

NOTE: This disposition is nonprecedential.

**United States Court of Appeals
for the Federal Circuit**

L'ORÉAL USA, INC.,
Appellant

v.

OLAPLEX, INC.,
Cross-Appellant

2019-2410, 2020-1014

Appeals from the United States Patent and Trademark Office, Patent Trial and Appeal Board in No. PGR2018-00025.

Decided: January 28, 2021

MICHELLE E. O'BRIEN, The Marbury Law Group, PLLC, Reston, VA, argued for appellant. Also represented by TIMOTHY JAMES MURPHY.

SANFORD IAN WEISBURST, Quinn Emanuel Urquhart & Sullivan, LLP, New York, NY, argued for cross-appellant. Also represented by JOSEPH M. PAUNOVICH, Los Angeles, CA; MATTHEW BLACKBURN, Diamond McCarthy LLP, San Francisco, CA.

Before DYK, REYNA, and TARANTO, *Circuit Judges*.

TARANTO, *Circuit Judge*.

L'Oréal USA, Inc. filed a petition for post-grant review under 35 U.S.C. §§ 321–29 of all claims of U.S. Patent No. 9,668,954, a patent then owned by Liqwd, Inc. that claims methods of treating hair using a product that includes maleic acid. As relevant here, L'Oréal urged unpatentability for obviousness under 35 U.S.C. § 103 based on the combination of U.S. Patent Publication No. 2012/0024309 (Pratt) and U.S. Patent No. 6,358,502 (Tanabe). After institution of the requested review, and Liqwd's disclaimer of claim 17, the Patent Trial and Appeal Board determined that claims 14–16, 18, and 24–28 (the breakage claims) were not proved unpatentable but that claims 1–13, 19–23, and 29–30 were proved unpatentable. L'Oréal appeals the Board's determination regarding the breakage claims. Liqwd cross-appeals the Board's determination regarding claims 1–13, 19–23, and 29–30. We affirm.

As an initial matter, we grant Liqwd's motion to substitute Olaplex, Inc. for Liqwd under Federal Rule of Appellate Procedure 43, based on Liqwd's transfer of its interest in the '954 patent to Olaplex after the parties filed notices of appeal and cross-appeal. The caption, originally listing Liqwd, now lists Olaplex instead. Except when discussing the substitution issue, we will generally use “Olaplex” to refer to both Liqwd and Olaplex.

We affirm the Board's determination that claims 1–13, 19–23, and 29–30 are unpatentable for obviousness based on the combined teachings of Pratt and Tanabe. Olaplex challenges only the Board's findings on motivation to combine, reasonable expectation of success, and the objective indicium of copying. We conclude that substantial evidence supports the Board's findings that a relevant artisan would have a motivation to combine Pratt and Tanabe with a reasonable expectation of success. As to copying, we assume

that, by virtue of issue preclusion based on our decision involving a related Olaplex patent several months after the Board decision in this matter, we must accept that “L’Oréal would not have developed products using maleic acid without having access to Liqwd’s confidential information.” *Liqwd, Inc. v. L’Oréal USA, Inc.*, 941 F.3d 1133, 1136 (Fed. Cir. 2019) (*’419 Decision*); *id.* at 1138–39 (affirming Board finding that “L’Oréal used maleic acid because of L’Oréal’s access to Liqwd’s non-public information, rather than because of L’Oréal’s independent development” (cleaned up)). We conclude, however, that substantial evidence supports the additional nexus-related facts that the Board in this matter found regarding copying, and given those facts, we further conclude, in conducting the ultimate legal analysis of obviousness based on all supported facts, that claims 1–13, 19–23, and 29–30 are unpatentable for obviousness.

We also affirm the Board’s determination that the breakage claims were not proved unpatentable. We hold that the breakage-decrease requirements added by the breakage claims limit the invention claimed for purposes of patentability analysis. And we hold that substantial evidence supports the Board’s finding that L’Oréal failed to establish, as it asserted, that meeting the breakage claims’ requirements is inherent in the combined teachings of Pratt and Tanabe.

I

The ’954 patent “generally relates to formulations and methods for treating keratin in hair, skin, or nails, and in particular for strengthening and/or repairing hair during or after” a coloring, a bleaching, or a permanent-wave treatment. ’954 patent, col. 1, lines 19–22; *see also id.*, col. 7, lines 7–14. The patent describes a method of using a formulation with an “active agent” (a polyfunctional compound) that “rebuild[s] the disulfide bonds in keratin found in hair” during bleaching (also called lightening). *Id.*, Abstract; *id.*, col. 7, lines 16–17; *id.*, col. 7, lines 42–46. The

formulation with the active agent may be applied “at the same time as” or after the coloring, bleaching, or permanent-wave treatment, *id.*, col. 3, lines 28–31, and the “active agents are washed from the individual’s hair on the same day that they are applied to the hair,” *id.*, col. 3, lines 14–17. The patent describes several examples with the active agent being “maleic acid.” *See, e.g., id.*, col. 21, lines 26–67 (“Example 1”); col. 22, lines 1–36 (“Example 2”).

The ’954 patent’s claims all require maleic acid as the active agent. For this appeal, claim 1, which is the only independent claim in the patent, is representative of claims 2–13, 19–23, and 29–30. Claim 1 recites:

1. A method for bleaching hair comprising:

(a) mixing a bleach powder and a developer to form a bleaching formulation;

(b) mixing an active agent formulation comprising an active agent with the bleaching formulation to form a mixture, wherein the active agent is maleic acid; and

(c) applying the mixture to the hair;

wherein the active agent in the mixture is at a concentration ranging from about 0.1% by weight to about 50% by weight.

Id., col. 25, lines 58–67.

Claims 14–16, 18, and 24–28, each of which simply adds a specific requirement of a level of decrease in hair breakage, have been labeled the “breakage claims” in this matter. Claim 24, which is illustrative, recites:

24. The method of claim 1, wherein following step (c) breakage of the hair is decreased by at least 5% compared to hair bleached with the bleaching formulation in the absence of the active agent.

