnesses testified consistently that, "to the extent the relied-upon portions of the '132 publication relate to mAb 6-2, those portions reflect the work of the '487 patent inventors." Surreply 5 (citing Ex. 1233, 134:20–135:5; Ex. 1234, 182:15–183:13; Ex. 1235, 194:21–195:1; Ex. 1236, 171:1–6). Patent Owner argues that Petitioner has taken the witnesses' testimony out of context and that the allegedly

anticipatory subject matter in the '132 Publication is mAb 6-2 and not transgenic mice or some other research tool. *Id.* at 6–7.

We agree with Patent Owner that that testimony must be taken in the context of the Petition and the rest of the witnesses' testimony. As explained above, we find the Petition relies on the '132 Publication's disclosure of mAb 6-2 for purposes of anticipation. The Petition relies on the remaining portions of the '132 Publication, such as the disclosure of transgenic mice in Example 3, for background or to show the '132 Publication is enabled. For example, the Petition cites Example 3 to show "the '132 Publication also discloses how the 6-2 antibody was made, screened, and tested." Pet. 38 (citing Ex. 1016 ¶¶ 232–236); *see also id.* at 41–42.

When asked during cross-examination, the inventors testified that they did not invent transgenic mice. *See, e.g.*, Ex. 1234, 174:22–175:2. Dr. Morris clarified, however, that "[t]o the extent that we contracted with Medarex to use transgenic mice to make human antibodies, that would be – that was work we did using these tools that Medarex had developed." Ex. 1235, 198:18–199:4. In other words, according to the inventors, they did not invent the Medarex mice, but they used Medarex mice to make the claimed invention. Although we agree the declarations are somewhat vague, we find Dr. Morris's explanation to be credible, as the inventors testified consistently that mAb 6-2, which they generated using Medarex mice, was a product of their collaborative work. *See* Ex. 1233, 134:20–135:5; Ex.

1234, 182:15–183:13; Ex. 1235, 194:21–195:1; Ex. 1236, 171:1–6.

Similarly, Petitioner argues that Mr. Pluenneke's disclaimer testimony lacks credibility because of his inconsistent testimony regarding who invented hybridoma 6-2. Sur-surreply 5–6. Specifically, Mr. Pluenneke is listed as an inventor along with Carl March and Larry O'Neal on the March Application. Ex. 1202.[7] The March Application includes a description of hybridoma 6-2 that is similar to the description in Example 6 of the '132 Publication. *Compare* Ex. 1202 ¶¶ 219–220, *with* Ex. 1016 ¶¶ 246–247. Petitioner argues that Mr. Pluenneke testified during cross-examination that "(1) the March Application was the *sole work* of *the inventors listed thereon*— Pluenneke, March, and O'Neal; and (2) he was not aware of any other individuals who contributed to it." Sur-surreply 5.

We are not persuaded that Mr. Pluenneke's testimony lacks credibility. Regarding the inventorship of the March Application, Petitioner again takes the witness's testimony out of context. Counsel for Petitioner questioned Mr. Pluenneke about the inventor declaration he signed for the March Application, which states Mr. Pluenneke believes he is a joint inventor "of the subject matter which is claimed and for which a patent is sought on the invention entitled Methods for Treating Cancer."

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[7] Carl J. March, John D. Pluenneke, and Larry F. O'Neal, US 2002/0076409 A1, published Jun. 20, 2002 ("March Application," Ex. 1202).

Ex. 1237, 58:12–21 (referring to Ex. 1219). Mr. Pluenneke then testified that his invention was to a "method for treating cancer involving administering an IL-4 antagonist . . . [w]ithin a specific claim in the back. And under the claims is what I invented. Which of those are specifically mine, I cannot state." *Id.* at 61:3–9. Counsel then asked whether Mr. Pluenneke invented various claims of the March application, to which Mr. Pluenneke testified that he could not remember. *Id.* at 61:10–63:9. Finally, counsel asked, "Is there anything in this application that wasn't invented by Carl March, John Pluenneke, or Larry O'Neal?" *Id.* at 63:10–12. Mr. Pluenneke responded, "Not to my knowledge." *Id.* at 63:15. Considering the testimony as a whole—and the fact that counsel did not ask specifically about Example 6 and hybridoma 6-2—we are not persuaded that Mr. Pluenneke necessarily understood the question to include the entire specification of the March Application. Rather, in light of the line of questioning, it is reasonable for Mr. Pluenneke to have understood counsel for Petitioner to be asking about who invented the subject matter of the March Application claims.

Petitioner also argues Mr. Pluenneke "cannot credibly credit the '487 patent inventors with anything" because he did not work with them and did not even know who they were. Sur-surreply 6–7. But Mr. Pluenneke did not specifically attribute the relied-upon portions of the '132 Publication to the work of the '487 patent inventors. Rather, he testified that those portions "do not reflect my work" and that he "did not work on making anti IL-4R antibodies" or work together with the '487 patent inventors. Ex.

2011 ¶ 8. Thus, he properly testified based on his own personal knowledge of what he worked on himself and with whom. Contrary to Petitioner's assertion, he did not testify regarding what the '487 patent inventors invented.

Petitioner also argues the meeting minutes fail to provide the necessary details to corroborate Patent Owner's assertions, such as whether mAb 6-2 is the invention solely of the named inventors and whether the work on mAb 6-2 was done under the direction and control of the named inventors. Reply 9. Petitioner also questions the accuracy of the minutes, asserting that they were not prepared contemporaneously, as some are dated months after the meeting occurred. *Id.* (citing Ex. 2012).

Corroboration is determined by a rule of reason analysis where "an evaluation of all pertinent evidence must be made so that a sound determination of the credibility of the inventor's story may be reached." *NFC Tech., LLC v. Matal*, 871 F.3d 1367, 1372 (Fed. Cir. 2017) (quoting *Singh v. Brake*, 317 F.3d 1334, 1341 (Fed. Cir. 2003)). Under the rule of reason, the evidence is considered as a whole and not individually. *Id.*

Applying the rule of reason, we find the meeting minutes to be sufficient for corroboration purposes, particularly in light of the accompanying testimony of Mr. Boiani and Dr. Aldrich. Even if the minutes alone did not contain the level of details sought by Petitioner, no one single piece of evidence needs to establish a particular fact. *See id.* ("[A]n inventor's conception can be corroborated even though 'no one

piece of evidence in and of itself' establishes that fact, and even through circumstantial evidence." (citations omitted)).

We find the meeting minutes together with the testimony of Mr. Boiani and Dr. Aldrich sufficient to corroborate the inventors' testimony that mAb 6-2 was the collaborative product of the inventors' work. The meeting minutes from "Meeting B," where Mr. Escobar, Mr. Boiani, and Dr. Armitage gave presentations, demonstrate that the antibody produced by hybridoma 6-2 blocked IL-4 binding to IL-4R and IL-13 and IL-4 activity mediated through IL-4R. Ex. 2018 (summarizing Ex. 2013, 1 ¶¶ 3, 5). The meeting minutes from "Meeting C," where the '487 patent inventors, Mr. Boiani, and Dr. Aldrich gave presentations, demonstrate that an IgM antibody designated "6-2" showed binding activity to IL-4R and IL-4R- blocking activity. Ex. 2019 (summarizing Ex. 2014, 1 ¶ 2). Mr. Boiani testifies that the meeting minutes reflect their work on mAb 6-2, and that he "conducted isotyping experiments to determine the isotype of the 6-2 antibody." Ex. 2009 ¶¶ 15–18. He also testifies that he sent the hybridoma cell line 6-2 to Dr. Aldrich, who, under the direction of Dr. Morris, used it to produce an IgG1 form of the 6-2 antibody. *Id.* ¶ 19 (citing Ex. 2014, 1 ¶ 5; Ex. 2019); *see also* Ex. 2010 ¶ 17. Taken as a whole, we find Patent Owner's evidence sufficient to corroborate the inventors' testimony that mAb 6-2 was the product of their collective work.

