IN RE PAOLO LONGI, et al.

No. 84-1561

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

759 F.2d 887*; *1985 U.S. App. LEXIS 14769*; *225 U.S.P.Q. (BNA) 645

April 11, 1985

PRIOR HISTORY: [**1] Appealed from: U.S. Patent & Trademark Office Board of Appeals.

COUNSEL: Ellsworth H. Mosher, Stevens, Davis, Miller & Mosher, of Alexandria, Virginia, argued for Appellants.

Harris A. Pitlick, Associate Solicitor, of United States Patent & Trademark Office, of Arlington, Virginia, argued for Appellee. With him on the brief were Joseph F. Nakamura, Solicitor and John W. Dewhirst, Associate Solicitor.

JUDGES: Friedman and Davis, Circuit Judges, and Skelton, Senior Circuit Judge.

OPINION BY: DAVIS

OPINION

[*889] DAVIS, Circuit Judge.

This is an appeal from a decision of the Patent and Trademark Office Board of Appeals (Board) affirming the examiner's final rejection of appellants' claims 17-34 in application Serial No. 543,520, (January 23, 1975) entitled "Polymerization Catalyst." The Board's affirmance was based upon a holding of obviousness-type double patenting over the claims of three commonly-owned applications, in view of four prior art patents to others. We affirm.

I.

BACKGROUND

A. *The Application*.

Appellants claim certain highly active catalysts used in the polymerization of ethylene. The application discloses that the polymerization of ethylene has been aided [**2] by "Ziegler" catalysts which are complexes of transition metal halides (the transition metal being titanium, and the halide being a chloride, for example) with organometallic compounds of metals belonging to Groups I, II, or III of the Periodic Table. The invention claimed in the application relates to a titanium-based Ziegler catalyst obtained by contacting the titanium compound described below, with an anhydrous magnesium dihalide support under conditions such that the compound is preactivated or becomes activated.

Claim 17 is illustrative of the claims on appeal:

> Polymerization catalysts obtained by mixing
>
> (A) a catalyst-forming component which is a hydride or organometallic compound of a metal belonging to Groups I to III inclusive of the Mendelyeev Periodic System
>
> with

> (B) a catalyst-forming component which is the product obtained by dispersing a titanium compound having the general formula
>
> (NR[4])[p]Ti[m]X[(n.m)+p]
>
> in which the Rs represent hydrogen or hydrocarbon radicals; the X[(n.m)] substituents are halogen atoms or in part OR' groups in which R' is an organic radical; n is the titanium valency and m and p are the whole numbers 1, 2 or 3; on a [**3] carrier essentially consisting of an anhydrous magnesium dihalide in an active form characterized in that in its X-rays spectrum the diffraction line of highest intensity that appears in the X-rays spectrum of the normal magnesium dihalide decreases in intensity and in its place a halo appears.

Also claimed is the method of preparing the catalysts and the process of polymerization using the claimed catalysts. It is asserted that unexpected results are obtained when the titanium compound is combined with an activated anhydrous magnesium dihalide which serves as a support for the titanium compound.

B. *The Commonly-Owned Applications and Patent*

Appellants' application (the applicants are Longi, Giannini and Mazzocchi) has been assigned to Montedison S.p.A., an Italian company based in Milan, Italy. The [*890] assignee also owns the following related applications: Serial Nos. 267,624 (Mayr I) (applicants Mayr, Susa, and Giachetti); 524,380 (Galli) (applicants Galli, Susa, Di Drusco); [1] and 622,550 (Mayr II) (applicants Mayr, Susa, and Giachetti). Mayr I claims polymerization catalysts obtained by mixing a hydride or organometallic compound with a product obtained [**4] by contacting a titanium or vanadium halide in which the metal has a valence lower than 4, with an active form of anhydrous magnesium dihalide. Specifically, catalysts in which the transition metal halide is titanium trichloride (TiCl[3]) are claimed. Also claimed is the method of preparing the catalyst by cogrinding the titanium halide with an anhydrous magnesium dihalide, thereby converting the dihalide to an active form.

1 Serial Nos. 267,624 and 524,380 have both been abandoned in favor of continuation applications Serial Nos. 190,375 and 151,828, respectively.

Galli claims polymerization catalysts obtained by mixing (a) the product obtained by contacting a titanium *oxyhalide* with a support composed, as in Mayr I, of an anhydrous magnesium dihalide in an active form, with (b) a Group I, II, or III hydride or organometallic compound. As in Mayr I, the dihalide is either preactivated or "cogrinded" with the titanium compound, converting the dihalide to an active form.

On November 3, 1981, a [**5] patent was granted on the Mayr II application (filed October 14, 1975), entitled "Catalysts for the Polymerization of Olefins," *U.S. Patent No. 4,298,718*. The Mayr II patent claims a catalyst with an active magnesium dihalide support, obtained in the same manner as claimed in Mayr I and Galli. Here, a titanium *tetrahalide* (TiCl[4], for example) is combined with the support magnesium dihalide and mixed with a hydride or organometallic compound. Claim 11 is illustrative:

> Polymerization catalysts prepared by mixing
>
> (a) a supported catalyst-forming component the essential support material of which is an active magnesium dihalide, said component being obtained by cogrinding a titanium tetrahalide with a normal, non-active anhydrous magnesium dihalide to obtain a component (a) the magnesium dihalide support material of which is activated and characterized in that it has one or both of the following properties (1) its X-rays powder spectrum does not show the most intense diffraction lines as they appear in the X-rays powder spectrum of normal, non-active magnesium dihalide, the spectrum of the activated magnesium dihalide showing a broadening of said most intense diffraction [**6] lines; (2) the surface area of the activated magnesium dihalide is greater than 3 m<2>/g, with
>
> (b) a hydride or organometallic compound of a metal belonging to one of Groups I to III inclusive of the

Mendelyeev Periodic Table. [2]

2 This claim is set forth for purposes of comparison to the claims in the instant application.

Considered together, the three other applications all claim catalysts obtained by mixing the product of a titanium compound and an activated magnesium dihalide with an organometallic compound. Mayr I claims a catalyst composed in part of a titanium halide with a valence less than 4 (*i.e.*, TiCl[3]); Galli a titanium oxyhalide; and Mayr II a titanium tetrahalide. The application in issue claims catalysts obtained in a similar manner as Mayr I, Galli, and Mayr II, except that a titanium compound with a quaternary nitrogen group (NR[4]) is claimed.

C. *The Prior Art*

The prior art references relied on by the examiner are:

Hewett	3,238,146	March, 1966
Argabright	3,069,446	Dec., 1962
Luft	2,981,725	April, 1961
Nowlin	2,918,458	Dec., 1959

[**7] Hewett's patent, entitled "Catalysts and their Preparation," discloses the use of metal-containing catalysts, including titanium catalysts, for aiding polymerization of unsaturated monomers. The disclosure [*891] teaches the use of metal salts such as magnesium chloride, as carriers for the catalysts. Luft's patent, entitled "Process for Polymerizing Olefins," teaches the use of promotors in conjunction with organometallic catalysts to improve the polymerization of ethylene. The use of an inert organic carrier, such as magnesium chloride, for the promotor and catalyst is specifically disclosed as useful in that it increases the accessible surface area of the catalyst, and thus lowers the amount of catalyst required to produce a given quantity of ethylene.

Nowlin's patent, entitled "Process and Catalyst for Production of Olefin Polymers," discloses the use of a polymerization catalyst comprised of an ammonium radical, a titanium, and a halogen, combined with a hydride or organometallic compound. The disclosed complex metal halide compounds include ammonium chlorotitonate ((NH[4])[2]TiCl[6]). The Argabright patent, entitled "Titanium Halide Derivatives, also teaches [**8] that nitrogen-containing titanium halide derivatives combined with an electron donor molecule perform as active catalysts. Thus, all together, the four references disclose that the titanium compounds claimed in the instant and prior applications are well-known components of Ziegler-catalyts.

D. *The Examiner's Rejection*

On February 10, 1981, the examiner finally rejected the claimed subject matter in Longi's application as unpatentable on the ground of estoppel, reasoning that the titanium species claimed were either compounds known to be used in forming Ziegler-type catalysts or were obvious in light of the prior art. The claims were further rejected by the examiner as unpatentable over the claims of Mayr I, Galli and Mayr II in view of Nowlin, Argabright, Hewett and Luft, on the grounds of double patenting. The examiner suggested that the applicants might overcome this rejection by filing a disclaimer or having the patents issue on the same date.

Instead, appellants filed a declaration by Enrico Albizzati, a Montedison biologist researching catalysts used for olefin polymerization, which purports to outline the unexpected results obtained from the applicants' claimed [**9] invention. By comparing the results of four tests which he supervised, Albizzati concluded that the "compound (CH[3])[4]NTi[2]Cl[9] [claimed in the instant application] used alone and in not supported form [sic] (Test 2) is a catalytic component having very low activity, as compared to TiCl[3] ARA [claimed in Mayr

I] used in Test 3 or TiCl[4] [claimed in Mayr II] used in Test 4." The examiner, however, found the Albizzati declaration unpersuasive and in his final rejection, based on the grounds of estoppel and "obviousness type double patenting," stated:

> It is certainly not surprising that the omission of the magnesium dichloride results in a catalyst that is far less active than the analogous catalyst based on titanium tetrachloride or titanium trichloride, i.e., Ziegler-type catalyst based on titanium tetrachloride or titanium trichloride were [sic] known to be more active than those of Nowlin et. al. The catalyst of Nowlin et. al., thus, would be a prime candidate for the activation technique described in the above application in view of its very low activity.

E. *Proceedings Before the Board*

The Board did not believe that the examiner [**10] had established a proper basis for a rejection based on estoppel, and accordingly reversed as to this ground. [3] As to the second ground, the Board stated that the double patenting rejection would be better characterized as a rejection based upon *35 U.S.C. § 103* taken with § 102(g). Then, in its opinion on reconsideration, the Board said that the "rejection is based on obviousness under *section 103*." Appeal was then taken to this court. In oral argument before this court, the Solicitor stated that the Board's decision could not be defended as based upon *§ 103* in light of § 102(g), but could be sustained on the grounds of double [*892] patenting of the obviousness type. In light of these conflicting statements, this court held that it could not determine the validity of the Board's decision, and accordingly vacated and remanded. *In re Longi, 732 F.2d 167 (Fed. Cir. 1984)* (unpublished).

> 3 There is no issue on this appeal relating to estoppel.

On remand, the Board affirmed the rejection based [**11] upon double patenting of the obviousness type. The Board stated that such a rejection was supported by prior Court of Customs and Patent Appeals decisions even though Section 804 of the Manual of Patent Examining Procedure (MPEP) and a Commissioner's Notice (834 O.G. 1615, January 31, 1967) both state that "'double patenting' rejections should not be applied to situations involving commonly owned cases of different inventive entities." The Board went on to say that the cited prior art patents indicate that the titanium compound set forth in the instant application may be effectively used in conjunction with the well-known Ziegler polymerization catalyst. Further, the Board said, it would be an obvious expedient and merely a matter of choice to use any of these known titanium compounds in conjunction with the activated magnesium dihalide support and to combine the resulting complex with the main catalyst material. Accordingly, the claimed subject matter was rejected as unpatentable over the claims in the commonly-owned applications in light of the four prior art patents.

II.

DOUBLE PATENTING

In considering the correctness of the Board's decision, we review any underlying facts [**12] found by the Board under the clearly erroneous standard. The Board's ultimate conclusion of obviousness is a question of law determined from these facts, and will be reviewed for correctness or error as a matter of law. [4] *In re De Blauwe, 736 F.2d 699, 222 U.S.P.Q. (BNA) 191 (Fed. Cir. 1984)*. Before discussing the correctness of the Board's conclusions, a brief review of the general doctrine of double patenting is appropriate.

> 4 We note that the Board did not make the instant rejection under *§ 103*. However, a double patenting of the obviousness type rejection is "analogous to [a failure to meet] the non-obviousness requirement of *35 U.S.C. § 103*," except that the patent principally underlying the double patenting rejection is not considered prior art. *In re Braithwaite, 379 F.2d 594, 600 n.4, 54 C.C.P.A. 1589, 154 U.S.P.Q. (BNA) 29 (1967)*. Therefore, our analysis concerning the correctness of the Board's decision in the instant case parallels our previous guidelines for a *§ 103* rejection. *See, e.g., In re De Blauwe, 736 F.2d 699, 222 U.S.P.Q. (BNA) 191 (Fed. Cir. 1984).*

[**13] A. *Double Patenting -- In General*

A double patenting rejection precludes one person from obtaining more than one valid patent for either (a)

the "same invention," or (b) an "obvious" modification of the same invention. A rejection based on double patenting of the "same invention" type finds its support in the language of *35 U.S.C. § 101*, which states that "Whoever invents or discovers any new and useful process . . . may obtain *a* patent therefor. . . ." (Emphasis added.) Thus, the term "same invention," in this context means an invention drawn to identical subject matter. *In re Vogel, 57 C.C.P.A. 920, 422 F.2d 438, 164 U.S.P.Q. (BNA) 619 (1970).*

On the other hand, a rejection based upon double patenting of the *obviousness type* ((b), *supra*) is a judicially created doctrine grounded in public policy (a policy reflected in the patent statute) rather than based purely on the precise terms of the statute. The purpose of this rejection is to prevent the extension of the term of a patent, even where an express statutory basis for the rejection is missing, by prohibiting the issuance of the claims in a second patent not patentably distinct from the claims of [**14] the first patent. *Carman Industries Inc. v. Wahl, 724 F.2d 932, 220 U.S.P.Q. (BNA) 481 (Fed. Cir. 1983)*; and *In re Thorington, 57 C.C.P.A. 759, 418 F.2d 528, 163 U.S.P.Q. (BNA) 644 (1969), cert. denied, 397 U.S. 1038, 25 L. Ed. 2d 649, 90 S. Ct. 1356, 165 U.S.P.Q. (BNA) 290 (1970)*. Fundamental to this doctrine is the policy that:

> The public should . . . be able to act on the assumption that upon the *expiration* of the patent it will be free to use not [*893] only the invention claimed in the patent but also modifications or variants which would have been *obvious* to those of ordinary skill in the art at the time the invention was made, taking into account the skill of the art and prior art other than the invention claimed in the issued patent. (Emphasis in original.)

In re Zickendraht, 50 C.C.P.A. 1529, 319 F.2d 225, 232, 138 U.S.P.Q. (BNA) 22, 27 (1963) (Rich, *J.*, concurring). Under that facet of the doctrine of double patenting, we must direct our inquiry to whether the claimed invention in the application for the second patent would have been obvious from the subject matter of the claims in the first patent, in light of the prior [**15] art. *Carman Industries, 724 F.2d at 940, 220 U.S.P.Q. at 487* . [5]

> 5 In *Carman Industries*, involving a design patent, we added that a second patent would also be invalid if the *first* patent's claims would have been obvious from the claims of the *second* patent. Appellants have neither asserted that this additional condition is lacking in the instant case, nor that the requirement which was set forth in the design-utility patent situation even applies to the instant situation. We need not, therefore, address either additional issue here.

Appellants argue that clear lines of division among the respective groups of claims in the several applications have been maintained. They conclude that because there are no "conflicting claims" and the claims in these applications do not "overlap," double patenting does not exist. However, appellants confuse the difference between the two types of double patenting. Overlapping and conflicting claims are considerations more significant in a *§ 101* "same [**16] invention" double patenting analysis. These are not "significant or controlling" factors in an obviousness type double patenting analysis where a rejection may be applied to "clearly distinct inventions." *In re Jentoft, 55 C.C.P.A. 1026, 392 F.2d 633, 640, 157 U.S.P.Q. (BNA) 363, 369 (1968)*; *see also In re Siu, 42 C.C.P.A. 864, 222 F.2d 267, 105 U.S.P.Q. (BNA) 428 (1955)*. This type of double patenting rejection has been applied where there are separate inventions, each of which is considered patentable over the prior art absent the first patent. *In re Bowers, 53 C.C.P.A. 1590, 359 F.2d 886, 149 U.S.P.Q. (BNA) 570 (1966)*. Thus, appellants' argument that the claimed inventions do not overlap is irrelevant.

Appellants also maintain that the entire doctrine of double patenting of the obviousness type should not apply to commonly-owned applications with different inventive entities. A rejection based upon such a doctrine, appellants say, is unduly restrictive and discourages group research. Moreover, each inventor in a research department should be entitled to separate patents for his or her own independent contribution to the basic objective of the overall research project. [**17] Such a broad position has been previously rejected, and it is inconsistent with both our precedents and recent legislation.

Many times our predecessor court, the Court of Customs and Patent Appeals, has treated

commonly-owned applications by different inventors as though they were filed by the same inventor, and then relied upon the doctrine of double patenting of the obviousness type to deny a second patent on subject matter not patentably distinct from the claims of the first patent. *See In re Newton, 56 C.C.P.A. 1463, 414 F.2d 1400, 163 U.S.P.Q. (BNA) 34 (1969)*; *In re Frilette, 56 C.C.P.A. 1262, 412 F.2d 269, 162 U.S.P.Q. (BNA) 163 (1968)*; *In re Rogers, 55 C.C.P.A. 1092, 394 F.2d 566, 157 U.S.P.Q. (BNA) 569 (1968)*; *In re Bowers, 53 C.C.P.A. 1590, 359 F.2d 886, 149 U.S.P.Q. (BNA) 570 (1966)*; *In re Borcherdt, 39 C.C.P.A. 1045, 197 F.2d 550, 94 U.S.P.Q. (BNA) 175 (1952)*; and *In re Borg, 55 C.C.P.A. 1021, 392 F.2d 642, 157 U.S.P.Q. (BNA) 359 (1968)*. In fact, the appellant in *In re Rogers* made an argument similar to the one the present appellant makes here. In that case, Rogers asserted that the obviousness type double patenting rejection was "distressing" [**18] to corporate practitioners and did not take into account the considerable exchange of information between inventors. The result, as the argument goes, would be that a corporation would find itself in a [*894] "box" because patent protection for both inventions would not be possible.

As we declared in that case, appellants, and those in like situations, are not in an inescapable "box." *In re Rogers, supra, 394 F.2d at 571, 157 U.S.P.Q. at 573*. A patent may still issue if an applicant faced with such a rejection were to file a terminal disclaimer under *35 U.S.C. § 253*, disclaiming "any terminal part of the term . . . of the patent," thereby guaranteeing that the second patent would expire at the same time as the first patent. It is well-established that a common assignee is entitled to proceed with a terminal disclaimer to overcome a rejection based on double patenting of the obviousness type. *In re Bowers, supra, 359 F.2d 886, 149 U.S.P.Q. (BNA) 571*. Since the second patent would expire simultaneously with the first, this use of a terminal disclaimer is consistent with the policy that the public should be free to use the invention as well as any obvious modifications [**19] at the end of the patent's term. *In re Robeson, 51 C.C.P.A. 1271, 331 F.2d 610, 614, 141 U.S.P.Q. (BNA) 485, 486 (1964)*.

Appellants respond to this suggested use of a disclaimer by citing MPEP [Manual of Patent Examining Procedure] § 804.03 for the proposition that terminal disclaimers are not applicable to commonly-owned applications made by different inventive entities. The Solicitor also candidly points us to the related Commissioner's Notice on Double Patenting (834 O.G. 1615, January 9, 1967) which states in relevant portion:

> The term 'double patenting' is properly applicable only to cases involving two or more applications and/or patents of the same inventive entity and should not be applied to situations involving commonly owned cases of different inventive entities.

Appellants argue, therefore, that a terminal disclaimer would be ineffective. However, this court has never approved this guideline, and such a requirement is inconsistent with many of our predecessor's decisions. *See, e.g., In re Rogers, 394 F.2d at 567, n.4, 157 U.S.P.Q. at 571* (citations omitted); and *In re Frilette, 56 C.C.P.A. 1262, 412 F.2d 269, 162 U.S.P.Q. (BNA) 163* [**20] *(1969)*. In fact, the examiner here invited appellants' assignee, which declined, to file a terminal disclaimer in order to overcome the rejection. We have held that the Double Patenting Notice, *supra*, is only a procedural memorandum which merely sets forth guidelines for the Patent and Trademark Office, and that where those guidelines are not even applied, as in the instant case, they can have no bearing on the outcome. *In re Newton, 56 C.C.P.A. 1463, 414 F.2d 1400, 163 U.S.P.Q. (BNA) 34 (1969)*. [6] In short, appellants' argument in this regard is meritless.

> 6 As we point out *infra*, the PTO has partially withdrawn the Notice of January 9, 1967.

As a last resort, appellants argue that under the recent legislative changes to *35 U.S.C. § 103*, [7] the "tenuous and untenable" double patenting rejection is unsupportable in light of the "fierce spotlight of the now-so-clearly revealed Congressional intent." [8] To respond to this contention, we inquire whether the recent legislation changes or in any [**21] way affects the doctrine of double patenting of the obviousness type.

> 7 This section now includes the following:
>
> > Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability

> under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

Patent Law Amendments, Pub. L. No. 98-622, § 104, 98 Stat. 3385 (1984).

8 Appellants also moved to remand to the Board in light of these recent legislative changes. For reasons explained *infra*, this motion is denied.

Certainly the mere words of the new statute do not compel the elimination of that type of double patenting objection. The objective of this amendment was to deal with citation of a co-worker's research development, *see In re Bass, 59 C.C.P.A. 1342, 474 F.2d 1276, 177 U.S.P.Q. (BNA)* [**22] *178 (1973)* and [*895] *In re Clemens, 622 F.2d 1029, 206 U.S.P.Q. (BNA) 289 (1980)*, not with double patenting. *See* 130 CONG. REC. H10925 (October 1, 1984); PATENT LAW AMENDMENTS ACT OF 1984, PUB. L. NO. 98-622, § 104, 98 STAT. 3385, *reprinted in* 1984 U.S. Code Cong. & Ad. News 5833. Indeed, the present problem is definitively resolved by important legislative history of that legislation. Of particular interest are Congressman Kastenmaier's remarks, incorporated into the Senate Report, on the effect the legislation would have on the judicially created double patenting doctrine:

> The Committee expects that the Patent and Trademark Office will reinstitute in appropriate circumstances the practice of rejecting claims in commonly owned applications of different inventive entities on the ground of double patenting. This will be necessary in order to prevent an organization from obtaining two or more patents with different expiration dates covering *nearly identical* subject matter. In accordance with established patent law doctrines, double patenting rejections can be overcome in certain circumstances by disclaiming the terminal portion of the term of the [**23] later patent, thereby eliminating the problem of extending patent life. (Emphasis added.)

130 CONG. REC. H10525 (daily ed. October 1, 1984); SENATE COMMITTEE ON THE JUDICIARY, PATENT LAW AMENDMENTS ACT OF 1984, S. Rep. 98-663, 98th Cong., 2d Sess. 8 (1984), *reprinted in* 1984 U.S. Code Cong. & Ad. News 5834 (section-by-section analysis of the Patent Law Amendments of 1984). Although it would seem clear from this statement that the recent amendment was not intended to affect the doctrine of double patenting, but seems rather to reaffirm its viability, appellants argue otherwise. They assert that in referring to "nearly identical subject matter," Mr. Kastenmaier was coining a new term of art different from the established test utilized in the obviousness type double patenting doctrine.

There is no substantial support for this argument. As we have previously discussed, double patenting of the same invention type under *§ 101* questions whether the respective claims cover "identical" subject matter. In referring to "nearly identical subject matter," we believe Congressman Kastenmaier and the Committees were referring to subject matter which "would have been obvious" [**24] from the subject matter of the claims of the first patent, in accordance with the established existing doctrine of double patenting of the obviousness type. That the doctrine was left unaffected but reaffirmed is further supported by the "PTO's Initial Guidelines as to Implementation of Patent Law Amendments" which state:

> (14) Double patenting rejections may now be made in applications based on commonly owned patents of different inventive entities and double patenting rejections of the obviousness type can be overcome by terminal disclaimers.
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> * * * * * *
>
> (16) The Commissioner's Notice of January 9, 1967, "Double Patenting," 834 O.G. 1615 (Jan. 31, 1967) is withdrawn to the extent that it does not authorize a double patenting rejection where different inventive entities are present.

Reprinted in 29 BNA's *Pat. T.M. & Copy. J.* 214 (December 20, 1984). For these reasons, we hold that double patenting of the obviousness type, as applied to

commonly-owned applications made by different inventive entities, is still a viable doctrine.

B. *The Rejection in This Case*

The narrower question in the current case is whether, in the absence of a terminal [**25] disclaimer, the Board erred in affirming the examiner's determination that the claimed subject matter is merely an obvious modification of the invention claimed in the commonly-owned applications and the Mayr II patent, in light of the four prior art references. Of course, a double patenting rejection presupposes a patent. Thus, we start by examining the claims of the Mayr II patent, and by assessing the prior art references in order to ascertain whether the PTO made out a *prima facie* case of [*896] obviousness. Then we must look to the Albizzati declaration to determine whether the Board correctly concluded that this sole rebuttal evidence was insufficient to overcome the *prima facie* case. *See In re Piasecki, 745 F.2d 1468, 223 U.S.P.Q. (BNA) 785 (Fed. Cir. 1984).*

The basic concept underlying the claims in all the commonly-owned applications and patent is the formation of a highly active Ziegler-type catalyst by first combining a titanium compound with an activated form of magnesium halide. The particular species of titanium compound can be selected from titanium trihalides (Mayr I application), titanium oxyhalides (Galli application), or titanium tetrahalides [**26] (Mayr II patent). The difference between the claims in the instant application, on the one hand, and the Mayr II claims, on the other, is the recitation of the nitrogen-containing titanium compound in the present application. [9] Thus, the question becomes whether the prior art discloses to one of ordinary skill in the art that magnesium halides in "active form" would have utility with the nitrogen-containing titanium compound embodied in the current invention.

> 9 Appellants contend that the fact that the previous applications claimed non-nitrogen-containing titanium shows that a clear line of division has been maintained between the applications, and therefore that the instant application is patentable. However, as we have seen, the fact that inventions are distinct and "non-overlapping" is not controlling when applying the obviousness type double patenting doctrine. *See In re Jentoft, supra.*

As taught by the four prior art references, all the claimed species of titanium compounds, as well as the nitrogen-containing [**27] titanium compounds of the claims now before us, are well-known "titanium compound" components of Ziegler-type catalysts. The compounds were correctly considered by the examiner to be qualitative equivalents. As the Board aptly noted, qualitative equivalence means that the active Ziegler-type catalysts could be prepared from these titanium compounds with the appropriate organometallic reducing agents (*i.e.*, active magnesium chloride). More specifically, Nowlin and Argabright teach the use of such nitrogen-containing titanium compounds. Thus, with knowledge that an "activated magnesium halide" would increase the catalytic activity of a Ziegler-type catalyst prepared with the species of titanium compound claimed in the commonly-owned patent, it would have been obvious to one of ordinary skill in the art that the same effect would probably occur by using a nitrogen-containing titanium compound.

Appellants retort that the various species of titanium compounds are significantly different in structure from the nitrogen-containing titanium catalyst. But the prior art patents suggest that the Ziegler-type catalyst carrier (for example, magnesium halide) would have utility with [**28] *each* type of titanium compound. Thus, the fact that the nitrogen-containing compounds disclosed in Nowlins and Argabright might be different structurally would not deter one of ordinary skill in the art from combining the compound with the activated magnesium halide claimed in the commonly-owned Mayr II patent, for example. Accordingly, a *prima facie* case of obviousness-type double patenting was properly made.

Contrary to appellants' arguments, the Albazzati declaration fails to provide the unexpected results necessary to rebut the *prima facie* case of obviousness. We may assume that the declaration was designed to show that the different claimed titanium species combined only with an aluminum alkyl yields an inferior catalyst, while the same species combined additionally with an active magnesium chloride support yields a highly active catalyst. However, as we have seen from the claims of the commonly-owned patent, magnesium halide in "active form" increases the effectiveness of Ziegler-type catalysts containing the titanium chloride compounds. The important point is that the declaration does not speak at all to the critical issue of whether that "active" support combined [**29] with the nitrogen based compound produced unexpected results not already

obtained with other Ziegler-type catalysts such as [*897] those containing the titanium chloride compounds. There is nothing to show that the results attested in the declaration were unexpected. The fact that some titanium compounds function more effectively, and that the exact magnitude of the increased catalytic activity might not be predictable, does not preclude a conclusion of obviousness. Only a reasonable expectation of success, not absolute predictability, is necessary for a conclusion of obviousness. *See In re Lamberti, 545 F.2d 747, 192 U.S.P.Q. (BNA) 278 (CCPA 1976)*, and *In re Clinton, 527 F.2d 1226, 188 U.S.P.Q. (BNA) 365 (CCPA 1976)*. Accordingly, the Board did not err in holding the claim subject matter unpatentable for double patenting of the obviousness type.

AFFIRMED.

ELI LILLY AND COMPANY, Plaintiff-Cross Appellant, v. BARR LABORATORIES, INC., and APOTEX, INC. and BERNARD C. SHERMAN, and GENEVA PHARMACEUTICALS, INC., Defendants-Appellants, and INTERPHARM, INC., Defendant.

99-1262, 99-1263, 99-1264, 99-1303

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

251 F.3d 955*; *2001 U.S. App. LEXIS 11240*; *58 U.S.P.Q.2D (BNA) 1865

May 30, 2001, Decided

SUBSEQUENT HISTORY: [**1] Opinion on Rehearing May 30, 2001, Reported at: *2001 U.S. App. LEXIS 11241*. Reported at: *251 F.3d 955 at 972*.

PRIOR HISTORY: Appealed from: United States District Court for the Southern District of Indiana. Chief Judge Sarah Evans Barker.
Eli Lilly & Co. v. Barr Labs., 251 F.3d 955, 2001 U.S. App. LEXIS 11241 (Fed. Cir., 2001)

COUNSEL: Charles E. Lipsey, Finnegan, Henderson, Farabow, Garrett & Dunner, L.L.P., of Washington, DC, argued for plaintiff-cross appellant, Eli Lilly and Company. With him on the brief were Allen M. Sokal, Kenneth M. Frankel, and David S. Forman. Of counsel was L. Scott Burwell. Of counsel on the brief were Douglas K. Norman, and James P. Leeds, Eli Lilly and Company, of Indianapolis, Indiana.

Richard S. Clark, Rochelle K. Seide, Marta E. Delsignore, Louis Sorell, Robert Neuner, and Thomas J. Parker, Baker & Botts, of New York, New York, for defendant-appellant, Geneva Pharmaceuticals, Inc.

George C. Lombardi, Winston & Strawn, of Chicago, Illinois, argued for defendant-appellant Barr Laboratories, Inc. With him on the brief were James F. Hurst, Dan K. Webb, Bradley C. Graveline, Christine J. Siwik, and Taras A. Gracey. Of counsel on the brief was Mark E. Waddell, Bryan Cave, LLP, of New York, New York. Of counsel was Derek John Sarafa.

Hugh L. Moore, and Diane I. Jennings, Lord, Bissell & Brook, of Chicago, Illinois for defendants-appellants Apotex, Inc. and [**2] Bernard C. Sherman.

Jeffrey P. Kushan, Powell, Goldstein, Frazer & Murphy LLP, of Washington, DC, for amicus curiae Biotechnology Industry Organization. Of counsel on the brief were Richard Medway and Eric M. Solovy, Powell, Goldstein, Frazer & Murphy LLP; and Charles E. Ludlam, Biotechnology Industry Organization, of Washington, DC.

William L. Mentlik, Lerner, David, Littenberg, Krumholz & Mentlik, LLP, of Westfield, New Jersey, for amicus curiae Zenith Goldline Pharmaceuticals, Inc.

Joseph P. Lavelle, Howrey Simon Arnold & White, of Washington, DC, for amicus curiae Intellectual Property Owners Association.

John C. Vassil, Morgan & Finnegan, L.L.P., of New York, New York, for amicus curiae Federal Circuit Bar Association. With him on the brief were Michael P. Dougherty, Tony V. Pezzano, and Tini Thomas. Of counsel on the brief were George E. Hutchinson and Philip C. Swain, Federal Circuit Bar Association, of Washington, DC.

Janice M. Mueller, Associate Professor, The John Marshall Law School, of Chicago, Illinois, amicus curiae.

Nancy J. Linck, Guilford Pharmaceuticals Inc., of Baltimore, Maryland, for amicus curiae Guilford Pharmaceuticals Inc.

JUDGES: NEWMAN, [**3] Circuit Judge, dissenting from the refusal to reconsider the case en banc.

OPINION

ERRATUM

The second page of the order issued on May 30, 2001, with Circuit Judge Newman's dissent appended, is hereby amended to read:

The court considered a request for an en banc hearing of the order issued on May 30, 2001. Circuit Judge Newman dissents in a separate opinion from the refusal of the court to reconsider the case en banc.

[*972] ORDER

Eli Lilly and Company filed a combined petition for panel rehearing and rehearing en banc. Responses thereto were invited by the court, and filed by Geneva Pharmaceuticals, Inc., and Barr Laboratories, Inc. The petition for rehearing and responses [1] were referred to the panel that heard the appeal, and thereafter, referred to the circuit judges who are in regular active service.

1 Amicus curiae briefs were filed by:

a- Intellectual Property Owners Association

b- Federal Circuit Bar Association

c- Professor Janice M. Mueller

d- Guilford Pharmaceuticals Inc.

e- Biotechnology Industry Organization

f- Zenith Goldline Pharmaceuticals, Inc.

[**4] Acting en banc, the court accepted the petition for rehearing en banc, and vacated the panel's opinion entered on August 9, 2000, which is reported at *222 F.3d 973 (Fed. Cir. 2000)*. The en banc court reassigned the appeals to the panel, which issues a separate opinion today.

Circuit Judge Newman dissents in a separate opinion.

Circuit Judge Linn did not participate in the vote.

May 30, 2001

Date

DISSENT BY: NEWMAN

DISSENT

NEWMAN, Circuit Judge, dissenting from the refusal to reconsider the case *en banc*.

The Federal Circuit, sitting *en banc*, vacated the panel's prior opinion issued on August 9, 2000 and returned the case to the panel for further consideration. The panel now again holds claim 7 of the '549 (Molloy) patent invalid for double patenting, but this time it bases that determination on a different patent, the '213 patent (Stark). The panel now grants summary judgment invalidating claim 7 of the '549 patent for double patenting with the Stark patent. However, this shift has led the panel into factual and legal areas that were [*973] not developed at trial, and into misapplication and misstatement of the law of double patenting. I must, respectfully, [**5] dissent.

Obviousness-Type Double Patenting

The judgemade law of obviousness-type double patenting was developed to cover the situation where patents are not citable as a reference against each other and therefore can not be examined for compliance with the rule that only one patent is available per invention. Double patenting thus is applied when neither patent is prior art against the other, usually because they have a common priority date. See General Foods Corp. v. Studiengesellschaft Kohle mb H,1 *972 F.2d 1272, 1278-81, 23 U.S.P.Q.2D (BNA) 1839, 1843-46 (Fed. Cir. 1992)* (summarizing the criteria for obviousness-type double patenting). As the court explained in *In re Boylan, 55 C.C.P.A. 1041, 392 F.2d 1017, 1018 n.1, 157 U.S.P.Q. (BNA) 370, 371 n.1 (CCPA 1968)*, "it must always be carefully observed that the appellant's patent is not 'prior art' under either *section 102* or *section 103* of the 1952 Patent Act."

These fundamental requirements for application of the law of double patenting are not met by the '549 and Stark patents. The Stark patent was filed nine years after the effective filing date of the '549 patent; there is no formal relationship between [**6] them; the '549 disclosure was a cited reference against Stark; and they have different inventorships. The panel ignores these routine criteria and the effect they have on a double patenting analysis. Whatever effect the '549 and Stark patents may have on each other, it is not "double patenting."

The district court had rejected Barr's double patenting arguments after summary judgment proceedings, ruling that:

> Barr's primary contention is that claim 7 of the '549 patent is invalid for double patenting because it merely sets forth the "scientific explanation" for the subject matter of certain of Lilly's other patents. Barr's summary judgment briefing on this issue is a confusing amalgamation of broad patent law principles that are not clearly applicable to the issues before the Court. In fact, the only case law cited in support of its theory is a dissenting opinion, never adopted thereafter by any court as best we could determine. Even disregarding any limitation on the application of this legal theory to the issues at hand, we observe that Barr's briefs focus extensively on the formulation and restatement of its legal theory to the exclusion of any evidence sufficient to explain [**7] or support it. Most notably, Barr has failed to provide any authoritative, reliable scientific opinion to establish that claim 7 of the '549 patent constitutes merely the later scientific explanation of what has already been claimed in the patents that came before.

On presumably the same record, the panel now grants summary judgment and *sua sponte* finds double patenting between claim 7 of the '549 patent and claim 1 of the Stark patent. The '549 disclosure, in the form of three issued divisional patents, was prior art cited against the Stark patent. Patentability of the Stark claims over this prior art was successfully argued in the PTO. The panel reaches the anomalous conclusion that the earlier filed '549 patent (effective filing date January 10, 1974) is invalid for obviousness-type double patenting with the Stark patent that was filed nine years later (April 8, 1983). Such a result is not available under the laws of *35 U.S.C. § 102* and *§ 103*; neither can it be achieved under the rubric of double patenting.

The claims are:

> Claim 7 of the '549 Molloy patent: [*974]
>
> The method of claim 4 [blocking the uptake of monoamines by brain neurons [**8] in animals] comprising administering to said animal a monoamine blocking amount of N-methyl-3--p-trifluoromethylphenoxy)-3 -phenylproplyamine [fluoxetine] or a pharmaceutically-acceptable acid addition salt thereof.
>
> Claim 1 of the '213 Stark patent:
>
> A method for treating anxiety in a human subject in need of such treatment which comprises the administration to said human of an effective amount of fluoxetine or norfluoxetine or pharmaceutically-acceptable salts thereof. [2]

The panel holds that the later-discovered and later-filed anxiety-treatment use of fluoxetine invalidates the patent on the earlier discovery of monoamine (serotonin) blocking use because the earlier discovery is "inherent" in the later one. That is not a correct statement of either the law of double patenting or the law of inherency. The 1974 invention can not be invalidated based on what was filed and claimed in the 1983 application, even on the panel's incorrect view of the law of inherency as applied to biological inventions.

> 2 A biological property or new use of a composition is claimed as a "method of use," in accordance with *35 U.S.C. 101*. Both claim 7 of the '549 patent and claim 1 of the Stark patent are method-of-use claims.

[**9] The district court remarked on the absence of reliable evidence as well as legal precedent to support Barr's proffered theories. The panel, however, finds that "Barr has offered a panoply of evidence to support the recognition of this inherent biological function." Panel op. at 23. I take note that the panel cites only references dated after the '549 application was filed. These references are not prior art to the '549 claims. Later discoveries and scientific advances may well elucidate the earlier ones, but that does not retrospectively erase the patentability of the earlier work.

The complex factual issues that have been raised in the record, in connection with the relationship between serotonin uptake and the various pharmaceutical uses of fluoxetine, can not be resolved in favor of Barr and adversely to Lilly on the summary judgment record, for the material facts have been placed squarely at issue. Indeed, the scientific evidence in the record weighs heavily against the panel's findings.

It is highly relevant that the Stark application was examined in light of prior art that included the '549 Molloy disclosure. While Barr cites cases that established rules with respect to the [**10] subsequent patentability of a genus when a species is known, this has no relevance to the question at bar. Further, these rules relate to whether a subsequent invention is patentable,

not a prior one. Here, however, it is the first-filed (Molloy) invention that the panel invalidates in view of the later-filed Stark invention. Although the Stark patent issued seven months before the '549 patent, the panel incorrectly holds that the later-filed but earlier-issued Stark claim renders obvious the '549 claim of nine years earlier priority. Neither *In re Berg, 140 F.3d 1428, 46 U.S.P.Q.2D (BNA) 1226 (Fed. Cir. 1998)*, relied on by the panel, nor any other case, supports such an inverted holding.

When two patents issue with claims that are not patentably distinct, the principle served by the judgemade law of double patenting is that because patent protection started with the first patent to issue, it should not extend to the expiration of the second patent to issue. Thus the law of double patenting does not consider the patents as prior art; the law simply requires elimination of the extension of exclusivity [*975] by truncating the term of the second patent to issue, to coincide with the [**11] term of the first patent to issue.

When the second patent to issue is (as here) the first patent that was filed, an anomaly may arise when there is a valid charge of obviousness-type double patenting. I repeat, that charge is not here available because the first patent that was filed was in fact a reference against the second patent. The panel, ignoring this immutable fact, undertakes an obviousness-type double patenting analysis. When two patents are appropriately considered for obviousness-type double patenting, an anomaly arises, for example, when the claims of patent B are "obvious" in light of the claims of patent A, but the claims of patent A are not obvious in light of the claims of patent B. An illustration is shown in In re Berg, where one patent was directed to a species, and the other to a genus that included the species. A genus is usually not patentable over a species, but a species may, depending on the facts, be patentable over the genus. Judgemade law has developed a special and simple test for double patenting in such a situation: the requirement of "cross-reading." By applying the rules of cross-reading, double patenting will not lie, for cases in which the first [**12] patent to issue is the second patent that was filed, unless the claims cross read; that is, unless the claims of each patent would have been obvious in view of the claims of the other patent. This simple expedient avoids the analytical trap into which the panel fell.

The panel has reached the truly anomalous result of holding invalid for obviousness, on a theory of obviousness-type double patenting, an invention that was made and applied for nine years before the asserted "prior art" was filed.

The panel states that In re Berg requires that unless the PTO is solely and exclusively responsible for all delays in issuing the first-filed patent, the patentee can not rely on the fact of its earlier filing. That is not the Berg holding. In Berg the same inventors filed, on the same day, patent applications whose claims stood in the relationship of genus and species of the same method for preparing an abrasive particle suitable for use in an abrasive composition. When the species application was about to issue, the examiner rejected the genus application on the grounds of obviousness-type double patenting. Berg argued that each application should be evaluated as to whether it [**13] represented a patentable advance over the other, a two-way test of cross-reading applied in particular circumstances. This court stated that the purpose of the two-way test, as it had been developed in our precedent, was "to prevent rejections for obviousness-type double patenting when the applicants filed first for a basic invention and later for an improvement, but, through no fault of the applicants, the PTO decided the applications in reverse order of filing, rejecting the basic application although it would have been allowed if the applications had been decided in the order of their filing." The Federal Circuit then held that Berg was not entitled to the benefits of the two-way test because he could have included all of the claims in a single application. Neither the facts of Berg nor the law as developed therein applies to the patents here under consideration.

The panel also holds that because Lilly disclaimed the Stark patent before trial, this bars Lilly from disclaiming that portion of the '549 patent that would have extended beyond the Stark patent's original life. No precedent so holds, and I discern no basis for such a new rule. A terminal disclaimer is a standard response [**14] to a charge of double patenting; this remedy need not be withheld, at least in the [*976] absence of fraud or bad faith. To deny a patentee the opportunity of simplifying the issues or improving its litigation position is an unnecessary if not a punitive action, unwarranted on this record.

The New Rules of Patentability of Biological Inventions

The panel states that "the natural result of fluoxetine hydrochloride is the inhibition of serotonin uptake," and holds that a discovery of a new and unobvious biological property is unpatentable because it is inherent in the chemical compound. As authority the panel cites a dissenting opinion in *Burroughs Wellcome Co. v. Barr Labs., Inc., 40 F.3d 1223, 1233, 32 U.S.P.Q.2D (BNA) 1915, 1924 (Fed. Cir. 1994)* (Lourie, J. dissenting in part), the dissent suggesting that a patent to a method which "is an inherent, inevitable result of the practice" of another method patent constitutes same-invention double patenting. Thus the panel holds the '549 claim to serotonin inhibition to be invalid as the natural and inherent result of the Stark treatment for relief of anxiety. How-

ever, every biological property is a natural and inherent result [**15] of the chemical structure from which it arises, whether or not it has been discovered. To negate the patentability of a discovery of biological activity because it is "the natural result" of the chemical compound can have powerful consequences for the patentability of biological inventions. The narrow facts of Burroughs Wellcome and the dissenting view therein do not warrant the new rule now adopted.

The panel also states that "there is not sufficient evidence on which a jury could base a finding that fluoxetine hydrochloride does not inhibit the uptake of serotonin." Indeed, it is far from clear what could be proved, as well as what must be proved, on the panel's theory of double patenting, for the many scientific articles cited in the record show the complexity of the mechanism of action of fluoxetine. However, the panel's ruling that Lilly would have to prove that serotonin inhibition does not occur on treatment with fluoxetine, in order to avoid double patenting invalidity of its claim for serotonin inhibition on treatment with fluoxetine, will surely add confusion and uncertainty to patent practice.

In this period of unprecedented development of patent-supported biological [**16] advance, the nation needs a stable and comprehensible patent law, lest this court falter in its leading role in implementing the law's fundamental purposes.

ELI LILLY AND COMPANY, Plaintiff-Cross Appellant, v. BARR LABORATORIES, INC., and APOTEX, INC. and BERNARD C. SHERMAN, and GENEVA PHARMACEUTICALS, INC., Defendants-Appellants, and INTERPHARM, INC., Defendant.

99-1262, 99-1263, 99-1264, 99-1303

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

251 F.3d 955*; *2001 U.S. App. LEXIS 11241*; *58 U.S.P.Q.2D (BNA) 1869

May 30, 2001, Decided

SUBSEQUENT HISTORY: [**1] Rehearing and Rehearing En Banc Denied July 18, 2001, Reported at: *2001 U.S. App. LEXIS 16987*. Certiorari Denied January 14, 2002, Reported at: *2002 U.S. LEXIS 480*.
Dissenting Opinion at Eli Lilly & Co. v. Barr Labs., 251 F.3d 955, 2001 U.S. App. LEXIS 11240 (Fed. Cir., 2001)
Rehearing, en banc, denied by, Without opinion by *Eli Lilly & Co. v. Barr Labs., Inc., 2001 U.S. App. LEXIS 16987 (Fed. Cir., July 18, 2001)*
Writ of certiorari denied, Motion granted by *Eli Lilly & Co. v. Barr Labs., Inc., 534 U.S. 1109, 122 S. Ct. 913, 151 L. Ed. 2d 879, 2002 U.S. LEXIS 480 (2002)*

PRIOR HISTORY: Appealed from: United States District Court for the Southern District of Indiana. Chief Judge Sarah Evans Barker.

Order on Rehearing Reported at: *2001 U.S. App. LEXIS 11240*. Original Opinion of August 9, 2000, Previously Reported at: *2000 U.S. App. LEXIS 19021*.
Eli Lilly & Co. v. Barr Lab., Inc., 222 F.3d 973, 2000 U.S. App. LEXIS 19021 (Fed. Cir., 2000)

DISPOSITION: AFFIRMED-IN-PART, REVERSED-IN-PART, AND VACATED.

COUNSEL: Charles E. Lipsey, Finnegan, Henderson, Farabow, Garrett & Dunner, L.L.P., of Washington, DC, argued for plaintiff-cross appellant, Eli Lilly and Company. With him on the brief were Allen M. Sokal, Kenneth M. Frankel, and David S. Forman. Of counsel was L. Scott Burwell. Of counsel on the brief were Douglas K. Norman, and James P. Leeds, Eli Lilly and Company, of Indianapolis, Indiana.

Richard S. Clark, Rochelle K. Seide, Marta E. Delsignore, Louis Sorell, Robert Neuner, and Thomas J. Parker, Baker & Botts, of New York, New York, for defendant-appellant, Geneva Pharmaceuticals, Inc.

George C. Lombardi, Winston & Strawn, of Chicago, Illinois, argued for defendant-appellant Barr Laboratories, Inc. With him on the brief were James F. Hurst, Dan K. Webb, Bradley C. Graveline, Christine J. Siwik, and Taras A. Gracey. Of counsel on the brief was Mark E. Waddell, Bryan Cave, LLP, of New York, New York. Of counsel [**2] was Derek John Sarafa.

Hugh L. Moore, and Diane I. Jennings, Lord, Bissell & Brook, of Chicago, Illinois for defendants-appellants Apotex, Inc. and Bernard C. Sherman.

Jeffrey P. Kushan, Powell, Goldstein, Frazer & Murphy LLP, of Washington, DC, for amicus curiae Biotechnology Industry Organization. Of counsel on the brief were Richard Medway and Eric M. Solovy, Powell, Goldstein, Frazer & Murphy LLP; and Charles E. Ludlam, Biotechnology Industry Organization, of Washington, DC.

William L. Mentlik, Lerner, David, Littenberg, Krumholz & Mentlik, LLP, of Westfield, New Jersey, for amicus curiae Zenith Goldline Pharmaceuticals, Inc.

Joseph P. Lavelle, Howrey Simon Arnold & White, of Washington, DC, for amicus curiae Intellectual Property Owners Association.

John C. Vassil, Morgan & Finnegan, L.L.P., of New York, New York, for amicus curiae Federal Circuit Bar Association. With him on the brief were Michael P. Dougherty, Tony V. Pezzano, and Tini Thomas. Of counsel on the brief were George E. Hutchinson and Philip C. Swain, Federal Circuit Bar Association, of Washington, DC.

[222z

Janice M. Mueller, Associate Professor, The John Marshall Law School, of Chicago, [**3] Illinois, amicus curiae.

Nancy J. Linck, Guilford Pharmaceuticals Inc., of Baltimore, Maryland, for amicus curiae Guilford Pharmaceuticals Inc.

JUDGES: Before MAYER, Chief Judge, FRIEDMAN, Senior Circuit Judge, and GAJARSA, Circuit Judge.

OPINION BY: GAJARSA

OPINION

[*958] ON PETITION FOR REHEARING EN BANC

GAJARSA, *Circuit Judge*.

ORDER

On the petition for rehearing or rehearing *en banc*, the court accepted the petition for rehearing *en banc*. Acting *en banc*, the court vacated the panel's original opinion entered on August 9, 2000, which is reported at *222 F.3d 973, 55 U.S.P.Q.2D (BNA) 1609 (Fed. Cir. 2000)*. The *en banc* court reassigned the opinion to the panel for a specific revision of the double patenting section. Based on the conclusions of the panel, the panel's original judgment affirming the district court's determination on the issue of best mode is reaffirmed. The panel's original judgment, which reversed the district court's determination that claim 7 of *U.S. Patent No. 4,626,549 ("the '549 patent")* is not invalid for double patenting, is reaffirmed, but on a different legal basis.

In December 1995, Barr Laboratories, Inc. ("Barr") filed an Abbreviated New [**4] Drug Application ("ANDA") under the Hatch-Waxman Act, *see 21 U.S.C. § 355(j)(2)(A)(vii)(IV) (1994)*, seeking approval from the Food and Drug Administration ("FDA") to market fluoxetine hydrochloride as an antidepressant. Fluoxetine hydrochloride is the active ingredient in Eli Lilly and Company's ("Lilly's") antidepressant drug Prozac. Lilly, on April 10, 1996, pursuant to *35 U.S.C. § 271(e)(2)(A) (1994)*, brought an infringement action in the United States District Court for the Southern District of Indiana, alleging that Barr's ANDA application infringed claim 5 of *U.S. Patent No. 4,314,081 ("the '081 patent")* and claim 7 the *'549 patent*. Lilly subsequently brought infringement actions against Geneva Pharmaceuticals, Inc., Apotex, Inc., and Bernard C. Sherman, all of whom had also filed ANDA applications with the FDA, and the actions were consolidated.

Barr and the other defendants (collectively "Barr") argued, *inter alia*, that claim 5 of the *'081 patent* and claim 7 of the *'549 patent* are invalid for failure to comply with the best mode requirement and that claim 7 of the *'549 patent* is invalid for double patenting. On cross-motions [**5] for summary judgment, the district court held in favor of Lilly, concluding that neither claim violates the best mode requirement and that no double patenting exists. [1] Barr appeals the district court's summary judgment rulings, and Lilly cross-appeals the district court's ruling that Barr was entitled to a jury trial on its invalidity counterclaims. Because we hold that both claims comply with the best mode requirement but that claim 7 of the [*959] *'549 patent* is invalid for obviousness-type double patenting, we affirm-in-part and reverse-in-part. Accordingly, we also vacate the district court's ruling that Barr is entitled to a jury trial because we dispose of the validity issues on appeal.

1 All other issues relating to validity were resolved by consent of the parties. As a result, the district court's judgment disposed of all claims at issue.

I. BACKGROUND

The present appeal concerns the validity of claim 5 of the *'081 patent*, which covers the pharmaceutical compound fluoxetine hydrochloride--the active ingredient [**6] in Lilly's antidepressant drug Prozac--and claim 7 of the *'549 patent*, which covers the administration of fluoxetine hydrochloride to inhibit serotonin uptake in an animal's brain neurons.

On January 10, 1974, Lilly filed application Serial No. 432,379 ("the '379 application") containing claims for a class of compounds, therapeutic methods of using those compounds, and pharmaceutical compositions comprising those compounds. The '379 application named Bryan B. Molloy ("Molloy") and Klaus K. Schmiegel as inventors. After its filing, the '379 application engendered a progeny of divisional applications, continuation applications, and patents that rivals the Hapsburg legacy. When the last patent stemming from the '379 application issued in December 1986, the application had spawned four divisional applications, three continuation applications, and six patents. During that twelve-year period, Lilly obtained six patents relating to fluoxetine hydrochloride--the *'081* and *'549 patents*, as

well as *U.S. Patent Nos. 4,018,895 ("the '895 patent"), 4,194,009 ("the '009 patent"), 4,590,213 ("the '213 patent")*, and *4,329,356 ("the '356 patent")*. The *'213* and *'356 patents* did not stem from the '379 [**7] application, and during the course of this litigation, Lilly disclaimed those patents.

The *'009 patent*, which expired in April 1994, claimed a class of pharmaceutical compounds, including fluoxetine hydrochloride, for administration in pyschotropically effective amounts. The *'895*, *'213*, and *'356 patents* related to methods for treating particular ailments by administering a pharmaceutical compound within a class of compounds that includes fluoxetine hydrochloride. Specifically, the *'895 patent*, which expired in April 1994, concerned the treatment of humans suffering from depression; the *'213 patent* concerned the treatment of humans suffering from anxiety; and the *'356 patent* concerned the treatment of animals suffering from hypertension.

In December 1995, pursuant to a Paragraph IV certification under the Hatch-Waxman Act, *see 21 U.S.C. § 355(j)(2)(A)(vii)(IV)*, [2] Barr filed an ANDA application seeking FDA approval to market fluoxetine hydrochloride as an antidepressant. Lilly responded by bringing an action in district court under *35 U.S.C. § 271(e)(2)(A)*, [3] asserting that Barr's ANDA application infringed claim 7 of the *'549 patent* [**8] and claim 5 of the *'081 patent*.

2 This section provides, in pertinent part, as follows:

> An abbreviated application for a new drug shall contain . . . a certification, in the opinion of the applicant and to the best of his knowledge, with respect to each patent which claims the listed drug . . . for which the applicant is seeking approval under this subsection . . . that such patent is invalid or will not be infringed by the manufacture, use, or sale of the new drug for which the application is submitted.

35 U.S.C. § 355(j)(2)(A)(vii)(IV) (1994).

3 This section provides, in pertinent part, that "it shall be an act of infringement to submit . . . an application under . . . [the Hatch-Waxman Act] . . . for a drug claimed in a patent or the use of which is claimed in a patent." *35 U.S.C. § 271(e)(2)(A)*.

[*960] At the district court, Barr argued that both claims are invalid for failure to comply with the best mode requirement and that claim 7 of the *'549* [**9] *patent* is invalid for obviousness-type double patenting. With regard to the best mode issue, Barr advanced two independent arguments. First, Barr argued that the claims are invalid because the patents failed to disclose Molloy's preferred method for synthesizing p-trifluoromethylphenol--a starting material necessary to make fluoxetine hydrochloride. Second, Barr argued that the claims are invalid because the patents failed to disclose Molloy's preferred solvent for recrystallizing fluoxetine hydrochloride. With regard to the issue of double patenting, Barr advanced three independent arguments, contending that claim 7 of the *'549 patent* is invalid in light of (1) the *'356* and *'213 patents*, (2) the *'895* and *'009 patents*, and (3) the *'081 patent*.

On cross motions for summary judgment, the district court held in favor of Lilly, concluding that claim 5 of the *'081 patent* and claim 7 of the *'549 patent* do not violate the best mode requirement and that claim 7 is not invalid for double patenting under any of Barr's theories. The district court recognized that Barr contended that claim 7 of the *'549 patent* is invalid for double patenting over, *inter alia*, the *'213 patent* because it merely [**10] sets forth the "scientific explanation" for the subject matter of that and other Lilly patents. Yet, the district court determined that Barr failed to provide any authoritative, reliable scientific opinion to establish that claim 7 of the *'549 patent* constitutes merely the scientific explanation of what was already claimed in the patents that came before it, including the *'213 patent*.

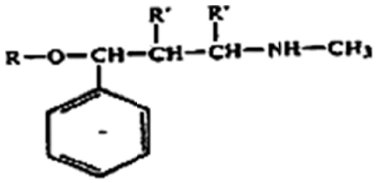
This appeal followed. Because these issues concern disparate parts of the record evidence, we describe separately the background relevant to each argument.

The Claims at Issue

A. Claim 5 of the *'081 patent*

Stemming directly from the '379 application, the *'081 patent* issued on February 2, 1982. Claim 5 of the *'081 patent*, which depends from claim 1, covers the compound N-methyl 3-(p-trifluoromethylphenoxy)-3-phenylpropylamine hydrochloride--commonly referred to as fluoxetine hydrochloride--and pharmaceutically-acceptable acid addition salts thereof formed with non-toxic acids. Claim 1, in turn, provides as follows:

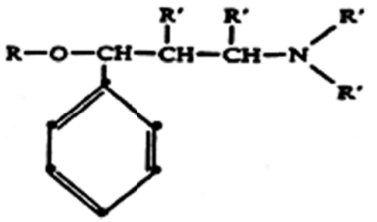
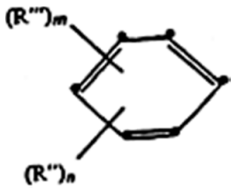
> A compound of the formula



wherein each R' is independently H or CH[3] and R is m- or p-chlorophenyl, o-, m-, or p-methoxyphenyl, phenyl, o-[**11] or m-fluorophenyl, o- or p-tolyl, 2,4-difluorophenyl or p-trifluoromethylphenyl and acid addition salts formed with pharmaceutically-acceptable acids.

B. Claim 7 of the *'549 patent*

On March 31, 1986, Lilly filed continuation-in-part application Serial No. 846,448, claiming the benefit of the 1974 filing date of the '379 application under *35 U.S.C. § 120*. [4] On December 2, 1986, the application matured into the *'549 patent*. Claim 7 of the *'549 patent*, which depends on claim [*961] 4, relates to blocking the uptake of the monoamine serotonin in an animal's brain neurons through administration of the compound N-methyl-3-(p-trifluoromethylphenoxy)-3-phenylpropylamine hydrochloride--commonly referred to as fluoxetine hydrochloride. Claim 4 provides as follows:

> A method of blocking the uptake of monoamines by brain neurons in animals comprising administering to said animal a monoamine blocking amount of a compound of the formula
>
> 
>
> wherein each R' is independently hydrogen or methyl; wherein R is naphthyl or
>
> 
>
> wherein R" and R"' are halo, trifluoromethyl, C[1] -C[4] alkyl, C[1] -C[3] alkyloxy [**12] or C[3] -C[4] alkenyl; and wherein n and m are 0, 1 or 2; and acid addition salts thereof formed with pharmaceutically-acceptable acids.

4 Application Serial No. 846,448 was a continuation-in-part of Serial No. 544,654 (October 24, 1983), which was a continuation of Serial No. 872,147 (January 25, 1978), which in turn was a divisional of Serial No. 432,379 (January 10, 1974).

C. Best Mode: p-trifluoromethylphenol

Both the *'081* and *'549 patents* identify p-trifluoromethylphenol as a starting material for making fluoxetine hydrochloride. During the early stages of experimentation, Molloy used commercial p-trifluoromethylphenol purchased from Marshallton Research Laboratories. However, when large quantities of p-trifluoromethylphenol were necessary for clinical testing, Lilly's division director refused to purchase p-trifluoromethylphenol due to the high costs. Instead, he required that Molloy and his colleagues synthesize their own p-trifluoromethylphenol.

To that end, Molloy worked with Lilly scientist [**13] Edward Lavagnino ("Lavagnino") to devise a cost-efficient method of synthesizing p-trifluoromethylphenol. After experimenting with various prior art methods, Molloy concluded that those methods were inadequate for generating a sufficient amount of p-trifluoromethylphenol for use in clinical testing. Then, following further research, Molloy and Lavagnino developed their own method for preparing p-trifluoromethylphenol that, as Lavagnino described in his deposition, was "superior" because it used "real cheap" starting material "available [in] tank car quantities." Also, in an article written after the filing of the '379 application, Molloy described his new synthesizing method as an improvement over prior art, because the "literature methods for [p-trifluoromethylphenol's] preparation are cumbersome and not easily adapted to large scale operations."

The *'081* and *'549 patents* do not claim the material p-trifluoromethylphenol or a method for synthesizing it, nor do they disclose Molloy's method for synthesizing it.

D. Best Mode: Recrystallization

While experimenting with compounds claimed in the *'081* and *'549 patents*, Molloy recrystallized the compounds in order to remove impurities [**14] and enhance their suitability for pharmaceutical use. The recrystallization process involved using a solvent to dissolve a sample of the compound and then separating the desired product in crystalline form from the impurities that remained dissolved. Between February 1973 and January 1974, Molloy and other [*962] Lilly scientists experimented with various solvents for recrystallizing fluoxetine hydrochloride and eventually found a particular solvent that produced a higher yield and higher purity than other solvents.

The record evidence illustrates that while Lilly scientists knew that some solvents for recrystallizing fluoxetine hydrochloride were more effective than others, choosing a suitable recrystallization solvent was well known to one of ordinary skill in the art. In particular, Dr. Elias J. Corey ("Corey"), a Nobel laureate, testified that fluoxetine hydrochloride is "generally quite easy to purify by recrystallizaton." Corey also explained that, although it requires some experimentation, selecting a recrystallization solvent is "very straightforward." Further, Barr's expert testified that "in 1974, sometimes the recrystallization of amine hydrochlorides was indeed routine."

The [**15] *'081* and *'549 patents* do not claim a process for recrystallizing fluoxetine hydrochloride nor do they disclose any solvents for use in the recrystallizing fluoxetine hydrochloride.

E. Double Patenting: The *'213 patent*

On May 20, 1986, the *'213 patent* issued from an application filed on April 8, 1983. Claim 1 of the *'213 patent* provides:

> A method for treating anxiety in a human subject in need of such treatment which comprises the administration to such human an effective amount of fluoxetine or norfluoxetine or pharmaceutically acceptable salts thereof.

II. STANDARD OF REVIEW

We review a district court's grant of summary judgment *de novo*. *Conroy v. Reebok Int'l, Ltd., 14 F.3d 1570, 1575, 29 U.S.P.Q.2D (BNA) 1373, 1377 (Fed. Cir. 1994)*. Summary judgment is appropriate when, based on the record, no genuine issue exists as to any material fact, and the moving party is entitled to judgment as a matter of law. *See Fed. R. Civ. P. 56(c)*. A genuine issue exists if the evidence is such that a reasonable jury could find for the nonmoving party. *Anderson v. Liberty Lobby, Inc., 477 U.S. 242, 248, 91 L. Ed. 2d 202, 106 S. Ct. 2505 (1986)*; *General Mills, Inc. v. Hunt-Wesson, Inc., 103 F.3d 978, 980, 41 U.S.P.Q.2D (BNA) 1440, 1442 (Fed. Cir. 1997)*. [**16] A disputed fact is material if it might affect the outcome of the suit such that a finding of that fact is necessary and relevant to the proceeding. *Anderson, 477 U.S. at 248*; *General Mills, 103 F.2d at 980, 41 U.S.P.Q.2D (BNA) at 1442*.

When evaluating a motion for summary judgment, the court views the record evidence through the prism of the evidentiary standard of proof that would pertain at a trial on the merits. *Anderson, 477 U.S. at 252-53*. Under the patent statutes, a patent enjoys a presumption of validity, *see 35 U.S.C. § 282*, which can be overcome only through clear and convincing evidence, *see United States Surgical Corp. v. Ethicon, Inc., 103 F.3d 1554, 1563, 41 U.S.P.Q.2D (BNA) 1225, 1232 (Fed. Cir. 1997)*. Thus, a moving party seeking to invalidate a patent at summary judgment must submit such clear and convincing evidence of invalidity so that no reasonable jury could find otherwise. Alternatively, a moving party seeking to have a patent held not invalid at summary judgment must show that the nonmoving party, who bears the burden of proof at trial, failed to produce clear and convincing evidence [**17] on an essential element of a defense upon which a reasonable jury could invalidate the patent. In determining whether a genuine issue of material fact exists, the court views the evidence in the light most favorable to the nonmoving party and resolves all doubts in its favor. *Anderson, 477 U.S. at 255*; *Transmatic, Inc. v.* [*963] *Gulton Indus., Inc., 53 F.3d 1270, 1274, 35 U.S.P.Q.2D (BNA) 1035, 1038 (Fed. Cir. 1995)*.

III. BEST MODE

Pursuant to *§ 112*, P 1, a patent specification must set forth the "best mode contemplated by the inventor of carrying out his invention." *35 U.S.C. § 112*, P 1 (1994). The best mode requirement creates a statutory bargained-for-exchange by which a patentee obtains the right to exclude others from practicing the claimed invention for a certain time period, and the public receives knowledge of the preferred embodiments for practicing the claimed invention. *Spectra-Physics, Inc. v. Coherent, Inc., 827 F.2d 1524, 1532, 3 U.S.P.Q.2D (BNA) 1737, 1742 (Fed. Cir. 1987)* (quoting *In re Gay, 50 C.C.P.A. 725, 309 F.2d 769, 772, 135 U.S.P.Q. (BNA) 311, 315 (CCPA 1962))*.

Our case law explicating the best mode requirement [**18] focuses on a two-prong inquiry. *Chemcast Corp. v. Arco Indus. Corp., 913 F.2d 923, 927-28, 16 U.S.P.Q.2D (BNA) 1033, 1036-37 (Fed. Cir. 1990)*. First,

the factfinder must determine whether, at the time of filing the application, the inventor possessed a best mode for practicing the invention. *Fonar Corp. v. General Elec. Co., 107 F.3d 1543, 1548, 41 U.S.P.Q.2D (BNA) 1801, 1804 (Fed. Cir. 1997)*; *United States Gypsum Co. v. National Gypsum Co., 74 F.3d 1209, 1212, 37 U.S.P.Q.2D (BNA) 1388, 1390 (Fed. Cir. 1996)*. Second, if the inventor possessed a best mode, the factfinder must determine whether the written description disclosed the best mode such that one reasonably skilled in the art could practice it. *Fonar, 107 F.3d at 1548, 41 U.S.P.Q.2D (BNA) at 1804*; *U.S. Gypsum, 74 F.3d at 1212, 37 U.S.P.Q.2D (BNA) at 1390*. The first prong involves a subjective inquiry, focusing on the inventor's state of mind at the time of filing. *U.S. Gypsum, 74 F.3d at 1212, 37 U.S.P.Q.2D (BNA) at 1390*; *Chemcast, 913 F.2d at 928, 16 U.S.P.Q.2D (BNA) at 1036*. The second prong involves an objective inquiry, focusing on the scope of the claimed invention and the [**19] level of skill in the art. *U.S. Gypsum, 74 F.3d at 1212, 37 U.S.P.Q.2D (BNA) at 1390*; *Chemcast, 913 F.2d at 928, 16 U.S.P.Q.2D (BNA) at 1036-37*.

With respect to the second prong of the best mode requirement, the extent of information that an inventor must disclose depends on the scope of the claimed invention. *Engel Indus. v. Lockformer Co., 946 F.2d 1528, 1531, 20 U.S.P.Q.2D (BNA) 1300, 1302 (Fed. Cir. 1991)*. Accordingly, an inventor need not disclose a mode for obtaining unclaimed subject matter unless the subject matter is novel and essential for carrying out the best mode of the invention. *Applied Med. Resources Corp. v. United States Surgical Corp., 147 F.3d 1374, 1377, 47 U.S.P.Q.2D (BNA) 1289, 1291 (Fed. Cir. 1998)*. Furthermore, the best mode requirement does not extend to production details or routine details. *Young Dental Mfg. Co., Inc. v. Q3 Special Prods., Inc., 112 F.3d 1137, 1143, 42 U.S.P.Q.2D (BNA) 1589, 1594-95 (Fed. Cir. 1997)*. Production details, which do not concern the "quality or nature of the [claimed] invention," *see id. at 1143, 42 U.S.P.Q.2D (BNA) at 1595*, relate to commercial and manufacturing considerations such [**20] as equipment on hand, certain available materials, prior relationships with suppliers, expected volume of production, and costs, *see Wahl Instruments, Inc. v. Acvious, Inc., 950 F.2d 1575, 1581, 21 U.S.P.Q.2D (BNA) 1123, 1128 (Fed. Cir. 1991)* (explaining that a "step or source or technique considered 'best' in a manufacturing circumstance may have been selected for a non-'best mode' reason"). Routine details, on the other hand, implicate the quality and nature of invention, but their disclosure is unnecessary because they are readily apparent to one of ordinary skill in the art. *Young Dental, 112 F.3d at 1143, 42 U.S.P.Q.2D (BNA) at 1595*. [*964]

At the district court, Barr advanced two independent reasons for invalidating the *'081* and *'549 patents* for failure to disclose the best mode: (1) Lilly failed to disclose Molloy's preferred method for synthesizing p-trifluoromethylphenol, and (2) it failed to disclose Molloy's preferred solvent for recrystallizing the fluoxetine hydrochloride compound. On cross-motions for summary judgment, the district court held in favor of Lilly. Barr appeals, and we address each argument in turn.

A. Synthesizing p-trifluoromethylphenol

Barr contends [**21] that claim 5 of the *'081 patent* and claim 7 of the *'549 patent* do not meet the best mode requirement because the patents fail to disclose Molloy's method for synthesizing p-trifluoromethylphenol. In the present case, even assuming that Molloy preferred his method for synthesizing p-trifluoromethylphenol to alternative means of obtaining the material, we hold that failure to disclose the synthesizing method does not contravene the best mode requirement.

We begin our analysis by examining the scope of the claimed inventions. *See Engel Indus., 946 F.2d at 1531, 20 U.S.P.Q.2D (BNA) at 1302* ("The best mode inquiry is directed to what the applicant regards as his invention, which in turn is measured by the claims."). Claim 5 of the *'081 patent* covers a formula for the compound fluoxetine hydrochloride, and claim 7 of the *'549 patent* covers a method for blocking the uptake of serotonin by brain neurons through administering a dosage of fluoxetine hydrochloride. Example 1 in both the *'081* and *'549 patents* identifies the chemical p-trifluoromethylphenol as a starting material for making fluoxetine hydrochloride. Neither patent, however, claims p-trifluoromethylphenol itself or a method [**22] for synthesizing it. Thus, while the best mode for developing fluoxetine hydrochloride involves use of p-trifluoromethylphenol, the claimed inventions do not cover p-trifluoromethylphenol and the patents do not accord Lilly the right to exclude others from practicing Molloy's method for synthesizing p-trifluoromethylphenol. As a result, the best mode requirement does not compel disclosure of Molloy's unclaimed method for synthesizing p-trifluoromethylphenol.

Furthermore, the circumstances here are different from those in *Dana Corp. v. IPC Ltd., 860 F.2d 415, 418, 8 U.S.P.Q.2D (BNA) 1692 (Fed. Cir. 1988)*, and *Northern Telecom, Inc. v. Datapoint Corp., 908 F.2d 931, 940-41, 15 U.S.P.Q.2D (BNA) 1321, 1328 (Fed. Cir 1990)*, in which an inventor failed to disclose unclaimed subject matter that was necessary for carrying out the best mode of the invention. In the present case, Molloy

disclosed his preference for using p-trifluoromethylphenol when making fluoxetine hydrochloride. What he did not disclose, nor was he required to do so, was the unclaimed method for synthesizing p-trifluoromethylphenol. *Cf. Randomex, Inc. v. Scopus Corp., 849 F.2d 585, 590, 7 U.S.P.Q.2D (BNA) 1050, 1054 (Fed. Cir. 1988)* [**23] (finding no violation of best mode requirement by concealment of a preferred cleaning fluid formula when the claimed invention "neither added nor claimed to add anything to the prior art respecting cleaning fluid").

To be sure, if the best mode for carrying out a claimed invention involves novel subject matter, then an inventor must disclose a method for obtaining that subject matter even if it is unclaimed. *Applied Med. Resources Corp. v. United States Surgical Corp., 147 F.3d 1374, 1377, 47 U.S.P.Q.2D (BNA) 1289, 1291 (Fed. Cir. 1998)*; *Wahl Instruments, 950 F.2d at 1583-84, 21 U.S.P.Q.2D (BNA) at 1130*. That, however, is not the case here. In the present case, the record insistently demonstrates that p-trifluoromethylphenol was commercially [*965] available at the time Lilly filed its original application. The record includes a product catalog from Marshallton Research Laboratories, dated January 1973, offering to sell p-trifluoromethylphenol. The record also contains an expert witness report explaining that p-trifluoromethylphenol was commercially available before 1974 from Aldrich Chemical Company. Additionally, the record includes prior art references that describe methods [**24] for preparing p-trifluoromethylphenol.

Barr contends that *Clayton v. Akiba, 214 U.S.P.Q. (BNA) 374 (Bd. Pat. App. 1982)*, supports its position that Lilly was obligated to disclose the method for synthesizing p-trifluoromethylphenol. We do not find that argument persuasive. *Clayton*, aside from being non-binding on this court, involves facts that are inapposite to the present case. In *Clayton*, the claimed invention was a chemical compound, and the Board found that the inventor violated the best mode requirement by failing to disclose his method for preparing a necessary intermediate compound. *See id. at 380-81*. The Board's reasoning, however, hinged on the fact that the intermediate compound was "*itself admittedly a novel compound* . . . and, thus, its preparation [was] part and parcel of 'carrying out' the invention." *Id. at 381* (emphasis added). Here, by contrast, the chemical p-trifluoromethylphenol, as explained above, was commercially available and described in the prior art.

Barr also seizes upon portions of the record evidence in an effort to establish a best mode violation. For example, Barr relies on Lavagnino's deposition testimony [**25] that Molloy's method for synthesizing p-trifluoromethylphenol used material "available in tank car quantities, real cheap chemical, and simple transformations." Barr also cites Lavagnino's statement explaining that Molloy's synthesizing method could be "scaled up" to produce large amounts of p-trifluoromethylphenol. Barr points to Molloy's own statement that "the relatively high cost" of p-trifluoromethylphenol "is a limiting factor in its use as a chemical intermediate," and that he preferred his synthesizing method because other methods were "cumbersome and not easily adapted to large scale operations." Finally, Barr relies on evidence that Lilly stopped purchasing p-trifluoromethylphenol after Molloy developed his synthesizing method.

Rather than establishing a best mode violation, this amalgam of evidence provides paradigmatic examples of production details that the law excepts from best mode disclosure. Indeed, this evidence relates to considerations of costs, volume, and available resources for manufacturing fluoxetine hydrochloride, all details that are superfluous to the best mode requirement. *See Wahl Instruments, 950 F.2d at 1581-82, 21 U.S.P.Q.2D (BNA) 1128-29* (holding [**26] no best mode violation for failure to disclose a method chosen for reasons of cost and volume). In short, the reasons for using Molloy's synthesizing method were not linked to the intrinsic quality of fluoxetine hydrochloride, which is the thrust of the best mode requirement.

B. Recrystallization Solvent

Barr also argues that claim 5 of the *'081 patent* and claim 7 of the *'549 patent* violate the best mode requirement because Molloy failed to disclose the particular recrystallization solvent that he used to purify fluoxetine hydrochloride. Even assuming that Molloy preferred a particular and specific recrystallization solvent to others, we hold that failure to disclose that solvent does not violate the best mode requirement.