Id., col. 27, lines 7–10. The language of claims 25–28 mirrors claim 24 but covers different percentages of decreased breakage: “at least 10%” (claim 25); “at least 20%” (claim 26); “at least 40%” (claim 27); “at least 50%” (claim 28). *Id.*, col. 27, lines 11–26. Claims 14–16 and 18 are relevantly similar, but they depend on claim 13, which depends on claim 12—which depends on claim 1 and adds a requirement for a second maleic-acid-based active agent—and adds that “the second active agent formulation further comprises a conditioning agent.” *Id.*, col. 26, lines 34–47, 52–55.

II

A

The Board relied on several alternative combinations of prior-art references for its unpatentability determinations, but the only combination we must address on appeal is the combination of Pratt and Tanabe.

Pratt: “Bleaching/Highlighting Composition.” Pratt states that its “objective . . . is reducing the damaging effect of commonly used bleaching agents.” Pratt, ¶ 3. It notes that the inventors “surprisingly found” that “when a bleaching composition is added [to] at least one cationic . . . and/or cationizable compound, [the] damaging effect of bleaching composition on hair is noticeably reduced.” *Id.*, ¶ 5. Pratt describes a “composition for bleaching hair comprising three parts” that are “mixed prior to application onto hair.” *Id.*, ¶ 6; *see also id.*, ¶¶ 8, 10. The three parts are: (1) “a substantially anhydrous composition comprising at least one compound with bleaching effect”; (2) “an aqueous composition comprising at least one oxidizing agent”; and (3) “a composition comprising at least one cationic and/or cationizable compound.” *Id.*, ¶ 6; *see also id.*, ¶¶ 8, 10. Pratt explains that the “third composition preferably comprises additionally at least one hair conditioning compound.” *Id.*, ¶ 53. It also states that the pH of the third composition is “most preferably” between 3 and 6 “and in

particular” between 3 and 5. *Id.*, ¶ 94. In one embodiment, Pratt notes, “maleic acid” is used to “adjust[]” the pH of the composition. *Id.* The patent says that the preferred “mixing ratio” of the three parts forming the overall composition is “4:4:0.2 to 4:4:0.75.” *Id.*, ¶ 95.

Pratt also reports its results for various examples. In one example, the inventors compared hair bleached without the third composition to one with the third composition. *Id.*, ¶¶ 99–108. The patent observes that the hair treated with the third composition was “bleached more effectively” and that the “damaging effect of [the] inventive composition is lower compared to the comparative composition.” *Id.*, ¶ 108. For other similar examples, the inventors “observed that bleaching effects were excellent” and that the hair “were easier to comb, felt soft and natural upon touching and had improved shine.” *Id.*, ¶ 138.

Tanabe: “Hair Cosmetic Compositions Containing Glycine and Alanine.” Tanabe describes “a hair cosmetic composition excellent in the effect of improving optical or mechanical properties of hair such [as] luster, softness, body and the like.” Tanabe, col. 1, lines 34–39. The hair-cosmetic composition, Tanabe explains, includes at least three components: first, “glycine or alanine”; second, an acid; third, “a cationic surfactant.” *Id.*, col. 1, lines 40–45. For the acid, “maleic acid” and two others are “particularly preferred.” *Id.*, col. 2, lines 4–5. For each component, Tanabe specifies various preferred concentration proportions. *Id.*, col. 1, line 52, through col. 2, line 12; *id.*, col. 2, lines 45–50. Tanabe also suggests that the composition’s pH “may range . . . from 2 to 6” but a pH from “2.5 to 3.5” is “particularly preferred.” *Id.*, col. 3, lines 26–30. Like Pratt and the ’954 patent, Tanabe includes numerous examples reporting results of experiments. One such experiment involved use of a hair-cosmetic composition with maleic acid on bleached hair samples. *See id.*, col. 3, line 36, through col. 4, line 54.

B

On August 10, 2018, the Board instituted a post-grant review of all claims of the '954 patent based on L'Oréal's petition. *L'Oréal USA, Inc. v. Liqwd, Inc.*, PGR2018-00025, 2018 WL 3934314 (P.T.A.B. Aug. 10, 2018) (*Institution Decision*). Although the Board explained that many of the claims were likely unpatentable, *id.* at *15, the Board noted its skepticism that L'Oréal had established that the breakage claims were likely unpatentable, *id.* at *11 (“Petitioner’s argument and evidence in support of the obviousness of these claims is lacking.”). The Board highlighted Olaplex’s observation that L'Oréal’s unpatentability argument on the breakage claims “relies on inherency” and stated: “There is insufficient evidence cited in the record that combining Pratt and Tanabe necessarily produces the reduced breakage as recited in any of claims 14–16, 18, or 24–28.” *Id.* “Some (possibly even all) of the breakage limitations in these claims might be met by combining the art,” the Board continued, “and there is some overlap with the claimed maleic acid concentrations. But [L'Oréal] has not shown that any—much less all—of the breakage limitations are satisfied if the art is combined and modified as proposed.” *Id.* Still, the Board “institute[d] post-grant review of all claims.” *Id.* at *15 (citing *SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348 (2018)).

On July 30, 2019, the Board issued its final written decision. The Board determined that claims 1–13, 19–23, and 29–30 were proved unpatentable for obviousness based on the combination of Pratt and Tanabe but that the breakage claims were not proved unpatentable.

Claims 1–13, 19–23, and 29–30. The Board found that when the “maleic-acid containing conditioner as suggested in Tanabe is used for the ‘third composition’ of Pratt’s mixture and method,” all limitations of claim 1 were met. J.A. 39. Specifically as to the concentration-range limitation, the Board found that Pratt and Tanabe taught “0.049 wt%

to 0.171 wt%, and 0.122 wt% to 0.429 wt%”—within the ranges claimed in the '954 patent's claims at issue. J.A. 40–41.