As for Petitioner's assertion that there was a delay in preparing the meeting minutes, Mr. Escobar

explained that the meeting minutes were typically written up on a rotating basis by the '487 patent inventors "within a week or so." Ex. 1234, 168:11–24. He also explained that the printout and signing of the minutes (such as that identified by Petitioner in Ex. 2012) "may have been not always timely," "[b]ut the minutes themselves were written up in a very timely fashion." *Id.* at 169:16–170:6. In light of the high level of detail provided in the meeting minutes (which might not be expected if there were a lengthy delay in the write-up), we find credible Mr. Escobar's testimony that they prepared the minutes in a timely fashion.

Petitioner also argues that the relevant inquiry is whether the relied- upon portions of the '132 Publication "were conceived solely by the named inventors." Reply 1 (citing *Allergan, Inc. v. Apotex Inc.*, 754 F.3d 952, 969 (Fed. Cir. 2014)). Petitioner then argues that the '487 patent inventors were not the "sole contributors" of mAb 6-2 and that Norman Boiani "conceived MAb6-2 and other antibodies disclosed in the '132 Publication." *Id.* at 2–3.

According to Petitioner, Mr. Boiani created and isolated mAb 6-2 and is a necessary contributor to the '487 patent claims. Reply 17–18. Petitioner argues that although Patent Owner asserts that the named inventors directed or controlled Mr. Boiani's work, that is insufficient "to vest inventorship in a supervisor." *Id.* at 18. Petitioner argues that before the work of another can inure to the benefit of an inventor, the inventor must establish prior conception. *Id.* Because Patent Owner cannot show

prior conception of mAb 6-2 by the inventors, Petitioner argues Patent Owner cannot attribute Mr. Boiani's work to the inventors. *Id.*

As Patent Owner notes, however, Patent Owner is not "swearing behind" the '132 Publication to show the '132 Publication is not § 102(e) prior art. Surreply 7. Rather, Patent Owner contends that the '132 Publication's disclosure of mAb 6-2 "represent[s] the work" of the '487 patent inventors. *See EmeraChem Holdings*, 859 F.3d at 1345.

Having considered the full trial record, we are not persuaded that Mr. Boiani's work on mAb 6-2 elevates him to the level of joint inventor, as Petitioner asserts. As explained above, the testimony of the inventors, as corroborated by the meeting minutes and the testimony of Mr. Boiani and Dr. Aldrich, establishes that Mr. Boiani conducted experiments and testing on the 6-2 hybridoma cell line to produce mAb 6-2 at the direction and control of Mr. Escobar. *See, e.g.*, Ex. 2006 ¶¶ 15–17; Ex. 2009 ¶¶ 3, 14–19; *see also supra*. Mr. Boiani testified that Mr. Escobar had ideas and would tell him to do work for him because he was his boss. Ex. 1232, 171:15–24. Although Mr. Boiani had some level of discretion to perform his work, Mr. Boiani testified that he conducted his work according to "standard policy" and used "established protocols with [Mr. Escobar's] overall guidance." *Id.* at 172:3–174:8. Tellingly, Mr. Boiani characterized himself as "a pair of hands for [the inventors'] thoughts." Ex. 1232, 177:2–8; *see also* Ex. 2009 ¶¶ 3, 7.

In light of that evidence, we view Mr. Boiani as a technician for carrying out Mr. Escobar's instructions,

and not a joint inventor. *See Mattor v. Coolegem*, 530 F.2d 1391, 1395 (CCPA 1976). There is no evidence in the record to show Mr. Boiani was involved in conceiving the claimed invention. On the contrary, the evidence presented demonstrates that Mr. Boiani conducted routine experiments to create mAb 6-2 at the direction of Mr. Escobar according to known techniques. *See Shatterproof Glass Corp. v. Libbey-Owens Ford Co.*, 758 F.2d 613, 624 (Fed. Cir. 1985) ("An inventor 'may use the services, ideas, and aid of others in the process of perfecting his invention without losing his right to a patent.'" (citation omitted)).

Petitioner argues that Mr. Boiani had to have conceived mAb 6-2 because it is insufficient to define a chemical compound "solely by its principal biological property . . . because an alleged conception having no more specificity than that is simply a wish to know the identity of any material with that biological property." Reply 20 (quoting *Amgen, Inc. v. Chugai Pharm. Co.*, 927 F.2d 1200, 1206 (Fed. Cir. 1991)); *see also* Sur-surreply 9. The facts of *Amgen*, however, are distinguishable from the instant case. In *Amgen*, the claims recited a "purified and isolated DNA sequence" encoding human erythropoietin. 927 F.2d at 1206. At the time of the invention, however, the amino acid sequence for erythropoietin was unknown and there was no viable method to obtain the claimed subject matter until it was actually obtained and characterized. *Id.*

Here, Petitioner has not shown that there was similar uncertainty in the art at the time of the

invention. The '487 patent claims an isolated human antibody that competes with a reference antibody for binding to IL- 4R, where the reference antibody has a *known,* specific amino acid sequence. Ex. 1001, 77:25–78:49 (claims). The '487 patent inventors conceived of the claimed invention and specifically directed the research associates like Mr. Boiani on methods to make such antibodies. *See* Ex. 2008 ¶ 9; Ex. 2009 ¶ 9. Mr. Boiani then followed that direction and, using standard techniques, prepared mAB 6-2. Ex. 1232, 171:15–177:8. Ultimately, we find that to be consistent with the work of a laboratory technician, and not the work of a joint inventor.

Based on the arguments and evidence presented during trial, we determine that Petitioner has not satisfied its burden to prove the portions of the '132 Publication relied upon for anticipation (i.e., mAb 6-2) represent the work of another to qualify as prior art under § 102(e).

Accordingly, we find that Petitioner has not established by a preponderance of the evidence that any challenged claim of the '487 patent is unpatentable as anticipated by the '132 Publication.

III. MOTIONS TO EXCLUDE

The party moving to exclude evidence bears the burden of proving that it is entitled to the relief requested—namely, that the material sought to be excluded is inadmissible under the Federal Rules of Evidence ("FRE"). *See* 37 C.F.R. §§ 42.20(c), 42.62(a).

Petitioner filed a Motion to Exclude the testimony of Stephen G. Kunin. Paper 65. Patent Owner relies on the testimony of Mr. Kunin as an expert in U.S. patent practice and procedure and offered his opinion regarding whether Patent Owner's evidence is sufficient to show the '132 Publication is prior art to the '487 patent. PO Resp. 3; Ex. 2038. We do not rely on Mr. Kunin's testimony in rendering this Decision. Accordingly, we dismiss Petitioner's Motion to Exclude as moot.

Patent Owner filed a Motion to Exclude portions of testimony from Exhibits 1200 (Zurawski Decl.), 1232 (Boiani Dep.), 1233 (Armitage Dep.), 1234 (Escobar Dep.), 1235 (Morris Dep.), 1237 (Pluenneke Dep.), 1239 (Zurawski Rebuttal Decl.), and 2102 (Zurawski Dep.). Paper 60, 3–10, 13–15. Patent Owner also moves to exclude the entirety of Exhibits 1432 (Defendant's Invalidity Contentions) and 1455 (MAB 230 Data Sheet). *Id.* at 10–13. We do not rely on any of the challenged evidence for purposes of rendering this Decision. Accordingly, we dismiss Patent Owner's Motion to Exclude as moot.

IV. CONCLUSION

For the foregoing reasons, we conclude that Petitioner has not established by a preponderance of the evidence that claims 1–14, 16, and 17 of the '487 patent are unpatentable as anticipated by the '132 Publication.

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1–14, 16, and 17 of the '487 patent are not held unpatentable as anticipated by the '132 Publication;

FURTHER ORDERED that Petitioner's Motion to Exclude is *dismissed as moot*;

FURTHER ORDERED that Patent Owner's Motion to Exclude is *dismissed as moot*; and

FURTHER ORDERED that, because this is a Final Written Decision, the parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirement of 37 C.F.R. § 90.2.

