NOTE: This disposition is nonprecedential.

United States Court of Appeals for the Federal Circuit

IN RE: THERIPION, INC.,
Appellant

2022-1346

Appeal from the United States Patent and Trademark Office, Patent Trial and Appeal Board in No. 15/909,314.

Decided: August 10, 2023

JILL BROWNING, Greenblum & Bernstein, P.L.C., Reston, VA, argued for appellant. Also represented by NICHOLAS V. SHERBINA, Sherbina Intellectual Property Law, PLLC, Everett, WA.

MARY L. KELLY, Office of the Solicitor, United States Patent and Trademark Office, Alexandria, VA, argued for appellee Katherine K. Vidal. Also represented by THOMAS W. KRAUSE, ROBERT MCBRIDE, AMY J. NELSON, FARHEENA YASMEEN RASHEED.

Before HUGHES, CUNNINGHAM, and STARK, *Circuit Judges*.

STARK, *Circuit Judge*.

Theripion, Inc. ("Theripion") appeals the results of the Patent Trial and Appeal Board's ("Board") *ex parte* examination of U.S. Patent Application No. 15/909,314 (the "'314 application"). The Board affirmed a patent examiner's final rejection of claims 1-13, 16, 22-24, and 27 of the '314 application as obvious over numerous prior-art references. For the following reasons, we vacate and remand. On remand, the Board must reassess its affirmance of the examiner's rejection of the claims and must provide further explanation of its reasoning for whatever conclusions it reaches.

I

Low levels of high-density lipoprotein ("HDL") have long been associated with an increased risk of myocardial infarction. (J.A. 23) (Specification ¶ 4) Along with stroke, myocardial infarction is often a consequence of cardiovascular disease, and these two conditions share "a common underlying etiology of atherosclerosis."[1] (J.A. 23) (Specification ¶ 3) Therefore, therapeutic strategies developed to promote atheroprotection – that is, protecting patients from cardiovascular disease and, thereby, reducing the risk of stroke and myocardial infarction – have focused on increasing a patient's HDL levels. (J.A. 1416 ("It is hypothesized that high levels of plasma HDL are not only protective against coronary artery disease, but may actually induce regression of atherosclerotic plaques."); J.A. 2902 ("HDL infusion therapies may induce both acute and chronic mechanisms that mediate atheroprotection."))

Apolipoprotein A-1 ("ApoA1") is "the principal protein component of HDL." (J.A. 24) (Specification ¶ 5) Introducing ApoA1 into the body can, thus, be a mechanism for increasing HDL levels. (J.A. 24) (Specification ¶¶ 6-7)

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[1] Atherosclerosis is the "thickening or hardening of the arteries caused by plaque buildup." Appellant's Br. 3.

However, ApoA1 has a relatively short half-life, meaning it only remains intact in the human body for a short time. (J.A. 75 (Specification ¶ 169) (discussing "circulating half-life of the resulting molecule"); J.A. 1418 ("ApoA-I molecules of the invention may retain all or most of their biological activities and the following properties may result: altered pharmacokinetics and pharmacodynamics leading to *increased half-life* and alterations in tissue distribution (e.g[.], *ability to stay in the vasculature for longer periods of time*) . . . .") (emphasis added)) The half-life of ApoA1 can be improved by joining it to another protein, forming what is referred to in the art as a fusion protein. (J.A. 6) ("[I]t was known that the Fc portion in the fusion protein increases the plasma half-life of the fused ApoA-1.") ApoA1 can be connected to another protein either directly or by using a linker molecule, creating an ApoA1 fusion protein. (J.A. 25) (Specification ¶ 10)

Immunoglobulins, a different kind of protein than ApoA1 (J.A. 43) (Specification ¶ 76), have remarkably long half-lives. (J.A. 602) ("The half-life of [a certain class of immunoglobulins] in circulation is the longest among all five types of immunoglobulin and may reach 21 days.") Portions of immunoglobulins that "bind[] to antibody receptors on cells" are referred to as "Fc regions" or "Fc fragments." (J.A. 43-44) (Specification ¶ 78) Prior to the '314 application, it was known in the art that fusion proteins could achieve longer half-lives when one protein was an Fc fragment of an immunoglobulin. (J.A. 2182) ("Fusion proteins comprising an Fc portion of an immunoglobulin can bestow several desirable properties on a fusion protein including . . . increased serum half-life . . . .") At the time the '314 application was filed, there was already a commercially available fusion protein, the Sino Biological ApoA1-Fc fusion protein, which contained ApoA1 directly bound (i.e., without a linker) to an Fc region of an immunoglobulin. (J.A. 105) (Specification ¶ 248)