Next, the Board found that a relevant artisan would have a motivation to combine the teachings with a reasonable expectation of success. On motivation to combine, the Board explained: “Given the substantial overlap in suitable ingredients for Tanabe's conditioners and Pratt's” third composition, a relevant artisan “would have understood that Tanabe's compositions are suitable for use as Pratt's” third composition. J.A. 43 (internal quotation marks and citation omitted). The Board found credible the explanation by L'Oréal's expert, Dr. Wickett, that a relevant artisan “would have understood that the compositions of Tanabe would effectively function as Pratt's” third composition and “would have made and expected such a combination to provide a further conditioning benefit (*e.g.*, luster, manageability) for the hair as suggested by Tanabe.” *Id.*; *see also* J.A. 44–47. On reasonable expectation of success, the Board rejected Olaplex's “argument that Tanabe's conditioners would not be expected to provide a benefit in an alkaline environment.” J.A. 47. The Board found that “Pratt itself suggests that acidic conditioners (*e.g.*, with pH values as low as 2 or preferably 3) can be added to a high pH bleaching composition.” J.A. 46–47; *see also id.* at 48 (“Pratt suggests that acidic conditioners may favorably be included in a bleaching mixture and an alkaline bleaching environment.”). The Board credited Dr. Wickett's testimony that a relevant artisan “would have thought and inferred that Tanabe's low pH conditioners would, at minimum, provide ‘conditioning benefits’ when combined with Pratt.” J.A. 46.

The Board then considered, at length, Olaplex's submissions concerning objective indicia of nonobviousness, addressing commercial success, long-felt and unmet need, unexpected results, industry praise, and copying. J.A. 48–76. For commercial success, long-felt need, and unexpected

results, the Board “g[a]ve little weight” to Olaplex’s evidence. J.A. 61, 68, 71, 73. For industry praise, the Board did “not find that the record here demonstrates industry praise *for the subject matter claimed* in the ’954 patent.” J.A. 76 (emphasis added). And for copying, the Board did “not give substantial weight to” the copying evidence. J.A. 59. While stating that “one plausible takeaway is that” L’Oréal copied information in a then-confidential Olaplex patent application disclosing maleic acid in a bleaching mixture, J.A. 54, the Board found that the evidence (including a laboratory notebook) showed that L’Oréal had independently described “its own maleic-acid additive for a bleaching composition *before* receiving” the Olaplex patent application, J.A. 56.

In the end, the Board concluded, the objective indicia did “not outweigh the evidence that claim 1 is unpatentable” based on Pratt and Tanabe. J.A. 76. Claims 2–13, 19–23, and 29–30 fell with claim 1. J.A. 76–77, 84.

The Breakage Claims. The Board rejected L’Oréal’s challenge to the breakage claims, elaborating on its statements in the *Institution Decision* that L’Oréal’s inherency arguments were “unpersuasive.” J.A. 78. The Board reiterated that “some of the breakage limitations in these claims *might* be met by combining the art, and there is some overlap with the claimed maleic acid concentrations. But such possibilities are insufficient to demonstrate that any—much less all—of the recited breakage limitations would be inherently satisfied in the Pratt/Tanabe combination.” J.A. 79 (citation omitted).

In so finding, the Board noted that L’Oréal’s new arguments and evidence in its reply violated 37 C.F.R. § 42.23(b) and could be struck, but the Board considered the arguments and evidence anyway. J.A. 82–83. It rejected L’Oréal’s argument that because the combined teachings of Pratt and Tanabe had conditioners, a relevant artisan would have expected a decrease in hair breakage of

“greater than 50%.” J.A. 80. The evidence showed that “not all conditioners necessarily convey the same benefits,” the Board found, and did not show that “the results observed with that product under [certain] conditions would *necessarily* and *inherently* inure to Tanabe’s particular conditioner when combined with Pratt’s bleaching mixture.” J.A. 82–83. The Board concluded that L’Oréal had not shown the breakage claims to be unpatentable.

L’Oréal timely appealed the patentability of the breakage claims. Olaplex timely cross-appealed the unpatentability of claims 1–13, 19–23, and 29–30. We have jurisdiction under 28 U.S.C. § 1295(a)(4)(A).

III

We begin with Liqwd’s motion to substitute Olaplex for itself under Federal Rule of Appellate Procedure 43. That rule provides the procedural vehicle for a substitution of a new party for an existing one when authorized by law, whether the basis for substitution is a party’s death (Fed. R. App. P. 43(a)) or another reason (Fed. R. App. P. 43(b)).

The Board issued its final written decision on July 30, 2019. L’Oréal filed a notice of appeal on September 12, 2019, and Liqwd filed a notice of its cross-appeal on September 26, 2019. Our jurisdiction attached when those notices were filed, *see Gilda Indus., Inc. v. United States*, 511 F.3d 1348, 1350 (Fed. Cir. 2008), and at that time, Liqwd still owned the ’954 patent and undisputedly had a concrete stake in both the cross-appeal and the appeal before this court. Accordingly, this matter does not involve a lack of standing or some other jurisdictional defect at the start of an Article III case. *See Schreiber Foods, Inc. v. Beatrice Cheese, Inc.*, 402 F.3d 1198, 1203 (Fed. Cir. 2005) (noting that such at-commencement defects present distinct problems, while finding no jurisdictional problem in the case before the court); *Grupo Dataflux v. Atlas Glob. Group, L.P.*, 541 U.S. 567 (2004) (concluding that a post-filing change to citizenship may not cure lack of subject-matter

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jurisdiction that existed when the action premised on diversity of citizenship was filed).

On January 8, 2020, while the appeals were before us, Liqwd transferred its interest in the '954 patent to Olaplex. Three months later, L'Oréal, in its merits briefing, argued that the transfer stripped Liqwd of the concrete stake required for an Article III court's adjudication of Liqwd's cross-appeal. Appellant Response and Reply Br. at 51–53. On May 4, 2020, Liqwd simultaneously responded to that argument in its reply brief and filed a motion to join or to substitute Olaplex. Cross-Appellant Reply Br. at 19–21; *L'Oréal USA, Inc. v. Olaplex Inc.*, No. 19-2410, ECF No. 32 (Fed. Cir. May 4, 2020).

L'Oréal does not question that Olaplex has the required personal stake needed to maintain the cross-appeal; and L'Oréal does not question the justiciability of its own appeal, whether or not Olaplex is substituted for Liqwd. See Appellant Response and Reply Br. at 51–53; *L'Oréal USA, Inc. v. Olaplex Inc.*, No. 19-2410, ECF No. 36 (Fed. Cir. May 14, 2020). For good reason: As the current owner of the '954 patent, Olaplex has a concrete stake in the patentability of the claims of the '954 patent. The parties thus properly agree that if we join or substitute Olaplex for Liqwd, no case-or-controversy problem exists.