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APPENDIX C

Paper No. 96
Entered: February 14, 2019

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SANOFI-AVENTIS U.S. LLC, GENZYME CORP., and REGENERON PHARMACEUTICALS, INC.,
Petitioner,
v.

IMMUNEX CORPORATION,
Patent Owner.

Case IPR2017-01884
Patent 8,679,487 B2

Before JAMES T. MOORE, GRACE KARAFFA OBERMANN, and TINA E. HULSE, *Administrative Patent Judges*.

HULSE, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

1. INTRODUCTION

Sanofi-Aventis U.S. LLC, Genzyme Corp., and Regeneron Pharmaceuticals, Inc. (collectively, "Petitioner") filed a Petition requesting an *inter partes* review of claims 1–17 of U.S. Patent No. 8,679,487 B2 (Ex. 1001, "the '487 patent"). Paper 1 ("Pet."). Immunex Corporation ("Patent Owner") filed a Preliminary Response to the Petition. Paper 10 ("Prelim. Resp."). With our authorization, Petitioner filed a Reply to the Preliminary Response (Paper 12), and Patent Owner filed a Surreply (Paper 13). On February 15, 2018, we instituted an *inter partes* review of claims 1–17 on two obviousness grounds. Paper 14 ("Dec. Inst."), 20.

Patent Owner filed a response to the Petition. Paper 37 ("PO Resp."). Petitioner filed a Reply. Paper 65("Reply"). With our authorization, Patent Owner filed a Surreply (Paper 78, "Surreply"), and Petitioner filed a Sur- Surreply (Paper 85, "Sur-surreply").

The parties also filed motions to exclude certain evidence. Paper 75 (Patent Owner's motion); Paper 80 (Petitioner's motion). The parties filed responsive papers to those motions. Paper 84 (Petitioner's opposition); Paper 88 (Patent Owner's reply); Paper 83 (Patent Owner's opposition); Paper 87 (Petitioner's reply).

An oral hearing was held on November 14, 2018, a transcript of which has been entered in the record. Paper 94 ("Tr.").

We have authority under 35 U.S.C. § 6(c). This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73.

For the reasons that follow, we determine Petitioner has shown by a preponderance of the evidence that claims 1–17 of the '487 patent are unpatentable as obvious.

A. Related Proceedings

Patent Owner has asserted the '487 patent against Petitioner in a pending lawsuit styled *Immunex Corp. v. Sanofi*, No. 2:17-cv-02613 (C.D. Cal., filed April 5, 2017). Pet. 4; Paper 7, 2.

Petitioner also filed a petition for *inter partes* review of the '487 patent on different grounds in IPR2017-01879. Pet. 4; Paper 7, 2. We instituted trial and enter a Final Written Decision in that proceeding concurrently with this decision.

Patent Owner also identifies certain applications and patents that "claim or may claim the benefit of the priority of the filing date of [the '487 patent]." Paper 7, 1–2.

B. The '487 Patent

The '487 patent relates to compositions and methods for treating certain conditions induced by interleukin-4 (IL-4) by administering an IL-4 antagonist to a patient with such a condition. Ex. 1001, 3:9–14. IL-4 has a broad spectrum of biological activities, including growth co-stimulation of T cells, mast cells, granulocytes, megakaryocytes, and

erythrocytes. *Id.* at 1:29–36. IL-4 binds to specific cell surface receptors called interleukin-4 receptors (IL-4R). *Id.* at 1:49–51. Binding of IL-4 to IL-4R results in transduction of a biological signal to cells, including various immune effector cells. *Id.* IL-4 has been implicated in a number of disorders, including allergy and asthma. *Id.* at 2:1–2, 4:11–31.

Different IL-4 antagonists may act at different sites or by different mechanisms of action. *Id.* at 10:47–48. According to the '487 patent, examples include antagonists that interfere with binding of IL-4 to cell surface receptors or that inhibit signal transduction. *Id.* at 10:48–50. The site of action may be intracellular, on a cell surface, or extracellular. *Id.* At 10:50–53. Antagonists may bind to either IL-4 or to the receptor. *Id.* at 10:53–54. Examples of IL-4 antagonists include IL-4 receptors, antibodies that bind to IL-4 or IL-4R, other IL-4 binding molecules, and IL-4 muteins. *Id.* at 10:36–38.

Blocking antibodies that interfere with the binding of IL-4 to IL-4R may be raised against either IL-4 or IL-4R. The antibodies can be screened in conventional assays for their ability to interfere with binding of IL-4 to IL-4R. *Id.* at 18:40–45. Because it has been found that IL-4R is a component of certain multi-subunit IL-13 receptor complexes, some antibodies raised against IL-4R may interfere with the binding of IL-13 to those complexes. *Id.* at 18:50–57. Those antibodies may inhibit both IL-4 induced biological activity and IL-13 induced activity and therefore may be used in treating conditions induced by either or both cytokines. *Id.* at 18:58–62. Such conditions include IgE-mediated conditions, asthma,

allergic conditions, allergic rhinitis, and dermatitis. *Id.* at 18:62–65.

The '487 patent identifies examples of IL-4R human monoclonal antibodies (MAbs) produced by immunizing transgenic mice. The examples are designated MAbs 6-2, 12B5, 63, 1B7, 5A1, and 27A1. *Id.* at 21:6–11.

MAbs 12B5, 63, and 1B7 are preferred fully human antibodies capable of inhibiting activity of both IL-4 and IL-13. *Id.* at 21:11–15.

The '487 patent presents the encoded amino acid sequence of the variable region of the light chain MAb 12B5 in SEQ ID NO:10, and of the variable region of the heavy chain in SEQ ID NO:12. *Id.* at 22:36–41.

C. Illustrative Claim

Petitioner challenges claims 1–17 of the '487 patent, of which claim 1 is the only independent claim. Claim 1 is illustrative and is reproduced below:

> 1. An isolated human antibody that competes with a reference antibody for binding to human IL-4 interleukin-4 (IL-4) receptor, wherein the light chain of said reference antibody comprises the amino acid sequence of SEQ ID NO:10 and the heavy chain of said reference antibody comprises the amino acid sequence of SEQ ID NO:12.

Ex. 1001, 77:26–31.

D. The Asserted Ground of Unpatentability

We instituted trial on the following grounds:

References	Basis	Claims challenged
Hart[1] and Schering-Plough[2]	§ 103(a)[3]	1–17
Hart, Schering-Plough, and Hoogenboom[4]	§ 103(a)	1–17

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[1] Hart et al., *Diminished Responses to IL-13 by Human Monocytes Differentiated* in vitro*: Role of the IL13R 1 chain and STAT6*, 29 EUR. J. IMMUNOL. 2087–97 (1999) ("Hart," Ex. 1204).

[2] Galizzi et al, EP 0 604 693 A1, published July 6, 1994 ("Schering-Plough," Ex. 1007).

[3] The Leahy-Smith America Invents Act ("AIA"), Pub. L. No. 112-29, which was enacted on September 16, 2011, made amendments to 35 U.S.C. § 103. AIA § 3(b). Those amendments became effective eighteen months later on March 16, 2013. *Id.* § 3(n). Because the application from which the '487 patent issued was filed before March 16, 2013, any citations to 35 § 103 in this Decision are to the pre-AIA version of the statute.

[4] Hoogenboom, et al. US 5,565,332, issued Oct. 15, 1996 ("Hoogenboom," Ex. 1402).

II. ANALYSIS

A. Person of Ordinary Skill in the Art

Petitioner asserts that a person of ordinary skill in the art would have had at least a Ph.D. or an M.D. with research experience in immunology, biochemistry, cell biology, molecular biology, or a related field or at least 2–3 years of professional experience in one or more of those fields. Pet. 35. According to Petitioner, such a person would have had an understanding of "how one generates antibodies to a chosen antigen from animals (*e.g.*, mice), and how one isolates human antibodies by generating human antibodies directly from transgenic animals or transforming animal antibodies into human or partially human antibodies." *Id.* (citing Ex. 1400 ¶ 27).