Raising HDL levels does not, by itself, provide sufficient atheroprotection. (J.A. 23 (Specification ¶ 4) (referring to "consensus view that the process of reverse cholesterol transport [i.e., RCT] . . . is central to beneficial HDL activity rather than simply an increase in HDL without RCT"); J.A. 2904 ("[C]holesterol efflux relates to atherosclerotic severity to a greater degree than HDL cholesterol concentration.")) Scientists have come to understand that RCT, the process by which the human body removes free cholesterol, is also important for atheroprotection – and, further, that RCT is mediated by ApoA1 and HDL. (J.A. 2904) ("The removal of free cholesterol . . . within atherosclerotic plaques by HDL and [ApoA1] is thought to be pivotal to atheroprotection.") The first, and critical, step in RCT is cholesterol efflux. (*Id.*)

Theripion observed that the Sino Biological ApoAl-Fc fusion protein, wherein ApoA1 and the Fc fragment are directly bound to each other without a linker, exhibits disappointing cholesterol efflux activity relative to ApoA1-Fc fusion proteins having linkers consisting of a large number of amino acids. (J.A. 49) (Specification ¶ 95) As the specification of the '314 application states:

> ApoA-1-Fc fusion protein containing a 26 amino acid linker between ApoA-1 and the Fc region (ApoA-1(26)Fc) demonstrated increased cholesterol efflux as compared to either an ApoA-1-Fc fusion protein with a two amino acid linker (ApoA-1(2)Fc (Theripion)) or an ApoA-1-Fc fusion protein without a linker (ApoA-1(0)Fc ([Sino Biological ApoA1-Fc fusion protein])) and had activity similar to wild-type human ApoA-1 (Control ApoA-1).")

(*Id.*) Theripion discovered that using a linker composed of 10 to 40 amino acids between ApoA1 and the Fc region increases cholesterol efflux activity. (*Id.*) The claims of the '314 application purport to cover this alleged invention.

Independent claim 1, which is illustrative of the issues presented in this appeal, reads:

> 1. A fusion polypeptide comprising, from an amino-terminal position to a carboxyl-terminal position, ApoA1-L1-D, wherein:
>
> ApoA1 is a first polypeptide segment comprising an amino acid sequence having at least 95% identity with amino acid residues 19-267 or 25-267 of SEQ ID NO:2, wherein said first polypeptide segment has cholesterol efflux activity;
>
> L1 is a first polypeptide linker consisting of from 10 to 40 amino acid residues; and
>
> D is an immunoglobulin Fc region,
>
> wherein the fusion polypeptide has increased cholesterol efflux activity as compared to the ApoA1-L1-D fusion polypeptide in which L1 is a two amino acid linker or is absent.

(J.A. 17) Claims 2-13, 16, 22-24, and 27 depend from claim 1. (J.A. 17-19)

In a January 24, 2020 office action, an examiner with the Patent and Trademark Office ("PTO") rejected claims 1-13 and 27 as obvious in view of a combination of

references including Knudsen,[2] Ledbetter,[3] Bacus,[4] and/or Lagerstedt.[5] (J.A. 634-35, 637) The examiner also rejected claims 16 and 22-24 as obvious in view of Knudsen, Bacus, and Lagerstedt, but not Ledbetter, in addition to other references that are not relevant to this appeal. (J.A. 648)

Theripion appealed to the Board, which affirmed the rejections.[6] (J.A. 2) Theripion then timely appealed to us. We have jurisdiction under 28 U.S.C. § 1295(a)(4)(A).

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[2] Knudsen et al., U.S. Patent App. Pub. No. 2011/0178029 A1, published July 21, 2011. (J.A. 1409-1533)

[3] Ledbetter et al., U.S. Patent No. 8,937,157 B2, issued January 20, 2015. (J.A. 1757-1897)

[4] Bacus et al., U.S. Patent App. Pub. No. 2009/0318346 A1, published December 24, 2009. (J.A. 2114-51)

[5] Lagerstedt et al., U.S. Patent App. Pub. No. 2015/0353626 A1, published December 10, 2015. (J.A. 2152-2390)

[6] The examiner specifically rejected claims 1-13 and 27 based on Knudsen in view of Benoit, Igawa, Ledbetter, Heusser, Nezu, Bacus, Lagerstedt, and Wu. On appeal, the Board affirmed, focusing on the teachings of Knudsen, Ledbetter, Bacus, and Lagerstedt. (J.A. 8-12) At the Board, Theripion "did not separately argue the Examiner's rejection of claims 16 and 22-24," so the Board affirmed as to claims 1-13, 16, 22-24, and 27. (J.A. 12) On appeal to us, Theripion challenges only the Board's findings with regards to Knudsen, Ledbetter, Bacus, and Lagerstedt, *see, e.g.*, Appellant's Br. 2, so we limit our analysis to these references.