Once again, we begin our analysis with the scope of the claimed invention. *See* [*966] *Engel Indus., 946 F.2d at 1531, 20 U.S.P.Q.2D (BNA) at 1302*. Claim 5 of the *'081 patent* covers the compound fluoxetine hydrochloride, and claim 7 of the *'549 patent* covers a method for administering it. Both patents teach that the preferred embodiment of fluoxetine hydrochloride is achieved by purifying the compound through recrystallization. Based on the record, there is no [**27] genuine issue that one of ordinary skill in the art possessed the requisite knowledge to select a solvent for recrystallizing fluoxetine hydrochloride. Even Barr's expert testified that "in 1974, sometimes the recrystallization of amine hydrochlorides was indeed routine." Choosing a solvent for performing recrystallization, therefore, constitutes a routine detail that falls outside the ambit of the best mode disclosure. *See Young Dental, 112 F.3d at 1144, 42 U.S.P.Q.2D (BNA) at 1595*; *Fonar, 107 F.3d at 1549, 41*

U.S.P.Q.2D (BNA) at 1805 ("It is well established that what is within the skill of the art need not be disclosed to satisfy the best mode requirement as long as that mode is described.").

Barr contends that, even if choosing a solvent for recrystallization is a routine detail, the best mode requirement compels Molloy to disclose the particular and specific solvent he used in the recrystallization process. In effect, Barr argues that Molloy was obligated to disclose not only the preferred embodiment of the claimed invention, but also the preferred solvent for the unclaimed recrystallization process. Stated at a higher level of generality, Barr asserts that a patentee [**28] must disclose a preferred mode for carrying out an unclaimed routine detail. That position, however, is in conflict with the scope of the claims at issue, our prior decisions, and the purpose undergirding the best mode requirement.

As we have often said, "it is concealment of the best mode of practicing the *claimed invention* that *§ 112*, P 1 is designed to prohibit." *Chemcast, 913 F.2d at 927, 16 U.S.P.Q.2D (BNA) at 1036* (emphasis added). Here, the patents disclose that the best mode of the claimed invention is fluoxetine hydrochloride that is purified through recrystallization. The patents, however, do not claim a process for purifying fluoxetine hydrochloride through recrystallization or a solvent for performing the recrystallization. Thus, failure to disclose a preferred solvent does not equate to a best mode violation because the patents simply do not claim a recrystallization process or a recrystallization solvent. *See Engel Indus., 946 F.2d at 1531, 20 U.S.P.Q.2D (BNA) at 1302* ("Unclaimed subject matter is not subject to the disclosure requirements of *§ 112*; the reasons are pragmatic: the disclosure would be boundless and the pitfalls endless."); *cf. Northern Telecom Ltd. v. Samsung Elecs. Co., 215 F.3d 1281, 1288, 55 U.S.P.Q.2D (BNA) 1065, 1070 (Fed. Cir. 2000)* [**29] (holding no best mode violation when inventor did not disclose an unclaimed, preferred method for use of the claimed invention--thin-line etching--because the claim covered a general process of plasma etching and the patent described the best mode for carrying out that process).

Further, *§ 112* requires only "an adequate disclosure of the best mode." *Amgen, Inc. v. Chugai Pharm. Co., Ltd., 927 F.2d 1200, 1212, 18 U.S.P.Q.2D (BNA) 1016, 1025-26 (Fed. Cir. 1991)*. It logically follows that a patentee's failure to disclose an unclaimed, preferred mode for accomplishing a routine detail does not violate the best mode requirement because one skilled in the art is aware of alternative means for accomplishing the routine detail that would still produce the best mode of the claimed invention. Indeed, Barr and other companies are able to recrystallize fluoxetine hydrochloride by using solvents different from the one Molloy used. In addition, [*967] our cases hold that a patentee complies with *§ 112* even though some experimentation is necessary to practice the best mode. *See id.* (holding that best mode does not require a "guarantee that every aspect of the specification be precisely and [**30] universally reproducible"); *Scripps Clinic & Research Found. v. Genentech, Inc., 927 F.2d 1565, 1579-80 (Fed. Cir. 1991)*; *Hybritech Inc. v. Monoclonal Antibodies, Inc., 802 F.2d 1367, 1384-85, 231 U.S.P.Q. (BNA) 81, 94 (Fed. Cir. 1986)*. In *Hybritech*, for example, this court held that the patentee did not violate *§ 112*, even though carrying out the best mode of the invention involved screening experiments that were laborious and time consuming, because screening methods were known in the art. 802 F.2d at 1384-85, *231 U.S.P.Q. (BNA) at 94*. Similarly, in the present case, solvents for recrystallizing fluoxetine hydrochloride were known in the art, and simply because selecting a desired solvent may have required some experimentation, nondisclosure of Molloy's particular solvent does not rise to a best mode violation.

Moreover, the purpose behind the best mode requirement supports our conclusion. As we explained in *Amgen*, the best mode requirement establishes a *quid pro quo* whereby the patentee "must not receive the right to exclude others unless at the time of filing he has provided an adequate disclosure of the best mode." *927 F.2d at 1210, 18 U.S.P.Q.2D (BNA) at 1024*. [**31] The best mode requirement, however, is a two-way street, and in the present case, the *'081* and *'549 patents* do not grant Lilly the right to exclude others from practicing Molloy's method of recrystallization or from using his preferred solvent. Thus, it would be incongruous to require that Molloy disclose that information nonetheless. *See Randomex, 849 F.2d at 588, 7 U.S.P.Q.2D (BNA) at 1053* ("It is concealment of the best mode of practicing the *claimed invention* that *section 112*, P 1 is designed to prohibit." (emphasis in original)).

In sum, because no genuine issue of material fact exists upon which a reasonable jury could find that claim 5 and claim 7 did not comply with the best mode requirement, we affirm the district court's grant of summary judgment in favor of Lilly. Thus, we have no occasion to determine if Barr has a right to a jury trial on that issue.

III. DOUBLE PATENTING

Through a statutorily prescribed term, Congress limits the duration of a patentee's right to exclude others from practicing a claimed invention. *35 U.S.C. § 154(a)(2) (1994)*. The judicially-created doctrine of obviousness-type double patenting cements that legislative [**32] limitation by prohibiting a party from obtaining an extension of the right to exclude through claims in a

later patent that are not patentably distinct from claims in a commonly owned earlier patent. *In re Longi, 759 F.2d 887, 892, 225 U.S.P.Q. (BNA) 645, 648 (Fed. Cir. 1985)* (explaining that, even though no explicit statutory basis exists for obviousness-type double patenting, the doctrine is necessary to prevent a patent term extension through claims in a second patent that are not patentably distinct from those in the first patent). [5] As one of our predecessor [*968] courts explained, "the fundamental reason for the rule [of obviousness-type double patenting] is to prevent unjustified timewise extension of the right to exclude granted by a patent no matter how the extension is brought about." *In re Van Ornum, 686 F.2d 937, 943-44, 214 U.S.P.Q. (BNA) 761, 766 (CCPA 1982)* (quoting *In re Schneller, 55 C.C.P.A. 1375, 397 F.2d 350, 158 U.S.P.Q. (BNA) 210, 214 (CCPA 1968))*.

5 A patent owner cannot avoid double patenting by disclaiming the earlier patent. Further, because Lilly disclaimed the *'213 patent*, it cannot now terminally disclaim the *'549 patent* to expire at the time the *'213 patent* would have expired had it not been disclaimed. That is, the fact that the *'213 patent* has been disclaimed is of no help to Lilly, as double patenting precludes claim 7 of the *'549 patent* from extending beyond the termination date of the *'213 patent*, whether that termination date is at the end of its normal term or, as in this case, is the date it is terminated via disclaimer.

[**33] Generally, an obviousness-type double patenting analysis entails two steps. First, as a matter of law, a court construes the claim in the earlier patent and the claim in the later patent and determines the differences. [6] *Georgia-Pacific Corp. v. United States Gypsum Co., 195 F.3d 1322, 1326, 52 U.S.P.Q.2D (BNA) 1590, 1593 (Fed. Cir. 1999)*. Second, the court determines whether the differences in subject matter between the two claims render the claims patentably distinct. *Id. at 1327, 52 U.S.P.Q.2D (BNA) at 1595*. A later claim that is not patentably distinct from an earlier claim in a commonly owned patent is invalid for obvious-type double patenting. *In re Berg, 140 F.3d 1428, 1431, 46 U.S.P.Q.2D (BNA) 1226, 1229 (Fed. Cir. 1998)*. A later patent claim is not patentably distinct from an earlier patent claim if the later claim is obvious over, or anticipated by, the earlier claim. *In re Longi, 759 F.2d at 896, 225 U.S.P.Q. (BNA) at 651* (affirming a holding of obviousness-type double patenting because the claims at issue were obvious over claims in four prior art patents); *In re Berg, 140 F.3d at 1437, 46 U.S.P.Q.2D (BNA) at 1233 (Fed. Cir. 1998)* (affirming [**34] a holding of obviousness-type double patenting where a patent application claim to a genus is anticipated by a patent claim to a species within that genus).

6 An absence of overlap between the later claim and the earlier claim does not preclude a conclusion that the later claim is patentably indistinct from the earlier claim.

On appeal, we limit our inquiry to an analysis of whether claim 7 of the *'549 patent* is invalid for obvious-type double patenting over claim 1 of the *'213 patent*. [7] In accordance with the two-prong obviousness-type double patenting test demarcated in *Georgia-Pacific*, we first construe the claims at issue and determine the differences in subject matter between these two claims. The relevant portion of claim 1 of the *'213 patent* is directed to a method for treating anxiety in a human by administering an effective amount of fluoxetine or a pharmaceutically-acceptable salt thereof. *'213 patent*, col. 2, ll. 34-39. Claim 7 of the *'549 patent* covers a method of blocking the uptake of serotonin [**35] by brain neurons in animals by administering [*969] the compound fluoxetine hydrochloride. *'549 patent*, col. 20, ll. 7-9.

7 A two-way double patenting test does not apply in this case. The two-way test is only appropriate in the unusual circumstance where, *inter alia*, the United States Patent and Trademark Office ("PTO") is "*solely* responsible for the delay in causing the second-filed application to issue prior to the first." (emphasis added). *In re Berg, 140 F.3d at 1437, 46 U.S.P.Q.2D (BNA) at 1233 (Fed. Cir. 1998)*; *see also In re Goodman, 11 F.3d 1046, 1053, 29 U.S.P.Q.2D (BNA) 2010, 2016 (Fed. Cir. 1993)* (holding that PTO actions did not dictate the rate of prosecution when Goodman accepted early issuance of species claims and filed a continuation application to prosecute genus claims). Such circumstances are not present in this case, because the PTO was not solely responsible for the delay. Indeed, the *'549 patent* issued in December 1986, approximately eight months after a continuation-in-part was filed, which stemmed from a continuation application, which in turn stemmed from a divisional of the original '379 application that was filed in January 1974. Further, an expert hired on behalf of Lilly in the matters of PTO and corporate intellectual property practice, in discussing claim 7 of the *'549 patent*, stated: "It is true that the claim could have been presented earlier. . . ." This statement indicates that the delay was not solely caused by the PTO.

[**36] A person of ordinary skill in the art would have recognized that fluoxetine hydrochloride is a pharmaceutically-acceptable salt of fluoxetine. In fact, hy-

drochloride salts are the most common pharmaceutically acceptable salts of basic drugs, and hence are obvious compounds. *See, e.g., The Merck Index of Chemicals and Drugs* (Paul G. Stecher et al. eds., 7th ed. 1960) (listing multiple hydrochloride salts of drugs).

Therefore, the only difference between claim 1 of the *'213 patent* and claim 7 of the *'549 patent* is that the former addresses a method of treating anxiety in humans with fluoxetine hydrochloride while the latter claims a method of using fluoxetine hydrochloride to block serotonin uptake in animals. Having recognized the difference between the claims at issue, we must decide whether this difference renders the claims patentably distinct.

Serotonin uptake inhibition is a natural biological activity that occurs when fluoxetine hydrochloride is administered to an animal, such as a human, for any purpose, including the treatment of anxiety. That is, serotonin uptake inhibition is an inherent property of fluoxetine hydrochloride upon its administration. Barr has offered [**37] a panoply of evidence to support the recognition of this inherent biological function of fluoxetine hydrochloride.

In Lilly's March 24, 1998 10-K filing with the Securities and Exchange Commission, Lilly pointed out that serotonin uptake inhibition is the "process by which Prozac works." The title of a 1995 article published by Lilly also indicates that Prozac is a serotonin uptake inhibitor: *Minireview Prozac (Fluoxetine, Lilly 110140), The First Selective Serotonin Uptake Inhibitor and Antidepressant Drug: Twenty Years Since Its First Publication.* [8] David T. Wong, Frank P. Bymaster, & Eric A. Engleman, at 1 (1995). The summary of this article "describes the evolutionary process involved in the discovery of the selective 5-HT [serotonin] uptake inhibitor, fluoxetine. . . ." [9] *Id.* at 1. The first full sentence of the article states: "Fluoxetine (Prozac) first appeared in scientific literature as Lilly 110140 (the hydrochloride form), a selective serotonin uptake inhibitor, in the August 15, 1974 issue of *Life Sciences*." *Id.* The article continues: "After twenty-plus years of extensive investigations, inhibition of serotonin uptake remains the major mechanism of [**38] action for fluoxetine. . . ." *Id.* Several tables in the article specifically demarcate amounts of serotonin uptake inhibition resulting from fluoxetine administration. *Id.* at 7, 10-12, 14, 18. The article even illustrates chemical structures of several serotonin uptake inhibitors, one of which is fluoxetine. *Id.* at 9. The article concludes by stating that despite "intensive investigation," including over 5500 research papers on the subject, fluoxetine "is still regarded as a selective [serotonin] uptake inhibitor."

8 The reference to "selective" means that fluoxetine hydrochloride inhibits the uptake of serotonin to a greater degree than it inhibits the uptake of other monoamines (such as dopamine or norepinephrine).

9 The Wong article defines 5-HT as serotonin. Wong at 2.

During a deposition, Lilly's expert, Alan Frazer, divulged that "there is no doubt in my mind" that fluoxetine hydrochloride inhibits serotonin reuptake in "the vast majority" of people that ingest fluoxetine hydrochloride. [**39] Frazer also stated that he had "no doubt" that inhibition reuptake in brain neurons is the expected consequence of administering fluoxetine hydrochloide. [*970] Frazer further acknowledged in a sworn statement that: "Clearly, there are [sic] a wealth of data demonstrating that the uptake of serotonin is inhibited in most humans when fluoxetine is administered." Another one of Lilly's experts, Louis Lemberger, stated in the course of a deposition: "If you give fluoxetine hydrochloride to a human being you are going to inhibit serotonin uptake. . . ." Yet another Lilly expert, Irwin Slater, also agreed that ingesting fluoxetine hydrochloride will result in the inhibition of serotonin uptake in brain neurons.

Likewise, Barr's expert, Fridolin Sulser, stated in an affidavit that "the pharmalogical effect of administering fluoxetine hydrochloride is to inhibit serotonin reuptake in brain neurons." He also recognized that "it is literally impossible to treat someone for anxiety . . . with fluoxetine hydrochloride without at the same time inhibiting serotonin reuptake." In an expert report, Dr. Sulser again reiterated that "the primary pharmalogical effect of fluoxetine is the inhibition of serotonin [**40] reuptake in brain neurons." He further reiterated that administering fluoxetine hydrochloride "will inherently and inevitably block the reuptake of serotonin. . . ." He provided a wealth of support for these opinions. Another Barr expert, Robert Roth, also stated that "the biological activity of claim 7 of the *'549 patent*[] inherently and inevitably occurs whenever someone practices . . . the '213 . . . patent[]." He continued, stating that "there is no doubt" that "administration of fluoxetine hydrochloride inherently and inevitably blocks the reuptake of serotonin. . . ." Dr. Roth provided a plethora of support for his opinion.

Lilly has not proffered any significant evidence rebutting Barr's ample foundation for the proposition that administration of fluoxetine hydrochloride naturally and inherently inhibits the uptake of serotonin.

A reference is anticipatory if it discloses every limitation of the claimed invention either explicitly or inherently. *Atlas Powder Co. v. Ireco Inc., 190 F.3d 1342, 1346, 51 U.S.P.Q.2D (BNA) 1943, 1945 (Fed. Cir. 1999).* A reference includes an inherent characteristic if that characteristic is the "natural result" flowing from the

reference's [**41] explicitly explicated limitations. *Continental Can Co. USA, Inc. v. Monsanto Co., 948 F.2d 1264, 1269, 20 U.S.P.Q.2D (BNA) 1746, 1749 (Fed. Cir. 1991)* (citations omitted). In this case, it is clear from all of the evidence proffered by Barr that the natural result flowing from administration of fluoxetine hydrochloride is inhibition of serotonin uptake. Therefore, the limitation of claim 7 of the *'549 patent* directed to blocking serotonin uptake by use of fluoxetine hydrochloride is an inherent characteristic of the administration of fluoxetine hydrochloride for any purpose, including the treatment of anxiety.

A patentable distinction does not lie where a later claim is anticipated by an earlier one. That is, a later patent claim that fails to provide novel invention over an earlier claim is not patentably distinct from the earlier claim. Salient aspects of the case at issue are factually similar to *Burroughs Wellcome Co. v. Barr Labs., Inc., 40 F.3d 1223, 32 U.S.P.Q.2D (BNA) 1915 (Fed. Cir. 1994)*. That case involved several patents directed to the use of 3'-azidothymidine ("AZT") to treat individuals infected with the human immunodeficiency virus ("HIV") or individuals [**42] who had acquired immunodeficiency syndrome ("AIDS"), and involved *United States Patent No. 4,818,750 ("the '750 patent")*, which covered a method of using AZT to increase the T-lymphocyte count of persons infected with HIV. *Burroughs Wellcome, 40 F.3d at 1225, 32 U.S.P.Q.2D (BNA) at 1916-17*. While never [*971] directly addressed by the majority, in his partial dissent, Judge Lourie articulated that the *'750 patent* should have been invalidated for double patenting because the method claimed in the *'750 patent* "is an inherent, inevitable result of the practice of the other method patents claiming treatment of HIV or AIDS." *Id. at 1233, 32 U.S.P.Q.2D (BNA) at 1924* (Lourie, J., dissenting-in-part). He stated that because the method claimed in the *'750 patent* was inherent in the use of AZT to treat HIV and AIDS patients, it lacked novelty. *Id.* He continued, suggesting that allowing a common owner to receive both a patent claiming the physical act of treating individuals that have HIV or AIDS and a patent covering the result that such treatment accomplishes makes "no sense." *Id. at 1234, 32 U.S.P.Q.2D (BNA) at 1924*. "It amounts to deciding that treating a person in pain [**43] with aspirin is one invention and invoking the pain relieving mechanism by means of that treatment is another." *Id.*

Similarly, in the case at bar, claim 7 of the *'549 patent* simply describes the process by which fluoxetine hydrochloride physically acts on individuals who receive the drug. That is, fluoxetine hydrochloride inherently blocks serotonin uptake upon administration. Therefore, no patentable distinction rests between administering fluoxetine hydrochloride for treatment of anxiety and inhibition of serotonin uptake by administration of fluoxetine hydrochloride.

The only other difference between claim 1 of the *'213 patent* and claim 7 of the *'549 patent* is that the former is directed to humans while the latter is directed to animals. Humans are a species of the animal genus. Our case law firmly establishes that a later genus claim limitation is anticipated by, and therefore not patentably distinct from, an earlier species claim. *In re Berg, 140 F.3d at 1437, 46 U.S.P.Q.2D (BNA) at 1233 (Fed. Cir. 1998)*; *In re Goodman, 11 F.3d 1046, 1053, 29 U.S.P.Q.2D (BNA) 2010, 2016 (Fed. Cir. 1993)*; *In re Gosteli, 872 F.2d 1008, 1010, 10 U.S.P.Q.2D (BNA) 1614, 1616 (Fed. Cir. 1989)*; [**44] *Titanium Metals Corp. v. Banner, 778 F.2d 775, 782, 227 U.S.P.Q. (BNA) 773, 779 (Fed. Cir. 1985)*; *In re Van Ornum, 686 F.2d at 944, 214 U.S.P.Q. (BNA) at 767 (C.C.P.A. 1982).*

A motion for summary judgment shall be granted "if the pleadings, depositions, answers to interrogatories, and admissions on file, together with affidavits, if any, show that there is no genuine issue as to any material fact, and that the moving party is entitled to judgment as a matter of law." *Fed. R. Civ. P. 56(c)*. A genuine issue of material fact exists if there is sufficient evidence for a jury to return a verdict in favor of the nonmoving party on the particular issue. *Anderson, 477 U.S. at 248.* While the burden rests on the party moving for summary judgment to show "that there is an absence of evidence to support the non-moving party's case," the nonmoving party must affirmatively demonstrate by specific factual allegations that a genuine issue of material fact exists for trial. *Celotex Corp. v. Catrett, 477 U.S. 317, 322-23, 325, 91 L. Ed. 2d 265, 106 S. Ct. 2548*. In this case, Barr moved for summary judgment that claim 7 of the *'549 patent* was invalid for [**45] double patenting over, *inter alia*, claim 1 of the *'213 patent*. Barr has presented an abundance of evidence indicating that the natural result of fluoxetine hydrochloride is the inhibition of serotonin uptake. Lilly has not proffered sufficient evidence in response to this evidence. Therefore, there remains no genuine issue of fact as to this issue. That is, there is not sufficient evidence on which a jury could base a finding that fluoxetine hydrochloride does not inhibit the uptake of serotonin. Accordingly, the district court erred by indicating [*972] that Barr failed to establish that inhibition of serotonin uptake merely describes a biological result of fluoxetine hydrochloride administration for the treatment of anxiety. Further, there is no issue of fact as to whether a human is a species of the animal genus or whether fluoxetine hydrochloride is a pharmaceutically-acceptable salt of fluoxetine. Consequently, the double patenting issue in this case is solely a matter of law.

We have compared the differences between the claims at issue as a whole and conclude that they are not

patentably distinct. Therefore, we reverse the district court's denial of the portion of Barr's motion [**46] for summary judgment contending that claim 7 of the *'549 patent* is invalid for obviousness-type double patenting over claim 1 of the *'213 patent*. Consequently, the portion of Barr's motion for summary judgment pertaining to double patenting is granted. The district court's grant of Lilly's motion for summary judgment pertaining to double patenting is reversed.

CONCLUSION

Because we hold that claim 5 of the *'081 patent* and claim 7 of the *'549 patent* comply with the best mode requirement and that claim 7 is invalid for obviousness-type double patenting in view of claim 1 of the *'213 patent*, we affirm-in-part and reverse-in-part. Further, because we do not reach the issue, we vacate the district court's grant of a jury trial to Barr.

AFFIRMED-IN-PART, REVERSED-IN-PART, AND VACATED.

COSTS

Each party shall bear its own costs.

United States Court of Appeals for the Federal Circuit

SUN PHARMACEUTICAL INDUSTRIES, LTD.,
Plaintiff-Appellee,

v.

ELI LILLY AND COMPANY,
Defendant-Appellant.

2010-1105

Appeal from the United States District Court for the Eastern District of Michigan in case no. 07-CV-15087, Judge George Caram Steeh.

Decided: July 28, 2010

JAMES F. HURST, Winston & Strawn LLP, of Chicago, Illinois, argued for plaintiff-appellee. With him on the brief were GAIL J. STANDISH and PETER E. PERKOWSKI, of Los Angeles, California.

CHARLES E. LIPSEY, Finnegan, Henderson, Farabow, Garrett & Dunner, LLP, of Reston, Virginia, argued for defendant-appellant. With him on the brief were ROBERT D. BAJEFSKY, HOWARD W. LEVINE, ROBERT F. SHAFFER and JESSICA R. UNDERWOOD, of Washington, DC. Of counsel

on the brief was JAMES P. LEEDS, Eli Lilly and Company, of Indianapolis, Indiana.

Before BRYSON, GAJARSA, and PROST, *Circuit Judges*.

PROST, *Circuit Judge*.

Appellant Eli Lilly and Company ("Lilly") appeals from a final judgment of the U.S. District Court for the Eastern District of Michigan, finding claims 2, 6, and 7 of U.S. Patent No. 5,464,826 ("'826 patent") invalid for obviousness-type double patenting over U.S. Patent No. 4,808,614 ("'614 patent"). Because the district court correctly found these claims of the '826 patent invalid, we affirm.

BACKGROUND

Lilly markets the drug Gemzar® for the treatment of various forms of cancer. The active ingredient in Gemzar® is gemcitabine. Both patents at issue in this suit, the '614 patent and the '826 patent, cover gemcitabine and are therefore listed in the Food and Drug Administration's ("FDA's") Approved Drug Products with Therapeutic Equivalence Evaluations (the "Orange Book") with respect to Gemzar®. The '614 patent claims gemcitabine, as well as a method of using gemcitabine for treating viral infections. The '826 patent, however, claims a method of using gemcitabine for treating cancer.

The '614 patent, entitled "Difluoro Antivirals and Intermediate Therefor," issued on February 28, 1989 and expired on May 15, 2010. The '614 patent resulted from a divisional application, filed December 4, 1984, as a continuation-in-part of U.S. Patent Application Serial No.

473,883 ("original '883 application"), filed on March 10, 1983.[1] '614 patent at [60], col.1 ll.7-11.

The specification of the original '883 application described only gemcitabine's utility for antiviral purposes. The continuation-in-part that resulted in the '614 patent added a description of gemcitabine's anticancer utility to the specification. Specifically, the specification of the '614 patent explains:

> In addition to the antiviral utility of the present compounds, certain of the compounds of the present invention have also demonstrated *excellent oncolytic activity* in standard cancer screens. A *particularly preferred compound with this utility is [gemcitabine].* This compound demonstrated activity in tumor systems L1210V lymphocytic leukemia, 6C3HED lymphosarcoma, CA-755 adenocarcinoma, P1534J lymphatic leukemia and X5563 plasma cell myeloma.

Id. col.17 ll.53-63 (emphases added). Claims 1, 2, and 8 of the '614 patent are directed to a class of nucleosides, which includes gemcitabine, whereas dependent claim 12 is directed solely to gemcitabine. *Id.* col.19. l.56-col.22 l.15. Claims 13 and 14 of the '614 patent recite a method of using the claimed nucleosides, including gemcitabine, for treating Herpes viral infections. *Id.* col.22 ll.16-24. The '614 patent does not claim a method of using any of the claimed nucleosides for treating cancer.

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[1] Lilly and Sun Pharmaceutical Industries, Ltd. ("Sun") did not dispute before the district court or on appeal that the '614 patent is entitled to the benefit of the filing date of the original '883 application. *See* Lilly's Principal Br. 8, 21; Lilly's Reply Br. 12, 19.

On December 4, 1984, the same day that Lilly filed the continuation-in-part that resulted in the '614 patent, Lilly filed another patent application that ultimately issued as the '826 patent. The '826 patent, titled "Method of Treating Tumors in Mammals with 2',2'Difluoronucleosides," issued on November 7, 1995. The '826 patent expires on November 7, 2012, which is two-and-a-half years after the expiration of the '614 patent. Lilly did not file a terminal disclaimer with respect to the '826 patent.

Each claim of the '826 patent is directed to a method of treating cancer with an effective amount of a class of nucleosides, which includes gemcitabine. Specifically, claim 1 of the '826 patent recites "[a] method of treating susceptible neoplasms[, i.e., cancer,] in mammals comprising administering to a mammal in need of such treatment a therapeutically effective amount" of the class of nucleosides. '826 patent col.23 l.41-col.24 l.46. Claim 2 of the '826 patent, which depends from claim 1, is specifically directed to a method of using gemcitabine "or a pharmaceutically acceptable salt thereof" for this purpose. *Id.* col.24 ll.46-48. Dependent claims 6 and 7 are directed to treating specific "susceptible neoplasms," including "leukemias, sarcomas, carcinomas, and myelomas," with the entire class of nucleosides and gemcitabine respectively. *Id.* col.24 ll.59-64.

In 2006, Sun, a generic drug manufacturer, filed an Abbreviated New Drug Application ("ANDA") with the FDA in which Sun sought approval to market a generic version of Lilly's Gemzar® and certified that both the '614 patent and the '826 patent were invalid or not infringed. On November 29, 2007, Sun filed this declaratory judgment action against Lilly, seeking declaratory relief that the '826 patent is invalid and not infringed. Lilly filed

counterclaims for infringement of the '826 patent and the '614 patent.

On August 17, 2009, the district court granted Sun's motion for partial summary judgment that the asserted claims, namely claims 2, 6, and 7, of the later '826 patent are invalid for obviousness-type double patenting over the earlier '614 patent. *Sun Pharm. Indus., Ltd. v. Eli Lilly & Co.*, 647 F. Supp. 2d 820 (E.D. Mich. 2009) ("*Summary Judgment Order*"). Relying primarily on our decisions in *Geneva Pharmaceuticals, Inc. v. GlaxoSmithKline PLC*, 349 F.3d 1373 (Fed. Cir. 2003), and *Pfizer, Inc. v. Teva Pharmaceuticals USA, Inc.*, 518 F.3d 1353 (Fed. Cir. 2008), the district court concluded that, given the '614 patent's disclosure of gemcitabine's anticancer use, claim 12 of the earlier '614 patent, which claims gemcitabine, and claims 2, 6, and 7 of the later '826 patent, which claim a method of using gemcitabine for cancer treatment, are not patentably distinct as a matter of law. *Summary Judgment Order*, 647 F. Supp. 2d at 824-25.

Upon motion by Lilly, the district court, pursuant to Federal Rule of Civil Procedure 54(b), entered final judgment that the '826 patent is invalid. Lilly timely appealed to this court. We have jurisdiction under 28 U.S.C. § 1295(a)(1).

DISCUSSION

"Double patenting is a question of law, which we review without deference." *Pfizer*, 518 F.3d at 1363. Similarly, we review "a district court's grant of summary judgment without deference." *Perricone v. Medicis Pharm. Corp.*, 432 F.3d 1368, 1372 (Fed. Cir. 2005). "A court considering summary judgment must draw all

reasonable inferences in favor of the nonmovant." *Geneva*, 349 F.3d at 1379.

"The doctrine of double patenting is intended to prevent a patentee from obtaining a timewise extension of [a] patent for the same invention or an obvious modification thereof." *In re Basell Poliolefine Italia S.P.A.*, 547 F.3d 1371, 1375 (Fed. Cir. 2008). The proscription against double patenting takes two forms: (1) statutory double patenting, which stems from 35 U.S.C. § 101 and prohibits a later patent from covering the same invention, i.e., identical subject matter, as an earlier patent, and (2) obviousness-type double patenting, which is a judicially created doctrine that prevents a later patent from covering a slight variation of an earlier patented invention. *Perricone*, 432 F.3d at 1372-73; *see Geneva*, 349 F.3d at 1377-78.

The second type of double patenting, obviousness-type double patenting, prohibits "claims in a later patent that are not patentably distinct from claims in a commonly owned earlier patent." *In re Basell*, 547 F.3d at 1375. An obviousness-type double patenting analysis, which "compares claims in an earlier patent to claims in a later patent or application," *Geneva*, 349 F.3d at 1378 n.1, consists of two steps, *Pfizer*, 518 F.3d at 1363. First, the court "construes the claim[s] in the earlier patent and the claim[s] in the later patent and determines the differences." *Id.* Second, the court "determines whether those differences render the claims patentably distinct." *Id.* "A later claim that is not patentably distinct from," i.e., "is obvious over[] or anticipated by," an earlier claim is invalid for obviousness-type double patenting. *Eli Lilly & Co. v. Barr Labs., Inc.*, 251 F.3d 955, 968 (Fed. Cir. 2001).

Our prior obviousness-type double patenting decisions in *Geneva* and *Pfizer*, which addressed factual situations closely resembling that presently before the court, control this case. In both cases, we found claims of a later patent invalid for obviousness-type double patenting where an earlier patent claimed a compound, disclosing its utility in the specification, and a later patent claimed a method of using the compound for a use described in the specification of the earlier patent. *See Pfizer*, 518 F.3d at 1363; *Geneva*, 349 F.3d at 1385-86. We held that a "claim to a method of using a composition is not patentably distinct from an earlier claim to the identical composition in a patent disclosing the identical use." *Pfizer*, 518 F.3d at 1363; *Geneva*, 349 F.3d at 1385-86.

In *Geneva*, the earlier patent claimed a compound, potassium clavulanate, and the specification disclosed its effectiveness in inhibiting ß-lactamase in humans. 349 F.3d at 1384-86. The later patent then claimed a method of using the compound to effect ß-lactamase inhibition in humans or animals. *Id.* In our obviousness-type double patenting analysis, we determined that to ascertain the scope of the earlier patent's claim to the compound itself, we had to examine the specification of the earlier patent, including the compound's disclosed utility. *Id.* at 1385. Upon reviewing this disclosure, we concluded that the claims of the two patents were not "patentably distinct" and thus the later patent was invalid for obviousness-type double patenting, because the later patent "claim[ed] nothing more than [the earlier patent's] disclosed utility as a method of using the . . . compound." *Id.* at 1385-86.

Similarly, in *Pfizer*, the earlier patent claimed several compounds and the specification disclosed their use in treating inflammation and inflammation-associated disorders. 518 F.3d at 1363 & n.9; *see* U.S. Patent No.

5,563,165 ("'165 patent"), at [57], col.1 ll.11-14, col.3 ll.3-27. The later patent then claimed a method of using these compounds for treating inflammation, inflammation-associated disorders, and specific inflammation-associated disorders, including arthritis, pain, and fever. *Pfizer*, 518 F.3d at 1363 & n.9; *see* U.S. Patent No. 5,760,068 ("'068 patent") col.97 l.49-col.108 l.29. After rejecting the patentee's objection to our consideration of the specification of the earlier patent, we determined that the later patent "merely claims a particular use described in the [earlier] patent of the claimed compositions of the [earlier] patent." *Pfizer*, 518 F.3d at 1363 & n.8. As such, we concluded that the asserted claims of the later patent were not "patentably distinct" from the claims of the earlier patent, and thus the later patent was invalid for obviousness-type double patenting. *Id.* at 1368.

Lilly attempts to distinguish *Geneva* and *Pfizer* from this case, arguing that the holding of these cases should be limited to their facts. Lilly contends that in both cases, the specification of the earlier patent disclosed a single use for the claimed compound, which was an essential part of the patented invention and thus necessary to patentability. Lilly argues that the double-patenting analysis of *Geneva* and *Pfizer* does not apply to the later '826 patent claims reciting a method of using gemcitabine for cancer treatment because, though the specification of the earlier '614 patent disclosed gemcitabine's use in treating both viral infections and cancer, the antiviral use provided the essential utility necessary to the patentability of the '614 patent's claim to gemcitabine. Lilly objects to what it characterizes as the district court's extension of the obviousness-type double patenting analysis of *Geneva* and *Pfizer* to any utility disclosed in the specification of an earlier patent. We reject Lilly's argument.

It is true that, as the *Geneva* court recognized, the earlier patent in *Geneva* disclosed a "single use" for the claimed compound, namely inhibition of ß-lactamase. 349 F.3d at 1384-86. However, the reasoning and holding of *Geneva* are not so limited. *Id.* Our later decision in *Pfizer* demonstrates this point. We disagree with Lilly's attempt to characterize *Pfizer* as involving a single disclosed utility, as well as with its argument that the decision's rationale turned on this alleged single utility.

First, Lilly's classification of *Pfizer* is factually erroneous because the earlier patent's specification unambiguously disclosed more than one utility for the claimed compound. Specifically, the specification of the earlier patent described the compound's use in treating both inflammation *and* inflammation-associated disorders.[2] The specification also enumerated nearly fifty different inflammation-associated disorders, including pain, headaches, fever, arthritis, asthma, bronchitis, skin-related conditions, and gastrointestinal conditions, for which the claimed compounds "would be useful." '165 patent col.3 ll.3-27. The specification's discussion of the compounds' use for both inflammation and inflammation-associated disorders, as well as the diverse range of ailments expressly included in the "inflammation-associated disorders" category, shows that the specification disclosed

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[2] *See, e.g.*, '165 patent, at [57] ("A class of . . . compounds is described for use in treating inflammation *and* inflammation-related disorders.") (emphasis added); *id.* col.1 ll.11-14 ("This invention . . . specifically relates to compounds . . . for treating inflammation *and* inflammation-associated disorders, such as arthritis.") (emphasis added); *id.* col.3 ll.3-27 ("Compounds of Formula I would be useful for the treatment of inflammation in a subject, *and* for treatment of other inflammation-associated disorders.") (emphasis added).

more than one use for the claimed compounds. The later patent even claimed the compounds' use for inflammation, inflammation-associated disorders, and specific inflammation-associated disorders, including arthritis, pain, and fever, in separate dependent claims, further evidencing that the utilities disclosed in the specification of the earlier patent are distinct. *See* '068 patent col.108 ll.18-27. Therefore, we do not agree that *Pfizer* involved a single disclosed utility that was alone essential to the patentability of the claimed compounds.

Moreover, the analysis in the *Pfizer* decision shows that obviousness-type double patenting encompasses any use for a compound that is disclosed in the specification of an earlier patent claiming the compound and is later claimed as a method of using that compound. *Pfizer* never implies that its reasoning depends in any way on the number of uses disclosed in the specification of the earlier patent. *See* 518 F.3d at 1363. Instead, its broad analysis reflects that the court considered the multiple uses for the compound that were discussed in the specification of the earlier patent. Indeed, the *Pfizer* decision ultimately invalidated claims in the later patent that were separately directed to these multiple uses, including inflammation, inflammation-associated disorders, and the specific inflammation-associated disorders of arthritis, pain, and fever. *Id.* at 1363 & n.9; *see* '068 patent col.108 ll.18-27.

Thus, the holding of *Geneva* and *Pfizer*, that a "claim to a method of using a composition is not patentably distinct from an earlier claim to the identical composition in a patent disclosing the identical use," extends to any and all such uses disclosed in the specification of the

earlier patent.[3] *Pfizer*, 518 F.3d at 1363; *Geneva*, 349 F.3d at 1385-86. Indeed, as both cases recognized,

> [i]t would shock one's sense of justice if an inventor could receive a patent upon a composition of matter, *setting out at length in the specification* the *useful purposes* of such composition, . . . and then prevent the public from making any beneficial use of such product by securing patents *upon each of the uses* to which it may be adapted.

Pfizer, 518 F.3d at 1363 n.8 (emphases added); *Geneva*, 349 F.3d at 1386 (quoting *In re Byck*, 48 F.2d 665, 666 (CCPA 1931)).

Furthermore, we reject Lilly's argument that the district court erred in consulting the specification of the issued '614 patent, as opposed to the specification of an earlier application, to ascertain the relevant disclosed uses of the compound gemcitabine for its obviousness-type

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[3] In rejecting Lilly's proposed single, essential utility test, we also note that such a test would be unworkable. Where an earlier patent specification describes multiple uses for a compound, a court would be unable to identify the one use that was "essential" or "necessary" to patentability. Indeed, Lilly's counsel repeatedly conceded at oral argument that "many times [a court] may not able to tell" which use was essential to patentability, as would be required under Lilly's test. Oral Arg. at 3:39-6:03, *available at* http://oralarguments.cafc.uscourts.gov/mp3/2010-1105.mp3; *see id.* at 9:48-10:42 ("In many cases, we concede th[is] could be a difficult inquiry."); *id.* at 13:20-13:58. Additionally, the characterization of the single essential utility might be arbitrary in application. For example, a broadly defined "single" utility might in actuality encompass multiple utilities, leading to significant problems in applying Lilly's proposed standard.

double patenting analysis. Both *Geneva* and *Pfizer* make clear that, where a patent features a claim directed to a compound, a court must consider the specification because the disclosed uses of the compound affect the scope of the claim for obviousness-type double patenting purposes. In *Geneva*, we acknowledged the general rule that an earlier patent's specification is not available to show obviousness-type double patenting. 349 F.3d at 1385. We have held, however, that there are "certain instances" where the specification of an earlier patent may be used in the obviousness-type double patenting analysis. *In re Basell*, 547 F.3d at 1378. Specifically, the specification's disclosure may be used to determine whether a claim "merely define[s] an obvious variation of what is earlier disclosed and claimed," "to learn the meaning of [claim] terms," and to "interpret[] the coverage of [a] claim." *Id.* As we recognized in *Geneva*, a court considering a claim to a compound must examine the patent's specification to ascertain the coverage of the claim, because a claim to a compound "[s]tanding alone . . . does not adequately disclose the patentable bounds of the invention." 349 F.3d at 1385. In examining the specification of the earlier patent, the court must consider "the compound's disclosed utility." *Id.*

We affirmed this holding in *Pfizer* by rejecting the patentee's objection to our reliance on the specification of the earlier patent that claimed the compounds at issue and explaining that "[t]here is nothing that prevents us from looking to the specification to determine the proper scope of the claims." *Pfizer*, 518 F.3d at 1363 (citing *Geneva*, 349 F.3d at 1386). Thus, we have expressly held that, where a patent claims a compound, a court performing an obviousness-type double patenting analysis should examine the specification to ascertain the coverage of the claim.

In response to Lilly's arguments, we determine that where such examination of the specification is appropriate in an obviousness-type double patenting analysis, the specification that must be considered is that of the issued patent. Lilly contends that the district court should have evaluated the '614 patent's claim to gemcitabine based on the specification that existed as of the undisputed effective filing date of the '614 patent, namely the specification of the original '883 application. The original '883 application disclosed only gemcitabine's antiviral use, not its anticancer use; Lilly added a description of gemcitabine's anticancer use to the specification in a continuation-in-part application that eventually resulted in the '614 patent. Lilly therefore asks this court to ignore the '614 patent's description of gemcitabine's use in cancer treatment, because this disclosure was not part of the original '883 application.

To support this argument, Lilly cites only the basic tenet of claim construction, as stated in *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005), that claim terms should be given their ordinary and customary meaning and this meaning is the one that "the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application." *Phillips*, however, does not support the proposition that a court should ignore portions of the patent specification in construing claims. Instead, *Phillips* makes clear that claim terms must be construed in light of the entirety of the patent, including its specification, and that the specification to be consulted is that of the issued patent, not an earlier application.

Specifically, *Phillips*, as well as the rest of our claim construction precedent, expounds that a "person of ordi-

nary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the *entire patent, including the specification*." *ICU Med., Inc. v. Alaris Med. Sys., Inc.*, 558 F.3d 1368, 1374 (Fed. Cir. 2009) (emphasis added); *Aquatex Indus., Inc. v. Techniche Solutions*, 419 F.3d 1374, 1380 (Fed. Cir. 2005); *Phillips*, 415 F.3d at 1313. In other words, "the 'ordinary meaning' of a claim term is its meaning to the ordinary artisan after reading *the entire patent*." *ICU Med.*, 558 F.3d at 1375 (emphasis added); *Phillips*, 415 F.3d at 1321. *Phillips* further explains the "fundamental rule" that claim terms "are construed with *the meaning with which they are presented in the patent document*." 415 F.3d at 1316 (emphasis added). As such, "[t]he construction that stays true to the claim language and most naturally aligns with *the patent's description* of the invention will be . . . the correct construction." *Id.* (emphasis added).

In sum, our claim construction precedent establishes that claim terms must be construed in light of the entire issued patent. This precedent leaves no room for debate that the relevant specification for claim construction purposes is that of the issued patent, not an early version of the specification that may have been substantially altered throughout prosecution. There is no support for Lilly's argument that the district court should have consulted the specification of the original '883 application, which was changed before the '614 patent issued, to construe the issued patent claims. Lilly cannot avoid portions of the specification of the '614 patent by resorting to the specification as originally filed.

We note that, where necessary in the obviousness-type double patenting analysis, consulting the specification of the issued patent, as opposed to an earlier version

of the specification, is consistent with the policy behind double patenting. As we stated in *In re Kaplan*, 789 F.2d 1574, 1579-80 (Fed. Cir. 1986), "[a]ll proper double patenting rejections, of either type, rest on the fact that a patent has been *issued* and later issuance of a second patent will continue protection, beyond the date of expiration of the first patent" of the same invention or an obvious variation thereof. In other words, the double patenting doctrine is concerned with the issued patent and the invention disclosed in that issued patent, not earlier drafts of the patent disclosure and claims.

In conclusion, the district court correctly followed the double patenting analysis of the *Geneva* line of cases, which address the situation in which an earlier patent claims a compound, disclosing the utility of that compound in the specification, and a later patent claims a method of using that compound for a particular use described in the specification of the earlier patent. As the district court recognized, claim 12 of the earlier '614 patent claims the compound gemcitabine. Following our precedent in *Geneva*, the district court properly considered the uses for gemcitabine disclosed in the specification of the issued '614 patent, specifically its use in treating viral infections and cancer, to determine the scope of this claim. *See Geneva*, 349 F.3d at 1385; *Summary Judgment Order*, 647 F. Supp. 2d at 824-25. In light of the earlier '614 patent's description of gemcitabine's use in treating cancer, the asserted claims of the later '826 patent, which recite a method of using gemcitabine to treat cancer, are not patentably distinct from the '614 patent's claim to gemcitabine. The asserted claims of the later '826 patent simply claim the anticancer use disclosed in the specification of the '614 patent as a method of use claim. *See Pfizer*, 518 F.3d at 1363; *Geneva*, 349 F.3d at 1385. Therefore, we affirm the district

court's judgment that the asserted claims, claims 2, 6, and 7, of the '826 patent are invalid for obviousness-type double patenting over the '614 patent.

AFFIRMED

IN RE LAWRENCE BYCK

No. 2671

UNITED STATES COURT OF CUSTOMS AND PATENT APPEALS

18 C.C.P.A. 1208; 48 F.2d 665; 1931 CCPA LEXIS 147

March 11, 1931, Oral argument by Mr. Scheffler and Mr. Miller
April 15, 1931, Decided

DISPOSITION: [**1] Affirmed.

HEADNOTES

PATENTS--DOUBLE PATENTING--SECOND PATENT CAN NOT BE GRANTED FOR USE OF PATENTED COMPOSITION.

Where an inventor has obtained patent for a composition, one of the described uses of which is to act as an insulating medium, he is not entitled to another patent for a coil insulated by that composition, especially in view of a prior patent showing an insulated coil using another composition, and it is not material that the application was copending with the one on which the patent for the composition was granted.

COUNSEL: R. L. Scheffler for appellant.

T. A. Hostetler (Howard S. Miller of counsel) for appellee.

JUDGES: Before GRAHAM, Presiding Judge, and BLAND, HATFIELD, GARRETT, and LENROOT, Associate Judges.

OPINION BY: LENROOT

OPINION

[*1208] APPEAL from Patent Office, Serial No. 87687

LENROOT, Judge, delivered the opinion of the court:

This is an appeal from a decision of the Board of Appeals of the United States Patent Office affirming the decision of the examiner, rejecting claims 1, 2, 3, 8, 9, and 10 of appellant's application for failure to define anything inventive over the subject matter claimed in appellant's prior patent, in view of the prior art.

Claims 1, 3, and 9 are illustrative of the claims in issue and read as follows:

1. An insulated coil comprising a conductive winding having an insulating coating of infusible, flexible, phenol-fatty oil composition, and an insulating filling for the interstices of said winding.

3. An insulated coil comprising a conductive winding having an insulating coating of infusible, flexible, phenol-fatty oil composition, associated with a fibrous sheet material, and an insulating filling for the interstices of the said winding.

[*1209] [**2] 9. As an article of manufacture, a flexible electrical conductor having an adhering insulating coating of an infusible, flexible, phenol-fatty oil composition.

The references are:

Baekeland, 1213726, January 23, 1917.

Byck, 1590079, June 22, 1926

The alleged invention is sufficiently described in the claims quoted.

The Board of Appeals in its decision stated:

The patent to Baekeland discloses the making of an insulated coil by first insulating the conductor in various ways, see page 2, lines 8-10, among which is coating it with an insulating varnish and then impregnating the conductor or coil and filling the interstices between the windings with a fluid and mobile phenolic condensation product and finally transforming said product, in situ,

into a solid homogeneous, impervious, insoluble, and infusible body.

Appellant carries out the same process, but uses both as the insulating varnish and as the impregnating material a composition for which he has been granted a patent (No. 1590079).

The examiner holds that there is no invention in substituting the composition of appellant's patent for the insulating varnish and the impregnating material in the Baekeland method.

It appears [**3] that on June 22, 1926, appellant was granted the patent cited as a reference upon an application filed November 5, 1923. The instant application was filed on February 11, 1926, so that it was copending at the time said patent was issued.

Appellant moved for a rehearing before the Board of Appeals upon the ground that the board had overlooked the fact that his application was copending when said patent was issued. The board denied the motion, stating:

The ground of our rejection was that appellant had already been granted a patent on the phenolic condensation product which he proposes to use for insulating electric conductors and coils, as claimed in the present application, and that it involved no invention to use such material for this purpose in view of the Baekeland *patent No. 1213726*. The question is merely whether it involved invention to substitute appellant's patented composition in the Baekeland process and coil. We held that it did not, and it is entirely immaterial that the applications were copending. The situation is like that in *Ex parte Isherwood*, C. D. 1917, page 226; *Ex parte Hammond et al.*, C. D. 1922, page 15; *Ex parte Chapman*, C. D. 1924, page 143; [**4] and *Willcox and Gibbs S. M. Co.* v. *The Merrow Mach. Co.*, C. D. 1898, page 584

In appellant's said patent it is stated that his material is adapted for use as a varnish or impregnating solution; it is further stated as follows:

Varnishes and lacquers prepared as above may be applied to wood, metal, fabrics, paper, and all other bases, and yield when baked (preferably at about 160 [degrees] to 170 [degrees] C.) lustrous, adherent, mechanically and chemically resistant, electrically insulating, and highly flexible films. They have been found well suited, among other uses, for the manufacture of so-called composite cardboard or laminated products (United States patent No. 1019406 to L. H. Baekeland), [*1210] comprising sheets of paper, canvas, etc., coated or impregnated with the phenolic condensation product, and consolidated and transformed by sufficient application of heat.

It is clear to us that the decision of the Board of Appeals must be affirmed unless the fact that appellant's instant application was copending with the application upon which his patent was issued prevents such patent being considered in determining whether appellant has made an invention. It [**5] is elementary that there can not be more than one valid patent for the same invention, and if appellant's claims here in issue have as an element of invention only the use of the composition patented to appellant, it would seem that in view of the Baekeland reference appellant was attempting to secure a patent upon an obvious use of a composition for which he has already received a patent.

Appellant cites many authorities in support of his contention that his said patent is not a bar to the allowance of the claims in issue. The cases so cited appear to establish the rule that where two applications by the same inventor are copending, it is a matter of indifference which of the patents is issued first, *provided that the claims are for separate inventions. Traitel Marble Co. v. U. T. Hungerford Brass & Copper Co., 22 F.2d 259*, and cases cited.

In the same case it was held that "the issuance of the first patent does not abandon the unclaimed matter in its disclosure, the pending of the second application rebutting any such inference."

We think it clear that the application here in issue does not claim a separate invention from that claimed in the issued patent, [**6] but only claims an obvious use of the composition there patented. If appellant's position is well taken, then it would seem that any inventor of a new and useful composition of matter may receive a patent for it and he may also, by filing separate applications, secure patents for every use of such composition that he may disclose. An inventor is not entitled to a patent unless his invention is new and useful. It would shock one's sense of justice if an inventor could receive a patent upon a composition of matter, setting out at length in the specification the useful purposes of such composition, manufacture and sell it to the public, and then prevent the public from making any beneficial use of such product by securing patents upon each of the uses to which it may be adapted.

In the case at bar, appellant received a patent upon his composition of matter because he had invented something new and useful. He could not have received such patent unless he had disclosed its utility. Such disclosure of usefulness did not constitute separate inventions, but an essential part of a single invention. Of course he might have disclosed a use of the invention which, together with other elements [**7] might have constituted a separate invention for which [*1211] he

would be entitled to a patent. This, we hold, he did not do, in view of the Baekeland reference.

For the reasons stated, there was no error in citing the said patent, not as prior art, but to show that appellant had already received a patent for the only invention that was disclosed in either application.

The decision of the Board of Appeals is *affirmed*.

GENEVA PHARMACEUTICALS, INC., Plaintiff/Counterclaim Defendant-Appellee, and RANBAXY PHARMACEUTICALS, INC. and RANBAXY LABORATORIES LIMITED, Plaintiffs/Counterclaim Defendants-Appellees, and TEVA PHARMACEUTICALS USA, INC., Plaintiff/Counterclaim Defendant-Appellee, v. GLAXOSMITHKLINE PLC, SMITHKLINE BEECHAM CORPORATION (doing business as GlaxoSmithKline Inc.), SMITHKLINE BEECHAM PLC, and BEECHAM GROUP PLC, Defendants/Counterclaimants-Appellants.

02-1439

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

349 F.3d 1373*; *2003 U.S. App. LEXIS 23795*; *68 U.S.P.Q.2D (BNA) 1865

November 21, 2003, Decided

PRIOR HISTORY: [**1] Appealed from: United States District Court for the Eastern District of Virginia. Judge Henry C. Morgan, Jr.
Geneva Pharms. v. Glaxosmithkline PLC, 189 F. Supp. 2d 377, 2002 U.S. Dist. LEXIS 3467 (E.D. Va., 2002)
Geneva Pharms., Inc. v. Glaxosmithkline PLC, 213 F. Supp. 2d 597, 2002 U.S. Dist. LEXIS 14192 (E.D. Va., 2002)

DISPOSITION: AFFIRMED.

COUNSEL: Dimitrios T. Drivas, White & Case, of New York, New York, argued for plaintiff-counterclaim defendants-appellees Geneva Pharmaceuticals, Inc. Of counsel was Leslie Morioka.

Joseph F. Jennings, Knobbe, Martens, Olson & Bear, of Irvine, California, for plaintiff/counterclaim defendants-appellees. Ranbaxy Pharmaceuticals, Inc. and Ranxbaxy Laboratories Limited. Ranbaxy relied on the brief and the argument of Teva Pharmaceuticals USA, Inc. Of counsel were William R. Zimmerman, Christy L. Green, and Darrell L. Olson.

Thomas J. Meloro, Jr., Kenyon & Kenyon, of New York, New York, argued for plaintiffs/counterclaim defendants-appellees Teva Pharmaceuticals USA, Inc. With him on the brief were Steven J. Lee, Larissa A. Soccoli, and Robert V. Cerwinski. Of counsel on the brief was C. Kyle Musgrove, Kenyon & Kenyon, of Washington, DC.

Donald R. Dunner, Finnegan, Henderson, Farabow, Garrett & Dunner, L.L.P., of Washington, DC, argued for defendants/counterclaimants-appellants. With him on the brief were Kelly A. Casey and Michael J. McCabe II, Finnegan, Henderson, [**2] etc., of Atlanta, Georgia.

JUDGES: Before MAYER, Chief Judge, RADER, and BRYSON, Circuit Judges.

OPINION BY: RADER

OPINION

[*1375] RADER, Circuit Judge.

The United States District Court for the Eastern District of Virginia granted summary judgment invalidating the claims of several patents for nonstatutory double patenting. *Geneva Pharms., Inc. v. GlaxoSmithKline, PLC, 189 F. Supp. 2d 377 (E.D. Va. 2002)* (Geneva I); *213 F. Supp. 2d 597 (E.D. Va. 2002)* (Geneva II); No. 2:01cv391 (E.D. Va. July 19, 2002)(Geneva III). Because the district court correctly found that these patents are invalid, this court affirms.

I.

The invalidated patents all originated in U.S. Patent Application No. 05/569,007 (the '007 application, now abandoned) filed almost thirty years ago on April 17, 1975. The United States Patent and Trademark Office (PTO) issued a restriction requirement in the '007 application, asking the applicants to choose from one of eight

distinct inventions that the PTO identified by groups of claims. This action separated the applications into two branches - one leading to patents granted in 1985, the other to patents granted in 2000/01, as shown by the [**3] table below. The record shows no terminal disclaimers in any of the patents. The appendix contains a diagram of the relationships amongst the patents and their parent applications.

1985 Patents *	2000/01 Patents
4,525,352 ('352 patent)	6,031,093 ('093 patent)
4,529,720 ('720 patent)	6,048,977 ('977 patent)
4,560,552 ('552 patent)	6,051,703 ('703 patent)
	6,218,380 ('380 patent)

* "1985" and "2000/01" refer to the patents' issue dates.

GlaxoSmithKline, PLC, SmithKline Beecham Corporation, SmithKline Beecham PLC, and Beecham Group PLC (collectively GSK) own the 1985 and 2000/01 patents, which relate to the antibiotic clavulanic acid and its salts. One of these salts, potassium clavulanate, is an active component of a commercially successful antibiotic that GSK markets as Augmentin (R). Augmentin (R) contains a second active component, the antibiotic amoxycillin. Amoxycillin is the primary antibiotic in Augmentin (R).

Some bacteria produce beta-lactamase, a compound that deactivates [**4] some antibiotics and makes them less effective against the bacteria. While potassium clavulanate has some antibiotic activity, its main function in Augmentin (R) is to inhibit beta-lactamase. By inhibiting beta-lactamase, potassium clavulanate prevents deactivation of amoxycillin in patients with bacteria producing beta-lactamase. Thus, amoxycillin and potassium clavulanate act synergistically against these bacteria to generate greater antibiotic activity.

The following are representative claims of the 1985 and 2000/01 patents:

The '352 patent (issued June 25, 1985):

> 1. A pharmaceutical composition useful for treating bacterial infections in humans and animals which comprises a synergistically effective amount of [*1376] clavulanic acid and an antibacterially effective amount of amoxycillin, in combination with a pharmaceutically acceptable carrier.

The '720 patent (issued July 16, 1985):

> 1. A method of effecting beta-lactamase inhibition in a human or animal in need thereof arising from a beta-lactamase producing bacteria which comprises administering to said human or animal a beta-lactamase inhibitory amount of clavulanic acid or a pharmaceutically acceptable [**5] salt thereof.

The '552 patent (issued Dec. 24, 1985):

> 1. A pharmaceutical composition for treating bacterial infections in humans and animals which comprises a synergistically effective amount of clavulanic acid, or a pharmaceutically acceptable salt thereof, and an antibacterially effective amount of a penicillin, or a pharmaceutically acceptable salt or ester thereof.

The '093 patent (issued Feb. 29, 2000):

> 1. A solid pharmaceutically acceptable salt of clavulanic acid.

The '977 patent (issued Apr. 11, 2000):

> 1. Clavulanic acid free of penicillin N,7-(5-amino-5-carboxyvalerami-do)-3-carbamoyloxymethyl-3-cephem-4-carboxylic acid and 7-(5-amino-5-carboxyvaleramido)-3-carbamoyloxymethyl-7-methoxy-3-cephem-4-carboxylic acid.

The '703 patent (issued Apr. 18, 2000):

> 1. Purified clavulanic acid.
>
> 7. A beta-lactamase inhibitor comprising purified clavulanic acid or a pharmaceutically acceptable salt thereof.

The '380 patent (issued Apr. 17, 2001):

> 1. A pharmaceutical composition useful for effecting beta-lactamase inhibition in humans and animals which comprises beta-lactamase inhibitory amount [**6] of a pharmaceutically acceptable salt of clavulanic acid, in combination with a pharmaceutically acceptable carrier.

The appellees (collectively Geneva) are generic drug makers seeking to market generic versions of Augmentin (R). Geneva applied for regulatory approval to market this compound from the Food and Drug Administration (FDA). See *21 U.S.C. § 355 (2000)*. That application for FDA approval constitutes infringement. See *35 U.S.C. § 271(e)(2) (2000)*. Thus the generic pharmaceutical companies initiated three separate lawsuits, later consolidated into this case, seeking a declaratory judgment that the 1985 and 2000/01 patents are invalid.

On February 22, 2002, a magistrate judge limited discovery in the consolidated case to the contents of Geneva's Abbreviated New Drug Applications (ANDAs). In Geneva I, the district court granted GSK's motion for partial summary judgment that the '552 patent is not invalid for nonstatutory double patenting over the '352 patent, and granted Geneva's motion for partial summary judgment that the '380 patent is invalid for nonstatutory double patenting over the '720 patent. In reaching [**7] this result, the district court found that a 1979 examiner interview (1979 interview) in the '007 application did not show that the PTO issued a restriction requirement. Therefore, *35 U.S.C. § 121* would not shield the '380 patent against invalidity over the '720 patent.

In Geneva II, the district court granted Geneva's motion for partial summary judgment that the '093, '977, and '703 patents are invalid for nonstatutory double patenting over the '720 patent. The district court concluded that the 1979 interview summary did not require the applicant to file separate patents for the relevant claims. Because the applicant could have avoided the multiple filings, the district court applied the one-way obviousness test. Accordingly, the district court ruled that the '093, '977, and '703 patents' claims are not patentably distinct from the '720 patent's [*1377] claims and are thus invalid for nonstatutory double patenting.

In Geneva III, the district court ruled that the '552 and '352 patents are invalid for nonstatutory double patenting over *U.S. Patent No. 4,441,609* (Crowley patent), and that the '720 patent is invalid for nonstatutory double patenting over *U.S. Patent No. 4,367,175* [**8] (Fleming patent). GSK owns the Crowley and Fleming patents because GSK has merged with the original assignees of those patents, Beecham Group, Ltd. and Glaxo Laboratories, Inc. The district court heard testimony from three experts, Drs. Sanders and Benet for Geneva, and Dr. Schofield for GSK. In reaching its obviousness ruling, the district court found that Geneva's experts were more credible than GSK's expert.

GSK timely appealed the discovery order and the three decisions to this court, which has jurisdiction under *28 U.S.C. § 1295(a)(1) (2000)*. On appeal, GSK contends that the district court erred in Geneva I and Geneva II because *35 U.S.C. § 121* should shield the 2000/01 patents against nonstatutory double patenting over the '720 patent. GSK contends that the district court erred in Ge-

neva III because application of double patenting in light of the Crowley and Fleming patents should not render the '352, '552, and '720 patents invalid. GSK also contends that the district court abused its discretion by limiting discovery to the ANDAs.

II.

This court reviews a grant of summary judgment without deference. [**9] *Telemac Cellular Corp. v. Topp Telecom, Inc., 247 F.3d 1316, 1327 (Fed. Cir. 2001)*. A court considering summary judgment must draw all reasonable inferences in favor of the nonmovant. *Anderson v. Liberty Lobby, Inc., 477 U.S. 242, 255, 91 L. Ed. 2d 202, 106 S. Ct. 2505 (1985)*. This court gives due weight to a patent's presumed validity under *35 U.S.C. § 282 (2000)*, and an accused infringer must show by clear and convincing evidence that a patent is invalid. *Applied Materials, Inc. v. Advanced Semiconductor Materials Am., Inc., 98 F.3d 1563, 1569 (Fed. Cir. 1996)*.

This court reviews both claim construction and double patenting without deference. *Cybor Corp. v. FAS Techs., Inc., 138 F.3d 1448, 1456 (Fed. Cir. 1998)*; *Texas Instruments v. United States Intl Trade Commn, 988 F.2d 1165, 1179 (Fed. Cir. 1993)* (citing *Gen. Foods Corp. v. Studiengesellschaft Kohle mbH, 972 F.2d 1272, 1277 (Fed. Cir. 1992)*).

A.

Turning first to the district court's Geneva I and Geneva II decisions, this court examines the holding that the 2000/01 patents are invalid [**10] for nonstatutory double patenting over the '720 patent (a 1985 patent). This question, in turn, leads to an examination of the district court's ruling that *35 U.S.C. § 121* does not shield the 2000/01 patents against double patenting.

In *§ 101, title 35* precludes more than one patent on the same invention. See *35 U.S.C. § 101 (2000)*. Accordingly, an applicant may obtain "a patent" for an invention. *In re Lonardo, 119 F.3d 960, 965 (Fed. Cir. 1997)*. *Section 101*, however, only prohibits a second patent on subject matter identical to an earlier patent. Id. Thus, applicants can evade this statutory requirement by drafting claims that vary slightly from the earlier patent.

This court's predecessor, the United States Court of Customs and Patent Appeals, recognized this problem and fashioned a doctrine of nonstatutory double patenting (also known as "obviousness-type" double patenting [1] to prevent issuance [*1378] of a patent on claims that are nearly identical to claims in an earlier patent. This doctrine prevents an applicant from extending patent protection for an invention beyond the statutory term by claiming a slight [**11] variant. See id. With nonstatutory double patenting, a terminal disclaimer may restrict the slight variation to the term of the original patent and cure the double patenting rejection. *In re Longi, 759 F.2d 887, 892 (Fed. Cir. 1985)*.

1 The distinctions between obviousness under *35 U.S.C. § 103* and nonstatutory double patenting include:

> 1. The objects of comparison are very different: Obviousness compares claimed subject matter to the prior art; nonstatutory double patenting compares claims in an earlier patent to claims in a later patent or application;
>
> 2. Obviousness requires inquiry into a motivation to modify the prior art; nonstatutory double patenting does not;
>
> 3. Obviousness requires inquiry into objective criteria suggesting non-obviousness; nonstatutory double patenting does not.

This case asks this court to examine whether *35 U.S.C. § 121* shields the 2000/01 patents from double patenting rejections in light of the '720 patent [**12] because the latter resulted from a divisional of a common parent, the '007 application. The '720 patent claims priority to U.S. Patent Application No. 05/964,035 ('035 application). If the '035 application is a divisional of the '007 application, then *§ 121* would prevent the '720 patent from erecting a nonstatutory double patenting bar against the 2000/01 patents. *Section 121* states: "A patent issuing on an application with respect to which a requirement for restriction under this section has been made . . . shall not be used as a reference either in the [PTO] or in the courts against a divisional application or against the original application or any patent issued on either of them." *35 U.S.C. § 121 (2000)*. Thus, if the 2000/01 patents and the '720 patent trace their lineage back to a common parent which was subject to a restriction requirement, then *§ 121* intervenes to prevent a nonstatutory double patenting rejection.

During reexamination proceedings for the '093, '977, and '703 patents over the '720 patent, the PTO detected a common ancestry and a restriction requirement. The PTO concluded that *§ 121* shielded the '093, '977, and '703 patents. The district [**13] court examined the record and disagreed, finding no restriction requirement that enables *§ 121* to act as a shield against the '720 patent.

In this case, GSK faces two hurdles to reach *§ 121* protection. First, the original '007 application (the parent to the 2000/01 patents and the '720 patent) did not contain the "method of use claims" that later appeared in the '720 patent. Second, the examiner did not issue a formal restriction requirement relating to the claims at issue in any document in the record.

When the PTO requires an applicant to withdraw claims to a patentably distinct invention (a restriction requirement), *§ 121* shields those withdrawn claims in a later divisional application against rejection over a patent that issues from the original application. The PTO Manual of Patent Examining Procedure (M.P.E.P.) warns examiners to apply restriction requirements carefully to avoid issuing two patents to the same (i.e., patentably indistinct) invention:

> Since requirements for restriction under *35 U.S.C. 121* are discretionary with the Commissioner, it becomes very important that the practice under this section be carefully administered. Notwithstanding [**14] the fact that this section of the statute apparently protects the applicant against the dangers that previously might have resulted from compliance with an improper requirement for restriction, [*1379] IT STILL REMAINS IMPORTANT FROM THE STANDPOINT OF THE PUBLIC INTEREST THAT NO REQUIREMENTS BE MADE WHICH MIGHT RESULT IN THE ISSUANCE OF TWO PATENTS FOR THE SAME INVENTION.

M.P.E.P. § 803.01 (8th ed. Aug. 2001). This passage recognizes that if an examiner issues a restriction requirement between patentably indistinct claims, two patents may issue and prolong patent protection beyond the statutory term on obvious variants of the same invention. This prolongation would occur because *§ 121* would immunize the restricted application against nonstatutory double patenting rejections.

At the outset, GSK argues that *§ 121* does not require that the claims later sought to be shielded must appear in an application before restriction. *Section 121* indicates otherwise. The first clause states: "If two or more independent and distinct inventions are claimed in one application . . . ." *35 U.S.C. § 121* (emphasis added). This clause notes that the restriction requirement [**15] applies to a single application that formally claims two or more distinct inventions. This indicates that the earlier application must contain formally entered claims that are restricted and removed, and that claims to the second invention reappear in a separate divisional application after the restriction. The text of *§ 121* does not suggest that the original application merely needs to provide some support for claims that are first entered formally in the later divisional application.

PTO regulations at the time also limited restrictions to cases where the examiner enters claims to a separate invention:

> *§ 1.145* Subsequent presentation of claims for different invention.
>
> If, after an office action on an application, the applicant presents claims directed to an invention distinct from and independent of the invention previously claimed, the applicant will be required to restrict the claims to the invention previously claimed if the amendment is entered, subject to reconsideration and review as provided in §§ *1.143 and 1.144*.

37 C.F.R. § 1.145 (1978) (emphasis added). *Section 1.145* thus implies that there can be no restriction unless the [**16] claims are presented and entered. *Section 1.142* also requires that the claims must have been pending before any restriction requirement:

> *§ 1.142* Requirement for restriction.
>
> (a) If two or more independent and distinct inventions are claimed in a single application, the examiner in his action shall require the applicant in his response to that action to elect that invention to which his claim shall be restricted, this official action being called a requirement for restriction (also known as a requirement for division).
>
> . . . .
>
> (b) Claims to the invention or inventions not elected, if not canceled, are nevertheless withdrawn from further consideration by the examiner by the election, subject however to reinstatement in the event the requirement for restriction is withdrawn or overruled.

37 C.F.R. § 1.142 (1978). By referring to the examiner's "action" as an "official action," the regulation instructs examiners to document restriction requirements. The regulation also plainly refers to claims that were entered in an application. Unless the relevant claims have been

entered or are otherwise pending, there would be no need to cancel, withdraw, [**17] or reinstate the claims.

In the '007 application, the method of use claims were not entered. Therefore, those claims could not have been subject to a restriction requirement. If the applicants [*1380] sought the benefit of *§ 121*, the applicants should have requested entry of the claims so that the PTO could issue a formal restriction requirement under *§ 1.145*.

Even if non-pending claims could be restricted, the prosecution history in this case does not document a restriction requirement. The examiner issued no document referring anywhere to "restriction." GSK relies on the 1979 interview summary, which states:

> Agreed that "simple beta-lactamase inhibition" compositions are proper in this case, but that method of use claims will go in a (Goldberg) Divisional (964035).

The interview summary does not explain why the compositions were "proper" and the method of use claims were not. This brief text also does not describe the subject matter of the "method of use claims."

The PTO issued two formal restriction requirements in the '007 application (the ultimate parent of the 1985 and 2000/01 patents). In April 1976, the examiner required restriction between four groups of claims [**18] as follows:

> Group I: Claims 1-14 and 29-35 [clavulanic acid, its salts and esters, methods of use, and compositions thereof]
>
> Group II: Claims 15-22 [methods of preparation of clavulanic acid from bacteria]
>
> Group III: Claims 23-24 [methods of de-esterification of esters of clavulanic acid]
>
> Group IV: Claims 25-28 [methods of esterification of clavulanic acid]

In June 1976, the applicants filed a response amending the claims. The response acknowledged a May 1976 examiner interview and noted that it was agreed at the interview to reorder the restriction requirement into eight groups. In a subsequent official action dated August 1976, the examiner issued another restriction requirement with the identical groups that appeared in the applicants' response:

> Group I: Claims 1, 3-6, 8-10, 36, 39 and 42-69 [clavulanic acid, its salts and esters, methods of use, and compositions thereof]
>
> Group II: Claims 15-22 [microbiological preparation of clavulanic acid and esters]
>
> Group III: Claims 23 and 24 [methods of de-esterification of esters of clavulanic acid]
>
> Group IV: Claims 25-28 [methods of esterification of clavulanic acid]
>
> Group [**19] V: Claims 7, 35, 38 and 40 [clavulanic acid esters]
>
> Group VI: Claim 37 [non-pharmaceutically acceptable salt of clavulanic acid]
>
> Group VII: Claims 11-14 and 30-34 [compositions of clavulanic acid or its salts with penicillins or cephalosporins, and methods of use thereof]
>
> Group VIII: Claim 41 [compositions of clavulanic acid or its salts with amino cephalosporins and other antibiotics]

At oral argument, GSK's counsel conceded that the 1979 interview summary does not refer to groups of claims set forth as separate inventions as required by an earlier PTO restriction requirement. Indeed, the record does not show that the 1979 interview summary refers to groups of claims that the examiner considered patentably distinct in the restriction requirements quoted above, or any other formally issued restriction requirement. The restriction requirements quoted above clearly set forth the subject matter and the specific claims that the PTO considered patentably distinct. Both restriction requirements group composition claims together with corresponding method of use claims, e.g., Groups I and VII. No separate groupings correspond to the "simple beta-lactamase inhibition [**20] compositions" and "method of use" - the subjects referred to in the 1979 interview summary. GSK contends that the 1979 interview summary [*1381] refers to a restriction requirement made orally at the interview. The record does not support that contention.

Section 121 shields claims against a double patenting challenge if consonance exists between the divided groups of claims and an earlier restriction requirement. *Symbol Techs., Inc. v. Opticon, Inc., 935 F.2d 1569,*

1579 (Fed. Cir. 1991) ("Consonance requires that the line of demarcation between the 'independent and distinct inventions' that prompted the restriction requirement be maintained . . . . Where that line is crossed the prohibition of the third sentence of *Section 121* does not apply.") (quoting *Gerber Garment Tech., Inc. v. Lectra Sys., Inc., 916 F.2d 683, 688 (Fed. Cir. 1990))*. If a restriction requirement does not clearly set forth the line of demarcation, then challenged claims could not satisfy the consonance requirement. Therefore restriction requirements must provide a clear demarcation between restricted subject matter to allow determination that claims in continuing applications are consonant [**21] and therefore deserving of *§ 121*'s protections.

GSK does not meet its burden to show that the record provides a clear demarcation of the allegedly restricted subject matter. In the first place, the record makes the substance of the documented interview uncertain. For example, the interview summary does not state what specific subject matter the allegedly restricted claims cover. The interview summary description refers generally to "simple beta-lactamase inhibition compositions" and "method of use claims." While the 1979 interview summary refers to "method of use claims" in the plural, GSK entered only one claim in the '035 application. This record provides no clear line of demarcation.

The term "restriction" does not appear in the July 9, 1979, response that the applicants filed to Examiner Berch after the interview in the '007 application. That response essentially parrots the 1979 interview summary:

> It was agreed that "simple beta-lactamase inhibition" composition claims, i.e., new claims 97 through 112, are proper in the present case but that method of use claims, that is a method of effecting beta-lactamase inhibition in humans and animals would not be proper in the [**22] present case and therefore an appropriate set of method of use claims corresponding to new claims 97 to 112 will be presented in Divisional Application, Serial No. 964,035.

The quoted passage does not state that the examiner required restriction between those two sets of claims. Moreover, the passage does not state that any claims are patentably distinct. The passage refers to composition claims 97-112, but provides no further details about the method of use claims other than that they would "correspond to" claims 97-112.

As to the '035 application, the applicants filed an amendment on April 12, 1979, adding a single method of use claim 106. The '035 application was under examination by a different examiner (Examiner Goldberg). In the amendment, the applicants state for the first time that the Examiner Berch considered the added claim separate and distinct from the claims of the '007 application:

> The Examiner in [569,007] held that the instant method-of-use claim was separate and patentably distinct from the compound, simple compositions and methods employing clavulanic acid . . . and indicated that the claim should be submitted in the instant divisional application. [**23]

Examiner Goldberg was not at the interview and therefore could not personally corroborate that statement. The record shows no examiner response to the statement. Thus, applicants' uncorroborated [*1382] and self-serving statement does not adequately document with sufficient clarity that the PTO required restriction.

This court notes that the PTO reexamined three of the 2000/01 patents (the '093, '977, and '703 patents) in light of the '720 application and concluded that *§ 121* shielded the patents against the '720 application. But in confirming the claims under reexamination, the examiner relied on flawed reasoning expressed in the corresponding Notices of Intent to Issue Reexamination Certificate (NIRC). In each reexamination, the examiner relied on the ambiguous 1979 interview summary to substantiate the alleged restriction requirement. The reexamination examiner stated that the "present series of application [sic] has been consistent with the patentable distinction of compounds (and simple compositions thereof) and their methods of use." That statement is plainly inaccurate. As explained above, the issued restriction requirements in this case grouped compounds, compositions, [**24] and methods of use together.