In its Preliminary Response, Patent Owner proposed a slightly different definition of the level of ordinary skill in the art. Prelim. Resp. 38 (citing Ex. 2101 ¶ 14). In our Decision on Institution, however, we noted that we did not discern a substantive difference between the parties' respective definitions. Dec. Inst. 5. In any event, Patent Owner does not address the level of ordinary skill in the art in its Patent Owner Response.

We agree with and adopt Petitioner's definition of the level of ordinary skill in the art. We further note that the prior art itself corroborates this finding and demonstrates the level of skill in the art at the time of the invention. *See Okajima v. Bourdeau*, 261 F.3d

1350, 1355 (Fed. Cir. 2001) (explaining that specific findings regarding ordinary skill level are not required "where the prior art itself reflects an appropriate level and a need for testimony is not shown" (quoting *Litton Indus. Prods., Inc. v. Solid State Sys. Corp.*, 755 F.2d 158, 163 (Fed. Cir. 1985))).

B. Claim Construction

In an *inter partes* review, the Board interprets claim terms in an unexpired patent according to the broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b) (2016);[5] *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2142 (2016) (affirming applicability of broadest reasonable construction standard to *inter partes* review proceedings). Under that standard, and absent any special definitions, we generally give claim terms their ordinary and customary meaning, as would be understood by one of ordinary skill in the art at the time of the invention. *See In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). Any special definitions for claim terms must be set forth in the specification with reasonable clarity, deliberateness, and precision. *See In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994).

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[5] A recent amendment to this rule does not apply here, because the Petition was filed before November 13, 2018. *See* "Changes to the Claim Construction Standard for Interpreting Claims in Trial Proceedings Before the Patent Trial and Appeal Board," 83 Fed. Reg. 51,340 (Oct. 11, 2018) (to be codified at 37 C.F.R. pt. 42).

The parties dispute the meaning of "human antibody," which appears in each challenged claim. According to Petitioner, the term should be construed to encompass both partially human and fully human antibodies. Pet. 20–21. Patent Owner, on the other hand, argues the term should be limited to fully human antibodies, as would have been understood by a person of ordinary skill in the art. PO Resp. 7–31. In our Institution Decision, we preliminarily construed the term to include both partially and fully human antibodies. Dec. Inst. 6–8. Now, having considered the arguments and evidence presented during trial, we maintain our prior construction and determine the broadest reasonable interpretation of "human antibody" that is consistent with the specification includes partially human antibodies.

The specification of the '487 patent repeatedly teaches that the antibodies of the invention include both "partially human" and "fully human" monoclonal antibodies. *See, e.g.*, Ex. 1001, 20:57–59 ("Antibodies of the invention include, but are not limited to, partially human (preferably fully human) monoclonal antibodies . . . ."); *see also id.* at 21:1–2 ("The desired antibodies are at least partially human, and preferably fully human.").

The specification also states:

> A method for producing an antibody comprises immunizing a non-human animal, such as a transgenic mouse, with an IL-4R polypeptide, whereby antibodies directed against the IL-4R polypeptide are generated in said animal. Procedures have

> been developed for generating *human antibodies* in non- human animals. The antibodies may be partially human, or preferably completely human.

Ex. 1001, 19:38–44 (emphasis added). Thus, the specification teaches that the "human antibodies" generated can be "partially human" or "completely human." *Id.* Stated somewhat differently, the specification expressly indicates that the phrase "human antibodies" broadly encompasses both "partially human" and "completely human" antibodies. *Id.*

Patent Owner contends that we misunderstand the specification. PO Resp. 10–11. Specifically, Patent Owner contends that by referring to "[t]he antibodies" rather than to "human antibodies" in the last sentence quoted above, the antecedent basis for "the antibodies" is "antibodies directed against the IL-4R polypeptide." *Id.* at 11 (citing Ex. 2141 ¶¶ 29–30; Ex. 2185 ¶ 20). In effect, Patent Owner asks us to ignore the second sentence of the passage to interpret the specification that way. We decline to do so, as we read the specification as a whole.

Moreover, we are not persuaded that a person of ordinary skill in the art reading the specification would interpret "human antibodies" to be limited to fully human antibodies. If that were the case, the specification would not need to repeatedly clarify that some "human antibodies" are fully human. For example, the specification states:

> Examples of antibodies produced by immunizing such transgenic mice are the

> *human monoclonal antibodies* designated 6-2 (described in example 6); 12B5 (described in example 8); and MAbs 63, 1B7, 5A1, and 27A1 (all described in example 9). Monoclonal antibodies 6-2, 12B5, 63, 1B7, 5A1, and 27A1 are *fully human antibodies*, and are capable of inhibiting activity of both IL-4 and IL-13.

Id. at 21:6–13 (emphases added). Here, the specification describes MAbs 6-2, 12B5, 63, 1B7, 5A1, and 72A1 as "human monoclonal antibodies." *Id.* Thus, if a person of ordinary skill in the art necessarily equated "human monoclonal antibodies" with fully human antibodies, the specification would not need to state—in the very next sentence—that those same antibodies are "fully human antibodies." *See id.* The only rational reason for clarifying that these "human" antibodies are "fully human" antibodies is because a person of ordinary skill in the art reading the specification as a whole would understand that "human" monoclonal antibodies are broad enough to also embrace partially human antibodies. We find that interpretation to be reasonable given the specification expressly states that "[a]ntibodies of the invention include, but are not limited to, partially human (preferably fully human) monoclonal antibodies." *See* Ex. 1001, 20:57–59; *see also id.* at 21:1–2 ("The desired antibodies are at least partially human, and preferably fully human.").

Taken as a whole, we have found nothing in the specification that clearly limits the term "human antibodies" to fully human antibodies, alone. On the contrary, as explained above, the specification

supports construing the term more broadly to include partially human antibodies.

We find the Federal Circuit's decision in *Nobel Biocare* to be instructive. *Nobel Biocare Servs. AG v. Instradent USA, Inc.*, 903 F.3d 1365, 1380–82 (Fed. Cir. 2018). In that case, the patent owner argued that its claim to a dental implant with a "coronal region having a frustoconical shape" should be construed to mean "the coronal region as a whole has a frustoconical shape." *Id.* at 1380. The patent owner argued that the Board erred by construing the term to include both partly and wholly frustoconical coronal regions. *Id.* The Federal Circuit affirmed the Board's broader construction where the specification taught embodiments with both wholly and partly frustoconical regions. *Id.* The Federal Circuit noted that "there is a strong presumption against a claim construction that excludes a disclosed embodiment." *Id.* at 1381 (quoting *In re Katz Interactive Call Processing Patent Litig.*, 639 F.3d 1303, 1324 (Fed. Cir. 2011)). The court held that the patent owner had not overcome the presumption "[b]ecause the claim language does not require the exclusion of those embodiments, and there is no basis in the intrinsic record for excluding them." *Id.*

Likewise, here, Patent Owner has not identified anything in the intrinsic record that overcomes the presumption. Patent Owner cites an amendment to the claims made during prosecution where, in response to an anticipation rejection, the applicant amended claim 1 to recite "an isolated <u>human</u> antibody" and canceled dependent claim 11, which recited a "human, partially human, humanized, or

chimeric antibody." Ex. 1002, 68, 69, 245. Patent Owner asserts that this demonstrates that "human" antibodies are distinct from "partially human, humanized, or chimeric" antibodies. PO Resp. 20.

Patent Owner's position is unpersuasive because canceled claim 11 does not identify distinct classes of antibodies. As we noted in our Decision on Institution, Patent Owner admitted that "humanized antibodies are only partially human antibodies." Dec. Inst. 7 (quoting Prelim. Resp. 41). Applying that same logic, chimeric antibodies are partially human antibodies, as well. Moreover, the specification of the '487 patent equates chimeric and humanized antibodies, stating "[a]dditional embodiments include chimeric antibodies, e.g., humanized versions of murine monoclonal antibodies. Such *humanized antibodies* may be prepared by known techniques." Ex. 1001, 19:21–23 (emphasis added). Thus, according to the specification, partially human, humanized, and chimeric antibodies overlap and may describe the same antibody. In light of the ambiguity and overlap between the various claim terms, it is reasonable to interpret "human" and "partially human" as similarly overlapping, particularly given the interchangeable use of the terms. *See* Ex. 1001, 19:41–44 ("Procedures have been developed for generating human antibodies in non-human animals. The antibodies may be partially human, or preferably completely human.").