We conclude that substitution is warranted in these circumstances; we do not consider joinder. *Cf. Mullaney v. Anderson*, 342 U.S. 415, 416–17 (1952) (allowing joinder and thereby avoiding potential standing problem without joined party). We have approved substitution of a successor in interest caused by a transfer of a patent under Federal Rule of Appellate Procedure 43(b). See, e.g., *Orexigen Therapeutics, Inc. v. Actavis Labs. FL, Inc.*, No. 18-1221, ECF No. 32 at 2 (Fed. Cir. Sept. 19, 2018) (noting that “this court has previously granted motions to substitute under Rule 43(b) when a party has acquired the patents during an appeal”); *Beghin-Say Int'l, Inc. v. Ole-Bendt Rasmussen*,

733 F.2d 1568, 1569 (Fed. Cir. 1984). More recently, in *Uniloc USA, Inc. v. ADP, LLC*, we permitted joinder of a party to whom the plaintiffs had “transferred all their rights in and to the patents-in-suit.” 772 F. App’x 890, 893 (Fed. Cir. 2019). We explained: “When [the plaintiffs] filed the notices of appeal that set our jurisdiction in these cases, they were indisputably the owners of the patents-in-suit. The transfer of the patent rights to [the non-party] did not divest this court of jurisdiction or the ability to substitute or join a successor-in-interest.” *Id.*

The trial-court counterpart to Federal Rule of Appellate Procedure 43 is Federal Rule of Civil Procedure 25. That rule specifically contemplates substitution in the case of a “transfer of interest.” Fed. R. Civ. P. 25(c) (“If an interest is transferred, the action may be continued by or against the original party unless the court, on motion, orders the transferee to be substituted in the action or joined with the original party.”). The authority to substitute based on a transfer of a specific litigation interest is well recognized. *See Horphag Research Ltd. v. Consac Indus., Inc.*, 116 F.3d 1450, 1453 (Fed. Cir. 1997); *Minn. Mining & Mfg. v. Eco Chem, Inc.*, 757 F.2d 1256, 1263–64 (Fed. Cir. 1985); *Trout v. Garmin Int’l, Inc.*, 413 F. App’x 288, 288 (Fed. Cir. 2011) (district-court substitution, while case was on appeal, upon transfer of patent); 6 James W. Moore, *Moore’s Federal Practice* § 25.31 (2020) (“Courts have applied the rule broadly to include transfers by either a plaintiff or defendant of various kinds of property interests that may be involved in a lawsuit,” including assignment of legal rights.) (citing cases). That body of law reinforces the availability of substitution in similar circumstances under the appellate rule.

We see no persuasive reason to deny substitution in the present matter, and there is good reason to grant substitution. L’Oréal has suffered no genuine prejudice from Liqwd’s several-month delay in filing its motion to either join or substitute Olaplex. L’Oréal was well aware of the

transfer and has not identified how the arguments before this court would have changed had Liqwd filed its motion earlier. On the other hand, there are substantial public, private, and judicial-efficiency interests in resolving the patentability issues decided by the Board in this matter. Finally, substitution of a successor in interest resulting from a simple transfer of the transferor's personal legal right does not raise the concern expressed by the Ninth Circuit in denying joinder in a non-successorship situation in *Bain v. California Teachers Ass'n*, namely, that joinder of a new plaintiff with its own legal claim that was merely parallel to the one lost by the original plaintiffs would threaten to “render[] obsolete” the mootness doctrine “in many if not most cases.” 891 F.3d 1206, 1216–17 (9th Cir. 2018). Substitution here does not pose such a threat.

IV

On the merits, we first address Olaplex's cross-appeal, which challenges the Board's determination of obviousness, based on Pratt and Tanabe, of most of the claims at issue in the post-grant review. Claim 1 is representative, for these purposes, of all the claims held unpatentable. We affirm the Board's determination.

Obviousness under 35 U.S.C. § 103 is a matter of law based on findings of underlying facts. *Ariosa Diagnostics v. Verinata Health, Inc.*, 805 F.3d 1359, 1364 (Fed. Cir. 2015). The underlying factual findings include “the scope and content of the prior art, the differences between the prior art and the claimed invention, the level of ordinary skill in the art, the presence or absence of a motivation to combine or modify with a reasonable expectation of success, and objective indicia of nonobviousness.” *Id.* We review the Board's ultimate obviousness conclusion de novo and its underlying factual findings for substantial-evidence support. *In re Varma*, 816 F.3d 1352, 1359 (Fed. Cir. 2016). In reviewing a factual finding for substantial evidence, we ask “whether a reasonable fact finder could have arrived at

the” finding, “taking into account evidence that both justifies and detracts from” the finding. *Personal Web Techs., LLC v. Apple, Inc.*, 848 F.3d 987, 991 (Fed. Cir. 2017) (cleaned up). L’Oréal had “the burden of proving a proposition of unpatentability by a preponderance of the evidence.” 35 U.S.C. § 326(e).

A

Olaplex does not contest the Board’s finding that there are no differences between the combined teachings of Pratt and Tanabe and the claimed invention. Specifically, Olaplex accepts that using the Tanabe-taught conditioner containing maleic acid as the third component in Pratt’s three-part formulation results in the mixture required by claim 1 of the ’954 patent. *See* J.A. 39–41. Instead, Olaplex challenges the Board’s finding that a relevant artisan would have had a motivation to combine the teachings of Pratt and Tanabe with a reasonable expectation of success. Cross-Appellant Opening Br. at 58–63; Cross-Appellant Reply Br. at 17–19. We reject that challenge.

Motivation to Combine. Substantial evidence supports the Board’s finding that a relevant artisan would have been motivated by “further conditioning benefits (*e.g.*, luster, manageability)” to combine the teachings of Pratt and Tanabe in a way that turns out to meet claim 1’s limitations. J.A. 43. The Board relied on testimony by L’Oréal’s expert, Dr. Wickett, that a relevant artisan “would have understood that the compositions of Tanabe would effectively function as Pratt’s [third] composition” and “would have made and expected such a combination to provide a further conditioning benefit (*e.g.*, luster, manageability) for the hair as suggested by Tanabe.” *Id.* The Board also found that “adding conditioners to bleaching mixtures was a known technique to combat bleach damage.” J.A. 45. Those findings are a reasonable reading of the record.