GSK took about a quarter-century to prosecute the 1985 and 2000/01 patents to issue. This record does not explain that delay. In any event, the effect of that delay could potentially extend patent protection for the invention in the original '007 application. For that reason as well, this thin and insufficient record simply does not operate to shield these patents under *§ 121* against double patenting rejections. *Section 121* can extend the patent term for inventions that are not patentably distinct, as apparently would be the case here. Given the potential windfall such patent term extension could provide to a patentee, [2] this court applies a strict test for application of *§ 121*. Specifically, *§ 121* only applies to a restriction requirement that is documented by the PTO in enough clarity and detail to show consonance. The restriction

documentation must identify the scope of the distinct inventions that the PTO has restricted, and must do so with sufficient clarity to show that a particular claim falls within the scope of the distinct inventions. In other words, *§ 121* requires a record that shows a discernable consonance.

2 One commentator has noted that *§ 121* can cause "extreme mischief." Martin J. Adelman, Patent Law Perspectives § 2.8[2] at 2-921 (2d ed. 1997).

[**25] This record is deficient. Accordingly, *§ 121* does not shield the 2000/01 patents against the '720 patent. Without a patentable distinction, the 2000/01 patents are invalid for nonstatutory double patenting. Thus, the district court correctly discerned that the allegedly restricted claims were not pending at the time and that the alleged restriction requirement was not sufficiently memorialized to show consonance.

B.

In Geneva III, the district court held that the claims of the '352 and '552 patents are invalid for nonstatutory double patenting over the Crowley patent. The table below shows claim 1 of the Crowley, '352, and '552 patents (paragraphing added).

Crowley (U.S. 4,441,609)	'352 Patent	'552 Patent
1. A packaged	1. A pharmaceutical	1. A pharmaceutical
pharmaceutical	composition useful	composition for
composition of enhanced	for treating bacterial	treating bacterial
storage stability which	infections in humans	infections in humans
comprises a closed	and animals which	and animals which
container containing	comprises	comprises
one or more unit-dose		
compositions suitable	a synergistically	a synergistically
for oral administration	effective amount of	effective amount of
each dosage unit of which	clavulanic acid and	clavulanic acid, or a
comprises		pharmaceutically
	an antibacterially	acceptable salt
20 mg to 1500 mg of	effective amount of	thereof, and
amoxycillin trihydrate,	amoxycillin, in	
	combination with a	an antibacterially
20 mg to 500 mg of	pharmaceutically	effective amount of
potassium clavulanate	acceptable carrier.	a penicillin, or a
and a pharmaceutically		pharmaceutically
acceptable carrier		acceptable salt or
		ester thereof.
with the proviso that the		
weight ratio of		
amoxycillin trihydrate to		
potassium clavulanate is		
from 6:1 to 1:1 and		
a desiccant.		

[**26] [*1383] As this table shows, the earlier Crowley claim is basically a species of the '352 and '552 compositions packaged in a closed container with a desiccant. Overall, the '352 and '552 claims recite limitations that are either broader than or obvious variants of corresponding limitations in the Crowley claim. The parties do not dispute that it would have been an obvious variation of the Crowley claim to omit the enhanced storage stability, the closed container, the packaged unit-dosages, the weight ratios, and the desiccant. Moreover, clavulanic acid would have been an obvious variant of Crowley's potassium clavulanate. Amoxycillin and penicillin are generic to Crowley's amoxycillin trihydrate.

Small differences in a few limitations prevent Crowley from being a pure species of the '352 and '552 claims. If the Crowley claims were purely a species of the broader genus claimed in the '352 and '552 claims, the latter would be anticipated outright. A claim cannot be patentably distinct over anticipatory subject matter. *Eli Lilly & Co. v. Barr Labs., Inc., 251 F.3d 955, 970 (Fed. Cir. 2001)*; see also *In re Goodman, 11 F.3d 1046, 1053 (Fed. Cir. 1993)* (an earlier [**27] species claim anticipates and therefore is not patentably distinct from a later genus claim). With the Crowley claim so similar to the later claims, GSK focused its efforts to find a patentable distinction on a single limitation.

Thus, to escape the problem of substantially overlapping subject matter, GSK emphasized that the possible point of patentable distinction is the '352 and '552 claims' "synergistically effective amount" limitation. The corresponding limitation in Crowley is 20 mg to 500 mg of potassium clavulanate. The district court found the term "synergistically effective amount of clavulanic acid" ambiguous. Relying on a definition in the specification to resolve the ambiguity, the district court construed the term to mean 50 mg to 500 mg. The district court buttressed this conclusion with its finding that Geneva's two experts, Drs. Sanders and Benet, were more credible than GSK's expert, Dr. Schofield. Based on that construction, the district court held that the '352 and '552 patents are invalid for nonstatutory double patenting over the Crowley patent.

Our predecessor court has stated that "effective amount" is a common and generally acceptable term for pharmaceutical [**28] claims and is not ambiguous or indefinite, provided that a person of ordinary [*1384] skill in the art could determine the specific amounts without undue experimentation. *In re Halleck, 57 C.C.P.A. 954, 422 F.2d 911, 914 (CCPA 1970).* By its terms, a "synergistically effective amount" is a functional limitation. As explained in *In re Swinehart, 58 C.C.P.A. 1027, 439 F.2d 210, 213 (CCPA 1971)*, a functional limitation covers all embodiments performing the recited function. Thus, this claim term should not be limited to the disclosed dosage range of 50 mg to 500 mg but instead should encompass any dosage amount that can achieve therapeutic synergy.

This construction yields no patentable distinction if the covered amounts nearly or completely encompass Crowley's disclosed range of 20 mg to 500 mg. To avoid invalidity, GSK seeks to read more into these claim terms to make the dosage range depend on the particular antibiotic and bacteria. According to GSK, a formulation falls outside the scope of the claims if a given antibiotic, bacteria, and disease combination provides no synergy.

This reading of the claim is indefinite. A claim is indefinite if its legal [**29] scope is not clear enough that a person of ordinary skill in the art could determine whether a particular composition infringes or not. See *35 U.S.C. § 112 (2000)*. Here, "synergy" refers to activity against bacteria that the claims do not identify. By GSK's proposed construction, a formulation (including AUGMENTIN (R)) might infringe or not depending on its usage in changing circumstances. In other words, a given embodiment would simultaneously infringe and not infringe the claims, depending on the particular bacteria chosen for analysis. Thus, one of skill would not know from one bacterium to the next whether a particular composition standing alone is within the claim scope or not. That is the epitome of indefiniteness. This court therefore rejects this proposed construction.

The term "synergistically effective amount" must mean any amount that is synergistic against any bacteria. The fact that the same dosage amount does not yield synergy under other circumstances is irrelevant; once a particular amount yields synergy under any circumstance, that amount is "synergistically effective." This construction is almost certainly broader than that of the district [**30] court and encompasses Crowley's corresponding "20 mg to 500 mg" limitation. There is no reason to believe that a bacterium providing synergy could not be found for any and all amounts within, and even outside, the range of 50 mg to 500 mg disclosed in the '352 and '552 patents and adopted by the district court.

This broader construction strengthens the district court's conclusion that the '352 and '552 claims are invalid for nonstatutory double patenting over the Crowley patent. The '352 and '552 patents claim subject matter that encompasses a substantial part of the subject matter of the Crowley claim. The '352 and '552 claims are thus generic to a substantial part of the scope of the Crowley claim. This genus-species relationship makes the claims patentably indistinct, because the earlier species within the Crowley claim anticipates the later genus of the '352 and '552 claims.

The district court properly held that the '352 and '552 patents are invalid.

C.

In Geneva III, the district court held that the '720 patent is invalid for nonstatutory double patenting over the Fleming patent. The claims at issue state: [*1385]

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[3] Fleming (U.S. 4,367,175)	'720 Patent

[3] Fleming (U.S. 4,367,175)	'720 Patent
1. Potassium clavulanate of the	1. a method of effecting
[4] formula having a molar	beta-lactamase inhibition in a
extinction coefficient as	human or animal in need thereof
determined in 0.1 M aqueous	arising from a beta-lactamase
potassium hydroxide using	producing bacteria which comprises
ultraviolet light of wavelength	administering to said human or
258 nm of about 17000.	animal a beta-lactamase inhibitory
	amount of clavulanic acid or a
	pharmaceutically acceptable salt
	thereof.

[**31]

3 Claim 1 of two other Fleming patents replace potassium with lithium and sodium.

4 The formula of the metal clavulanate is redundant to the recited chemical name.

The Fleming patent discloses that the molar extinction coefficient limitation indicates purity suitable for pharmaceutical use. Fleming patent, col. 1, l. 67, to col. 2, l. 2. Potassium clavulanate is a salt of clavulanic acid. The patent emphasized the importance of purifying clavulanic acid. Indeed the applicants obtained the compound by fermenting a strain of *Streptomyces clavuligerus* and not by chemical synthesis. Id., col. 1, ll. 10-12, 18-29, and 51-54. So the '720 patent claim differs only as a method of inhibiting beta-lactamase and in specifying the amount of compound necessary to inhibit the beta-lactamase. The district court held that inhibiting beta-lactamase is an inherent property of potassium clavulanate, and therefore the Fleming claims anticipated the '720 claims.

To review the district court's judgment on this point, [**32] this court examines the disclosure of the Fleming claim. Nonetheless, this court does not consider the Fleming claim in a vacuum, as a simple compound, without considering the compound's disclosed utility. Because nonstatutory double patenting compares earlier and later claims, an earlier patent's disclosure is not available to show nonstatutory double patenting. See *Gen. Foods Corp. v. Studiengesellschaft Kohle mbH, 972 F.2d 1272, 1281-82 (Fed. Cir. 1992)*. Of course, the earlier patent's disclosure may register on the patentability scale if that patent qualifies as prior art under *35 U.S.C. § 102*, which is generally not the case. Id.

The challenge of a double patenting analysis, however, is to understand the scope of the compared claims. In this case, for instance, claim 1 of the '720 patent is drawn to a compound having a certain physical property. Standing alone, that claim does not adequately disclose the patentable bounds of the invention. Therefore, this court examines the specifications of both patents to ascertain any overlap in the claim scope for the double patenting comparison. See *In re Avery, 518 F.2d 1228, 1232 (CCPA 1975)*; [**33] *In re Zickendraht, 50 C.C.P.A. 1529, 319 F.2d 225, 228, 1963 Dec. Comm'r Pat. 657 (CCPA 1963)*.

A person of ordinary skill in the art reviewing the disclosure of the Fleming patent would recognize a single use for potassium clavulanate, administration to patients to combat bacteria that produce beta-lactamase. The Fleming patent discloses that the claimed compound is "a novel antibiotic . . . for use in conjunction with beta-lactam antibiotics which show susceptibility to beta-lactamases." Fleming patent, col. 1, l. 8, and col. 2, ll. 42-45. The Fleming patent discloses no other use. The '720 patent simply claims that use as a method.

Our predecessor court recognized that a claim to a method of using a composition is not patentably distinct from an earlier [*1386] claim to the identical composition in a patent disclosing the identical use:

> It would shock one's sense of justice if an inventor could receive a patent upon a composition of matter, setting out at length in the specification the useful purposes of such composition, manufacture and sell it to the public, and then prevent the public from making any beneficial use of such product by securing patents upon each of the uses to which it [**34] may be adapted.

In re Byck, 18 C.C.P.A. 1208, 48 F.2d 665, 666, 1931 Dec. Comm'r Pat. 391 (CCPA 1931). In Christmann, our predecessor court affirmed the PTO's nonstatutory double patenting rejection of claims to an insecticidal composition over a prior patent claiming the composition's active component. *In re Christmann, 29 C.C.P.A. 1037, 128 F.2d 596, 1942 Dec. Comm'r Pat. 481 (CCPA 1942)*. Our predecessor court stated that the applicant could

only have obtained a patent by disclosing the composition's utility, and "such disclosure of usefulness did not constitute separate inventions, but an essential part of a single invention." *Id. at 600* (quoting Byck).

These cases apply as well to this court's review of the '720 patent and the earlier Fleming patent. The Fleming patent's claim describes a compound, and Fleming's written description discloses a single utility of that compound as administration to a human in amounts effective for inhibiting beta-lactamase. The '720 patent claims nothing more than Fleming's disclosed utility as a method of using the Fleming compound. Thus, the claims of the Fleming and '720 patents are not patentably distinct. This court affirms the district court's [**35] judgment that the '720 patent is invalid for nonstatutory double patenting over the Fleming patent.

D.

Finally, this court considers GSK's appeal of the district court's decision to deny GSK's motion to compel discovery. The district court stated that "it appears that under the parameters set forth by the Federal Circuit at this stage of these cases that the ANDA is the go-by that is needed to be examined, and I'm going to limit the discovery to that."

This court applies the law of the regional circuit, here the Fourth Circuit, to review orders refusing to compel discovery. *Am. Standard Inc. v. Pfizer Inc., 828 F.2d 734, 739 (Fed. Cir. 1987).* The Fourth Circuit reviews discovery rulings for abuse of discretion. *Gutierrez de Martinez v. DEA, 111 F.3d 1148, 1155 (4th Cir. 1997).* Because this court affirms that the patents at issue in this case are invalid, the discovery issue is moot.

CONCLUSION

The district court correctly granted summary judgment that the 1985 and 2000/01 patents are invalid for nonstatutory double patenting.

COSTS

Each party shall bear its own costs.

AFFIRMED

[*1387] [SEE APPENDIX; GSK PATENTS IN ORIGINAL] [**36]

United States Court of Appeals for the Federal Circuit

2007-1271

PFIZER, INC., PHARMACIA CORP., PHARMACIA & UPJOHN, INC., PHARMACIA & UPJOHN COMPANY, G.D. SEARLE & CO., G.D. SEARLE LLC, SEARLE LLC (Delaware) and SEARLE LLC (Nevada),

Plaintiffs-Appellees,

v.

TEVA PHARMACEUTICALS USA, INC.,

Defendant-Appellant.

Leora Ben-Ami, Kaye Scholer LLP, of New York, New York, argued for plaintiffs-appellees. With her on the brief were Daniel L. Reisner and Daniel Forchheimer. Of counsel on the brief was David De Lorenzi, Gibbons P.C., of Newark, New Jersey.

Henry C. Dinger, P.C., Goodwin Procter LLP, of Boston, Massachusetts, argued for defendant-appellant. With him on the brief were Thomas L. Creel, P.C., Keith A. Zullow, Christopher M. Ries, of New York, New York.

Appealed from: United States District Court for the District of New Jersey

Judge John C. Lifland

United States Court of Appeals for the Federal Circuit

2007-1271

PFIZER, INC., PHARMACIA CORP., PHARMACIA & UPJOHN, INC., PHARMACIA & UPJOHN COMPANY, G.D. SEARLE & CO., G.D. SEARLE LLC, SEARLE LLC (Delaware) AND SEARLE LLC (Nevada),

Plaintiffs-Appellees,

v.

TEVA PHARMACEUTICALS USA, INC.,

Defendant-Appellant.

Appeal from the United States District Court for the District of New Jersey in case no. 04-754, Judge John C. Lifland.

DECIDED: March 7, 2008

Before MICHEL, Chief Judge, DYK, Circuit Judge, and KENNELLY, District Judge.[*]

DYK, Circuit Judge.

Appellant Teva Pharmaceuticals USA, Inc. ("Teva") appeals from a final judgment of the United States District Court for the District of New Jersey, entered after a bench trial, in favor of Appellees Pfizer, Inc. et al. (collectively "Pfizer"). Pfizer Inc. v. Teva Pharms. USA, Inc., 482 F. Supp. 2d 390 (D.N.J. 2007). The district court held that Teva infringed three patents owned by Pfizer: specifically, claims 1-3, 7-9, 11, and 13 of U.S. Patent No. 5,466,823 ("the '823 patent"), claims 1-5 and 15-18 of U.S. Patent

[*] Honorable Matthew F. Kennelly, District Judge, United States District Court for the Northern District of Illinois, sitting by designation.

No. 5,563,165 ("the '165 patent"), and claims 1-4 and 11-17 of U.S. Patent No. 5,760,068 ("the '068 patent"). The district court also held that the asserted claims of the three patents were not invalid for a best mode violation and that the asserted claims of the '068 patent were not invalid for obviousness-type double patenting. The district court held that none of the patents was unenforceable on grounds of inequitable conduct. We find that the asserted '068 patent claims are invalid based on double patenting. However, we agree that claim 9 of the '823 patent and claim 17 of the '165 patent are not invalid for a best mode violation. The '823, '165 and '068 patents also are not unenforceable for inequitable conduct. We therefore affirm-in-part and reverse-in-part.

BACKGROUND

Pfizer produces and sells the drug Celebrex, a non-steroidal anti-inflammatory drug ("NSAID"), for the treatment of osteoarthritis and rheumatoid arthritis. Pfizer owns the patents-in-suit, which encompass a broad genus of non-steroidal anti-inflammatory compounds, compositions using those compounds, and methods of using those compositions. The claims of the patents include celecoxib—the active ingredient in Celebrex.

Teva is a generic drug manufacturer. Pursuant to the provisions of the Hatch-Waxman Act, 21 U.S.C. § 355, Teva filed an Abbreviated New Drug Application ("ANDA") with the Food and Drug Administration ("FDA") addressed to a proposed drug identified as "Celecoxib Capsules, 100 mg, 200 mg, and 400 mg." Pfizer, 482 F. Supp. 2d at 398. Because the patents covering celecoxib are listed in the Orange Book, Teva was required to certify that those patents "[are] invalid or will not be infringed by the

manufacture, use or sale of the new drug for which the [ANDA] is submitted." 21 U.S.C. § 355(j)(2)(A)(vii)(IV).[1] Teva's ANDA contained the required "Paragraph IV certification." That certification did not dispute that the filing of Teva's ANDA would infringe the patents, but challenged the validity of the patents covering celecoxib. In February 2004, in response to the submission of Teva's ANDA, Pfizer initiated this litigation by filing a patent infringement action against Teva pursuant to 35 U.S.C. § 271(e). Pfizer alleged that Teva's ANDA filing was an act of patent infringement because the ANDA sought approval to manufacture, use or sell a drug claimed in a patent or the use of which is claimed in a patent. In May 2004, Teva filed an answer. It did not argue that its ANDA was not within the scope of the claims but rather asserted affirmative defenses that the patents-in-suit were invalid or unenforceable. Teva did not counterclaim. Understanding these affirmative defenses requires an understanding of the history of NSAIDs and the prosecution history of the three patents.

Traditional NSAIDs have been used for many years to treat people suffering from pain and other symptoms associated with inflammation. Aspirin, for example, has been on the market for nearly a century. Aspirin was followed several decades later by the introduction of other similar drugs, such as ibuprofen and naproxen. Although these traditional NSAIDs were effective in treating pain from inflammation, they were also associated with harmful gastrointestinal side effects, ranging from slight stomach discomfort to serious life-threatening ulcers.

[1] The Hatch-Waxman process is described in detail in prior decisions. See, e.g., Andrx Pharms., Inc. v. Biovail Corp., 276 F.3d 1368, 1370-71 (Fed. Cir. 2002).

In the early 1970s, scientists made a breakthrough in understanding the operative mechanism of the traditional NSAIDs when they discovered that the drugs inhibited the cyclooxygenase ("COX") enzyme in the body, which produces small molecules associated both with pain and inflammation and also with good housekeeping functions that contribute to, for example, good gastrointestinal physiology. Several years later, scientists made another significant breakthrough when they discovered that there were in fact at least two different kinds of COX enzymes: the first, COX-1, produces the molecules associated with the good housekeeping functions inside the body, and the second, COX-2, produces the molecules associated with pain and inflammation. Traditional NSAIDs were found to inhibit both of these COX enzymes. In the years following and leading up to the discovery of celecoxib, scientists began searching for a compound that would selectively inhibit the COX-2 enzyme to treat pain and inflammation without inhibiting the COX-1 enzyme. In other words, they began to focus their efforts on identifying a compound that would effectively treat pain without the harmful side effects identified with the traditional NSAIDs. See generally Univ. of Rochester v. G.D. Searle & Co., 358 F.3d 916, 917-18 (Fed. Cir. 2004) (describing the development of modern NSAIDs).

By 1993, Pfizer had identified several new compounds that it believed would selectively inhibit COX-2. On November 30, 1993, Pfizer filed U.S. Patent Application No. 08/160,594 ("the '594 application") with the Patent and Trademark Office ("PTO") that claimed a broad range of these chemical compounds. The application included claims directed to the chemical compounds themselves, to compositions using these

compounds, and to methods of using these compounds, including specific claims to celecoxib.

In an office action dated July 12, 1994, the patent examiner issued a restriction requirement, which identified the compound claims, the composition claims, and the method claims as each directed to patentably distinct subject matter. The restriction requirement required Pfizer to select for prosecution one of these three claim groups. In the same office action, the examiner further required the applicant "to elect a single disclosed species" that the examiner identified.[2] J.A. at 26326. In response, Pfizer elected to prosecute the generic compound claims and, within that genus, the single

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[2] The examiner's restriction requirement provided:

> No generic claim being allowable, the following action is also taken. Restriction to one of the following inventions is required under 35 U.S.C. [§] 121:
>
> I. Claims 1-20, compounds.
> II. Claims 21-26, compositions.
> III. Claims 27-37, methods of use.
>
> The above groups are identified as general areas. Accordingly, as groups they are independent or distinct as the compounds of Group I would differ in scope from the compositions of Group II, the products would be capable of more than one use and separate search considerations are involved.
>
> The above groups themselves are inclusive of patentably distinct subject matter. Accordingly, along with the election of one of the above groups the following action is also taken.
>
> Claims 1, 16, 21 and 27 are generic to a plurality of disclosed patentably distinct species comprising for example: the compounds of (1) Example 1, (2) Example 3, (4) [sic] Example 4, (5) Example 16, etc., the method of treating fever using (5) the compound of Example 1, etc. Applicant is required under 35 U.S.C. § 121 to elect a single disclosed species, even though this requirement is traversed.

J.A. at 26325-26.

compound species celecoxib. The resulting compound claims remaining in the original '594 application were ultimately allowed, and the application issued as the '823 patent.

Subsequent to the restriction requirement but before the '594 application issued, Pfizer filed a series of continuation applications claiming priority to the '594 application and covering the non-elected subject matter which it had elected not to prosecute in the original '594 application.[3] In particular, Pfizer filed a divisional application, which ultimately issued as the '165 patent, that included the restricted-out composition claims, and a continuation-in-part application ("CIP"), which ultimately issued as the '068 patent, that included the restricted-out method claims.

Following an 18-day bench trial, the district court rejected each of Teva's invalidity arguments and found Pfizer's patents infringed. The district court first rejected Teva's defense that the asserted patents were invalid as obvious over the prior art. Teva does not appeal that aspect of the district court's decision, and we do not discuss it here. The district court rejected Teva's best mode defense as to all of the asserted patents because it held that Pfizer's subjective preference for COX-2 selectivity was not the type of preference that best mode requires an applicant to disclose. The district court also rejected Teva's double patenting argument based on the theory that the '165 patent was prior art to the '068 patent. The district court held that, under 35 U.S.C. § 121, the '165 patent could not be used as prior art against the '068 patent. Finally, the district court held that there was no inequitable conduct. Teva asserted that two Merck references, International Application No. WO 95/00501 ("the '501 application") and U.S.

[3] Several of these applications were directed to the several non-elected species of compounds. Those applications ultimately issued as patents, but since they do not cover celecoxib, they are not at issue here.

Patent No. 5,474,995 ("the '995 patent") should have been disclosed to the PTO. The district court held that they were not material because they did not qualify as prior art under 35 U.S.C. § 102(e). The latter holdings are the subject of this appeal.

After trial, the district court issued a judgment, concluding that Teva infringed each of the '823, '165, and '068 patents and ordering that Teva's ANDA not be approved earlier than the expiration date of the '823, '165, and '068 patents. The judgment also included an order enjoining Teva from engaging in the manufacture, use, offer to sell, sale, or importation into the United States of any product comprising the chemical compound celecoxib. Teva timely appealed. We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(1).

DISCUSSION

I

We first consider whether the claims of the '068 method patent are invalid based on obviousness-type double patenting over the '165 composition patent. If the '068 patent is invalid, Pfizer is not entitled to an injunction beyond the expiration date of the '165 patent. The district court held that the safe-harbor provision of 35 U.S.C. § 121 prevented the '165 patent from serving as prior art with respect to the '068 patent. This was so because both the '165 patent and the '068 patent derived from applications filed in response to the restriction requirement made in the common parent application. Because it found that the '165 patent was not prior art, the district court held that the '068 patent was not invalid on grounds of double patenting.

A

The third sentence of section 121 provides a safe harbor to patents that issue on applications filed as a result of a restriction requirement:

> A patent issuing on an application with respect to which a requirement for restriction under this section has been made, or on an application filed as a result of such a requirement, shall not be used as a reference either in the Patent and Trademark Office or in the courts against a divisional application or against the original application or any patent issued on either of them, if the divisional application is filed before the issuance of the patent on the other application.

35 U.S.C. § 121 (2000). In addition to the express requirements of section 121, we have also construed the statute to require consonance: the applicant must maintain the line of demarcation between the independent and distinct inventions that prompted the restriction requirement. Gerber Garment Tech. v. Lectra Sys., Inc., 916 F.2d 683, 688 (Fed. Cir. 1990). This consonance requirement prevents an applicant from amending the claims in the divisional application in a way that would violate the originally imposed restriction requirement and thereby impermissibly extend the patent term as to that subject matter. Id.[4]

[4] Teva argues that the '165 patent was not consonant with an election of species restriction requirement made in the parent application. The district court disagreed, finding that the election of species was not a restriction requirement under section 121, and that the '165 patent maintained consonance with the compound/composition/method restriction requirement. We do not reach these issues because we find that section 121 is inapplicable.

Teva contends that section 121 applies exclusively to divisional applications, and that because the '068 patent issued on a CIP rather than on a divisional application, it does not fall within the terms of the statute.[5]

Although both are types of continuing applications, divisionals and CIPs differ significantly in at least one respect: a divisional application contains an identical disclosure to its parent application, but a CIP introduces new matter. A CIP is "just what its name implies. It partly continues subject matter disclosed in a prior application, but it adds new subject matter not disclosed in the prior application." Univ. of W. Va. Bd. of Trs. v. Vanvoorhies, 278 F.3d 1288, 1297 (Fed. Cir. 2002); see also Manual of Patent Examining Procedure ("MPEP") § 201.08 (8th ed., Rev. 5, 2006) ("A continuation-in-part is an application filed during the lifetime of an earlier nonprovisional application, repeating some substantial portion or all of the earlier nonprovisional application and adding matter not disclosed in the said earlier nonprovisional application.") (emphasis in original). A divisional application is defined as "[a] later application for an independent or distinct invention, carved out of a pending application and disclosing and claiming only subject matter disclosed in the earlier or parent application . . . ." MPEP § 201.06.

[5] The district court declined to consider this issue below on the ground that it had been raised too late in the proceedings. We need not address the propriety of the district court's refusal to consider this issue because we may properly decide the issue, even if not raised below, since the issue of whether section 121 applies to CIPs is a predicate legal issue necessary to a resolution of the issues before the court. See Kamen v. Kemper Fin. Servs., Inc., 500 U.S. 90, 99 (1991); Forshey v. Principi, 284 F.3d 1335, 1356 (Fed. Cir. 2002) (en banc) superseded by statute on other grounds, as recognized in Morgan v. Principi, 327 F.3d 1357 (Fed. Cir. 2003).

Also, we see no basis for the claim that Pfizer was somehow prejudiced by Teva's failure to raise this purely legal issue earlier in the proceeding. We also conclude that Teva adequately raised the issue on appeal in its "Statement of Issues."

A divisional application "is often filed as a result of a restriction requirement made by the examiner." Id.

Pfizer argues that the terms "divisional" and "continuation-in-part" are merely labels used for administrative convenience, and that accordingly, although the '068 is termed a CIP, it is in effect a divisional for purposes of section 121. In other words, Pfizer contends that the term "divisional application" as it is used in section 121 refers broadly to any type of continuing application filed as a result of a restriction, regardless of whether it is labeled by the PTO, for administrative purposes, as a divisional, a continuation, or a CIP. We disagree.

Section 121 explicitly refers to "divisional applications." That section provides:

> If two or more independent and distinct inventions are claimed in one application, the Director may require the application to be restricted to one of the inventions. If the other invention is made the subject of a divisional application which complies with the requirements of section 120 of this title it shall be entitled to the benefit of the filing date of the original application. A patent issuing on an application with respect to which a requirement for restriction under this section has been made, or on an application filed as a result of such a requirement, shall not be used as a reference either in the Patent and Trademark Office or in the courts against a divisional application or against the original application or any patent issued on either of them, if the divisional application is filed before the issuance of the patent on the other application. If a divisional application is directed solely to subject matter described and claimed in the original application as filed, the Director may dispense with signing and execution by the inventor. The validity of a patent shall not be questioned for failure of the Director to require the application to be restricted to one invention.

35 U.S.C. § 121 (emphases added). As noted above, the third sentence of the statute provides a safe harbor (for patents or applications derived as the result of a restriction requirement) from attack based on the original application (or a patent issued therefrom), or based on applications or patents similarly derived from the same

restriction requirement. That safe harbor, by its literal terms, protects only "divisional application[s]" (or the original application) and patents issued on such applications.

The legislative history of section 121, like section 121 itself, refers specifically to "divisional application[s]." The House Report, referring to section 121, states:

> This section enacts as law existing practice with respect to division, at the same time introducing a number of changes. Division is made discretionary with the Commissioner. The requirements of section 120 are made applicable and neither of the resulting patents can be held invalid over the other merely because of their being divided in several patents. In some cases a divisional application may be filed by the assignee.

H.R. Rep. No. 82-1923, at 20 (1952) (emphasis added).

The "changes" referred to in the legislative history included the safe-harbor provision of section 121. Prior to the 1952 Patent Act, no protection was afforded to patent applications filed as a result of a restriction requirement—referred to at the time as a "requirement for division"—and such applications were often rejected or held invalid on double patenting grounds. See Studiengesellschaft Kohle mbH v. N. Petrochemical Co., 784 F.2d 351, 358 (Fed. Cir. 1986) ("SGK") (Newman, J., concurring); In re Eisler, 203 F.2d 726 (CCPA 1953). Thus, although a requirement for division embodied a determination by the PTO that the patent application contained more than one patentably distinct invention, such a determination did not protect the divisional application from rejection on grounds of double patenting. In re Isherwood, 46 App. D.C. 507, 512 (D.C. Cir. 1917) (holding that an examiner is not estopped from rejecting a divisional application because of an earlier requirement for division). The PTO and the courts were therefore not precluded from rejecting an application filed as a result of a requirement for division based on the very same application from which the subsequent application was divided. See In re Kauffman, 152 F.2d 991, 993 (CCPA

1946). Pursuant to this practice, a patent applicant could appeal an examiner's requirement for division, United States ex rel. Steinmetz v. Allen, 192 U.S. 543 (1904), and "his failure to litigate the question was at his peril." Kauffman, 152 F.2d at 993.

The inequity of this practice was well known by 1952. See In re Ferenci, 83 F.2d 279, 282-83 (CCPA 1936) ("One anomalous result . . . is that after division has been required and the applicant has complied therewith, the divided claims have been rejected on the ground of double patenting, although it is obvious that division was required upon the theory that the original application contained claims for more than one independent invention.").[6] The purpose of section 121 was to eliminate this inequity and thereby allow applicants to reasonably rely on restriction requirements. See SGK, 784 F.2d at 358 (Newman, J., concurring). Given the protection of section 121, applicants would no longer need to appeal a restriction requirement because they would no longer be penalized for acquiescing in an improper restriction requirement. See id. at 359. The enactment of section 121, therefore, brought clarity and fairness to the interaction between restriction and double patenting.

There is no suggestion, however, in the legislative history of section 121 that the safe-harbor provision was, or needed to be, directed at anything but divisional applications. The commentary and materials published since section 121's enactment similarly contain no suggestion that section 121 was meant to cover any applications other than divisionals.[7] Although the legislative history reveals no reason why

[6] See also W. F. Hyer, Note: Divisional Practice and Double Patenting, 17 Geo. Wash. L. Rev. 537 (1949).

[7] See P.J. Federico, Commentary on the New Patent Act, at 35 (1954) (reprinted at 75 J. Pat. & Trademark Off. Soc. 161, 196 (1993)); John C. McIntyre, Jr.,

Congress drafted section 121 only to benefit divisional applications, there are certainly plausible reasons why Congress would have concluded that section 121 should be limited to divisional applications, and not include CIPs. The need for the protection only existed when a divisional application was filed as a result of the restriction. If the section had included CIPs, which by definition contain new matter, the section might be read as providing the earlier priority date even as to the new matter, contrary to the usual rule that new matter is not entitled to the priority date of the original application. See Asseff v. Marzall, 189 F.2d 660, 661 (D.C. Cir. 1951). There was no possible reason for protecting the new matter from double patenting rejections.

The difference between divisional applications and CIPs, moreover, was well known at the time that Congress enacted the 1952 Patent Act. The Manual of Patent Examining Procedure in use at the time included definitions of the different types of applications. A divisional was defined as "[a] later application for a distinct or independent invention, carved out of a pending application and disclosing and claiming nothing not disclosed in the earlier or parent application . . . ." MPEP § 201.06 (1st ed., 1949). And a CIP was defined as "an application filed during the lifetime of an earlier application by the same applicant, repeating some substantial portion or all of the earlier application and adding matter not disclosed in the said earlier case." Id. § 201.08 (emphasis in original). Indeed, these earlier definitions are nearly identical to those in the latest edition of the MPEP (quoted above). Despite this awareness, however, the drafters of section 121 chose to refer specifically and only to divisional (and original)

The Effect of a Restriction Requirement in the Patent and Trademark Office on a Subsequent Double Patenting Adjudication, 4 AIPLA Q.J. 301 (1976).

applications. If the drafters wanted to include CIPs within the protection afforded by section 121, they could have easily done so.

Pfizer's only claimed authority for including CIP applications within the scope of section 121 are three cases where this court, although it did not consider the question, may have assumed that section 121 applied to CIP applications filed in response to a restriction requirement. See Geneva Pharms., Inc. v. GlaxoSmithKline PLC, 349 F.3d 1373, 1382 (Fed. Cir. 2003); Gerber, 916 F.2d at 689; SGK, 784 F.2d at 355. But in two of these cases we held that section 121 was inapplicable on other grounds, and thus did not need to, and did not in fact address the divisional question. Geneva, 349 F.3d at 1382 (finding that the patentee did not comply with the consonance requirement); Gerber, 916 F.2d at 689 (same). In the third, we disposed of the double patenting issue on the ground that the claims of the patents were patentably distinct. SGK, 784 F.2d at 355. Since the issue now before us was not decided by those cases, they are not binding authority. See Rhone Poulenc Agro, S.A. v. DeKalb Genetics Corp., 284 F.3d 1323, 1334 (Fed. Cir. 2002).

We conclude that the protection afforded by section 121 to applications (or patents issued therefrom) filed as a result of a restriction requirement is limited to divisional applications. We note that this interpretation of section 121 is consistent with the PTO's understanding of section 121. See Ex parte Granados, No. 2002-2030, 2003 WL 25283825, *11 (B.P.A.I. Sept. 26, 2003) (not selected for publication) ("[T]he instant case is a continuation-in-part, not a divisional . . . . It therefore does not fall within the literal terms of [section 121]."); see also MPEP § 804.01 (similarly referring to "divisional" applications). Here, the '068 patent, though it derived from the application

that led to the '823 patent, was filed as a CIP and not a divisional application. We hold that section 121 does not apply to the '068 patent and that the '165 patent may be used to invalidate the '068 patent. Given our conclusion, we do not consider Teva's alternative argument that section 121 does not apply because the '165 patent is not consonant with the restriction requirement made in the parent application.

B

Because section 121 does not prohibit us from using the '165 patent as a reference against the '068 patent, we must next determine whether the claims of the '068 patent are patentably distinct from the claims of the '165 patent.

Obviousness-type double patenting is a judicially created doctrine that "prohibit[s] a party from obtaining an extension of the right to exclude through claims in a later patent that are not patentably distinct from claims in a commonly owned earlier patent." Eli Lilly & Co. v. Barr Labs., Inc., 251 F.3d 955, 967 (Fed. Cir. 2001). We have identified two steps in an obviousness-type double patenting analysis. First, "a court construes the claim[s] in the earlier patent and the claim[s] in the later patent and determines the differences." Id. at 968. Second, it determines whether those differences render the claims patentably distinct. Id. "A later patent claim is not patentably distinct from an earlier patent claim if the later claim is obvious over, or anticipated by, the earlier claim." Id. We have also held that a "claim to a method of using a composition is not patentably distinct from an earlier claim to the identical composition in a patent disclosing the identical use." Geneva, 349 F.3d at 1385-86. Double patenting is a question of law, which we review without deference. Ga.-Pac. Corp. v. U.S. Gypsum Co., 195 F.3d 1322, 1326 (Fed. Cir. 1999).

Here, although the district court first held that section 121 precluded the use of the '165 patent against the '068 patent, the district court also found that if section 121 did not prevent the '165 patent from being prior art, it would hold that the relevant claims of the two patents were not patentably distinct. We agree that the relevant claims of the two patents are not patentably distinct. The claims at issue of the '068 patent merely recite methods of administering a "therapeutically-effective amount" of the compositions found in claim 5 of the '165 patent. Moreover, the term "therapeutically-effective amount" is found in claim 1 of the '165 patent and was stipulated by the parties to mean the same thing in both patents.[8] Thus, we agree with the district court that the '068 patent merely claims a particular use described in the '165 patent of the claimed compositions of the '165 patent.[9] The asserted claims of the '068 are therefore not patentably distinct over the claims of the '165 patent.

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[8] To the extent that Pfizer contends that we may not rely on the teachings of the specification or claims in the '165 patent to reject the claims of the '068 patent, we disagree. See Geneva, 349 F.3d at 1386. There is nothing that prevents us from looking to the specification to determine the proper scope of the claims. In Geneva, we stated:

> It would shock one's sense of justice if an inventor could receive a patent upon a composition of matter, setting out at length in the specification the useful purposes of such composition, manufacture and sell it to the public, and then prevent the public from making any beneficial use of such product by securing patents upon each of the uses to which it may be adapted.

Id. (internal citation omitted).

[9] Pfizer argues that claims 15-17 must be considered separately because these claims are directed to the particular disorders of arthritis, pain, and fever. We find that these recitations do not claim non-obvious subject matter, since claim 5 of the '165 patent generally claims compounds, which the specification indicates are used to treat "inflammation-related disorders."

We conclude that: (1) Pfizer cannot claim the protection of section 121 with respect to the '068 patent because that patent did not issue on a divisional application, and (2) the asserted claims of the '068 patent are not patentably distinct from the claims of the '165 patent. Accordingly, the '068 patent is invalid for obviousness-type double patenting.[10]

II

We next consider Teva's contention that the '823 compound and '165 composition patents are invalid because they violate the best mode requirement. The best mode requirement is contained in 35 U.S.C. § 112: "The specification shall . . . set forth the best mode contemplated by the inventor of carrying out his invention." The test for compliance with best mode is comprised of two steps: first, whether, "at the time of filing the application, the inventor possessed a best mode for practicing the invention;" and second, whether the inventor's disclosure was "adequate to enable one of ordinary skill in the art to practice the best mode of the invention." Bayer AG v. Schein Pharms., Inc., 301 F.3d 1306, 1320 (Fed. Cir. 2002). The first prong is subjective and focuses on the inventor's state of mind at the time the application is filed; the second prong is "objective and depends upon the scope of the claimed invention and the level of skill in the relevant art." Id. The "invention" referred to in the best mode test is the invention as defined by the claims. Id. Typically, the best mode issue concerns the applicant's failure to disclose a preferred embodiment, but not always. In Bayer, we explained that

[10] The effect of our decision is to require amendment to the district court's judgment to change the effective date of the order preventing approval of Teva's ANDA. Also, our determination requires the elimination of the provisions of the district court's order enjoining Teva from the manufacture or use of celecoxib in violation of the '068 patent.

the best mode requirement does not "demand disclosure of every preference an inventor possesses as of the filing date." Id. at 1314-15. We held that the best mode requirement does demand disclosure of an inventor's preferred embodiment of the claimed invention. Id. at 1316. However, it is not limited to that. We have recognized that best mode requires inventors "to disclose aspects of making or using the claimed invention [when] the undisclosed matter materially affect[s] the properties of the claimed invention." Id. at 1319.

We first consider Teva's best mode challenge to the generic claims of the compound and composition patents: claims 1-3, 7-8, 11, and 13 of the '823 patent, and claims 1-5, 15-16, and 18 of the '165 patent. Teva contends, with respect to those claims, that Pfizer violated the best mode requirement by failing to disclose its preference for COX-2 selectivity. Here, Teva's argument is limited. Teva does not claim that Pfizer had a subjective, undisclosed preference for a particular compound (a preferred embodiment) at the time it filed the patent applications. Rather, Teva argues that the generic claims of the '823 and '165 patents do not teach one of skill in the art how to arrive at the preferred embodiment because they do not reveal Pfizer's preference for compounds that demonstrate COX-2 selectivity. Teva asserts that, without the knowledge of the preference for COX-2 selectivity, one of ordinary skill in the art would not be able to identify a preferred embodiment (compound or composition) in the generic claims.

It is undisputed that, at the time of filing, Pfizer preferred compounds and compositions that were COX-2 selective, and that this preference was not disclosed in either the compound or the composition applications. Moreover, according to Teva,

many of the claimed compounds are not in fact COX-2 selective. Teva contends that, by concealing its preference for COX-2 selectivity, Pfizer was able to keep for itself the crux of the invention. That is, Pfizer effectively hid among the many disclosed compounds and compositions in the generic claims the one or two compounds that were truly valuable by not disclosing how to identify which compounds displayed COX-2 selective characteristics. Without knowing the properties of the compound that Pfizer would later single out, Teva argues, Pfizer could effectively withhold from the public its actual invention—a compound or composition that was COX-2 selective. This preference, Teva argued, was relevant to using the claimed invention. The district court held that, "[a]lthough Teva's argument has some intuitive appeal," J.A. at 181, under this court's precedents, a preference for COX-2 selectivity was "not an aspect of using the claimed compounds or compositions that materially affects the properties of the claimed inventions," because it did not "affect the intrinsic properties of the claimed invention or teach anything that must be done to the compounds or compositions in order to make them work." J.A. at 184.

Pfizer argues that the district court correctly construed our precedent as foreclosing the possibility that the best mode requirement demands the disclosure of such a preference. It argues that, under Bayer, the best mode inquiry is limited to determining whether the patent conceals a preference for making or using the claimed invention. And, according to Pfizer, because there is no dispute that one of ordinary skill in the art would know how to make and use the claimed compositions and compounds themselves, there can be no best mode violation.

These contentions as to the generic claims raise a difficult issue that we need not resolve to decide this case. This is so because we undertake the best mode inquiry on a claim by claim basis, and we conclude that the celecoxib-specific claims are not invalid.

Claim 9 of the '823 patent and claim 17 of the '165 patent are both celecoxib-specific claims; they each disclose only one compound/composition. Here, there is no issue as to these claims about failing to disclose the preferred compound or composition because these claims are directed to a single compound and composition. There is thus no failure to disclose a preferred embodiment or a preference for identifying the preferred embodiment with respect to these claims. Teva's sole argument is that, even after identifying the compound celecoxib, the criteria for selecting the correct dosage requires knowledge of Pfizer's preference for COX-2 selectivity, and that under Bayer there is failure to disclose a preferred way of using the invention. Pfizer does not appear to dispute that dosage range could be a preferred method of use that materially affects the properties of the invention under Bayer. But Pfizer counters that dosages were disclosed in the specification, and that there was no evidence that the inventors preferred another dosage. This appears to be undisputed. Teva's only answer to this is that COX-2 selectivity could affect dosage. Although Teva is correct, there is no evidence that at the time of filing the inventors planned to use the COX-2 selectivity criterion to arrive at a preferred dosage (in contrast to their intent to use COX-2 selectivity to arrive at the right compounds). Thus, there was no evidence that they concealed a preferred method of getting to the right dosage. We thus hold that at least the celecoxib-specific claims in the '823 and '165 patents did not violate the best mode

requirement. We affirm the district court's judgment that these claims are not invalid and are infringed.

Having concluded that these claims are valid, we need not address the generic claims. There is no counterclaim for invalidity in this case, see Cardinal Chem. Co. v. Morton Int'l, Inc., 508 U.S. 83 (1993), and a finding that the other claims were invalid would not change the practical effect of the district court's judgment since the order is directed to the use of celecoxib. In other words, it makes no practical difference whether Teva's ANDA filing infringes other claims in the '823 and '165 patents.

III

Teva next contends that the patents in suit are unenforceable due to inequitable conduct. A patent will not be held unenforceable due to inequitable conduct unless there is clear and convincing evidence that the patent applicant (1) either "made an affirmative misrepresentation of material fact, failed to disclose material information, or submitted false material information, and (2) intended to deceive the [PTO]." Cargill, Inc. v. Canbra Foods, Ltd., 476 F.3d 1359, 1363 (Fed. Cir. 2007). If it finds materiality and intent, a district court must then "balance the equities to determine whether the patentee has committed inequitable conduct that warrants holding the patent unenforceable." Id. at 1365. We review a district court's findings on the threshold issues of materiality and intent for clear error, and the ultimate decision on inequitable conduct for abuse of discretion. Id. at 1364-65.

"Information is material for the purposes of an inequitable conduct determination if a reasonable examiner would have considered such prior art important in deciding whether to allow the parent application." Digital Control, Inc. v. Charles Mach. Works,

437 F.3d 1309, 1314 (Fed. Cir. 2006) (internal citation omitted). We have noted that under the "reasonable examiner" standard, "a misstatement or omission may be material even if disclosure of that misstatement or omission would not have rendered the invention unpatentable." Id. at 1318.

Before the district court, Teva argued that Pfizer had committed inequitable conduct by failing to disclose two Merck publications during the prosecution of the applications that led to the patents in suit. These two publications—the '501 application and the '995 patent—both derive from and claim priority to Merck's U.S. Patent Application 08/082,196 ("the '196 application") filed several months before Pfizer filed its initial application. The '196 application was later abandoned and never published, and could not, therefore, have been used as prior art under 35 U.S.C. § 102 against any of the patents in suit. The '501 application was published before the '823 patent issued; the '995 patent issued and was published after the '823 patent issued but before either the '165 patent or the '068 patent issued. With respect to the '823 patent, Teva argued that Pfizer should have disclosed the '501 application because that would have led a reasonable examiner to the earlier '196 application and therefore to the application for the '995 patent, which was a CIP of the '196 application. With respect to the '165 patent and the '068 patent, Teva argues that Pfizer should have disclosed the '995 patent itself. There was no dispute that Pfizer was in possession of these two references during the pendency of its own patent applications.

The district court held that neither the '501 application nor the '995 patent was material. The district court also held that, even if the Merck references were material, Teva had failed to meet the threshold showing of intent. We conclude that, even if the

Merck references were material, the district court did not clearly err in finding that Teva failed to establish that Pfizer acted with an intent to deceive.

On appeal, Teva contends that the materiality of the references standing alone, in the absence of a credible explanation for withholding them, is sufficient to establish intent. However, the district court held that Pfizer had offered a good faith explanation for failing to disclose the Merck references based on the testimony of Pfizer's witness, Dr. Talley, who was one of the named inventors of celecoxib. Dr. Talley testified that Pfizer had studied the Merck references and concluded that none of the compounds disclosed in the Merck references was similar to the compounds disclosed in Pfizer's own patent applications. This is because, as Dr. Talley explained, the compounds disclosed in the Merck references had a different heterocyclic core than the compounds of the Pfizer applications and that this was a significant distinction. Pfizer notes that the PTO itself recognizes that such differences are significant. Pfizer also presented evidence below of its own highly consistent pattern of disclosing references having the same heterocyclic core in the prosecution of hundreds of its other patent applications. Indeed, Pfizer established that, in connection with the prosecution of a separate patent application that had the same heterocyclic core, it did disclose the '501 reference. The district court credited this "highly consistent pattern" as strong evidence supporting Pfizer's good faith explanation for not disclosing the Merck references. Because the Merck references disclosed compounds having a different core, Pfizer concluded that they were not material. The district court found that Dr. Talley's testimony in this

respect was credible, and we see no basis for overturning that finding.[11] Given the existence of a credible reason for the withholding, the materiality of the references standing alone is not sufficient to establish intent. See Ferring B.V. v. Barr Labs., Inc., 437 F.3d 1181, 1191 (Fed. Cir. 2006) (requiring three conditions where a party relies solely on the materiality of the references: "(1) the applicant knew of the information; (2) the applicant knew or should have known of the materiality of the information; and (3) the applicant has not provided a credible explanation for the withholding"). For these reasons, we conclude that the district court did not clearly err in finding that Teva failed to prove by clear and convincing evidence that Pfizer intended to deceive the PTO by not disclosing the Merck references. There is therefore no basis for finding inequitable conduct.

IV

We find that the asserted claims of the '068 patent are invalid for double patenting and reverse the district court on that aspect of its judgment. We also find that claim 9 of the '823 patent and claim 17 of the '165 patent are not invalid for a best mode violation. Finally, the '823 patent, the '165 patent, and the '068 patent are not unenforceable for inequitable conduct. Accordingly, we affirm the district court's judgment of infringement with respect to claim 9 of the '823 patent and claim 17 of the '165 patent.

[11] Teva argues that the district court improperly restricted its cross-examination of Dr. Talley by not allowing questions regarding Dr. Talley's signing of the oath in the patent application. The district court not only determined that Teva's line of questioning went beyond the scope of direct, but it also concluded that the evidence that Teva wanted to elicit from Dr. Talley was already in the record. We do not find that this was an abuse of discretion.

CONCLUSION

The judgment of the district court is AFFIRMED-IN-PART and REVERSED-IN-PART.

No costs.

United States Court of Appeals for the Federal Circuit

2007-1450
(Reexamination No. 90/006,297)

IN RE BASELL POLIOLEFINE ITALIA S.P.A.

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Appealed from: United States Patent and Trademark Office
Board of Patent Appeals and Interferences

United States Court of Appeals for the Federal Circuit

2007-1450
(Reexamination No. 90/006,297)

IN RE BASELL POLIOLEFINE ITALIA S.P.A.

Appeal from the United States Patent and Trademark Office, Board of Patent Appeals and Interferences.

DECIDED: November 13, 2008

Before NEWMAN, LOURIE, and LINN, Circuit Judges.

Opinion for the court filed by LOURIE, Circuit Judge. Dissenting opinion filed by NEWMAN, Circuit Judge.

Basell Poliolefine Italia, S.P.A. ("Basell") appeals from two decisions of the United States Patent and Trademark Office ("PTO") Board of Patent Appeals and Interferences ("Board") resulting from a Director-ordered reexamination of U.S. Patent 6,365,687 ("the '687 patent"). The Board affirmed the rejections of all the claims of the '687 patent as unpatentable under 35 U.S.C. §§ 102(b) and 103(a) and the doctrine of obviousness-type double patenting. Because the Board did not err in concluding that the pending claims were barred under the doctrine of obviousness-type double patenting, we affirm.

BACKGROUND

The '687 patent, entitled "Process for the Polymerization and Copolymerization of Certain Unsaturated Hydrocarbons," was issued on April 2, 2002. Giulio Natta ("Natta"), Piero Pino, and Giorgio Mazzanti are named inventors and Basell is the assignee. The '687 patent claims priority from Italian Application No. 25,109, filed July 27, 1954 ("the Italian application").[1] The invention relates to "a process for copolymerizing unsaturated hydrocarbons of the formula CH_2=CHR in which R is a saturated aliphatic radical with two or more carbon atoms or a cycloaliphatic radical, in the presence of a catalyst comprising a catalytic aluminum alkyl compound and a catalytic titanium halide compound." '687 patent Abstract. Claims 1 and 9, which are both representative claims, read as follows:

> 1. A process which comprises polymerizing ethylene with an alpha-olefin, CH_2=CHR, wherein R is a saturated aliphatic radical with 2 or more carbon atoms or a cycloaliphatic radical, in the presence of a catalyst obtained by reacting an aluminum alkyl compound with a catalytic titanium halide compound.
>
> 9. A process for preparing a copolymer comprising copolymerizing monomeric olefin molecules comprising a monomeric vinyl hydrocarbon having the formula CH_2=CHR, wherein R is a saturated aliphatic radical having at least 2 carbon atoms or is a cycloaliphatic radical, in the presence of a catalyst comprising a catalytic aluminum alkyl compound and a catalytic titanium halide compound.

[1] The '687 patent issued from U.S. application Ser. No. 07/883,912 ("the '912 application"), which was filed on May 12, 1992 and is "a continuation, of U.S. application Ser. No. 07/719,666, filed Jun. 24, 1991, now abandoned, which is a continuation of 07/607,215, filed Oct. 29, 1990, now abandoned, which is a continuation of 06/906,600, filed Sep. 10, 1986, now abandoned, which is a continuation of 06/498,699, filed May 27, 1983, now abandoned, which is a continuation of 04/710,840, filed Jan. 24, 1958, now abandoned, which is a divisional of 04/514,097, filed Jun. 8, 1955, now abandoned." '687 patent col.1 ll.5-14.

’687 patent claims 1 & 9 (emphases added). Thus, the pending claims generally involve polymerizing any alpha-olefin C_4 or higher with any olefin (in some claims, specifically ethylene) using a titanium halide aluminum alkyl catalyst.

On June 7, 2002, the PTO initiated a Director-ordered reexamination. The reexamination was for all claims based on double patenting in view of two expired patents issued to Natta, viz., U.S. Patents 3,256,235 (“the ’235 patent”) and 3,403,139 (“the ’139 patent”). During the course of reexamination, the Examiner added double patenting rejections based on two other expired patents issued to Natta, viz., U.S. Patents 3,317,496 (“the ’496 patent”) and 3,582,987 (“the ’987 patent”).

On March 30, 2005, the Board affirmed the double patenting rejections. The Board first determined whether the patentees were entitled to a one-way or two-way test for double patenting. The Board found that the circumstances did not dictate the application of a two-way test for double patenting. The Board concluded that the patentees “significantly controlled the rate of prosecution throughout the chain of ancestor applications,” and thus the one-way test applied. In re Basell Poliolefine, No. 2004-1390, slip op. at 15 (B.P.A.I. Mar. 30, 2005) (“2005 Board Decision”). After reviewing the examiner’s double patenting rejections, the Board upheld the rejections on each ground.

Turning to the new grounds of rejection based on §§ 102 and 103, the Board determined that U.S. Patent 3,058,963 (“Vandenberg”) raised a substantial new question of patentability within the meaning of the reexamination statute in effect on June 7, 2002. The Board found that the patentees failed to establish that the ’687 patent was entitled to the earlier filing date of the Italian application sufficient to

antedate the Vandenberg reference. Id. at 126. Because the patentees were not entitled to the benefit of priority under 35 U.S.C. § 119, the Board held that Vandenberg was available as prior art under 35 U.S.C. §§ 102(b) and 103. The Board found that claims 1-4, 8-13, 15, 21-26, 28, 31, 32, 35, 39-44, and 48-52 were anticipated by Vandenberg and claims 1-52 would have been obvious over Vandenberg under § 103(a).[2]

In a second appeal, on March 29, 2007, the Board affirmed the §§ 102(b) and 103(a) rejections based on Vandenberg and finalized all of the obviousness-type double patenting rejections. The Board held that, even though the PTO previously cited Vandenberg, that reference raised a substantial new question of patentability under the previous 35 U.S.C. § 303(a) based on the particular facts of this case. In particular, the Board found that "the examiner never fully considered the substantive issues of patentability of the claims over [Vandenberg] as a result of the incorrect assessment of the effective filing date." In re Basell Poliolefine, No. 2007-0111, slip op. at 47 (B.P.A.I. Mar. 29, 2007). As such, the citation of Vandenberg in the original examination did not bar rejections based on Vandenberg during reexamination. The Board further held that the appealed claims were not entitled to the benefit of an earlier filing date under 35 U.S.C. §§ 119 and 120 and reaffirmed its finding that the claims were either anticipated or rendered obvious in view of Vandenberg.

Basell timely appealed the Board's decision. We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(4)(A).

[2] Claims 1-34 appear in the '687 patent, and claims 35-52 were added during reexamination.

DISCUSSION

Because we conclude that the Board's decision can be affirmed based on its obviousness-type double patenting rejection in view of the '987 patent, we focus our inquiry on that issue. Double patenting is a question of law that we review de novo. In re Emert, 124 F.3d 1458, 1460 (Fed. Cir. 1997). The determination of whether a one-way or two-way analysis applies is also a question of law that we review without deference. Id. We review the Board's factual findings for lack of substantial evidence. Id.

On appeal, Basell argues that the Board erred in rejecting the claims for obviousness-type double patenting in view of the '987 patent. First, Basell argues that the '987 patent was considered during original prosecution of the '687 patent and thus cannot be considered during reexamination under the previous version of 35 U.S.C. § 303(a) and our holdings in In re Portola Packaging, Inc., 110 F.3d 786 (Fed. Cir. 1997) and In re Recreative Technologies Corp., 83 F.3d 1394 (Fed. Cir. 1996). Second, Basell asserts that the Board erred in dismissing declaration evidence. Next, Basell argues that the Board erred because it failed to conduct an analysis under Graham v. John Deere Co., 383 U.S. 1 (1966), as of the earliest filing date claimed in the '687 patent. Lastly, Basell contends that the Board erred by failing to apply a two-way obviousness-type double patenting analysis. According to Basell, any delay in the prosecution of the patent was attributable to the PTO.

In response, the Director argues that the Board properly considered the '987 patent. According to the Director, the '987 patent was never considered during the original prosecution of the '687 patent, but only in another application that involved

claims that were unrelated to the rejected claims. The Director also asserts that the Board properly considered the declaration evidence but found it insufficient to support Basell's claims. The Director further argues that, contrary to Basell's assertion, an obviousness-type double patenting analysis does not always require a full Graham obviousness analysis to be performed as of the priority date of the pending claims. Lastly, the Director contends that the Board properly applied a one-way obviousness-type double patenting analysis because Basell effectively controlled the rate of prosecution.

We agree with the Director that the claims of the '687 patent are unpatentable based on obviousness-type double patenting in view of the '987 patent. "The doctrine of double patenting is intended to prevent a patentee from obtaining a time-wise extension of [a] patent for the same invention or an obvious modification thereof." In re Lonardo, 119 F.3d 960, 965 (Fed. Cir. 1997). The judicially created doctrine of obviousness-type double patenting "prohibit[s] a party from obtaining an extension of the right to exclude through claims in a later patent that are not patentably distinct from claims in a commonly owned earlier patent." Eli Lilly & Co. v. Barr Labs., Inc., 251 F.3d 955, 967 (Fed. Cir. 2001). In determining double patenting, a one-way test is normally applied, in which "the examiner asks whether the application claims are obvious over the patent claims." In re Berg, 140 F.3d 1428, 1432 (Fed. Cir. 1998). In unusual circumstances, where an applicant has been unable to issue its first-filed application, a two-way test may apply, in which "the examiner also asks whether the patent claims are obvious over the application claims." Id.

As a preliminary matter, we are unpersuaded by Basell's assertion that the Board erred by failing to apply a two-way test for double patenting. The two-way test is "a narrow exception to the general rule of the one-way test." Id. The test arose out of the concern "to prevent rejections for obviousness-type double patenting when the applicants filed first for a basic invention and later for an improvement, but, through no fault of the applicants, the PTO decided the applications in reverse order of filing, rejecting the basic application although it would have been allowed if the applications had been decided in the order of their filing." Id. Thus, the two-way test may be appropriate "in the unusual circumstance that the PTO is solely responsible for the delay in causing [a] second-filed application to issue prior to [a] first." Id. at 1437.

Those circumstances, however, are not present here. The record shows that the patentees did not present any claim resembling the claims at issue until 1964, nine years after Natta filed the first U.S. application in the chain of priority and well after Natta filed the application that resulted in the '987 patent. Moreover, those claims appear to have been filed for interference purposes only. In addition, the Board found that since 1954, the patentees repeatedly submitted claims directed to claims covering other inventions, urged the examiner to declare interferences for unrelated inventions, and repeatedly filed continuing applications without appeal. During the critical co-pendent period of the applications for the '687 patent and the '987 patent, Natta could have filed the present claims. Natta's actions, or inactions, had a direct effect on the prosecution and thus were responsible for any delay in prosecution. We find no error with regard to the Board's findings and agree with the Board that the two-way test for double patenting does not apply.

We are likewise unpersuaded by Basell's assertion that the '987 patent cannot be relied upon by the Board because it was previously considered during the original prosecution. The record demonstrates that the '987 patent was cited during the prosecution of a different patent application, viz., application no. 06/498,699, which was ultimately abandoned. Notably, the claims of that application differ from the claims of the '687 patent in that the recited catalyst contained a titanium chloride limitation, whereas the '687 patent encompasses catalysts that generally encompass the generic titanium halides. In attempting to overcome the double patenting rejection during the prosecution of the '699 application, Natta et al. argued that it would not have been obvious to use the titanium chloride catalyst recited in the claims of the '699 application. Thus, the rejection based on the '987 patent during the prosecution of the '699 application involved different claims than the claims at issue. As such, we agree with the Director that the Board was not precluded under Portola or Recreative Technologies from relying on the '987 patent in its double patenting rejection.[3]

The critical inquiry before us is whether the claims of the '687 patent define an obvious variation of the claims of the '987 patent. In concluding that it does, the Board relied on claim 1 of the '987 patent which recites:

> 1. A process for polymerizing monomeric materials selected from the group consisting of (a) unsaturated hydrocarbons of the formula CH_2=CHR in which R is selected from the group consisting of saturated aliphatic radicals containing 1 to 4 carbon atoms and the phenyl radical to

[3] We note that Portola was overruled by 35 U.S.C. 303(a) by legislation for "any determination of the Director of the United States Patent and Trademark Office that is made under section 303(a) . . . on or after [November 2, 2002]." See, e.g. In re Swanson 540 F.3d 1368, 1379-80 (Fed. Cir. 2008). The double patenting rejection during the reexamination was made on June 13, 2004, thereby making it subject to the new statute and not Portola.

> solid linear polymerizates comprising a mixture of substantially linear, regular head-to-tail amorphous, atactic homopolymers, substantially linear, regular head-to-tail partially crystalline homopolymers, and homopolymers consisting of isotactic macromolecules as defined and which show a regular succession of —CH_2— and —CHR— groups in long linear chains which assume, at least for long macromolecule sections, a regular structure
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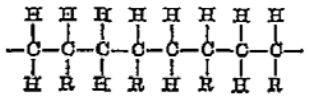
> 
>
> wherein R has the same significance as above and the asymmetric carbon atoms of the main chains have identical steric configurations on the same chain at least for long sections, and which macromolecules are crystallizable; (b) mixtures of said unsaturated hydrocarbons to solid linear copolymerizates; and (c) mixtures of said unsaturated hydrocarbons containing to to [sic] 10% of another olefinic monomer copolymerizable therewith to a solid linear copolymerizate, which process comprises contacting the monomeric material with a catalyst prepared by bringing a halide of a transition metal belonging to Groups IV to VI inclusive of the Mendeleeff Periodic Table in which the metal has a valency higher than 3 into intimate contact with an alkyl compound of an element belonging to Groups II to III inclusive of said table mixed with the monomeric material to be polymerized.

'987 patent claim 1 (emphases added). As indicated earlier, independent claims 1 and 9 of the '687 patent, which are typical claims in the patent, recite:

> 1. A process which comprises polymerizing ethylene with an alpha-olefin, CH_2═CHR, wherein R is a saturated aliphatic radical with 2 or more carbon atoms or a cycloaliphatic radical, in the presence of a catalyst obtained by reacting an aluminum alkyl compound with a catalytic titanium halide compound.
>
> 9. A process for preparing a copolymer comprising copolymerizing monomeric olefin molecules comprising a monomeric vinyl hydrocarbon having the formula CH_2═CHR, wherein R is a saturated aliphatic radical having at least 2 carbon atoms or is a cycloaliphatic radical, in the presence of a catalyst comprising a catalytic aluminum alkyl compound and a catalytic titanium halide compound.

’687 patent claims 1 & 9 (emphases added).[4]

We agree with the Board’s conclusion that the claims of the ’687 patent are not patentably distinct from claim 1 of the ’987 patent. Claim 1 of the ’687 patent covers polymerizing 1) an alpha-olefin of C_4 or higher, 2) with ethylene, 3) using a titanium halide aluminum alkyl catalyst. As the Director and the Board correctly noted, the claim encompassing those limitations is an obvious variant of claim 1 of the ’987 patent. Specifically, with regard to the alpha olefin of C_4 or higher, claim 1 of the ’987 patent provides that one of the monomeric materials may include “unsaturated hydrocarbons of the formula CH_2═CHR in which R is selected from the group consisting of saturated aliphatic radicals containing 1 to 4 carbon atoms.” Thus, both claims of the ’987 patent and the ’687 patent cover alpha olefins of C_4 to C_6. In addition, with regard to ethylene, claim 1 of the ’987 patent recites “another olefinic monomer,” and thus covers a genus that includes ethylene. Similarly, with regard to the titanium halide aluminum alkyl catalyst, claim 1 of the ’987 patent covers a genus that the parties do not dispute includes titanium halide, as well as a genus that includes aluminum alkyl. Claim 1 of the ’687 patent is thus not patentably distinct from claim 1 of the ’987 patent.

Similarly, claim 9 of the ’687 patent, which does not limit one of the starting monomeric materials to ethylene but instead covers a broader class of olefin molecules, is not patentably distinct from claim 1 of the ’987 patent because that claim likewise covers a broad class of olefinic monomers.

[4] Basell states that claims 1-8, 16-21, 29-52 stand or fall together, as do claims 9-15 and 22-28. We therefore focus our analysis on representative claims 1 and 9 of the ’687 patent.

In essence, the claims of the ’987 and ’687 patents consist of various permutations of polymerization of olefins with various numbers of carbon atoms using catalysts of titanium halides and aluminum alkyls. Some expressions are generic to others. While it is true that a generic expression does not render obvious all of the species that it encompasses, these claims are both generic and specific to each other in interchangeable ways, involving the same groups of species.

The ’987 claims are directed to polymerization of C_3 to C_6 olefins with other mixtures of unsaturated hydrocarbons. As homologs are presumptively obvious over known compounds, these claims render obvious the claims of the ’687 patent directed to polymers of the homologous, well-known ethylene and C_4 olefins (claim 1) and the copolymerization of C_4 olefins (claim 9). It is worthy of note that, while claim 1 of the ’687 patent recites ethylene, its specification is almost entirely directed to propylene, which is encompassed by ’987 claim 1; the discussion of ethylene is limited and it is mentioned briefly in a statement that a small amount of ethylene does not interfere with the polymerization of propylene. Thus, propylene is squarely within the scope of the ’987 patent’s C_3 to C_6 scope. Claim 9 is directed to polymerization of C_4 and higher olefins, just as is the ’987 patent.

Moreover, the specification of the ’987 patent itself refers to ethylene, propylene, butene, and other olefins which indicates that those olefins were intended to fall within the meaning of the claims. Thus, the PTO had good basis for its conclusion that the claims of the ’987 patent rendered obvious the claims of the ’687 patent and that the latter claims are invalid for obviousness-type double patenting.

Relying on In re Kaplan, 789 F.2d 1574 (Fed. Cir. 1986), Basell asserts that the rejection must be reversed because the Board improperly read limitations from the '987 specification into the claims in concluding that the claims are not patentably distinct. We disagree. While we stated in Kaplan that it is impermissible to treat a "patent disclosure as though it were prior art" in a double patenting inquiry, we further reaffirmed the holding in In re Vogel, 422 F.2d 438 (CCPA 1970), that certain instances may exist where a patent's disclosure may be used. Kaplan, 789 F.2d at 1580. Indeed, our predecessor court stated that a patent's disclosure may be used to determine whether an application claim is merely an obvious variation of an invention claimed in a patent. Vogel, 422 F.2d at 441-42. The court stated that the disclosure may be used to learn the meaning of terms and in "interpreting the coverage of [a] claim." Id. at 441. It may also be used to answer the question whether claims merely define an obvious variation of what is earlier disclosed and claimed. The court stated that the disclosure "sets forth at least one tangible embodiment within the claim, and it is less difficult and more meaningful to judge whether [something] has been modified in an obvious manner." Id. at 442. The court further stated that "use of the disclosure is not in contravention of the cases forbidding its use as prior art, nor is it applying the patent as a reference under 35 U.S.C. § 103, since only the disclosure of the invention claimed in the patent may be examined." Id. As such, we conclude that the Board did not err in referring to the specification of the '987 patent when it determined whether the claims were patentably distinct from the claims of the '687 patent.

We further disagree with Basell's argument that the Board failed to consider the declaration evidence of its experts, Drs. Floyd and Porri. Indeed, in its 2005 decision,

the Board expressly considered those declarations and found them to be unpersuasive. 2005 Board Decision at 100-03. We find no error with regard to the Board's consideration of those declarations.

We are also unpersuaded by Basell's assertion that the double patenting rejection should be reversed because the Board failed to expressly conduct a full Graham analysis in determining that the '687 patent claims were an obvious variant of claim 1 of the '987 patent. Indeed, "this court has endorsed an obviousness determination similar to, but not necessarily the same as, that undertaken under 35 U.S.C. § 103 in determining the propriety of a rejection for double patenting." In re Braat, 937 F.2d 589, 592-93 (Fed. Cir. 1991). Hence, we find no basis for reversing the Board's decision merely because the Board failed to expressly set forth each of the Graham factors in its analysis. The Board carefully considered claim 1 of the '987 patent and the claims of the '687 patent and determined that a person of ordinary skill in the art would have found the '687 patent claims to have been obvious. We find no error in the Board's analysis.

We have considered Basell's remaining arguments and find none that justify a reversal. Having concluded that the Board properly affirmed the rejection of claims 1-52 of the '687 patent based on obviousness-type double patenting in view of the '987 patent, we need not address the remaining issues raised by Basell regarding the §§ 102(b) and 103(a) rejections, as well as the additional double patenting rejections. Accordingly, the Board's decision is affirmed.

AFFIRMED

United States Court of Appeals for the Federal Circuit

2007-1450
(Reexamination No. 90/006, 297)

IN RE BASELL POLIOLEFINE ITALIA S.P.A.

Appeal from the United States Patent and Trademark Office, Board of Patent Appeals and Interferences.

NEWMAN, Circuit Judge, dissenting.

The patent on appeal is directed to the production of crystalline copolymers of alpha-olefins having four or more carbon atoms, using a catalyst obtained by reacting an aluminum alkyl with a titanium halide; the inventor is Natta et al. (the "Natta '687 patent"). The initial application was filed in 1958, flowing from discoveries that started with the polymerization of ethylene and that have produced new materials that continue to revolutionize the packaging and several other industries. The scientific achievements reflected in these discoveries won a Nobel Prize in 1963 for Dr. Giulio Natta and Dr. Karl Ziegler.

I write in dissent, first because the reexamination here conducted was in violation of the reexamination law as it then existed. Such violation should not be condoned, for the PTO is as bound by the law as are those who practice before it. If this improper reexamination were to be tolerated, as do my colleagues on this panel, it at least

warrants strict scrutiny. Yet the panel majority defers to unsupported findings, permits the PTO to ignore all of the expert evidence, and joins in the PTO's unfair allocation to the inventors of blame for the extreme delays here illustrated.

The Reexamination Statute before November 2, 2002

Reexamination before 35 U.S.C. §303 was amended effective November 2, 2002, was available only on certain grounds not considered during the initial examination. The purpose was to protect patentees from the harassment of too-facile reexamination, lest the abuses outweigh the benefits.[1] Reexamination of the Natta '687 patent was not requested by any interested person, but was ordered by the Director of the PTO for the stated reason: "The failure of the Office to consider the entire patent family for potential double patenting issues has created an extraordinary situation for which a Commissioner ordered reexamination is an appropriate remedy." Director Initiated Order for Reexamination, at 2 (Jun. 7, 2002). However, the issue of double patenting had been considered during the initial examination; and the examiner had found, as stated in the Reasons for Allowance, that: "The statutory double-patenting rejection has been obviated by the amendments set forth in the latest response . . . The obviousness-type double patenting rejection is withdrawn as per MPEP § 804(I)(B)." Reason for Allowance, Application/Control No. 07/883,912, at 3 (Sept. 27, 2001).

The PTO apparently recognized that there was a problem with its initiation of this reexamination, for the Board stated that if this court were to find that the reexamination

[1] In In re Swanson, 540 F.3d 1368, 1381 (Fed. Cir. 2008), this court commented on the amended section 303, stating that "we are mindful that Congress intended that the courts continue to 'judiciously interpret the substantial new question standard to prevent cases of abusive tactics and harassment of patentees through reexamination.'" (citing H.R. Rep. No. 107-120, at 3 (2002)).

had been improperly initiated, on remand the PTO would simply institute another reexamination under the amended statute. Ex parte Basell, Appeal No. 2004-1390, Reexamination Control No. 90/006,297, at 122 n.37 (Aug. 19, 2004).

The PTO's brief on appeal does not attempt to justify the reexamination on double patenting grounds, but instead argues only an alternative ground related to entitlement to the initial filing date and the effect of an intervening reference. This ground was also considered during the initial examination of the Natta '687 patent, with the examiner's Reasons for Allowance stating: "The prior art rejections are withdrawn because the right to benefit of the filing date of the Italian ['109] priority application has been established, and thus the Vandenberg and Anderson patents are antedated." In sum, no valid basis has been provided for this reexamination.

My colleagues now review only the double patenting rejection, ignore the underlying impropriety, and chastise the patentee for delays for which it was not responsible.

The issue of delay

The PTO criticizes the long period from initial filing to issuance of the Natta '687 patent. It is indeed extraordinarily long. However, the reexamination examiner acknowledged that there were "PTO delays due to multiple interferences which occurred from the 1950's up to 1984 or 1985," while also stating that the applicant "caused a substantial number of delays from 1985 to 2000." Examiner's Answer, Application Number: 90/006,297, at 30 (Jan. 13, 2004). The latter period included an appeal to this court, during which the PTO moved for remand in order to conduct additional examination. The record shows no violation by the applicant of the PTO's

rules and procedures, or any significant departure from standard practices, in Natta's participating in time-consuming procedures.

The delays due to patent interferences are notorious, and here there were three, involving multiple parties and multiple countries. Interference delays generally flow from not only the complexity of the subject matter and requisite proofs, but also the due process that PTO procedures assure in these complex inter partes proceedings, including the rights of appeal and the authorized judicial proceedings. It may well be that the PTO has been unfairly criticized for the lengthy pendency illustrated by this patent; however, it is equally unfair to chastise this patentee, when most of the delay was agreed by the PTO to be due to its procedures.

Whatever the reasons for the prolonged pendency, delay is not a ground of double patenting.

The double patenting issue

The PTO had consistently found that the claims of the Natta '687 patent are patentably distinct from the claims of the '987 patent. In both the examination and the reexamination, the examiners found that the classes of copolymers and catalysts in the '687 claims were patentably distinct from those claimed in the '987 patent. The PTO agreed that the subject matter claimed in the Natta '687 patent is not an obvious variant of the '987 claims.

In the prosecution history of the Natta '687 patent, Dr. Natta had explained the issues involving the higher olefins of the '687 invention:

> [T]he presence of any substantial amount of the higher olefins inhibits polymerization of the ethylene while the higher olefins, if they react at all, do so only at the very low

> reaction rates and, in any case, without yielding polymers of the type with which this invention is concerned.

Prosecution history of Natta U.S. Application No. 03/710,840, at 5. Expert polymer scientists testified that it would not have been predicted whether or how the higher olefins would behave in this system, or which catalysts would be effective. Professor Lido Porri testified that "Claim 1 of the '987 patent . . . is too broad and incomplete to have motivated one of skill in the art in 1954 to attempt to prepare such a catalyst and to have had a reasonable expectation that a copolymer as recited could be prepared." Declaration of Professor Lido Porri ¶44 (Oct. 30, 2002). Expert polymer scientist Dr. Joseph C. Floyd declared: "In mid-1954, the reference to the new two component catalyst system of claim 1 [of the '987 patent] would have been too broad to have motivated one of ordinary skill to attempt to prepare such a catalyst system and have had a reasonable expectation that a copolymer as recited could have been prepared." Declaration of Joseph C. Floyd ¶40 (Nov. 4, 2002).