II

Obviousness presents a question of law based on subsidiary factual findings. *See In re Kubin*, 561 F.3d 1351, 1355 (Fed. Cir. 2009). A proposed patent claim is obvious, and should not be issued, "if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains." 35 U.S.C. § 103(a). In determining whether a claim is obvious, we – like the patent examiner and the Board – assess "(1) 'the scope and content of the prior art,' (2) 'differences between the prior art and the claims at issue,' (3) 'the level of ordinary skill in the pertinent art,' and (4) the presence of objective indicia of nonobviousness such 'as commercial success, long felt but unsolved needs, failure of others,' and unexpected results." *Elbit Sys. of Am., LLC v. Thales Visionix, Inc.*, 881 F.3d 1354, 1357 (Fed. Cir. 2018) (quoting *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17 (1966)).

On appeal, we review the Board's legal determination of obviousness de novo and its factual findings for substantial evidence. *See, e.g.*, *Almirall, LLC v. Amneal Pharms. LLC*, 28 F.4th 265, 271 (Fed. Cir. 2022). "[A] fact finder must consider *all* evidence of obviousness and nonobviousness before reaching a determination" as to whether a particular claim would have been obvious to a person of ordinary skill in the art at the priority date of the proposed claim. *In re Cyclobenzaprine Hydrochloride Extended-Release Capsule Patent Litig.*, 676 F.3d 1063, 1077 (Fed. Cir. 2012). Among the evidence that must be considered is any objective evidence of non-obviousness (if presented), such as commercial success or satisfaction of a long-felt but unmet need, as such evidence "serve[s] to guard against slipping into use of hindsight" and, thereby, help courts avoid "the temptation to read into the prior art the teachings of

the invention in issue." *Graham*, 383 U.S. at 36 (internal quotation marks omitted).

The Board "must make the necessary findings and have an adequate evidentiary basis for its findings," including those made in connection with an obviousness determination. *In re Nuvasive, Inc.*, 842 F.3d 1376, 1382 (Fed. Cir. 2016) (internal quotation marks omitted). Moreover, the Board "'must examine the relevant data and articulate a satisfactory explanation for its action including a rational connection between the facts found and the choice made.'" *Id.* (quoting *Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983)). "[T]he amount of explanation needed will vary from case to case, depending on the complexity of the matter and the issues raised in the record." *Pers. Web Techs., LLC v. Apple, Inc.*, 848 F.3d 987, 992 (Fed. Cir. 2017). "A brief explanation may do all that is needed if, for example, the technology is simple and familiar and the prior art is clear in its language and easily understood." *Id.* at 994.

III

On appeal, Theripion argues that the Board erred in its analysis of unexpected results and motivation to combine. We agree with Theripion – though only to the extent that we find the Board failed to adequately explain how it determined the '314 application's claims are obvious in light of the totality of the record before it. We vacate the Board's judgment of obviousness and remand for it to reassess the

evidence and provide a more fulsome explanation for whatever conclusions it reaches.

A[7]

Theripion insists that, at the time it filed the '314 application, a person of ordinary skill in the art would not have expected that the addition or extension of a linker between fusion components would improve protein functions. The Board, by contrast, found that this relationship would have been expected – but for reasons that we are unable to discern from its written decision. (J.A. 11) ("Thus, one of ordinary skill in the art would similarly expect that use of a peptide linker, such as Gly_4Ser_4, would increase the biological activity (i.e., cholesterol efflux activity) of a Fc fusion protein with ApoA1.") Given the complexity of the technology involved here, we vacate and remand for the Board to look again at the evidence before it and to provide a better explanation of how it evaluated Theripion's evidence regarding unexpected results.