Olaplex disputes those findings in three ways. First, Olaplex essentially argues that Pratt requires a high pH

mixture and that Tanabe teaches away from using its (maleic acid) conditioner in a high pH mixture. Cross-Appellant Opening Br. at 60–61; Cross-Appellant Reply Br. at 18. “[A] showing that a prior art reference teaches away from a given combination is evidence that one of skill in the art would not have been motivated to make that combination to arrive at the claimed invention.” *Rembrandt Wireless Techs., LP v. Samsung Elecs. Co.*, 853 F.3d 1370, 1379 (Fed. Cir. 2017); *see also KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 416 (2007). “A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant.” *In re Urbanski*, 809 F.3d 1237, 1244 (Fed. Cir. 2016) (cleaned up).

The Board reasonably rejected Olaplex’s argument. Olaplex relies on Tanabe’s statement that the pH of its hair-cosmetic composition “may range specifically from 2 to 6, with pH 2.5 to 3.5 being particularly preferred,” Tanabe, col. 3, lines 26–30—which are acidic ranges, lower than above-7.0 alkaline ranges. But Tanabe uses the language of “may” and “preferred,” which are not words that the Board had to find would discourage alternatives, and, in any event, the Board also reasonably found that Pratt itself “teaches [that] low pH conditioners, similar to those described in Tanabe, may be included in its high pH bleaching mixture, thus providing a reason to have selected and combined Tanabe’s low pH cationic conditioners.” J.A. 45 (citing Pratt, ¶¶ 94, 103).

Second, Olaplex asserts that a relevant artisan “would not have had reason to search” for the teachings in Tanabe because Pratt already taught reducing damage to bleached hair. Cross-Appellant Opening Br. at 62. But the conclusion does not follow from the premise: That a particular piece of prior art achieves a desirable goal to some extent hardly means that relevant artisans would have lacked a motivation to achieve the goal to a greater extent. *See*

Huawei Techs. Co. v. Iancu, 813 F. App'x 505, 510 (Fed. Cir. 2020). Here, reducing bleach damage is a concrete benefit and is a matter of degree, not all or nothing.

Third, Olaplex contends that the relevant artisan would not have been motivated to use maleic acid over other compounds disclosed in both Pratt and Tanabe. Cross-Appellant Opening Br. at 62. But as the Board indicated, J.A. 45, Tanabe itself provides the motivation to focus on a small subset of possibilities that includes maleic acid. It teaches that “malic acid, succinic acid and *maleic acid* are particularly preferred.” Tanabe, col. 2, lines 4–5 (emphasis added).

In sum, substantial evidence supports the Board's finding that a relevant artisan “would have had reason to attempt to . . . carry out the claimed process.” *PharmaStem Therapeutics, Inc. v. ViaCell, Inc.*, 491 F.3d 1342, 1360 (Fed. Cir. 2007).

Reasonable Expectation of Success. The Board found that a relevant artisan would have had a reasonable expectation of success in combining the teachings of Pratt and Tanabe. J.A. 43–48. In briefly challenging this finding, Olaplex, as in its challenge to the Board's motivation finding, focuses on pH levels. Specifically, Olaplex contends that a relevant artisan “would have understood the hair damage-reducing effects of a mild acid like maleic acid would have been literally and chemically neutralized once mixed with a bleaching formulation like Pratt.” Cross-Appellant Reply Br. at 18.

The Board reasonably found otherwise. As the Board noted, there is “substantial overlap in suitable ingredients for Tanabe's conditioners and” the relevant part of Pratt's composition, J.A. 43, so “Tanabe's conditioner would also have been thought to serve as a substitute (and at least equivalent to)” the relevant part of Pratt's composition, J.A. 44. The Board also noted that “Pratt itself suggests that acidic conditioners . . . can be added to a high pH

bleaching composition.” J.A. 46–47; *see also* J.A. 48 (“Also, Pratt suggests that acidic conditioners may favorably be included in a bleaching mixture and an alkaline bleaching environment”). In addition, the Board credited the testimony of Dr. Wickett that a relevant artisan “would have thought and inferred that Tanabe’s low pH conditioners would, at minimum, provide ‘conditioning benefits’ when combined with Pratt.” J.A. 46. Olaplex has not shown that its evidence undermines the Board’s finding that, considering all relevant factors, a relevant artisan would have had a reasonable expectation of success of combining Tanabe’s teaching of a conditioner containing maleic acid with Pratt’s composition. *See Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1364, 1367–68 (Fed. Cir. 2007) (A relevant artisan’s “expectation of success need only be reasonable, not absolute.”); *Acorda Therapeutics, Inc. v. Roxane Labs., Inc.*, 903 F.3d 1310, 1333 (Fed. Cir. 2018). We conclude that substantial evidence supports the Board’s finding.

B

“Objective indicia of nonobviousness must be considered in every case where present.” *Apple Inc. v. Samsung Elecs. Co.*, 839 F.3d 1034, 1048 (Fed. Cir. 2016) (en banc). They “include: commercial success enjoyed by devices practicing the patented invention, industry praise for the patented invention, copying by others, and the existence of a long-felt but unsatisfied need for the invention.” *Id.* at 1052. The Board considered at length Olaplex’s evidence of objective indicia and made findings that left that evidence, even taken as a whole, with little if any weight in the overall obviousness analysis. J.A. 48–76.

On appeal, Olaplex challenges only the Board’s determination involving copying. Olaplex relies on our October 2019 decision in *’419 Decision*, 941 F.3d 1133, which involved a post-grant review of U.S. Patent No. 9,498,419—a grandparent of the ’954 patent (sharing a specification). There, we upheld a specific Board finding on copying—as

quoted above, that L'Oréal relied on confidential Olaplex information in deciding to develop a product using maleic acid—and, without deciding the ultimate obviousness question for ourselves, we remanded to the Board for further proceedings, because the Board had not explored nexus-related facts but instead had erroneously deemed copying to be legally immaterial unless a product was copied. *'419 Decision*, 941 F.3d at 1136, 1138–39 (reviewing the Board decision at *Liqwd, Inc. v. L'Oréal USA, Inc.*, No. 18-2152, ECF No. 47 at 16–67 (Fed. Cir. Dec. 12, 2018) (*'419 Board Decision*)). Olaplex argues that issue preclusion requires the same copying-related finding in this matter—which the Board here did not make—and seeks a remand for reassessment of the role of copying in the overall obviousness analysis. Cross-Appellant Opening Br. at 43, 52; Cross-Appellant Reply Br. at 3.