The expert witnesses explained that before the invention claimed in the '687 patent, attempts to copolymerize ethylene with a higher olefin had been unsuccessful. Both Professor Porri and Dr. Floyd so stated. Second Declaration of Professor Lido Porri ¶20 (May 24, 2005); Third Declaration of Dr. Joseph C. Floyd ¶41 (May 27, 2005). Indeed, the PTO does not dispute that the claimed subject matter of the '687 and the '978 patents is patentably distinct. The presence of overlapping subject matter, and the specific choice of catalyst, present technological questions that were answered by the experts, without contradiction. The record contains no contrary authority, no citations or references or arguments, other than the flawed presumption of "homology" created by my colleagues.

All of the experts testified as to the inability at that time to copolymerize ethylene and butylene, and that it was not possible to predict whether any adaptation of these new catalyst systems would achieve this long-sought result. The reexamination examiner wrote that "The present coinventors developed a ground-breaking invention, so one skilled in the art would have been astounded by their accomplishments at the time the invention was made." Examiner's Answer, Application Number: 90/006,297, at 38.

The law of double patenting is in terms of whether the later claimed invention is an obvious variant of the earlier claimed invention. In General Foods Corp. v. Studiengesellschaft Kohle mbH, 972 F.2d 1272 (Fed. Cir. 1992), the court stressed the critical role of patentable distinction in obviousness-type double patenting:

> [T]he determining factor in deciding whether or not there is double patenting is the existence vel non of patentable difference between two sets of claims. The phrases actually used in the opinion include "patentably distinguishable," "patentable distinctions," and "whether such differences would have been obvious to one of ordinary skill in the art." They are all equivalent.

Id. at 1278-79. Although the Board ruled that it was irrelevant whether the '987 patent provided guidance for polymerization of alpha-olefins higher than propylene, such lack of guidance or absence of enablement is indeed relevant to whether the later invention would have been obvious in light of the earlier, or whether the asserted obvious variant could have been patented in both patents. As the '687 patent states, and as the witnesses reinforced, longer chain hydrocarbons behave differently, and their catalysis is unpredictable. See '687 patent col. 1, ll. 62-65 ("it was not apparent that those [reaction] agents would be useful in the polymerization of the unsaturated hydrocarbons containing the vinyl group."); id. at col. 2, ll. 54-58 ("In view of the foregoing, it could not

be predicted, from the work with ethylene, that our polymerization agents would be useful for the production of higher molecular weight polymers of the vinyl hydrocarbons of formula CH_2=CHR as defined herein.") In addition, the claims must be considered in their entirety, including the specific catalysts, whose use in these specific systems is agreed not to be shown in the earlier patent.

In sum, in view of the recognition that the process in the '687 claims is patentably distinct from the '987 claims, double patenting can not lie. See Application of Sarett, 327 F.2d 1005, 1016 (C.C.P.A. 1964) (reversing rejections for obviousness-type double patenting because generic and specific claims may nonetheless be patently distinct); see generally In re Jones, 958 F.2d 347, 350 (Fed. Cir. 1992) (explaining that a disclosure of a chemical genus does not automatically render obvious any species within the genus).

In view of the irregularity of the reexamination and the flawed rulings on this appeal, I must, respectfully, dissent.

United States Court of Appeals for the Federal Circuit

ELI LILLY AND COMPANY AND TRUSTEES OF PRINCETON UNIVERSITY,
Plaintiffs-Appellees,

v.

TEVA PARENTERAL MEDICINES, INC. AND BARR LABORATORIES, INC.,
Defendants-Appellants,

and

APP PHARMACEUTICALS, LLC,
Defendant-Appellant.

2011-1561, -1562

Appeals from the United States District Court for the District of Delaware in consolidated Case Nos. 08-CV-0335, 08-CV-0384, 08-CV-0860, and 09-CV-0272, Chief Judge Gregory M. Sleet.

ELI LILLY AND COMPANY AND TRUSTEES OF PRINCETON UNIVERSITY,
Plaintiffs-Appellees,

v.

APP PHARMACEUTICALS, LLC,
Defendant-Appellant.

2012-1037

Appeal from the United States District Court for the District of Delaware in Case No. 11-CV-0628, Chief Judge Gregory M. Sleet.

Decided: August 24, 2012

ADAM L. PERLMAN, Williams & Connolly, LLP, of Washington, DC, argued for plaintiff-appellee. With him on the brief were BRUCE R. GENDERSON, KANNON K. SHANMUGAM, DOV P. GROSSMAN, and DAVID M. KRINSKY. Of counsel was ELLEN E. OBERWETTER.

JOHN C. ENGLANDER, Goodwin Procter, LLP, of Boston, Massachusetts, argued for defendants-appellants. With him on the brief were DARYL L. WIESEN and EMILY L. RAPALINO. Of counsel on the brief were ERIC H. YECIES and MICHAEL B. COTTLER.

Before LOURIE, DYK, and WALLACH, *Circuit Judges*.

LOURIE, *Circuit Judge*.

Appellants Teva Parenteral Medicines, Inc., Barr Laboratories, Inc., and APP Pharmaceuticals, LLC appeal from the judgment of the United States District Court for the District of Delaware holding that U.S. Patent 5,344,932 (the "'932 patent") is not invalid for obviousness-type double patenting. *See Eli Lilly & Co. v. Teva Parenteral Meds. Inc.*, No. 08-335-GMS, 2011 U.S. Dist.

LEXIS 83124, 2011 WL 3236037 (D. Del. July 28, 2011). We affirm.

BACKGROUND

This patent infringement dispute concerns applications filed by several generic pharmaceutical manufacturers seeking regulatory approval to market generic formulations of the chemotherapy agent pemetrexed. To begin, we outline the necessary background information and procedural history, as set forth below.

A. Antifolate Drugs

Folates, which include the B vitamin folic acid and its derivatives,[1] play a critical role in nucleic acid synthesis within human cells and, as such, are required for cell growth and division. To that end, numerous cellular enzymes recognize and process folates—some folate-specific enzymes such as dihydrofolate reductase ("DHFR") and glycinamide ribonucleotide formyltransferase ("GARFT") catalyze biochemical reactions important for making both DNA and RNA, while others such as thymidylate synthetase ("TS") selectively affect DNA production.[2]

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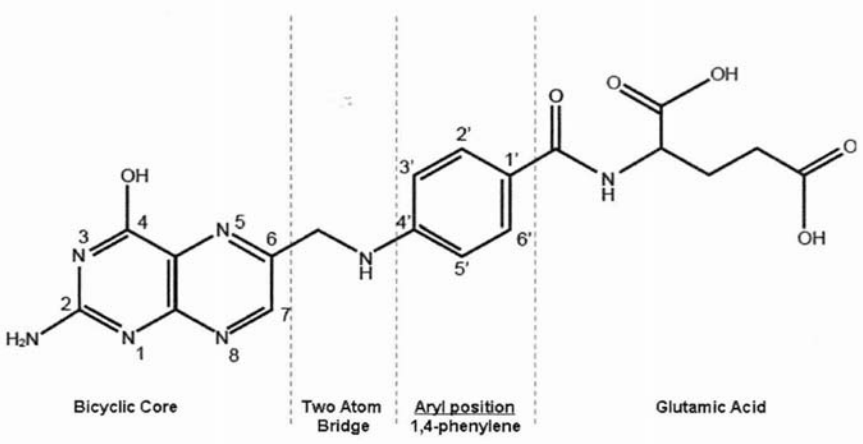
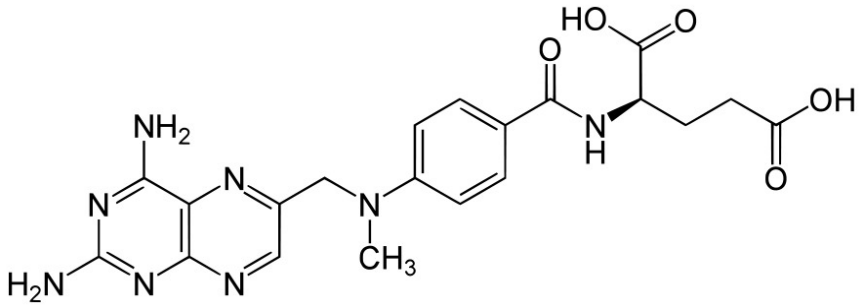
[1] Although folic acid itself predominates in most dietary supplements and fortified foods, the compound naturally occurs in various other chemical forms including folic acid salts and esters. For convenience, we refer to folic acid and such related compounds collectively as "folates."

[2] Purines and pyrimidines are key building blocks in the production of both RNA and DNA. DHFR and GARFT participate in global purine synthesis, so those enzymes affect both DNA and RNA production. In contrast, TS serves only in the production of deoxythymidine monophosphate, a pyrimidine nucleotide that is incorporated into DNA but not RNA.

Given the key role of folates in DNA synthesis, and thus in cellular replication, folate metabolism presents an attractive target for cancer treatments because cancerous cells characteristically exhibit rapid, unchecked division and proliferation. Accordingly, researchers and physicians have developed numerous compounds, known as "antifolates," intended to inhibit one or more of the folate-specific enzymes necessary for DNA synthesis. Structurally analogous to natural folates, antifolates induce initial recognition by one or more of the folate-specific enzymes yet contain important structural differences that prevent the target enzyme from carrying out its normal function. For example, the chemical structure of folic acid is represented below—highlighting key structural features including the bicyclic core, bridge region, aryl position, and glutamic acid domain—along with the closely related structure of methotrexate, a well-known antifolate that was first introduced around 1950.



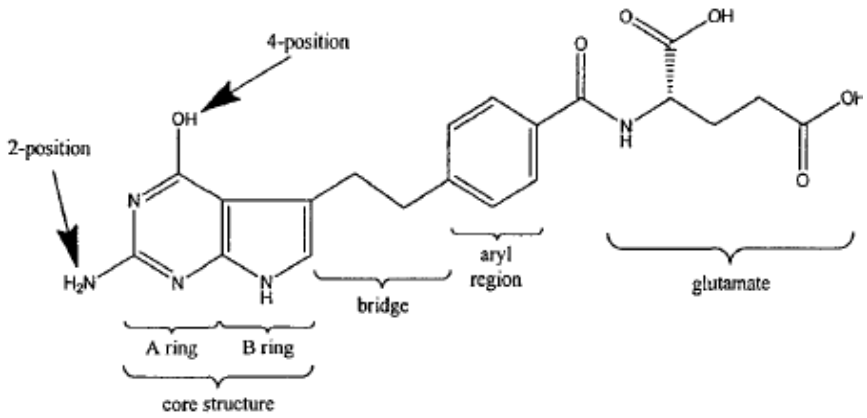
Folic Acid



Methotrexate

Methotrexate is used as a chemotherapy agent for treating certain cancers, including leukemias, lymphomas, and osteosarcoma, among others. In addition to its anticancer effects, however, methotrexate, like many antifolates, exhibits significant toxicity due to deleterious effects on non-cancerous, healthy cells. Such toxicity is thought to arise at least in part because methotrexate primarily inhibits DHFR and therefore substantially impairs DNA *and* RNA synthesis. While DNA synthesis is of principal importance for actively dividing cells (*e.g.*, cancer cells), ongoing RNA synthesis is necessary for essentially all living cells in the body. Methotrexate and other antifolate drugs that inhibit both the DNA and RNA synthesis pathways are thus prone to undesirable off-target effects.

In the 1980s, researchers sought to develop antifolates capable of inhibiting TS, which would selectively impede DNA synthesis and presumably mitigate the toxicity issues associated with methotrexate and other then-existing antifolates. One such effort led by Prof. Edward Taylor, a chemist at Princeton University, yielded pemetrexed, the antifolate at the heart of this appeal:



Pemetrexed

As with methotrexate, pemetrexed exhibits some structural similarity to folic acid. One key difference that distinguishes pemetrexed from folic acid and methotrexate is that pemetrexed contains a pyrrolo[2,3-d]pyrimidine bicyclic core, characterized by a five-member ring fused with a six-member ring, rather than the dual six-member rings found in the pteridine cores of folic acid and methotrexate. After synthesizing pemetrexed, the Princeton group collaborated with researchers at Eli Lilly to test the new compound for antifolate activity, and the results soon revealed that pemetrexed acts as a potent inhibitor of TS. Princeton and Eli Lilly (together, "Lilly") thereafter began exploring for related compounds with similar activity as TS inhibitors and pursuing preclinical and clinical studies to evaluate promising candidates for therapeutic use.

Among the many pemetrexed-related compounds that were developed and tested, pemetrexed itself proved to be the best therapeutic candidate and ultimately won FDA approval in 2004 for use in treating mesothelioma and then in 2008 for treatment of non-small cell lung cancer.

Lilly manufactures and distributes pemetrexed under the brand name Alimta®.

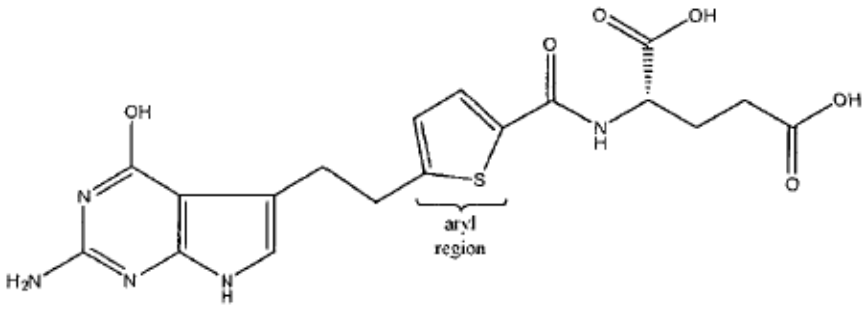
B. Lilly's Patents

In conjunction with their antifolate research, the inventors filed U.S. patent application 07/448,742 (the "'742 application") on December 11, 1989. The '742 application disclosed and claimed pemetrexed as well as a broader group of related antifolates containing pemetrexed's characteristic core structure. The '742 application, though itself eventually abandoned, founded a family of related applications that ultimately yielded the three patents at issue in this appeal.

The '932 patent issued on September 6, 1994, from an application filed on March 22, 1991, claiming priority from the '742 application through a series of continuations. Claim 3 of the '932 patent claims pemetrexed. Claims 1, 2, and 7 are generic, Markush-style claims that encompass pemetrexed as well as other structurally related antifolates.

U.S. Patent 5,028,608 (the "'608 patent") issued on July 2, 1991, from an application filed on May 24, 1990, as a continuation-in-part of the '742 application. The '608 patent claims, *inter alia*, an antifolate (the "'608 Compound") that differs from pemetrexed only in its aryl region—the '608 Compound contains a five-member thiophene ring in place of pemetrexed's six-member benzene ring.[3]

[3] The parties use the expressions "thienyl group" and "phenyl group"; accordingly, we will also.

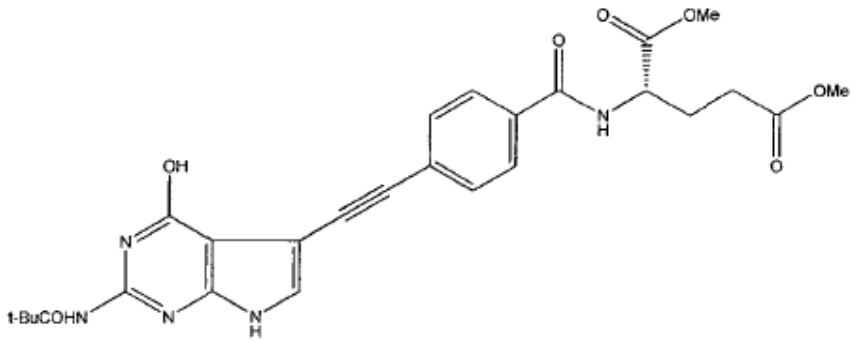


The '608 Compound

U.S. Patent 5,248,775 (the "'775 patent") issued on September 28, 1993, from an application filed January 31, 1992, as a continuation-in-part of the application that led to the '932 patent. The '775 patent discloses a family of chemical intermediates that can be used to make a variety of antifolates, including pemetrexed, that contain a pyrrolo[2,3-d]pyrimidine bicyclic core. Among others, the '775 patent claims a compound (the "'775 Intermediate") that is used as an intermediate in one method for making pemetrexed. The '775 Intermediate differs from pemetrexed in having a carbon-carbon triple bond in its bridge region and three protecting groups at substituent positions in its core and glutamate domains.[4] In addition,

[4] Protecting groups are selectively reversible chemical modifications often used to prevent unwanted side reactions during multistep organic syntheses. In general, protecting groups are introduced at one or more particularly reactive positions in a complex molecule to stabilize or "protect" those parts of the molecule during later chemical manipulation of other target sites. Once a desired modification has been achieved elsewhere in the molecule, the protecting groups can be removed to reconstitute a reactive substituent at each protected position. The '775 Intermediate contains a pivaloyl protecting group (denoted "*t*-BuCO") in its core region and two methyl ester protecting groups (denoted "OMe") in its glutamate domain.

Examples 6 and 10 of the '775 patent disclose reduction and hydrolysis reactions, respectively, that could together be used to derive pemetrexed from the '775 Intermediate. '775 patent col. 9, l. 59 – col. 10, l. 5; col. 12, ll. 51–66.



The '775 Intermediate

The '932, '608, and '775 patents were assigned to the Trustees of Princeton University and exclusively licensed to Eli Lilly. The '608 and '775 patents have expired, but the '932 patent remains in effect until July 24, 2016, due to a patent term extension of over four years to compensate for delays in the regulatory approval of Alimta®. *See* 35 U.S.C. § 156. Lilly holds a further six months of market exclusivity over pemetrexed pursuant to 21 U.S.C. § 355a.

C. District Court Proceedings

Teva Parenteral Medicines, Inc., Barr Laboratories, Inc., and APP Pharmaceuticals, LLC (collectively, "Teva") filed abbreviated new drug applications ("ANDAs") seeking approval to manufacture and sell generic versions of Alimta® before the expiration of the '932 patent. Those ANDAs each included a Paragraph IV certification asserting that the '932 patent was invalid, unenforceable, or would not be infringed by the proposed generic products.

See 21 U.S.C. § 355(j)(2)(A)(vii)(IV). In response, Lilly brought suit in the United States District Court for the District of Delaware, alleging infringement of claims 1, 2, 3, and 7 of the '932 patent pursuant to 35 U.S.C. § 271(e)(2)(A).

During the proceedings, Teva conceded infringement but maintained that the asserted claims of the '932 patent were invalid for obviousness-type double patenting over two earlier-issued claims: (1) claim 3 of the '608 patent, which claims the '608 Compound, and (2) claim 7 of the '775 patent, which claims the '775 Intermediate.

Regarding the '608 Compound, Teva presented evidence that various antifolates known at the time of the invention contained a phenyl group in the aryl position, and Teva contended that it would have been obvious to incorporate a phenyl group into the '608 Compound consistent with such "conventional wisdom" in the field. As to the '775 Intermediate, Teva argued that the asserted claims of the '932 patent constitute a use for the '775 Intermediate—*i.e.*, synthesizing pemetrexed—that had already been disclosed in the specification of the earlier-issued '775 patent, rendering such claims invalid for obviousness-type double patenting. In addition, Teva argued that even ignoring the specification of the '775 patent, an ordinarily skilled chemist presented with the '775 Intermediate immediately would have recognized pemetrexed as an obvious potential end product.

Following a bench trial, the district court rejected Teva's arguments and held that claims 1, 2, 3, and 7 of the '932 patent were not invalid for obviousness-type double patenting over either the '608 Compound or the '775 Intermediate. *Eli Lilly*, 2011 WL 3236037, at *2–4. Specifically, the district court rejected Teva's "focus[] only on the aryl region of the ['608 Compound] in isolation,"

finding persuasive other evidence indicating that one of skill in the art would have pursued changes outside of the aryl region to improve TS inhibition and would have avoided introducing a phenyl group into the '608 Compound based on previous reports of toxicity with analogous antifolate structures. *Id.* at *4. The district court also declined to hold the asserted claims invalid over the '775 Intermediate. The court held (1) that the '932 patent "does not claim the use of the ['775 Intermediate]," so the teachings from the '775 patent's specification were inapplicable to its obviousness-type double patenting analysis, and (2) that pemetrexed would not have been obvious from the structure of the '775 Intermediate because, among many possible choices, a person of ordinary skill would not have made the structural changes necessary to derive pemetrexed. *Id.* at *2–3.

Accordingly, the district court entered a final judgment in Lilly's favor and enjoined approval of Teva's proposed generic pemetrexed products until after the expiration of Lilly's exclusive rights on January 24, 2017. *Eli Lilly & Co. v. Teva Parenteral Meds. Inc.*, Nos. 08-335-GMS, 08-384-GMS, 08-860-GMS, and 09-272-GMS (D. Del. Aug. 22, 2011) (Am. Final J. Order), ECF No. 115. Teva timely appealed, and we have jurisdiction under 28 U.S.C. § 1295(a)(1).[5]

[5] After trial, individual appellant APP Pharmaceuticals supplemented its ANDA to add a further Paragraph IV certification relating to a particular pemetrexed dosage form. Appellees initiated a new infringement suit to address APP's supplemental ANDA filing, and the parties agreed to be bound in that action by any judgment in the antecedent litigation. Accordingly, following its August 22, 2011, judgment in favor of Lilly, the district court entered a stipulated judgment against APP as to its supplemental ANDA filing. *Eli Lilly & Co. v. APP Pharm., LLC*, No. 11-628-GMS (D. Del. Oct. 17, 2011)

DISCUSSION

The sole disputed issue in this appeal is whether the asserted claims of the '932 patent are invalid for obviousness-type double patenting. The doctrine of obviousness-type double patenting is intended to "prevent the extension of the term of a patent . . . by prohibiting the issuance of the claims in a second patent not patentably distinct from the claims of the first patent." *In re Longi*, 759 F.2d 887, 892 (Fed. Cir. 1985). "A later patent claim is not patentably distinct from an earlier claim if the later claim is obvious over, or anticipated by, the earlier claim." *Eli Lilly & Co. v. Barr Labs., Inc.*, 251 F.3d 955, 968 (Fed. Cir. 2001). As with statutory obviousness under 35 U.S.C. § 103, obviousness-type double patenting is an issue of law premised on underlying factual inquiries. *Otsuka Pharm. Co. v. Sandoz, Inc.*, 678 F.3d 1280, 1290 (Fed. Cir. 2012). Accordingly, we consider the district court's ultimate conclusion on obviousness-type double patenting without deference, but we review any predicate findings of fact for clear error. *Id.*

A. The '608 Compound

We first address the '608 Compound. Claim 3 of the '608 patent recites the '608 Compound, an antifolate that is structurally related to pemetrexed but never advanced to clinical use. As described, the '608 patent issued in July 1991, more than three years before the '932 patent issued with its claims covering pemetrexed. The question, then, is whether the asserted claims of the '932 patent are

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(Stipulation and J. Order), ECF No. 10. We granted APP's unopposed motion to consolidate that action with the related matters on appeal. *Eli Lilly & Co. v. Teva Parenteral Meds. Inc.*, Nos. 2011-1561, -1562, 2012-1037 (Fed. Cir. Nov. 29, 2011) (Order Consolidating Appeals).

patentably distinct from Lilly's earlier-issued claim to the '608 Compound.

On appeal, Teva contends that the district court erred by failing to invalidate the claims for obviousness-type double patenting. Teva's primary argument concerns the appropriate legal standard for evaluating obviousness-type double patenting. Relying on our decision in *Amgen Inc. v. Hoffmann-La Roche Ltd.*, 580 F.3d 1340 (Fed. Cir. 2009), Teva contends that the correct analysis involves only the *differences* between the claims at issue, so that any features held in common between the claims—in this case, all but the aryl regions of the '608 Compound and pemetrexed—would be excluded from consideration. In *Amgen*, we explained that once the differences between claims are established, the obviousness-type double patenting analysis entails determining "whether the differences in subject matter between the claims render the claims patentably distinct." 580 F.3d at 1361. But those differences cannot be considered in isolation—the claims must be considered as a whole. *Amgen* expressly noted that "[t]his part of the obviousness-type double patenting analysis is analogous to an obviousness analysis under 35 U.S.C. § 103." *Id.* And just as § 103(a) requires asking whether the claimed subject matter "as a whole" would have been obvious to one of skill in the art, so too must the subject matter of the '932 claims be considered "as a whole" to determine whether the '608 Compound would have made those claims obvious for purposes of obviousness-type double patenting. *Gen. Foods Corp. v. Studiengesellschaft Kohle mbH*, 972 F.2d 1272, 1278 (Fed. Cir. 1992) ("Claims must be read as a whole in analyzing a claim of double patenting."). Thus, the district court did not err by examining whether one of ordinary skill in the art would have been motivated to modify the '608 Com-

pound to create pemetrexed, considering the compounds as a whole.

On the merits, Teva also disputes the district court's findings and conclusions in view of the evidence presented. Specifically, Teva contends (1) that placing a phenyl group in the aryl position represented inescapable "conventional wisdom" in the field based on antifolate structures known at the time, (2) that the district court erred in finding that one of skill in the art would have considered a phenyl group undesirable within the structural context of the '608 Compound, and (3) that the district court erred by discounting its theory that principles of bioisosterism[6] would have suggested replacing the '608 Compound's thienyl with phenyl.

Lilly defends the district court's findings, arguing that the evidence amply supported the court's view that a person of ordinary skill would not have had reason to manipulate the '608 Compound to produce pemetrexed. Lilly contended, and the district court found, that a chemist at the time seeking to develop TS inhibitors would have looked specifically to data from that emerging sub-discipline rather than attempting to emulate the "conventional" antifolates highlighted by Teva. In fact, according to Lilly, the contemporary experience and understanding in the TS field not only would have failed to suggest substituting a phenyl group into the '608 Compound, but earlier reports of associated inefficacy and toxicity would have actively dissuaded one from doing so. Finally, Lilly maintains that bioisosterism provides no

[6] Bioisosterism refers to a process that involves replacing one atom or functional group in a molecule with another of similar chemical, physical, or electronic properties in hopes that the substitution will result in similar or enhanced activity.

basis for predicting whether a substituted compound will prove more or less effective than the original.

Based on the evidence presented at trial, we discern no error in the district court's findings or its conclusion that the asserted claims are patentably distinct from the '608 Compound. In the chemical context, we have held that an analysis of obviousness-type double patenting "requires identifying some reason that would have led a chemist to modify the earlier compound to make the later compound with a reasonable expectation of success." *Otsuka*, 678 F.3d at 1297. Here, the district court considered the parties' arguments and evidence, particularly their conflicting expert testimony as to how an ordinarily skilled chemist presented with the '608 Compound would have been motivated to proceed at the time. In its decision, the court credited Lilly's evidence to find that "the ways in which a person of ordinary skill in the art would modify [the '608 Compound] would not result in pemetrexed." *Eli Lilly*, 2011 WL 3236037, at *4. We owe that finding considerable deference on appeal, and we see no clear error based on the record before us. Moreover, a complicated compound such as the '608 Compound provides many opportunities for modification, but the district court did not find that substituting a phenyl group into the aryl position was the one, among all the possibilities, that would have been successfully pursued. Thus, absent any motivation to derive pemetrexed from the '608 Compound or reason to expect success in doing so, the district court correctly concluded that the asserted claims were not invalid for obviousness-type double patenting over the '608 Compound.

B. The '775 Intermediate

As with the '608 Compound, Lilly's claim covering the '775 Intermediate was issued before the '932 patent. As

an independent basis for holding the '932 claims invalid for obviousness-type double patenting, Teva similarly contends that pemetrexed is not patentably distinct from the '775 Intermediate.

Teva's arguments regarding the '775 Intermediate can be summarized as follows. According to Teva, the '775 Intermediate is used to make pemetrexed, and Lilly disclosed that use in the '775 patent. By later claiming pemetrexed itself, Teva maintains, the '932 patent appropriates a previously disclosed use for a previously patented compound, which renders the asserted '932 claims invalid for obviousness-type double patenting under a line of our precedent including *In re Byck*, 48 F.2d 665 (CCPA 1931), and *Sun Pharmaceutical Industries, Ltd. v. Eli Lilly & Co.*, 611 F.3d 1381 (Fed. Cir. 2010). We conclude that Teva's reliance on *Byck*, *Sun*, and related cases is unsound and that the district court did not err when it upheld the asserted claims of the '932 patent over the '775 Intermediate.

As a general rule, obviousness-type double patenting determinations turn on a comparison between a patentee's earlier and later claims, with the earlier patent's written description considered only to the extent necessary to construe its claims. *E.g.*, *In re Avery*, 518 F.2d 1228, 1232 (CCPA 1975). This is so because the non-claim portion of the earlier patent ordinarily does not qualify as prior art against the patentee and because obviousness-type double patenting is concerned with the improper extension of exclusive rights—rights conferred and defined by the *claims*. The focus of the obviousness-type double patenting doctrine thus rests on preventing a patentee from claiming an obvious variant of what it has previously *claimed*, not what it has previously *disclosed*. *See generally Gen. Foods*, 972 F.2d at 1280–82.

The cases on which Teva relies represent a limited exception to this customary framework. In *Byck*, our predecessor court considered obviousness-type double patenting rejections against claims to an insulated coil made up of a conductive winding material coated with an "infusible, flexible, phenol-fatty oil composition." 48 F.2d at 665. The patent applicant, Byck, had earlier obtained a patent claiming the same phenol-oil composition, and the prior art disclosed similar coils coated with other insulating compositions. *Id.* at 665–66. Moreover, Byck's earlier patent had discussed using his phenol-oil composition to produce adherent insulating films on metal substrates. *Id.* at 666. The court concluded that, in view of the prior art and Byck's earlier patent, the pending claims were drawn not to a second, distinct invention "but only . . . an obvious use of the composition there patented." *Id.* The court explained:

> It would shock one's sense of justice if an inventor could receive a patent upon a composition of matter, setting out at length in the specification the useful purposes of such composition, manufacture and sell it to the public, and then prevent the public from making any beneficial use of such product by securing patents upon each of the uses to which it may be adapted.

Id. Thus, even though Byck's earlier patent was not prior art, the court held that its disclosure of an intended use for the previously claimed phenol-oil composition could be used in the obviousness-type double patenting analysis to reject a later claim directed to that use of the same compound. *Id.* at 667.

A trio of our more recent decisions applied the same exception to allow limited consideration of teachings in an earlier-issued patent's specification. In *Geneva Pharma-*

ceuticals, Inc. v. GlaxoSmithKline PLC, 349 F.3d 1373 (Fed. Cir. 2003), the plaintiff had patented methods of using clavulanic acid to mitigate antibiotic resistance when treating bacterial infections. The plaintiff then acquired a preexisting patent that claimed clavulanic acid compositions and disclosed their utility for treating patients harboring antibiotic-resistant bacteria. *Id.* at 1377, 1385. In that case, we relied on *Byck* to hold the plaintiff's method claims invalid for double patenting: "Our predecessor court recognized that a claim to a method of using a composition is not patentably distinct from an earlier claim to the identical composition in a patent disclosing the identical use." *Id.* at 1385–86 (citing *Byck*, 48 F.2d at 666). Similarly, in *Pfizer, Inc. v. Teva Pharmaceuticals USA, Inc.*, 518 F.3d 1353, 1363 (Fed. Cir. 2008), we held claims to methods of administering a particular anti-inflammatory drug invalid for obviousness-type double patenting where the patentee's earlier patent claimed the drug itself and disclosed the same methods of administering the drug. And in *Sun*, the patent holder had developed an antiviral compound, gemcitabine, that also proved useful for treating cancer. An initial patent issued with composition claims covering gemcitabine as well as method claims drawn to using the drug to treat herpesvirus infections; also mentioned in the specification, but not claimed, was gemcitabine's potential anticancer activity. *Sun*, 611 F.3d at 1383. As in *Geneva* and *Pfizer*, we held the patentee's subsequent claims to methods of using gemcitabine to treat cancer invalid for double patenting, looking to the disclosure of anticancer utility in the first patent's specification. *Id.* at 1386–89.

Byck, *Geneva*, *Pfizer*, and *Sun* thus "address the situation in which an earlier patent claims a compound, disclosing the utility of that compound in the specification, and a later patent claims a method of using that

compound for a particular use described in the specification of the earlier patent." *Sun*, 611 F.3d at 1389. Furthermore, in each of those cases, the claims held to be patentably indistinct had in common the same compound or composition—that is, each subsequently patented "use" constituted a, or the, disclosed use for the previously claimed substance.

That is not the case before us. Rather than a composition and a previously disclosed use, the claims at issue recite two separate and distinct chemical compounds: the '775 Intermediate and pemetrexed, differing from each other in four respects. That alone suffices to undermine Teva's argument regarding the '775 Intermediate, for the asserted claims of the '932 patent do not recite a *use* of the *same compound*, but a *different compound* altogether. The cited cases therefore do not govern.

Furthermore, even if one composition could somehow be considered a "use" of another, the record makes clear that, unlike in the cited cases, Lilly's successive claims are wholly independent of one another. For example, pemetrexed and the '775 Intermediate exhibit substantial structural differences, and neither embodies or subsumes the other. Moreover, pemetrexed can be made via any of several synthetic techniques, many of which do not involve the '775 Intermediate. The '775 Intermediate and pemetrexed are thus separate and independent chemical compounds; Lilly's original claim to the '775 Intermediate offered no protection for pemetrexed, and its claims to pemetrexed do not incorporate or require use of the '775 Intermediate. The particular concerns motivating our prior decisions are thus absent here. In sum, although the specification of the '775 patent discloses one method for deriving pemetrexed using the '775 Intermediate, we agree with the district court's conclusion that that disclo-

sure does not render Lilly's claims to pemetrexed invalid for obviousness-type double patenting.

As the district court recognized, the correct double patenting analysis in this case turns on an evaluation of what Lilly has claimed, not what it has disclosed. Putting aside the teachings in the '775 patent's specification, Teva's double patenting contentions evaporate. The evidence of record characterizes the '775 Intermediate as a versatile compound from which a skilled chemist could derive innumerable final products beyond just pemetrexed, and the district court found that there would have been "no reason" to pursue pemetrexed among the various other avenues that would have been considered possible at the time. We see no error in the district court's findings or its conclusion on this point, and, although not controlling, we further note that its analysis comports with PTO guidelines on the patentability of related products. *See* Manual of Patent Examining Procedure § 806.05(j) (8th ed., rev. 8, 2010) ("[A]n intermediate product and a final product can be shown to be distinct inventions if the intermediate and final products are mutually exclusive inventions (not overlapping in scope) that are not obvious variants, and the intermediate product as claimed is useful to make other than the final product as claimed."). In sum, the district court correctly concluded that the asserted claims are not invalid for obviousness-type double patenting over the '775 Intermediate.

C. Objective Indicia of Nonobviousness

Finally, Lilly presented evidence at trial that pemetrexed exhibited unexpected clinical properties and achieved considerable commercial success. But the district court disregarded that evidence, holding that "secondary considerations are not relevant to the analysis of

invalidity for obviousness-type double patenting." *Eli Lilly*, 2011 WL 3236037, at *1 n.1. For that proposition, the district court relied on a footnote in *Geneva*, in which we remarked only that inquiry into secondary considerations is not required in every obviousness-type double patenting analysis, not that such evidence is off-limits or irrelevant. *See Geneva*, 349 F.3d at 1378 n.1. The district court's categorical repudiation of Lilly's evidence was therefore erroneous. When offered, such evidence should be considered; a fact-finder "must withhold judgment on an obviousness challenge until it has considered all relevant evidence, including that relating to the objective considerations." *In re Cyclobenzaprine Hydrochloride Extended-Release Capsule Patent Litig.*, 676 F.3d 1063, 1079 (Fed. Cir. 2012). Given that the district court nonetheless rejected Teva's double patenting arguments, however, such error was, in this instance, harmless.

CONCLUSION

In view of the foregoing, we hold that the asserted claims of the '932 patent are not invalid for obviousness-type double patenting over claim 3 of the '608 patent or claim 7 of the '775 patent. We have considered each of Teva's remaining arguments and find them unpersuasive. Accordingly, the judgment of the district court is

AFFIRMED

United States Court of Appeals for the Federal Circuit

2009-1020, -1096

AMGEN INC.,

Plaintiff-Cross Appellant,

v.

F. HOFFMANN-LA ROCHE LTD, ROCHE DIAGNOSTICS GMBH, and HOFFMANN-LA ROCHE INC.,

Defendants-Appellants.

Lloyd R. Day, Jr., Day Casebeer Madrid & Batchelder LLP, of Cupertino, California, argued for plaintiff-cross appellant. With him on the brief were David M. Madrid, Linda A. Sasaki-Baxley and Jonathan D. Loeb. Of counsel on the brief were Stuart L. Watt, Wendy A. Whiteford and Erica S. Olson, Amgen Inc., of Thousand Oaks, California; Cecilia H. Gonzalez and Margaret D. MacDonald, Howrey LLP, of Washington, DC. Of counsel was Christian E. Mammen, Day Casebeer Madrid & Batchelder LLP, of Cupertino, California.

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Appealed from: United States District Court for the District of Massachusetts

Judge William G. Young

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F. HOFFMAN-LA ROCHE LTD, ROCHE DIAGNOSTICS GMBH, and HOFFMAN-LA ROCHE INC.,

Defendants-Appellants.

Appeals from the United States District Court for the District of Massachusetts in case no. 05-CV-12237, Judge William G. Young.

DECIDED: September 15, 2009

Before MAYER, CLEVENGER, and SCHALL, Circuit Judges.

SCHALL, Circuit Judge.

This is a patent case. Amgen Inc. ("Amgen") is the owner of U.S. Patent Nos. 5,441,868 ("the '868 patent"), 5,547,933 ("the '933 patent"), 5,618,698 ("the '698 patent"), 5,756,349 ("the '349 patent"), and 5,955,422 ("the '422 patent"). The patents relate to the production of the protein erythropoietin ("EPO") using recombinant deoxyribonucleic acid ("DNA") technology. All five patents share a common specification and descend from Application No. 06/675,298 ("the '298 application"), which issued as now-expired U.S. Patent No. 4,703,008 ("the '008 patent").

In November of 2005, Amgen brought a declaratory judgment action against F. Hoffman-La Roche Ltd, Roche Diagnostics GMBH, and Hoffman-La Roche Inc. ("Roche") in the United States District Court for the District of Massachusetts, alleging that Roche's product, MIRCERA®, would infringe Amgen's five patents if imported into the United States. Roche responded with affirmative defenses and counterclaims that Amgen's asserted patents were invalid and not infringed. In October of 2008, following rulings of summary judgment and judgment as a matter of law ("JMOL"), and a jury trial, the court entered judgment that the '868, '933, '698, and '422 patents were infringed and not invalid, and that the '349 patent was neither invalid nor infringed. Amgen, Inc. v. F. Hoffman-La Roche Ltd., No. 05-12237-WGY, slip op. at 1–2 (D. Mass. Oct. 17, 2008) ("Final Judgment"). Accordingly, the court granted Amgen declaratory relief and permanently enjoined Roche from marketing MIRCERA® in the United States. Id.

Roche appeals from several rulings of the court. Specifically, Roche challenges the court's rulings that none of the claims-in-suit were invalid for obviousness-type double patenting, Amgen, Inc. v. F. Hoffman-La Roche Ltd., 581 F. Supp. 2d 160, 173, 186, 192 (D. Mass. 2008); and that claim 1 of the '422 patent was neither anticipated nor indefinite and infringed, id. at 194, 198, 204. Roche also challenges the court's rulings sustaining the jury's verdict that claims 3, 7, and 8 of the '933 patent were neither anticipated nor indefinite; and that claims 3, 7, and 8 of the '933 patent, claims 1 and 2 of the '868 patent, and claims 6–9 of the '698 patent were literally infringed.

Amgen cross-appeals from the court's rulings that claim 7 of the '349 patent and claims 9, 11, and 14 of the '933 patent were not infringed. Amgen also cross-appeals

from the court's ruling vacating the jury's verdict that claim 12 of the '933 patent was infringed under the doctrine of equivalents ("DOE"). Id. at 205.

We vacate the court's grant of summary judgment and of JMOL to Amgen of no invalidity for obviousness-type double patenting of claims 3, 7, and 8 of the '933 patent; claim 1 of the '422 patent; and claim 7 of the '349 patent. We therefore remand to the district court for an obviousness-type double patenting analysis of those claims in light of this opinion. We also vacate the court's grant of JMOL to Roche of non-infringement of claim 7 of the '349 patent and remand to the district for a new trial on infringement of that claim. We affirm the court's judgment in all other respects.

BACKGROUND

I

As noted, the patents at issue relate to the production of EPO using recombinant DNA technology. EPO, which is a naturally occurring protein (or polypeptide), stimulates the production of red blood cells through a process called erythropoiesis. Amgen, 581 F. Supp. 2d at 168. The production of EPO is useful in treating blood disorders characterized by a low hematocrit, which is a low ratio of red blood cells to total blood cells. Id. One such blood disorder is anemia. In a clinical study performed in 1979–80, Dr. Eugene Goldwasser attempted to treat anemic patients with EPO isolated from human urine. Id. at 168. He had limited success, however, because the EPO recovered from urine was low-yield, of high impurity, and unstable. Id. at 168–69.

Rather than attempting to obtain EPO from natural sources such as human urine, a team of Amgen researchers led by Dr. Fu-Kuen Lin identified a means of producing usable amounts of EPO via recombinant DNA technology. Id. at 169. The common

specification of Amgen's patents describes the production of recombinant EPO. To produce EPO, Dr. Lin made an expression vector carrying the human EPO DNA sequence he had discovered. See '422 patent col.11 ll.1–10. An expression vector is a circular piece of DNA that is inserted into a host cell to produce a protein. Id. col.2 ll.36–54; figs.2 & 3. He then injected, or transfected, host Chinese hamster ovary ("CHO") cells with the expression vector. Id. col.11 ll.5–10

The transfected CHO cells use the EPO DNA sequence to form a protein with the 166 amino acid sequence of EPO shown in Figure 6 of the common specification of the patents. Id. fig.6. Prior to secretion of EPO from the cell, the final amino acid, or the C-terminal amino acid, of the 166 amino acid sequence is cleaved off, leaving a 165 amino acid protein. Amgen, 581 F. Supp. 2d at 170. Also prior to secretion, carbohydrates are attached to certain sites on EPO in a process called glycosylation, which results in a glycoprotein. Id. Thus, Dr. Lin's transfected CHO cells ultimately yield a glycoprotein with the 165 amino acid sequence of human EPO. Id. Recombinant EPO produced in this manner can bind to the EPO receptor and stimulate erythropoiesis. Id. at 169.

On November 30, 1984, Amgen submitted to the United States Patent and Trademark Office ("PTO") the '298 application, from which Amgen's five patents descend. Id. at 180. The '298 application originally contained claims drawn to, inter alia, DNA sequences, host cells, processes of producing polypeptides, polypeptides, and pharmaceutical compositions. Id. In 1986, the PTO subjected Amgen's '298 application to a restriction requirement, which identified claims drawn to DNA, cells, polypeptides, and pharmaceutical compositions as each directed to patentably distinct

subject matter. Id. The PTO examiner stated that, under 35 U.S.C. § 121, restriction to one of the following inventions was required:

> I. Claims 1–13, 16, 39–41, 47–54, and 59, drawn to polypeptide, classified in Class 260, subclass 112.
>
> II. Claims 14, 15, 17–36, 58, and 61–72, drawn to DNA, classified in Class 536, subclass 27.
>
> III. Claims 37–38, drawn to plasmid, classified in Class 435, subclass 317.
>
> IV. Claims 42–46, drawn to cells, classified in Class 435, subclass 240.
>
> V. Claims 55–57, drawn to pharmaceutical composition, classified in Class 435, subclass 177.
>
> VI. Claim 60, drawn to assay, classified in Class 435, subclass 6.[1]

Id. In response, Amgen elected to prosecute Group II claims in the '298 application, which were drawn to DNA and host cells. Id. Ultimately, the '298 application issued on October 27, 1987, as the now-expired '008 patent entitled "DNA Sequences Encoding Erythropoietin." The '008 patent claimed DNA sequences encoding EPO and host cells transformed or transfected with those DNA sequences. '008 patent col.40 ll.17–68.

On October 23, 1987, subsequent to the restriction requirement but before the '008 patent issued, Amgen prosecuted the claims withdrawn from the '298 application in continuation application 07/113,178 ("the '178 application") and continuation application 07/113,179 ("the '179 application"). Amgen, 581 F. Supp. 2d at 180. After a series of

[1] The PTO maintains the United States Patent Classification System ("USPC") for organizing patent documents by common subject matter. Each subject matter division in the USPC includes a major component called a class and a minor component called a subclass. A class generally delineates one technology from another. Subclasses delineate processes, structural features, and functional features of the subject matter encompassed within the scope of a class. Every class has a unique alphanumeric identifier, as do most subclasses. See generally Manual of Patent Examining Procedure ("MPEP") § 902.01 (8th ed., July 2008 rev.) (describing the Manual of Classification).

intervening continuation applications and interferences, the ’933 patent eventually emerged from the ’178 application, while the ’422, ’349, ’868, and ’698 patents eventually emerged from the ’179 application. As a result, all five patents-in-suit (’933, ’422, ’349, ’868, and ’698) claim priority to the ’298 application, share a common specification, and have the title “Production of Erythropoietin” or “Production of Recombinant Erythropoietin.”

In broad strokes, the ’933 patent claims recombinant EPO, a pharmaceutical composition comprising recombinant EPO, and methods of treating kidney dialysis patients by administering pharmaceutical compositions comprising recombinant EPO. ’933 patent col.38 l.17–col.40 l.11. The ’422 patent claims a pharmaceutical composition comprising recombinant EPO. ’422 patent col.38 l.37–41. Because the ’933 and ’422 patents both cover recombinant EPO and pharmaceutical compositions thereof, the parties refer to them collectively as the “product patents.” The ’349 patent claims the process of producing recombinant EPO in vertebrate cells capable of producing EPO at a specific rate. ’349 patent col.38 ll.34–36. The ’868 patent claims the process of producing recombinant EPO in mammalian cells, ’868 patent col.38 ll.24–37, while the ’698 patent claims the process of producing recombinant EPO in cells comprised of amplified DNA encoding EPO, ’698 patent col.38 ll.50–65. Because the ’868 and ’698 patents both cover processes of producing recombinant EPO, the parties refer to them collectively as the “process patents.”

Based on these patents, Amgen has developed two erythropoiesis-stimulating agent (“ESA”) drugs, EPOGEN® and Aranesp®, to treat anemia and anemia-related diseases. Amgen, 581 F. Supp. 2d at 171. The key difference between these drugs is

how frequently patients must take them. Id. The Food and Drug Administration ("FDA") has approved EPOGEN for weekly dosing and Aranesp for bi-weekly dosing to anemic patients. Id.

Roche sought to introduce into the United States market its own ESA drug, MIRCERA®, which it manufactures overseas. Id. at 172. The active ingredient of MIRCERA® is continuous erythropoietin receptor activator ("CERA"). CERA is formed via a chemical reaction that bonds polyethylene glycol ("PEG") to recombinant EPO produced by CHO cells. Id. The attachment of one PEG molecule to EPO, also known as pegylation of EPO, results in the displacement of a single hydrogen atom from the amino acid lysine or from the beginning amino acid (i.e., the N-terminus) of EPO. Id. Pegylation of a therapeutic protein, such as EPO, can expand the drug's life in the body and reduce levels of toxicity, allowing for extended dosing intervals. Id. As a result, MIRCERA® has received FDA approval for once-monthly dosing to anemic patients. Id.

II

Amgen sought a declaratory judgment that, if imported into the United States, MIRCERA® would infringe the '933, '422, '868, '698, and '349 patents. Specifically, Amgen alleged infringement of claims 3, 7–9, 11, 12, and 14 of the '933 patent, claim 1 of the '422 patent, claim 7 of the '349 patent, claims 1–2 of the '868 patent, and claims 6–9 of the '698 patent. Roche responded with affirmative defenses and counterclaims that Amgen's asserted patents were invalid and not infringed.

After discovery, the district court granted Amgen summary judgment of no obviousness-type double patenting of any of the asserted claims in the '933, '422, and '349 patents over the claims in the '008 patent based on the protection from such

challenge afforded by 35 U.S.C. § 121. Amgen, 581 F. Supp. 2d at 173. Over cross-motions for summary judgment, the district court also granted Amgen summary judgment that claim 1 of the '422 patent was infringed. Id. at 167, 204. The parties tried the remaining infringement and invalidity claims to a jury. After Roche presented its case-in-chief to the jury, the court granted Amgen JMOL that claim 1 of the '422 patent was not anticipated. Id. at 198. After conducting hearings outside the presence of the jury and reviewing the trial record, the court granted Amgen JMOL of no obviousness-type double patenting of (1) the asserted claims in the '933, '422, and '349 patents over the claims in the '868 and '698 patents, id. at 192, and (2) the asserted claims in the '868 and '698 patents over the claims in the '008 patent, id. at 186. The court also granted Roche JMOL that claims 9, 11, and 14 of the '933 patent and claim 7 of the '349 patent were not infringed.

On October 23, 2007, the jury rendered a verdict in favor of Amgen, upholding the validity of all the claims-in-suit. The jury found that Roche literally infringed claims 3, 7, and 8 of the '933 patent; claims 1 and 2 of the '868 patent; and claims 6–9 of the '698 patent. Over Roche's motions for renewed JMOL and a new trial, the court sustained these jury findings. The jury also found that claim 12 of the '933 patent was infringed under the DOE. Granting Roche's motion for renewed JMOL relating to claim 12 of the '933 patent, the court vacated the jury verdict of infringement and entered judgment of non-infringement as to that claim. Id. at 205. Subsequently, the court granted Amgen a declaratory judgment and a permanent injunction, enjoining Roche from marketing MIRCERA® in the United States. Final Judgment, slip op. at 1–2. Roche appeals the described rulings and findings in favor of Amgen, while Amgen cross-appeals the

described rulings in favor of Roche. We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(1).

DISCUSSION

In this appeal, we are presented with issues involving obviousness-type double patenting, anticipation, indefiniteness, and infringement relating to the '933, '422, '349, '868, and '698 patents.

I

Obviousness-Type Double Patenting

For purposes of explaining its rulings relating to obviousness-type double patenting, the district court grouped the '933, '422, and '349 patents, and the '868 and '698 patents separately. We shall do the same.

A

The court granted Amgen summary judgment of no obviousness-type double patenting of the asserted claims of the '933, '422, and '349 patents over the claims of the '008 patent.[2] Amgen, 581 F. Supp. 2d at 179. The court also granted Amgen JMOL of no obviousness-type double patenting of the asserted claims of the '933, '422, and '349 patents over the claims of the '868 and '698 patents.[3] Id. at 192. The court

[2] Before the district court, Roche asserted that claims 3, 7, and 8 of the '933 patent; claim 1 of the '422 patent; and claim 7 of the '349 patent are invalid for obviousness-type double patenting over claim 27 of the '008 patent. Generally, as noted, claims 3, 7, and 8 of the '933 patent are drawn to recombinant EPO; claim 1 of the '422 patent is drawn to a pharmaceutical composition comprising recombinant EPO; and claim 7 of the '349 patent is drawn to a process of producing recombinant EPO. Claim 27 of the '008 patent is drawn to CHO cells comprising DNA encoding EPO.

[3] Before the district court, Roche asserted that claims 3, 7, and 8 of the '933 patent; claim 1 of the '422 patent; and claim 7 of the '349 patent are invalid for obviousness-type double patenting over claims 1 and 2 of the '868 patent and claims 6–

arrived at these rulings after concluding that the '933, '422, and '349 patents were shielded from double patenting by 35 U.S.C. § 121. Id.

Section 121, entitled "Divisional applications," provides in its third sentence:

> A patent issuing on an application with respect to which a requirement for restriction under this section has been made, or on an application filed as a result of such a requirement, shall not be used as a reference either in the Patent and Trademark Office or in the courts against a divisional application or against the original application or any patent issued on either of them, if the divisional application is filed before the issuance of the patent on the other application.

35 U.S.C. § 121. The third sentence of § 121 is a safe harbor provision that protects a divisional application, the original application, or any patent issued on either of them from validity challenges based on a patent issuing on an application subjected to a restriction requirement or on an application filed as a result of a restriction requirement. In effect, the third sentence of § 121 shields patents that issue on applications filed as a result of a restriction requirement from double patenting invalidation. See Applied Materials, Inc. v. Advanced Semiconductor Materials America, Inc., 98 F.3d 1563, 1568 (Fed. Cir. 1996) ("[W]hen two or more patents result from a PTO restriction requirement, whereby aspects of the original application must be divided into separate applications, § 121 insulates the ensuing patents from the charge of double patenting.").

The court concluded that the '933, '422, and '349 patents were entitled to the § 121 safe harbor because they had descended from the '178 and '179 applications, both of which had been filed in response to a PTO-imposed restriction requirement. The court observed that "[a]fter the PTO imposed the 1986 restriction requirement," Amgen "filed two divisional applications, the '178 and '179, which ultimately issued as

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9 of the '698 patent. Generally, as noted, claims 1 and 2 of the '868 patent and claims 6–9 of the '698 patent are drawn to processes of producing recombinant EPO.

the ’933, ’422, and ’349 patents.” Amgen, 581 F. Supp. 2d at 179. The court found that the “undisputed evidence show[ed] that both the ’178 and ’179 applications were filed as a result of the PTO’s 1986 restriction requirement.” Id. Thus, the court deemed the ’933, ’422, and ’349 patents immune from a charge of obviousness-type double patenting over the ’008, ’868, and ’698 patents. Id. at 182, 192.

On appeal, Roche contends that the district court erroneously determined that § 121’s safe harbor insulates the ’933 and ’422 patents from obviousness-type double patenting invalidation over the ’008, ’868, and ’698 patents. Roche’s Br. 34. Roche’s main contention is that § 121 cannot shield the ’933 and ’422 patents because they issued from solely continuation applications to which § 121 is inapplicable. Id. Roche contends that § 121 applies exclusively to divisional applications and patents issuing therefrom. Roche emphasizes that the statute, entitled “Divisional applications,” requires on its face that the later patent must issue from “a divisional application” or the “original application.” Id. at 35. Because the ’933 and ’422 patents issued from the ’178 and ’179 continuation applications, Roche contends they are not entitled to the § 121 safe harbor. Id. at 36.

Amgen argues that the district court correctly held that § 121 protects the asserted claims of the ’933 and ’422 patents from obviousness-type double patenting invalidation over the claims of the ’008, ’868, and ’698 patents. Amgen’s Br. 39. Amgen relies on our decisions in Applied Materials, Inc. v. Advanced Semiconductor Materials Am., Inc., 98 F.3d 1563, 1568 (Fed. Cir. 1996), and Symbol Technologies, Inc. v. Opticon, Inc., 935 F.2d 1569 (Fed. Cir. 1991), for the proposition that patents that issue directly from continuation applications, as the ’933 and ’422 patents did, are

eligible for § 121 protection so long as the other requirements of § 121 are met. Id. at 41. In Amgen's view, the only § 121 requirement at issue is the "divisional application" requirement, and Amgen contends that the '178 and '179 applications meet that requirement. Id. Amgen urges the court to look to an application's substance—not its designation—to determine whether it qualifies as a divisional application under § 121's safe harbor. Id. at 42. In support of this approach, Amgen relies on the definition of "divisional application" in § 201.06 of the Manual of Patent Examining Procedure ("MPEP"), which provides:

> A later application for an independent or distinct invention, carved out of a pending application and disclosing and claiming only subject matter disclosed in the earlier or parent application, is known as a divisional application or "division."

MPEP § 201.06 (8th ed., July 2008 rev.). According to Amgen, the '178 and '179 applications were later applications, which were (1) carved out of a pending application (the '298 application), (2) contained claims to distinct and independent inventions, and (3) disclosed and claimed only subject matter disclosed in the earlier or parent application. Amgen's Br. 41. Thus, Amgen argues, because the '178 and '179 applications, from which the '933 and '422 patents descend, conform to the PTO's definition of a "divisional application" in MPEP § 201.06, the '933 and '422 patents are entitled to the § 121 safe harbor. Id.

Amgen also noted at oral argument that Roche did not contest the no obviousness-type double patenting ruling relating to the '349 patent in its reply brief, even though Amgen cross-appealed the court's ruling that the '349 patent was not infringed by MIRCERA®. See Oral Arg. 33:10–35, June 4, 2009, available at

http://oralarguments.cafc.uscourts.gov/searchscript.asp (search case no. 2009-1020). Amgen urges us to treat Roche's omission as waiver. Id.

We address this last point of Amgen's first. Amgen correctly points out that Roche did not challenge the § 121 protection afforded to the '349 patent in its reply brief. When questioned at oral argument about this omission, counsel for Roche stated, "We won on non-infringement, so you can't appeal when you win." Oral Arg. 37:00–27. While a challenge to the no invalidity ruling of the '349 patent would have been a proper response to Amgen's cross-appeal of the non-infringement ruling of the '349 patent, we do not deem Roche's failure to raise this alternative ground for affirmance as waiver in this case. See Independence Park Apartments v. United States, 449 F.3d 1235, 1240 (Fed. Cir. 2006) (explaining that appellees are in the position of defending a favorable judgment and, under certain circumstances, may not be "required to raise all possible alternative grounds for affirmance to avoid waiving any of those grounds"); cf. Harris Corp. v. Ericsson Inc., 417 F.3d 1241, 1251 (Fed. Cir. 2005) ("An appellate court retains case-by-case discretion over whether to apply waiver."). Therefore, given our ruling on infringement of the '349 patent, see infra Part V.B, we will rule on whether the '349 patent is entitled to the § 121 safe harbor.

B

We review a district court's grant of summary judgment without deference. See In re Metoprolol Succinate Patent Litig., 494 F.3d 1011, 1015 (Fed. Cir. 2007). Summary judgment is appropriate if there are no genuine issues of material fact so that the moving party is entitled to judgment as a matter of law. See Fed. R. Civ. P. 56(c). In other words, the court properly grants summary judgment if no reasonable jury could

return a verdict for the non-moving party. See Anderson v. Liberty Lobby, Inc., 477 U.S. 242, 248 (1986). In assessing the evidence, we draw all reasonable inferences in favor of the non-moving party. BMC Res., Inc. v. Paymentech, L.P., 498 F.3d 1373, 1378 (Fed. Cir. 2007).

We apply the standard of review for JMOL rulings used in the relevant regional circuit. DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc., 567 F.3d 1314, 1329 (Fed. Cir. 2009). In this case, that is the First Circuit. In the First Circuit, a district court's grant of JMOL is reviewed without deference. Id. (applying First Circuit law). Under First Circuit law, JMOL is warranted when, viewing the evidence in the light most favorable to the non-moving party, "there is no legally sufficient evidentiary basis for a reasonable jury to find for the [non-moving] party." Guilloty Perez v. Pierluisi, 339 F.3d 43, 50 (1st Cir. 2003) (quotation marks omitted).

We review a court's conclusion on double patenting without deference because "double patenting is a matter of what is claimed, and therefore is treated like claim construction upon appellate review." Georgia-Pacific Corp. v. U.S. Gypsum Co., 195 F.3d 1322, 1326 (Fed. Cir. 1999). "[Obviousness-type] double patenting is a judicially created doctrine adopted to prevent claims in separate applications or patents that do not recite the 'same' invention, but nonetheless claim inventions so alike that granting both exclusive rights would effectively extend the life of patent protection." Perricone v. Medicis Pharm. Corp., 432 F.3d 1368, 1373 (Fed. Cir. 2005).

We conclude that, because the '178 and '179 applications were filed as continuation—rather than divisional—applications, the '933, '422, and '349 patents do not receive the benefit of § 121. We reach this conclusion in light of our opinion in

Pfizer, Inc. v. Teva Pharmaceuticals USA, Inc., 518 F.3d 1353 (Fed. Cir. 2008). The Pfizer decision addressed whether a patent that issued from a continuation-in-part application—rather than a divisional application—could receive the protection of the § 121 safe harbor. 518 F.3d at 1358–62. Looking first to the statute, the court observed that § 121 on its face refers to "divisional application[s]." Id. at 1360. Turning to the legislative history, the court observed that a House Report also referred specifically to "divisional application[s]." Id. Notably absent from the legislative history, in the court's view, was a suggestion "that the safe-harbor provision was, or needed to be, directed at anything but divisional applications." Id. at 1361. From there, the court "conclude[d] that the protection afforded by section 121 to applications (or patents issued therefrom) filed as a result of a restriction requirement is limited to divisional applications." Id. at 1362. Accordingly, the court decided that the § 121 safe harbor did not apply to the patent before it, which issued from a continuation-in-part application. Id.

We are persuaded by the reasoning in Pfizer that the § 121 safe harbor provision does not protect continuation applications or patents descending from only continuation applications. The statute on its face applies only to divisional applications,[4] and a

[4] The statute is entitled "Divisional applications" and refers specifically to "divisional applications" in its text:

> § 121. Divisional applications
>
> If two or more independent and distinct inventions are claimed in one application, the Director may require the application to be restricted to one of the inventions. If the other invention is made the subject of a divisional application which complies with the requirements of section 120 of this title it shall be entitled to the benefit of the filing date of the original application. A patent issuing on an application with respect to which a requirement for restriction under this section has been made, or on an application filed as

continuation application, like a continuation-in-part application, is not a divisional application. See Gerber Garment Tech., Inc. v. Lectra Sys., Inc., 916 F.2d 683, 688 (Fed. Cir. 1990) ("To gain the benefits of Section 121 there outlined, [the patentee] must have brought its case within the purview of the statute, i.e., it must have limited the claims in its divisional application to the non-elected invention or inventions." (emphasis added)). We recognize that, unlike a continuation-in-part application, a continuation application can satisfy the definition of a "divisional application" in MPEP § 201.06. That is because a continuation-in-part application adds subject matter not disclosed in the earlier application, see MPEP § 201.08, whereas continuation and divisional applications are limited to subject matter disclosed in the earlier application, see MPEP §§ 201.06, 201.07. This distinction, however, does not justify departing from a strict application of the plain language of § 121, which affords its benefits to "divisional application[s]." See 35 U.S.C. § 121 (sheltering from attack "a divisional application or . . . the original application or any patent issued on either of them, if the divisional application is filed before the issuance of the patent on the other application" (emphases added)); see also Geneva Pharm., Inc. v. GlaxoSmithKline PLC, 349 F.3d 1373, 1382

> a result of such a requirement, shall not be used as a reference either in the Patent and Trademark Office or in the courts against a divisional application or against the original application or any patent issued on either of them, if the divisional application is filed before the issuance of the patent on the other application. If a divisional application is directed solely to subject matter described and claimed in the original application as filed, the Director may dispense with signing and execution by the inventor. The validity of a patent shall not be questioned for failure of the Director to require the application to be restricted to one invention.

35 U.S.C. § 121 (emphases added).

(Fed. Cir. 2003) ("Given the potential windfall [a] patent term extension could provide to a patentee, this court applies a strict test for application of § 121." (footnote omitted)).

Our conclusion that the § 121 safe harbor protects patents descending from divisional applications, but not from continuation applications exclusively, is consistent with our decisions in Applied Materials and in Symbol Technologies. In both of those cases, we affirmed § 121 protection of patents which issued directly from continuation applications. See Applied Materials, 98 F.3d at 1568–69; Symbol Technologies, 935 F.2d at 1579–81. In both cases, however, the continuation applications, from which the protected patents issued, descended from divisional applications that were filed as a result of restriction requirements. See Applied Materials, 98 F.3d at 1568; Symbol Technologies, 935 F.2d at 1580. Our decisions in Applied Materials and Symbol Technologies thus establish that a patent need not have issued directly from a divisional application to receive § 121 protection. In other words, intervening continuation applications do not render a patent ineligible for § 121 protection so long as they descended from a divisional application filed as a result of a restriction requirement. Unlike the patents at issue in Applied Materials and Symbol Technologies, the '933, '422, and '349 patents issued from continuation applications, which descended from continuation applications exclusively, and not from divisional applications. Thus, Applied Materials and Symbol Technologies are of no help to Amgen's position that the '933, '422, and '349 patents deserve § 121 protection.

Furthermore, Amgen has not presented us with any persuasive reason as to why we should deem the '178 and '179 continuation applications divisional applications for purposes of § 121. Amgen does not dispute that it denominated the '178 and '179

applications continuations, that it checked the continuation application box on the submitted form, or that its applications met the PTO's definition of a continuation application in MPEP § 201.07. See Amgen's Br. 38, 42. Instead, Amgen argues that, because the '178 and '179 continuation applications could have been filed as divisional applications, we should treat them as such for purposes of § 121. While this argument convinced the district court to regard the '178 and '179 continuation applications as divisional applications, we are not likewise convinced. We decline to construe "divisional application" in § 121 to encompass Amgen's properly filed, properly designated continuation applications.

Because the '178 and '179 applications were filed as continuation applications instead of divisional applications, we hold that the '933, '422, and '349 patents do not receive the protections afforded by § 121's safe harbor. As a result, we vacate the grant of summary judgment and of JMOL of no obviousness-type double patenting of the '933, '422, and '349 patents and remand to the district court the question of whether the asserted claims of those patents are invalid for obviousness-type double patenting over the claims of the '008, '868, and '698 patents.[5]

In this context, we now address Roche's contention that a new time frame for obviousness-type double patenting should apply in the district court on remand when it considers the validity of the '933, '422, and '349 patents, and in our review of the district

[5] We note that, because the '933 patent issued on August 20, 1996, which was before the issuance of the '698 patent on April 8, 1997, the '698 patent presumably cannot be used as an obviousness-type double patenting reference against the '933 patent on remand. See Georgia-Pacific, 195 F.3d at 1326 ("Under obviousness-type double patenting, a patent is invalid when it is merely an obvious variation of an invention disclosed and claimed in an earlier patent by the same inventor." (emphasis added)).

court's decision on the validity of the '868 and '698 patents. Roche finds support for the new time frame in our recent decision in Takeda Pharmaceutical Co. v. Doll, 561 F.3d 1372 (Fed. Cir. 2009), which post-dates the district court's decision in this case.

C

Takeda presented the situation where a patent applicant sought to overcome a double patenting rejection of a process patent over a product patent by presenting post-invention evidence of alternative processes of making the product. 561 F.3d at 1375–76. In 1974, Takeda Pharmaceutical Co. ("Takeda") filed a Japanese patent application disclosing a product (cephem compounds) and the process for making the product. Id. at 1373. Takeda obtained a patent on the product in 1981, and a patent on the process in 1996, both of which claimed priority to the 1974 application. Id. at 1373–74. During reexamination of the process patent, the PTO examiner rejected the claims of the process patent as patentably indistinct over the claims of the product patent, and, therefore, invalid for double patenting, a ruling which the Board of Patent Appeals and Interferences affirmed. Id. at 1374. The District Court for the District of Columbia disagreed, however, based primarily on MPEP § 806.05(f), which provides that process and product claims are patentably distinct if "the product as claimed can be made by another materially different process." Takeda Pharm. Co. v. Dudas, 511 F. Supp. 2d 81, 96 (D.D.C. 2007), vacated, Takeda, 561 F.3d at 1378. The district court held that, because viable, alternative processes for making the product existed in 2002 and 2005, the process and product were patentably distinct, and, therefore, not invalid for obviousness-type double patenting. Takeda, 511 F. Supp. 2d at 97.

The question on appeal to this court in Takeda was whether, when an issued patent claims a product and discloses, but does not claim, a process for making that product, the patentee, when later seeking a patent on the disclosed process, may present evidence of post-invention, alternative processes that produce the patented product, in order to show that the process and product are patentably distinct. 561 F.3d at 1375–76.[6] The answer was a qualified yes. We concluded that "the relevant time frame for determining whether a product and process are 'patentably distinct' should be at the filing date of the secondary application," which is the later application for the process. Id. at 1377. We reasoned that "[t]he secondary application . . . actually triggers the potential of an 'unjustified extension of patent term,'" which is one of the "policies underlying the double patenting doctrine." Id. That is because the patentee "essentially avers that the product and process are 'patentably distinct'" upon filing of the secondary application. Id. Accordingly, Takeda could "rely on subsequent developments in the art up to January 8, 1990, the filing date of the secondary application, in order to show a patentable distinction between the [product and process for making the product]." Id. at 1378. We thus held that Takeda could rely on alternative processes that were in existence prior to January 8, 1990, the date of the application for the process patent. Id. It could not, however, rely on processes that came into existence after January 8, 1990, which eliminated processes existing in 2002

[6] Takeda could overcome a double patenting rejection by presenting evidence that the product could be produced by alternative processes because "double patenting is not sustainable when the product can be fabricated by processes other than that secured by the issued process patent," In re Cady, 77 F.2d 106, 109 (CCPA 1935) (quotation marks omitted). This principle is embodied in MPEP § 806.05(f), which states that a product is patentably distinct from the process for making the product if "the product as claimed can be made by another materially different process."

and 2005, which did not exist before January 8, 1990. Id. Since the parties disputed whether alternative processes existed prior to the filing of the process patent, we remanded to the district court for a final obviousness-type double patenting decision. Id.

Roche contends that Takeda changed the time frame for an obviousness-type double patenting analysis. Roche's Resp. Ct. Req. 1. Roche hones in on the language in the Takeda opinion stating that "the relevant time frame for determining whether a product and process are 'patentably distinct' should be at the filing date of the secondary application." Id. at 2 (quoting Takeda, 561 F.3d at 1377). Given this language, Roche argues that it should be able to rely on evidence up to the filing date of "secondary application[s]" to show a lack of patentable distinctiveness in this case. Id. Roche contends that interpreting Takeda's holding so that only patentees can take advantage of post-invention developments to show a patentable distinction is manifestly unfair. Id. at 4. In Roche's view, if the patentee is to benefit from art that arises after the invention date, then an accused infringer is likewise benefitted. Id. In other words, Roche contends, Takeda must be a two-way street, benefitting the patentee and patent challenger alike. Thus, Roche argues that evidence arising up to the time of filing of the "secondary application[s]" (June 7, 1995, for the '933 patent; August 2, 1993, for the '422 patent; and June 6, 1995, for the '349 patent) should be considered (1) by the district court on remand in its obviousness-type double patenting analysis of the claims of the '933, '422, and '349 patents over the claims of the '008, '868, and '698 patents, and (2) by this court in its review of the obviousness-type double patenting analysis of the '868 and '698 patents over the '008 patent.

Amgen responds that Takeda did not change the time frame of the obviousness-type double patenting inquiry in all cases. Amgen's Resp. Ct. Req. 1. Amgen reads Takeda to only allow the patentee an opportunity to rely on post-invention evidence. Id. Under this reading, Takeda permits Amgen to show post-invention developments in the art that confirm patentable distinctiveness. Id. at 2. Amgen contends that, if § 121 does not shield the '933, '422, and '349 patents from obviousness-type double patenting invalidation, then Takeda permits Amgen to present evidence of alternative processes for making the products claimed in the '933, '422, and '349 patents up to the filing dates of those patents. Id. at 5. In short, Amgen contends, Takeda is a one-way street, benefitting only the patentee.

Roche's view that Takeda changed the time frame of the obviousness-type double patenting inquiry in all cases collides with 35 U.S.C. § 120. Section 120, entitled "Benefit of earlier filing date in the United States," recites in pertinent part:

> An application for patent for an invention disclosed in the manner provided by the first paragraph of section 112 of this title in an application previously filed in the United States, . . . which is filed by an inventor or inventors named in the previously filed application shall have the same effect, as to such invention, as though filed on the date of the prior application, if filed before the patenting or abandonment of or termination of proceedings on the first application or on an application similarly entitled to the benefit of the filing date of the first application and if it contains or is amended to contain a specific reference to the earlier filed application.

35 U.S.C. § 120 (emphases added). In short, § 120 provides that a qualifying "application for patent for an invention . . . shall have the same effect . . . as though filed on the date of the prior application." This court has "repeatedly recognized [the] principle" that the "plain and unambiguous meaning of section 120 is that any application fulfilling the requirements therein 'shall have the same effect' as if filed on

the date of the application upon which it claims priority." Transco Prods. Inc. v. Performance Contracting, Inc., 38 F.3d 551, 556 (Fed. Cir. 1994). "The 'effect' described in section 120 is the benefit of the earlier filing date—i.e., the benefit for purposes of priority and section 112 . . . ." Cooper Techs. Co. v. Dudas, 536 F.3d 1330, 1342 (Fed. Cir. 2008). Thus, § 120 requires continuation applications to receive, at the very least, the benefits provided by the earlier filing date.

We cannot read Takeda in the manner for which Roche advocates without violating the plain language of 35 U.S.C. § 120. Section 120 requires that all five of Amgen's asserted patents ('933, '422, '349, '868, and '698) benefit from the effect of having been filed on the filing date of the '298 application, which is November 30, 1984. That means that Amgen's patents cannot be invalidated based on art arising after November 30, 1984. Consequently, we must reject Roche's contention that it should be able to show patentable indistinctiveness by relying on evidence up to the filing date of "secondary application[s]." Therefore, on remand, Roche may not rely on developments in the art subsequent to November 30, 1984, but prior to the filing dates of the '933 patent (June 7, 1995), '422 patent (August 2, 1993), and '349 patent (June 6, 1995), to show that that the '933, '422, and '349 patents are patentably indistinct over the '008 patent.

The question of impairment of a patentee's rights under § 120, as applied to foreign applicants via 35 U.S.C. § 119, did not arise in Takeda.[7] Rather, the Takeda

[7] Because the patents-at-issue in Takeda claimed priority to a Japanese patent application, they received the benefit of the earlier filing date under 35 U.S.C. § 119. Section 119 provides in relevant part: "An application for patent for an invention filed in this country by any person who has . . . previously regularly filed an application for a patent for the same invention in a foreign country . . . , shall have the same effect

decision conferred upon the patentee an additional benefit outside the mandate of § 120. Nevertheless, the Takeda court understood the interrelationship between § 120 and the timing rule it created. It recognized that the rule it crafted could "provide the patentee with the best of both worlds: the applicant can use the filing date as a shield, enjoying the earlier priority date in order to avoid prior art, and rely on later-developed alternative processes as a sword to defeat double patenting challenges." Takeda, 561 F.3d at 1377. Because of § 120, we read Takeda to stand for the limited proposition that an applicant can only rely on subsequent developments in the art up to the filing date of the "secondary application" in order to show that alternative processes to make the product render the product and the process for making that product patentably distinct.

The claims of the '933 and '422 product patents, which we hold are not protected by the § 121 safe harbor, are related to the claims of the '868 and '698 process patents, although not in precisely the same way the claims of the product and process patents were related in Takeda. That is to say, the '933 and '422 patents claim products which are made by processes claimed in the '868 and '698 patents. The '349 patent differs, however, from the '933 and '422 patents in its relationship to the '868 and '698 patents because it, like the '868 and '698 patents, claims a process of producing recombinant EPO. The relationship between the '933 and '422, but not the '349, claims and the '868 and '698 claims implicates the principle applied in Takeda, 561 F.3d at 1375, that "double patenting is not sustainable when the product can be fabricated by processes other than that secured by the issued process patent." In re Cady, 77 F.2d 106, 109

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as the same application would have if filed in this country on the date on which the application for patent for the same invention was first filed in such foreign country." 35 U.S.C. § 119. We also note that divisional applications filed in accordance with the requirements of § 120 benefit from an earlier filing date under 35 U.S.C. § 121.

(CCPA 1935) (quotation marks omitted); see also MPEP § 806.05(f). On remand, Takeda will permit Amgen, if it wishes to do so, to rely on alternative processes for making the products claimed in the '933 and '422 patents up to their filing dates to prove that the claims of those patents and the claims of the '868 and '698 patents are patentably distinct.[8] If Amgen pursues that course, Roche will be free to rely on subsequent developments in the art up to the filing dates of the '933 and '422 patents to prove that any alternative processes put forth by Amgen do not render the claims of the '933 and '422 patents and the claims of the '868 and '698 patents patentably distinct. In other words, Takeda is a two-way street within its own confines.