According to Theripion, at the time of its alleged invention, an ordinarily skilled artisan would have thought that the addition or extension of a linker between fusion-protein components would not necessarily improve, and could even decrease, desired protein function. Theripion's expert, Dr. Jeffrey A. Ledbetter – who is also the lead author on the Ledbetter prior-art reference (J.A. 1757) as well as the second named inventor on the '314 application (J.A. 2) –

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[7] We reject Theripion's argument that the Board erred in waiting to consider objective indicia of nonobviousness until after concluding the claims were prima facie obvious. So long as the Board considers all evidence before reaching an ultimate conclusion as to obviousness, "there is nothing inherently wrong" with proceeding in the order the Board did here. *Adapt Pharma Ops. Ltd. v. Teva Pharms. USA, Inc.*, 25 F.4th 1354, 1372-73 (Fed. Cir. 2022).

declared it was "common practice in the art of Fc fusion protein engineering to not include a peptide linker, or to include only a short, one or two amino acid linker, between the N-terminus of an Fc region and the C-terminus of a fusion partner." (J.A. 579) Theripion presented the Board with examples of prior-art fusion-protein studies seemingly supporting the contention that the addition or extension of a linker between fusion components might decrease, and certainly does not necessarily increase, protein function, a view further endorsed by Dr. Ledbetter. (*See, e.g.*, J.A. 417-18 (Dr. Ledbetter discussing Mack (J.A. 435-39) as example of fusion-protein activity being insensitive to linker length); J.A. 418 (discussing Hu (J.A. 440-49) as example of increased fusion-protein linker length resulting in decreased fusion-protein efficacy)) Theripion also referenced Dwyer (J.A. 748),[8] a prior-art reference teaching that a DNase-Fc fusion protein was significantly *less* active than wild type DNase (J.A. 428), regardless of linker length, which again suggests that increasing linker length in a fusion protein does not necessarily improve activity.[9] (J.A.

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[8] Mary A. Dwyer et al., *Expression and Characterization of a DNase I-Fc Fusion Enzyme*, 274 J. BIOLOGICAL CHEMISTRY 9738 (1999) (J.A. 428-33).

[9] The Director argues that Theripion forfeited the arguments it makes to us regarding Dwyer and unpredictability in the art. We disagree. The Board clearly understood that Theripion was arguing "the Examiner did not properly consider evidence of unexpected results." (J.A. 7; *see also* J.A. 10-11 (citing Theripion's appeal brief to Board); J.A. 748 (portion of Theripion's brief before Board which cited to Dwyer and Second Ledbetter Declaration, as "demonstrat[ing] that the addition or extension of a linker between fusion components does not necessarily improve and can even decrease protein function"); J.A. 765 (listing Dwyer as "evidence relied upon in this Brief" filed with

431-32) ("[T]he DNase I-Fc fusion was ~10-fold less active in the plasmid nicking assay than wild type DNase I. This was independent of the linker length between the Fc and DNase I.") Therefore, the relationship between linker length and protein function was, in Theripion's view, unpredictable, at the pertinent date.

Theripion also relied on Example 1 in the '314 application which showed, seemingly surprisingly, increased cholesterol efflux activity with ApoA1 fused to the N-terminus of an Fc fragment using a linker of 26 amino-acid residues, as compared to the amount of cholesterol efflux activity when ApoA1 was fused to the N-terminus of Fc with no linker or with a two amino acid linker. (J.A. 105-06) (Specification ¶ 248) ("Cholesterol efflux was increased in cultures containing ApoA-1-Fc with a 26 amino acid linker (ApoA-1(26)Fc), compared to either ApoA-1-Fc with a two amino acid linker (ApoA-1(2)Fc (Theripion)) or ApoA-1-Fc without a linker (ApoA-l(0)Fc (Sino Biol)).")

It appears the Board was not persuaded by Theripion's evidence of unexpected results. However, we cannot discern from its opinion the reasons for such a conclusion. Nor can we determine whether the Board adequately considered the totality of Theripion's evidence.

The Board found that "one of ordinary skill in the art would . . . expect that use of a peptide linker, such as Gly_4Ser_4, would increase the biological activity (i.e., cholesterol efflux activity) of a Fc fusion protein with ApoA1." (J.A. 11) In making this finding, the Board relied heavily