We assume, without deciding, that the particular finding upheld in 2019 should be given issue-preclusive effect. But we reject the request for a remand. Here, unlike in the Board decision addressed in our 2019 opinion, the Board made all the needed nexus findings. Given those findings, which we see no basis for disturbing, no new factual findings are needed. We therefore consider all the facts and draw the legal conclusion of obviousness.

1

In the *'419 Decision*, we characterized the Board's finding we were affirming as follows: “L'Oréal would not have developed products using maleic acid without having access to Liqwd's confidential information.” 941 F.3d at 1136; *see also id.* at 1138–39 (affirming the Board's finding that “L'Oréal used maleic acid because of L'Oréal's access to Liqwd's non-public information, rather than because of L'Oréal's independent development” (cleaned up)). It was that specific finding—which concerns L'Oréal's choice to actually develop a commercial product using maleic acid, *i.e.*, to “launch[] its products,” as the Board said, *'419 Board*

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Decision at 44–45—which this court affirmed when referring to “copying,” see *'419 Decision*, 941 F.3d at 1139 (“[W]e affirm the Board’s factual finding that L’Oréal *used* maleic acid because of L’Oréal’s access to Liqwd’s confidential information.” (emphasis added)); *id.* at 1134–35 (“[T]he Board found that L’Oréal USA, Inc., used Liqwd’s confidential information and copied Liqwd’s patented method.”). The Board in its findings and this court in affirming the Board’s findings did not determine what L’Oréal had already done in its laboratory even before seeing the Olaplex confidential information. See *'419 Board Decision* at 45 (noting lack of clarity of laboratory notebooks and not deciding what they meant, focusing instead on L’Oréal’s product development).

We did not affirm or reverse the Board’s ultimate obviousness ruling. Instead, we explained that, even though the Board had found that L’Oréal relied on confidential Olaplex information, the Board had “disregard[ed] its finding” based on the premise that any copying is legally immaterial unless it was a product that was copied—and we rejected that premise. *'419 Decision*, 941 F.3d at 1136–39. Then, having noted that a patent owner that relies on copying as evidence of nonobviousness “must show that a nexus exists between the evidence and the claimed features of the invention,” *id.* at 1138, we remanded to the Board “for further analysis” of the weight to be given to the copying fact in the overall obviousness analysis, *id.* at 1139, which would require findings about nexus that had not been made by the Board in the matter.

2

We assume, without deciding, that issue preclusion requires that the assessment of unpatentability in the present matter must take as a given the factual finding about copying made in the earlier matter between the same two parties. Here, unlike in the earlier matter, the Board has already made the required nexus-related factual

determinations, and we have not been shown any persuasive reason to disturb those determinations. In light of those findings, the specific copying fact that we take as a given deserves little weight in the overall legal analysis of obviousness, and the facts as a whole lead us to conclude, as the Board did, that claim 1 is unpatentable for obviousness.

First, the claims at issue here differ from the claims of the '419 patent in that they recite the use of a bleach powder (claims 1–16, 18–30), do not cover the use of active-agent salts (claims 1–16, 18–30), and are not limited to mixtures that do not contain a hair-coloring agent (claims 1–16, 18–29). Compare '954 patent, col. 25, line 57, through col. 27, line 30, with '419 patent, col. 25, line 41, through col. 26, line 53 (J.A. 3530); see also *L'Oréal USA, Inc. v. Liqwd, Inc.*, PGR2017-00012, Paper 94 at 8 n.6 (P.T.A.B. Dec. 9, 2020) (*Final Written Decision on Remand*) (Board, in the '419 matter, explaining that the present post-grant review “involved a different (albeit related) patent, different claims, and different prior art combinations”). There is no finding in the '419 proceeding that L'Oréal copied the specific features of the '419 patent's claims, let alone the specific features of the claims at issue here. Nor is there any evidence in this proceeding of such copying.

Second, quite apart from the difference in the claims, there is another independent reason that copying does not require a finding of nonobviousness here. We have said that “more than the mere fact of copying by an accused infringer is needed to make that action significant to a determination of the obviousness issue.” *Cable Elec. Prods., Inc. v. Genmark, Inc.*, 770 F.2d 1015, 1028 (Fed. Cir. 1985); see also *In re GPAC Inc.*, 57 F.3d 1573, 1580 (Fed. Cir. 1995) (same). We have looked for other facts to illuminate whether copying in a particular context actually indicates nonobviousness of the merits of the invention, typically the presence of significant other objective indicia already

having such a nexus. See *Ecolochem, Inc. v. S. Cal. Edison Co.*, 227 F.3d 1361, 1380 (Fed. Cir. 2000) (“We note, however, that a showing of copying is only equivocal evidence of non-obviousness in the absence of more compelling objective indicia of other secondary considerations.”). For example, where industry praise for the claimed technology is present, we have noted that “[c]opying may indeed be another form of flattering praise for inventive features.” *Crocs, Inc. v. Int’l Trade Comm’n*, 598 F.3d 1294, 1311 (Fed. Cir. 2010). And we have said that “[c]opying by the accused infringer . . . has limited probative value in the absence of evidence of failed development efforts by the infringer, or of more compelling objective indicia of other secondary considerations.” *Friskit, Inc. v. Real Networks, Inc.*, 306 F. App’x 610, 617 (Fed. Cir. 2009) (cleaned up); see also *Dow Chem. Co. v. American Cyanamid Co.*, 816 F.2d 617, 622 (Fed. Cir. 1987) (finding significant that “Cyanamid tried but failed to develop the claimed invention and copied it instead”); *Vandenberg v. Dairy Equip. Co.*, 740 F.2d 1560, 1567 (Fed. Cir. 1984) (“The copying of an invention may constitute evidence that the invention is not an obvious one. This would be particularly true where the copyst had itself attempted for a substantial length of time to design a similar device, and had failed.” (citation omitted)).

Here, there are no other objective indicia sufficiently tending to suggest that nonobviousness of claim 1’s subject matter was the reason for the (now assumed) fact that L’Oréal chose to launch a product using maleic acid as a result of seeing Olaplex’s confidential information. The Board soundly rejected Olaplex’s evidence of industry praise because, while there was praise of Olaplex’s *product*, that product does not in fact use maleic acid (as required by claim 1), and so “there is an inadequate nexus between those laudatory statements . . . and *the invention claimed*.” J.A. 75. Olaplex also did not prove that L’Oréal tried to make a product solving the problem that claim 1 addressed but failed until it saw the confidential patent application.