D

Turning now to the process patents, the court granted Amgen JMOL that claims 1 and 2 of the '868 patent and claims 6–9 of the '698 patent are not invalid for obviousness-type double patenting over claim 27 of the '008 patent. Amgen, 581 F. Supp. 2d at 186. Since the parties had agreed that the § 121 safe harbor did not apply to these claims, the court engaged in an obviousness-type double patenting analysis. Id. at 182–83. The court first construed the claims in the '008, '868, and '698 patents and then determined that there were patentable differences. Id.

The relevant claim of the '008 reference patent is claim 27, which depends from claims 7, 8, 11, and 23–25. Those claims recite as follows:

> 7. A purified and isolated DNA sequence consisting essentially of a DNA sequence encoding a polypeptide having an amino acid sequence sufficiently duplicative of that of erythropoietin to allow possession of the

[8] We note that, because claim 27 of the '008 patent recites host cells, the principle articulated in In re Cady, and embodied in MPEP § 806.05(f), does not apply to the obviousness-type double patenting analysis of the claims of the '933, '422, and '349 patents over claim 27 of the '008 patent.

> biological property of causing bone marrow cells to increase production of reticulocytes and red blood cells, and to increase hemoglobin synthesis or iron uptake.
>
> 8. A cDNA sequence according to claim 7.
>
> 11. A genomic DNA sequence according to claim 7.
>
> 23. A procaryotic or eucaryotic host cell transformed or transfected with a DNA sequence according to claim 7, 8, or 11 in a manner allowing the host cell to express said polypeptide.
>
> 24. A transformed or transfected host cell according to claim 23 which host cell is capable of glycosylating said polypeptide.
>
> 25. A transformed or transfected mammalian host cell according to claim 24.
>
> 27. A transformed or transfected CHO cell according to claim 25.

'008 patent col.40 ll.18–25, 30, 56–64, 67–68. In short, claim 27 recites a CHO cell—a mammalian cell capable of glycosylating EPO—transfected with a DNA sequence encoding a polypeptide having an amino acid sequence sufficiently duplicative of that of EPO to allow possession of the stated biological properties.

The asserted claims of the '868 patent are independent claim 1 and dependent claim 2, which recite as follows:

> 1. A process for the production of a glycosylated erythropoietin polypeptide having the in vivo biological property of causing bone marrow cells to increase production of reticulocytes and red blood cells comprising the steps of:
>
> (a) growing, under suitable nutrient conditions, mammalian host cells transformed or transfected with an isolated DNA sequence encoding human erythropoietin; and
>
> (b) isolating said glycosylated erythropoietin polypeptide therefrom.
>
> 2. The process according to claim 1 wherein said host cells are CHO cells.

’868 patent col.40 ll.24–37. In short, claims 1 and 2 cover a process of producing EPO that involves (a) growing mammalian (CHO in claim 2) cells transfected with DNA encoding EPO and (b) isolating from those cells glycosylated EPO having the stated biological properties in vivo (i.e., in live animals).

The asserted claims of the ’698 patent are independent claim 6 and dependent claims 7–9, which recite as follows:

> 6. A process for the production of a glycosylated erythropoietin polypeptide having the in vivo biological property of causing bone marrow cells to increase production of reticulocytes and red blood cells comprising the steps of:
>
> a) growing, under suitable nutrient conditions, vertebrate cells comprising amplified DNA encoding the mature erythropoietin amino acid sequence of FIG. 6; and
>
> b) isolating said glycosylated erythropoietin polypeptide expressed by said cells.
>
> 7. The process of claim 6 wherein said vertebrate cells further comprise amplified marker gene DNA.
>
> 8. The process of claim 7 wherein said amplified marker gene DNA is Dihydrofolate reductase (DHFR) gene DNA.
>
> 9. The process according to claims 2, 4 and 6 wherein said cells are mammalian cells.

’698 patent col.38 ll.50–64. Claims 6–9 of the ’698 patent are similar to claims 1 and 2 of the ’868 patent, but with an additional limitation that the host cells comprise amplified DNA (which includes a marker gene in claim 7 that is DHFR in claim 8).

The district court determined that the asserted claims in the ’868 and ’698 patents were patentably distinct from claim 27 of the ’008 patent. The court identified the following differences between the asserted claims of the ’868 and ’008 patents:

> “Unlike the asserted claims of the ’868 patent, none of the ’008 claims require: (1) that the recited host cell actually express any EPO polypeptide; (2) that the recited host cell actually express a glycosylated

> EPO polypeptide; (3) that the host cell be capable of producing an isolatable amount of a glycosylated EPO polypeptide; and (4) that any glycosylated EPO isolated from cells grown in culture have the stated in vivo function."

Amgen, 581 F. Supp. 2d at 184 (quoting Pl's Mem. Supp. No Obviousness-Type Double Patenting [Doc. 1310] at 41). Citing the declaration testimony of Amgen's expert, Dr. Harvey F. Lodish, the court deduced that "[s]imply having the starting material (which is reflected in the '008 patent) and knowing that, in theory, it can be used to create proteins is not the equivalent of having an actual process that successfully does so." Amgen, 581 F. Supp. 2d at 184. For similar reasons, the court concluded that claims 6–9 of the '698 patent were also patentably distinct over the claims of the '008 patent. Id. at 186. It determined that "[t]o be able to produce [a glycosylated, in vivo biologically active EPO product] from cells containing multiple copies of EPO DNA would have been novel to one skilled in the art at the time of the invention (even if the skilled artisan had possession of the product claimed in the '008 patent)." Id. The court also noted that the "PTO found the '868 and '698 claims patentably distinct from those in the '008 patent." Id. From there, the court concluded: "The credible evidence shows, and the Court so finds, that each invention claimed in the '868 and '698 asserted claims is patentably distinct from each invention claimed in the '008 patent." Id.

On appeal, Roche contends that claims 1 and 2 of the '868 patent and claims 6–9 of the '698 patent are obvious over claim 27 of the '008 patent. Roche's Br. 28. Roche characterizes claim 27 of the '008 patent as drawn to host cells capable of expressing a glycosylated EPO polypeptide that "allow[s] possession" of in vivo biological EPO activity. Id. In turn, it characterizes claims 1 and 2 of the '868 patent and claims 6–9 of the '698 patent as drawn to processes for producing in host cells

EPO "having" that stated activity. Id. Roche argues that this difference—"having" rather than "allow[ing] possession" of the stated activity—is not a patentable distinction. Id. In Roche's view, "having" in vivo activity is obvious if the originally claimed host cells "allow possession" of such activity. Id.

Roche also argues that claim 27 of the '008 patent created a reasonable expectation that an ordinarily skilled artisan could successfully practice the processes described in the asserted claims of the '868 and '698 patents. Id. at 31. Claim 27 of the '008 patent evidences on its face a reasonable expectation of success, according to Roche, because it "allow[s] possession" of biologically active EPO—the invention recited in the asserted claims of the '868 and '698 patents. Roche's Reply Br. 8. In addition, Roche argues that Dr. Lodish's testimony demonstrates that an ordinarily skilled artisan would have had a reasonable expectation of success of producing biologically active EPO in CHO cells. Id. Specifically, Roche highlights Dr. Lodish's testimony that a person of ordinary skill in the art could use claim 27's host cells to express a functional protein "without any difficulty." Id. (quoting Trial Tr. vol. 2, 109, Oct. 4, 2007). Lastly, Roche points to Dr. Lin's admission that he expected that the claim 27 host cells would have in vivo activity. Id. at 9–11 (citing Trial Tr. vol 12, 1884, Sept. 27, 2007).

Amgen responds that claim 27 of the '008 patent does not render obvious claims 1 and 2 of the '868 patent or claims 6–9 of the '698 patent. Amgen's Br. 25. Amgen argues that, contrary to Roche's contention, the host cells recited in claim 27 of the '008 patent do not inevitably produce the biologically active EPO required by the asserted claims of the '868 and '698 patents. Id. Amgen emphasizes that it is not the host cells

that "allow possession of" the stated biological activities; rather, it is the amino acid sequence encoded by the DNA recited in claim 27. Id. at 28. This distinction is critical, in Amgen's view, because there is a vast difference between a CHO cell equipped to produce a polypeptide whose amino acid sequence may permit possession of certain biological activity, and a process that produces a human glycoprotein that actually possesses that activity. Id. at 29. In other words, Amgen argues that while an EPO polypeptide sequence might be necessary, it alone would not be sufficient to produce an EPO product with the stated biological activities. Id.

Amgen also argues that an ordinarily skilled artisan in 1983–84 would not have reasonably expected the host cells in claim 27 of the '008 patent to produce the isolatable, biologically active EPO required by the asserted claims of the '868 and '698 patents. Id. at 32. According to Amgen, before 1984, it was not known whether any recombinant cell—including non-human CHO cells—could be engineered to produce a human EPO glycoprotein with in vivo biological activity. Id. Amgen points out that Dr. Lodish testified at trial that, before 1984, no one had successfully produced any recombinant human glycoprotein where the carbohydrate structures were required for biological activity. Id. at 33 (citing Trial Tr. vol. 2, 83, 102–103, Oct. 4, 2007). As a result, Amgen contends, skilled artisans could not have reasonably expected CHO cells to produce a biologically active EPO glycoprotein. Id.

We agree with the district court that claims 1 and 2 of the '868 patent and claims 6–9 of the '698 patent are not invalid for obviousness-type double patenting over claim 27 of the '008 patent. The obviousness-type double patenting analysis entails two steps: (1) construction of the claims in the earlier patent and the claim in the later

patent to identify any differences, and (2) determination of whether the differences in subject matter between the claims render the claims patentably distinct. See Eli Lilly & Co. v. Barr Labs., Inc., 251 F.3d 955, 968 (Fed. Cir. 2001). Accordingly, we begin our obviousness-type double patenting analysis, as the district court's analysis began, by construing the claims and identifying any differences. As mentioned, claim 27 of the '008 patent recites a CHO cell—a mammalian cell capable of glycosylating EPO—transfected with a DNA sequence encoding a polypeptide having an amino acid sequence sufficiently duplicative of that of EPO to allow possession of the stated biological properties. Claims 1 and 2 of the '868 patent and claims 6–9 of the '698 patent recite processes of producing EPO that involve (a) growing mammalian cells transfected with DNA encoding EPO and (b) isolating from those cells glycosylated EPO having the stated biological properties.

In essence, claim 27 of the '008 patent recites the starting materials necessary to execute the processes recited in the asserted claims of the '868 and '698 patents. The cells described in claim 27 are "capable of glycosylating" EPO and are transfected with DNA encoding a polypeptide "having an amino acid sequence sufficiently duplicative of that of erythropoietin to allow possession" of the stated biological activities. Neither of these limitations in claim 27, however, requires that the cells actually produce isolatable amounts of glycosylated EPO having the stated in vivo bioactivity. In contrast, the asserted claims of the '868 and '698 patents do require actual production of isolatable amounts of the in vivo biologically active EPO glycoprotein. In addition to possessing the transfected CHO cells recited in claim 27 of the '008 patent, an ordinarily skilled artisan practicing the asserted claims of the '868 and '698 patents would need to grow

those cells and isolate from them glycosylated EPO having the stated in vivo biological properties. Thus, the main difference between claim 27 of the '008 patent and the asserted claims of the '868 and '698 patents is the actual production of isolatable glycosylated EPO having the stated in vivo biological activities.

Next, we must determine whether this difference renders claims 1 and 2 of the '868 patent and claims 6–9 of the '698 patent patentably distinct over claim 27 of the '008 patent. In so doing, we ask whether the identified difference renders the claims of the '868 and '698 patents non-obvious to a person of ordinary skill in the art in light of the prior art. See In re Kaplan, 789 F.2d 1574, 1580 (Fed. Cir. 1986). This part of the obviousness-type double patenting analysis is analogous to an obviousness analysis under 35 U.S.C. § 103, except that the '008 patent is not considered prior art. See In re Longi, 759 F.2d 887, 892 n.4 (Fed. Cir. 1985) ("[A] double patenting of the obviousness type rejection is analogous to [a failure to meet] the non-obviousness requirement of 35 U.S.C. § 103, except that the patent principally underlying the double patenting rejection is not considered prior art." (quotation marks omitted)).

An obviousness determination requires that a skilled artisan would have perceived a reasonable expectation of success in making the invention in light of the prior art. See In re Kubin, 561 F.3d 1351, 1360 (Fed. Cir. 2009) ("[S]tated in the familiar terms of this court's longstanding case law, the record shows that a skilled artisan would have had a resoundingly 'reasonable expectation of success' in deriving the claimed invention in light of the teachings of the prior art."); In re O'Farrell, 853 F.2d 894, 904 (Fed. Cir. 1988) ("For obviousness under § 103, all that is required is a reasonable expectation of success."); see also Longi, 759 F.2d at 896–97 (holding that a patent

application was properly rejected for obviousness-type double patenting where the prior art references indicated a reasonable expectation of success). At trial, Roche had the burden of showing by clear and convincing evidence that a person of ordinary skill in the art in possession of the transfected CHO cells would have had a reasonable expectation of success in producing a recoverable amount of in vivo biologically active EPO. See Pharmastem Therapeutics, Inc. v. Viacell, Inc., 491 F.3d 1342, 1360 (Fed. Cir. 2007) ("[T]he burden falls on the patent challenger to show by clear and convincing evidence that a person of ordinary skill in the art would have had reason to . . . carry out the claimed process, and would have had a reasonable expectation of success in doing so."). Whether an ordinarily skilled artisan would have reasonably expected success in practicing the asserted claims of the '868 and '698 patents is measured as of the date of the inventions described in those patents.[9] See Life Techs., Inc. v. Clontech Labs., Inc., 224 F.3d 1320, 1326 (Fed. Cir. 2000) (measuring reasonable expectation of success from the perspective of a person of ordinary skill in the art at the time the invention was made).

In our view, the identified difference between the asserted claims of the '868 and '698 patents and claim 27 of the '008 patent renders the claims patentably distinct. We conclude that the actual production of glycosylated EPO having the stated in vivo biological activities would not have been obvious to an ordinarily skilled artisan in possession of the transfected CHO cells described in claim 27. That is because one of

[9] As discussed in Part I.C, we reject Roche's contention that, under Takeda, a reasonable expectation of success must be measured at the time of the filing of the '868 patent (August 15, 1995) and '698 patent (April 8, 1997) instead of their effective filing date (November 30, 1984). As explained above, to allow evidence of reasonable expectation of success up to the filing date of the '868 and '698 patents to invalidate Amgen's patents would violate 35 U.S.C. § 120.

ordinary skill in the art would not have reasonably expected to successfully produce isolatable quantities of glycosylated EPO having the stated biological activities in transfected CHO cells. Put most simply, CHO cells transfected with the EPO DNA sequence and the production of recombinant, in vivo biologically active EPO glycoprotein are patentably distinct inventions.

We reach this conclusion in light of Dr. Lodish's declarations and testimony at trial, which demonstrate that an ordinarily skilled artisan would not have reasonably expected success in producing recombinant, in vivo biologically active EPO in CHO cells. According to Dr. Lodish, there are at least two reasons why, prior to Dr. Lin's inventions, a person of ordinary skill in the art would not have had a reasonable expectation of practicing the asserted claims of the '868 and '698 patents: (1) an ordinarily skilled artisan would not have known which, if any, host cells would produce EPO with the carbohydrate structures necessary for its in vivo function; and (2) no one had successfully produced any recombinant glycoprotein with in vivo bioactivity where the carbohydrate structures were important for biological activity.[10] Trial Tr. vol. 2, 83, 102–04, Oct. 4, 2007. As a result, Dr. Lodish testified, an ordinarily skilled artisan would have had "great uncertainty in the ability to make recombinant EPO with carbohydrate chains for in vivo biological activity." Trial Tr. vol. 2, 96, Oct. 4, 2007. According to this testimony and declarations to the same effect, we conclude, like the district court

[10] Dr. Lodish testified that "with the EPO DNA in hand one would have no reasonable expectation of success in generating a recombinant mammalian cell to make an EPO protein with in vivo biological activity." Trial Tr. vol. 2, 83, Oct. 4, 2007. Dr. Lodish then explained the bases for his opinion: "[W]e didn't know any of the post-translational modifications that might have been important for EPO's function. We had no idea which cultured cells, if any, might make these, or introduce these modifications to the EPO. And finally, no one in this 1983 time frame had produced a recombinant glycoprotein with in vivo bioactivity." Id.

concluded, that a person of ordinary skill in the art would not have reasonably expected to successfully isolate from transfected CHO cells recombinant EPO glycoprotein having the stated biological activities.

Roche has pointed to no prior art reference or testimony that demonstrates that an ordinarily skilled artisan would have reasonably expected to successfully produce in CHO cells an in vivo biologically active glycoprotein, much less EPO, where the carbohydrate structures matter for biological activity. Instead, Roche emphasizes Dr. Lin's personal expectation and Dr. Lodish's testimony that claim 27's host cells would and do express glycosylated EPO having the stated biological properties. Neither piece of evidence persuades us that an ordinarily skilled artisan would have reasonably expected such results. First, Dr. Lin's personal expectations are not conclusive of an ordinarily skilled artisan's reasonable expectations. See Standard Oil Co. v. Am. Cyanamid Co., 774 F.2d 448, 454 (Fed. Cir. 1985) ("[O]ne should not go about determining obviousness under § 103 by inquiring into what patentees (i.e., inventors) would have known or would likely have done, faced with the revelations of references."). Second, Dr. Lodish's observation that the transfected CHO cells recited in claim 27 do produce glycosylated EPO having the stated biological activity is one of hindsight, not of reasonable expectation of success at the time of the invention. See KSR Int'l Co. v. Teleflex Inc., 550 U.S. 398, 421 (2007) ("A factfinder should be aware . . . of the distortion caused by hindsight bias and must be cautious of arguments reliant upon ex post reasoning."). Therefore, the district court did not erroneously conclude that no reasonable jury could have found that Roche proved by clear and convincing evidence a reasonable expectation of success.

For these reasons, we affirm the district court's grant of JMOL that claims 1 and 2 of the '868 patent and claims 6–9 of the '698 patent are not invalid for obviousness-type double patenting over claim 27 of the '008 patent.

II

Anticipation

Roche argues that claim 1 of the '422 patent and claims 3, 7, and 8 of the '933 patent are anticipated by EPO purified from urine by Dr. Goldwasser. See, e.g., Takaji Miyake, Charles K.-H Kung, & Eugene Goldwasser, Purification of Human Erythropoietin, 252 J. Biological Chemistry 5558 (1977).

A

The question of anticipation of claim 1 of the '422 patent was presented to the jury. However, after Roche, but before Amgen, presented its case-in-chief, Amgen moved for JMOL of no anticipation of claim 1 of the '422 patent, which the district court granted. Amgen, 581 F. Supp. 2d at 193. Claim 1 of the '422 patent recites:

> A pharmaceutical composition comprising a therapeutically effective amount of human erythropoietin and a pharmaceutically acceptable diluent, adjuvant or carrier, wherein said erythropoietin is purified from mammalian cells grown in culture.

'422 patent col.38 ll.36–41. As a matter of claim construction, the district court determined that claim 1 of the '422 patent required EPO to be "purified from mammalian cells grown in culture" ("the '422 source limitation").[11] Amgen, 581 F. Supp. 2d at 193.

[11] The court construed the source limitation "purified from mammalian cells grown in culture" in claim 1 of the '422 patent as "obtained in substantially homogeneous form from the mammalian cells, using the word from in the sense that it originates in the mammalian cells, without limitation to it only taking it directly out of the interior of the cells, which have been grown in the in vitro culture." Amgen, Inc. v. F. Hoffman-La Roche Ltd., 494 F. Supp. 2d 54, 65 (D. Mass. 2007) ("Markman").

In deciding the JMOL motion, the court found that "[t]he undisputed record revealed that none of the allegedly anticipatory art was 'purified from mammalian cells grown in culture.'" Id. In particular, the court determined that Dr. Goldwasser's study, which involved EPO purified from urine, did not involve EPO purified from mammalian cells grown in culture. Id. at 197. The court rejected Roche's contention that Dr. Goldwasser's urinary EPO anticipated claim 1 of the '422 patent because at least some of the recombinant EPO would be structurally indistinguishable from urinary EPO. Id. The court reasoned that EPO extracted from urine and synthetically engineered EPO differ in glycosylation patterns, specific activity, stability in the human body, and ability to be mass produced. Id. at 194–95. As a result, the court concluded that no reasonable jury could find that Roche had proved by clear and convincing evidence that claim 1 of the '422 patent was anticipated. Id. at 193.

The question of whether claims 3, 7, and 8 of the '933 patent are anticipated by EPO purified from urine by Dr. Goldwasser has a different procedural history than the issue of whether the Goldwasser prior art anticipated claim 1 of the '422 patent. The issue of anticipation of the claims of the '933 patent went to the jury, which returned a verdict of no invalidity. After the verdict was rendered, Roche moved for JMOL of invalidity and for a new trial. Denying Roche's motion for renewed JMOL and its motion for a new trial, the district court sustained the jury verdict of no anticipation of claims 3, 7, and 8 of the '933 patent. Trial Tr. vol. 20, 2981, Oct. 17, 2007. Those claims are as follows:

> 3. A non-naturally occurring glycoprotein product of the expression in a mammalian host cell of an exogenous DNA sequence comprising a DNA sequence encoding human erythropoietin said product possessing the in

> vivo biological property of causing bone marrow cells to increase production of reticulocytes and red blood cells.
>
> 7. The glycoprotein product according to claims 3, 4, 5 or 6 wherein the host cell is a non-human mammalian cell.
>
> 8. The glycoprotein product according to claim 7 wherein the non-human mammalian cell is a CHO cell.

'933 patent col.38 ll.26–31, 64–67. Independent claim 3, from which claims 7 and 8 depend, recites the relevant limitation. That limitation is a "product of . . . expression in a mammalian host cell," which is similar to the source limitation present in claim 1 of the '422 patent ("purified from mammalian cells grown in culture"). As a matter of claim construction, the district court determined that claim 3 of the '933 patent required EPO to be "the product of . . . expression in a mammalian host cell" ("the '933 source limitation").[12]

B

On appeal, Roche argues that the district court erred in its determination that Goldwasser's urinary EPO does not anticipate claim 1 of the '422 patent. Roche's Br. 43, 46. In making its anticipation argument, Roche relies on our statement in Amgen Inc. v. Hoechst Marion Roussel, Inc., 314 F.3d 1313, 1354 n.20 (Fed. Cir. 2003) ("TKT II"), that "a claimed product shown to be present in the prior art cannot be rendered patentable solely by the addition of source or process limitations." Starting from this premise, Roche argues that claim 1 of the '422 patent is not patentable based on the

[12] The court construed the relevant part of independent claim 3 of the '933 patent as follows: "a non-naturally occurring glycoprotein product of the expression in a mammalian host cell" is "a glycoprotein (not occurring in nature) that is the product of the expression in a mammalian host cell," where "expression means that the glycoprotein was produced in a cell and recovered from the cell culture." Markman, 494 F. Supp. 2d at 71–72 (footnote omitted).

addition of the source limitation ("purified from mammalian cells grown in culture") because the EPO recited in claim 1 of the '422 patent is the same as urinary EPO. Roche's Br. 44. In other words, Roche argues that, even though Dr. Goldwasser's EPO is purified from urine, it anticipates claim 1 of the '422 patent because the "purified from mammalian cells grown in culture" source limitation fails to impart novel structure onto EPO. Id. In Roche's view, it demonstrated by clear and convincing evidence that at least some EPO purified from mammalian cells grown in culture is structurally identical to Dr. Goldwasser's urinary EPO. Id. at 44. That evidence included testimony from Roche's expert, Dr. Carolyn Bertozzi, Amgen's publications, and Amgen's submissions to the FDA. Id. Because the source limitation does not impart novel structures onto EPO, Roche argues, the district court erred in concluding that urinary EPO does not anticipate claim 1 of the '422 patent.

Amgen argues that the district court did not err in granting JMOL that Dr. Goldwasser's urinary EPO does not anticipate claim 1 of the '422 patent because it is not "purified from mammalian cells grown in culture." Amgen's Br. 48. Amgen contends that, because the source limitation imparts both novel structure and function onto EPO, and because it is undisputed that Dr. Goldwasser's EPO was purified from urine, urinary EPO does not anticipate claim 1 of the '422 patent. Id. at 48–49. In support of the structural and functional distinctiveness of recombinant EPO, Amgen points to the declarations of its expert, Dr. Ajit Varki, and the specification and prosecution history of the '422 patent. Id. at 50. Amgen notes in particular that the specification shows that, due to different glycosylation patterns, recombinant EPO has a higher molecular weight and a different charge than urinary EPO. See '422 patent col.28 l.48–col.29 l.24.

As far as the ’933 patent is concerned, Roche argues that it is entitled to a new trial because the district court erred in its jury instructions. Roche’s Br. 46. The court, in error according to Roche, refused to deliver Roche’s requested jury instruction that “you can anticipate a product-by-process claim even if the product in the prior art is not made by the same process.” Roche’s Br. 46–47. Instead, the court instructed the jury that anticipation requires the prior art to possess “every single element of a particular claim,” Trial Tr., vol. 20, 3012, Oct. 17, 2007, and that “[a] product-by-process claim is a claim to a product made by the recited process,” Trial Tr. vol 23, 3171, Oct. 22, 2007. Those instructions, in Roche’s view, improperly implied to the jury that a process limitation absent from the prior art sufficed to avoid anticipation. Roche’s Br. 47.

Amgen responds that the district court delivered appropriate jury instructions on anticipation. Amgen’s Br. 57. In Amgen’s view, the court correctly instructed the jury to consider every limitation of the asserted claims of the ’933 patent, which gave effect to the source limitation. Id. Because the source limitation imparts structural and functional distinctiveness onto EPO, Amgen contends, it must define EPO recited in the asserted claims of the ’933 patent. Id. Amgen points out that, at trial, expert testimony, experimental data, and publications demonstrated differences in structure and function between urinary EPO and recombinant EPO. Id. at 50–54. Thus, Amgen contends, the jury instructions were correct as a matter of law. Id. at 57.

C

“A patent is presumed to be valid, and this presumption only can be overcome by clear and convincing evidence to the contrary.” Enzo Biochem, Inc. Gen-Probe Inc., 424 F.3d 1276, 1281 (Fed. Cir. 2005) (citation omitted). A patent claim is invalid by

reason of anticipation if "the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent." 35 U.S.C. § 102(a). Anticipation under § 102(a) generally requires the presence in the prior art of each and every limitation of the claimed invention. Advanced Display Sys., Inc. v. Kent State Univ., 212 F.3d 1272, 1282 (Fed. Cir. 2000).

It has long been the case that an old product is not patentable even if it is made by a new process. See Gen. Elec. Co. v. Wabash Appliance Corp., 304 U.S. 364, 373 (1938) ("Wabash") ("[A] patentee who does not distinguish his product from what is old except by reference, express or constructive, to the process by which he produced it, cannot secure a monopoly on the product by whatever means produced."); Cochrane v. Badische Anilin & Soda Fabrik, 11 U.S. 293, 311 (1884) ("BASF") ("While a new process for producing [the product] was patentable, the product itself could not be patented even though it was a product made [by an artificial process] for the first time."); SmithKline Beecham Corp. v. Apotex Corp., 439 F.3d 1312, 1317 (Fed. Cir. 2006) ("It has long been established that one cannot avoid anticipation by an earlier product disclosure by claiming the same product . . . as produced by a particular process."); In re Thorpe, 777 F.2d 695, 697 (Fed. Cir. 1985) ("If the product in a product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a difference process."); Tri-Wall Containers, Inc. v. United States, 408 F.2d 748, 750 (CCPA 1969) ("It is well established that a product as made by a new process is not patentable unless the product itself is new.").

However, a new product may be patented by reciting source or process limitations so long as the product is new and unobvious. See Wabash, 304 U.S. at 373 ("[I]n some instances a claim may validly describe a new product with some reference to the method of production . . . ."); BASF, 111 U.S. at 311 (determining that "an old article" made by a new process was not patentable); In re Luck, 476 F.2d 650, 653 (CCPA 1973) ("[I]t is well established that product claims may include process steps to wholly or partially define the claimed product."); In re Brown, 459 F.2d 531, 535 (CCPA 1972) ("[I]t is the patentability of the product claimed and not of the recited process steps which must be established."); In re Pilkington, 411 F.2d 1345, 1348 (CCPA 1969) ("[P]atentability of a claim to a product does not rest merely on a difference in the method by which that product is made. Rather, it is the product itself which must be new and unobvious.").

We begin the anticipation analysis with the '422 patent. In that connection, the first question we must answer is whether, as a matter of claim construction, the district court erred in determining that claim 1 of the '422 patent claimed a product reciting a source limitation. Amgen, 581 F. Supp. 2d at 194. We conclude that the court did not err. The reason is that, by its plain terms, claim 1 of the '422 patent claims a product with a source limitation. See TKT II, 314 F.3d at 1329 ("[T]he limitation 'purified from mammalian cells grown in culture' in claim 1 [of the '422 patent] clearly limits the source of the EPO used in the claimed 'pharmaceutical composition.'"). Indeed neither party argues otherwise.

The question we must next address is whether the production of EPO by recombinant technology resulted in a new product, so that claim 1 was not anticipated

by the urinary EPO of Dr. Goldwasser. In other words, does the source limitation "purified from mammalian cells grown in culture" distinguish recombinant EPO from Dr. Goldwasser's urinary EPO? See SmithKline Beecham, 439 F.3d at 1315; In re Luck, 476 F.2d at 653. We see no error in the district court's grant of JMOL in favor of Amgen. The court had before it the specification and prosecution history of the '422 patent, both of which refer to studies indicating that recombinant EPO had a higher molecular weight and different charge than urinary EPO due to differences in carbohydrate composition. '422 patent col.28 l.48–col.29 l.24. The prosecution history also contains a declaration from Amgen's expert, Dr. Richard D. Cummings, explaining that recombinant EPO can be distinguished from urinary EPO based on its carbohydrate content. At trial, Amgen's expert, Dr. Varki, testified at length regarding differences in the carbohydrate composition of recombinant EPO and urinary EPO. Based on this evidence, the presumption of patent validity, and Roche's burden of clear and convincing evidence, we conclude that the court did not err in determining a reasonable jury could only have concluded that EPO "purified from mammalian cells grown in culture" is a new product claimed with reference to its source. Therefore, we affirm the district court's grant of JMOL to Amgen of no anticipation of claim 1 of the '422 patent.

D

We turn now to Roche's claim that an erroneous jury instruction by the district court entitles it to a new trial on the issue of whether Dr. Goldwasser's urinary EPO anticipated claims 3, 7, and 8 of the '933 patent. As mentioned, Roche contends that the jury found no anticipation of the claims of the '933 patent based on the false premise

that the absence of the source limitation from the prior art sufficed to avoid anticipation. We also previously noted that the source limitation "product of . . . expression in a mammalian host cell" recited in independent claim 3, from which claims 7 and 8 depend, is similar to the source limitation present in claim 1 of the '422 patent ("purified from mammalian cells grown in culture").

We review decisions on motions for a new trial under the law of the regional circuit, which is the First Circuit in this case. DePuy Spine, 567 F.3d at 1334. The First Circuit reviews the district court's denial of a motion for a new trial for manifest abuse of discretion. Seahorse Marine Supplies, Inc. v. P.R. Sun Oil Co., 295 F.3d 68, 82 (1st Cir. 2002). We review "the legal sufficiency of jury instructions on an issue of patent law without deference to the district court."[13] Broadcom Corp. v. Qualcomm Inc., 543 F.3d 683, 697 (Fed. Cir. 2008) (quotation marks omitted). "A jury verdict will be set aside, based on erroneous jury instructions, if the party seeking to set aside the verdict can establish that those instructions were legally erroneous, and that the errors had prejudicial effect." NTP, Inc. v. Research In Motion, Ltd., 418 F.3d 1282, 1311 (Fed. Cir. 2005) (quotation marks omitted). Accordingly, "a party seeking to alter a judgment

[13] There may be some question as to whether this court reviews jury instructions relating to patent law under our own law or regional circuit law. Compare, e.g., Broadcom Corp. v. Qualcomm Inc., 543 F.3d 683, 697 (Fed. Cir. 2008) (reviewing a challenge to jury instructions under Federal Circuit law), with Kinetic Concepts, Inc. v. Blue Sky Med. Group, Inc., 554 F.3d 1010, 1021 (Fed. Cir. 2009) ("Challenges to jury instructions are reviewed under the law of the regional circuit where the district court sits." (quotation marks omitted)). Since our review of jury instructions does not seem to substantially differ from that of the First Circuit, we apply our law here. See Seahorse Marine, 295 F.3d at 76 ("We review jury instructions de novo, bearing in mind that the district court's refusal to give a particular instruction constitutes reversible error only if the requested instruction was (1) correct as a matter of substantive law, (2) not substantially incorporated into the charge as rendered, and (3) integral to an important point in the case." (quotation marks omitted)).

based on erroneous jury instructions must establish that (1) it made a proper and timely objection to the jury instructions, (2) those instructions were legally erroneous, (3) the errors had prejudicial effect, and (4) it requested alternative instructions that would have remedied the error." Id. at 1311–12 (quotation marks omitted).

Roche requested the following jury instruction: "You can anticipate a product-by-process claim even if the product in the prior art is not made by the same process." The district court did not give that instruction. Rather, it instructed the jury that "[a] claim is anticipated only if each and every element as set forth in the claim is disclosed either expressly or inherently in a single prior art reference." See Trial Tr. vol. 20, 3011–12, Oct. 17, 2007. In effect, the jury was instructed that Dr. Goldwasser's urinary EPO anticipated the asserted claims of the '933 patent only if it met the source limitation "product of . . . expression in a mammalian host cell."

We recognize that, by omitting Roche's proposed instruction or a similar instruction, the district court effectively took away from the jury the question of whether the asserted claims of the '933 patent recite an old product (urinary EPO) made by a new process (recombinant production). In other words, the court decided as a matter of law that the asserted claims of the '933 patent recite a new product defined by the source limitation "product of . . . expression in a mammalian host cell." It appears that the court did that in view of its grant of JMOL of no anticipation with respect to claim 1 of the '422 patent. As seen, in that ruling, the court determined that no reasonable jury could find that the recombinant EPO described in the asserted claims of the '422 patent was an old product, given the structural distinctions between urinary and recombinant

EPO attributable to recombinant EPO's source. Amgen, 581 F. Supp. 2d at 194–95, 198.

In this case, we do not think the jury verdict should be overturned because the court, and not the jury, decided the question of whether the asserted claims of the '933 patent recite an old product (urinary EPO) made by a new process (recombinant production). The court's instruction was legally correct and not clearly misleading as long as the EPO recited in the asserted claims of the '933 patent is a new product described in terms of its source. That requirement was met. For purposes of the source limitation, which is what is at issue, there essentially is no difference between claim 1 of the '422 patent ("erythropoietin . . . purified from mammalian cells grown in culture") and claim 3 of the '933 patent ("[a] non-naturally occurring glycoprotein product of the expression in a mammalian host cell of an exogenous DNA sequence comprising a DNA sequence encoding human erythropoietin"). At the same time, we hold above that the EPO of claim 1 of the '422 patent is a new product. The same holding necessarily applies to claim 3 of the '933 patent. In short, a reasonable jury could not have found that recombinant EPO described in the asserted claims of the '933 patent was an old product. Under these circumstances, the court's instructions requiring anticipatory prior art to meet the source limitations recited in the asserted claims of the '933 patent were legally sufficient and non-prejudicial.

E

Roche raises one additional argument relating to anticipation of the asserted claims of the '422 and '933 patents. Roche argues that the district court erred in construing the source limitations in the validity context differently than in the

infringement context. Roche's Br. 54. In the context of validity, the district court construed the source limitations as imparting novel structures that distinguish recombinant EPO from urinary EPO. Amgen, 581 F. Supp. 2d at 193–98. As will be seen below, when addressing the issue of whether Roche's MIRCERA® product infringed the '422 and '933 patents, the district court did not require MIRCERA® to possess novel structures that distinguish recombinant EPO from urinary EPO. Id. at 204–05. Quoting Amazon.com, Inc. v. Barnesandnoble.com, Inc., Roche relies on the axiom that "claims must be interpreted and given the same meaning for purposes of both validity and infringement analyses." 239 F.3d 1343, 1351 (Fed. Cir. 2001). Roche contends that, for validity, but not infringement, the court required the source limitations to impart novel structure onto EPO. Roche's Br. 54. According to Roche, because the court did not require Amgen to show for infringement that MIRCERA® possessed novel structures that distinguish it from urinary EPO, the court should not have required Roche to prove for anticipation that the source limitation does not impart novel structure onto EPO. Id. at 55. Roche urges that, without the requirement to prove that recombination imparted novel structures to Amgen's EPO, urinary EPO anticipates recombinant EPO as a matter of law. Id. We are not persuaded by Roche's argument.

In determining validity of a product-by-process claim, the focus is on the product and not on the process of making it. See Atl. Thermoplastics Co. v. Faytex Corp., 970 F.2d 834, 841 (Fed. Cir. 1992) (explaining that, in BASF, the validity rule "focused on the product with less regard for the process limits"); Brown, 459 F.2d at 535 (focusing on the product claimed and not the process); Pilkington, 411 F.2d at 1348 (noting that the product itself must be new). That is because of the already described, long-

standing rule that an old product is not patentable even if it is made by a new process.[14] As a result, a product-by-process claim can be anticipated by a prior art product that does not adhere to the claim's process limitation. In determining infringement of a product-by-process claim, however, the focus is on the process of making the product as much as it is on the product itself. See Abbott Labs. v. Sandoz, Inc., 566 F.3d 1282, 1293 (Fed. Cir. 2009) (en banc). In other words, "process terms in product-by-process claims serve as limitations in determining infringement." Id. (quotation marks omitted). As a result, a product-by-process claim is not infringed by a product made by a process other than the one recited in the claim. Id.

The impact of these different analyses is significant. For product-by-process claims, that which anticipates if earlier does not necessarily infringe if later. That is because a product in the prior art made by a different process can anticipate a product-by-process claim, but an accused product made by a different process cannot infringe a product-by-process claim. Similarly, that which infringes if later does not necessarily anticipate if earlier. That is because an accused product may meet each limitation in a claim, but not possess features imparted by a process limitation that might distinguish the claimed invention from the prior art.

Based on our precedent, the court did not err in conducting its validity and infringement analyses differently. To prove invalidity, Roche had to show that recombinant EPO was the same as urinary EPO, even though urinary EPO was not

[14] Because validity is determined based on the requirements of patentability, a patent is invalid if a product made by the process recited in a product-by-process claim is anticipated by or obvious from prior art products, even if those prior art products are made by different processes. Cf. BASF, 111 U.S. at 311 (assessing the invalidity of an old product recited in a product-by-process claim in terms of patentability).

made recombinantly. The court concluded that Roche did not meet its burden because urinary EPO and recombinant EPO were structurally and functionally different. Those structural and functional differences are not explicitly part of the claim, yet are relevant as evidence of no anticipation because of the source limitation. To prove infringement, Amgen had to show that MIRCERA® comprises EPO made recombinantly, which the court concluded it did. Importantly, Amgen was not required to show that MIRCERA® was also structurally and functionally different from urinary EPO. In other words, for validity, the court correctly required the source limitations to impart novelty onto EPO, but did not require Dr. Goldwasser's EPO to meet the source limitations; for infringement, the court correctly required MIRCERA® to satisfy the source limitations, but did not require MIRCERA® to differ from urinary EPO. For these reasons, the court did not err in conducting distinct validity and infringement analyses of the asserted claims of the '933 and '422 patents.

III

Indefiniteness

Before the jury was charged, Roche moved for JMOL that claim 1 of the '422 patent and claims 3, 7, and 8 of the '933 patent were invalid for indefiniteness. After the district court denied the motion, the jury returned a verdict that the claims were not indefinite. Denying Roche's renewed motion for JMOL and its motion for a new trial, the court sustained the jury verdict that claim 1 of the '422 patent and claims 3, 7, and 9 of the '933 patent were not indefinite. Amgen, 581 F. Supp. 2d at 198–201. On appeal, Roche argues that the court's construction of "human erythropoietin" in claim 1 of the '422 patent and its construction of the source limitation in claim 1 of the '422 patent and

of the source limitation in the asserted claims of the '933 patent render those claims indefinite.

A

Roche contends that the court wrongly construed human EPO in claim 1 of the '422 patent as "[a] protein having the amino acid sequence of human erythropoietin, such as the amino acid sequence of EPO isolated from human urine." Roche's Br. 59 (quoting Markman, 494 F. Supp. 2d at 64). At the time of the invention, Roche contends, no one knew the amino acid sequence of human EPO. Roche's Br. 59. That means, according to Roche, that a skilled artisan confronted with claim 1 of the '422 patent would not have known which amino acid sequence (i.e., the order or number of amino acids) the claim covers. Id. at 60. In Roche's view, this lack of clarity renders the claim indefinite. Id. To make the term human EPO in claim 1 definite, Roche advocates confining its meaning to the specific 166 amino acid sequence disclosed in Figure 6 of the '422 patent specification. Id. at 61.

Amgen responds that the court's construction of human EPO does not render claim 1 of the '422 patent indefinite. Amgen's Br. 61. Amgen points out that the specification defines the claimed product as having the same amino acid sequence as naturally occurring EPO and that it uses human EPO to refer to the product produced according to Example 10 and to urinary EPO. Id. at 62. Amgen also contends that an ordinarily skilled artisan would have understood the parameters of claim 1, and that nothing in the claim or specification requires the court to have limited human EPO to the 166 amino acid sequence disclosed in Figure 6. Id. at 62–63.

Indefiniteness is a question of law. Praxair, Inc. v. ATMI, Inc., 543 F.3d 1306, 1319 (Fed. Cir. 2008). Under 35 U.S.C. § 112, claims must "particularly point[ ] out and distinctly claim[ ] the subject matter which the applicant regards as his invention." If a claim fails to reasonably apprise one skilled in the art of the boundaries of the claim when read in light of the specification, then the claim is invalid under § 112 for indefiniteness. See Miles Labs., Inc. v. Shandon, Inc., 997 F.2d 870, 875 (Fed. Cir. 1993).

We do not think the court's construction of human EPO provides a reason to disturb the jury verdict that claim 1 of the '422 patent is not indefinite. First, the specification of the '422 patent supports the court's construction of human EPO. See In re Marosi, 710 F.2d 799, 803 (Fed. Cir. 1983) (finding claims not indefinite when the specification provided "a general guideline and examples sufficient to enable a person of ordinary skill in the art to determine whether" the claim limitation was satisfied). It defines human EPO as having the same amino acid sequence as naturally occurring EPO and being produced by the process described in Example 10. See '422 patent col.10 ll.12–18; col.15 ll.7–19; col.25 l.27–col.29 l.25. While Figure 6 of the specification discloses a 166 amino acid sequence of human EPO, neither the claim nor the specification defines human EPO in terms of that figure. Therefore, the court correctly construed human EPO as "[a] protein having the amino acid sequence of human EPO, such as the amino acid sequence of EPO isolated from human urine."

Second, Dr. Lodish's testimony supports a finding that an ordinarily skilled artisan would have understood the boundaries of claim 1 of the '422 patent. Dr. Lodish testified at trial that an ordinarily skilled artisan reading the '422 patent would have understood

what human EPO was. Amgen, 581 F. Supp. 2d at 199. He explained that Figure 6 (i.e., the 166 amino acid sequence of EPO) and Example 10 (describing production of human EPO) in the specification would have reasonably apprised a person of ordinary skill of the scope of human EPO. Id. He also explained that the human EPO produced according to Example 10 would have had 165 amino acids. Id. Based on the specification of the '422 patent and Dr. Lodish's testimony, a jury could have reasonably concluded that claim 1 was not rendered indefinite by the court's construction of human EPO. See Kinetic Concepts, Inc. v. Blue Sky Med. Group, Inc., 554 F.3d 1010, 1022 (Fed. Cir. 2009) (finding a claim not indefinite where the specification provided several examples and the patentee submitted a declaration explaining that the ordinarily skilled artisan would have understood the meaning of the claim).

We are not convinced by Roche's argument that an ordinarily skilled artisan in 1984 could not have known the boundaries of claim 1 of the '422 patent because no one knew the actual amino acid sequence of human EPO. We recognize that an ordinary skilled artisan did not know at the time, and the patent did not explain, that Example 10 would produce, or that urinary EPO possessed, the amino acid sequence disclosed in Figure 6 less the C-terminal amino acid. See Trial Tr. vol. 16, 2339–47 Oct. 3, 2007. That does not mean, however, that an ordinarily skilled artisan at the time of the invention would not have known the scope of human EPO in claim 1. See Shatterproof Glass Corp. v. Libbey-Owens Ford Co., 758 F.2d 613, 624 (Fed. Cir. 1985) (explaining that § 112 only requires the claim language to be "as precise as the subject matter permits" (quotation marks omitted)). According to Dr. Lodish's testimony, an ordinarily skilled artisan who possessed urinary EPO or the amino acid disclosed in

Figure 6, or who practiced the invention described in Example 10, would have knowingly been within the scope of claim 1 of the '422 patent, even without knowing that the EPO in hand was actually 165 amino acids in length. Furthermore, Roche has not presented us with any reason as to why the claim is indefinite if human EPO encompasses both the 166 amino acid sequence disclosed in Figure 6 and the 165 amino acid sequence produced by practicing Example 10 and possessed by EPO purified from urine. Therefore, we will not disturb the court's construction of the term human EPO, a construction which we hold does not render claim 1 of the '422 patent indefinite.

B

Roche also argues that the court's construction of the source limitations recited in the asserted claims of the '422 and '933 patents renders the claims indefinite.[15] Roche's Br. 55. In Roche's view, the court concluded that urinary EPO did not anticipate the asserted claims of the '422 and '933 patents because it construed the source limitations to include an implied indefinite term that excludes prior art urinary EPO. Id. According to Roche, the court did not identify which structures distinguish unanticipated recombinant EPO from urinary EPO, and these structures are not defined in the claims. Id. at 56. Moreover, Roche contends, the claims do not avoid indefiniteness based on the glycosylation differences between urinary EPO and recombinant EPO because the carbohydrate structures of urinary EPO were not known. Id. Roche points out that this court has previously stated that "[b]y definition, one must

[15] The source limitation in claim 1 of the '422 patent is "purified from mammalian cells grown in culture," col.38 ll.40–41, while the source limitation in claim 3 of the '933 patent is "product of the expression in a mammalian host cell," col.38 ll.26–27.

know what the glycosylation of uEPO [urinary EPO] is with certainty before one can determine whether the claimed glycoprotein has a glcyosylation different from that of uEPO." Id. (quoting TKT II, 314 F.3d at 1341). The implicit exclusion of urinary EPO from the asserted product claims makes it impossible, in Roche's view, to discern the boundaries of the claims. Id. Accordingly, Roche urges, the implicit term that distinguishes recombinant EPO from urinary EPO renders claim 1 of the '422 patent and claims 3, 7, and 8 of the '933 patent indefinite. Roche's Br. 57.

Amgen responds that the asserted claims of the '422 and '933 patents are not indefinite under the district court's construction of the source limitations. Amgen's Br. 59. The product claims are definite, according to Amgen, because they encompass whatever EPO glycoprotein structures result from the recited process's production. Id. at 61. Amgen contends that it was not required to claim EPO in terms of specific carbohydrate structures. Id.

We conclude that the source limitations do not render the asserted claims of the '422 and '933 patents indefinite. Roche correctly points out that the district court found that the asserted claims were not anticipated by urinary EPO because recombinant EPO and urinary EPO are structurally and functionally distinct. Roche is also correct that those structural and functional distinctions are not stated on the face of the claims. That does not mean, however, that the court implicitly construed the source limitations to include those structural and functional differences. See supra Part II.E (explaining that validity and infringement analyses of product-by-process claims differ). Rather, the court construed the source as a limitation of the asserted claims and found that the source imparted structural and functional features not possessed by EPO purified from

urine. The structural and functional differences were therefore relevant to the court's finding that recombinant EPO was a new product claimed with reference to the source from which it was obtained. See Brown, 459 F.2d at 535 ("[T]he lack of physical description in a product-by process claim makes determination of the patentability of the claim more difficult, since in spite of the fact that the claim may recite only process limitations, it is the patentability of the product claimed and not of the recited process steps which must be established."). Contrary to Roche's assertions, findings of fact that go to the question of validity of product-by-process claims do not automatically become part of claim construction.

We note that, if we carried Roche's argument to its logical conclusion, product-by-process claims would be indefinite in instances where the product-by-process format is often preferred. Patentees often use process limitations to distinguish their product from prior art products because their product cannot accurately be discriminated from the prior art except by reference to the process by which it is obtained. See, e.g., Pilkington, 411 F.2d at 1349 ("[T]he differences between the [claimed product] and the [product] of the prior art do not appear to us to be particularly susceptible to definition by the conventional recitation of properties or structures."). In those situations, the product-by-process format allows the patentee to obtain a patent on the product even though the patentee cannot adequately describe the features that distinguish it from prior art products. In effect, the process limitation embodies the difficult-to-describe distinctions that render the product patentable. Thus, to call the process limitation indefinite in this situation would defeat one of the purposes of product-by-process

claims, namely permitting product-by-process claims reciting new products lacking physical description.

We therefore affirm the court's decision to sustain the jury verdict that claim 1 of the '422 patent and claims 3, 7, and 8 of the '933 patent are not invalid for indefiniteness.

IV

Infringement

Roche challenges the findings that MIRCERA® literally infringes claim 1 of the '422 patent; claims 3, 7, and 8 of the '933 patent; claims 1 and 2 of the '868 patent; and claims 6–9 of the '698 patent.

Infringement is a question of fact. Leapfrog Enters., Inc. v. Fisher-Price, Inc., 485 F.3d 1157, 1159 (Fed. Cir. 2007). To prove infringement, the patentee must show that an accused product embodies all limitations of the claim either literally or by the DOE. TIPS Sys., LLC v. Phillips & Brooks/Gladwin, Inc., 529 F.3d 1364, 1379 (Fed. Cir. 2008); see also Tech. Licensing Corp. v. Videotek, Inc., 545 F.3d 1316, 1327 (Fed. Cir. 2008) (stating that, to prove infringement, the patentee has the burden of persuasion by a preponderance of the evidence). If any claim limitation is absent from the accused device, there is no literal infringement as a matter of law. TIPS Sys., 529 F.3d at 1379. We begin our infringement analysis with the product patents.

A

The district court granted Amgen summary judgment of infringement of claim 1 of the '422 patent after finding that MIRCERA® comprised human EPO. 581 F. Supp. 2d at 201. In the court's view, Roche's internal documents and representations to the FDA

confirmed that MIRCERA® contains human EPO, which the court defined by its amino acid sequence. Id. at 202. The court found that Roche's internal documents referred to CERA, the active ingredient in MIRCERA®, as "peg-EPO," and that Roche represented to the FDA that CERA and epoetin beta, the starting material of MIRCERA®, have the same amino acid sequence. Id. Relying on A.B. Dick Co. v. Burroughs Corp., 713 F.2d 700, 703 (Fed. Cir. 1983), for the proposition that "one cannot avoid infringement merely by adding elements," the court rejected Roche's argument that MIRCERA® does not contain EPO because CERA is formed through pegylation. Id. at 203. Thus, the court concluded that MIRCERA® literally infringes claim 1 of the '422 patent. Id. After hearing all of the evidence at trial, the jury similarly concluded that MIRCERA® literally infringed claims 3, 7, and 8 of the '933 patent. The court then denied Roche's motion for JMOL of non-infringement with respect to those claims.

On appeal, Roche argues that MIRCERA® does not infringe the asserted claims of the '422 and '933 patents because MIRCERA® is not produced and purified from mammalian cells. Roche's Br. 48. Roche interprets the source limitations in both patents as requiring that the accused product actually be produced by a mammalian cell. Id. Roche contends that MIRCERA® cannot meet the cell-produced limitations because it is indisputably made in a cell-free reaction. Id. at 50. In addition, Roche argues that, once it is formed, MIRCERA® is a novel, intact molecule that no longer contains human EPO. Id. Although Roche takes issue with the court's analysis of MIRCERA®'s precursor, epoetin beta, it contends that epoetin beta also does not meet the source limitations because epoetin beta loses a hydrogen atom when it reacts with a PEG molecule. Id. at 51. Lastly, Roche argues that the court erred in failing to instruct

the jury that the asserted claims of the '933 patent require a product with a structure capable of being produced in a mammalian host cell. Id. at 52.

Amgen responds that the source limitations do not exclude the attachment of further structure, such as PEG, to human EPO. Amgen's Br. 64. Amgen points to the specification, which describes the chemical attachment of materials, such as detectable markers, to the claimed glycoprotein products. Id. (citing '422 patent col.12 ll.12–16). Amgen contends, as the district court determined, that the source limitations pertain to the source of human EPO, not MIRCERA®, and that they do not preclude the addition of other materials. Id. at 65. Pointing to Roche's internal documents and FDA representations, Amgen disputes Roche's assertion that the attachment of PEG fundamentally transforms MIRCERA® so that MIRCERA® does not contain EPO. Id. at 68. In Amgen's view, the removal of a single hydrogen atom from epoetin beta does not change the fact that MIRCERA® contains the sequence of amino acids that defines human EPO in claim 1 of the '422 patent. Id. at 70.

We see no error in the district court's grant of summary judgment that MIRCERA® literally infringes claim 1 of the '422 patent or its ruling denying Roche's motion for JMOL of non-infringement, which sustained the jury's verdict that MIRCERA® literally infringes claims 3, 7, and 8 of the '933 patent.[16] As a preliminary

[16] Claim 1 of the '422 patent recites "[a] pharmaceutical composition comprising a therapeutically effective amount of human erythropoeitin and a pharmaceutically acceptable diluent, adjuvant or carrier, wherein said erythropoietin is purified from mammalian cells grown in culture." '422 patent col.38 ll.37–41. Claim 3 of the '933 patent, from which claims 7 and 8 depend, recites "[a] non-naturally occurring glycoprotein product of the expression in a mammalian host cell of an exogenous DNA sequence comprising a DNA sequence encoding human erythropoeitin said product possessing the in vivo biological property of causing bone marrow cells to increase production of reticulocytes and red blood cells." '933 patent col.38 ll.26–31.

matter, no genuine issues of material fact stand in the way of adjudication by summary judgment of the issue of whether MIRCERA® infringes claim 1 of the '422 patent. The court's determination of infringement followed from its application of its construction of two terms in claim 1 to the undisputed facts of the case. The first term is "human erythropoietin"; the second term is the source limitation "purified from mammalian cells grown in culture." '422 patent col.38 ll.37–41. We conclude that the court correctly construed those terms and that, in view of that claim construction, Amgen was entitled to summary judgment that MIRCERA® infringed claim 1 of the '422 patent.[17] Because the source limitation of claim 1 of the '422 patent is, for purposes of Roche's infringement contentions, the same as the source limitation recited in the asserted claims of the '933 patent, we similarly conclude that a reasonable jury could have found that MIRCERA® infringed claims 3, 7, and 8 of the '933 patent.

MIRCERA® comprises "human erythropoietin" because it contains "[a] protein having the amino acid sequence of human erythropoietin, such as the amino acid sequence of EPO isolated from human urine," Markman, 494 F. Supp. 2d at 64. Roche's internal documents and FDA representations reveal that MIRCERA®, or peg-

[17] As noted, the court construed "human erythropoietin" as "[a] protein having the amino acid sequence of human EPO, such as the amino acid sequence of EPO isolated from human urine." Markman, 494 F. Supp. 2d at 64. The court construed the source limitation "purified from mammalian cells grown in culture" in claim 1 of the '422 patent as "obtained in substantially homogeneous form from the mammalian cells, using the word from in the sense that it originates in the mammalian cells, without limitation to it only taking it directly out of the interior of the cells, which have been grown in the in vitro culture." Id. at 65. The court construed the relevant part of claim 3 of the '933 patent as follows: "a non-naturally occurring glycoprotein product of the expression in a mammalian host cell" is "a glycoprotein (not occurring in nature) that is the product of the expression in a mammalian host cell," where "expression means that the glycoprotein was produced in a cell and recovered from the cell culture." Id. at 71–72.

EPO, comprises a protein having the amino acid sequence of human erythropoietin. Amgen, 581 F. Supp. 2d at 202; see also id. at 172 ("[T]he resulting glycosylated human EPO polypeptide product [of Roche's manufacturing process] contains the identical amino acid sequence as naturally occurring human EPO." (quotation marks omitted)). Those documents, as well as expert testimony, also indicate that the loss of a hydrogen atom, either from a lysine side chain or from the N-terminus of the protein, does not mean that the protein lacks the amino acid sequence of EPO. See id. at 172; see also id. at 207 ("Roche concedes that Amgen's experts provided testimony that pegylation does not change the amino acid sequence of epoetin beta.").

Furthermore, nothing in the claim construction of human EPO excludes the attachment of a PEG molecule, and the common specification to the '422 and '933 patents contemplates the attachment of additional molecules. See, e.g., '422 patent col.12 ll.12–16. Roche's argument that human EPO no longer exists "as a matter of chemistry" once it reacts with a PEG molecule is unpersuasive because the record shows that the human EPO component exists in the final product and confers its structural and functional properties onto MIRCERA®. The record therefore supports the court's conclusion, and the jury's implicit conclusion,[18] that the attachment of a PEG molecule is the addition of an element, which cannot negate infringement, as opposed to a fundamental chemical transformation, which might save MIRCERA® from infringement. Amgen, 581 F. Supp. 2d at 203–04; see also Amstar Corp. v. Envirotech Corp., 730 F.2d 1476, 1482 (Fed. Cir. 1984) ("Modification by mere addition of elements

[18] The court instructed the jury regarding Roche's theory that MIRCERA® is a single molecule, which no longer contains human EPO: "Roche people say that the very fact of the pegylation, the combination, changes it. It's not the same thing. It's something new and different." Trial Tr., vol. 20, 3021, Oct. 17, 2007.

. . . cannot negate infringement, without disregard of . . . long-established, hornbook law . . . .").

MIRCERA® also comprises EPO produced in and purified from mammalian cells, thereby satisfying the source limitations of the asserted claims. Roche's FDA filings and other admissions show that epoetin beta, the starting ingredient for CERA, is produced in and purified from mammalian cells grown in culture. See Amgen, 581 F. Supp. 2d at 172 ("Like Amgen's EPO, epoetin beta is a recombinant EPO formed by injecting DNA encoding human EPO into a CHO cell." (quotation marks omitted)). Roche fundamentally misreads the asserted claims to require that MIRCERA® be produced in, and purified from, mammalian cells and have a cell-produced structure.[19] Yet, all that these claims require is that MIRCERA® comprise EPO produced in and purified from mammalian cells. See '422 patent col.38 ll.40–41 ("wherein said erythropoietin is purified from mammalian cells grown in culture"); '933 patent col.38 ll.26–29 ("product of the expression in a mammalian host cell of an exogenous DNA sequence comprising a DNA sequence encoding human erythropoetin"). That MIRCERA® itself can only be produced outside a cell is irrelevant to the source limitations. Consequently, the court properly declined to instruct the jury that the source limitation requires MIRCERA® to be cell-produced.

Because MIRCERA® embodies the human EPO and source limitations of the asserted claims, we affirm the district court's grant of summary judgment to Amgen of

[19] Roche's interpretation of the source limitations stems from its contention that, because structures and functions imparted by the source limitations were relevant for anticipation, they too should be relevant for infringement. We have already explained that the anticipation and infringement analyses differ for product-by-process claims. See supra Part II.E.

infringement of claim 1 of the ’422 patent and its denial of JMOL to Roche of non-infringement of claims 3, 7, and 8 of the ’933 patent.

B

Turning to the two process patents, the jury found claims 1 and 2 of the ’868 patent and claims 6–9 of the ’698 patent literally infringed by MIRCERA®. The district court then denied Roche’s motions for JMOL of non-infringement and for a new trial.

Because Roche manufactures MIRCERA® overseas, the jury’s finding of literal infringement of the ’868 and ’698 patents was based on 35 U.S.C. § 271(g), which provides, in relevant part:

> Whoever without authority imports into the United States or offers to sell, sells, or uses within the United States a product which is made by a process patented in the United States shall be liable as an infringer, if the importation, offer to sell, sale, or use of the product occurs during the term of such process patent. . . . A product which is made by a patented process will, for purposes of this title, not be considered to be so made after—
>
> (1) it is materially changed by subsequent processes . . . .

Section 271(g) makes the importation into the United States of a product made by a process patented in the United States an act of infringement. If, however, the product made by the patented process is “materially changed by subsequent processes” prior to importation, then importation of that product does not constitute infringement. Id. § 271(g)(1). In short, the question before the district court was whether the MIRCERA® product to be imported into the United States by Roche is “materially changed by subsequent processes” so that it is materially different from the product produced by the processes of claims 1 and 2 of the ’868 patent and claims 6–9 of the ’698 patent. See Eli Lilly & Co. v. Am. Cyanamid Co., 82 F.3d 1568, 1575–77 (Fed. Cir. 1996).

On appeal, Roche argues that MIRCERA® did not infringe the '868 and '698 patents under § 271(g) as a matter of law. Roche's Br. 62. That is because the evidence conclusively demonstrates, according to Roche, that MIRCERA® is materially changed prior to importation. Id. at 63. In Roche's view, to determine whether MIRCERA® has been "materially changed," the drug must be compared to the crude product resulting from the claimed processes, and not the FDA-approved Amgen drugs. Id. Comparing unadministerable crude EPO to FDA-approved MIRCERA® evidences a "material change," according to Roche. Id. In addition, Roche observes that, due to the attached PEG molecule, MIRCERA® possesses different structures and properties than Amgen's EPO. Id. at 64. Roche points out that MIRCERA® has thousands more atoms, hundreds of new bonds, a significantly higher molecular weight, a different charge, and improved pharmacokinetic properties. Id. at 64–65. Those changes are material, according to Roche, because MIRCERA® has improved pharmacokinetic characteristics and requires less-frequent dosing than Amgen's products. Id. at 65. Roche contends that the district court should not have allowed the jury's verdict to stand because no reasonable jury could have concluded that purification and pegylation did not materially change the EPO in MIRCERA®. Id.

Roche separately argues, as it did below, that, even if a factual issue existed for the jury to decide, it is entitled to a new trial because the district court erroneously instructed the jury on § 271(g). Id. at 66. The court instructed the jury to "look at the product that would be produced by that [patented] process" and then "look at the product that's produced by the lawful in Europe, but infringing here in the United States, Roche process." Id. That charge was incorrect as a matter of law, Roche contends,

because § 271(g) requires comparison of the products produced by the patented process to the product imported into the United States, and not to the immediate product Roche produces by employing the patented process. Id. According to Roche, the court erred when it instructed the jury that it could "consider whether [MIRCERA®] would work without Amgen's patented process. Would it do what it's supposed to do absent Amgen's patented process." Id. at 66 (quoting Trial Tr., vol. 20, 3026, Oct. 17, 2007). Roche contends that this "but for" test for material change is inconsistent with § 271(g), which refers to a material change and not different processes. Id.

Amgen responds that there was sufficient evidence for a reasonable jury to find that Roche's imported product is not materially changed from the EPO recited in the asserted claims of the '868 and '698 patents. Amgen's Br. 75. According to Amgen, Roche's own documents show that the human EPO in MIRCERA® has the same structure and function as EPO recited in the claims of the '868 and '698 patents. Id. at 75–76. Amgen emphasizes that MIRCERA®'s biological activity depends on EPO. Id. at 76. Amgen disputes whether the claims are limited to crude isolates unsuitable for human use, but argues that, even if they were, Roche's purification process does not materially change the EPO product recited in the asserted claims. Id. at 78.

As for the jury instructions, Amgen contends that the court properly instructed the jury to determine whether Roche's imported product was materially changed from the product of the claimed processes. Amgen argues that the court correctly delivered the following instruction: "If the Roche product is materially changed from the product of the claimed process, Amgen has lost. That product can be imported into the United States and it does not infringe." Id. at 74–75. Amgen also argues that Eli Lilly, 82 F.3d at

1575–77, supports the instruction that the jury was "entitled to consider whether the item would work without Amgen's patented process." Amgen's Br. 74.

We do not think that Roche was entitled to JMOL that MIRCERA® does not infringe the asserted claims of the '868 and '698 patents, because the record supports a determination that the human EPO in MIRCERA® is not "materially changed" by pegylation. Unlike Roche, we do not read the scope of the asserted claims as limited to production of crude EPO. That being said, the record reveals that MIRCERA®, unlike crude EPO, is suitable for administration to patients. The record also reveals structural and functional differences (e.g., size, molecular weight, half-life, atomic composition) between MIRCERA® and EPO produced by the processes recited in the asserted claims. The question that remains for infringement under § 271(g) is whether these differences are material.

Materiality is context-dependent. See Biotech Biologische Naturverpackungen GmbH & Co. v. Biocorp, Inc., 249 F.3d 1341, 1352 (Fed. Cir. 2001) ("Whether a change in a product is material is a factual determination, and is properly for the trier of fact."). In the biotechnology context, a significant change in a protein's structure and/or properties would constitute a material change. Cf. Eli Lilly, 82 F.3d at 1573 ("In the chemical context, a 'material' change in a compound is most naturally viewed as a significant change in the compound's structure and properties."). A good source for determining whether a change in a product of a process is material under § 271(g) is the patent. Where the specification or asserted claims recite a structure or function for the product of the processes, then significant variations from the recited structure and

function are material. What makes a variation significant enough to be a "material change," however, is a question of degree.

In this case, Amgen presented evidence that the structural and functional differences were not material because MIRCERA® still contains EPO, the structure of EPO remains intact, MIRCERA® binds to the EPO receptor, and MIRCERA® retains its claimed ability to increase the production of reticulocytes and red blood cells. See, e.g., Trial Tr., vol. 17, 2495–98, Oct. 4, 2007. The in vivo biological properties of EPO are recited in the claims of the '868 and '698 patents, so significant variations therefrom (e.g., a significant increase in the production of red blood cells) would constitute material changes. See '868 patent col.40 ll.27–29; '698 patent col.38 ll.51–53. The record reflects, however, that MIRCERA® and human EPO stimulate erythropoiesis similarly. See Trial Tr., vol. 17, 2488–91, Oct. 4, 2007. Roche did not argue to the contrary. Instead, Roche presented evidence that the identified structural and functional changes confer pharmacokinetic properties onto MIRCERA® that render it superior to EPO made by the claimed processes. In particular, Roche emphasized that MIRCERA®'s active ingredient, CERA, exhibits a longer half-life in the bloodstream, producing MIRCERA®'s longer dosing interval. Based on this record, we think there was sufficient evidence for a jury to conclude that the structural and functional differences between MIRCERA® and EPO recited in the process claims were not material. Therefore, Roche was not entitled to JMOL that MIRCERA® does not infringe the asserted claims of the '868 and '698 patents.

We also conclude that instructions delivered to the jury on "material change" under § 271(g) were legally sufficient. When read as a whole, the "material change"

instructions adequately informed the jury that it was to compare the EPO produced according to the claimed processes with MIRCERA®. See Eli Lilly, 82 F.3d at 1573 ("We look . . . to the substantiality of the change between the product of the patented process and the product that is being imported."). While it is true that the jury was instructed to look at the product produced by Roche's process, Trial Tr., vol. 21, 3078, Oct. 18, 2003, the jury was also instructed that if MIRCERA® was materially changed from the product of the claimed process, it would not infringe, id. In addition, the court instructed the jury to ask "does the Roche approach materially change its product MIRCERA®?" Trial Tr., vol. 20, 3025, Oct. 17, 2003. These "material change" instructions, as a whole, adequately conveyed to the jury that it was required to compare MIRCERA® to the product produced by the processes recited in the asserted claims of the '868 and '698 patents.

We similarly conclude that Roche is not entitled to a new trial even though the court instructed the jury that it could consider whether MIRCERA® would function if not made by Amgen's patented process. The court's instruction—"You are entitled to consider whether [MIRCERA®] would work without Amgen's patented process. Would it do what it's supposed to do absent Amgen's patented process?"—was presumably an attempt to provide the jury with some guidance as to the types of changes that would be material in this case. The court effectively instructed the jury that it could consider whether MIRCERA®'s biological function depends on its EPO component produced according to Amgen's patented processes. We assume that is because the court wanted the jury to ask whether the subsequent processes (i.e., pegylation) confer or enhance the biological properties possessed by MIRCERA®. We view the basis of

MIRCERA®'s biological function as a relevant consideration in assessing whether pegylation is a material change, especially where the asserted claims of the '868 and '698 patents recite the "in vivo biological property of causing bone marrow cells to increase production of reticulocytes and red blood cells." See Eli Lilly, 82 F.3d at 1577 (discussing whether the chemical and biological properties and utility of the accused product are material changes). Although this instruction is imperfect, we do not think a jury would have been clearly misled by the "material change" instructions as a whole. Therefore, the "material change" charge does not warrant a new trial.

V

Cross-Appeal

Amgen cross-appeals the district court's rulings vacating the jury verdict of infringement of claim 12 of the '933 patent under the DOE and entering judgment of no infringement of claims 9, 11, 12, and 14 of the '933 patent and claim 7 of the '349 patent.

A.

The question of infringement, literally or by equivalents, of claim 12 of the '933 patent was presented to the jury. Roche moved for JMOL of non-infringement as to that claim, which the court denied. After the jury returned a verdict of infringement under the DOE of claim 12 of the '933 patent, Roche moved for renewed JMOL of non-infringement as to that claim. Vacating the jury verdict of infringement by DOE, the court granted Roche's motion for renewed JMOL with respect to claim 12 of the '933 patent. Amgen, 581 F. Supp. 2d at 205. It did so on the ground that Amgen had failed to identify limitation by limitation the equivalent function-way-result. Id. Claim 12 of the

’933 patent depends from claims 3 and 7, both of which the jury found literally infringed. The three claims recite as follows:

> 3. A non-naturally occurring glycoprotein product of the expression in a mammalian host cell of an exogenous DNA sequence comprising a DNA sequence encoding human erythropoietin said product possessing the in vivo biological property of causing bone marrow cells to increase production of reticulocytes and red blood cells.
>
> 7. The glycoprotein product according to claims 3, 4, 5 or 6 wherein the host cell is a non-human mammalian cell.
>
> 12. A pharmaceutical composition comprising an effective amount of a glycoprotein product effective for erythropoietin therapy according to claim 7 and a pharmaceutically acceptable diluent, adjuvant or carrier.

’933 patent col.38 ll.26–31; col. 38 ll.64–65; col.39 ll.12–col.40 ll.2.

Claims 9, 11, and 14 of the ’933 patent did not reach the jury because the district court granted Roche JMOL of no infringement of those claims. Claims 9, 11, and 14 recite as follows:

> 9. A pharmaceutical composition comprising an effective amount [of] a glycoprotein product effective for erythropoietin therapy according to claim 1, 2, 3, 4, 5, or 6 and a pharmaceutically acceptable diluent, adjuvant or carrier.
>
> 11. A method for treating a kidney dialysis patient which comprises administering a pharmaceutical composition of claim 9 in an amount effective to increase the hematocrit level of said patient.
>
> 14. A method for treating a kidney dialysis patient which comprises administering a pharmaceutical composition of claim 12 in an amount effective to increase the hematocrit level of said product.

’933 patent col.39 l.1–4; col.39 l.8–col.40 l.2; col.40 ll.7–11. Claim 9 is similar to claim 12, except that claim 9 depends from claim 3 directly, whereas claim 12 depends from claim 7, which depends from claim 3. Claims 11 and 14 are identical except that claim 11 depends from claim 9 and claim 14 depends from claim 12. For purposes of the

issues on appeal, however, claim 9 is the same as claim 12, and claim 11 is the same as claim 14.[20]

Amgen contends that the jury verdict relating to claim 12 should be reinstated because the jury had before it substantial evidence of literal infringement or infringement by equivalents. Amgen's Br. 82. Amgen contends that Roche's representations to the FDA that its product is a "pharmaceutical composition" containing a pharmaceutically acceptable "diluent" satisfy that limitation of claim 12. Id. at 84. Amgen also contends that Roche's FDA representations, internal documents, and expert testimony all establish that MIRCERA® produces an increase in red blood cell count by stimulating erythropoiesis, thus satisfying the limitation, "amount . . . effective for erythropoietin therapy." Id. at 84–85. Amgen notes that the jury heard testimony that pegylation did not change the function (to stimulate maturation of bone marrow cells into red blood cells), way (binding to the EPO receptor), or result (to make more red blood cells). Id. at 85. The only limitation the jury could have found infringed by DOE, in Amgen's view, was "effective for erythropoietin therapy," and, according to Amgen, there was sufficient evidence of equivalence to support the jury's verdict. Amgen's Reply Br. 9.

Amgen also argues that, if the court reinstates the jury verdict of infringement under the DOE of claim 12, the court should reverse the JMOL of no infringement of

[20] We note that our holding in TKT II that claim 9 of the '933 patent was invalid for indefiniteness does not apply here because claim 9 was only indefinite to the extent that it depended from claim 1 of the '933 patent. 314 F.3d at 1342, 1358. That is because we concluded that the limitation "glycosylation which differs from that of human urinary erythropoietin" in claim 1, from which claim 9 may depend, was indefinite. Id. at 1340–42. In this case, claim 9 was only at issue to the extent it depended from claim 3, which does not contain the previously declared indefinite limitation.

claim 9, because the evidence proving infringement of claim 12 also proves infringement of claim 9. Id. at 14–15. Amgen further argues that, assuming claims 9 and 12 are held to be infringed, we should vacate the JMOL of no infringement of dependent claims 11 and 14, which recite methods of treating kidney dialysis patients with pharmaceutical compositions comprising EPO, and remand for a new trial relating to those claims. Id. at 14–17; Amgen's Br. 86–88.

Roche counters that Amgen failed to perform the limitation-by-limitation analysis required to support the jury's verdict of DOE infringement of claim 12. Roche's Reply Br. 59. Roche contends that its representations to the FDA, its internal documents, and expert testimony do not constitute the particularized testimony and linking argument DOE infringement requires. Id. Roche notes that the district court excluded Amgen's proffered expert testimony on equivalents because it lacked a limitation-by-limitation comparison. Id. As for claim 9, Roche argues that the court correctly granted JMOL of no infringement because Amgen presented no testimony relating to infringement of this claim specifically. Id. at 60. Roche also contends that, because JMOL of no infringement of claims 9 and 12 was warranted, JMOL of dependent claims 11 and 14 also was warranted. Id. at 61–62.

"An accused device that does not literally infringe a claim may still infringe under the doctrine of equivalents if each limitation of the claim is met in the accused device either literally or equivalently." Cybor Corp. v. FAS Techs., Inc., 138 F.3d 1448, 1459 (Fed. Cir. 1998) (en banc). An element in the accused product is equivalent to a claim limitation if the differences between the two are "insubstantial" to one of ordinary skill in the art. Warner-Jenkinson Co. v. Hilton Davis Chem. Co., 520 U.S. 17, 40 (1997).

Insubstantiality may be determined by whether the accused device performs substantially the same function in substantially the same way to obtain the same result as the claim limitation. Graver Tank & Mfg. Co. v. Linde Air Prods. Co., 339 U.S. 605, 608 (1950).

To support a finding of infringement under DOE, Amgen must have presented, on a limitation-by-limitation basis, "particularized testimony and linking argument as to the 'insubstantiality of the differences' between [the pharmaceutical composition in claim 12] and [MIRCERA®], or with respect to the function, way, result test." Tex. Instruments v. Cypress Semiconductor Corp., 90 F.3d 1558, 1567 (Fed. Cir. 1996). "[E]vidence and argument on the doctrine of equivalents cannot merely be subsumed in plaintiff's case of literal infringement." Lear Siegler, Inc. v. Sealy Mattress Co., 873 F.2d 1422, 1425 (Fed. Cir. 1989); see also Texas Instruments, 90 F.3d at 1567 ("Generalized testimony as to the overall similarity between the claims and the accused infringer's product or process will not suffice."). But see Paice LLC v. Toyota Motor Corp., 504 F.3d 1293, 1305 (Fed. Cir. 2007) ("Our 'particularized testimony' standard does not require [the expert] to re-start his testimony at square one when transitioning to a doctrine of equivalents analysis."). These requirements "ensure that a jury is provided with the proper evidentiary foundation from which it may permissibly conclude that a claim limitation has been met by an equivalent." Comark Commc'ns, Inc. v. Harris Corp., 156 F.3d 1182, 1188 (Fed. Cir. 1998).