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Board); J.A. 405-06 (Theripion citing Second Ledbetter Declaration to examiner for its argument that "fusion protein studies demonstrate that the addition or extension of a linker between fusion components does not necessarily improve and can even decrease protein function" and, further, discussing Dwyer))

on Bacus and Ledbetter. (J.A. 10-11) The Board does not explain, however, why a skilled artisan would look to Bacus' ErbB-based fusion proteins for linkers to use in a system based on ApoA1, an entirely different type of protein. Ledbetter teaches that increasing linker length, using a $(Gly_4Ser)_4$ linker, increased DNase activity in an RNase-$(Gly_4Ser)_4$-Fc-NLG-DNase fusion protein, but DNase is a different protein than ApoA1, and NLG is yet another kind of linker. (J.A. 428 (Dwyer discussing DNase); J.A. 1812 (Ledbetter observing "robust DNase enzymatic activity" for this fusion protein); J.A. 1771 (Ledbetter figure 11b demonstrating these results)) The Board did not provide any rationale for why a skilled artisan would have expected Ledbetter's data relating to DNase fusion protein activity to be predictive of ApoA1 activity in the fusion proteins claimed in the '314 application. After all, ApoA1 is an entirely different kind of protein than Bacus' ErbB or Ledbetter's DNase.

Then there is Dwyer, which appears to support Theripion's argument that linker length does not predictably impact the activity of adjacent proteins. In particular, Dwyer at least suggests that even among DNase fusion proteins like those used in Ledbetter, linker length does not predictably impact DNase activity. (J.A. 431-32) Yet the Board does not even mention Dwyer, much less grapple with how Theripion's results could have been expected in view of it.[10]

The Board's failure to "explicitly discuss every issue or every piece of evidence does not alone establish that [the Board] did not consider it." *Novartis AG v. Torrent*

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[10] At oral argument, the Director acknowledged that the Board did not specifically address Dwyer. Oral Arg. at 14:21-32, available at https://oralarguments.cafc.uscourts.gov/default.aspx?fl=22-1346_05042023.mp3.

Pharms. Ltd., 853 F.3d 1316, 1328 (Fed. Cir. 2017). At the same time, however, the Board "must examine the relevant data and articulate a satisfactory explanation for its action[,] including a rational connection between the facts found and the choice made." *Motor Vehicle Mfrs. Ass'n*, 463 U.S. at 43 (internal quotation marks omitted). Here, without more from the Board, we are concerned that the Board may have improperly used the claims of the '314 application "as a template for its own reconstruction," *Sensonics, Inc. v. Aerosonic Corp.*, 81 F.3d 1566, 1570 (Fed. Cir. 1996), just as Theripion alleges, *see* Appellant's Br. 45.

Theripion further contends that the Board erred in analyzing unexpected results relative to Bacus and Ledbetter, which teach structurally and functionally distinct fusion proteins, rather than relative to Knudsen, which Theripion argued was the closest prior art because it teaches ApoA1-Fc fusion proteins with peptide linkers. "This court has held that when unexpected results are used as evidence of nonobviousness, the results must be shown to be unexpected compared with the closest prior art." *Kao Corp. v. Unilever U.S., Inc.*, 441 F.3d 963, 970 (Fed. Cir. 2006) (internal quotation marks omitted); *see also Adapt Pharma Ops.*, 25 F.4th at 1373 ("To be particularly probative, evidence of unexpected results must establish that there is a difference between the results obtained and those of the closest prior art, and that the difference would not have been expected by one of ordinary skill in the art at the time of the invention.") (internal quotation marks omitted). By seeming to focus on whether Theripion's results were unexpected based on Bacus' and Ledbetter's teachings (*see* J.A. 11), it appears that the Board believed Bacus and Ledbetter were the closest prior art, although the Board never says so expressly. On remand, the Board must determine which prior art is the closest prior art and explain why that is, and then consider and explain whether Theripion's results are unexpected relative to that closest prior art.

Yet another difficulty we have in reviewing the Board's analysis arises from Theripion's contention that, at the time it filed the '314 application, a person of skill in the art would not even have known of the problem of poor cholesterol efflux being associated with ApoA1-Fc fusion proteins with shorter linkers or no linker. *See* Appellant's Br. 15-18, 46. That the '314 application solves a problem that was not recognized in the prior art, if true, could support a finding of nonobviousness, as it would support Theripion's contention that its results were unexpected. *See, e.g.*, *In re Gruskin*, 234 F.2d 493, 498 (C.C.P.A. 1956) ("Therefore, since the cited prior art does not appear to have been cognizant of the problem . . . it can hardly be said that the references would have suggested [a resolution to the unknown problem]."). Where a patent applicant "has recognized, attacked, and successfully solved a problem," that applicant may have "achiev[ed] unobvious and unexpected results." *Id.* at 499. As the Board did not address this argument, we have no analysis of it to review.

In short, we must remand so the Board can reconsider the totality of Theripion's evidence of unexpected results and for it to explain, for itself,[11] how it reaches its reconsidered conclusion as to whether Theripion has proven unexpected results.