In fact, the Board found, with ample evidentiary support, that “at least one month before the May 19, 2015[] meeting and receipt by [L’Oréal] of then-confidential patent application, [L’Oréal] had described a maleic-acid containing bleaching mixture in its own highly confidential lab notebook.” J.A. 54.¹ And the Board considered evidence of commercial success, long-felt and unmet need, and unexpected results, but it determined that each warranted “little weight,” considering, *e.g.*, the need to tie objective indicia to the invention itself, the success of Olaplex’s own competing product (which is not covered by claim 1), the existence of prior-art references meeting the asserted need before the ’954 patent, and the inadequacies of the unexpected-results evidence, including its limited scope and the unavailability for deposition of the key proponent of the evidence (one of two named inventors on the ’954 patent). J.A. 59–61

¹ Olaplex argues that when the Board admitted the laboratory notebook and related evidence establishing that fact, it violated 37 C.F.R. § 42.65(b), which requires an explanatory affidavit in certain circumstances—specifically, when a party “relies on a technical test or data from such a test.” *See* Cross-Appellant Opening Br. at 52–58. The Board rejected Olaplex’s evidentiary objection. J.A. 112. It explained that no affidavit was required to indicate why the lab notebook and related evidence was being used—to show simply that L’Oréal “was already working on and had already described maleic-acid bleaching additives in its internal documents before receiving the information about the use of maleic acid in bleaching mixtures from” Olaplex. *Id.* That limited use was relevant to Olaplex’s copying contention and did not depend on the results of a technical test or data, making an affidavit under the regulation unnecessary. *Id.* We see no abuse of discretion in that admissibility ruling. *See VidStream LLC v. Twitter, Inc.*, 981 F.3d 1060, 1064 (Fed. Cir. 2020) (stating the standard of review for Board admissibility rulings).

(commercial success), 62–68 (long-felt and unmet need), 68–73 (unexpected results), 76. Olaplex does not contest those determinations. On this record of Board findings, we do not see the particular copying we assume as a given as having a significant bearing on the obviousness determination.

More generally, the case is ripe for drawing a conclusion about the ultimate legal issue of obviousness—taking as a given the one assumed copying-related fact and a full set of findings about nexus and about the asserted objective indicia. Considering all the evidence, we conclude that claim 1 would have been obvious to a relevant artisan: The supported prior-art findings are strong in suggesting obviousness and the objective indicia do not meaningfully suggest otherwise. Substantial evidence supports the Board's finding that “adding conditioners to bleaching mixtures was a *known technique* to combat bleach damage” and that a relevant artisan would have been motivated to make the asserted combination and expected success. J.A. 45 (emphasis added). In another case, we observed: “[W]here a claimed invention represents no more than the predictable use of prior art elements according to established functions, as here, evidence of secondary indicia are frequently deemed inadequate to establish non-obviousness.” *Ohio Willow Wood Co. v. Alps S., LLC*, 735 F.3d 1333, 1344 (Fed. Cir. 2013). This case fits that pattern: We conclude that claim 1 (and the claims of which it is representative) would have been obvious to a relevant artisan.

V

L'Oréal's appeal challenges the Board's rejection of its contention that the breakage claims are unpatentable. L'Oréal makes three arguments. The first involves forfeiture. The second involves claim construction. The third involves inherency. We reject all three arguments.

A

L'Oréal contends that the Board improperly reached the patentability of the breakage claims. That is so, says L'Oréal, because, after Olaplex argued against unpatentability of these claims in its preliminary patent-owner response, J.A. 535–37, and after the Board stated in its institution decision that L'Oréal's petition had not likely shown unpatentability of those claims, *Institution Decision*, 2018 WL 3934314, at *10–11, Olaplex made no separate argument about those claims in its post-institution patent-owner response. Appellant Opening Br. at 47–48; Appellant Response and Reply Br. at 23–25. We reject this contention.

The Board, which did not address this forfeiture contention when ruling on L'Oréal's challenge to the breakage claims, did not err in considering the challenge on its merits. J.A. 77–84. L'Oréal did not present this contention in its reply before the Board, *see* J.A. 935–36, but only during a subsequent conference call about Olaplex's challenge to L'Oréal's presentation of new evidence in its reply, J.A. 989, and during oral argument, J.A. 1229–30. The Board could properly consider the contention forfeited as too late. *Cf.* Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756–01, 48,768 (Aug. 14, 2012) (“No new evidence or arguments may be presented at the oral argument.”); *Dell Inc. v. Acceleron, LLC*, 884 F.3d 1364, 1369 (Fed. Cir. 2018). And given that it was L'Oréal's burden to show unpatentability, the Board was at least permitted, if not required, to decide on the merits whether L'Oréal had met its burden. Nor do we see an abuse of discretion in the Board considering Olaplex's arguments in the authorized surreply on the breakage-claims issue, J.A. 82–83, even if the Board is understood to have effectively altered its Scheduling Order statement that “[t]he patent owner is cautioned that any arguments for patentability not raised in the [post-institution] response will be deemed waived,” J.A. 599. L'Oréal

has not identified authority that precludes such an adjudication-management decision.

B

L'Oréal argues that the limitations stated in the breakage claims are of no legal effect, but mere statements of intended result, and hence cannot create patentability if the claims on which they depend are unpatentable. Appellant Opening Br. at 27; Appellant Response and Reply Br. at 11–14. The breakage claims are all dependent claims, and the sole limitations they add—either to independent claim 1 (on which claims 24–28 depend) or to dependent claim 13 (on which claims 14–16 and 18 depend)—are specific amounts of reduction in breakage compared to hair bleached with the bleaching formulation without the active agent. We reject L'Oréal's argument about the meaning and character of the limitations added by the breakage claims.