Reviewing the record in the light most favorable to Amgen, we agree with the district court that a reasonable jury could not have concluded that claim 12 was infringed by DOE. In this case, the jury found claim 12 of the '933 patent infringed

under DOE, but we have no way of knowing which limitations were met literally or by DOE. In the absence of a special jury interrogatory informing the court of how the jury found each claim limitation was met by MIRCERA®, we must determine if Roche demonstrated either (1) that there was no substantial evidence from which the jury could have found that a particular identified limitation was met literally or by equivalents or (2) that there was no substantial evidence in the record that would have permitted the jury to find that any limitation had been met by equivalents. Id. at 1190. We hold the latter to be the case.

The record does not contain sufficient evidence that any limitation in claim 12 of the '933 patent was met by DOE. Amgen argues that it provided equivalents evidence pertaining to the "amount . . . effective for erythropoietin therapy" limitation in claim 12. We, however, do not view the evidence that pegylation does not change the biological properties of human EPO contained in MIRCERA® as equivalents evidence of the therapeutic efficacy limitation. Rather, Amgen presented that evidence to demonstrate that pegylation was not a "material change" to the human EPO contained in MIRCERA®.[21] See Trial Tr., vol. 17, 2486–87, Oct. 4, 2007. We fail to see how Dr.

[21] Amgen cites the following testimony from Dr. Lodish as evidence of infringement by equivalents of the therapeutic efficacy limitation:

> Q: Dr. Lodish, if I were to suggest to you that Roche says that attaching peg to EPO materially changes the product of Dr. Lin's processes, would you agree?
>
> * * * *
>
> A. Well, simply put, changing or adding peg to EPO does not change either the structure of EPO or perhaps . . . attaching peg to EPO neither changes the three-dimensional structure of EPO, nor, more importantly, perhaps, its biological function of binding to the erythropoietin receptors on bone marrow cells, stimulating them to produce red blood cells to make more red blood cells. It's the same function in substantially the same way.

Lodish's statements relating to literal infringement of Amgen's process claims under § 271(g) are particularized testimony of equivalents of the therapeutic efficacy limitation in Amgen's pharmaceutical composition claim, and Amgen has not pointed to any argument at trial linking the two. See Lear Siegler, 873 F.2d at 1425–26 (requiring particularized DOE testimony); Texas Instruments, 90 F.3d at 1567 (same). Indeed, the district court excluded Amgen's proffered testimony from Dr. Lodish that MIRCERA® was equivalent to the product recited in the claims of the '933 patent because Dr. Lodish's expert report lacked the limitation-by-limitation analysis required by our case law.[22] See Trial Tr. vol. 17, 2483–86, Oct. 4, 2007. The absence of an expert opinion regarding DOE infringement distinguishes this case from Paice, 504 F.3d at 1305, in which the patentee's proferred expert provided an opinion regarding DOE infringement. Therefore, the court did not err in vacating the jury verdict that claim 12 of the '933 patent was infringed under the DOE and in entering judgment as to non-infringement of that claim.

Because we are affirming judgment of no infringement of claim 12 of the '933 patent, we do not reach Amgen's arguments relating to claims 9, 11, and 14 of the '933 patent, which were contingent on a reinstatement of the jury verdict of infringement of claim 12.

See Trial Tr., vol. 17, 2486–87, Oct. 4, 2007 (emphasis added).

[22] When Amgen asked Dr. Lodish if he had "an opinion whether or not peg-EPO would be equivalent to the product of '933, claim 3," Trial Tr. vol. 17, 2483, Oct. 4, 2007, Roche objected that Dr. Lodish was taking a "generalized doctrine of equivalents approach," id. at 2484. The court sustained Roche's objection, stating that he "didn't think [Amgen was] going to be able to meet the [F]ederal [C]ircuit test." Id. at 2486.

B

At the close of Amgen's case, the court granted JMOL of non-infringement of claim 7 of the '349 patent. See Trial Tr., vol.19, 2787–88, Oct. 16, 2007. Amgen then moved for a new trial on infringement of claim 7, which the court denied. Claim 7 depends from claims 1–6. Claim 1, which is representative of claims 2–6, and claim 7 recite as follows:

> 1. Vertebrate cells which can be propagated in vitro and which are capable upon growth in culture of producing erythropoietin in the medium of their growth in excess of 100 U of erythropoietin per 10^6 cells in 48 hours as determined by radioimmunoassay, said cells comprising non-human DNA sequences which control transcription of DNA encoding human erythropoietin.
>
> 7. A process for producing erythropoietin comprising the step of culturing, under suitable nutrient conditions, vertebrate cells according to claim 1, 2, 3, 4, 5 or 6.

'349 patent col.38 ll.8–14, ll.34–36. In short, claim 7 covers a process of producing EPO from cultured vertebrate cells that produce human EPO in excess of 100 U of EPO per 10^6 cells in 48 hours as determined by radioimmunoassay ("RIA").

On appeal, Amgen contends that a new trial is warranted because a reasonable jury could have found claim 7 of the '349 patent infringed. Amgen's Br. 88. Amgen argues that Roche's FDA representations and Dr. Lodish's testimony provide substantial evidence that Roche's actual production process involves cells that meet the production-rate limitation ("vertebrate cells that produce human EPO in excess of 100 U of EPO per 10^6 cells in 48 hours as determined by radioimmunoassay"). Id. Dr. Lodish relied on enzyme-linked immunoabsorbent assay ("ELISA") data in Roche's FDA submissions to arrive at his conclusion that MIRCERA® was made by vertebrate cells that produce approximately 1,500 units of EPO per 10^6 cells in 48 hours. Trial Tr., vol.

17, 2450, Oct. 4, 2007. Dr. Lodish testified that the results would be very similar, if not identical, if Roche's measurements had used RIA instead of ELISA. Id. at 2451. In addition, Dr. Lodish testified that RIA tests performed by another Amgen expert, Dr. Ronald W. McLawhon, confirmed his opinion that Roche's vertebrate cells were capable of producing EPO in excess of 100 units per 10^6 cells in 48 hours. Id. at 2453. In Amgen's view, a reasonable jury could credit Dr. Lodish's expert opinion as showing it is more likely than not that Roche's cells satisfy claim 7 of the '349 patent. Amgen's Br. 89.

Amgen also contends that it presented sufficient evidence demonstrating that Roche's assay, ELISA, satisfied the function-way-result test to prove infringement under DOE. Id. at 90. Dr. Lodish testified that both RIA and ELISA perform the same function (to measure how much EPO is in culture fluids) in a similar way (using an antibody), to obtain very similar, if not identical results. Id. (citing Trial Tr., vol. 17, 2451, Oct. 4, 2007). Amgen notes that the same issue was considered in Amgen, Inc. v. Hoechst Marion Roussel, Inc., 126 F. Supp. 2d 69, 119–20 (D. Mass. 2001) ("TKT"), aff'd in relevant part by TKT II, 314 F.3d at 1358. In TKT, Amgen offered ELISA data to prove infringement of claims in the '349 patent from which claim 7 depends. 126 F. Supp. 2d at 119–20. The court concluded "even if the Court were to hold that radioimmunoassays were required . . . , Amgen's evidence regarding the comparability of ELISA and RIA measurements would more than support the Court's finding of infringement under the doctrine of equivalents." 126 F. Supp. 2d 119–20. Amgen therefore contends it is entitled to a jury trial on infringement by equivalents of claim 7 of the '349 patent. Amgen's Br. 91.

Roche replies that the district court did not err in granting JMOL of non-infringement of claim 7 of the '349 patent. Roche's Reply Br. 62. Roche contends that Dr. Lodish's failure to actually assess Roche's production process made Amgen's proof deficient. Id. Roche argues that its FDA representations are inadequate evidence of infringement of claim 7, because they relate to production of purified clinical-grade material, which is different than the production of EPO in the "medium of their growth." Id. at 62–63. Roche also explains that claim 7 requires RIA measurements, and Roche generated its FDA data using ELISA. Id. at 63. Arguing that the RIA tests performed by Dr. McLawhon were inadmissible, Roche avers that the record does not establish the qualifications of those performing the tests, how the tests were conducted and the protocol used, or the reliability of the results. Id. As for infringement by DOE, Roche contends that Amgen provided neither the limitation-by-limitation analysis proof that DOE infringement requires nor substantial evidence to support DOE infringement. Id.

Reviewing the evidence in the light most favorable to Amgen, we hold that the district court erred in granting Roche JMOL of non-infringement of claim 7 of the '349 patent. Roche's FDA submissions and Dr. Lodish's testimony provided sufficient evidence from which a reasonable jury could have concluded that MIRCERA® infringes claim 7 of the '349 patent. In its FDA submissions, Roche identified, in the case of MIRCERA®, the type of cells used, the growth conditions of the cells, and the specific rate of EPO production. Although Roche used ELISA to measure the amount of EPO in the culture, Dr. Lodish testified that RIA and ELISA yield "very similar, if not identical" results. Trial Tr., vol. 17, 2451, Oct. 4, 2007. Also in evidence was Dr. Lodish's testimony that, in making MIRCERA®'s precursor, Roche essentially practices Example

10 in the asserted patents, see id. at 2404–2410, and Example 10 describes production-rates of EPO-producing cells, see '349 patent col.26 ll.50–52. Lastly, Dr. Lodish relied on data from RIA experiments performed by Dr. McLawhon to confirm that production of MIRCERA® meets the production-rate limitation. Trial Tr., vol. 17, 2452–53, Oct. 4, 2007. From this evidence, a reasonable jury could have concluded that the production-rate limitation of claim 7 of the '349 patent was met literally or by equivalents.

Contrary to Roche's assertions, Amgen was not required to have duplicated Roche's actual production process in order to prove infringement. See Johns Hopkins Univ. v. CellPro, Inc., 152 F.3d 1342, 1349–50, 1356 (Fed. Cir. 1998) (affirming infringement where patentee did not test the accused product, but relied on documents produced by accused infringer). Neither was Amgen required to establish infringement by offering RIA data into evidence. See Union Carbide Chems. & Plastics Tech. Corp. v. Shell Oil Co., 425 F.3d 1366, 1374–75 (Fed. Cir. 2005) (affirming infringement where patentee proved infringement of a limitation measured by the "comparison test" with measurements from a different, but comparable test); cf. Genentech, Inc. v. Wellcome Found. Ltd., 29 F.3d 1555, 1566 (Fed. Cir. 1994) (affirming non-infringement where patentee relied on test different from that specified in the claims without establishing tests were comparable). Indeed, Amgen could have relied on the FDA submissions and Dr. Lodish's opinion that RIA and ELISA tests serve the same function, way, and result to show that the production-rate limitation was met by equivalents. Cf. TKT, 126 F. Supp. 2d at 120 ("Amgen's evidence regarding the comparability of ELISA and RIA

measurements would more than support the Court's finding of infringement under the doctrine of equivalents.").

We are not persuaded that Amgen's evidence was insufficient because Roche's FDA submissions were based on measurements Roche had taken from producing purified MIRCERA®, because Roche's measurements were made using ELISA, or because the record lacks evidence of how Dr. McLawhon's RIA tests were conducted. At trial, Roche was free to challenge the credibility of Dr. Lodish and his reliance on the FDA submissions and RIA tests performed by Dr. McLawhon. Indeed, in its cross-examination of Dr. Lodish, Roche established that ELISA and RIA tests were not identical, and Dr. McLawhon's tests were not admitted into evidence. Without more, however, Roche was not entitled to JMOL of non-infringement. Therefore, we hold that, on this record, the court erred in taking the question of infringement of claim 7 of the '349 patent away from the jury.

CONCLUSION

For the reasons set forth above, we vacate the judgment that the claims of the '008, '868, and '698 patents do not invalidate for obviousness-type double patenting claims 3, 7, and 8 of the '933 patent; claim 1 of the '422 patent; and claim 7 of the '349 patent. We remand to the district court for an obviousness-type double patenting analysis of those claims in light of this opinion. We also vacate the judgment of non-infringement of claim 7 of the '349 patent and remand to the district court for a new trial on infringement of that claim. We affirm the judgments of no invalidity of claims 1 and 2 of the '868 patent and claims 6–9 of the '698 patent. We also affirm the judgments of infringement of claims 3, 7, and 8 of the '933 patent and claim 1 of the '422 patent. In

addition, we affirm the judgments of infringement of claims 1 and 2 of the ’868 patent; claims 6–9 of the ’698 patent; and the judgment of non-infringement of claims 9, 11, 12, and 14 of the ’933 patent. Finally, because we leave certain infringement rulings in place, while vacating and remanding others, the district court is of course free to reconsider the scope of its permanent injunction if it wishes. We do not disturb the court’s injunction.

AFFIRMED-IN-PART, VACATED-IN-PART, and REMANDED.

COSTS

Each party shall bear its own costs.

United States Court of Appeals for the Federal Circuit

2009-1032

BOEHRINGER INGELHEIM INTERNATIONAL GMBH
and BOEHRINGER INGELHEIM PHARMACEUTICALS, INC.,

Plaintiffs-Appellants,

v.

BARR LABORATORIES, INC.
and BARR PHARMACEUTICALS, INC.,

Defendants,

and

MYLAN PHARMACEUTICALS, INC.,

Defendant-Appellee.

Bruce M. Wexler, Paul, Hastings, Janofsky & Walker LLP, of New York, New York, argued for plaintiffs-appellants. With him on the brief were Joseph M. O'Malley, Jr., Eric W. Dittmann and Angela C. Ni; and Stephen B. Kinnaird, of Washington, DC.

Shannon M. Bloodworth, Perkins Coie LLP, of Washington, DC, argued for defendant-appellee. With her on the brief was David J. Harth, of Madison, Wisconsin. Of counsel was Sarah C. Walkenhorst, Perkins Coie LLP, of Madison, Wisconsin.

Appealed from: United States District Court for the District of Delaware

Judge Joseph J. Farnan, Jr.

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BOEHRINGER INGELHEIM INTERNATIONAL GMBH
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and

MYLAN PHARMACEUTICALS, INC.,

Defendant-Appellee.

Appeal from the United States District Court for the District of Delaware in consolidated cases 05-CV-700 and 05-CV-854, Judge Joseph J. Farnan, Jr.

DECIDED: January 25, 2010

Before LINN, DYK, and PROST, Circuit Judges.

Opinion for the court filed by Circuit Judge LINN. Opinion dissenting-in-part filed by Circuit Judge DYK.

LINN, Circuit Judge

This is a patent infringement case involving the effectiveness of a terminal disclaimer to overcome obviousness-type double patenting and the safe-harbor provision of 35 U.S.C. § 121. Boehringer Ingelheim International GmbH and Boehringer Ingelheim Pharmaceuticals, Inc. (collectively "Boehringer") appeal from a final judgment

that Boehringer's U.S. Patent No. 4,886,812 (the "'812 patent") is invalid for obviousness-type double patenting. Boehringer Ingelheim Int'l GmbH v. Barr Labs., Inc., No. 05-CV-700 (D. Del. Sept. 18, 2008); Boehringer Ingelheim Int'l GmbH v. Barr Labs., Inc., 562 F. Supp. 2d. 619 (D. Del. 2008). Because the district court incorrectly concluded that the safe-harbor provision of 35 U.S.C. § 121 is inapplicable in this case, we reverse and remand.

I. BACKGROUND

Boehringer is the record owner of the '812 patent, which claims certain tetrahydrobenzthiazole compounds. Boehringer, 562 F. Supp. 2d at 623; '812 patent [57], col.23 l.67-col.26 l.22. One of the claimed tetrahydrobenzthiazole compounds is 2-Amino-6-dimethylamino-4,5,6,7-tetrahydrobenzthiazole, known more commonly as pramipexole. Boehringer, 562 F. Supp. 2d at 623; '812 patent col.25 ll.19-21 (claim 7). Boehringer manufactures, markets, and sells pharmaceutical tablets containing pramipexole under the brand name Mirapex. Boehringer, 526 F. Supp. 2d at 624. On July 1, 1997, the United States Food and Drug Administration ("FDA") approved Boehringer's New Drug Application ("NDA") for Mirapex, for the treatment of "signs and symptoms of idiopathic Parkinson's disease." Id.; J.A. 947, 1017-18.

The '812 patent is the third in a chain of related patents, all of which share a common specification. The first application in the chain is U.S. Patent Application No. 06/810,947 (the "'947 application"), filed December 19, 1985. '812 patent [62]; Boehringer, 562 F. Supp. 2d at 625. The '947 application originally contained fifteen claims. Boehringer, 562 F. Supp. 2d at 625. During prosecution of the '947 application, the examiner issued a restriction requirement listing ten groups of claims related to what the examiner considered to be independent and distinct inventions:

I. Claims 1-8 (at least part of each), drawn to benzothiazole compounds and a pharmaceutical composition, classified in Class 548, subclasses 161, 163 and 164.

II. Claims 1-5 and 8-10 (at least part of each), drawn to pyrrolidinyl-substituted benzothiazole compounds and a pharmaceutical composition, classified in Class 514, subclass 367.

III. Claims 1-4 and 8 (at least part of each), drawn to piperidinyl-substituted benzothiazole compounds and a pharmaceutical composition, classified in Class 546, subclass 192.

IV. Claims 1-4 and 8 (at least part of each), drawn to hexamethylimino substituted benzothiazole compounds and a pharmaceutical composition, classified in Class 540, subclass 603.

V. Claims 1-4 and 8, drawn (at least part of each) [to] morpholinyl-substituted benzothiazole compounds and a pharmaceutical composition, classified in Class 544, subclass 135.

VI. Claim 14, drawn to a method of preparing benzothiazole compounds using a thiourea reactant.

VII. Claim 15, drawn to a method of preparing benzothiazole compounds using a disulfide reactant classified based on type of compound formed.

VIII. Claims 9 and 10, drawn to a method of lowering blood pressure or heart rate classified based on type of compound used.

IX. Claims 11 and 12, drawn to a method for treating Parkinsonism, classified based on type of compound used.

X. Claim 13, drawn to a method for treating schizophrenia, classified based on type of compound used.

U.S. Patent Appl. Serial No. 06/810,947, Office Action, at 2-3 (Sept. 4, 1986) ("Office Action"). Although the restriction requirement stated that each of the ten groups was a distinct invention, the examiner allowed the applicant to elect "either (A) one of the compound groups I-V and one of the utility groups VIII-X (composition and utility to be

limited to elected compound type for examination) or (B) one of the process groups VI and VII." Id. at 4.

In response to the restriction requirement, the applicants elected to prosecute claims directed to the invention of Group II (pyrrolidinyl-substituted benzothiazole compounds) and to the invention of Group IX (a method for treating Parkinsonism using those compounds). Boehringer, 562 F. Supp. 2d at 625. The applicants amended the claims of the '947 application accordingly, and U.S. Patent No. 4,731,374 (the "'374 patent") issued from the application on March 15, 1988. Id.

While the '947 application was pending, the applicants filed U.S. Patent Application No. 07/124,197 (the "'197 application") as a divisional of the '947 application. Id. A different examiner was assigned to the '197 application. Id. at 625 n.2. The '197 application originally contained all of the claims of the original '947 application, but, following a rejection, the applicants amended the '197 application so that it claimed various methods of using tetrahydrobenzthiazole compounds to treat certain medical conditions. Id. at 625. The method-of-use claims of the '197 application encompassed the examiner's demarcated inventions of Groups VIII and X of the restriction requirement, as well as that of Group IX directed to the use of compounds other than the compound of Group II elected in the '947 parent. Id.; see also Br. for Plaintiffs-Appellants 12, 14-17 (noting that "new claims 16 through 55 [of the '197 application] claimed the methods of use set forth in Groups VIII-X"). Thus, none of the claims of the '197 application covered subject matter elected in the '947 parent. The respective claims of the '197 and '947 applications were therefore divided as between applications along the lines of demarcation drawn by the examiner in the restriction

requirement. These new claims were ultimately allowed, and U.S. Patent No. 4,843,086 (the "'086 patent") issued from the application on June 27, 1989. Boehringer, 562 F. Supp. 2d at 626. The '086 patent expired on June 27, 2006.

On October 12, 1988, during the pendency of the '197 application, the applicants filed U.S. Patent Application No. 07/256,671 (the "'671 application"), which was the application from which the '812 patent issued. Id. The '671 application was filed as a division of the second application in the chain—the '197 application. It was not filed as a division of the first application—the '947 application. In fact, at the time that the '671 application was filed, the '374 patent had already issued from the '947 application, so no further divisionals from the '947 application were permitted. See '374 patent [45]; 35 U.S.C. § 120. Like the '197 application, the '671 application originally contained all of the claims of the original '947 application, but it was later amended to include only compound claims other than those directed to the pyrrolidinyl-substituted benzothiazoles previously claimed in the '374 patent. Boehringer, 562 F. Supp. 2d at 626. No restriction requirement was made in the '197 application. As Boehringer acknowledges, the amended claims encompass Groups I, III, IV, and V of the restriction requirement made in the grandparent '947 application and do not cross the examiner's lines of demarcation with either the claims of the grandparent '947 application or those of the parent '197 application. See Br. for Plaintiffs-Appellants at 16-17. The '812 patent issued from the '671 application on December 12, 1989—approximately six months after the issuance of the '086 patent. Boehringer, 562 F. Supp. 2d at 626.

After the issuance of the '812 patent and after the FDA approved Boehringer's NDA for Mirapex, Boehringer applied for a patent term extension for the '812 patent

under 35 U.S.C. § 156. Id. at 629. Boehringer's application stated that claims 1, 2, 3, 4, 7, 8, 9, and 10 of the '812 patent read on Mirapex. Claims 5 and 6 of the '812 patent were not listed in the application. The United States Patent and Trademark Office ("Patent Office" or "PTO") granted the application and extended the term of the '812 patent by 1,564 days, "with all rights pertaining thereto as provided by 35 U.S.C. § 156(b)." J.A. 1030. The '812 patent's original expiration date was December 12, 2006. The consequence of the 1,564-day extension was to extend Boehringer's rights in the '812 patent under § 156 until March 25, 2011.

On October 26, 2005, Mylan Pharmaceuticals, Inc. ("Mylan") notified Boehringer that it had submitted an Abbreviated New Drug Application ("ANDA") for generic pramipexole. Boehringer, 562 F. Supp. 2d at 624. In response, Boehringer brought a patent infringement action against Mylan, and the action was consolidated with Boehringer's previously filed patent infringement action against an earlier ANDA filer, Barr Laboratories, Inc. ("Barr").[1] Id. Specifically, Boehringer alleged that, by filing an ANDA, Mylan infringed claims 5, 7, 9, and 10 of the '812 patent. Id. at 623. As a defense, Mylan argued that the asserted claims of the '812 patent were invalid for obviousness-type double patenting in view of the '086 patent. Id. Mylan also counterclaimed seeking a declaration that claims 3, 4, 5, 7, 9, and 10 of the '812 patent are invalid for obviousness-type double patenting. Id.

The district court conducted a bench trial in March 2008. On the last day of trial, Boehringer sought to overcome the obviousness-type double patenting defense based on the then-expired '086 patent by filing a terminal disclaimer of the '812 patent with the

[1] Barr and Boehringer have settled, and Barr is not a party to this appeal.

Patent Office. Boehringer's terminal disclaimer purported to disclaim "only the terminal part of the statutory term of the '812 patent which would extend beyond 1,564 days after the full statutory term of the '086 patent as that term is defined in 35 U.S.C. [§] 154, so that, by virtue of this disclaimer, the [']812 patent will expire on October 8, 2010." J.A. 4199. In other words, Boehringer sought to disclaim the approximately six months of the '812 patent's original term that extended beyond the term of the '086 patent, and then to apply its 1,564-day extension to this shortened original term.

The district court concluded that Boehringer's terminal disclaimer was ineffective to overcome the obviousness-type double patenting rejection, because the disclaimer was filed after the '086 patent had expired. Boehringer, 562 F. Supp. 2d at 631. The district court also rejected Boehringer's argument that the safe-harbor provision of 35 U.S.C. § 121 precluded the use of the '086 patent as an invalidating reference. Id. at 635. On the merits, the district court concluded that the compound claims of the '812 patent were obvious in view of the method-of-use claims of the '086 patent. Id. at 640. The district court therefore held that the '812 patent was invalid for obviousness-type double patenting. Id.

The district court entered final judgment in favor of Mylan, and Boehringer timely appealed. We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(1) (2006).

II. DISCUSSION

Boehringer raises two issues on appeal: (1) whether its retroactive terminal disclaimer was effective to overcome invalidity based on obviousness-type double patenting; and (2) whether the safe-harbor provision of 35 U.S.C. § 121 precluded a finding of obviousness-type double patenting. Boehringer does not appeal the district

court's conclusion on the merits that the claims of the '812 patent were obvious in view of the claims of the '086 patent. We address each appealed issue in turn.

A. Retroactive Terminal Disclaimer

Because 35 U.S.C. § 101 "states that an inventor may obtain 'a patent' for an invention," the statute "permits only one patent to be obtained for a single invention." In re Lonardo, 119 F.3d 960, 965 (Fed. Cir. 1997) (emphasis added). "A double patenting rejection precludes one person from obtaining more than one valid patent for either (a) the 'same invention,' or (b) an 'obvious' modification of the same invention." In re Longi, 759 F.2d 887, 892 (Fed. Cir. 1985). Obviousness-type double patenting is a "judicially created doctrine grounded in public policy (a policy reflected in the patent statute)" that "prevent[s] the extension of the term of a patent, even where an express statutory basis for the rejection is missing, by prohibiting the issuance of the claims in a second patent not patentably distinct from the claims of the first patent." Id.

The purpose for the doctrine of obviousness-type double patenting is well established:

> The doctrine of double patenting is intended to prevent a patentee from obtaining a time-wise extension of patent [rights] for the same invention or an obvious modification thereof.

Lonardo, 119 F.3d at 965; see also Eli Lilly & Co. v. Barr Labs., Inc., 251 F.3d 955, 967 (Fed. Cir. 2001) ("The judicially-created doctrine of obviousness-type double patenting cements [the] legislative limitation [of § 101] by prohibiting a party from obtaining an extension of the right to exclude through claims in a later patent that are not patentably distinct from claims in a commonly owned earlier patent.").

The doctrine of obviousness-type double patenting is an important check on improper extension of patent rights through the use of divisional and continuation

applications, at least for patents issued from applications filed prior to the amendment of 35 U.S.C. § 154 to create twenty-year terms running from the date of the earliest related application. See 35 U.S.C. § 154; Uruguay Round Agreements Act, Pub. L. No. 103-465, 108 Stat. 4809 (1994); see also In re Fallaux, 564 F.3d 1313, 1318 (Fed. Cir. 2009) (discussing rationales for obviousness-type double patenting rejections for patents issued from applications filed both before and after the amendment of the Patent Act). "The policy underlying a double patenting rejection is an important policy because it precludes the improper extension of the statutory term of patent protection for an invention." Applied Materials, Inc. v. Advanced Semiconductor Materials Am., Inc., 98 F.3d 1563, 1577 (Fed. Cir. 1996).

"For obviousness-type double patenting, [the improper extension of the statutory term] can sometimes be avoided for co-owned patents or applications through the use of a terminal disclaimer." Id. Terminal disclaimers are expressly permitted under 35 U.S.C. § 253:

> A patentee, whether of the whole or any sectional interest therein, may, on payment of the fee required by law, make disclaimer of any complete claim, stating therein the extent of his interest in such patent. . . .
>
> In like manner any patentee or applicant may disclaim or dedicate to the public the entire term, or any terminal part of the term, of the patent granted or to be granted.

"[A] terminal disclaimer may restrict the slight variation to the term of the original patent and cure the double patenting rejection." Geneva Pharms., Inc. v. GlaxoSmithKline PLC, 349 F.3d 1373, 1378 (Fed. Cir. 2003).

In this case, in response to Mylan's assertion that the '812 patent was invalid for obviousness-type double patenting over its parent, the '086 patent, Boehringer attempted to disclaim the terminal portion of the original term of the '812 patent, so that

its original term would end on the date of the expiration of the '086 patent. See J.A. 4199; see also Br. for Plaintiffs-Appellants 22 (showing that, after Boehringer's terminal disclaimer, the expiration date of the original term of the '812 patent was the same as the expiration date of the '086 patent). Because the terminal disclaimer was filed on March 13, 2008—long after the expiration of the '086 patent on June 27, 2006—the district court held that the terminal disclaimer was ineffective and did not preclude the '812 patent from being held invalid on the basis of obviousness-type double patenting. Boehringer, 562 F. Supp. 2d at 631. Boehringer appeals the district court's holding. Our review is de novo. See, e.g., NTP, Inc. v. Research In Motion, Ltd., 418 F.3d 1282, 1314 (Fed. Cir. 2005) ("This court reviews the statutory construction of a district court de novo."); Lonardo, 119 F.3d at 965 ("Double patenting is a question of law that we review de novo.").

Preliminarily, we reject Boehringer's argument that the district court, in expressing concerns about "gamesmanship" in filing terminal disclaimers during litigation, somehow improperly imported a bar of disclaimers during litigation into the statute authorizing terminal disclaimers, 35 U.S.C. § 253. See Boehringer, 562 F. Supp. 2d at 632 n.8. The basis for the district court's rejection of Boehringer's terminal disclaimer was not that it was filed during litigation, but rather that it was filed after the expiration of the '086 patent and therefore purported to operate retroactively to disclaim a part of the term of the '812 patent that was in the past. See id. at 631 ("[A] terminal disclaimer may overcome [an obviousness-type] double patenting rejection only if the earlier patent has not yet expired.").

We agree with Boehringer—and Mylan does not dispute—that a patentee may file a disclaimer after issuance of the challenged patent or during litigation, even after a finding that the challenged patent is invalid for obviousness-type double patenting. See, e.g., Perricone v. Medicis Pharm. Corp., 432 F.3d 1368, 1375 (Fed. Cir. 2005) (noting that there is no "prohibition on post-issuance terminal disclaimers" and that "[a] terminal disclaimer can indeed supplant a finding of invalidity for double patenting"). The question here is whether a retroactive terminal disclaimer—i.e., a terminal disclaimer that is filed after the expiration date of an earlier commonly owned patent—is effective to overcome obviousness-type double patenting.

"The fundamental reason for the rule [of obviousness-type double patenting] is to prevent unjustified timewise extension of the right to exclude granted by a patent no matter how the extension is brought about." In re Van Ornum, 686 F.2d 937, 943-44 (CCPA 1982) (quoting In re Schneller, 397 F.2d 350, 354 (CCPA 1968)); see also Lonardo, 119 F.3d at 965 (emphasizing purpose of doctrine of double patenting of precluding "patentee from obtaining a time-wise extension of patent [rights] for the same invention or an obvious modification thereof"). When the claims of a patent are obvious in light of the claims of an earlier commonly owned patent, the patentee can have no right to exclude others from practicing the invention encompassed by the later patent after the date of the expiration of the earlier patent. But when a patentee does not terminally disclaim the later patent before the expiration of the earlier related patent, the later patent purports to remain in force even after the date on which the patentee no longer has any right to exclude others from practicing the claimed subject matter. By permitting the later patent to remain in force beyond the date of the earlier patent's

expiration, the patentee wrongly purports to inform the public that it is precluded from making, using, selling, offering for sale, or importing the claimed invention during a period after the expiration of the earlier patent. Cf. Paragon Solutions, LLC v. Timex Corp., 566 F.3d 1075, 1091 (Fed. Cir. 2009) (discussing importance of ability of "potential infringers to ascertain the propriety of particular activities" and "the notice function central to the patent system"); PSC Computer Prods., Inc. v. Foxconn Int'l, Inc., 355 F.3d 1353, 1361 (Fed. Cir. 2004) (emphasizing "the important public notice function of patents—the mechanism whereby the public learns which innovations are the subjects of the claimed invention, and which are in the public domain").

By failing to terminally disclaim a later patent prior to the expiration of an earlier related patent, a patentee enjoys an unjustified advantage—a purported time extension of the right to exclude from the date of the expiration of the earlier patent. The patentee cannot undo this unjustified timewise extension by retroactively disclaiming the term of the later patent because it has already enjoyed rights that it seeks to disclaim. Permitting such a retroactive terminal disclaimer would be inconsistent with "[t]he fundamental reason" for obviousness-type double patenting, namely, "to prevent unjustified timewise extension of the right to exclude." Van Ornum, 686 F.2d at 943-44 (emphasis removed). We therefore hold that a terminal disclaimer filed after the expiration of the earlier patent over which claims have been found obvious cannot cure obviousness-type double patenting.

We note that this holding is consistent with our treatment of this issue in Lonardo:

> With obviousness-type double patenting, . . . a terminal disclaimer may overcome that basis for unpatentability, assuming that the first patent has not expired. In this case, the [patent] over which the claims have been

> rejected . . . has expired, so a terminal disclaimer cannot cure these rejections.

Lonardo, 119 F.3d at 965 (emphasis added). Boehringer argues that this language in Lonardo is dicta, and that it "merely observed that there would be no reason to issue a patent application terminally disclaimed to an expired patent since that application would theoretically issue without any term." Br. for Plaintiffs-Appellants 42. Boehringer is correct that the applicant in Lonardo did not actually file a terminal disclaimer or rely on a terminal disclaimer to cure obviousness-type double patenting. Even though we may not technically be bound by this language in Lonardo, it is instructive and our holding is consistent with it.

In this case, assuming that the claims of the '812 patent are obvious in light of the claims of the '086 patent, Boehringer would have had no right to exclude others from practicing the subject matter encompassed by the '812 patent after the expiration date of the '086 patent. However, because the '812 patent purported to remain in force after June 27, 2006, and because Boehringer did not disclaim it before then, Boehringer enjoyed an unjustified advantage—a purported time extension of the right to exclude from June 27, 2006 forward. There is nothing that Boehringer can do now to "un-exercise" the right that it has already improperly enjoyed. Boehringer's terminal disclaimer therefore cannot cure a finding of invalidity of the '812 patent for obviousness-type double patenting.[2]

[2] Before the 1952 amendments, the predecessor to 35 U.S.C. § 253 provided that the disclaimer must be filed without unreasonable delay. See 35 U.S.C. §§ 65, 71 (1934). The 1952 amendments deleted this language. See 35 U.S.C. § 253; 66 Stat. 809. We do not see this deletion as having any bearing on whether the disclaimer must be filed before the expiration of the patent.

Boehringer argues that it did not enjoy any unjustified advantage because it had properly obtained a term extension under 35 U.S.C. § 156. More specifically, Boehringer argues that, even if the original expiration date of the '812 patent should have been June 27, 2006, the term of the '812 patent was properly extended by 1,564 days under § 156, so Boehringer has not enjoyed any rights to which it was not entitled. We disagree. Boehringer's argument rests on the faulty premise that the rights enjoyed by a patentee during the term of a patent are the same as the rights enjoyed by a patentee during the term of an extension under § 156. As the statute makes clear, however, the rights of a patentee during a term extension are limited in ways that do not normally apply to granted patents:

> The rights derived from any patent the term of which is extended under this paragraph shall, during the period of interim extension—
>
> > (i) in the case of a patent which claims a product, be limited to any use then under regulatory review;
> >
> > (ii) in the case of a patent which claims a method of using a product, be limited to any use claimed by the patent then under regulatory review; and
> >
> > (iii) in the case of a patent which claims a method of manufacturing a product, be limited to the method of manufacturing as used to make the product then under regulatory review.

35 U.S.C. § 156(d)(5)(F) (emphases added). Thus, if Boehringer had disclaimed the terminal portion of the '812 patent prior to the expiration of the '086 patent, then a competitor would have been placed on notice that, during the § 156 extension period following June 27, 2006, Boehringer only had the right to exclude the "use then under regulatory review"—namely, the use of pramipexole for the treatment of the "signs and symptoms of idiopathic Parkinson's disease," J.A. 947, 1017-18. Likewise, because Boehringer's application for term extension was limited to claims 1, 2, 3, 4, 7, 8, 9, and

10 of the ’812 patent, the public would have been on notice that Boehringer had no right to exclude the practice of claims 5 and 6 during the § 156 extension period. However, because Boehringer did not disclaim the terminal portion of the ’812 patent prior to the June 27, 2006 expiration of the ’086 patent, a competitor that performed a patent search on June 28, 2006 would have wrongly been led to believe that the ’812 patent continued to cover the specific compounds claimed in claims 5 and 6, and that it precluded use of pramipexole for treatment of conditions beyond those approved by the FDA. This is precisely the type of “unjustified timewise extension of the right to exclude” that the doctrine of obviousness-type double patenting is designed to prevent. Van Ornum, 686 F.2d at 943-44 (emphasis removed).

We also reject Boehringer’s argument that the outcome in this case is dictated by our decision in Merck & Co. v. Hi-Tech Pharmacal Co., 482 F.3d 1317 (Fed. Cir. 2007). In Merck, the court held simply that “a patent term extension under § 156 may be applied to a patent subject to a terminal disclaimer.” Id. at 1324. The court said nothing about whether a terminal disclaimer filed after the expiration of the earlier patent over which claims have been rejected could cure obviousness-type double patenting. To the contrary, the terminal disclaimer in Merck occurred well before the expiration of the patent over which obviousness-type double patenting was asserted. See id. at 1318-19 (noting that terminal disclaimer was filed during prosecution of later patent, which issued on January 10, 1989, but that term of earlier patent extended until June 30, 2004). Merck in fact emphasized that its holding was entirely consistent with “prevent[ing] extension of patent term for subject matter that would have been obvious over an earlier filed patent.” Id. at 1323. By contrast, permitting a retroactive terminal disclaimer to

cure obviousness-type double patenting would not be consistent with preventing improper extension of a patent term. Boehringer is therefore wrong to rely on Merck.

We conclude that Boehringer's terminal disclaimer cannot overcome obviousness-type double patenting based on the '086 patent because the terminal disclaimer was filed after the expiration of the '086 patent.

B. Safe-Harbor Provision of 35 U.S.C. § 121

Boehringer argues in the alternative that the safe-harbor provision of 35 U.S.C. § 121 shields the '812 patent from invalidity on the basis of double patenting in view of the '086 patent. Section 121 provides in relevant part:

> If two or more independent and distinct inventions are claimed in one application, the Director may require the application to be restricted to one of the inventions. If the other invention is made the subject of a divisional application which complies with the requirements of section 120 of this title it shall be entitled to the benefit of the filing date of the original application. A patent issuing on an application with respect to which a requirement for restriction under this section has been made, or on an application filed as a result of such a requirement, shall not be used as a reference either in the Patent and Trademark Office or in the courts against a divisional application or against the original application or any patent issued on either of them, if the divisional application is filed before the issuance of the patent on the other application . . . .

35 U.S.C. § 121 (emphasis added).

The emphasized third sentence of § 121 is the so-called safe-harbor provision. "Prior to the 1952 Patent Act, courts and patentees were aware of the unfairness that resulted when the Patent Office required restriction or division between claims in a patent application, thus requiring that a second patent application be carved out of the first, and then rejected the second application on the basis of the first." Studiengesellschaft Kohle mbH v. N. Petrochemical Co., 784 F.2d 351, 358 (Fed. Cir. 1986) (Newman, J., concurring); see also Gerber Garment Tech., Inc. v. Lectra Sys.,

Inc., 916 F.2d 683, 688 (Fed. Cir. 1990) (approving of the description of the purpose of § 121 set forth in concurring opinion in Studiengesellschaft). "When the PTO requires an applicant to withdraw claims to a patentably distinct invention (a restriction requirement), § 121 shields those withdrawn claims in a later divisional application against rejection over a patent that issues from the original application." Geneva Pharms., 349 F.3d at 1378.

The safe harbor is provided to protect an applicant from losing rights when an application is divided. The safe harbor of § 121 is not lost if an applicant does not file separate divisional applications for every invention or when independent and distinct inventions are prosecuted together. The statute, in referring to "two or more independent and distinct inventions," recognizes that the safe harbor is not limited to only one divisional application. 35 U.S.C. § 121 (emphasis added). Thus, where the third sentence of § 121 refers to a patent issuing on an application filed as a result of a restriction requirement, it is referring to patents issuing from any number of multiple divisional applications and precludes any one from being used as a reference against any other.

The district court held that § 121 was inapplicable because the application resulting in the '812 patent was not filed "as a result of" the restriction requirement entered during the prosecution of the '947 application but because of concerns over potentially interfering matter in a patent owned by Eli Lilly. Boehringer, 562 F. Supp. 2d at 634-35. Boehringer first argues that the district court erred in reading the "as a result of" language of § 121 to apply to the '812 patent rather than merely the patent that is being used as a reference—here, the '086 patent. Boehringer next contends that if the

"as a result of" requirement does apply to the '812 patent, the requirement is met on this record. Mylan counters that the safe harbor of § 121 is unavailable to Boehringer because the '812 patent resulted from neither the "application with respect to which a restriction requirement . . . [was] made" (the '947 application), nor the divisional "filed as a result of such a requirement" (the '197 application). 35 U.S.C. § 121. Rather, the '812 patent resulted from a divisional of a divisional of the application in which the restriction requirement was entered. According to Mylan, § 121 applies only to a divisional of a patent in which a restriction requirement was entered and does not apply to a divisional of a divisional.

Thus, on appeal, the parties present us with two issues related to § 121: (1) whether § 121 can ever apply to a divisional of a divisional of the application in which a restriction requirement was entered; and (2) whether the "as a result of" requirement of § 121 applies to the '812 patent and is satisfied here. We address each issue in turn. Our review is de novo. See, e.g., NTP, 418 F.3d at 1314; Lonardo, 119 F.3d at 965.

1. Applicability of § 121 to a Divisional of a Divisional

Section 121 refers to restriction among "two or more independent and distinct inventions" and provides that a patent issuing on either the original application subject to a restriction requirement ("an application with respect to which a requirement for restriction under this section has been made") or a divisional application ("an application filed as a result of such a requirement") cannot be used as a reference against either "the original application" or "a divisional application." 35 U.S.C. § 121. The most straightforward reading of the statutory text is that the safe harbor of § 121 applies even when the PTO issues a restriction requirement that leads to more than two separate applications. See, e.g., Applied Materials, 98 F.3d at 1568 ("[W]hen two or more

patents result from a PTO restriction requirement, whereby aspects of the original application must be divided into separate applications, § 121 insulates the ensuing patents from the charge of double patenting." (emphases added)). Moreover, § 121 refers broadly to "a divisional application," and does not state that the divisional must be a direct divisional of the original application. Had Congress intended to limit the safe harbor only to a divisional of the application in which the restriction requirement was entered, it could have said "a divisional application of the original application," rather than simply "a divisional application."

We have recognized the reach of § 121 in situations where the patent subject to a double-patenting challenge and the application in which the restriction requirement was entered share a common lineage. See Geneva Pharms., 349 F.3d at 1378 ("[I]f the [patent subject to the double-patenting challenge] and the [patent that is the basis of the challenge] trace their lineage back to a common parent which was subject to a restriction requirement, then § 121 intervenes to prevent [an obviousness-type] double patenting rejection."). We have also held that § 121 applies specifically to continuing applications deriving from a divisional application filed as a result of a restriction requirement. See, e.g., Symbol Techs., Inc. v. Opticon, Inc., 935 F.2d 1569, 1580 (Fed. Cir. 1991) (extending the protection of § 121 to a patent issuing from a continuation application that descended from a divisional application filed as a result of a restriction requirement); Amgen Inc. v. F. Hoffman-La Roche Ltd, 580 F.3d 1340, 1354 (Fed. Cir. 2009) ("[I]ntervening continuation applications do not render a patent ineligible for § 121 protection so long as they descended from a divisional application filed as a result of a

restriction requirement."). We see no reason why § 121 would not likewise extend to a divisional of a divisional.

We therefore reject Mylan's argument that § 121 is inapplicable solely because the '812 patent issued from an application that was a divisional of a divisional and hold that, assuming all other requirements of § 121 are met, the safe-harbor provision may apply to a divisional of a divisional of the application in which a restriction requirement was entered. We note that this holding is fully consistent with the purpose of § 121—namely, to prevent a patentee who divides an application in which a restriction requirement has been made from risking invalidity due to double patenting. See Geneva Pharms., 349 F.3d at 1378; Studiengesellschaft, 784 F.2d at 358 (Newman, J., concurring).

2. The "as a result of" Requirement

The district court held that the "as a result of" requirement of § 121 must be satisfied by both the '086 and '812 patents. The court then found that while the '086 patent met the "as a result of" requirement, the restriction did not "carry over" to the application that had matured to the '812 patent because it was not filed because of the restriction requirement but instead because of a patent owned by Eli Lilly.

Boehringer first argues that while the district court was correct as to the '086 patent, it erred by requiring the "as a result of" requirement to "carry over" to the next patent in the chain. According to Boehringer, the "as a result of" requirement of § 121 need only apply to the patent that is being used as a reference—here, the '086 patent—and not to the challenged patent.

We agree with the district court that the "as a result of" requirement must be satisfied by both the '086 reference patent and the '812 challenged patent. We have

repeatedly held that the "as a result of" requirement applies to the challenged patent as well as the reference patent. See, e.g., Pfizer, Inc. v. Teva Pharm. USA, Inc., 518 F.3d 1353, 1360 (Fed. Cir. 2008) ("[T]he third sentence of [§ 121] provides a safe harbor (for patents or applications derived as the result of a restriction requirement) from attack based on the original application (or a patent issued therefrom), or based on applications or patents similarly derived from the same restriction requirement." (emphases added)); Bristol-Myers Squibb Co. v. Pharmachemie B.V., 361 F.3d 1343, 1347-48 (Fed. Cir. 2004) ("As section 121 has been interpreted by this court, [the patentee] is entitled to invoke the statutory prohibition against the use of the [reference] patent 'as a reference' against the divisional application that resulted in the [challenged] patent only if the divisional application was filed as a result of a restriction requirement and is consonant with that restriction requirement." (emphasis added)); Gerber Garment, 916 F.2d at 687 ("The prohibition against use of a parent application 'as a reference' against a divisional application applies only to the divisional applications that are 'filed as a result of' a restriction requirement." (emphasis added)).

Boehringer next contends that the application that matured into the '812 patent does meet the "as a result of" requirement. Boehringer argues that the '812 patent traces its lineage to the '374 patent and claims a subset of the non-elected subject matter from the '947 application. Moreover, it asserts that but for the restriction requirement, it could have pursued all the claims of the '812 patent in the '947 application and that any motivation with regard to the Eli Lilly patent is irrelevant. Boehringer finally argues that when an examiner issues a restriction requirement identifying more than two independent and distinct inventions, the choice of how to

prosecute non-elected inventions is up to the applicant and is constrained neither by the terms of an examiner's restriction requirement nor by the language of § 121. According to Boehringer, so long as consonance is met, it makes no difference in terms of compliance with the "as a result of" requirement whether the applicant responds to the examiner's restriction requirement by filing one or more divisional applications from the original application, or instead files a single divisional application followed by successive additional divisionals.

We agree with Boehringer. The restriction requirement entered in the '947 application required only an election in that application of a subset of the ten identified inventions. It also had the effect of obligating Boehringer to file one or more divisional applications if it wanted patent protection for the non-elected subject matter. Boehringer did so not by filing separate divisional applications on each of the inventions grouped by the examiner in the restriction requirement, but instead, by filing two successive divisionals to different combinations of the inventions identified in the restriction requirement. In doing so, Boehringer neither violated the examiner's restriction requirement nor risked loss of the safe harbor of § 121.[3]

[3] According to the dissent, because the restriction requirement did not explicitly require the applicant to carve out the child application (the '671 application) from the parent application (the '197 application) and the examiner did not impose a separate restriction in the parent application, the child application fails to satisfy the "as a result of" requirement. Dissenting Op. at 9-10. We believe that this interpretation of the "as a result of" requirement is too narrow. The child application was "due to the administrative requirements imposed by the Patent and Trademark Office," Applied Materials, 98 F.3d at 1568, in the sense that, absent the restriction requirement, the applicant could have retained in the grandparent application (the '947 application) the claims prosecuted in the child application. We see no principled distinction between filing one or more divisional applications from an original application and filing successive divisional applications as was done here, so long as no two applications claim the same "invention" as defined by the examiner.

As noted, supra, the safe harbor is provided to protect an applicant from being penalized for dividing an application. Section 121 is not concerned with any overlap in non-elected inventions prosecuted within any particular divisional application or in how any such applications are filed. To prevent loss of the safe harbor in dividing out claims to non-elected inventions, what is required is consonance with the restriction requirement. As we explained in Gerber Garment, "[c]onsonance requires that the line of demarcation between the 'independent and distinct inventions' that prompted the restriction requirement be maintained. . . . Where that line is crossed the prohibition of the third sentence of Section 121 does not apply." Gerber Garment, 916 F.2d at 688.

According to Mylan, this means that an applicant must strictly follow an examiner's election procedure and not overlap claims to independent and distinct inventions in any single divisional application. We disagree. An overlap of claims to independent and distinct inventions within a given divisional application is neither contrary to the restriction requirement nor relevant to the requirements of the third sentence of § 121. Rather, what consonance requires is that the claims prosecuted in two or more applications having common lineage in a divisional chain honor, as between applications, the lines of demarcation drawn by the examiner to what he or she considered independent and distinct inventions in the restriction requirement. As we stated in Gerber Garment:

> Plain common sense dictates that a divisional application filed as a result of a restriction requirement may not contain claims drawn to the invention set forth in the claims elected and prosecuted to patent in the parent application. The divisional application must have claims drawn only to the "other invention."

Id. at 687. We later reiterated that "[t]o gain the benefits of Section 121 . . . Gerber must have brought its case within the purview of the statute, i.e., it must have limited the claims in its divisional application to the non-elected invention or inventions." Id. at 688 (emphases added). The divisions need not be limited to a single one of the examiner's demarcated inventions to preserve the right to rely on the safe harbor of § 121.

Here, as noted earlier, the restriction requirement imposed during prosecution of the '947 application divided the claims into groups, each covering what the examiner demarcated as an invention "independent and distinct, each from the other." Office Action at 3. None of the inventions claimed as between the '374 original patent, the '086 division, and the '812 division of the division, crosses the examiner's lines of demarcation of inventions identified in the restriction requirement. Thus, consonance is met and the '086 patent cannot be used as a reference against the '812 patent any more than if both patents had issued from direct divisions from the application in which the restriction requirement was made.[4]

III. CONCLUSION

For the foregoing reasons, we conclude that Boehringer's terminal disclaimer does not overcome obviousness-type double patenting with respect to the '086 patent, but that the safe-harbor provision of § 121 is applicable. We therefore reverse the district court's judgment of invalidity and remand for further proceedings consistent with this opinion.

[4] The dissent believes that the rule the majority has adopted will have the untenable result of tolerating the filing of repeated divisionals beyond anything intended by Congress when it passed § 121. To the contrary, applicants will be entitled to the safe harbor of § 121 for the same number of divisional applications, corresponding to the number of "independent and distinct" inventions demarcated by the examiner, whether filed separately or serially, provided consonance is met.

REVERSED and REMANDED

COSTS

Costs to Boehringer.

United States Court of Appeals for the Federal Circuit

2009-1032

BOEHRINGER INGELHEIM INTERNATIONAL GMBH
and BOEHRINGER INGELHEIM PHARMACEUTICALS, INC.,

Plaintiffs-Appellants,

v.

BARR LABORATORIES, INC.
and BARR PHARMACEUTICALS, INC.,

Defendants,

and

MYLAN PHARMACEUTICALS, INC.,

Defendant-Appellee.

Appeal from the United States District Court for the District of Delaware in consolidated cases 05-CV-700 and 05-CV-854, Judge Joseph J. Farnan, Jr.

DYK, Circuit Judge, dissenting in part.

The majority has adopted a construction of section 121 that significantly expands its coverage. 35 U.S.C. § 121. In my view the majority opinion works an unfortunate and unsupported change in our jurisprudence defining the scope of section 121, and in doing so, loses sight of its purpose. I respectfully dissent.

I

The prohibition against double patenting contained in 35 U.S.C. § 101 represents an important protection against the undue extension of patent rights. It bars patentees from securing an extension of the patent term through the filing of a divisional

application that claims the same invention (or an obvious variant) as the original application. See 35 U.S.C. § 101; In re Longi, 759 F.2d 887, 892 (Fed. Cir. 1985) ("A double patenting rejection precludes one person from obtaining more than one valid patent for either (a) the 'same invention,' or (b) an 'obvious' modification of the same invention.").[1] The policy underlying the double-patenting doctrine "is an important policy because it precludes the improper extension of the statutory term of patent protection for an invention." Applied Materials, Inc. v. Advanced Semiconductor Materials Am., Inc., 98 F.3d 1563, 1577 (Fed. Cir. 1996); see Geneva Pharms., Inc. v. GlaxoSmithKline PLC, 349 F.3d 1373, 1378 (Fed. Cir. 2003). There is no question here but that the inventions claimed in the '086 patent and the '812 patent are either the same invention or obvious variants thereof, and that the '812 patent would typically fall on double patenting grounds. The majority avoids this result through the application of section 121.

Section 121 was adopted as part of the 1952 Patent Act, Pub. L. No. 82-593, 66 Stat. 792 (current version at 35 U.S.C. § 1 et seq.). It was designed to prevent an unfair result under prior law whereby a patentee's compliance with an examiner's incorrect restriction requirement (separating out supposedly patentably distinct inventions that were in fact the same or not patentably distinct) resulted in the original application's being used as a reference against the later divisional application. The use of the original application as a reference could result in a subsequent rejection based on double patenting. Before the 1952 Patent Act, no protection was afforded to patent applications filed as a result of an incorrect restriction requirement. See In re Eisler,

[1] The prohibition against obviousness type double patenting is based on an interpretation of the statute. See In re Longi, 759 F.2d at 892.

203 F.2d 726 (CCPA 1953). The PTO and the courts were not precluded from rejecting an application filed as a result of a requirement for division based on the very same application from which the subsequent application was divided. See In re Kauffman, 152 F.2d 991, 993 (CCPA 1946); see also In re Isherwood, 46 App. D.C. 507, 512 (D.C. Cir. 1917) (holding that an examiner is not estopped from rejecting a divisional application because of an earlier requirement for division). To avoid such a result, a patent applicant was required to appeal an examiner's requirement for division, see United States ex rel. Steinmetz v. Allen, 192 U.S. 543 (1904), and "his failure to litigate the question was at his peril," Kauffman, 152 F.2d at 993.

Section 121 was designed to ameliorate the inequity of this rule, and to allow applicants to reasonably rely on an examiner's restriction requirements. Pfizer, Inc. v. Teva Pharms. USA, Inc., 518 F.3d 1353, 1361 (Fed. Cir. 2008). The purpose of the rule was to ensure that "when the existence of multiple patents is due to the administrative requirements imposed by the Patent and Trademark Office . . . the inventor shall not be prejudiced by having complied with those requirements." Applied Materials, 98 F.3d at 1568. Section 121 thus carved out a narrow exception from the obviousness-type double patenting doctrine, by providing that "[a] patent issuing on an application with respect to which a requirement for restriction . . . has been made, or on an application filed as a result of such a requirement, shall not be used as a reference . . . against a divisional application or against the original application." 35 U.S.C. § 121 (emphasis added). Because section 121 can extend the patent term for inventions that are not patentably distinct, we have held that "this court applies a strict test for application of § 121." Geneva Pharms., 349 F3d at 1382.

II

I agree with the majority that section 121 is not limited to the first divisional application filed as a result of the restriction requirement, but extends to later divisional applications filed "as a result of" the restriction and that are consonant with the restriction requirement.

However, as the majority at least purportedly recognizes, the "as a result of" and consonance requirements must be satisfied by both the reference patent and the challenged patent. Majority Op. at 19-20 (citing Bristol-Myers Squibb Co. v. Pharmachemie B.V., 361 F.3d 1343, 1347-48 (Fed. Cir. 2004) ("As section 121 has been interpreted by this court, [the patentee] is entitled to invoke the statutory prohibition against use of the [reference] patent 'as a reference' against the divisional application that resulted in the [challenged] patent only if the divisional application was filed as a result of the restriction requirement and is consonant with that restriction requirement.")). Thus, it is not enough that the original application was filed as a result of the restriction requirement; the subsequent contested patent application itself must have been the result of the restriction, and must be consonant with the restriction requirement. See Pfizer, 518 F.3d at 1360 ("[T]he third sentence of [section 121] provides a safe harbor (for patents or applications derived as the result of a restriction requirement) from attack based on the original application (or a patent issued therefrom), or based on applications or patents similarly derived from the same restriction requirement." (emphases added)). We have held that section 121 should only be used to protect those applicants who are compelled to comply with a restriction imposed by a patent examiner, and who faithfully follow the restriction requirement in a

later application. See, e.g., Texas Instruments Inc. v. U.S. Int'l Trade Comm'n, 988 F.2d 1165, 1179 (Fed. Cir. 1993) (holding that the post-restriction addition of a claim to the divisional application was "consonant with the grouping restriction actually imposed by the examiner," and thus the safe harbor of section 121 applied (emphasis added)).

III

In my view, the majority has misinterpreted both the "consonance" and "as a result of" requirements. Necessary to an understanding of these issues is an understanding of the actual restriction requirement imposed by the examiner in this case. The examiner of the '947 application (the grandparent) imposed a restriction requirement, thus requiring the filing of a later divisional application (the '197 parent application), which later matured into the '086 patent.[2] The examiner imposed the restriction on the grounds that "each of groups I-V is a patentably distinct invention," J.A. 577, and that each of the compounds "could be used in each of the materially different processes as set forth in VIII-X," J.A. 576. The restriction thus required the applicant to elect "one of the compound[] group[s] I-V and one of the utility groups VIII-X," or "one of the process groups VI and VII." J.A. 577. Accordingly, the applicants

[2] For purposes of clarity, I provide a timeline of the various patents and applications at issue:

December 19, 1985:	Boehringer files the '947 patent application.
September 4, 1986:	PTO examiner issues a restriction requirement forcing Boehringer to separate the inventions claimed in the '947 patent application.
November 23, 1987:	Boehringer files the '197 application, a divisional of the '947 application.
March 15, 1988:	'374 patent issues from the '947 patent application.
October 12, 1988:	Boehringer files the '671 application, a divisional of the '197 application.
June 27, 1989:	'086 patent issues from the '197 application.
December 12, 1989:	'812 patent issues from the '671 application.

elected to prosecute claims directed to the invention of Group II (pyrrolidinyl-substituted benzothiazole compounds) and Group IX (a method for treating Parkinson's disease), resulting in the '374 patent (the grandparent). Boehringer Ingelheim Int'l GMBH v. Barr Labs., Inc., 562 F. Supp. 2d 619, 625 (D. Del. 2008).

The '197 application (the parent), a divisional of the '947 application, was not consonant with the original restriction requirement, as the applicants combined in a single application claims that the original examiner determined were drawn to separate inventions, namely Groups VIII, IX, and X of the '947 application.[3] The child application (the '671 application) was also not consonant because it contained separate inventions, namely claims encompassing Groups I, III, IV, and V of the '947 application.[4]

Despite the fact that the '197 and the '671 applications impermissibly combine claims drawn to independent and distinct inventions identified by the original examiner, the majority concludes that the consonance requirement is met. The majority concludes that the requirements of section 121 are met because "[n]one of the inventions claimed as between the '374 original patent, the '086 division, and the '812 division of the division, crosses the examiner's lines of demarcation of inventions identified in the restriction requirement." Majority Op. at 24. It is unclear what the majority means by

[3] The '197 application originally contained all of the claims of the original '947 application, but, following a rejection, the applicant amended the '197 application so that it claimed methods of using benzothiazole compounds to treat certain medical conditions (high blood pressure, Parkinson's disease, and schizophrenia), excluding the method of using Group II compounds in accordance with the method of Group IX (i.e. the use of pyrrolidinyl-substituted compounds to treat Parkinson's disease), which was elected in the '947 grandparent.

[4] Like the '197 application, the '671 application originally contained all of the claims of the '947 grandparent application, but it was later amended to include only compound claims other than those directed to the pyrrolidinyl-substituted benzothiazoles previously claimed in the '374 patent.

stating that the "inventions" here did not cross the examiner's "lines of demarcation of inventions." It is not the inventions that must preserve the examiner's line of demarcation among separate inventions, but rather, the applications that must be consonant with the restriction requirement. Here it is clear that the patent examiner's line of demarcation between independent and distinct inventions was not preserved, as is required by our case law, because both the parent and the child applications combined distinct inventions.

In effect, it appears that the majority is dispensing with the requirement that the restriction requirement be followed at all in any later divisional applications, so long as the original application in which the restriction requirement was imposed complies with the restriction. This is apparently what the majority means in stating that what consonance requires is that "the claims prosecuted in two or more applications having common lineage in a divisional chain honor, as between applications, the lines of demarcation drawn by the examiner to what he or she considered independent and distinct inventions in the restriction requirement." Majority Op. at 23.

To support its position that later divisional applications need not comply with the restriction requirement, the majority cites language from our case law for the proposition that section 121 is satisfied if later divisional applications are limited to the "non-elected invention or inventions" of the parent application. This suggests to the majority that separate inventions may be combined in a single later application. But our decisions do not in fact countenance this. In my view, the majority's decision is inconsistent with our case law clearly establishing that "[c]onsonance requires that the line of demarcation between the 'independent and distinct inventions' that prompted the restriction

requirement be maintained." Gerber Garment Tec., Inc. v. Lectra Sys. Inc., 916 F.2d 683, 688 (Fed. Cir. 1990); see Geneva Pharms., 349 F.3d at 1381 ("Section 121 shields claims against a double patenting challenge if consonance exists between the divided groups of claims and an earlier restriction requirement." (citing Symbol Techs., Inc. v. Opticon, Inc., 935 F.2d 1569, 1569 (Fed. Cir. 1991))); Applied Materials, 98 F.3d at 1568 (noting that "the examiner's demarcation among the separate inventions should be preserved" (emphasis added)).

In Texas Instruments Inc. v. U.S. International Trade Commission, 988 F.2d 1165 (Fed. Cir. 1993), the original examiner found that the claims of the original application were drawn to three separate inventions, and grouped the claims in Groups I, II, and III. Id. at 1179. The applicant duly followed the restriction requirement laid out by the examiner and separated out the claims into three separate patents, with claims drawn to Group I issuing as the original patent (the '238 patent), and claims drawn to Group II and III issuing as divisionals of the parent application (the '027 and the '764 patent, respectively). However, the examiner's description of what was contained in Group III differed from the actual grouping in the restriction requirement, which in fact incorporated a claim drawn to Group II. The Commission held that the "actual restriction groupings, not the written descriptions thereof, control for purposes of ascertaining if subsequent amendments to original claims are consonant with the substantive restrictions drawn by the examiner." Id. We adopted this reasoning, and concluded that the inclusion of the claim drawn to Group II in the '764 patent was "consonant with the grouping restriction actually imposed by the examiner." Id. (emphasis added). In other words, the later application was consonant because the

applicant followed the original examiner's groupings. That was not done here, and consonance accordingly was not maintained.

Applied Materials, Inc. v. Advanced Semiconductor Materials America, Inc., 98 F.3d 1563 (Fed. Cir. 1996), is to the same effect. There, the examiner issued a restriction requirement and divided the claims into three groups: an oven-type radiation-heated reactor, a reactor with means for introducing gaseous reactants, and a gaseous epitaxial coating process. The applicant initially elected the radiation-heated reactor, then "duly prosecuted the other two inventions in separately filed divisional applications." Id. at 1567. During the prosecution of the patent for the gaseous epitaxial coating process, the claims were amended to include non-epitaxial deposition as well as epitaxial deposition. The alleged infringer in that case argued that consonance was lost when the claims were enlarged. However, the original examiner had not determined that non-epitaxial deposition and epitaxial deposition were separate inventions. The court held that section 121 still applied. Id. at 1569. The amendments to the process claims did not violate the restriction requirement, "for the process claims remained in separate patents from the apparatus claims although the scope of the process claims was modified." Id. at 1568 (emphasis added). This language makes clear that the patentee's conformity with the examiner's restriction requirement, by separating out the three patentably distinct inventions into three separate applications, was the key to invoking section 121. In other words, later applications must keep separate the inventions that the original examiner identified as being separate. It seems to me plain that the parent and child applications in this case did not satisfy the consonance requirement.

But even if the majority were correct as to consonance, the benefit of the section 121 safe harbor should be denied because the '671 child application which issued into the '812 patent was not filed "as a result of" the restriction requirement. The only justification the majority offers for concluding that the "as of result of" requirement is met in this case is that the restriction requirement was imposed with respect to the grandparent application, resulting in the filing of one or more later divisional applications. But this rationale completely fails to explain why the child is protected from the parent application as a reference. There is in fact no basis for protecting the child against the use of the parent application as a reference, since there is absolutely nothing in the majority's reading of the original (grandparent) restriction that in any way required separation of the child from the parent. Nor did the examiner of the parent application require separation of the child. The second examiner did not follow the reasoning or views of the first examiner as to the distinctiveness of the various inventions. In other words, the child was not separated from the parent "as a result of" the restriction requirement, but rather as the result of the applicant's voluntary choice. Since the separation was not "due to the administrative requirements imposed by the Patent and Trademark Office," id. at 1568, the child application should not be afforded the protections of section 121 with respect to the parent application.

The majority opinion not only fails to follow a "strict test" for the application of section 121, see Geneva Pharms., 349 F.3d at 1382, it fails to recognize any meaningful restriction on section 121's application in the present context. Under the majority's theory, if an applicant faced with a restriction requirement filed a series of divisional applications claiming essentially the same invention or an obvious variant

again and again, each successive application would be protected from all of the earlier applications—whether or not the later applications followed the original restriction requirement. None of the earlier applications could be cited as prior art. Thus, the applicant could thereby have achieved multiple unjustified extensions of the patent term. The potential for this abuse is illustrated in this case: by breaking up the parent and child applications while ignoring the line of demarcation between patentably distinct inventions drawn by the first examiner, Boehringer was able to extend the term of the ’812 patent (the child) six months longer than the ’086 patent (the parent’s) term, although the ’812 patent was obvious in light of the ’086 patent. The majority’s opinion is devoid of any justification for this untenable result. It hardly requires argument to demonstrate that Congress could not have intended section 121 to operate in this perverse fashion.

I respectfully dissent.

IN RE ROBERT LONARDO, (Reexamination No. 90/003,494) IN RE RESTORATIVE CARE (Reexamination No. 90/003,343) IN RE RESTORATIVE CARE

96-1101,-1123,-1124

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

119 F.3d 960*; *1997 U.S. App. LEXIS 16771*; *43 U.S.P.Q.2D (BNA) 1262

July 8, 1997, Decided

SUBSEQUENT HISTORY: [**1] Certiorari Denied March 2, 1998, Reported at: *1998 U.S. LEXIS 1493*.

PRIOR HISTORY: Appealed from: U.S. Patent and Trademark Office Board of Patent Appeals and Interferences. (Serial No. 08/218,756).

DISPOSITION: AFFIRMED.

COUNSEL: Kirk M. Hartung, Zarley, McKee, Thomte, Voorhees & Sease, of Des Moines, Iowa, argued for appellants. With him on the brief was Donald H. Zarley.

Nancy J. Linck, Solicitor, U.S. Patent and Trademark Office, of Arlington, Virginia, argued for the Commissioner. With her on the brief were Albin F. Drost, Deputy Solicitor, Joseph G. Piccolo and John M. Whealan, Associate Solicitors.

JUDGES: Before NEWMAN, LOURIE, and RADER, Circuit Judges. Opinion for the court filed by Circuit Judge LOURIE. Opinion concurring in the judgment as to Serial No. 08/218,756 and dissenting as to Reexamination Nos. 98/003,494 and 90/003,343 filed by Circuit Judge NEWMAN.

OPINION BY: LOURIE

OPINION

[*962] LOURIE, Circuit Judge.

Robert Lonardo and Restorative Care of America Inc. appeal from three decisions of the Patent and Trademark Office (PTO) Board of Patent Appeals and Interferences holding that certain claims of *U.S. Patents 5,269,748* and *5,298,013* are invalid, and that the only claim of application S/N 08/218,756 is not allowable, based on the ground [**2] of double patenting over expired U.S. Patent Re. 33,762. Ex parte Restorative Care of Am., Inc., No. 95-4499 (Bd. Pat. App. & Int. Oct. 13, 1995); Ex parte Restorative Care of Am., Inc., No. 95-4500 (Bd. Pat. App. & Int. Oct. 13, 1995); Ex parte Lonardo, No. 95-4476 (Bd. Pat. App. & Int. Oct. 13, 1995). Because the board did not err in holding that the rejected claims of the patents are unpatentable and that the claim of the application is not allowable, we affirm.

BACKGROUND

The '756 application is a continuation of the application that issued as the *'013 patent*, which is a division of the application that issued as the *'748 patent*. The *'013* and *'748 patents*, the '756 application, and the '762 patent are all apparently entitled to the benefit of the filing date of the same abandoned application. The following chart indicates the relationship between these patents and applications.

abandoned application *'748 patent* (continuation)

'762 reissue patent (expired) *'013 patent* (division) '756 application (continuation)

The inventions of the patents and application generally concern a therapeutic leg and foot device. As shown in figure 8 of the application and patents, reproduced [**3] below, this device includes an L-shaped member having a leg portion (20), a heel portion (22) at the end of the leg portion, and a foot portion (21) extending from the heel portion at a right angle to the leg portion. The heel portion is configured to provide a space (27) between a patient's heel and the heel portion (22) in order to prevent the application of pressure to the patient's heel. This is useful, for example, in preventing the formation of a decubitus ulcer (pressure sore) on the heel of a bedridden patient.

[*963]

Claim 1 of the expired '762 reissue patent reads as follows:

1. A therapeutic leg and foot device comprising an L-shaped member of a flexible, transparent, acrylic, plastic, said member having a generally contoured and channel-shaped leg portion, a curved heel portion integral with one end of said leg portion, and a generally contoured foot portion extending integrally from said heel portion at right angles to said leg portion, said foot portion being shorter than the adult human foot, the channel shape of said leg portion being substantially flattened at said heel portion, said curved heel portion being narrower than said foot and leg portions and having a [**4] free and unflanged edge to permit flexing of said foot portion with respect to said leg portion, said foot portion exerting a pressure of 30 to 50 lbs. toward said leg portion when said foot portion is flexed away from the right angle position, and means for releasably securing the device to the leg and foot of a patient.

The *'748 patent* also claims a device, claims 1 and 9 reading as follows:

1. A therapeutic leg and foot device, comprising, an L-shaped member comprised of a one piece flexible plastic material; said L-shaped member having a leg portion, a heel portion integral with one end of said leg portion, and a foot portion extending integrally from said heel portion at right angles to said leg portion, said heel portion having a configuration to provide a space between the patient's heel and said heel portion to prevent the application of pressure to the patient's heel by the heel portion when the posterior region of the lower leg and the sole of the foot of a patient wearing the device are in supporting contact with said leg portion and said foot portion, respectively, resulting from the configuration of said heel portion, said heel portion having substantially free [**5] and unflanged side edges to permit lateral visibility of said space and a patient's heel suspended within said space, and means for releasably securing said device to the leg and foot of a patient.

9. The device of claim 1 wherein said means for releasably securing said device to the leg and the foot of a patient is comprised of a sandal extending substantially over said foot portion and the foot of the patient with a cut out heel portion [*964] adjacent said heel portion of said splint and said space.

Restorative Care stated in its brief that claim 11 "is substantially similar to claim 9, except there is no limitation in claim 10 (from which claim 11 depends) that the L-shaped member be a one piece plastic material (as in claim 1 from which claim 9 depends)."

The *'013 patent* claims a method, claim 1 reading as follows:

1. The method of healing or preventing decubitus on the heel of a bedfast patient, comprising, placing on the leg and foot of said patient an L-shaped member having a leg portion, a heel portion on one end of said leg portion, and a foot portion extending from said heel portion at right angles to said leg portion, forming the shape of said heel portion [**6] so that the shape alone of said heel portion will provide a space between the patient's heel and said heel portion to prevent the application of pressure to the patient's heel by said heel portion when the lower leg and the sole of the foot of said patient are in intimate contact with said leg portion and said foot portion, respective, and securing said L-shaped member to the leg and foot of said patient by using a sandal extending substantially over said foot portion and the foot of the patient, and cutting out a heel portion of said sandal adjacent said heel portion of said L-shaped member and said space.

The '756 application also claims a method, claim 1 reading as follows:

1. The method of healing or preventing decubitus on the heel of a bedfast patient, comprising, placing on the

leg and foot of said patient an L-shaped member having a leg portion, a heel portion secured to one end of said leg portion, and a foot portion extending from said heel portion substantially at right angles to said leg portion, forming the shape of said heel portion so that the shape alone of said heel portion alone will provide a space between the heel portion and said heel of said patient [**7] to prevent the application of pressure to the patient's heel by said heel portion when the lower leg and the sole of the foot of said patient are in intimate contact with said leg portion and said foot portion, respectively, securing said L-shaped member to the leg and foot of said patient by using a sandal extending substantially over said foot portion, and the foot of the patient, and providing an opening in said sandal adjacent said heel portion of said L-shaped member and said space to permit visual inspection of said space from a lateral direction.

Third parties requested reexamination of the *'748* and *'013 patents*; the reexaminations were limited to claims 9 and 11 of the *'748 patent* and claims 1, 2, and 5 of the *'013 patent*. The reexamination order for the *'748 patent* was based on a new question of patentability allegedly raised with respect to the '762 patent, and the reexamination order for the *'013 patent* was based on a new question of patentability allegedly raised with respect to another patent. During reexamination, the claims in question of both patents were rejected on the ground of double patenting over claim 1 of the '762 patent. Restorative Care appealed to the [**8] board, arguing that double patenting was improperly raised during reexamination and that the claims in question are patentably distinct over claim 1 of the '762 patent.

The board first determined that the issue of double patenting was properly raised during reexamination of the *'748 patent*. It reasoned that under *35 U.S.C. § 303 (1994)*, the Commissioner has the authority to consider "other patents" during reexamination, aside from "prior art consisting of patents or printed publications" specified in *35 U.S.C. § 301 (1994)*. The board in effect interpreted the phrase "other patents" in *section 303* as not being limited to prior art patents. It affirmed the rejection of claims 9 and 11 of the *'748 patent* on the ground of obviousness-type double patenting over claim 1 of the '762 patent. The board reasoned that obviousness-type double patenting includes all types of double patenting other than "same invention" double patenting. Since the claims in question did not define identical subject matter, [*965] the board held that "same invention" double patenting did not apply, but obviousness-type double patenting was properly applied because one could not practice the invention of the expired [**9] '762 patent without infringing the *'748 patent*.

The board's analysis next focused on the "securing" means limitation of claims 9 and 11. In construing that limitation under *35 U.S.C. § 112*, P 6 (1994), the board found that the only structure disclosed for that means was a sandal with a cut-out heel portion. The board thus concluded that the claims of the '762 and *'748 patents* both require that structure and accordingly that they are not patentably distinct. The board also affirmed the rejection of claims 1, 2, and 5 of the *'013 patent* on the ground of double patenting over claim 1 of the '762 patent. The board found that the "securing" step requires securing a sandal with a cut-out heel portion and again interpreted the "securing" means of the '762 patent claim as requiring a sandal with a cut-out heel portion. The board therefore concluded that the method of the *'013 patent* is not patentably distinct from the apparatus of the '762 patent.

Finally, the sole claim of the '756 application was rejected on the ground of double patenting over claim 1 of the '762 patent. The board found that the claimed method of the '756 application requires use of a sandal with a cut-out heel [**10] portion. Because the apparatus of the '762 patent requires that same structure, the board concluded that the method was not patentably distinct over the apparatus.

Lonardo and Restorative Care appealed to this court and all three cases were consolidated for appeal. We have jurisdiction pursuant to *28 U.S.C. § 1295(a)(4) (1994)*. Double patenting is a question of law that we review de novo. *Texas Instruments v. United States Int'l Trade Comm'n, 988 F.2d 1165, 1179, 26 U.S.P.Q.2D (BNA) 1018, 1029 (Fed. Cir. 1993)*.