We also note that the applicants inserted the word "human" in claim 1 to traverse an inherent anticipation rejection. Ex. 1002, 73. In doing so, the applicants argued that the prior art taught making antibodies "against murine *or* human IL-4R, so the

skilled artisan is not *necessarily* led to make an anti-human IL-4R antibody." *Id.* at 74; *see also id.* at 76 (noting the examiner unfairly characterized the prior art abstract as teaching human antibodies where the abstract refers to "[*m*]*ammalian* antibodies" that are immunoreactive with "*mammalian* IL-4 receptors"). Thus, the applicant traversed the anticipation rejection by distinguishing the amended claim reciting "human antibodies" from prior art that was directed to murine antibodies. Given the circumstances of the amendment, nothing indicates the applicants added "human" to claim 1 to limit the scope of the claims to fully human antibodies.

Consistent with that reading, after Patent Owner's amendment to claim 1, the examiner continued to characterize the remaining claims 1–10 and 12–16 as being "drawn to an isolated human antibody that competes with a reference antibody for binding to human IL-4 receptor . . . said isolated antibody *that is a human antibody*, . . . *wherein the antibody is humanized*, is full length or fragment thereof." Ex. 1002, 46 (emphasis added); *see also id.* at 49. In other words, even after the applicant amended claim 1 to recite "an isolated human antibody," the examiner continued to understand the scope of the claims to include both fully and partially human antibodies. That reading, on the examiner's part, aligns with the rationale for the amendment, whereby "human" was added to claim 1 to distinguish the subject matter from the prior art's disclosure of murine antibodies without regard to whether the antibodies were fully or partially human. Like the examiner, we read "a human antibody" broadly to

include an antibody that "is humanized." Ex. 1002, 46.

We are required to consider the prosecution history when determining the broadest reasonable interpretation of the claims. *See Microsoft Corp. v. Proxyconn, Inc.*, 789 F.3d 1292, 1298 (Fed. Cir. 2015). But, to apply prosecution history disclaimer, the party seeking to invoke the disclaimer "bears the burden of proving the existence of a 'clear and unmistakable' disclaimer that would have been evident to one skilled in the art." *Trivascular, Inc. v. Samuels*, 812 F.3d 1056, 1064 (Fed. Cir. 2016).

Under the facts and circumstances presented here, we find the cited prosecution history to be equivocal, at best. We are not inclined—as Patent Owner suggests—to speculate and attribute the examiner's statements to a "copy and paste" error. Surreply 5–6 (citing Ex. 1002, 46, 85, 119, 120–121). Even if the examiner had simply copied and pasted the language from one Office Action to the next, the examiner consistently summarized the claims as being drawn to "an isolated antibody . . . said isolated antibody *that is a human antibody* . . . wherein the antibody is *humanized*." *See* Ex. 1002, 46, 85, 119, 120–121. That is, the examiner clearly included humanized antibodies in his interpretation of a "human antibody," and, as Petitioner notes, Patent Owner never corrected the examiner's interpretation. Sur-surreply 3.

We therefore will not narrow the meaning of "human antibody" where Patent Owner has not shown a "clear and unmistakable" disclaimer that the

term "human antibody," as interpreted in the claims, should be limited to fully human antibodies. *See Trivascular*, 812 F.3d at 1064 (finding no error in PTAB's conclusion that Petitioner failed to meet its burden of demonstrating a "clear and unmistakable" disclaimer during prosecution).

As further support for its narrow construction, Patent Owner relies heavily on extrinsic evidence and the testimony of its experts, Dr. Wayne Marasco and Dr. Fred Finkelman.[6] Ex. 2101 ¶¶ 15–21; Ex. 2141 ¶¶ 24–30; Ex. 2185 ¶¶ 16–21. Citing various papers, Drs. Marasco and Finkelman assert that the "convention in the field had long been to refer to antibodies by their species of origin." Ex. 2101 ¶ 17 (citing Ex. 1402, 13:5–28; Ex. 2103, 128); *id.* ¶ 21 (citing Ex. 2104, 65); Ex. 2141 ¶ 27 (citing Ex. 2171; Ex. 2172; Ex. 1206; Ex. 1409, 7-8; Ex. 1206); Ex. 2185 ¶ 18 (citing Ex. 1402; Ex. 2103; Ex. 2171; Ex. 2172; Ex. 1206; Ex. 1409; Ex. 2140). That evidence, however, is not inconsistent with the disclosure of the specification, which refers to "fully human" antibodies when identifying antibodies that contain no non-human fragments. Ex. 1001, 21:6–13. Moreover, we note that Riechmann,[7] cited in the specification of the

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[6] Patent Owner also submits the testimony of Stephen Kunin, said to be "an expert on US patent practice and procedure." PO Resp. 21; Ex. 2183. Whether the testimony is admissible or not (*see* 37 C.F.R. 42.65(a)), we give Mr. Kunin's testimony little weight, as he does not address certain portions of the specification and prosecution history relied upon in this Decision. *See, e.g.*, Ex 1002, 46, 49.

[7] Riechmann et al., *Reshaping Human Antibodies for Therapy*, 332 Nature 323–27 (1988) ("Riechmann," Ex. 1415).

'487 patent (Ex. 1001, 19:34–35), refers to humanized antibodies (i.e., partially human antibodies) as "human" antibodies. Ex. 1415, 325; *see also* Ex. 1477 ¶¶ 9–10.

The specification is "the single best guide to the meaning of a disputed term," and "[u]sually, it is dispositive" as claims must be construed "in view of the specification, of which they are a part." *Hamilton Beach Brands, Inc. v. f'real Foods, LLC*, 908 F.3d 1328, 1339 (Fed. Cir. 2018) (quoting *Phillips v. AWH Corp.*, 415 F.3d 1303, 1315 (Fed. Cir. 2005) (en banc)) (finding PTAB did not err in its construction that "follows the claim's plain language read in line with the specification"). And the specification in this case expressly identifies "human" antibodies as embracing both "fully human" and "partially human" antibodies. Ex. 1001, 19:41–44.

Patent Owner also notes the district court judge in the parallel district court proceeding construed the term "human antibody" to mean a "fully human" antibody. Surreply 6 (citing Ex. 2300, 18–21). After considering the evidence as outlined above, we reach a different conclusion than the district court based on the broader applicable case law here.

Accordingly, having considered the arguments and evidence presented during trial, we determine the broadest reasonable interpretation of "human antibody" includes both fully human and partially human antibodies.

C. Obviousness over Hart and Schering-Plough

Petitioner asserts that claims 1–17 of the '487 patent are unpatentable as obvious over Hart and Schering-Plough. Pet. 35–56. Patent Owner opposes Petitioner's assertion. PO Resp. 31–66; Surreply 7–15. Having considered the arguments and evidence presented at trial, we determine that Petitioner has established by a preponderance of the evidence that the challenged claims are unpatentable as obvious over Hart and Schering- Plough.

1. Hart (Ex. 1204)

Hart relates to a study of the signaling complexes induced by IL-4 and IL-13 in monocytes and monocyte-derived macrophages. Ex. 1204, 2088, 2091. Hart describes the use of a murine anti-hIL-4R antibody called "MAb230," which was obtained commercially from R&D Systems. *Id.* at 2094. Hart describes MAb230 as "a neutralizing antibody to IL-4R ." *Id.* Hart teaches that MAb230 inhibits both IL-4 and IL-13 signaling by blocking hIL-4R . *Id.* at 2092–93.