In several cases, we have determined that certain claim language was properly understood as “only a statement of purpose and intended result” and not calling for “a manipulative difference in the steps of the claim.” *Bristol-Myers Squibb Co. v. Ben Venue Labs., Inc.*, 246 F.3d 1368, 1376 (Fed. Cir. 2001); *see also Minton v. Nat'l Ass'n of Securities Dealers, Inc.*, 336 F.3d 1373, 1381 (Fed. Cir. 2003); *Teva Pharms. USA, Inc. v. Sandoz Inc.*, 906 F.3d 1013, 1023 (Fed. Cir. 2018). In each case, the court made a claim-specific judgment of the intended effect of the language; and in each case, the language at issue identified a property in only very general terms and appeared in the very same claim that stated the other more concrete requirements. *See Bristol-Myers*, 246 F.3d at 1374–75 (“an antineoplastically effective amount” after specific dosage amounts); *Minton*, 336 F.3d at 1381 (“efficiently” after identifying trading steps); *Teva*, 906 F.3d at 1023 (the addition of “the regimen being sufficient to be therapeutically effective is superfluous” after claim requirement of “a

therapeutically effective regimen”). It was in those circumstances that we determined that certain language “essentially duplicates the dosage amounts recited in the claims,” *Bristol-Myers*, 246 F.3d at 1375, did not “inform the mechanics of how the [method] is executed,” *Minton*, 336 F.3d at 1381, or “d[id] not change the claimed method or require any additional required structure or condition for the claims,” *Teva*, 906 F.3d at 1023.

The claim limitations at issue here are relevantly different, for at least two reasons taken together. First, in requiring specific decreases (*e.g.*, 5%, 10%, 20%, 40%, 50%) in hair breakage, they “state specific requirements rather than a general purpose or aspirational result for the claimed method.” *Allergan Sales, LLC v. Sandoz, Inc.*, 935 F.3d 1370, 1379 (Fed. Cir. 2019) (Prost, C.J., concurring). Second, that is all they do, and they are dependent claims, so to treat the limitations as of no legal effect would be to interpret each of these dependent claims as entirely a nullity. The fairer understanding of these claims is that they limit the options covered by the subject matter defined by the claims on which they depend to options that produce the concretely specified results—thus making a difference in the manipulative steps.

L'Oréal contends that we should hold the language not limiting because of enablement concerns. Appellant Opening Br. at 37, 39; Appellant Response and Reply Br. at 4–10, 13, 21. But while an enablement challenge is within the grounds authorized under 35 U.S.C. § 321(b), L'Oréal did not press an enablement challenge, even in the alternative, in its petition for post-grant review. *See* J.A. 319 (stating that “Petitioner does not concede that the '954 specification provides sufficient details as to how or why the recited amounts of breakage reduction are allegedly achieved” but not arguing enablement). For at least that reason, and given the above reasons for reading the breakage claims as limiting, we see no basis for concluding otherwise based on the narrow claim-construction canon that

ambiguous claims be read to maintain their validity. *See Ruckus Wireless, Inc. v. Innovative Wireless Solutions, LLC*, 824 F.3d 999, 1004 (Fed. Cir. 2016); *Phillips v. AWH Corp.*, 415 F.3d 1303, 1327 (Fed. Cir. 2005) (en banc).

C

Finally, we reject L'Oréal's challenge to the Board's finding that L'Oréal did not support its inherency assertion in arguing the obviousness of the breakage claims. Inherency is a fact issue, and for each breakage claim, L'Oréal had to prove that "the limitation at issue necessarily [was] present, or the natural result of the combination of elements explicitly disclosed by the prior art." *PAR Pharm., Inc. v. TWI Pharms., Inc.*, 773 F.3d 1186, 1195–96 (Fed. Cir. 2014). We conclude that substantial evidence supports the Board's finding that L'Oréal did not prove that the breakage-decrease percentages in the breakage claims are necessarily present in or the natural result of the combined teachings of the prior art.

The Board found that the Pratt/Tanabe combination at issue taught "0.049 wt% to 0.171 wt%, and 0.122 wt% to 0.429 wt%," of maleic acid, a small portion of the range stated in claim 1, on which the breakage claims directly or indirectly depend. J.A. 40–41. The Board also found that, while "it may be the case that Pratt/Tanabe combination would reduce hair breakage by some amount, possibly meeting some of the breakage claims," L'Oréal had not "demonstrate[d] that is necessarily so for any or all of the breakage claims." J.A. 83. L'Oréal has not shown error in that finding.

L'Oréal does not point to evidence showing the necessarily present or natural-result breakage properties of the particular Pratt/Tanabe combination. Instead, it argues that the '954 patent's specification establishes inherency. Appellant Opening Br. at 32–34. Specifically, it relies on a passage in column 18, lines 23–30, which states:

The formulation described herein improves hair quality, such as appearance (*e.g.*, sheen) and feel, and decreases hair breakage when the hair is subjected to treatments, such as coloring or permanent waving.

In some embodiments, hair breakage decreases by 5, 10, 15, 20, 25, 30, 35, 40, 45, or 50% or higher after treatment with the active agent compared to untreated hair from the same individual.

'954 patent, col. 18, lines 23–30. But this statement does not make L'Oréal's case. The statements “[t]he formulation described . . . decreases hair breakage” and that “some embodiments” will have certain “hair breakage decreases” do not establish that the particular Pratt/Tanabe combination will show the specifically claimed breakage decreases or, as L'Oréal has urged, that every formulation meeting the broad claim 1 concentration range will do so.

L'Oréal also relies on *Alcon Research, Ltd. v. Apotex Inc.*, 687 F.3d 1362 (Fed. Cir. 2012), for the idea that “an overlapping concentration range establishes the inherency of a property across the entire claimed concentration when the patent itself teaches that the property is inherent across the entire concentration and the claims require the same.” Appellant Opening Br. at 38. We disagree. In that case, the court concluded, as a matter of claim construction, that an independent claim's limitation requiring “stabilizing conjunctival mast cells” by administering olopatadine was necessarily a property of the specific concentration ranges of olopatadine required by the dependent claims. *Alcon*, 687 F.3d at 1369. The claims here are not similar. The independent claim has a wide range of possible concentrations, and the dependent breakage claims call for particular breakage decreases. There is no claim-construction implication that the entire concentration range produces any or all of the particular breakage decreases.

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VI

For the foregoing reasons, we grant Liqwd's motion to substitute Olaplex for Liqwd and affirm the Board's decision.

The parties shall bear their own costs.

AFFIRMED