DISCUSSION

A. Propriety of Reexamination

Restorative Care argues that there was no basis for reexamination of the *'748 patent*, that reexamination may only be ordered to decide new questions of patentability based upon prior art. Because the '762 and *'748 patents* are entitled to the same filing date, Restorative Care argues, the '762 patent is not prior art to the *'748 patent*

and the reexamination thus was improper. The PTO responds that the Commissioner is authorized to consider double patenting during reexamination. In particular, the PTO argues that the reexamination statute authorizes the Commissioner to consider "other patents or printed publications" without [**11] restriction to prior art. The PTO also argues that, because obviousness-type double patenting is judicially-created and is not based upon statute, there is no statutory reason why it may not be applied in both examination and reexamination.

The doctrine of double patenting is intended to prevent a patentee from obtaining a time-wise extension of patent for the same invention or an obvious modification thereof. E.g., *In re Longi, 759 F.2d 887, 892, 225 U.S.P.Q. (BNA) 645, 648 (Fed. Cir. 1985).* "Same invention" double patenting is based upon *35 U.S.C. § 101 (1994)*, which states that an inventor may obtain "a patent" for an invention. The statute thus permits only one patent to be obtained for a single invention, and the phrase "same invention" refers to an invention drawn to substantially identical subject matter. Id. Obviousness-type double patenting, on the other hand, is judicially created and prohibits an inventor from obtaining a second patent for claims that are not patentably distinct from the claims of the first patent. Id. With obviousness-type double patenting, however, a terminal disclaimer may overcome that basis for unpatentability, assuming that the first patent has not expired. [**12] In this case, the '762 patent, over which the claims have been rejected, has expired, so a terminal disclaimer cannot cure these rejections.

The applicable statute relating to reexamination provides that:

Within three months following the filing of a request for reexamination under the provisions of *section 302* of this title, the Commissioner will determine whether a [*966] substantial new question of patentability affecting any claim of the patent concerned is raised by the request, with or without consideration of other patents or printed publications. On his own initiative, and any time, the Commissioner may determine whether a substantial new question of patentability is raised by patents and publications discovered by him or cited under the provisions of *section 301* of this title.

35 U.S.C. § 303(a) (1994).

Under *section 303(a)*, the Commissioner has authority "on his own initiative" to consider a substantial new question of patentability over "patents and publications discovered by him." That provision of the statute is not specifically limited to prior art patents or printed publications. Moreover, it authorizes the Commissioner to consider "other patents or printed publications" [**13] in addition to the prior art submitted by a third party who may have requested the reexamination. See *35 U.S.C. § 301 (1994)* ("Any person at any time may cite to the Office in writing prior art consisting of patents or printed publications which that person believes to have a bearing on the patentability of any claim of a particular patent."); *35 U.S.C. § 302 (1994)* ("Any person at any time may file a request for reexamination by the Office of any claim of a patent on the basis of any prior art cited under the provisions of *section 301* of this title."). Since the statute in other places refers to prior art in relation to reexamination, see id., it seems apparent that Congress intended that the phrases "patents and publications" and "other patents or printed publications" in *section 303(a)* not be limited to prior art patents or printed publications.

The legislative history indicates that considerations such as cost and availability of evidence were among the criteria Congress considered in determining the scope of reexamination. See H.R. Rep. No. 1307, at 4 (1980), reprinted in 1980 U.S.C.C.A.N. 6460, 6462-63; see also *Quad Envtl. Techs. Corp. v. Union Sanitary Dist.,* [**14] *946 F.2d 870, 875 n.7, 20 U.S.P.Q.2D (BNA) 1392, 1395 n.7 (Fed. Cir. 1991)* (stating that the purpose in restricting reexamination to printed documents "was to provide a cheaper and less time-consuming alternative way to challenge patent validity on certain issues"). A patent is clearly the type of evidence that Congress intended the PTO to consider during reexamination, and the cost of examination is not significantly increased by having the PTO consider the ground of double patenting, as it involves issues of claim identity and obviousness, well within the PTO's everyday expertise. The burdens on the patentee and the PTO are the same, whether the issue is novelty or nonobviousness over prior art patents or double patenting over a prior-issued patent. Moreover, the efficiency of the patent evaluation process is ultimately increased by allowing the PTO to consider double patenting during reexamination, rather than requiring a district court to decide a challenge to a patent based upon alleged double patenting. Finally, it is reasonable to conclude that Congress intended to include double patenting over a prior patent as a basis for

reexamination because maintenance of a patent that creates double patenting [**15] is as much of an imposition on the public as maintenance of a patent that is unpatentable over prior art. Thus, we conclude that the PTO was authorized during reexamination to consider the question of double patenting based upon the '762 patent.

Restorative Care also argues that, even if the PTO was entitled to consider double patenting during reexamination, the examiner improperly relied upon a "nonobvious double patenting" ground. It refers to the examiner's reasoning that the patentee should not be entitled to maintenance of the rejected claims because it did not show why the claims were not presented in the earlier patent and the subject matter of the claims was fully disclosed in that patent. Restorative Care argues that there are only two types of double patenting, same invention and obviousness-type, and that the board improperly affirmed the rejection based upon a nonexistent class of double patenting. The PTO responds that the board properly relied upon obviousness-type double patenting by finding that the '748, '013, and '762 claims are only obvious variations of each other.

We note that the Manual of Patent Examining Procedure contains a section entitled "Nonobvious [**16] Type" within its discussion of [*967] nonstatutory double patenting. M.P.E.P. § 804(B)(2), p. 800-20 (July 1996). It refers to the questions whether claims could have been presented in an earlier patent and whether the subject matter is disclosed in that patent. Both issues were mentioned by the board here. However, we need not consider whether Restorative Care is correct in its assertion that its claims were improperly rejected on the basis of a nonobvious double patenting ground. The board premised its affirmance of the examiner on obviousness-type double patenting and we agree with its holding, as is indicated hereinbelow.

B. Obviousness-Type Double Patenting

1. The *'748 Patent*

Restorative Care argues that claims 9 and 11 of the *'748 patent* are patentably distinct from claim 1 of the '762 patent and that, accordingly, obviousness-type double patenting does not bar confirmation of its claims. In particular, it argues in its brief (emphasis in original) that, although all claims in question "require an L-shaped member with a leg portion, a heel portion, and a foot portion integral with one another," claim 1 of the '762 patent further requires that the L-shaped member be made [**17] from transparent acrylic plastic, that the foot and leg portions be contoured, that the foot portion be shorter than the adult human foot, that the leg portion be substantially flattened at the heel portion, that the heel portion be narrower than the leg and foot portions, and that the foot portion exert a pressure of 30-50 pounds.

The PTO responds that claims 9 and 11 of the *'748 patent* contain only obvious variations over claim 1 of the '762 patent and that one could not practice the invention of claim 1 of the '762 patent without also infringing claims 9 and 11.

We agree with the PTO that the claims in question are unpatentable on the ground of obviousness-type double patenting, not because one could not practice the invention of the '762 patent without infringing claims 9 and 10, but because each of the additional limitations argued by Restorative Care is an obvious modification of the device defined in the '762 claim. Many of the alleged differences in elements are in species-genus form, the expired '762 patent claiming an element with specificity and the '748 claims defining it more generically. For example, Restorative Care has shown no patentable distinction between a [**18] "leg portion" (*'748 patent*) and a "generally contoured and channel-shaped leg portion" ('762 patent), between a "foot portion" and a "generally contoured foot portion," or between a "heel portion" and a "curved heel portion."

Restorative Care also argues that the board improperly read limitations into the specification when it interpreted the "securing" means limitation of the '762 patent claim. The PTO responds that, under *35 U.S.C. § 112*, P 6 (1994), the board correctly considered the specification in construing the "securing" means element. See *In re Donaldson, 16 F.3d 1189, 1193, 29 U.S.P.Q.2D (BNA) 1845, 1849 (Fed. Cir. 1994)* (in banc) (stating that *section 112*, P 6, "applies regardless of the context in which the interpretation of means-plus-function language arises"). We agree with the PTO that the board correctly interpreted the "securing" means element under *section 112*, P 6, and Donaldson. The only structure disclosed for implementing the function of the "securing" means is a sandal with a cut-out heel portion. In particular, the specification states that:

Any suitable means may be used to secure the device to the leg and foot of the patient. For example, viewing FIGS. 8 and [**19] 9, I use a soft leather sleeve or

sandal 30 which is slipped over the patient's foot and the foot portion 21 of the device. It is provided with a cut out heel portion with strips 31 and 32 passing under the foot and strips 33 behind the upper heel.

'762 patent, col. 3, lines 55-62. In interpreting the "securing" means in light of the disclosed structure, we do not disagree with the board that it must be interpreted in the manner that is expressly recited in claim 9 of the *'748 patent*. Accordingly, the board did not err in concluding that claims 9 and 11 of the *'748 patent* are unpatentable on that ground.

[*968] 2. The *'013 Patent*

Restorative Care makes the same arguments with respect to this patent. For the reasons explained above, double patenting was properly raised during reexamination of the *'013 patent*. Furthermore, the board correctly characterized the rejection as being based on obviousness-type double patenting.

Restorative Care argues that the claims in question are patentably distinct from the claims of the '762 patent. Restorative Care argues that the method of using the device would not have been obvious over a claim to the device. We do not agree that there is [**20] a patentable distinction between the method of using the device and the device itself. The claimed structure of the device suggests how it is to be used and that use thus would have been obvious.

Restorative Care also argues that the particular structure used by the method is patentably distinct from the device, and it makes essentially the same arguments with respect to the alleged structural differences as it did for the *'748 patent*. For the reasons explained above, we agree with the PTO that, even given these structural differences, the method would have been obvious. Accordingly, we conclude that the board did not err in holding that claims 1, 2, and 5 of the *'013 patent* are unpatentable on the ground of double patenting over the '762 patent.

3. The '756 Application

Lonardo finally argues that the claim of the '756 application is patentably distinct from the '762 patent claim. The PTO responds that the board correctly rejected the claim on the ground of obviousness-type double patenting. Lonardo makes essentially the same arguments with respect to the alleged distinctions between the method and device, and between the structure used by the method and the structure [**21] of the device, that Restorative Care made with respect to the *'748* and *'013 patents*. For the reasons explained above, we do not agree that these are nonobvious distinctions or that there is such a distinction between the method of using the device and the device itself. Accordingly, we conclude that the board did not err in holding that the claim of the '756 application is unpatentable over the '762 patent on the ground of double patenting.

CONCLUSION

The board did not err in concluding that double patenting was properly raised during reexamination of the *'748* and *'013 patents* and that claims 9 and 11 of the *'748 patent* and claims 1, 2, and 5 of the *'013 patent* are unpatentable over the '762 patent on the ground of obviousness-type double patenting. The board also did not err in concluding that claim 1 of the '756 application is not allowable on that same ground.

AFFIRMED

CONCUR BY: NEWMAN

CONCUR

NEWMAN, Circuit Judge, concurring in the judgment as to Serial No. 08/218,756, dissenting as to Reexamination Nos. 98/003,494 and 90/003,343.

Double patenting is [**22] not a ground of rejection that is permitted to be raised under the reexamination statute. I must, respectfully, dissent from the panel majority's decision to ignore the statutory limitations of reexamination.

The reexamination statute is the result of a carefully designed compromise, balancing the advantages of resolution of certain important issues by reexamination in the Patent and Trademark Office, against the disadvantages of potential harassment of patentees after their patent has issued. For this reason, the statute requires that reexamination be limited to "prior art consisting of patents or printed publications" cited to the Office under *35 U.S.C. § 301*. *Section 302* authorizes a request for reexamination "on the basis of any prior art cited under the provisions of *section 301*," and states that the request "must set forth the pertinency and manner of

applying cited prior art." Patentability based on prior art is the only available ground of reexamination. [1]

> 1 The panel majority's suggestion that the Commissioner's authority to act "on his own initiative," *35 U.S.C. § 303(a)*, somehow enlarges the grounds of reexamination is not a tenable reading of the statute.

[*969] Double [**23] patenting is not based on prior art. See, e.g., *Quad Environmental Tech. Corp. v. Union Sanitary Dist., 946 F.2d 870, 874, 20 U.S.P.Q.2D (BNA) 1392, 1394 (Fed. Cir. 1991)* (a double patenting rejection "does not mean that the first-filed patent is a prior art reference under § 102 against the later-filed application. [Citation omitted.]"); *In re Kaplan, 789 F.2d 1574, 1579, 229 U.S.P.Q. (BNA) 678, 682 (Fed. Cir. 1986)* ("In considering the question [of obviousness-type double patenting], the patent disclosure may not be used as prior art. [Citation omitted.]"); *In re Longi, 759 F.2d 887, 892 n.4, 225 U.S.P.Q. (BNA) 645, 648 n.4 (Fed. Cir. 1985)* ("the patent principally underlying the double patenting rejection is not considered prior art. [Citation omitted.]").

Limitation of reexamination to prior art was the legislative response to concerns lest the life of an issued patent be wasted and the patentee's legitimate rights be abused by third party requests for reexamination, for there are myriad grounds on which patentability is subject to challenge. See *Patlex Corp. v. Mossinghoff, 758 F.2d 594, 601, 225 U.S.P.Q. (BNA) 243, 248 (Fed. Cir. 1985).* In *In re Recreative Technologies Corp., 83 F.3d 1394, 1397, 38 U.S.P.Q.2d (BNA) 1776, 1778* [**24] *(Fed. Cir. 1996)* this court reviewed the legislative history and its "serious concern that reexamination not create new opportunities for abusive tactics and burdensome procedures." The requirement that "no grounds of reexamination were to be permitted other than on new prior art and sections 102 and 103" was a well-considered balance of the arguments for and against reexamination. H.R. Rep. No. 96-1307, at 3 (1980), reprinted in 1980 U.S.C.C.A.N. 6460, 6462 (reexamination is limited to new prior art).

The court again explained in *In re Portola Packaging, Inc., 110 F.3d 786, 789, 42 U.S.P.Q.2D (BNA) 1295, 1298 (Fed. Cir. 1997)* that "Congress recognized that holdings of patent invalidity by courts were mostly based on prior art that was not before the PTO." (Citing Patent Reexamination: Hearings on S.1679 before the Senate Comm. on the Judiciary, 96th Cong. 14 (1980) (testimony of Commissioner Sidney Diamond) (referring to a 1974 study showing that 66-80% of the patents held invalid involved uncited prior art)). See *In re Etter, 756 F.2d 852, 856, 225 U.S.P.Q. (BNA) 1, 4 (Fed. Cir. 1985)* (in banc) (the purpose of reexamination is to remedy overlooked prior art).

To achieve a contrary holding [**25] for the ground of double patenting, my colleagues invoke "efficiency" and offer the explanation that reexamination is cheaper and less burdensome than litigation. However, these were not the only issues weighed and balanced in this legislation, for a primary concern was the encumbrance on the patent during reexamination proceedings. Indeed, here it is the patentee who is objecting to having been brought into involuntary reexamination by third parties while the patents are in litigation.

It is not our role to amend the statute, and it is not our privilege to ignore the statute. Indeed, I take note that Congress has recently held hearings on certain proposals to enlarge the scope of reexamination. Meanwhile, the statute continues to bar reexamination on the ground of double patenting.

IN RE JOEL V. VAN ORNUM and PETER L. STANG

Appeal No. 82-505.

UNITED STATES COURT OF CUSTOMS AND PATENT APPEALS

686 F.2d 937; 1982 CCPA LEXIS 117; 214 U.S.P.Q. (BNA) 761

Oral argument on April 5, 1982
August 5, 1982

PRIOR HISTORY: [**1] Serial No. 821,360.

COUNSEL: *Harry M. Cross, Jr., Daniel W. Sixbey* and *Stuart J. Friedman*, of Seattle, WA, attorneys for appellants.

Joseph F. Nakamura, Solicitor, *Gerald H. Bjorge*, Associate Solicitor, of Washington, D.C., attorneys for the Patent and Trademark Office.

OPINION BY: RICH

OPINION

[*937] Before MARKEY, Chief Judge, RICH, BALDWIN, MILLER, and NIES, Associate Judges.

RICH, Judge.

This appeal is from the decision of the United States Patent and Trademark Office (PTO) Board of Appeals (board) sustaining the rejection of claims 1-3, 6, and 7 of application serial No. 821,360, filed August 3, 1977, for "Elastomeric Sealant Composition," on the ground of double patenting and also on a theory of abandonment by assignment, citing *35 USC 102(c)*. We affirm the double patenting rejection and do not reach the abandonment issue.

Background

The appellant-inventors, Van Ornum and Stang, in addition to filing the application [*938] at bar, had already had issued to their assignees two United States Patents on puncture sealant compositions for vehicle tires: No. 3,935,893, issued Feb. 3, 1976 (the *'893 patent*), and No. 4,113,799, issued Sept. 12, 1978 [**2] (the *'799 patent*). It has been of significance in this case that the *'893 patent* issued to General Motors Corporation as the result of an assignment, recorded in the PTO on the filing date of the application for that patent. The present application and the *'799 patent* have been assigned to Rocket Research Corporation, by change of name now Rockcor, Inc., the real party in interest in this appeal, the assignment also being recorded in the PTO.

The application on appeal was filed under *35 USC 121* as a voluntary division of the application that matured into the *'799 patent*, and all claims stand rejected on the ground of double patenting, said to be of the "obviousness type," the rejection being predicated on the claims of both the *'893* and *'799 patents*.

The board opinion explains its views on the relationship of the claims of the two patents to the claims on appeal as follows:

Before we discuss the rejections, it would be well to set forth an analysis of the various inventions being claimed in the two patents and the present application. As can be seen, all three relate to sealing compositions, which are to be used in the same manner. The claims of *Patent No. 3,935,893* set forth [**3] the composition in its most detailed form, describing six ingredients,

consisting of the high molecular weight and low molecular weight butyl rubbers, liquid polybutylene, partially hydrogenated elastomeric block copolymer, carbon black and cross-linking agents. The ratio of high molecular weight butyl rubber to low molecular weight butyl rubber is specifically described as being 60 to 40. *Patent No. 4,113,799* is broader in that it sets forth only the high molecular weight and low molecular weight butyl rubber as well as a "tackifier." As can be seen from the patent specification, liquid polybutylene is a preferred tackifier. The claims define a broad range of 35-65 for the high molecular weight rubber to 65-35 low molecular weight butyl rubber. The claims in the present application describe the same high molecular and low molecular weight butyl rubber composition which is used with the tackifier. However, the ratio of high molecular weight to low molecular weight butyl rubber is set forth in a broader range of 20-60 high molecular weight rubber to 80-40 low molecular weight butyl rubber. Also, the specification teaches tht liquid polybutylene is the preferred tackifier. [Our [**4] emphasis.]

Appellants' brief says that the claims on appeal are identical to claims which were in the application for the *'799 patent* which were rejected therein on the ground of double patenting in view of the *'893 patent* claims and that, because the Manual of Patent Examining Procedure (MPEP) § 1490 states that a terminal disclaimer cannot be directed to particular claims but only to an entire patent, they were divided out and placed in the divisional application on appeal. The *'799 patent* then went to issue with claims which had been allowed. The prosecution of the broader claims now before us was continued in a divisional application. With further reference to the relation of the claims on appeal to the claims of their patents, appellants' view is as follows:

The claims of the present applications [sic] are, by definition, generic to the species claims of the two patents * * * relied upon by the Examiner in support of the double patenting rejection * * *. The broad generic claims of the application comprehend both the constituents and specific range limitations of the claims of both patents. The Board of Appeals implicitly acknowledges the genus species relation by [**5] treating the appealed claims as an attempt to claim broadly that which had been previously described in more detail in the claims of the two patents.

In prosecuting these "generic" claims in the application before us, appellants sought [*939] to overcome the double patenting rejection by filing a terminal disclaimer under *35 USC 253*, second paragraph. [1] The first disclaimer filed was criticized as not in proper form and a second one was filed. The PTO rule or regulation on terminal disclaimers, which gives rise to the issue before us, is *37 CFR 1.321* which reads:

> 1 The second paragraph of *§ 253* which provides for terminal disclaimers reads:
>
> In like manner any patentee or applicant may disclaim or dedicate to the public the entire term, or any terminal part of the term, of the patent granted or to be granted.

§ 1.321 Statutory disclaimer.

(a) A disclaimer under *35 U.S.C. 253* must identify the patent and the claim or claims which are disclaimed, and be signed by the person making the disclaimer, who shall state therein the extent of his interest in the patent. A disclaimer which is not a disclaimer of a complete claim or claims may be refused recordation. [**6] A notice of the disclaimer is published in the Official Gazette and attached to the printed copies of the specification. In like manner any patentee or applicant may disclaim or dedicate to the public the entire term, or any terminal part of the term, of the patent granted or to be granted.

(b) A terminal disclaimer, when filed in an application to obviate a double patenting rejection, must include a provision that any patent granted on that application shall be enforceable only for and during such period that said patent is commonly owned with the application or patent which formed the basis for the rejection. [Our emphasis.]

The legal problem which has been paramount in this case arose because appellants would not, because they could not, file a disclaimer complying with paragraph (b) of the rule because their *'893 patent*, on the claims of which the double patenting rejection was in part based, had been assigned to General Motors. The PTO therefore ruled that the disclaimer was unacceptable and that the double patenting rejection would have to stand. Appellants therefore attack the rule.

With respect to the double patenting rejection, appellants make two principal contentions: [**7] (1) the

appealed claims, considering their relation to the claims of the two patents, were not properly rejected for double patenting; (2) *37 CFR 1.321(b)* is invalid, (a) as beyond the rulemaking authority of the Commissioner of Patents and Trademarks under *35 USC 6(a)* and *(b)* because it is contrary to statutory and case law.

OPINION

The Facts Adequately Support a Rejection Based on "Double Patenting"

We necessarily begin by considering whether there was a proper "double patenting" rejection. We approach that question by stating our view of the essential facts as gleaned from our own study of the record.

Appellants Van Ornum and Stang are the identical inventorship entity involved in all of the patents and application here involved, notwithstanding the reversal of the order of their names on the two issued patents so that they have been referred to as the Stang et al. and Van Ornum et al. patents. They filed their first application on July 15, 1974, and simultaneously recorded their assignment thereof to General Motors. The *'893 patent* issued thereon is entitled "Self-Sealing Vehicle Tire and Sealant Composition." The object of the invention is to render tubeless automobile [**8] tires self sealing after being punctured, desirably maintaining that capacity over a wide possible service temperature range of -20 degrees F. to 270 degrees F. The inventors were not pioneers in the field and begin their disclosure by referring to three prior sealant patents. They say they began their work by "screening a number of commercial sealants" containing curable butyl rubber which lacked sufficient tack and strength at high temperatures. The first example of the patent, which contains two specific examples, discloses that appellants began with a [*940] "commercially available sealant composition," the makeup of which is tabulated, to which they added a liquid tackifier and a "block copolymer." Going into more detail, the tabulation of the old sealant composition shows that it contained a by-weight mixture of 60 parts of high molecular weight butyl rubber and 40 parts of low molecular weight butyl rubber, a quantity of mixed carbon blacks of three different grades, a cross-linking agent, and a large amount of toluene as solvent. To this was added, as tackifier, a liquid copolymer consisting of 98% butylene and 2% isobutylene which was "a commercial product available [**9] under the trade name "Indopol H-300'." Also added was a block copolymer "of the A-B-A type wherein the A blocks were formed of polystyrene, [and] the B blocks were polymeric segments of isoprene and some higher carbon chain length conjugated dienes," partially hydrogenated. This material "was obtained under the trade designation 'Kraton G-6500'," said to be about 68% by weight polyisoprene.

This condensed description should suffice to give meaning to the four claims of '893, which are of quite limited scope, claim 1 being exemplary:

1. A sealant composition for use in a vehicle tire to seal punctures therein up to about one-quarter inch in diameter formed in the operation of said tire, said composition consisting essentially of, by weight,

10 to 15 parts of a butyl rubber having an average molecular weight in the range of about 100,000 to 300,000,

6 to 10 parts of a butyl rubber having an average molecular weight in the range of about 10,000 to 30,000,

60 to 65 parts of a liquid polybutylene having an average molecular weight of about 500 to 5,000,

5 parts of a partially hydrogenated thermoplastic elastomeric block copolymer having the general molecular configuration [**10] A-(B-A)1-5 wherein, prior to hydrogenation, each A is a monovinyl arene polymer block and each B is a conjugated diene polymer block, and only said diene block(s) are hydrogenated.

5 to 17 parts carbon black,

and small but suitable amounts of cross-linking agents suitable for curing butyl rubbers.

All four claims are of the "consisting essentially of" type. Claims 1 and 2 are directed to "A sealant" and claims 3 and 4 to "A self-sealing rubber tire" containing sealant as defined in claims 1 and 2, respectively. Claims 2 and 4 differ from claims 1 and 3 in that they specify the monovinyl arene to be styrene and limit the "diene polymer" as being "from the group consisting of butadiene and isoprene." So much for the nature of *patent '893*. We turn now to the other patent.

One year after filing the application for their *'893 patent* and assigning it to General Motors, appellants filed, on July 14, 1975, while their first application was still pending, their application which matured into the

'799 patent. The two applications are unrelated in that the second patent makes no reference to the first application. It also has a different assignee, Rockcor, Inc. We do not have [**11] the file history of this patent in the record so all we know about it is what is in the patent and what we have been told about it, which is minimal. Essentially all of the disclosure of the *'893 patent* is contained in it but in rewritten and considerably amplified form. Instead of two specific examples there are eight, so designated, plus a table of eight somewhat related specific compositions, and two added drawings one of which is a bicycle tire and the other a graph. One item of added disclosure relates to the ratio of high to low molecular weight butyl rubbers which form an important ingredient of all the sealants. The general disclosure is that the weight ratio "may vary from 20/80 to 60/40." A more specific disclosure is that "a sealant composition having a ratio of high molecular weight to low molecular weight butyl rubber between about 35/65 to 45/55 has unexpectedly superior properties." The patent specification goes on to explain that superiority in detail, which we need not consider, [*941] and was evidently enough to persuade the examiner that this narrower ratio range was a patentable discovery since it became the subject matter of the claims which appear in [**12] the patent. Claim 1, the only independent claim, exemplifies this:

1. A sealant composition comprising a reinforced partially cross-linked matrix comprising a high average molecular weight butyl rubber having a molecular weight in the range of approximately 100,000 to 400,000 and a low average molecular weight butyl rubber having a molecular weight in the range of approximately 10,000 to 40,000, in a ratio of high to low molecular weight butyl rubber of between about 35/65 and 45/55, in admixture with a tackifier present in an amount between about 55 and 70 weight % of the composition.

The remaining claims of the *'799 patent* are the dependent claims 2-7 adding further limitations. For example, illustrative of the kind of added disclosure in this patent over that in *patent '893*, claim 6 states that the "tackifier" of claim 1 may be selected from a group consisting of nine broadly-named subgroups of compounds which will be found listed in the specification, e.g., one such subgroup is "alkyl aromatics." Compared with the disclosure of *patent '893*, practically every component of the sealant there described is the subject of an augmented disclosure of possible variants in *patent* [**13] *'799*. Another interesting feature of the prosecution leading to *patent '799* is a declaration of Van Ornum under *37 CFR 1.131* which the attorney stated (our emphasis) "establishes that the genus claimed in this application on appeal [to the board] was reduced to practice before the filing date of U.S.P. 3,935,893." One statement in that declaration is that 5 of the 8 examples in the table of compositions in the *'799 patent*, repeated in the division therefrom now before us, were physically tested prior to the filing date of the first *patent, '893*, July 14, 1974.

We now approach the application at bar. We are told that the claims on appeal were originally presented in the application for *patent '799* but were rejected therein for double patenting in view of the claims which now appear in *patent '893*. [2] Appellants, thinking of avoiding that rejection with a terminal disclaimer, discovered that they would have to disclaim a terminal portion of the term of any patent they might get with respect to all the claims in their application, including claims 1-7 which were allowable. They avoided this sacrifice by dividing out the claims on appeal into the application before us, without [**14] changing the specification, and *patent '799* was issued for its full term. Application serial No. 821,360 is the divisional application they filed on Aug. 3, 1977, here on appeal. Therein they received a final rejection for double patenting in view of the claims of *patent '893*, and also in view of the allowed claims of the parent application which matured into *patent '799*. The examiner issued this rejection after receiving a "Disclosure Statement" from appellants' attorney containing the following (the omissions being merely page references):

> 2 The record and briefs show that there had been some amending of these claims, not disclosed in full. Appellants' brief says they are identical to the correspondingly numbered claims, as amended during the prosecution of the *'799 patent*, were cancelled therefrom, filed in the divisional, and amended to their present from prior to issuance of *patent '799*. According to the examiner, when he first acted on them in the divisional they were in "consisting of" form so he did not reject them on *patent '893* for double patenting but did so after they were amended to their present "comprising" form, and otherwise amended.

U.S. Patent 3,935,893 [**15] discloses and claims a

tire sealant composition comprising a high molecular weight butyl rubber, a low molecular weight butyl rubber and a partially hydrogenated block copolymer. The block copolymer is stated to be absolutely essential * * * and must be present in at least 4% by weight * * *. In contrast, the invention disclosed and claimed herein does not require a partially hydrogenated block copolymer, since applicants have discovered that certain compositions make good sealants for a variety of uses including bicycle tire sealants whether or not they include such [*942] block copolymers. * * * This difference requires the conclusion that the invention claimed in U.S. Patent 3,935,893 and the invention claimed in this application are patentably distinct.

The examiner disagreed with appellants' conclusion and so do we, at least for present purposes as more fully explained later. For the present, we note that this "absolutely essential" argument remains one of appellants' principal points and requires closer examination. As earlier stated, the '893 patent's stated objective is a sealant effective in a vehicle tire over a wide temperature range of from -20 degrees to 270 [**16] degrees. The statement in the specification reads as follows:

* * * we have found that it is absolutely essential that it [block copolymer] be employed in the subject sealant composition if the sealant is to have suitable strength, particularly over the wide temperature range involved, to effectively retain the air under pressure in a punctured tire.

In the amplified disclosure of *patent '799*, appellants take a different approach to the whole situation. The whole pitch appears to be to justify broader -- even "generic" -- claims. The sealant is now not just for automobile tires; it may be applicable to less severe uses, says the disclosure, such as bicycle tires, tire patches, auto sealant, roofing sealant, caulking compound, general household sealant "and others." Partially hydrogenated block copolymer is no longer "absolutely essential"; "To aid in maintaining sufficient tackiness and thermal stability at elevated temperatures * * * [it] may be included up to about 10 wt. % of the composition * * *." (Emphasis ours.) It is in fact included in every one of the eight formulas of the table (4.75-5.01 wt. %) but omitted from all of the patent claims except 4 and 5 and, of [**17] course, from all of the claims on appeal. In sum, considering the position taken in appellants' second patent, the "iffy" nature of the statement in their first patent, and the evident fact that nothing in particular is suggested to be done to make it possible to omit the block copolymer component, appellants' position that putting it in or leaving it out suffices to create a "patentable distinction" between claims is untenable. This difference is presented in *patent '799* as an option. It appears to us that, in the course of their further investigations of their sealants, appellants simply found that their "absolutely essential" statement in their '893 patent was untrue or an exaggeration or a misunderstanding.

Our broader problem, however, is to decide whether on all the facts the PTO had good ground for making a double patenting rejection, and, if so, what kind of a double patenting rejection. Following this court's decision in *In re Zickendraht, 50 CCPA 1529, 319 F.2d 225, 138 USPQ 22 (1963)*, wherein it was suggested to the bar that terminal disclaimers might overcome some double patenting rejections, somewhat more than thirty appeals have been decided on that question, each [**18] on its own facts. Out of these decisions there evolved a distinction between "same invention" type cases and "obviousness type" cases. By the time of *In re Vogel, 57 CCPA 920, 422 F.2d 438, 164 USPQ 617 (1970)*, this court had decided that "same invention" meant claims to identical subject matter, i.e., that a claim limitation to halogen was not the same as a claim to chlorine and that meat was ot the same as pork, or beef, but that a claim to a yard and a claim to 36 inches or three feet were for the same invention despite their differences in wording. The significance of that was that the court had also decided that *35 USC 101* precluded two patents for the same invention, wherefore a terminal disclaimer could be of no help. *In re Griswold, 53 CCPA 1565, 365 F.2d 834, 150 USPQ 804 (1966)*. On the other hand, numerous cases were considered in which application claims were directed to mere obvious modifications of, or improvements on, inventions defined in the claims of patents already issued to the same inventors, or to common assignees, and it had been decided that they might be allowed to go to patent if the applicants filed terminal disclaimers. We classified these as "obviousness [**19] type double patenting." This latter classification has, in the course of time, come, somewhat loosely, to indicate any "double patenting" situation [*943] other than one of the "same invention" type, although it is not altogether appropriate in cases such as this where, as appellants argue with some justification, their present claims bear a genus-species relation to the claims in the

two issued patents, the application claims being generic and the patent claims specific. To illuminate this situation we now quote the only independent claim in the application at bar:

1. A sealant composition comprising a reinforced partially cross-linked matrix comprising a high average molecular weight tutyl rubber having a molecular weight in the range of approximately 100,000 to 400,000 and a low average molecular weight butyl rubber having a molecular weight in the range of approximately 10,000 - 40,000 in a ratio of high to low molecular weight butyl rubber of between about 20/80 and 60/40, in admixture with a tackifier present in an amount between about 55 and 70 weight % of the composition.

The remaining claims on appeal, 2, 3, 6, and 7, are all dependent claims and are identical [**20] with correspondingly numbered claims of *patent '799*. That being so, comparison of the above application claim 1 with *patent '799* claim 1, previously quoted, shows that the only difference between the claims on appeal and the claims of the *'799 patent* resides in the recited ratio of high to low molecular weight butyl rubber, as follows:

application: between 20/80 and 60/40

patent '799: between 35/65 and 45/55.

The former ratios broader and inclusive of the latter and are in that sense "generic" and cause the application claims to dominate the *'799 patent* claims. They also, of course, dominate the claims of the '893 patent. Furthermore, the ratios of the claims on appeal are disclosed in the *'799 patent*, and these claims were found unpatentable therein, for double patenting, over the claims of the earlier '893 patent. Consider that claim 1 of patent '893 recited 10-15 parts of a high weight butyl and 6-10 parts of a low weight butyl rubber, limitations which were exemplified in the express 60/40 ratio of Example 1 and the 14.25 parts high to 9.5 parts low of Example 2, which calculates out to a 60/40 ratio.

This court has encountered this genus-species situation before [**21] and considered the obviousness problem. In *Vogel, supra*, this court said in 1970:

We recognize that it is most difficult, if not meaningless, to try to say what is or is not an obvious variation of a claim. A claim is a group of words defining only the boundary of the patent monopoly. It may not describe any physical thing and indeed may encompass physical things not yet dreamed of. How can it be obvious or not obvious to modify a legal boundary? The disclosure, however, sets forth at least one tangible embodiment within the claim, and it is less difficult and more meaningful to judge whether that thing has been modified in an obvious manner. It must be noted that this use of the disclosure is not in contravention of the cases forbidding its use as prior art, nor is it applying the patent as a reference under *35 USC 103*, since only the disclosure of the invention claimed in the patent may be examined.

Again, in *In re Braithwaite, 54 CCPA 1604, 379 F.2d 606, 154 USPQ 38 (1967)*, this court would have held a situation much like the present to require sustaining a double patenting rejection except for the existence of an effective terminal disclaimer. Broader dominating claims [**22] were in the continuation-in-part application on appeal and were generic to a claim of an issued patent.

In re Schneller, 55 CCPA 1375, 397 F.2d 350, 158 USPQ 210 (1968), is also pertinent because it involved a voluntary divisional application of which an alleged continuation was before this court with a rejection for double patenting of claims which would have continued patent protection on the preferred embodiment of an invention already patented. What we said in that case applies to the facts here:

The fundamental reason for the rule [against "double patenting"] is to prevent unjustified timewise extension of the right to exclude granted by a patent no [*944] matter how the extension is brought about.

* * * If appellant were now to prevail, the end result would be the grant of another patent effectively extending the time during which he may exclude others from practicing an invention which is disclosed and claimed in his issued patent.

This would necessarily be so because of the fact, not only admitted but urged by appellants, that the claims on appeal are generic to -- that is to say they dominate -- the inventions claimed in both of the patents for which they [**23] applied.

On careful review of all the facts of record, we therefore hold that the double patenting rejection of the appealed claims was fully justified. Appellants, in the course of expanding their first application to disclose

enough more by way of details, alternatives, and additional uses to support the broad, dominating, "generic" claims here on appeal, have disclosed no additional invention or discovery other than what has already been claimed in *patent '799*, as above explained. There is a significant difference between justifying the broadening of claims and disclosing additional inventions.

Since the application claims, compared to the claims of either of the patents cited to support the rejection, do not present a "same invention" type of double patenting situation, the next question is whether appellants can overcome the rejection by filing a terminal disclaimer.

Appellants' Terminal Disclaimer Is Unacceptable

Appellants concede that the terminal disclaimers they have filed do not comply with *37 CFR 1.321(b)*, supra, because they are unable to comply with it, having assigned all right, title and interest in the invention on which patent '893 issued to General Motors [**24] Corporation. Their assignment was executed on July 5, 1974, filed with the application, and recorded in the PTO on July 15, 1974. The parent of the application at bar, serial No. 595,351, filed July 14, 1975, together with all right, title, and interest in and to the invention therein described, having been assigned to Rocket Research Corporation, by change of name Rockcor, Inc., that assignee necessarily owns the invention at bar, described and claimed in the divisional application based thereon.Neither appellants nor Rockcor, therefore, can give the undertaking required by *§ 1.321(b)* that any patent granted on the divisional application will be commonly owned with the '893 patent, "which formed the basis of the [double patenting] rejection," to quote *§ 1.321(b)*.

Since appellants cannot comply with the regulation, they have, perforce, taken the only course left open to them short of surrender and challenge the validity of the regulation.

37 CFR 1.321(b) is a Valid Regulation

Professor Chisum in his recent textbook PATENTS (1981) includes as Chapter 9, "Double Patenting," the most complete, critical summary of that law we have seen. On the subject at hand, he says ([**25] § 9.04[2][b]:

[ii]--Harassment by Multiple Assignees. Even though both patents are issued to the same patentee or assignee, it [is] possible that ownership of the two will be divided by later transfers and assignments. The possibility of multiple suits against an infringer by assignees of related patents has long been recognized as one of the concerns behind the doctrine of double patenting. [15]

15 See *Sandy MacGregor Co. v. Vaco Grip Co., 2 F.2d 655 (6th Cir. 1924)*, discussed at § 9.03[2][d] supra.

He then discusses two cases in this court, in one of which we had played down the importance of harassment by multiple assignees as unlikely, and continues:

The risk of harassment by multiple assignment can be eliminated entirely by the terms of the disclaimer. In a footnote to In re Griswold (1966), [20] the court quoted a disclaimer which included a provision that the second patent would "be [*945] enforceable only for and during such period that the legal title to said patent and to such right to recover shall be the same respectively as" the first patent. The court indicated that this was "ingenious" and "an imaginative solution to one of the more [**26] theoretical objections to double patenting, split ownership of two patents and potential harassment."

20 *365 F.2d 834, 840 n.5, 150 USPQ 804 (C.C.P.A. 1966).* [*53 CCPA 1565.]*

After Griswold, the Patent Office amended rule 321 to require terminal disclaimers to contain such a "non-alienation" agreement. [21] Apparently no court decision has yet ruled on whether the Patent Office may properly impose such a requirement.

21 *37 C.F.R. § 1.321(b).*

We are now presented with the necessity of making that ruling. In passing, we note that the language of paragraph (b) of the rule is precisely that used in the Griswold terminal disclaimer.

Appellants have elaborated several arguments to support their contention that *§ 1.321(b)* is invalid. We find none of them persuasive and will discuss them seriatim.

The regulation was, of course, promulgated by the Commissioner of Patents and Trademarks and it is

contended that it was beyond the authority granted him by the pertinent statute, *35 USC 6(a)*, which gives him the right, "subject to the approval of the Secretar of Commerce, to establish regulations, not inconsistent with law, for the conduct of proceedings in the Patent [**27] and Trademark Office." Appellants say the regulation is "invalid on its face" but they do not explain why beyond contending it is "substantive and not procedural." We can give no weight to that contention. True, the rule is substantive in that it relates to a condition under which a patent will be granted which otherwise would have to be denied for double patenting. Much of the content of the PTO rules is "substantive" in this respect. The regulation clearly relates to application processing within the PTO in a manner consistent with statutory and case law, which is its principal business. In this connection, we here note briefly the history of the development of the regulation.

We noted above the long line of double patenting decisions in this court which extended over many years. Throughout the period, the theory of harassment by multiple assignees underlay double patenting, at least in part, and now and again came up for discussion. It had long been thought about in the PTO and, no doubt, by some members of the patent bar.In fact, it went back at least to *Underwood v. Gerber, 149 U.S. 224 (1893)*, discussed in *Chisum, supra, § 9.02[4][5]*. As this court plowed through [**28] its double patenting cases, it came upon the apparently bar-initiated progenitor of *§ 1.321(b)* in Griswold, as noted in the passage quoted from Chisum, supra.That was in 1966. On December 31, 1970, the Commissioner published a Notice of Proposed Rule Making (*35 Fed. Reg. 20012*), dated December 24, proposing the precursor of *§ 1.321*, in which he said:

The proposed revision of *§ 1.321* and proposed new § 3.53 brings into the rules a current procedure not based on rule. This provision would prevent harassment of an alleged infringer by multiple parties due to subsequent different ownership of multiple patents granted as the result of filing a terminal disclaimer to overcome a double patenting rejection.

The language of proposed § 3.53 [a new form] is substantially the form which met with the approval of the Court of Customs and Patent Appeals in footnote 5 of *In re Griswold, 365 F.2d 834*; *150 USPQ 805*; *53 CCPA 1565*. [Emphasis ours.]

It thus appears that the "current procedure" was adopted sometime after Griswold and had been in effect for some time by the end of 1970. Pursuant to the Notice, a hearing was held on February 19, 19871, comments were received, and the proposed [**29] rule was amended in response thereto.The new rules were promulgated and published in *36 Fed. Reg. 7312* with an effective date of April 30, 1971. Among comments [*946] received in this rulemaking process was one from the American Patent Law Association whose Board of Managers suggested changes and adopted a resolution specifically approving the non-alienation provision.Jan.-Feb. 1971 APLA Bull. 164-165. Thus, the challenged rule has been in effect for more than a decade and this is the first attack on it which has come to our attention.

Appellants say the regulation is contrary to the patent statutes, referencing only the introductory words of *§ 102*, and in derogation of their statutory right to a patent. They also quote a passage from *In re Stempel, 44 CCPA 820, 241 F.2d 755, 113 USPQ 77 (1957)*. There are, and always have been, various legal obstacles that may prevent applicants from obtaining patents which are not spelled out in the statutes. Consider, for example, that for over 160 years all of the law now subsumed under the nonobviousness provision of *§ 103* was judge-made and without statutory basis. As we have often pointed out, all of obviousness-type double patenting [**30] law is still only case law. We think this a sufficient answer to the argument that the regulation is contrary to statute or without statutory foundation.

As for Stempel, of course the case had nothing to do with double patenting, but with what showing must be made under Rule 131 to antedate a reference. It is true that the present writer said in that context that "The patent statutes give to inventors the right to a patent upon compliance with their provisions," and in that context the statutes were applicable; but in the present context, where the denial of a patent is on a ground with which the statutes have nothing to do, those words are simply too general and cannot be applied. It would be nice if every statement made in an opinion could be automatically tested against every conceivable application to determine whether an exception or two should be noted; but that is a Utopian revery. Precedents are of value for what they decide, not for every sentence they contain. Stempel does not apply here. On another occasion this court has found it necessary to qualify broad language in Stempel found inappropriate to unforeseen circumstances. See *In re Tanczyn, 52 CCPA 1630, 1633,* [**31] *347 F.2d 830,*

831, 146 USPQ 298, 301 (1965). It happens all the time; it is in this manner that case law gets refined.

Appellants contend that *§ 1.321(b)* is contrary to or inconsistent with "case law." The argument is based on two decisions by this court rendered during the formative stages of the law of double patenting and the law of terminal disclaimers as a way to avoid that ground of rejection. They are, in order of their decision, *In re Robeson, 51 CCPA 1271, 331 F.2d 610, 141 USPQ 485 (1964)*, and *In re Jentoft, 55 CCPA 1026, 392 F.2d 633, 157 USPQ 363 (1968)*. The regulation, as we said, was adopted later, in 1971, the PTO and the bar then being quite familiar with those decisions.

In June 1963, this writer, concurring, suggested in *Zickendraht, supra*, that applicants might make use of terminal disclaimers to avoid obviousness-type double patenting rejections. Robeson came to the court the very next year. Some of the claims had been rejected for double patenting as directed to an obvious variation of what was claimed in a Robeson patent. The application at bar was a continuation-in-part of an application which would have issued with the patent had it not become involved [**32] in an interference.Appellant conceded the obviousness issue but argued that he had overcome the rejection by filing a terminal disclaimer. The court began its discussion by commenting that "Whether a terminal disclaimer can overcome the objections to double patenting has been the subject of much discussion." The opinion then referred to the fact that the rule that there should be only one patent for one invention was as old as *Miller v. Eagle, 151 U.S. 186 (1894)*, and had been followed by this court in *In re Siu, 42 CCPA 864, 222 F.2d 267, 105 USPQ 428 (1955)*, a much debated case in the early days of terminal disclaimer decisions, which really was a "same invention" type of case not curable by terminal disclaimer. The court concluded its double patenting discussion with the following paragraph:

[*947] As noted in Siu, extension of monopoly is not the only objection to double patenting. [fn *Underwood v. Gerber, 149 U.S. 224 (1893)*.] Others include possible harassment by multiple assignees, inconvenience to the Patent Office, and the possibility that one might avoid the effect of file wrapper estoppel by filing a second application. [fn. quoting from an H. Marans article, [**33] 36 JPOS 207 (1954), part of the discussion referred to.] We do not minimize those possibilities, but we must decide this case on the facts before us. We are not here confronted by a situation where any abuse of the terminal disclaimer is suggested. We conclude that on the facts here, the only real objection to granting appellant's application is an extension of the monopoly. The terminal disclaimer, which Congress has expressly provided, removes any danger of such result, thus we are obliged to reverse the rejection of claims 7, 8, 9, 13 to 15 and 30 [for double patenting].

Thus, the court decided, on the facts of the case, to give no weight to the harassment possibility through multiple assignees, there being none, and that is the first item of case "law" on which appellants here rely.As a decision, the most the case stands for is that in the absence of any rule to the contrary, such as we now have in *§ 1.321(b)*, a terminal disclaimer without the transfer restriction now required was found acceptable. It did not hold that such a restriction would be improper.

In re Jentoft, like Robeson, was an obviousness-type double patenting case where applicant's claims were rejected [**34] on claims of his own patent.He then filed a terminal disclaimer, citing Robeson as reason for accepting it. The examiner and board tried to distinguish Robeson on the ground that Jentoft's patent contained a claim generic to the structure of the patent and to the modified structure of the application which was rejected on it. Conceding the terminal disclaimer would overcome the extension of monopoly objection to double patenting, emphasis was placed on the inability of the disclaimer to prevent the possibility of harassment in case the patent and any additional patent issuing on the application should fall into different hands because both patents would contain claims covering the apparatus of the application. It was contended that this could not have happened in the Robeson fact situation. In discussing that harassment issue, we began by saying:

As to the mere possibility of harassment, while we do not regard it as an impossibility, we think that giving weight to it to deny effect to terminal disclaimers is to overlook the countervailing advantages to the public, pointed out in Braithwaite * * *.

Braithwaite referred to two cases decided the previous year, *54 CCPA 1589* and [**35] *1604, 379 F.2d 594* and 606, 154 UPSQ 29 and 38 (1967). There the court had pointed out that giving effect to terminal disclaimers --

which the then Patent Office had refused to do -- was in the public interest because it encouraged the disclosure of additional developments, the earlier filing of applications, and the earlier expiration of patents whereby the inventions covered became freely available to the public. In Jentoft we were still dealing with that much discussed question -- were terminal disclaimers effective at all. The Patent Office was insisting that they were not in the Jentoft fact situation and pressing its argument on the basis of harassment possibilities. The court rejected the argument with some fervor.Looking at the Jentoft facts, the court thought the possibility of divided ownership "most unlikely." The opinion refers to the "unreality of the harassment theory as a ground of refusing effect to terminal disclaimers." But as the solicitor's brief points out, what the court there thought unlikely has here actually occurred. Our earlier speculations must give way to reality.

What appellants have referred to as case law in conflict with *§ 1.321(b)* consists [**36] of comments made in only two cases out of many in a rapidly developing field of jurisprudence fourteen or more years ago. Subsequent to those cases, it was the judgment of the administrative agency charged with [*948] implementing the patent statutes, which is better informed on conditions in the field than are we, that the kind of terminal disclaimer commitment now contained in the regulation, referred to by this court in Griswold as an ingenious solution to a long-recognized objection to double patenting is desirable. It was first established as an administrative practice on Feb. 14, 1968, by a Commissioner's Notice, 848 O.G. 1, which introduced the non-alienability proviso. The Notice read:

The practice set forth in the notice of January 31, 1967, entitled "Double Patenting" (834 O.G. 1615), is modified to the extent that when a single inventive entity is involved, a terminal disclaimer will be accepted to avoid a double patenting rejection even if the claims overlap, if the claims which would otherwise be subject to such rejection could not have been allowed in the other application or patent, and if the terminal disclaimer further provides that the patent shall expire [**37] immediately if it ceases to be commonly owned with the other application or patent. [Our emphasis.]

This proviso was continued in a superseding notice of February 18, 1969 (860 O.G. 661). In 1970, the Commissioner published his Notice of Proposed Rule Making with a somewhat different provision and after a hearing and receipt of comments the present regulation was adopted in 1971 with the approval of the bar. It was now been in effect for more than a decade during which the bar has known what the procedure is. We have been shown no compelling reason to invalidate it.

Certainly many, if not most, double patenting situations fall into the obviousness-type double patenting category and involve a modification of or improvement upon what an inventor or his assignee has already patented. The desire is to be able to bring such improvement inventions within the protection of the patent system, at the same time giving an incentive for their disclosure. For a long time the judge-made law of double patenting was a serious obstacle to doing so. Knowing this, the drafters of the 1952 Patent Act provided a possible remedy in the terminal disclaimer, *35 USC 253*. See P.J. Federico, Commentary [**38] on the New Patent Act, 35 USCA p. 49 (1954). That provision is merely permissive and it was left to the courts to work out its application on a case-by-case basis. This court in the first Braithwaite case, 54 CCPA at 1598, 379 F.2d at 601, 154 USPQ at 34, speaking of such inventions and the granting of a second patent upon the filing of a terminal disclaimer making the two patents expire together, said:

When a terminal disclaimer causes two patents to expire together[,] a situation is created which is tantamount for all practical purposes to having all the claims in one patent.

Obviously, that thought contemplates common ownership of the two patents, which remains common throughout the life of the patents. In the discussions in the Robeson and Jentoft cases on which appellants rely, we gave little weight to the harassment possibility because we thought that divided ownership was most unlikely -- a remote possibility. When it is a reality, as in this case, the situation is like that held impermissible in *Pope v. Gormully, 144 U.S. 248 (1892)*, cited by the solicitor, where a patentee undertook to assign separate claims of the same patent to different parties.

Upon this extensive [**39] review of the situation, we consider it desirable to tie both the termination and the ownership of the two patents together, as is required by *§ 1.321(b)*, and, seeing no substantial obstacle to doing so, hold it to be a valid regulation.

The decision of the board is affirmed.

AFFIRMED

DISSENT BY: BALDWIN

DISSENT

BALDWIN, Judge, dissenting.

I cannot agree with the majority position that *37 CFR 1.321(b)* (Rule 321(b)) is valid. I am of the conviction that the regulation is invalid and unenforceable and that appellants' terminal disclaimer is effective to overcome the obviousness-type double patenting rejections of claims 1-3, 6, and 7 [*949] (assuming such rejections are justified). Thus I would reverse the double patenting rejections and, by necessity, reach the *35 USC 102(c)* rejection which I would reverse for the reasons set forth below.

Appellants challenge the validity of Rule 321(b) arguing that it is contrary to law in that it goes beyond the rule-making authority of the Commissioner of Patents and Trademarks (Commissioner) and it extends the Commissioner's authority to govern post-patent issuance conduct of patentees. These arguments are persuasive.

Initially, it [**40] is noted that there exists no express statutory grant to the Commissioner of authority to require inclusion of the non-alienation provision of Rule 321(b) in a terminal disclaimer filed to obviate a rejection based on the judicially created doctrine of obviousness-type double patenting. Thus, such authority must be found in *35 USC 6(a)* which states in pertinent part that the Commissioner may "establish regulations, not inconsistent with law, for the conduct of proceedings in the Patent and Trademark Office." [1] *Norton v. Curtiss, 57 CCPA 1384, 1400, 433 F.2d 779, 791, 167 USPQ 532, 542 (1970)*. Additionally, this court has long held that such regulations have the force and effect of law when not inconsistent with the statutes. See, e.g., *Norton v. Curtiss, supra.*

1 The Commissioner, in fact, based authority for promulgation of Rule 321(b) on *35 USC 6. 36 Fed.Reg. 7312, 7313 (1971)*.

In light of the specific criteria set forth in *35 USC 6(a)*, Rule 321(b) with its requirement of maintaining common ownership of certain patents after issuance is invalid on two accounts. First, the non-alienation requirement is directly contrary to and, thus, inconsistent with *35 USC 261* which [**41] states that "[a]pplications for patent, patents, or any interest therein, shall be assignable in law by an instrument in writing." Second, the post-issuance restriction of Rule 321(b) cannot be considered as relating to anything concerning "the conduct of proceedings in the Patent and Trademark Office." *35 USC 6(a)* (emphasis added). The Commissioner has exceeded his authority by attempting to govern by regulation the acts of patentees and the enforceability of patents. Thus, Rule 321(b) is without support under *35 USC 6(a)* and must fail.

As to the first point, the majority (while stating that it has sufficiently answered the appellants' argument that the regulation is contrary to statute) completely ignores the free alienability provisions of *35 USC 261*. With respect to the second point, the majority apparently believes that any regulation promulgated under *35 USC 6(a)* can satisfy the "for conduct of proceedings in the Patent and Trademark Office" (PTO) by merely having some nominal relationship to application processing within the PTO no matter how strongly the regulation may directly effect the enforceability of patents after issuance by the PTO, at which point the PTO's jurisdiction [**42] over the subject matter ceases.

Additionally, the rule must be considered suspect as being arbitrary since the only rationale given for the rule had been discarded by this court two years prior to the PTO's rule-making process. The proposed Rule 321(b)'s rationale, as set forth in "Notice of Proposed Rule Making" (Notice), *35 Fed. Reg. 20011 (1970)*, was to "prevent harassment of an alleged infringer by multiple parties due to subsequent different ownership of multiple patents granted as the result of filing a terminal disclaimer to overcome a double patenting rejection." The rationale, clearly and absolutely rejected by this court in 1968, *In re Jentoft, 55 CCPA 1026, 392 F.2d 633, 157 USPQ 363 (1968)*, but now resurrected by the majority here, presumes not only that infringement will occur, but also that, even if assignees act in bad faith, courts would be impotent to redress or prevent such problems. Furthermore, as noted in Jentoft and true today, it does not appear that courts are beset with harassment problems arising when patents directed to genus exist separate from patents directed to species of the [*950] genus. Thus while the harassment possibility may be less remote [**43] in the present situation due to

the actuality of divided ownership, possible harassment is not such an unmanageable horror sufficient enough to breathe life into an otherwise ultra vires rule-making action on the part of the Commissioner.

In the Notice, footnote 5 of *In re Griswold, 53 CCPA 1565, 365 F.2d 834, 150 USPQ 804 (1966)*, is cited for support and as this court's approval of the non-alienation language of Rule 321(b). While the court in Griswold spoke highly of the non-alienation language, it gave the terminal disclaimers no effect. Additionally, in the later decided Jentoft case, this court found a terminal disclaimer without non-alienation language effective to overcome an obviousness-type double patenting rejection implying no such non-alienation language was or should be required. Thus, Griswold cannot be construed as a basis for support of Rule 321(b).

The majority endorses the solicitor's attempt to contrive some support for Rule 321(b) by combining dictum from an opinion of this court (*In re Braithwaite, 54 CCPA 1589, 379 F.2d 594, 154 USPQ 29 (1967))* with part of the rationale of an 1892 Supreme Court case (*Pope Mfg. Co. v. Gormully Mfg. Co., 144 U.S. 248 (1892))*. [**44] However, as discussed below, such a position cannot save Rule 321(b) from a holding that it was promulgated without authority.

In Braithwaite, this court held that a terminal disclaimer was effective to overcome an obviousness-type double patenting rejection even where the claims of the reference patent and the application are "overlapping," i.e., in generic-specific relationship. In doing so, the court remarked "[w]hen a terminal disclaimer causes two patents to expire together a situation is created which is tantamount for all practical purposes to having all claims in one patent." *54 CCPA at 1598*. In Pope Mfg. Co., which concerned plaintiff's standing to sue for patent infringement, only one of four claims of a patent was "assigned" to a Mr. Kilpatrick who subsequently conveyed his interest to plaintiff. Stating that "the monopoly granted by law to the patentee is for one entire thing, and that in order to enable the assignee to sue, the assignment must convey to him the entire and unqualified monopoly which the patentee held * * * and that any assignment short of that is a mere license" (*144 U.S. at 250*), the court held that the "so-called assignment" to Mr. Kilpatrick was [**45] a "mere license" and did not vest legal title to the one claim in him or his assigns (i.e., plaintiff) or give him the right to sue for infringement.

Combining the two cases, the solicitor argues and the majority agrees that appellants are attempting to do indirectly that which they cannot do directly under *Pope Mfg. Co., supra.* However, I find the use of a remark in *Braithwaite, supra*, coupled with statements in *Pope Mfg. Co., supra*, to limit an inventor's right of alienation of his property, *35 USC 261*, unfounded and not persuasive.

As to Braithwaite, it must be kept in mind that, in reality, there exist, separate and distinct, a patent and an application which may issue into another patent in these situations, and not one patent containing all the claims.

With regards to the Pope Mfg. Co. case, its holding and reasoning have little relevance to the situation at hand. First, the case has nothing to do with ultra vires rule-making action of the Commissioner. Second, the assignment of U.S. Patent No. 3,935,893 ('893 patent) to General Motors Corporation in the present situation was for the entire rights in the patent, a wholly different situation than in Pope Mfg. Co. Furthermore, [**46] the decision was handed down long before the doctrine of obviousness-type double patenting was well defined, [2] long before Congress authorized the filing of [*951] terminal disclaimers, [3] and long before courts had recognized that terminal disclaimers would obviate such rejections. [4]

2 See, e.g., Judge Rich's concurring opinion in *In re Zickendraht, 50 CCPA 1529, 319 F.2d 225, 138 USPQ 22 (1963).*

3 See *In re Robeson, 51 CCPA 1271, 331 F.2d 610, 141 USPQ 485 (1964).*

4 Id.

Since I would hold Rule 321(b) to be an unenforceable regulation and since appellants' terminal disclaimer under consideration [5] meets the statutory requirements of *35 USC 253* [6] and the regulation implemented thereunder, *37 CFR 1.321(a)*, [7] the terminal disclaimer is effective to overcome the obviousness-type double patenting rejections of claims 1-3, 6, and 7. See, e.g., *In re Eckel, 55 CCPA 1068, 393 F.2d 848, 157 USPQ 415 (1968)*. Doing so leads to consideration of the abandonment issue not reached by the majority.

5 The body of the disclaimer reads:

Your petitioner, Rockcor, Inc., a

> Washington corporation having its principal place of business at 11441 Willows Road, Redmond, Washington, U.S.A., represents that it was formerly named Rocket Research Corporation as indicated by the change of name certificate recorded in the United States Patent and Trademark Office at Reel 0312, Frame 958, and that it is the assignee of the entire right, title and interest of application Serial No. 821,360, filed August 3, 1977 for ELASTOMERIC SEALANT COMPOSITION by reason of the assignment of parent application Serial No. 595,351 filed July 14, 1975 to Rocket Research Corporation, such assignment being recorded in the United States Patent and Trademark Office on Reel 3221, Frame 555. Your petitioner, Rockcor, Inc., hereby disclaims the terminal portion of any patent granted on the above identified application, which would extend beyond the expiration date of *patents No. 4,113,799* and No. 3,935,893.

6 *35 USC 253* states in pertinent part:

> In like manner any patentee or applicant may disclaim or dedicate to the public the entire term, or any terminal part of the term, of the patent granted or to be granted.

7 *37 CFR 1.321(a)* provides:

> A disclaimer under *35 U.S.C. 253* must identify the patent and the claim or claims which are disclaimed, and be signed by the person making the disclaimer, who shall state therein the extent of his interest in the patent. A disclaimer which is not a disclaimer of a complete claim or claims may be refused recordation. A notice of the disclaimer is published in the Official Gazette and attached to the printed copies of the specification. In like manner any patentee or applicant may disclaim or dedicate to the public the entire term, or any terminal part of the term, of the patent granted or to be granted.

[**47] The PTO takes the position that by assigning the '893 patent to a third party, appellants have abandoned under *35 USC 102(c)* [8] their invention claimed in the application on appeal and thus are not entitled to a patent on that invention. Such a position in unsupportable. The PTO Board of Appeals (board) "[did] not believe that *Section 102(c)* was written with this type of 'abandonment' in mind," and I agree. No reasonable interpretation of *§ 102(c)* can sweep the act of assignment of a prior patent within the meaning of abandonment of the invention claimed in a subsequently filed patent application.

8 *35 USC 102(c)* states that "[a] person shall be entitled to a patent unless * * * he has abandoned the invention."

The solicitor characterizes the *§ 102(c)* rejection made by the examiner and board as amounting "to a rationale for a rejection which has had long administrative standing and is searching for a home." The solicitor then refers to section 304 of the PTO's Manual of Examining Procedure (MPEP) [9] stating that it has appeared in its present form since 1948 or 1949 and that in that section "the previously and differently assigned patent [sic] of the same inventor [**48] is termed a 'reference' against a second application for a common subject matter disclosed." The solicitor concludes that the *§ 102(c)* rejection is "believed sound and [*952] consistent with long standing administrative practice."

9 MPEP § 304 (4th ed., Rev. 5, Jan. 1981) states:

> Where applicant has pending two applications with overlapping subject matter claimed therein, and assigns one of the applications in its entirely, which assignment is

> duly recorded in the Patent and Trademark Office, the assigned application at once may become a reference gainst the second application for all common subject matter disclosed, irrespective of the dates of filing of the two applications, and also of any subsequent assignment of the second case to another assignee.

I do not find this persuasive and can only agree with the solicitor to the extent that the rejection herein is still searching for a home. First, it is noted that MPEP § 304 concerns pending applications only and not a patent-application situation. Second, if MPEP § 304 were relevant, it could not control for, regardless of how ingrained a practice may have become in PTO practice, this court clearly is not bound [**49] by such practice. See *In re Gibbs, 58 CCPA 901, 437 F.2d 486, 168 USPQ 578 (1971)*.

Accordingly, I would hold that appellants cannot be deemed to have abandoned their claimed invention within the meaning of *§ 102(c)*, and the rejection would have to be reversed.

In summary, the decision of the board sustaining the rejection of all claims on the ground of obviousness-type double patenting and under *35 USC 102(c)* should be reversed.

United States Court of Appeals for the Federal Circuit

2006-1401

MERCK & CO., INC.,

Plaintiff-Appellee,

v.

HI-TECH PHARMACAL CO., INC.,

Defendant-Appellant

Robert L. Baechtold, Fitzpatrick, Cella, Harper & Scinto, of New York, New York, argued for plaintiff-appellee. With him on the brief was Bruce M. Wexler.

William L. Mentlik, Lerner, David, Littenberg, Krumholz & Mentlik, LLP, of Westfield, New Jersey, argued for defendant-appellant. With him on the brief was Roy H. Wepner. Of counsel on the brief was Alfred B. Engelberg, of Palm Beach, Florida.

Appealed from: United States District Court for the District of New Jersey

Judge Mary L. Cooper

United States Court of Appeals for the Federal Circuit

2006-1401

MERCK & CO., INC.

Plaintiff-Appellee,

v.

HI-TECH PHARMACAL CO., INC.,

Defendant-Appellant.

DECIDED: March 29, 2007

Before LINN, Circuit Judge, FRIEDMAN and PLAGER, Senior Circuit Judges.

LINN, Circuit Judge.

This case presents the question of whether a patent term extension under the Hatch-Waxman Act, 35 U.S.C. § 156, may be applied to a patent subject to a terminal disclaimer under 35 U.S.C. § 253, filed to overcome an obviousness-type double-patenting rejection. Because the language of § 156 is unambiguous and fulfills a purpose unrelated to and not in conflict with that of § 253, we hold that a Hatch-Waxman term extension may be so applied.

I. BACKGROUND

Merck & Co, Inc. ("Merck") is the inventor of TRUSOPT®, a drug used to treat glaucoma. On June 26, 1987, Merck filed a patent application covering certain carbonic anhydrase inhibitors, including dorzolamide, which is the active ingredient in TRUSOPT®. That patent application eventually issued as United States Patent No. 4,797,413 (the "'413 patent"). During prosecution of the '413 patent, the examiner rejected all claims on the ground of obviousness-type double patenting over the claims of an earlier patent also owned by Merck. That patent, U.S. Patent No. 4,677,115 (the "'115 patent"), issued on June 30, 1987. To overcome this rejection, Merck filed a terminal disclaimer under 35 U.S.C. § 253. The terminal disclaimer disavowed any term of the '413 patent that would extend beyond June 30, 2004, the original term of the '115 patent (17 years from its date of issue). The filing of the terminal disclaimer was accepted by the Examiner as overcoming the double-patenting rejection and, on January 10, 1989, the '413 patent was granted.

In 1994, the Uruguay Round Agreements Act (URAA) was enacted. That act "harmonize[d] the term provision of United States patent law with that of our leading trading partners which grant a patent term of 20 years from the date of filing of the patent application." Merck & Co. v. Kessler, 80 F.3d 1543, 1547 (Fed. Cir. 1996). Under the URAA, the term of a patent then in force was amended to the greater of 20 years from its earliest effective filing date or 17 years from its date of issue. See 35 U.S.C. § 154(a)(2), (c)(1). The '115 patent was subject to the URAA, and consequently, its expiration date was reset by operation of law to December 12, 2004 (twenty years from the filing date of the '115 patent). Because the terminal disclaimer linked the

expiration date of the ’413 patent to the term of the ’115 patent, the expiration date of the ’413 patent likewise was reset to December 12, 2004.

Merck sought and received approval from the United States Food & Drug Administration (“FDA”) to market TRUSOPT®. As part of the approval process, Merck was required to submit information to the FDA on any patent that claims the approved drug or method of using the drug, and for which a claim of patent infringement could reasonably be asserted against an unauthorized party. See 21 U.S.C. § 355(b)(1). The FDA publishes patent information on approved drug products in the “Orange Book,” a register that provides notice of patents covering name brand drugs. The Orange Book shows that the ’413 patent covers TRUSOPT®. See Approved Drug Products with Therapeutic Equivalence Evaluation (the “Orange Book”).

On March 20, 1997, at the request of Merck and pursuant to 35 U.S.C. § 156, the Patent and Trademark Office (the “PTO”) extended the term of the ’413 patent based on the period of regulatory review undertaken by the FDA of Merck’s TRUSOPT® drug. The PTO granted the patent term extension for a period of 1233 days and calculated the extension to run from the effective date of the terminal disclaimer, i.e., December 12, 2004. Based on the patent term extension, the expiration date of the ’413 patent thus became April 28, 2008.

The patent infringement dispute at issue here began in August 2005, when Hi-Tech Pharmacal Co., Inc. (“High-Tech”) filed with the FDA Abbreviated New Drug Application Nos. 77-846 and 77-847 (“ANDA Nos. 77-846 and 77-847”) for a generic version of a drug containing the active ingredient dorzolamide and used in drops for the treatment of ocular hypertension. The Federal Food, Drug, and Cosmetic Act requires

that an ANDA application contain a certification for each patent listed in the Orange Book for the brand-name drug. This certification must state one of the following: (i) that the required patent information relating to such patent has not been filed; (ii) that such patent has expired; (iii) that the patent will expire on a particular date; or (iv) that such patent is invalid or will not be infringed by the drug for which approval is being sought. 21 U.S.C. § 355(b)(2)(A). The ANDA applicant who certifies, under paragraph iv, that a listed patent is invalid or not infringed, must, among other things, notify the patent owner that it has filed an ANDA containing a patent challenge. 21 U.S.C. § 355(b)(3). Pursuant to these rules, Hi-Tech sent a paragraph iv patent certification notice to Merck, stating that Hi-Tech's generic eye-drops do not infringe the '413 patent. In response, on January 18, 2006, Merck sued Hi-Tech for infringement pursuant to 35 U.S.C. § 271(c)(2)(A), alleging that the filing of ANDA Nos. 77-846 and 77-847 was an act of infringement. Hi-Tech answered that the patent had expired on December 12, 2004 and was not enforceable after that date.

On March 1, 2006, Hi-Tech filed a motion to dismiss pursuant to Fed. R. Civ. P. 12(b)(6) on the ground that while its products were covered by the claims of the '413 patent, the terminal disclaimer foreclosed the patent term extension and the '413 patent therefore expired on December 12, 2004. On April 3, 2006, Merck filed a cross-motion for judgment on the pleadings on the ground that the terminal disclaimer did not foreclose the Hatch-Waxman term extension, arguing that the reasoning of King Pharmaceuticals, Inc. v. Teva Pharmaceuticals, Inc., 409 F. Supp. 2d 609 (D.N.J. 2006), should apply.

On April 25, 2006, the district court entered a final judgment, denying Hi-Tech's motion to dismiss and granting Merck's motion for judgment on the pleadings. See Merck & Co. v. Hi-Tech Pharmacal Co., Nos. 06-266 and 06-268 (D.N.J. Apr. 25, 2006). The District Court adopted the reasoning of King Pharmaceuticals and enjoined Hi-Tech from commercializing the drug claimed in the '413 patent until the end of the patent term extension, i.e., until April 28, 2008. See Merck, Nos. 06-266 and 06-268, slip op. at 2. Hi-Tech timely appealed to this court. We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(1).

II. DISCUSSION

A. Standard of Review

As with Rule 12(b)(6) motions, the question of whether a motion for judgment on the pleadings was properly granted is a purely procedural question not pertaining to patent law, to which this court applies the rule of the regional circuit. See C&F Packing Co. v. IBP, Inc., 224 F.3d 1296, 1306 (Fed. Cir. 2000). The Third Circuit exercises plenary review of such Rule 12(c) motions using the same standard as the district court. E.g., CoreStates Bank, N.A. v. Huls Am., Inc., 176 F.3d 187, 193 (3d Cir. 1999). The only debated question in this case—the scope of 35 U.S.C. § 156—is a question of statutory construction, over which we also exercise plenary review. NTP, Inc. v. Research In Motion, Ltd., 418 F.3d 1282, 1314 (Fed. Cir. 2005).

B. Analysis

In 1984, Congress enacted the Drug Price Competition and Patent Term Restoration Act of 1984 ("Hatch-Waxman Act"), 98 Stat. 1585, which amended the Federal Food, Drug, and Cosmetic Act and the patent laws. The issue in this case

concerns the proper interpretation of a portion of § 201 of the Hatch-Waxman Act, codified at 35 U.S.C. § 156.

This provision established a patent term extension for patents relating to certain products subject to regulatory delays that could not be marketed prior to regulatory approval. Section 156 provides an extension of up to five years if certain conditions are met. The conditions are set forth in the five numbered sub-paragraphs of § 156(a).

35 U.S.C. § 156 provides, in relevant part:

> (a) The term of a patent which claims a product, a method of using a product, or a method of manufacturing a product shall be extended in accordance with this section from the original expiration date of the patent, which shall include any patent term adjustment granted under section 154(b), if
>
> (1) the term of the patent has not expired before an application is submitted under subsection (d)(1) for its extension;
>
> (2) the term of the patent has never been extended under subsection (e)(1) of this section;
>
> (3) an application for extension is submitted by the owner of record of the patent or its agent and in accordance with the requirements of paragraphs (1) through (4) of subsection (d);
>
> (4) the product has been subject to a regulatory review period before its commercial marketing or use;
>
> (5)(A) except as provided in subparagraph (B) or (C) [not relevant in this case], the permission for the commercial marketing or use of the product after such regulatory review period is the first permitted commercial marketing or use of the product under the provision of law under which such regulatory review period occurred.

35 U.S.C. § 156(a) (emphasis added).

Hi-Tech does not challenge that the '413 patent meets each of the enumerated conditions of § 156 but rather contends that as a condition for the lifting of the double-patenting rejection and thus the grant of the '413 patent, Merck disclaimed any extension of its term beyond the expiration of the '115 patent and is thus foreclosed from obtaining a term extension under § 156. Hi-Tech asserts that terminal disclaimers are irrevocable and final because the disclaimer is the sine qua non for the grant of the patent. Hi-Tech argues that to hold that a terminally disclaimed patent is not barred from obtaining a term extension under § 156 would be contrary to the purpose behind the use of terminal disclaimers because it would effectively uncouple the terminal disclaimer from the original expiration date of the '115 patent. Hi-Tech also argues that such a holding would conflict with this court's prior decisions regarding term extensions and terminal disclaimers in Merck, 80 F.3d at 1543, and Bayer AG v. Carlsbad Tech., Inc., 298 F.3d 1377 (Fed. Cir. 2002). Finally, Hi-Tech argues that the PTO regulation that authorizes extension of terminally disclaimed patents, 37 C.F.R. § 1.775, is invalid.

In opposition, Merck argues that § 156 unambiguously states that a patent term "shall be extended" where the conditions enumerated are satisfied. Moreover, it argues that § 156 makes no mention of terminal disclaimers under 35 U.S.C. § 253 and does not prohibit the extension of a patent subject to a § 253 terminal disclaimer. Merck also contends that the term extension provision of § 156 presents no conflict with the terminal disclaimer provision of § 253 and that both sections serve unrelated and independent purposes.

To address the question of whether a patent term extension under 35 U.S.C. § 156 may be applied to a patent subject to a terminal disclaimer, we turn first to the language of § 156. See Hughes Aircraft Co. v. Jacobson, 525 U.S. 432, 438 (1999) ("As in any case of statutory construction, our analysis begins with 'the language of the statute.' And where the statutory language provides a clear answer, it ends there.") (citations omitted).

While § 156 does not expressly reference terminal disclaimers, it does enumerate other requirements that must be met to obtain a patent term extension. It states that, if those requirements are met, the patent term "shall be extended." See 35 U.S.C. § 156(a). Use of the word "shall" in a statute generally denotes the imperative. See BlackLight Power, Inc. v. Rogan, 295 F.3d 1269, 1273 (Fed. Cir. 2002) (stating that the word "shall" imposes a duty); Grav v. United States, 886 F.2d 1305, 1307-08 (Fed. Cir. 1989) (stating that the use of the word "shall" indicates the action is mandatory); Acuna v. United States, 479 F.2d 1356, 1360 (Ct. Cl. 1973) (same). Nothing in the language of the statute states or suggests that the word "shall" does not mean exactly what it says. Thus, use of the word "shall" indicates that if the enumerated list of requirements is met, the patent term is entitled to be extended. While we find the statutory language unambiguous, we note that the legislative history of the Hatch-Waxman Act, see 130 Cong. Rec. 23765 and 24444 (1984), is consistent with our interpretation. See United States v. Wells, 519 U.S. 482, 492 (1997) (noting that legislative history is consistent with the Court's interpretation of the plain and unambiguous text of the statute); Whitfield v. United States, 543 U.S. 209, 210 (2005) (same).

Hi-Tech's construction ignores the word "shall" and does not represent the most natural reading of the statutory language. It is not the construction of the statute to which one comes most naturally from the flow of the words and sentences that are used. See United States v. Nordic Village, Inc., 503 U.S. 30, 36 (1992) (stating that it is a "settled rule that a statute must, if possible, be construed in such fashion that every word has some operative effect"); Demko v. United States, 216 F.3d 1049, 1053 (Fed. Cir. 2000); LSI Computer Sys., Inc. v. U.S. Int'l Trade Comm'n, 832 F.2d 588, 590 (Fed. Cir. 1987) (stating that "this court will not bend or strain the words of a statute to change its meaning unless there is a persuasive and clear showing that Congress did not intend for the letter of the statute to prevail") (internal quotation omitted).