2. Schering-Plough (Ex. 1007)

Schering-Plough relates to "compounds and compositions useful for the detection, purification, measurement and/or inhibition of the human 130 kDa IL-4 receptor." Ex. 1007, Abstract. Schering-Plough recognizes that antibodies specific for the IL-4 receptor "could be therapeutic entities for allergy" given IL-4's role in the production of IgE. *Id.* at 2:18–22. Schering-Plough also recognizes that non-human monoclonal antibodies could be humanized and used for long term treatment of allergic disorders and may prevent the rejection of grafts. *Id.* at 2:20–23.

Accordingly, Schering-Plough describes a technique for making humanized versions of mouse anti-hIL-4R antibodies called "CDR grafting." *Id.* at 5:1–4. "[T]he CDRs [complementarity determining regions] from a rodent monoclonal antibody can be grafted onto a human antibody, thereby 'humanizing' the rodent antibody." *Id.* at 5:3–4.

3. Analysis

A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; any differences between the claimed subject matter

and the prior art; (3) the level of skill in the art; and (4) objective evidence of nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

"[A] patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art." *KSR*, 550 U.S. at 418. "[I]t can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does." *Id.* Moreover, a person of ordinary skill in the art must have had a reasonable expectation of success of doing so. *PAR Pharm., Inc. v. TWi Pharms., Inc.*, 773 F.3d 1186, 1193 (Fed. Cir. 2014).

One way a patent's subject matter can be proved obvious is by "noting that there existed at the time of invention a known problem for which there was an obvious solution encompassed by the patent's claims." *KSR*, 550 U.S. at 420. "When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp." *Id.* at 421.

Regarding claim 1, Petitioner asserts that the combination of Hart and Schering-Plough teaches each limitation of the claims. For example, Hart teaches a murine anti-hIL-4R blocking antibody, MAb230, which Dr. Zurawski asserts inherently "competes" with mAb 12B5. Pet. 35–36. According to Petitioner, Hart teaches every limitation of claim 1 except that it is a murine instead of a human

antibody. *Id.* at 36. Petitioner argues that Schering-Plough supplies the missing limitation through its description of techniques for humanizing murine anti-hIL-4R blocking antibodies so they can be employed "for long term treatment of allergic disorders." *Id.* (quoting Ex. 1007, 2:18–22, 5:1–23, 6:30–34).

Petitioner further asserts an ordinary artisan would have had a reason to combine Hart and Schering-Plough because it was well known in the art that the ultimate goal of humanization is to decrease the immunogenicity of a non-human antibody while still maintaining its antigen binding specificity and affinity. *Id.* at 37 (citing Ex. 1400 ¶¶ 138, 142; Ex. 1413, 969). Thus, according to Petitioner, it would have been obvious to modify Hart's MAb230 with Schering-Plough's humanization techniques to derive a potential therapeutic for allergic diseases. *Id.* at 36 (citing Ex. 1007, 2:18–22; 5:1–23; Ex. 1400 ¶ 132). Petitioner further asserts a person of ordinary skill in the art would have had a reasonable expectation of success in combining the references, as humanization techniques were well developed by May 1, 2001, and "skilled artisans would have reasonably expected to apply these techniques to transform MAb230 into a promising therapeutic with the same specificity and relative affinity for hIL-4R." *Id.* at 45 (citing Ex. 1400 ¶¶ 56, 149; Ex. 1007, 5:5–8; Ex. 1405, 10033).

Based on the arguments and evidence presented at trial, we agree with Petitioner and its expert, Dr. Zurawski, that the combination of Hart and Schering-Plough teaches each limitation of claim 1. *See* Ex. 1400 ¶¶ 133–150. We have considered the arguments

and evidence regarding claims 2– 17, including Dr. Zurawksi's persuasive supporting testimony. *See* Ex. 1400 ¶¶ 151–209. Based on Petitioner's contentions and supporting evidence, we find that the combination of Hart and Schering-Plough teaches each limitation of those claims, as well. *See id.* We further note that Patent Owner has not argued the specific limitations of the dependent claims.

We are also persuaded that Petitioner has shown that a person of ordinary skill in the art would have had a reason to humanize Hart's MAb230 using Schering-Plough's humanization technique to create a potential therapeutic for allergic diseases with a reasonable expectation of success. Petitioner's expert, Dr. Zurawski, explains that a person of ordinary skill in the art would have had a reason to graft the CDRs and other binding- determinant amino acid residues from MAb230 into a human framework according to the teachings of Schering-Plough to "derive a less immunogenic version of MAb230 that could be used as a potential therapeutic." Ex. 1400 ¶ 132.

Dr. Zurawski further testified that "MAb230 was known to block both IL-4 and IL-13 activity and to exhibit an IC_{50} value for IL-4 inhibition in the range of 20–40 pM, which would have indicated to the skilled artisan that MAb230 is a promising candidate from which to derive an effective therapeutic." Ex. 1400 ¶ 136 (citing Ex. 1204, Fig. 8; Ex. 1206). Moreover, we credit the testimony of Dr. Zurawski that techniques for preparing a humanized antibody that retains MAb230's specificity and affinity for hIL-4R were well known and within the ability of a person of ordinary skill in the art. *Id.* ¶ 138. Dr. Zurawski

also states that, as of 1995, over 100 examples of humanized antibodies have been successfully achieved. *Id.* (quoting Ex. 1409, 33).

In response, Patent Owner argues we should reject this ground because the proper construction of "human antibody" does not include humanized antibodies (i.e., partially human antibodies). PO Resp. 37–47. As explained above, however, we have construed "human antibody" to include partially human antibodies and, therefore, reject Patent Owner's argument.

Patent Owner also argues that Petitioner's arguments rely on impermissible hindsight to arrive at the claimed invention. PO Resp. 33 (citing Ex. 2141 ¶¶ 31–33; Ex. 2185 ¶¶ 22–56; Ex. 2101 ¶¶ 22–35). Patent Owner criticizes Petitioner's immediate focus on MAb230 rather than considering the full scope and content of the prior art. *Id.* at 33. According to Patent Owner, Petitioner (1) presents an oversimplified view of the art and ignores the numerous other immune-cell signaling molecules involved in allergic disorders that a person of ordinary skill in the art would have considered in developing candidate therapeutic targets; (2) ignores the wide range of strategies in the prior art for altering IL-4R signaling; and (3) ignores the fact that MAb230 was one of at least twelve anti-IL-4R antibodies in the prior art and was not and never has been recognized in the art as a candidate for modification to create a therapeutic. *See id.* at 34–46; Ex. 2141 ¶¶ 31–33, 41; Ex. 2185 ¶¶ 22–56; Ex. 2101 ¶¶ 22–35.

We agree with Petitioner, however, that the motivation to humanize murine antibodies specific for IL-4R for use in treating allergic disorders is taught in Schering-Plough. *See* Reply 8. Schering-Plough expressly states that "[n]on-human monoclonal antibodies [specific for IL-4R] could advantageously be humanized and thus be used for long term treatment of allergic disorders." Ex. 1007, 2:1–23 (citation omitted). That other strategies may have existed for inhibiting IL-4R signaling does not change our analysis. The law "does not require that the motivation be the *best* option, only that it be a *suitable* option from which the prior art did not teach away." *PAR Pharm.*, 773 F.3d at 1197–98 (rejecting argument that there were better methods available to address the prior art concerns).

Here, although others in the art (including Petitioner) may have been pursuing different avenues for inhibiting IL-4 activity, that activity is inapposite to our analysis. Patent Owner has not identified any persuasive evidence in the record that teaches away from humanizing MAb230. *See Senju Pharm. Co. v. Lupin Ltd.*, 780 F.3d 1337, 1348, 1350 (Fed. Cir. 2015) (rejecting argument that claims were not obvious where prior art references teaching high concentrations did not teach away from use of lower concentrations, as claimed).