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[11] On appeal, the Director supplies reasoning she speculates the Board adopted. For instance, the Director insists that "the Board necessarily considered Theripion's alleged superior results in comparison to Knudsen as part of its secondary considerations analysis." Appellee Br. at 46-47. "[C]ourts may not accept appellate counsel's post hoc rationalizations for agency action." *Burlington Truck Lines, Inc. v. United States*, 371 U.S. 156, 168-69 (1962). Instead, we must remand so the Board can better explain its own analysis.

B

With respect to motivation to combine prior-art references, Theripion again contends that the Board failed to adequately explain itself. We again agree.

The Board found that a person of ordinary skill in the art would have been motivated to modify Knudsen in view of Bacus, Ledbetter, and Lagerstedt, among other references not relevant on appeal. (J.A. 7-8) ("[O]ne of ordinary skill in the art would have been motivated to include a linker from 10 to 40 amino acids (such as the Gly_4Ser_4 linker) [taught in Ledbetter (J.A. 1799)] in the fusion peptide taught in Knudsen . . . .")) Theripion argued to the Board that the examiner failed to identify a reason that one of ordinary skill in the art would have selected an extended linker (10 to 40 amino acids) to join ApoA1 to the N-terminus of an immunoglobulin Fc region. (J.A. 732) Theripion further contended that the "art fails to teach or suggest any functional relationship between linker length and protein function in the context of an ApoA1-Fc fusion." (J.A. 732; *see also* J.A. 7 (Board referencing this argument)) Additionally, Dr. Ledbetter declared that "the immunoglobulin hinge region . . . which constitutes the N-terminal end of the Fc region, has generally been viewed in the art as a natural linker region that does not require further extension when constructing an Fc fusion protein," which may discourage a skilled artisan from investigating linker length. (J.A. 581) Therefore, according to Theripion, a skilled artisan would have had no motivation to combine the teachings of Knudsen, Bacus, Ledbetter, and Lagerstedt.

In finding the requisite motivation to combine, the Board evidently rejected Theripion's arguments, but in doing so it provided little more than the conclusory statement that "the Examiner has the better position." (J.A. 7) The Board made findings regarding what each prior art reference taught in isolation (J.A. 7-8) and failed to articulate

any reason why a skilled artisan would have modified Knudsen's system with Ledbetter's linker – other than the unexplained assertion that "incorporation of such a linker increases biological activity of the fusion partner" (J.A. 8), for which there is little, if any, support in the record, especially in view of Dwyer, which the Board fails to address. The Board did not identify any evidence for its conclusion that a person of ordinary skill in the art would have viewed Ledbetter's DNase fusion-protein data as instructive with respect to the biological activity of ApoA1-Fc, an entirely different fusion protein.

"[I]t is not adequate to summarize and reject arguments without explaining why the [Board] accepts the prevailing argument." *In re Nuvasive, Inc.*, 842 F.3d at 1383. The Board "must articulate *a reason why*" a person of skill would be motivated to combine references. *Id.* at 1382. "Conclusory statements alone are insufficient" to permit us to review the Board's motivation analysis. *Id.* at 1383 (internal quotation marks omitted). Therefore, we must remand. On remand, the Board is free to reach the same conclusions it previously reached with respect to motivation to combine, but it must provide further explanation for whatever conclusion it reaches.

C

While Theripion contends that the record is so clear as to warrant reversal – that is, the evidence of unexpected results is so compelling as to overwhelm any prima facie case of obviousness and, in any event, there is no prima facie showing of obviousness because there was no motivation to combine the prior art references – we are unable to reach that conclusion. Given that we are presently unsure of the bases on which the Board reached its subsidiary factual findings supporting its ultimate legal conclusion of obviousness, we are not in a position to determine whether there is substantial evidence to support the Board's determination. *See Alacritech, Inc. v. Intel Corp.*, 966 F.3d 1367,

1370-73 (Fed. Cir. 2020) (vacating and remanding for further consideration where we could not "reasonably discern whether the Board followed a proper path in determining" challenged claims were obvious). Instead, we will remand for further proceedings before the Board.

IV

In sum, we vacate and remand for the Board to provide a more thorough explanation of its obviousness findings, particularly its findings on unexpected results and motivation to combine, and to reassess whether to affirm the examiner's rejection of the claims once more. We take no position on whether the prior art renders the claims of the '314 application obvious.

VACATED AND REMANDED

COSTS

No Costs.