Patent Owner and its expert Dr. Finkelman argue that a person of ordinary skill in the art would not have chosen to humanize MAb230 because of the risk of unacceptable side effects from blocking both IL-4 and IL-13 activity, such as parasitic infection, inflammatory disease, and cancer. PO Resp. 54 (citing

Ex. 2185 ¶¶ 43–49). According to Patent Owner, because IL-4 and IL-13 were known to have protective effects, a person of ordinary skill in the art "would not have had a reason to modify an antibody that blocked both IL-4 and IL-13 activity and would not have had a reasonable expectation of success in doing so." *Id.* at 54–59.

We are not persuaded that the potential risk of side effects would have deterred a person of ordinary skill in the art from developing a way to block both IL-4 and IL-13 signaling. *See* Ex. 1477 ¶¶ 44–49. First, we note the literature cited by Patent Owner's expert Dr. Finkelman characterizes the side effects as theoretical. Dr. Finkelman's own paper states that although studies "*suggest* that TH2 cytokine antagonists *may* increase the risk and severity of [side effects,] such therapy should be relatively safe" if certain "commonsense precautions" are taken. Ex. 2159, 772 (emphasis added); *see* Ex. 1477 ¶ 46; *see also* Ex. 2185 ¶ 47 (noting both "IL-4 and IL-13 exert antitumoral properties *in vitro* and ***possibly*** *in vivo*" (emphasis added)). Thus, we credit the testimony of Petitioner's expert, Dr. Zurawski, who supports his opinion with several references touting the benefits of inhibiting both IL-4 and IL-13 signaling. Ex. 1477 ¶¶ 45 (citing Ex. 1407, 14 ("Several researchers say that perhaps a more promising drug target than either cytokine is the portion of the receptor molecule on immune system cells that is shared by both IL-4 and IL-13. . . . Several companies are already seeking an effective way to block the receptor's signaling."); Ex. 1011, 412 (stating therapies directed at IL-4R are "especially interesting" because such agents "may be

expected to inhibit the signaling induced by the binding of both IL-4 and IL-13 because of shared receptor subunits")).

Patent Owner also argues that even if a person of ordinary skill in the art would have chosen to develop anti-IL-4R antibodies as a therapeutic strategy, Petitioner has failed to show why a person of ordinary skill in the art would have selected MAb230 from the known murine anti-IL-4R antibodies. PO Resp. 46, 59–61 (citing Ex. 2101 ¶¶ 32–35; Ex. 2141 ¶¶ 31–33; Ex. 2185 ¶¶ 39–41, 50–53). Patent Owner argues that MAb230 is manufactured for "RESEARCH USE ONLY," and that the literature in the art consistently describes MAb230 as a research tool. PO Resp. 47–49. Moreover, Patent Owner argues that Petitioner has not identified any prior art that suggests modifying MAb230 to make a therapeutic antibody, even though it had been commercially available as a research tool for 20 years. *Id.* at 47 (citing Ex. 2101 ¶ 34; Ex. 2141 ¶¶ 31–33; Ex. 2185 ¶¶ 39–41); *see also id.* at 48–53.

The problem with Patent Owner's argument is that the law does not require the prior art to explicitly suggest humanizing MAb230. *See Allergan, Inc. v. Apotex Inc.*, 754 F.3d 952, 964 (Fed. Cir. 2014) ("A motivation to combine may be implicit in the prior art—silence does not imply teaching away."). Rather, we look to the prior art as a whole and determine what it would have taught a person of ordinary skill in the art. *In re Merck & Co.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986) (stating prior art "must be read, not in isolation, but for what it fairly teaches in combination with the prior art as a whole").

Moreover, as explained above, Petitioner need not show that MAb230 was the only option or even the best option for a person of ordinary skill in the art. On the contrary, Petitioner may show that MAb230 was a "suitable option from which the prior art did not teach away." *PAR Pharm.*, 773 F.3d at 1197–98. Here, Schering-Plough expressly teaches a person of ordinary skill in the art that humanizing a non-human IL-4R antibody could be used for long term treatment of allergic disorders. Ex. 1007, 2:1–23. Schering- Plough identifies nine different murine anti-IL-4R antibodies, three of which inhibit IL-4R binding. *Id.* at 2:32–33, 14 (Table III); *see also* Ex. 1477 ¶¶ 23–24. Tony[8] discloses a murine antibody X2/45, which also blocks IL-4 activity. Ex. 1019, Abstract.

Dr. Zurawski credibly testifies that a person of ordinary skill in the art would have understood that MAb230 was a potent anti-hIL-4R blocking antibody (Ex. 1400 ¶ 148), and even more potent than the antibodies reported in Schering-Plough and Tony (Ex. 1477 ¶ 24). Accordingly, Dr. Zurawski concludes, "MAb230's reported ND50/IC50 for inhibiting IL-4 activity sets it apart from any pre-May 1, 2001 anti-hIL-4R blocking antibody of which I am aware and makes MAb230 a natural choice for therapeutic development. It is a matter of common sense to select

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[8] Tony et al., *Design of Human Interleukin-4 Antagonists Inhibiting Interleukin-4-Dependent and Interleukin-13-Dependent Responses in T- Cells and B-Cells with High Efficiency*, 225 EUR. J. BIOCHEM. 659–65 (1994) (Ex. 1019, "Tony").

the most potent anti-hIL-4R blocking available for humanization." Ex. 1477 ¶ 24; *see also id.* ¶¶ 39–43 (considering literature cited by Patent Owner's expert and opining that none teaches against humanizing MAb230).

Patent Owner and Dr. Finkelman argue, however, that affinity alone does not indicate whether an antibody would make a good therapeutic because it depends on what the antibody does when bound to the antigen. PO Resp. 62; Ex. 2185 ¶¶ 54–56. Patent Owner asserts that a person of ordinary skill in the art would have been concerned that a high-affinity antibody would amplify the toxicities that would result from blocking IL-4 and IL-13 activity. *Id.* As explained above, however, we are not persuaded that persons of ordinary skill in the art would have been deterred by the potential for theoretical side effects. Moreover, citing literature in support, Dr. Zurawski credibly explains that a person of ordinary skill in the art would have understood that high binding affinity/potency indicated that MAb230 was a promising candidate for therapeutic development. Ex. 1477 ¶¶ 52–53 (citing Ex. 1406, 2:14–20; Ex. 1410, 141; Ex. 1475, 499).

Patent Owner also argues that Petitioner has failed to show that a person of ordinary skill in the art would have had a reasonable expectation of success in modifying MAb230 to generate a therapeutic antibody. PO Resp. 63–66; Surreply 13–14. According to Patent Owner, Petitioner has only argued that a person of ordinary skill in the art could have successfully humanized MAb230. PO Resp. at 64 (citing Pet. 45). Regardless, Patent Owner argues

that by May 1, 2001, "the prior art had not demonstrated the feasibility of targeting IL-4 or IL-13, either individually or in combination, to treat allergic disorders." *Id.* at 65. And given the risk of "potentially serious side-effects," Patent Owner argues that a person of ordinary skill in the art would not have had a reasonable expectation of success in developing a therapeutic by humanizing MAb230. *Id.* at 66 (citing Ex. 2185 ¶¶ 43–49).

In response, Petitioner notes that the claims do not require therapeutic efficacy. Reply 21; Sur-surreply 14. We agree with Petitioner that the pertinent question is not whether there is a reasonable expectation that the antibodies will actually be therapeutically effective. Rather, the question is whether a person of ordinary skill in the art would have reasonably expected to arrive at the claimed invention. *See Allergan, Inc. v. Sandoz Inc.*, 726 F.3d 1286, 1292 (Fed. Cir. 2013) ("[T]he person of ordinary skill need only have a reasonable expectation of success of developing the claimed invention."). Moreover, a reasonable expectation of success does not require "an absolute certainty for success." *PAR Pharm.*, 773 F.3d at 1198. Here, Dr. Zurawski testifies—and Patent Owner does not contest—that preparing a humanized antibody that retains MAb230's specificity and approximate affinity for hIL-4R using CDR-grafting was within the ability of a person of ordinary skill in the art. Ex. 1400 ¶ 138. Thus, we are persuaded that the record supports a reasonable expectation of success in humanizing Hart's MAb230 with the CDR grafting technique of Schering-Plough.

Even if we were to require some showing of a reasonable expectation of therapeutic efficacy, we note that Patent Owner's statements to the Office during prosecution of a related patent application tend to support that showing. In response to an enablement rejection where the examiner found the prior art taught inhibiting IL-4 is not effective in treating asthma, Patent Owner stated, "There is no reasonable basis for concluding that antibodies that bind to 'the perfect target' and inhibit 'an important regulator' would be therapeutically ineffective." Ex. 1407, 7. This is consistent with the art of record that teaches those of ordinary skill in the art believed a blocking antibody like MAb230 may have therapeutic potential. Ex. 1007, 2:1–22 ("Non-human monoclonal antibodies could advantageously be humanized and thus be used for long term treatment of allergic disorders." (citation omitted)); Ex. 1011, 410, 412 (stating "IL-4 receptor antagonism offers another potential therapeutic approach to IL-4 inhibition in allergic rhinitis" and that monoclonal antibodies to IL-4R are "especially interesting").

We note that Patent Owner has not separately presented evidence of secondary considerations of nonobviousness, such as unexpected results, long-felt but unmet need, or failure of others. To the extent Patent Owner contends that the evidence discussed above constitutes such evidence, we have considered it in conjunction with Petitioner's evidence of obviousness and found it not to be persuasive. *In re Cyclobenzaprine, Hydrochloride Extended-Release Capsule Patent Litig.*, 676 F.3d 1063, 1079 (Fed. Cir. 2012) (stating "objective evidence [must] be

considered before making an obviousness determination").

Accordingly, having considered the arguments and evidence presented at trial, we determine that Petitioner has shown by a preponderance of the evidence that claims 1–17 are unpatentable as obvious over Hart and Schering-Plough.

D. Obviousness over Hart, Schering-Plough, and Hoogenboom

Petitioner asserts claims 1–17 of the '487 patent are also unpatentable as obvious over Hart, Schering-Plough, and Hoogenboom. Pet. 56–61. For the reasons discussed above, however, we have already determined that claims 1–17 are unpatentable as obvious over Hart and Schering-Plough. In light of that determination, we need not address whether the same claims are also unpatentable as obvious over the combination of Hart, Schering-Plough, and Hoogenboom.

III. MOTIONS TO EXCLUDE

The party moving to exclude evidence bears the burden of proving that it is entitled to the relief requested—namely, that the material sought to be excluded is inadmissible under the Federal Rules of Evidence ("FRE"). *See* 37 C.F.R. §§ 42.20(c), 42.62(a).

A. Petitioner's Motion to Exclude

Petitioner filed a Motion to Exclude the testimony of Stephen G. Kunin. Paper 80. Patent Owner relies on the testimony of Mr. Kunin as an expert in U.S.

patent practice and procedure and offered his opinion regarding claim construction. Ex. 2183. We considered but do not rely on Mr. Kunin's testimony in rendering this Decision. Accordingly, we dismiss Petitioner's Motion to Exclude as moot.

B. Patent Owner's Motion to Exclude

1. Portions of Exhibits 1400 and 1477

Patent Owner filed a Motion to Exclude portions of testimony from Exhibits 1400 (Zurawski Decl.) and 1477 (Zurawski Rebuttal Decl.) that are not cited in the Petition or Reply. Paper 75, 1–3. We do not rely on any of the cited testimony and, therefore, dismiss as moot Patent Owner's motion related to that testimony.

Patent Owner also argues paragraphs 24 and 38 of Dr. Zurawski's Rebuttal Declaration (Ex. 1477) should be excluded because the paragraphs rely on inadmissible hearsay evidence relating to Exhibit 1455, the MAb230 data sheet. Even if Exhibit 1455 were inadmissible hearsay, we agree with Petitioner that Dr. Zurawski is entitled to rely on the datasheet under FRE 703 as information that an expert in his field would reasonably rely on. *See* Paper 84, 2–3; FRE 703 ("An expert may base an opinion on facts or data in the case that the expert has been made aware of or personally observed. If experts in the particular field would reasonably rely on those kinds of facts or data in forming an opinion on the subject, they need not be admissible for the opinion to be admitted.").

Patent Owner argues Petitioner has failed to show an expert would rely on Exhibit 1455 because it does not include the necessary experimental detail underlying the experiments. Paper 88, 2. We are not persuaded, however, that an expert would require such experimental detail for a commercial datasheet that is provided when a customer purchases MAb230. Accordingly, we find Dr. Zurawski is entitled to rely on Exhibit 1455 and we deny Patent Owner's motion as to paragraphs 24 and 38 of Exhibit 1477.

2. Exhibit 1407

Patent Owner also moves to exclude Exhibit 1407 as inadmissible hearsay. Paper 75, 3–4. Exhibits 1407 is an excerpt from the prosecution history of related U.S. Patent Application No. 10/324,493. Patent Owner argues that the Petition relies on Exhibit 1407 for the truth of the matter asserted when alleging that "hIL-4R was known in the prior art as 'the perfect target' for therapeutic agents because it is an 'important regulator' of allergic disorders." *Id.* at 3–4 (citing Paper 1, 23). Patent Owner also argues that Petitioner's Reply similarly relied on Exhibit 1407 for the statement that "[s]everal companies [were] already seeking an effective way to block the [IL-4] receptor's signaling" and "IL-4 and IL-13-induced signaling by blocking IL-4R was a preferred strategy for treating allergic diseases." *Id.* at 4.

Petitioner notes that the Petition relies on Exhibit 1407 and Patent Owner failed to timely object. Paper 84, 4–5. We agree with Petitioner that Patent Owner failed to timely object to the evidence within ten days of instituting trial. *See* Paper 18 (objections filed

March 2, 2018); 37 C.F.R. § 42.64(b)(1) (stating objections to evidence submitted during a preliminary proceeding must be filed within ten days of the institution of trial). Patent Owner's objection to those portions of Exhibit 1407 cited in the Petition is therefore waived.

Patent Owner asserts it is entitled to object to inadmissible evidence in the Reply. But the evidence objected to in the Reply (i.e., Ex. 1407, pages 7 and 14) was also cited in the Petition. *See* Reply 9, 11–15, 19, 21, 24 (citing pages 7 and/or 14 of Exhibit 1407). Patent Owner cannot rehabilitate its waived objection when the same evidence is relied upon in the Reply. We, therefore, find Patent Owner's objection to pages 7 and 14 of Exhibit 1407 to be waived and deny Patent Owner's motion as to Exhibit 1407.

3. Exhibits 1432 and 1455

Patent Owner also moves to exclude the entirety of Exhibits 1432 (Defendant's Invalidity Contentions) and 1455 (MAB 230 Data Sheet). Paper 75, 4–8. We do not rely directly on either exhibit for purposes of rendering this Decision. Accordingly, we dismiss Patent Owner's Motion to Exclude as moot as to Exhibits 1432 and 1455.

4. Exhibits 2133 and 2304

Patent Owner moves to exclude portions of Exhibits 2133 and 2304, which are transcripts from the cross-examination of Dr. Zurawski. Paper 75, 8–10. We do not rely on the objected-to testimony for purposes of rendering this Decision. Accordingly, we

dismiss Patent Owner's Motion to Exclude as moot as to those portions of Exhibits 2133 and 2304.

IV. CONCLUSION

For the foregoing reasons, we conclude that Petitioner has established by a preponderance of the evidence that claims 1–17 of the '487 patent are unpatentable as obvious over Hart and Schering-Plough.

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1–17 of the '487 patent are held unpatentable as obvious;

FURTHER ORDERED that Petitioner's Motion to Exclude is *dismissed as moot*;

FURTHER ORDERED that Patent Owner's Motion to Exclude is *dismissed as moot-in-part and denied-in-part*; and

FURTHER ORDERED that, because this is a Final Written Decision, the parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirement of 37 C.F.R. § 90.2.

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