Moreover, § 156 states that the Hatch-Waxman extension shall run from the expiration date of the patent, as adjusted under section 154(b) to make up for certain PTO delays. In turn, § 154(b)(2)(B) expressly excludes patents in which a terminal disclaimer was filed from the benefit of a term adjustment for PTO delays. There is no similar provision that excludes patents in which a terminal disclaimer was filed from the benefits of Hatch-Waxman extensions. The express prohibition against a term adjustment regarding PTO delays, the absence of any such prohibition regarding Hatch-Waxman extensions, and the mandate in § 156 that the patent term shall be extended if the requirements enumerated in that section are met, support the conclusion that a patent term extension under § 156 is not foreclosed by a terminal disclaimer. See Leatherman v. Tarrant County Narcotics Intelligence and Coordination Unit, 507 U.S. 163, 168 (1993) (observing that an action that is expressly required under one federal

rule but not included among the enumerated actions from another federal rule indicates that the action is not a requirement of the later federal rule).

Hi-Tech argues that a construction of the Hatch-Waxman Act that permits patent term extensions for patents subject to terminal disclaimers ignores the fact that the terminal disclaimer was a waiver of patent term and improperly uncouples the '413 terminally disclaimed patent from the '115 patent. We disagree. The expiration date of the patent set by the terminal disclaimer remains in place. The computation of a Hatch-Waxman patent term extension is from the expiration date resulting from the terminal disclaimer and not from the date the patent would have expired in the absence of the terminal disclaimer. Any waiver of the term is thus not ignored or nullified because the terminal disclaimer provides the date from which the patent term extension begins. The purpose of the terminal disclaimer—to prevent extension of patent term for subject matter that would have been obvious over an earlier filed patent—remains fulfilled by virtue of the fact that the date from which any Hatch-Waxman extension is computed is the terminally disclaimed date. At the same time, the purpose of the patent term extension—to restore some of the patent term lost due to regulatory review—is also satisfied.

The legislative history of § 156 indicates that Congress was aware of concerns over the effects of extending related patents—at least as to parent, continuation, and continuation-in-part patents—and chose to provide the patentee with the option to select to extend the term of only one of either the parent patent or a continuation patent. See 130 Cong. Rec. 23765 (1984) ("[O]ne patent on a product, not necessarily the first, can be extended but . . . the total exclusive market life of the product cannot exceed 14

years."); id. at 24444 ("The one change involves the rules about which patents can be extended. Under this amendment, the patent holder would be allowed to select the patent to be extended. . . . I believe this amendment is acceptable because it gives the patentholder the flexibility to select the most important patent for extension."). Congress chose not to limit the availability of a patent term extension to a specific parent or continuation patent but instead chose a flexible approach which gave the patentee the choice. We see no reason why a patentee should not have the same choice as between an earlier patent and a later patent related by a terminal disclaimer.

Finally, we disagree with Hi-Tech's argument that to interpret § 156 to permit extension of terminally disclaimed patents conflicts with this court's decisions in Merck and Bayer. Merck dealt with the interplay between § 156 and the URAA, not the interplay between § 156 and terminal disclaimers under § 253. In Merck, we held that § 156 "requires a more flexible interpretation of the phrase 'original expiration date.'" 80 F.3d at 1551. We stated that "original expiration date" in § 156 "means no more than that the expiration date has not been extended under [§ 156] and, thus, the phrase can identify more than one date." Id. In that case, we allowed the patent term as adjusted by the URAA to be extended by the Hatch-Waxman Act. Bayer dealt with the interplay between § 253 and the URAA and, like Merck, did not deal with the interplay between § 156 and terminal disclaimers under § 253. Although we held in Bayer that a terminal disclaimer could not be withdrawn, we did not hold that the terminal disclaimer date cannot be extended by a separate statutory provision. To the contrary, in Bayer, this court held that a URAA term extension operates to extend the term of the related terminally disclaimed patent as a matter of law. 298 F.3d at 1381-82. We stated that

"[b]ecause the URAA amendments automatically changed the expiration date of the [parent patent] from October 1, 2002 to December 9, 2003, the expiration date of the [terminally disclaimed patent], which is contingent upon the expiration date of the [parent patent], also changed simultaneously to December 9, 2003. Id. at 1382-83. Neither of these cases holds or suggests that the express provisions of § 156 are in any way inapplicable to or limited by the presence in a patent of a terminal disclaimer.

For all of the foregoing reasons, we hold that a patent term extension under § 156 may be applied to a patent subject to a terminal disclaimer. We also reject Hi-Tech's assertion of invalidity of 37 C.F.R. § 1.775, the PTO regulation authorizing Hatch-Waxman extensions of terminally disclaimed patents.

CONCLUSION

The judgment of the district court is

AFFIRMED.

United States Court of Appeals for the Federal Circuit

OTSUKA PHARMACEUTICAL CO., LTD.,
Plaintiff-Appellee,

v.

SANDOZ, INC., SUN PHARMACEUTICAL INDUSTRIES, LTD., SYNTHON BV, SYNTHON HOLDINGS BV, SYNTHON LABORATORIES, INC., AND SYNTHON PHARMACEUTICALS, INC.,
Defendants,

and

APOTEX INC. AND APOTEX CORP.,
Defendants-Appellants,

and

TEVA PHARMACEUTICALS USA, INC., BARR LABORATORIES, INC., AND BARR PHARMACEUTICALS, INC.,
Defendants-Appellants.

2011-1126, -1127

Appeal from the United States District Court for the District of New Jersey in Case No. 07-CV-1000, Judge Mary L. Cooper.

Decided: May 7, 2012

JAMES B. MONROE, Finnegan, Henderson, Farabow, Garrett & Dunner, LLP, of Washington, DC, argued for plaintiff-appellee. With him on the brief were MICHAEL J. FLIBBERT, PAUL M. BROWNING and DENISE MAIN. Of counsel on the brief were ROBERT L. BAECHTOLD and JOHN D. MURNANE, Fitzpatrick, Cella, Harper & Scinto, of New York, New York.

STEVEN E. FELDMAN, Husch Blackwell LLP, of Chicago, Illinois, argued for defendants-appellants Apotex Inc., et al. With him on the brief were DANIEL R. CHERRY and SHERRY L. ROLLO.

ELIZABETH J. HOLLAND, Kenyon & Kenyon LLP, of New York, New York, for defendants-appellants Teva Pharmaceuticals USA, Inc., et al. With her on the brief was MARIA LUISA PALMESE.

Before LOURIE, MOORE, and REYNA, *Circuit Judges*.

LOURIE, *Circuit Judge*.

Apotex Inc., Apotex Corp., Teva Pharmaceuticals USA, Inc., Barr Laboratories, Inc., and Barr Pharmaceuticals, Inc. (collectively, the "Defendants") appeal from the final decision of the United States District Court for the District of New Jersey sustaining the validity of the asserted claims of U.S. Patent 5,006,528 (the "'528 patent) under 35 U.S.C. § 103 and under the doctrine of nonstatutory double patenting. We affirm.

BACKGROUND

Schizophrenia is a debilitating mental disease affecting about one percent of the human population. Despite

extensive research, the cause, mechanism, and etiology of schizophrenia remain unknown. Individuals with schizophrenia suffer from positive symptoms, negative symptoms, and cognitive deficits. Positive symptoms include hallucinations and delusions. Negative symptoms include flat affect, poverty of speech, inability to experience pleasure, lack of desire to form relationships, and lack of motivation.

Drugs that treat schizophrenia are called antipsychotics. The first antipsychotic drug, chlorpromazine, was discovered by accident in the early 1950s. Subsequent research revealed that chlorpromazine's antipsychotic properties were due to its antagonism (blocking) of dopamine receptors in the brain. That finding resulted in the development of other "typical" antipsychotics, which treat positive symptoms but not negative symptoms and have a number of problematic side effects, including extrapyramidal symptoms ("EPS"), tardive dyskinesia, prolactin elevation (hyperprolactinemia), and sudden decrease in blood pressure (orthostatic hypotension). The United States Food and Drug Administration ("FDA") last approved a typical antipsychotic in 1975. Despite their drawbacks, typical antipsychotics are still used today.

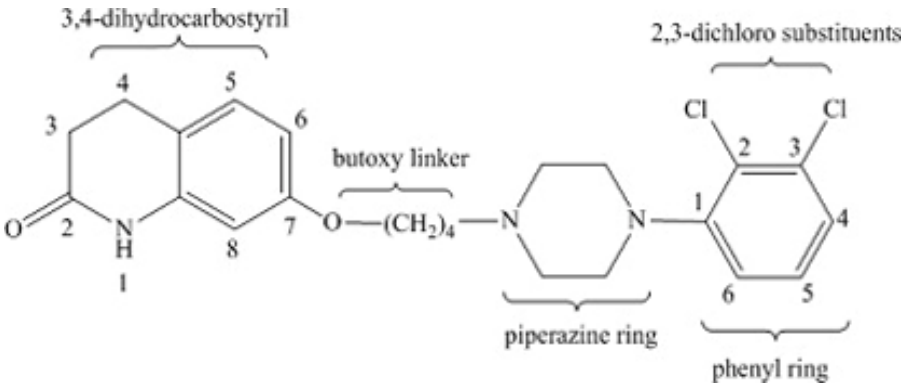
Researchers discovered clozapine in the early 1960s. Clozapine was the first "atypical" antipsychotic, in that it had a diminished propensity to cause EPS and was useful for treating both positive and negative symptoms of schizophrenia. Clozapine had serious potential side effects, however, including orthostatic hypotension, frank hypotension, and agranulocytosis (a life-threatening decrease in white blood cells). Due to those side effects clozapine was withdrawn from clinical trials in the 1970s, prompting scientists to seek an atypical antipsychotic drug similar to clozapine with respect to efficacy but lacking its toxicity and side effects. Researchers' efforts

were largely unsuccessful, however, and the FDA approved no new antipsychotic drugs between 1976 and 1989. The FDA finally approved clozapine in 1990, but only for treatment-resistant or treatment-intolerant patients, subject to rigorous blood testing.

The FDA approved risperidone, the first post-clozapine atypical antipsychotic, in 1994. Since then the FDA has approved seven other atypical antipsychotics: olanzapine (1996); quetiapine (1997); ziprasidone (2001); aripiprazole (2002); paliperidone (2007); asenapine (2009); and iloperidone (2009). Although clozapine remains the "gold standard" with respect to efficacy, the other atypical antipsychotics are considered at least as effective as typical antipsychotics for treating positive symptoms, while also treating negative symptoms and causing fewer EPS side effects. Every FDA-approved atypical antipsychotic has a chemical structure related either to clozapine or risperidone, with the sole exception of aripiprazole—the compound at issue in the present appeal.

Aripiprazole is the active ingredient in the antipsychotic drug marketed by Otsuka Pharmaceutical Co., Ltd. ("Otsuka") under the brand name Abilify®. The culmination of several decades of drug development efforts, Abilify® was approved in 2002 by the FDA and is marketed for the treatment of schizophrenia, bipolar disorder, irritability associated with autistic disorder in pediatric patients, and as an add-on treatment for depression. Abilify® has been commercially successful; since 2005 its annual sales have exceeded a billion dollars, and in 2009 its sales were $3.3 billion.

Aripiprazole has the chemical name 7-{4-[4-(2,3-dichlorophenyl)-1-piperazinyl]-butoxy}-3,4-dihydrocarbostyril and has the following chemical structure:



aripiprazole

Otsuka Pharm. Co. v. Sandoz, Inc., No. 3:07-cv-1000, 2010 U.S. Dist. LEXIS 132595, at *15 (D.N.J. Dec. 15, 2010). Aripiprazole is a "carbostyril derivative," that is, its chemical structure contains a quinolinone fused ring (labeled as "3,4-dihydrocarbostyril" in the structure above). Aripiprazole's carbostyril ring is referred to as "3,4-dihydro" because it has two hydrogen atoms (not shown in the structure above) connected to the 3 and 4 positions, and thus has a single bond between these two carbon atoms. In contrast, a "carbostyril" moiety has only one hydrogen atom at the 3 and 4 positions and a resulting double bond between the carbon atoms. Researchers refer to both variants as "carbostyril derivatives." Connected to the 7-position of aripiprazole's carbostyril core is a "butoxy linker" consisting of four methylene ($–CH_2–$) units. A "propoxy linker," in contrast, consists of only three methylene units. Connected to aripiprazole's butoxy linker is a piperazine ring and a phenyl ring. The terminal phenyl ring of aripiprazole is "2,3-dichloro" substituted, meaning that it has chlorine atoms connected to the 2 and 3 positions.

Otsuka is the assignee of the '528 patent, which has a foreign priority date of October 31, 1988, was filed on

October 20, 1989, and issued on April 9, 1991. The exclusivity afforded by the '528 patent, including a five-year patent term extension and a six-month period of pediatric exclusivity, will expire on April 20, 2015. *Id.* at *14. Claim 12 of the '528 patent claims aripiprazole using its chemical name. '528 patent col.19 ll.18–19. Claim 16 claims "[a] pharmaceutical composition for treating schizophrenia containing, as the active ingredient, a carbostyril compound . . . ," *id.* col.19 l.16–col.20 l.3, and claim 17 claims "[t]he pharmaceutical composition of claim 16 wherein the carbostyril compound" is aripiprazole, *id.* col.20 ll.4–7. Claim 23, which was added during re-examination of the '528 patent, claims a method of treating schizophrenia comprising administering a pharmaceutical composition containing aripiprazole as an active ingredient. Ex Parte Reexamination Certificate, '528 patent col.2 ll.13–16.

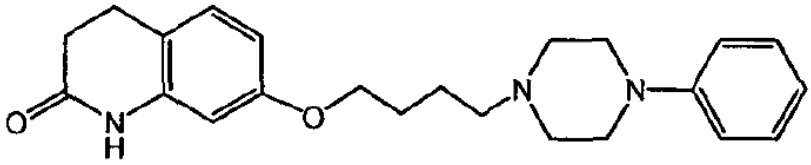
The Defendants and several other companies submitted Abbreviated New Drug Application ("ANDA") filings to the FDA for approval to engage in the commercial manufacture, use, or sale of generic aripiprazole products. Otsuka brought actions against these generic drug manufacturers for patent infringement; most of those actions were consolidated into the case now before us on appeal. *See Otsuka*, 2010 U.S. Dist. LEXIS 132595, at *3–5. Otsuka asserted that the Defendants infringed claims 12, 17, and 23 of the '528 patent under 35 U.S.C. § 271(e)(2)(A). The Defendants conceded that their ANDA filings constituted literal infringement but asserted in defense and counterclaimed that the claims were invalid for obviousness and obviousness-type double patenting.[1]

[1] The Defendants also asserted an ultimately unsuccessful inequitable conduct defense and counterclaim, which are not at issue on appeal.

The district court held a bench trial from August 5 through August 26, 2010, and heard closing arguments on October 21, 2010. The court entered its Amended Memorandum Opinion on December 15, 2010. *See id.* at *5.

On the issue of obviousness under § 103, the court concluded that the Defendants failed to prove by clear and convincing evidence that the asserted claims would have been obvious to one of ordinary skill. In its analysis, the court considered the known carbostyril derivatives, with particular emphasis on the three purported "lead compounds" asserted by the Defendants. *Id.* at *53.

The first of the Defendants' alleged lead compounds is 7-[4-(4-phenylpiperazinyl)-butoxy]-3,4-dihydrocarbostyril, which has the following chemical structure:



"unsubstituted butoxy"

Br. Defs.-Appellants Apotex, at 12. The parties refer to this compound as the "unsubstituted butoxy," because its phenyl ring is unsubstituted and it has a butoxy linker connecting the 7-position of its carbostyril core to its piperazine ring.

The unsubstituted butoxy is disclosed and claimed in Otsuka's earlier U.S. Patent 4,734,416 (the "'416 patent"), which the parties agree is prior art to the '528 patent. The '416 patent issued on March 29, 1988, and expired on March 29, 2005. Entitled "Pharmaceutically Useful Carbostyril Derivatives," the '416 patent teaches a broad genus encompassing "approximately nine trillion compounds." *Otsuka*, 2010 U.S. Dist. LEXIS 132595, at *12.

The '416 patent discloses that "[c]arbostyril derivatives having antihistaminic action and central nervous controlling action are useful as antihistaminic agents or central nervous controlling agents." '416 patent abstract. The patent further discloses that the compounds:

> are useful for central nervous controlling agents such as central muscle relaxing agents, sleep-inducing agents, pre-operative drugs, antischizophrenia agents, sedatives, antianxiety drugs, antimanic depressive psychosis agents, antipyretic agents, analgetic agents and depressors, without showing side-effects such as the feeling of thirst, constipation, tachycordia [sic], parkinsonism, and/or delayed dyscinesia [sic] which exist with conventional central nervous controlling agents.

Id. col.3 ll.14–22. Claim 13 of the '416 patent claims the unsubstituted butoxy using its chemical name. *Id.* col.70 ll.62–63. Claim 50 claims "[a] method of producing an antihistaminic effect in a mammal comprising the step of administering to the mammal for producing said antihistaminic effect a pharmaceutical composition containing a suitable amount of a carbostyril derivative" having a general chemical formula, *id.* col.76 ll.1–60, and claim 116 claims "[t]he method of claim 50, wherein the carbostyril derivative is selected from the group consisting of" nine specific carbostyril derivatives, including the unsubstituted butoxy, *id.* col.84 ll.29–46.

The unsubstituted butoxy is also disclosed in a declaration submitted during the prosecution of the '416 patent by one of that patent's co-inventors, Dr. Kazuyuki Nakagawa (the "Nakagawa declaration"). J.A. 3792–3807. The Nakagawa declaration discloses three sets of test data comparing certain carbostyril derivatives. The first two measure the compounds' antihistaminic activity. The

third involves a test for "Activity for inhibiting jumping behavior in mouse induced by Methamphetamine and L-DOPA." J.A. 3803. Although the Nakagawa declaration nowhere mentions schizophrenia or antipsychotic activity, and despite conflicting evidence regarding the use of mouse jumping test data in antipsychotic drug discovery, the district court found that Dr. Nakagawa's mouse jumping data "could be indicative of potential antipsychotic activity to the skilled artisan." *Otsuka*, 2010 U.S. Dist. LEXIS 132595, at *34.

The Nakagawa declaration provides mouse jumping test data for nine carbostyril derivative test compounds and two prior art reference compounds. The potency of the compounds is indicated with an effective dosage ("ED_{50}") value measured in milligrams per kilogram, wherein a lower value indicates greater potency in the mouse jumping test. The following table summarizes the data for the test compounds.

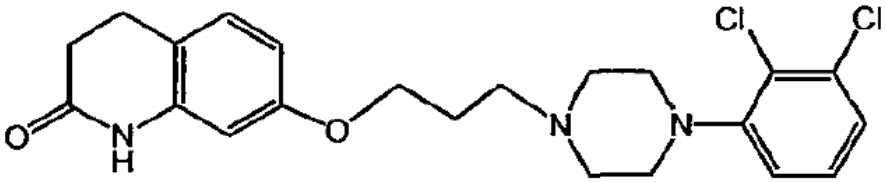
Compound No.	**Chemical Name**	**ED_{50}**
5	5-[3-(4-phenylpiperazinyl)propoxy]-3,4-dihydrocarbostyril dihydrochloride	2.1
6	7-[3-(4-phenylpiperazinyl)propoxy]-3,4-dihydrocarbostyril dihydrochloride	9.3
16	7-{3-[4-(4-chlorophenyl)piperazinyl]propoxy}-3,4-dihydrocarbostyril	15.1

39	7-{3-[4-(3-chlorophenyl)piperazinyl]propoxy}-3,4-dihydrocarbostyril	2.5
41	7-[4-(4-phenyl-1-piperazinyl)butoxy]-3,4-dihydrocarbostyril ("unsubstituted butoxy")	5.5
42	1-methyl-7-[3-(4-phenyl-1-piperazinyl)propoxy]-3,4-dihydrocarbostyril	10.7
43	7-{3-[4-(2-chlorophenyl)-1-piperazinyl]propoxy}-3,4-dihydrocarbostyril	3.4
44	5-{3-[4-(2-ethoxyphenyl)-1-piperazinyl]propoxy}-3,4-dihydrocarbostyril	0.53
45	5-{3-[4-(4-methylphenyl)-1-piperazinyl]propoxy}-3,4-dihydrocarbostyril	8.1

J.A. 3794, 3796, 3805. The two most potent carbostyril derivatives tested in the mouse jumping study have a 5-propoxy linker, *i.e.*, a propoxy substituent connected at the 5-position of the carbostyril core. Compound 44, the most potent derivative with an ED_{50} of 0.53, has a 5-propoxy linker and an ethoxy substituent ($–OCH_2CH_3$) at the 2-position of its phenyl ring. Compound 5, the second most potent derivative with an ED_{50} of 2.1, has a 5-propoxy linker and an unsubstituted phenyl ring. Of the 7-linked carbostyril derivatives for which Dr. Nakagawa provided mouse jumping data, Compound 39, a 3-chloro

substituted propoxy,[2] had an ED_{50} of 2.5; Compound 43, a 2-chloro substituted propoxy, had an ED_{50} of 3.4; Compound 41, the unsubstituted butoxy, had an ED_{50} of 5.5; Compound 6, an unsubstituted propoxy, had an ED_{50} of 9.3; and Compound 16, a 4-chloro substituted propoxy, had an ED_{50} of 15.1. Thus, the best compounds in this test were the propoxys, not the butoxy.

The second alleged lead compound considered by the district court is a carbostyril derivative with the chemical name 7-{3-[4-(2,3-dichlorophenyl)-1-piperazinyl]-propoxy}-3,4-dihydrocarbostyril and the chemical structure depicted below:



"2,3-dichloro propoxy"

Br. Defs.-Appellants Apotex, at 9. The parties refer to this compound as the "2,3-dichloro propoxy" because its phenyl ring is substituted with a chlorine atom at the 2 and 3 positions and it has a propoxy linker connecting its carbostyril core and its piperazine ring. The 2,3-dichloro propoxy was disclosed in two prior art foreign counterparts to Otsuka's '416 patent: German Patent 2,912,105 (the "DE '105 patent"), J.A. 3808–930, at 3926 (example 317); and Swedish Patent Publication 434,945 (the "SE '945 application"), J.A 6396–565, at 6556 (example 134). Like the '416 patent, the SE '945 application teaches that its carbostyril derivatives "can be used as antihistamines

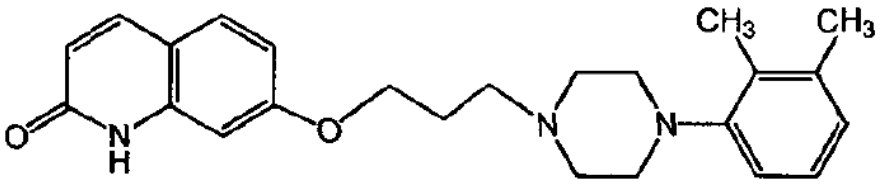
[2] Elsewhere in its opinion the district court referred to Compound 39 as "OPC-4139." *See Otsuka*, 2010 U.S. Dist. LEXIS 132595, at *42.

or agents having a regulating action in the central nervous system," J.A. 6495, and discloses numerous examples of agents in the latter category:

> The compounds according to the present invention are therefore useful as means of controlling the central nervous system as muscle relaxants, sleeping agents, presurgery drugs, antischizophrenia agents, sedatives, anxiolytics, drugs for manic-depressive psychosis, fever-lowering agents, analgesics and "depressors" without showing side effects such as thirst, constipation, tachycardia, parkinsonism and/or delayed dyschezia, which are displayed by conventional agents which act on the central nervous system.

J.A. 6499. The SE '945 application "discloses dozens of carbostyril compounds," and the 2,3-dichloro propoxy "is just one of ninety-six different compounds disclosed in Example 134 alone." *Otsuka*, 2010 U.S. Dist. LEXIS 132595, at *37–38. The DE '105 patent "is substantially the same as the SE '945 application except that the DE '105 Patent omits any mention of potential antipsychotic activity." *Id.* at *38.

The final purported lead compound considered by the district court is OPC-4392. This carbostyril derivative, which has the following chemical structure, has a 2,3-dimethyl substituted phenyl ring, a propoxy linker, and a carbostyril ring containing a double bond at the 3,4-position:



"OPC-4392"

Br. Defs.-Appellants Apotex, at 10. OPC-4392 is an Otsuka development compound and, as of the priority date of the '528 patent, was the only carbostyril derivative tested in humans as a potential antipsychotic. A prior art article published in 1987 describes OPC-4392 as "a totally new compound that is an anti-psychotic drug being developed." Mitsukuni Murasaki, *New Psycho-Neuro Agents*, 16 Japanese J. Clinical Psychiatry 1515, 1517 (1987) ("Murasaki 1987"); J.A. 5891–919, at 5907. The Murasaki 1987 article further notes that "the anti-psychotic action was not strong but the strength of the activating action stood out," that "improvements were observed in the negative symptoms," and that "the extra-pyramidal disturbances are extremely weak." J.A. 5907. A prior art publication from January 1988 by the same author stated that OPC-4392 was "expected to have some advantageous effects different from those of conventional antipsychotic drugs," such as chlorpromazine. Mitsukuni Murasaki, *Phase 1 Study of a New Antipsychotic Drug, OPC-4392*, 12 Progress Neuro-Psychopharmacology & Biological Psychiatry 793, 802 (1988) ("Murasaki 1988"); J.A. 10396–406, at 10405. Although the article stated that OPC-4392 was "expected to have fewer side effects than conventional drugs of the same class," it also reported that subjects receiving a 5-milligram dose of OPC-4392 "experienced sleeplessness, stagger, weakness, fatigability, heavy headedness, lack of motivation and disturbed concentration, which were so severe that they were not able to perform daily routine work." J.A. 10397, 10401.

Evaluating the differences between the claimed invention and the prior art, the district court found that the asserted prior art did not teach one of ordinary skill to select the unsubstituted butoxy, the 2,3-dichloro propoxy, or OPC-4392 as a lead compound for further antipsychotic research. *Otsuka*, 2010 U.S. Dist. LEXIS 132595, at *59,

*64, *70. Rather, the court found that a structure like clozapine or risperidone—both of which are structurally dissimilar to aripiprazole—would have been an attractive lead compound. *Id.* at *76. The court thus concluded that the Defendants failed to prove by clear and convincing evidence that one of ordinary skill would have been motivated to combine the asserted prior art to make aripiprazole and would have had a reasonable expectation of success in doing so. *Id.* at *76–77.

The court then turned to the issue of nonstatutory obviousness-type double patenting. The court considered whether aripiprazole and its uses are not patentably distinct from the unsubstituted butoxy in claim 13 of the '416 patent. *Id.* at *88. Noting the structural differences between aripiprazole and the unsubstituted butoxy, the court found that the prior art did not teach one of ordinary skill to achieve antipsychotic activity by modifying the unsubstituted butoxy with a 2,3-dichloro substitution on its phenyl ring to make aripiprazole. *Id.* at *90–91. The court thus concluded that the Defendants failed to prove by clear and convincing evidence that the asserted claims were invalid for nonstatutory double patenting. *Id.* at *92.

On December 15, 2010, the court entered its Amended Order and Final Judgment in favor of Otsuka. *Otsuka Pharm. Co. v. Sandoz, Inc.*, No. 3:07-cv-1000 (D.N.J. Dec. 15, 2010). The Defendants timely appealed. We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(1).

DISCUSSION

A patent is invalid if an alleged infringer proves, by clear and convincing evidence, that 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 pertinent art. 35 U.S.C. §§ 103(a), 282(2); *Microsoft Corp. v. i4i Ltd.*, 131 S. Ct. 2238, 2242 (2011). Obviousness is a question of law with underlying factual findings, including: (1) the scope and content of the prior art; (2) the level of ordinary skill in the pertinent art; (3) the differences between the claimed invention and the prior art; and (4) objective evidence such as commercial success, long-felt need, and the failure of others. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). Similarly, nonstatutory obviousness-type double patenting is a question of law with underlying findings of fact. *In re Longi*, 759 F.2d 887, 892 (Fed. Cir. 1985).

Following a bench trial, we review the district court's conclusions of law *de novo* and its findings of fact for clear error. *Golden Blount, Inc. v. Robert H. Peterson Co.*, 365 F.3d 1054, 1058 (Fed. Cir. 2004). A factual finding is clearly erroneous if, despite some supporting evidence, we are left with the definite and firm conviction that a mistake has been made. *United States v. U.S. Gypsum Co.*, 333 U.S. 364, 395 (1948).

I

We first address the Defendants' arguments that the district court erred by failing to hold the asserted claims invalid for obviousness under § 103.[3]

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[3] Defendants-Appellants Apotex Inc. and Apotex Corp. submitted one set of appellate briefs addressing the issues of § 103 obviousness and nonstatutory double patenting. Defendants-Appellants Teva Pharmaceuticals USA, Inc., Barr Laboratories, Inc., and Barr Pharmaceuticals, Inc., submitted another set of briefs that addressed only nonstatutory double patenting, but joined in full the principal and reply briefs filed by Apotex. For purposes of this opinion we will refer to the arguments in both sets of briefs as the Defendants' arguments.

The Defendants contend that aripiprazole would have been obvious over the prior art carbostyril derivative compounds at the time aripiprazole was invented. They assert that the lead compound analysis applied by the district court violates our precedent and "fall[s] into a rigid obviousness analysis precluded by *KSR*." Br. Defs.-Appellants Apotex, at 35–36. In this regard, the Defendants allege that the court erred by assuming that "only the most obvious choice could serve as a lead." *Id.* at 34. According to the Defendants, prior art compounds, including the 2,3-dichloro propoxy, the unsubstituted butoxy, and OPC-4392, were known to have antipsychotic activity, and it would have been obvious to chemically modify them in the ways necessary to make aripiprazole. Finally, they argue that aripiprazole's properties and other secondary considerations do not render aripiprazole nonobvious.

Otsuka, in response, argues that the district court correctly rejected the Defendants' obviousness contentions, which are based on improper hindsight bias. Otsuka points out that no carbostyril derivative had been shown to effectively treat schizophrenia as of the priority date of the '528 patent. Otsuka also contends that the district court did not require proof that aripiprazole was the "most obvious" compound, but rather evaluated all of the potential choices available to one of ordinary skill and determined that the prior art did not suggest that the unsubstituted butoxy, 2,3-dichloro propoxy, or OPC-4392 would be suitable lead compounds. Otsuka also asserts that secondary considerations support the court's conclusion of nonobviousness.

For the following reasons, we hold that the district court correctly determined that the Defendants failed to prove by clear and convincing evidence that the asserted claims would have been obvious under § 103.

A. The District Court's "Lead Compound" Analysis

In cases involving the patentability of a new chemical compound, *prima facie* obviousness under the third *Graham* factor generally turns on the structural similarities and differences between the claimed compound and the prior art compounds. *Daiichi Sankyo Co. v. Matrix Labs., Ltd.*, 619 F.3d 1346, 1352 (Fed. Cir. 2010). The Defendants assert that the district court erred by employing a "lead compound" analysis as part of its determination under the third *Graham* factor. We reject that contention. New compounds may be created from theoretical considerations rather than from attempts to improve on prior art compounds. In this case, however, the parties' arguments focus on selecting and modifying particular prior art compounds, designated as lead compounds.

Our case law demonstrates that whether a new chemical compound would have been *prima facie* obvious over particular prior art compounds ordinarily follows a two-part inquiry. First, the court determines whether a chemist of ordinary skill would have selected the asserted prior art compounds as lead compounds, or starting points, for further development efforts. *Eisai Co. v. Dr. Reddy's Labs., Ltd.*, 533 F.3d 1353, 1359 (Fed. Cir. 2008) ("[P]ost-*KSR*, a prima facie case of obviousness for a chemical compound still, in general, begins with the reasoned identification of a lead compound."). A lead compound, as we have explained, is "a compound in the prior art that would be most promising to modify in order to improve upon its . . . activity and obtain a compound with better activity." *Takeda Chem. Indus., Ltd. v. Alphapharm Pty., Ltd.*, 492 F.3d 1350, 1357 (Fed. Cir. 2007). As such, a lead compound is "a natural choice for further development efforts." *Altana Pharma AG v. Teva Pharm. USA, Inc.*, 566 F.3d 999, 1008 (Fed. Cir. 2009). In recent cases involving the alleged obviousness of a new

chemical compound, the parties have frequently focused upon the notion that a chemist must select one or more lead compounds. *E.g.*, *Daiichi*, 619 F.3d at 1352; *Altana*, 566 F.3d at 1007; *Procter & Gamble Co. v. Teva Pharm. USA, Inc.*, 566 F.3d 989, 994 (Fed. Cir. 2009); *Eisai*, 533 F.3d at 1357; *Takeda*, 492 F.3d at 1357; *Eli Lilly & Co. v. Zenith Goldline Pharm., Inc.*, 471 F.3d 1369, 1379 (Fed. Cir. 2006); *Yamanouchi Pharm. Co. v. Danbury Pharmacal, Inc.*, 231 F.3d 1339, 1345 (Fed. Cir. 2000); *cf. Unigene Labs., Inc. v. Apotex, Inc.*, 655 F.3d 1352, 1362 (Fed. Cir. 2011) ("[T]he term "reference composition" is more appropriate than "lead compound" when considering obviousness for a chemical composition."). In such cases our analysis focuses on those proposed lead compounds that the alleged infringer has attempted to prove, by clear and convincing evidence, that the skilled artisan would have had a reason to select from the panoply of known compounds in the prior art. *Daiichi*, 619 F.3d at 1354.

In determining whether a chemist would have selected a prior art compound as a lead, the analysis is guided by evidence of the compound's pertinent properties. *See Eli Lilly*, 471 F.3d at 1378; *In re Lalu*, 747 F.2d 703, 707 (Fed. Cir. 1984). Such properties may include positive attributes such as activity and potency, *Altana*, 566 F.3d at 1008; *Eli Lilly*, 471 F.3d at 1379; *Yamanouchi*, 231 F.3d at 1345; adverse effects such as toxicity, *Takeda*, 492 F.3d at 1358, and other relevant characteristics in evidence, *see Eisai*, 533 F.3d at 1358 (considering a prior art compound's lipophilicity and low molecular weight); *Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1363 (Fed. Cir. 2007) (considering the "strength, solubility, and other known chemical characteristics" of a prior art salt-forming acid). Absent a reason or motivation based on such prior art evidence, mere structural similarity between a prior art compound and the claimed compound

does not inform the lead compound selection. *See Daiichi*, 619 F.3d at 1354; *In re Dillon*, 919 F.2d 688, 692 (Fed. Cir. 1990) (en banc) ("[S]tructural similarity between claimed and prior art subject matter, proved by combining references or otherwise, *where the prior art gives reason or motivation to make the claimed compositions*, creates a *prima facie* case of obviousness." (emphasis added)). Were it otherwise, the analysis would impermissibly rely upon *ex post* reasoning. *See KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 421 (2007) ("A factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning.").

The second inquiry in the analysis is whether the prior art would have supplied one of ordinary skill in the art with a reason or motivation to modify a lead compound to make the claimed compound with a reasonable expectation of success. *Takeda*, 492 F.3d at 1357 ("[I]n cases involving new chemical compounds, it remains necessary to identify some reason that would have led a chemist to modify a known compound in a particular manner to establish prima facie obviousness of a new claimed compound."); *Pfizer*, 480 F.3d at 1361 ("[T]he challenger of the patent [must] show by clear and convincing evidence that a skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the claimed invention, and that the skilled artisan would have had a reasonable expectation of success in doing so."); *Dillon*, 919 F.2d at 692.

In keeping with the flexible nature of the obviousness inquiry, the reason or motivation for modifying a lead compound may come from any number of sources and need not necessarily be explicit in the prior art. *Eisai*, 533 F.3d at 1357 (citing *KSR*, 550 U.S. at 415); *Aventis Pharma Deutschland GmbH v. Lupin, Ltd.*, 499 F.3d

1293, 1301 (Fed. Cir. 2007). Again, pertinent properties guide the analysis, for "it is the possession of promising useful properties in a lead compound that motivates a chemist to make structurally similar compounds." *Daiichi*, 619 F.3d at 1354 ("Potent and promising activity in the prior art trumps mere structural relationships."); *see also Eli Lilly*, 471 F.3d at 1378 ("[P]atentability for a chemical compound does not depend only on structural similarity."); *In re Stemniski*, 444 F.2d 581, 586 (CCPA 1971). As we have explained, "it is sufficient to show that the claimed and prior art compounds possess a 'sufficiently close relationship . . . to create an expectation,' in light of the totality of the prior art, that the new compound will have 'similar properties' to the old." *Aventis*, 499 F.3d at 1301 (quoting *Dillon*, 919 F.2d at 692); *see also In re Wilder*, 563 F.2d 457, 460 (CCPA 1977).

In the present case, in assessing whether aripiprazole would have been *prima facie* obvious in view of the prior art compounds asserted by the Defendants, the district court summarized the applicable law as requiring inquiry into

> the hypothetical person of skill in the art's identification of a lead compound, structural differences between the proposed lead compound and the claimed invention, motivation or teachings in the prior art to make the necessary changes to arrive at the claimed invention, and whether the person of skill in the art would have a reasonable expectation of success in making such structural changes.

Otsuka, 2010 U.S. Dist. LEXIS 132595, at *52–53. We discern no error in the district court's recitation of the applicable law. Moreover, the court did not require, as the Defendants allege, that only "the most obvious choice"

could serve as the lead. Rather, the district court concluded that two compounds—clozapine and risperidone—would have been considered viable lead compounds. *Id.* at *76. These were the only marketed antipsychotic compounds at the time the present inventors began their work. They were the natural and obvious lead compounds whose structures one would have considered to modify to obtain improved antipsychotic compounds. At the relevant time, there were no carbostyril compounds that were marketed as antipsychotics or were publicly known to have potent antipsychotic activity with minimal side effects. Carbostyrils were thus not plausible lead compounds, except in retrospect, and the district court did not clearly err in concluding that they were not.

As for the Defendants' purported lead compounds, the district court carefully considered each compound and correctly rejected the contention that a skilled artisan would have selected those compounds for further antipsychotic drug research efforts.

B. The Unsubstituted Butoxy Compound

In evaluating the differences between the claimed invention and the prior art, the district court first considered the unsubstituted butoxy compound disclosed in the prior art '416 patent and the Nakagawa declaration. The Defendants contend that the court erred by finding that a skilled artisan would not have selected the unsubstituted butoxy as a lead compound for antipsychotic drug discovery. We disagree.

As the court noted, the claims of the prior art '416 patent explicitly disclose the unsubstituted butoxy as producing an antihistaminic effect. This clear teaching controls over the far more nebulous disclosure that the trillions of carbostyril compounds encompassed by the '416 patent "have antihistaminic and central nervous

controlling effects." '416 patent col.2 ll.50–51. As explained by Dr. Bryan Roth, whom the court credited as an expert in schizophrenia, antipsychotic drug discovery, and psychopharmacology, one of ordinary skill in the art would not have understood the '416 patent's "laundry list" of potential central nervous system controlling effects to mean that every carbostyril derivative disclosed in the '416 patent is a potential antipsychotic. *Otsuka*, 2010 U.S. Dist. LEXIS 132595, at *26, *31.

The Nakagawa declaration similarly fails to support the Defendants' contentions. As an initial matter, Otsuka argues in a footnote to its brief that the Nakagawa declaration is not eligible as prior art because the Defendants failed to prove that a chemist seeking to develop a new antipsychotic drug would have consulted the unindexed file history of the prior art '416 patent in the course of his or her research. Br. Pl.-Appellee Otsuka, at 24 n.1. Arguments raised only in footnotes, however, are waived. *SmithKline Beecham Corp. v. Apotex Corp.*, 439 F.3d 1312, 1320 (Fed. Cir. 2006). Although we may exercise our discretion to consider improperly raised arguments, we decline to do so here. *See Becton Dickinson & Co. v. C.R. Bard, Inc.*, 922 F.2d 792, 800 (Fed. Cir. 1990). We therefore assume, without deciding, that the Nakagawa declaration qualifies as prior art.

Although Nakagawa's mouse jumping data "could be indicative of potential antipsychotic activity to the skilled artisan," *Otsuka*, 2010 U.S. Dist. LEXIS 132595, at *34, that alone does not resolve the matter. Rather, we must consider the contents of the declaration as a whole, as the district court correctly did. In doing so, we focus in particular on the compounds' disclosed properties because, as the district court found, "[g]enerally, a skilled artisan would be attracted to the most potent compounds in

selecting a lead compound for development." *Id.* at *54; *see also Daiichi*, 619 F.3d at 1354.

Of the nine carbostyril test compounds for which the Nakagawa declaration supplied mouse jumping data, the unsubstituted butoxy was inferior to four other test compounds and thus "was only of middling potency." *Otsuka*, 2010 U.S. Dist. LEXIS 132595, at *65. Significantly, the four more potent test compounds were all propoxy-linked, including Compound 44, which, with an ED_{50} of 0.53 milligrams per kilogram, "was by far the most potent of the compounds tested." *Id.* at *54. One of the Defendants' own experts conceded that the activity of Compound 44 was "striking," and Dr. Roth testified that if a skilled artisan were to select any compound from the Nakagawa declaration, it would be Compound 44. *Id.* at *54, *56. The Defendants do not allege obviousness over the structurally dissimilar Compound 44, which, unlike aripiprazole, has a propoxy linker connected at the 5-position of its carbostyril core and a 2-ethoxy substituent on its phenyl ring. As the district court found, the Nakagawa declaration would, if anything, have taught one of ordinary skill to select a 5-linked propoxy carbostyril derivative as a lead compound. *See id.* at *57 (comparing the ED_{50} value of 2.1 for a 5-linked unsubstituted propoxy and the ED_{50} value of 9.3 for a 7-linked unsubstituted propoxy and finding that this "significant" difference "would teach the skilled artisan the superiority of 5-linked propoxy compounds over 7-linked propoxy compounds").

Thus, neither the '416 patent nor the Nakagawa declaration supports the Defendants' position that one of ordinary skill would have selected the prior art unsubstituted butoxy compound as a lead compound for further antipsychotic research.

C. The 2,3-Dichloro Propoxy Compound

According to the Defendants, the district court erred by failing to find that aripiprazole would have been obvious over the SE '945 application, which taught that the 2,3-dichloro propoxy compound had antipsychotic activity. We disagree. The Defendants' argument "strains the scope of the SE '945 application." *Id.* at *62. As the district court correctly found, the SE '945 application lists the 2,3-dichloro propoxy compound "as one among hundreds of examples that may be useful for an extensive list of potential central nervous system controlling activities," *id.*, and fails to tie the 2,3-dichloro propoxy to any meaningful suggestion of antipsychotic activity.

The Defendants, citing *Pfizer*, 480 F.3d 1348, allege that the SE '945 application's generic disclosure "is all that is required for obviousness." Br. Defs.-Appellants Apotex, at 37. In *Pfizer*, this court held that the claimed amlodipine besylate salt would have been obvious in view of the known chemical structure of amlodipine and a prior art group of salt-forming anions including benzene sulphonate (which combines with amlodipine to form the besylate salt). *Pfizer*, 480 F.3d at 1372. This court premised its conclusion on findings that the prior art not only provided "ample motivation to narrow the [prior art] genus of . . . salt-forming anions . . . to a few [species]," *id.* at 1363, but also "predicted the results," *id.* at 1367. In the present case, in contrast to *Pfizer*, the Defendants failed to make an analogous showing. The district court thus correctly found that one of ordinary skill in the art would not have selected the 2,3-dichloro propoxy compound as a lead compound for further antipsychotic research.

Furthermore, as Otsuka points out, the Defendants' theory that aripiprazole would have been obvious over the

unsubstituted butoxy and the 2,3-dichloro propoxy rested in large part upon an asserted "bracketing theory"—*i.e.*, that one would have combined those two asserted compounds to arrive at aripiprazole, which shares some structural features of both. The district court found that the Defendants' theory constituted "an improper hindsight analysis." *Otsuka*, 2010 U.S. Dist. LEXIS 132595, at *64. The Defendants do not on appeal challenge the district court's finding or re-assert their bracketing theory. Accordingly, we conclude that the Defendants failed to prove by clear and convincing evidence that aripiprazole would have been obvious over the 2,3-dichloro propoxy.

D. OPC-4392

The Defendants also assert that the district court erred by rejecting OPC-4392 as a lead compound. Again, we disagree. The Defendants rely selectively on the disclosure in Murasaki 1987 that OPC-4392 was "an antipsychotic drug," J.A. 5907, and the fact that OPC-4392 proceeded to Phase II clinical trials. Taken as a whole, however, the prior art taught away from using OPC-4392 as a starting point for further antipsychotic research.

For example, Murasaki 1987 teaches that "the antipsychotic action [of OPC-4392] was not strong." *Id.* Based on that teaching, together with other prior art of record that focuses only on the effects of OPC-4392 on schizophrenia's negative symptoms, a skilled artisan would have concluded that OPC-4392 did not treat positive symptoms. *Otsuka*, 2010 U.S. Dist. LEXIS 132595, at *68–69. The district court also credited the testimony of one of the Defendants' witnesses, who stated that clinical studies of OPC-4392 showed that it "lacked [an] antipsychotic component." *Id.* at *68. Furthermore, Murasaki 1987 taught that "the strength of the activating action [of

OPC-4392] stood out," J.A. 5907, a property that Dr. Roth testified would have been a "red flag" indicating that the drug was likely to cause patients to act out on their delusions and hallucinations. *Otsuka*, 2010 U.S. Dist. LEXIS 132595, at *69. Another prior art reference, Murasaki 1988, taught that OPC-4392, even at a "very low dose," *id.* at *41, caused "severe" side effects, J.A. 10401. In light of the totality of the evidence before the district court, we perceive no clear error in the conclusion that OPC-4392 was "considered a failure insofar as it did not treat the positive symptoms of schizophrenia and was not well-tolerated in modest doses." *Otsuka*, 2010 U.S. Dist. LEXIS 132595, at *70. The court thus did not err in concluding that one of ordinary skill in the art would not have selected OPC-4392 as a lead compound for further antipsychotic research.

Even assuming that one would have selected OPC-4392 as a lead compound, the district court found that the Defendants failed to prove that the prior art would have directed one to make the various modifications necessary to convert OPC-4392 into aripiprazole. Those modifications include: (1) converting OPC-4392's carbostyril core into a dihydrocarbostyril; (2) changing OPC-4392's propoxy linker to a butoxy; and (3) replacing OPC-4392's 2-methyl and 3-methyl groups with 2-chloro and 3-chloro substituents. On appeal, the Defendants rely in large part on the inventors' and Otsuka's own development efforts in an attempt to prove that aripiprazole would have been obvious. *E.g.*, Br. Defs.-Appellants Apotex, at 46–47 (arguing that Otsuka's aripiprazole development involved a "short timeline" and only "took a few months"). Those arguments cannot trump the district court's careful fact finding, however. The inventor's own path itself never leads to a conclusion of obviousness; that is hindsight. What matters is the path that the person of ordi-

nary skill in the art would have followed, as evidenced by the pertinent prior art. *See* 35 U.S.C. § 103(a) ("Patentability shall not be negatived by the manner in which the invention was made."); *Life Techs., Inc. v. Clontech Labs., Inc.*, 224 F.3d 1320, 1325 (Fed. Cir. 2000) ("[T]he path that leads an inventor to the invention is expressly made irrelevant to patentability by statute."). We therefore agree with the district court that the Defendants failed to provide clear and convincing evidence that the skilled artisan would have known how to modify OPC-4392 to increase antipsychotic activity. *Otsuka*, 2010 U.S. Dist. LEXIS 132595, at *70.

E. Conclusion

In summary, the district court's careful analysis exposed the Defendants' obviousness case for what it was—a poster child for impermissible hindsight reasoning. Because we agree with the district court that the Defendants failed to prove that claim 12 of the '528 patent would have been *prima facie* obvious over the asserted prior art compounds, we need not address the court's findings regarding objective evidence of nonobviousness. In addition, because the Defendants' arguments for obviousness of dependent claims 17 and 23 rely on a determination of obviousness for independent claim 12, we need not separately analyze the court's finding that the Defendants failed to prove invalidity for the asserted dependent claims.

II

We now turn to the Defendants' contention that the district court erred by failing to hold the asserted claims of the '528 patent invalid for nonstatutory obviousness-type double patenting in view of the unsubstituted butoxy compound of claim 13 of the '416 patent.

An inventor may obtain "a patent" for an invention pursuant to 35 U.S.C. § 101; the statute thus "permits only one patent to be obtained for a single invention." *In re Lonardo*, 119 F.3d 960, 965 (Fed. Cir. 1997). The double patenting doctrine "precludes one person from obtaining more than one valid patent for either (a) the 'same invention,' or (b) an 'obvious' modification of the same invention." *Longi*, 759 F.2d at 892. Nonstatutory double patenting is a judicially created doctrine grounded in public policy that "prevent[s] the extension of the term of a patent, even where an express statutory basis for the rejection is missing, by prohibiting the issuance of the claims in a second patent not patentably distinct from the claims of the first patent." *Id.*

As an initial matter, the parties disagree over the legal test for nonstatutory double patenting. Otsuka contends that there is no difference between obviousness under § 103 and obviousness-type double patenting. That is not entirely correct. We have noted that "a double patenting of the obviousness type rejection is analogous to [a failure to meet] the non-obviousness requirement of 35 U.S.C. § 103." *Id.* at 892 n.4 (internal quotation marks omitted). Important differences remain, however. The patent principally underlying the double patenting rejection need not be prior art. *Id.* Moreover, when analyzing obviousness-type double patenting in cases involving claimed chemical compounds, the issue is not whether a skilled artisan would have selected the earlier compound as a lead compound. That is so because the analysis must necessarily focus on the earlier claimed compound over which double patenting has been alleged, lead compound or not. *See Ortho Pharma. Corp. v. Smith*, 959 F.2d 936, 943 (Fed. Cir. 1992) ("[I]t is the claims that are compared when assessing double patenting.").

The Defendants assert that, unlike an analysis under § 103, the test for obviousness-type double patenting never asks whether the prior art would have supplied a motivation to modify the earlier claimed compound. That is also incorrect. Unless the earlier claim anticipates the later claim under § 102, the question whether the two claimed compounds are "patentably distinct" implicates the question of obviousness under § 103, *Longi*, 759 F.2d at 892, which in the chemical context requires identifying some reason that would have led a chemist to modify the earlier compound to make the later compound with a reasonable expectation of success, *see Takeda*, 492 F.3d at 1357, 1361.

The Defendants rely on *Geneva Pharm., Inc. v. GlaxoSmithKline PLC*, 349 F.3d 1373, 1377 n.1 (Fed. Cir. 2003), which states in a footnote that "[o]bviousness requires inquiry into a motivation to modify the prior art; nonstatutory double patenting does not." *Geneva*, however, involved nonstatutory double patenting based on anticipation, not obviousness. *Id.* ("This genus-species relationship makes the claims patentably indistinct, because the earlier species . . . anticipates the later genus . . . ."). For anticipation, of course, motivation in the prior art is unimportant. *See, e.g.*, *Callaway Golf Co. v. Acushnet Co.*, 576 F.3d 1331, 1347 (Fed. Cir. 2009) (noting that, in an "anticipation argument, . . . motivation to combine is not an issue"). The statement from *Geneva* was later recited in dictum in *Procter & Gamble Co. v. Teva Pharm. USA, Inc.*, 566 F.3d 989 (Fed. Cir. 2009), in which we concluded under § 103 that there would have been no motivation to modify the prior art compound, *id.* at 995, and then stated: "Having concluded that [the asserted compound] was not obvious under 35 U.S.C. § 103, we *similarly conclude* that the [asserted] patent is not invalid for obviousness-type double patenting," *id.* at

999 (emphasis added). Contrary to the Defendants' arguments, neither *Geneva* nor *Procter & Gamble* stands for the proposition that, in considering whether one compound is an obvious variant of another for purposes of nonstatutory double patenting, analyzing the compound of the prior claim for a reason or motivation to modify is irrelevant.

We therefore reject the Defendants' contention that the district court legally erred by relying in part on its findings under § 103 in its subsequent double patenting analysis. The court in this case applied the correct test for nonstatutory obviousness-type double patenting: In the context of claimed chemical compounds, an analysis of nonstatutory obviousness-type double patenting—like an analysis under § 103—entails determining, *inter alia*, whether one of ordinary skill in the art would have had reason or motivation to modify the earlier claimed compound to make the compound of the asserted claim with a reasonable expectation of success. There is no other way to consider the obviousness of compound B over compound A without considering whether one of ordinary skill would have had reason to modify A to make B. That is traditional obviousness analysis.

Turning to the particulars of the district court's decision on nonstatutory double patenting, the Defendants contend that the court improperly treated claim 13 of the '416 patent in isolation without considering prior art, such as the Nakagawa declaration, which would have taught a skilled artisan to substitute a phenyl ring with chlorine atoms at the 2- and 3-positions to make aripiprazole. Otsuka, in response, argues that the court, after considering the Nakagawa declaration in detail, correctly concluded that aripiprazole was not an obvious variant of the unsubstituted butoxy.

We agree with the district court that the asserted claims are not invalid for nonstatutory double patenting. As we explained above, aripiprazole differs structurally from the unsubstituted butoxy of claim 13 of the '416 patent. Aripiprazole has chlorine substituents at the 2 and 3 positions of its phenyl ring, whereas the unsubstituted butoxy has hydrogens at those positions—*i.e.*, it is "unsubstituted." In its double patenting analysis, the court determined "that the prior art, including the Nakagawa Declaration, . . . did not teach the person of ordinary skill in the art to pursue a 2,3-dichloro substitution on the phenyl ring to achieve antipsychotic activity." *Otsuka*, 2010 U.S. Dist. LEXIS 132595, at *90–91; *see also id.* at *64. The evidence before the district court supports this finding. For example, the court credited evidence demonstrating the high degree of unpredictability in antipsychotic drug discovery as of the priority date. *Id.* at *48, *61. Experts testified that the discovery of new antipsychotic drugs in the 1980s was "very unpredictable," J.A. 30660, and that antipsychotic research at that time was "notoriously unsuccessful," J.A. 30453. As *KSR* makes clear, predictability is a vital consideration in the obviousness analysis. 550 U.S. at 421; *see also Procter & Gamble*, 566 F.3d at 996 ("[T]o the extent an art is unpredictable, as the chemical arts often are, *KSR*'s focus on . . . 'identified, predictable solutions' may present a difficult hurdle because potential solutions are less likely to be genuinely predictable." (quoting *Eisai*, 533 F.3d at 1359)).

As the district court correctly held, the prior art would not have provided a skilled artisan with a reason to make the necessary structural changes to the unsubstituted butoxy to yield aripiprazole. *Otsuka*, 2010 U.S. Dist. LEXIS 132595, at *91. The Defendants posit that substitution with chlorine atoms at the 2- and 3-positions of the phenyl ring "would have been a logical and routine modi-

fication." Br. Defs.-Appellants Apotex, at 66. The evidence indicates otherwise. The Nakagawa declaration neither disclosed nor would have suggested a 2,3-dichloro substituted antipsychotic compound. *Otsuka*, 2010 U.S. Dist. LEXIS 132595, at *62; J.A. 30689. And, as we noted above, although other prior art including the SE '945 application disclosed 2,3-dichloro substituted compounds, those references failed to tie that disclosure to any meaningful suggestion of antipsychotic activity. *Otsuka*, 2010 U.S. Dist. LEXIS 132595, at *62. As Dr. David Nichols, an expert in both medicinal chemistry and pharmacology, testified at trial: "There was no known antipsychotic drug, successful or otherwise, that had those two particular [chlorine] substituents arranged in a 2,3 . . . orientation," and, further, "[t]here's no teaching that suggests that a dichlorination pattern like that would lead to a safe atypical antipsychotic, or even an antipsychotic, period, atypical or otherwise." J.A. 30688–89. In short, we perceive no clear error in the district court's finding that one of ordinary skill would not have been motivated to pursue a 2,3-dichloro substitution on the phenyl ring as would have been required to convert the unsubstituted butoxy to aripiprazole.

Finally, the nonstatutory double patenting issue in this case is not, as the Defendants argue, controlled by *In re Zickendraht*, 319 F.2d 225 (CCPA 1963). In *Zickendraht*, one of our predecessor courts reviewed a decision of the Board of Patent Appeals and Interferences (the "Board") rejecting a claimed metalliferous azodyestuff compound for nonstatutory double patenting over a similar compound claimed in an issued patent. The two compounds were identical but for the presence or absence of a methyl group. *Id.* at 1534. In affirming the Board's rejection, the *Zickendraht* court noted that "[i]t has not been shown that this [chemical] difference has any effect

on the dyeing characteristics of the compound." *Id.* at 1531. The court also pointed out that the earlier "patent disclosure would suggest to one skilled in the art" reacting particular starting components, which "should result in production of the dye claimed" in the pending application. *Id.* at 1532. Unlike in *Zickendraht*, the evidence here not only demonstrates the unpredictability of minor structural changes on a compound's antipsychotic properties, but also indicates that the prior art would not have provided the skilled artisan with a reason to make the necessary structural changes to the unsubstituted butoxy to yield aripiprazole. *Otsuka*, 2010 U.S. Dist. LEXIS 132595, at *61, *91. *Zickendraht*, therefore, is distinguishable from the present case.

Because we agree with the district court that the prior art would not have provided one of ordinary skill with a reason or motivation to make aripiprazole from the unsubstituted butoxy compound, we need not examine Otsuka's evidence of secondary considerations of nonobviousness. Moreover, the Defendants do not advance separate double patenting arguments for the asserted dependent claims of the '528 patent. We therefore conclude that the district court correctly determined that all of the asserted claims of the '528 patent are not invalid for nonstatutory obviousness-type double patenting over claim 13 of the '416 patent.

CONCLUSION

For the foregoing reasons, we *affirm* the judgment of the district court.

AFFIRMED

United States Court of Appeals for the Federal Circuit

06-1329

TAKEDA CHEMICAL INDUSTRIES, LTD.
and TAKEDA PHARMACEUTICALS NORTH AMERICA, INC.,

Plaintiffs-Appellees,

v.

ALPHAPHARM PTY., LTD.
and GENPHARM, INC.,

Defendants-Appellants.

David G. Conlin, Edwards Angell Palmer & Dodge LLP, of Boston, Massachusetts, argued for plaintiffs-appellees. With him on the brief were Barbara L. Moore, Kathleen B. Carr, and Adam P. Samansky; and Anthony J. Viola, of New York, New York. Of counsel on the brief was Mark Chao, Takeda Pharmaceuticals North America, Inc., of Lincolnshire, Illinois.

Kevin F. Murphy, Frommer Lawrence & Haug LLP, of New York, New York, argued for defendants-appellants. With him on the brief were Edgar H. Haug and Jeffrey A. Hovden.

Appealed from: United States District Court for the Southern District of New York

Judge Denise Cote

United States Court of Appeals for the Federal Circuit

06-1329

TAKEDA CHEMICAL INDUSTRIES, LTD. and TAKEDA PHARMACEUTICALS NORTH AMERICA, INC.,

Plaintiffs-Appellees,

v.

ALPHAPHARM PTY., LTD. and GENPHARM, INC.,

Defendants-Appellants.

DECIDED: June 28, 2007

Before LOURIE, BRYSON, and DYK, Circuit Judges.

Opinion for the court filed by Circuit Judge LOURIE. Concurring opinion filed by Circuit Judge DYK.

LOURIE, Circuit Judge.

Alphapharm Pty., Ltd. and Genpharm, Inc. (collectively "Alphapharm") appeal from the decision of the United States District Court for the Southern District of New York, following a bench trial, that U.S. Patent 4,687,777 was not shown to be invalid under 35 U.S.C. § 103. Takeda Chem. Indus., Ltd. v. Mylan Labs., 417 F. Supp. 2d 341 (S.D.N.Y. 2006). Because we conclude that the district court did not err in determining that the claimed compounds would not have been obvious in light of the prior art, and hence that the patent has not been shown to be invalid, we affirm.

BACKGROUND

Diabetes is a disease that is characterized by the body's inability to regulate blood sugar. It is generally caused by inadequate levels of insulin—a hormone produced in the pancreas. Insulin allows blood sugar or glucose, which is derived from food, to enter into the body's cells and be converted into energy. There are two types of diabetes, known as Type 1 and Type 2. In Type 1 diabetes, the pancreas fails to produce insulin, and individuals suffering from this type of diabetes must regularly receive insulin from an external source. In contrast, Type 2 diabetic individuals produce insulin. However, their bodies are unable to effectively use the insulin that is produced. This is also referred to as insulin resistance. As a result, glucose is unable to enter the cells, thereby depriving the body of its main source of energy. Type 2 diabetes is the most common form of diabetes—affecting over 90% of diabetic individuals.

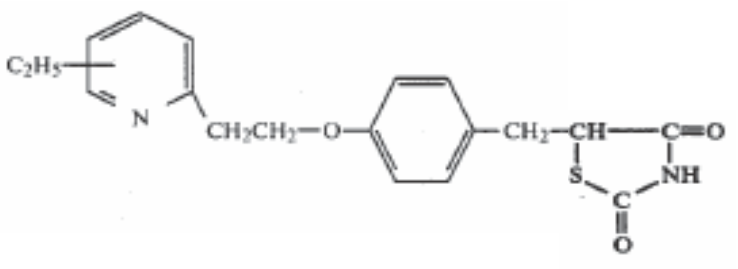
In the 1990s, a class of drugs known as thiazolidinediones ("TZDs") was introduced on the market as a treatment for Type 2 diabetes. Takeda Chemical Industries, Ltd., and Takeda Pharmaceuticals North America, Inc. (collectively "Takeda") first invented certain TZDs in the 1970s. Takeda's research revealed that TZDs acted as insulin sensitizers, i.e., compounds that ameliorate insulin resistance. Although the function of TZDs was not completely understood, TZDs appeared to lower blood glucose levels by binding to a molecule in the nucleus of the cell known as PPAR-gamma, which activates insulin receptors and stimulates the production of glucose transporters. Takeda, 417 F. Supp. 2d at 348-49. The transporters then travel to the cellular surface and enable glucose to enter the cell from the bloodstream. Id.

Takeda developed the drug ACTOS®, which is used to control blood sugar in patients who suffer from Type 2 diabetes. ACTOS® has enjoyed substantial commercial

success since its launch in 1999. By 2003, it held 47% of the TZD market, and gross sales for that year exceeded $1.7 billion. Id. at 386. The active ingredient in ACTOS® is the TZD compound pioglitazone, a compound claimed in the patent in suit.

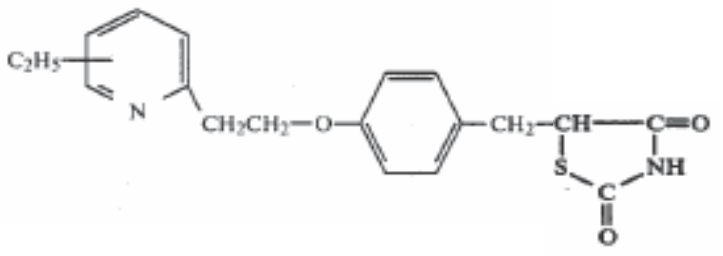
Takeda owns U.S. Patent 4,687,777 (the "'777 patent") entitled "Thiazolidinedione Derivatives, Useful As Antidiabetic Agents." The patent is directed to "compounds which can be practically used as antidiabetic agents having a broad safety margin between pharmacological effect and toxicity or unfavorable side reactions." '777 patent col.1 ll.34-37. The asserted claims are claims 1, 2, and 5. Claim 1 claims a genus of compounds. Claim 5 claims pharmaceutical compositions containing that genus of compounds. Those claims read as follows:

1. A compound of the formula:



or a pharmacologically acceptable salt thereof.

5. An antidiabetic composition which consists essentially of a compound of the formula:



or a pharmacologically acceptable salt thereof, in association with a pharmacologically acceptable carrier, excipient or diluent.

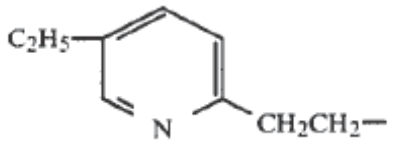
Id., claims 1 & 5.

For purposes of this appeal, the critical portion of the compound structure is the left moiety of the molecule, namely, the ethyl-substituted pyridyl ring.[1] That chemical structure, which has an ethyl substituent (C_2H_5) pictorially drawn to the center of the pyridyl ring, indicates that the structure covers four possible compounds, viz., compounds with an ethyl substituent located at the four available positions on the pyridyl ring. Takeda, 417 F. Supp. 2d at 360. The formula includes the 3-ethyl compound, 4-ethyl compound, 5-ethyl compound (pioglitazone), and 6-ethyl compound.

Claim 2 of the '777 patent covers the single compound pioglitazone. That claim, which depends from claim 1, reads:

> 2. A compound as claimed in claim 1, wherein the compound is 5-{4-[2-(5-ethyl-2-pyridyl)ethoxy]benzyl}-2,4-thiazolidinedione.

'777 patent, claim 2. Pioglitazone is referred to as the 5-ethyl compound because the ethyl substituent is attached to the 5-position on the pyridyl ring. That portion of the compound is depicted as:

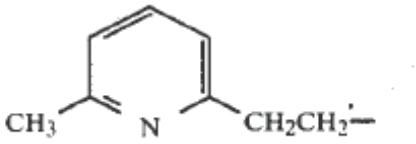


Alphapharm, a generic drug manufacturer, filed an Abbreviated New Drug Application ("ANDA") pursuant to the Hatch-Waxman Act seeking U.S. Food and Drug Administration ("FDA") approval under 21 U.S.C. § 355(j) et seq. to manufacture and sell a generic version of pioglitazone. Alphapharm filed a Paragraph IV certification with

[1] Pyridine is a "six-membered carbon-containing ring with one carbon replaced by a nitrogen." Takeda, 417 F. Supp. 2d at 351.

its ANDA pursuant to § 505(j)(2)(B)(ii), asserting that the '777 patent is invalid as obvious under 35 U.S.C. § 103. In response, Takeda sued Alphapharm, along with three other generic drug manufacturers who also sought FDA approval to market generic pioglitazone, alleging that the defendants have infringed or will infringe the '777 patent.

On January 17, 2006, the district court commenced a bench trial solely on the issues of validity and enforceability of the '777 patent. Alphapharm advanced its invalidity argument, asserting that the claimed compounds would have been obvious at the time of the alleged invention. Alphapharm's obviousness contention rested entirely on a prior art TZD compound that is referenced in Table 1 of the '777 patent as compound b. The left moiety of compound b consists of a pyridyl ring with a methyl (CH_3) group attached to the 6-position of the ring. That portion of its chemical structure is illustrated as follows:



Alphapharm asserted that the claimed compounds would have been obvious over compound b.

The district court found that Alphapharm failed to prove by clear and convincing evidence that the asserted claims were invalid as obvious under 35 U.S.C. § 103. The court first concluded that there was no motivation in the prior art to select compound b as the lead compound for antidiabetic research, and that the prior art taught away from its use. As such, the court concluded that Alphapharm failed to make a prima facie

case of obviousness. The court continued its analysis and found that even if Alphapharm succeeded in making a prima facie showing, Takeda would still prevail because any prima facie case of obviousness was rebutted by the unexpected results of pioglitazone's nontoxicity. The court then rendered judgment in favor of Takeda. The district court also held that the '777 patent had not been procured though inequitable conduct. That decision has been separately appealed and has been affirmed in a decision issued today.

Alphapharm timely appealed. We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(1).

DISCUSSION

A. Standard of Review

In this appeal, we are presented with one issue, namely, whether the asserted claims of the '777 patent would have been obvious under 35 U.S.C. § 103 at the time the invention was made. An invention is not patentable, inter alia, "if the differences between the subject matter sought to be patented 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." 35 U.S.C. § 103(a). Because a patent is presumed to be valid, 35 U.S.C. § 282, the evidentiary burden to show facts supporting a conclusion of invalidity, which rests on the accused infringer, is one of clear and convincing evidence. AK Steel Corp. v. Sollac & Ugine, 344 F.3d 1234, 1238-39 (Fed. Cir. 2003). Whether an invention would have been obvious under 35 U.S.C. § 103 is a "question of law, reviewed de novo, based upon underlying factual questions which are

reviewed for clear error following a bench trial." Alza Corp. v. Mylan Labs., Inc., 464 F.3d 1286, 1289 (Fed. Cir. 2006).

B. Obviousness

Alphapharm raises three main arguments in support of its contention that the claims would have been obvious. First, Alphapharm asserts that the district court misapplied the law, particularly the law governing obviousness in the context of structurally similar chemical compounds. According to Alphapharm, the record established that compound b was the most effective antidiabetic compound in the prior art, and thus the court erred by failing to apply a presumption that one of ordinary skill in the art would have been motivated to make the claimed compounds. Alphapharm asserts that such a conclusion is mandated by our case law, including our en banc decision in In re Dillon, 919 F.2d 688 (Fed. Cir. 1990). Second, Alphapharm argues that the court erred in determining the scope and content of the prior art, in particular, whether to include the prosecution history of the prior '779 patent. Lastly, Alphapharm assigns error to numerous legal and factual determinations and certain evidentiary rulings that the court made during the course of the trial.

Takeda responds that the district court correctly determined that Alphapharm failed to prove by clear and convincing evidence that the asserted claims are invalid as obvious. Takeda contends that there was overwhelming evidence presented at trial to support the court's conclusion that no motivation existed in the prior art for one of ordinary skill in the art to select compound b as a lead compound, and even if there was, that the unexpected results of pioglitazone's improved toxicity would have rebutted any prima facie showing of obviousness. Takeda further argues that all of

Alphapharm's remaining challenges to the district court's legal and factual rulings are simply without merit.

We agree with Takeda that the district court did not err in concluding that the asserted claims of the '777 patent would not have been obvious. The Supreme Court recently addressed the issue of obviousness in KSR International Co. v. Teleflex Inc., 127 S. Ct. 1727 (2007). The Court stated that the Graham v. John Deere Co. of Kansas City, 383 U.S. 1 (1966), factors still control an obviousness inquiry. Those factors are: 1) "the scope and content of the prior art"; 2) the "differences between the prior art and the claims"; 3) "the level of ordinary skill in the pertinent art"; and 4) objective evidence of nonobviousness. KSR, 127 S. Ct. at 1734 (quoting Graham, 383 U.S. at 17-18).

In a thorough and well-reasoned opinion, albeit rendered before KSR was decided by the Supreme Court, the district court made extensive findings of fact and conclusions of law as to the four Graham factors. Alphapharm's arguments challenge the court's determinations with respect to certain of these factors, which we now address.

1. Differences Between the Prior Art and the Claims

a. Selection of Compound b as Lead Compound

Alphapharm's first argument challenges the court's determination with regard to the "differences between the prior art and the claims." Alphapharm contends that the court erred as a matter of law in holding that the ethyl-substituted TZDs were nonobvious in light of the closest prior art compound, compound b, by misapplying the law relating to obviousness of chemical compounds.

We disagree. Our case law concerning prima facie obviousness of structurally similar compounds is well-established. We have held that "structural similarity between claimed and prior art subject matter, proved by combining references or otherwise, where the prior art gives reason or motivation to make the claimed compositions, creates a prima facie case of obviousness." Dillon, 919 F.2d at 692. In addition to structural similarity between the compounds, a prima facie case of obviousness also requires a showing of "adequate support in the prior art" for the change in structure. In re Grabiak, 769 F.2d 729, 731-32 (Fed. Cir. 1985).

We elaborated on this requirement in the case of In re Deuel, 51 F.3d 1552, 1558 (Fed. Cir. 1995), where we stated that "[n]ormally a prima facie case of obviousness is based upon structural similarity, i.e., an established structural relationship between a prior art compound and the claimed compound." That is so because close or established "[s]tructural relationships may provide the requisite motivation or suggestion to modify known compounds to obtain new compounds." Id. A known compound may suggest its homolog, analog, or isomer because such compounds "often have similar properties and therefore chemists of ordinary skill would ordinarily contemplate making them to try to obtain compounds with improved properties." Id. We clarified, however, that in order to find a prima facie case of unpatentability in such instances, a showing that the "prior art would have suggested making the specific molecular modifications necessary to achieve the claimed invention" was also required. Id. (citing In re Jones, 958 F.2d 347 (Fed. Cir. 1992); Dillon, 919 F.2d 688; Grabiak, 769 F.2d 729; In re Lalu, 747 F.2d 703 (Fed. Cir. 1984)).

That test for prima facie obviousness for chemical compounds is consistent with the legal principles enunciated in KSR.[2] While the KSR Court rejected a rigid application of the teaching, suggestion, or motivation ("TSM") test in an obviousness inquiry, the Court acknowledged the importance of identifying "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" in an obviousness determination. KSR, 127 S. Ct. at 1731. Moreover, the Court indicated that there is "no necessary inconsistency between the idea underlying the TSM test and the Graham analysis." Id. As long as the test is not applied as a "rigid and mandatory" formula, that test can provide "helpful insight" to an obviousness inquiry. Id. Thus, in cases involving new chemical compounds, it remains necessary to identify some reason that would have led a chemist to modify a known compound in a particular manner to establish prima facie obviousness of a new claimed compound.

We agree with Takeda and the district court that Alphapharm failed to make that showing here. Alphapharm argues that the prior art would have led one of ordinary skill in the art to select compound b as a lead compound. By "lead compound," we understand Alphapharm to refer to a compound in the prior art that would be most promising to modify in order to improve upon its antidiabetic activity and obtain a

[2] We note that the Supreme Court in its KSR opinion referred to the issue as whether claimed subject matter "was" or "was not" obvious. Since 35 U.S.C. § 103 uses the language "would have been obvious," and the Supreme Court in KSR did consider the particular time at which obviousness is determined, we consider that the Court did not in KSR reject the standard statutory formulation of the inquiry whether the claimed subject matter "would have been obvious at the time the invention was made." 35 U.S.C. § 103. Hence, we will continue to use the statutory "would have been" language.

compound with better activity.[3] Upon selecting that compound for antidiabetic research, Alphapharm asserts that one of ordinary skill in the art would have made two obvious chemical changes: first, homologation, i.e., replacing the methyl group with an ethyl group, which would have resulted in a 6-ethyl compound; and second, "ring-walking," or moving the ethyl substituent to another position on the ring, the 5-position, thereby leading to the discovery of pioglitazone. Thus, Alphapharm's obviousness argument clearly depends on a preliminary finding that one of ordinary skill in the art would have selected compound b as a lead compound.

The district court found, however, that one of ordinary skill in the art would not have selected compound b as the lead compound. In reaching its determination, the court first considered Takeda's U.S. Patent 4,287,200 (the "'200 patent"), which was issued on September 1, 1981, and its prosecution history. The court found that the '200 patent "discloses hundreds of millions of TZD compounds."[4] Takeda, 417 F. Supp. 2d at 378. The patent specifically identified fifty-four compounds, including compound b, that were synthesized according to the procedures described in the patent, but did not disclose experimental data or test results for any of those compounds. The prosecution history, however, disclosed test results for nine specific compounds, including compound b. That information was provided to the examiner in response to a rejection

[3] The parties do not dispute that compound b was the closest prior art compound. Thus, the legal question is whether or not the claimed subject matter would have been obvious over that compound. We will, however, use Alphapharm's terminology of "lead compound" in this opinion, deciding the appeal as it has been argued.

[4] Three divisional applications derive from the '200 patent. Those applications matured into U.S. Patent 4,340,605, U.S. Patent 4,438,141, and U.S. Patent No. 4,444,779 (the "'779 Patent"). The '779 patent is of particular relevance in this appeal and is discussed below. Takeda, 417 F. Supp. 2d at 378.

in order to show that the claimed compounds of the ’200 patent were superior to the known compounds that were disclosed in a cited reference. The court, however, found nothing in the ’200 patent, or in its file history, to suggest to one of ordinary skill in the art that those nine compounds, out of the hundreds of millions of compounds covered by the patent application, were the best performing compounds as antidiabetics, and hence targets for modification to seek improved properties. Id. at 375.

The court next considered an article that was published the following year in 1982 by T. Sodha et al. entitled “Studies on Antidiabetic Agents. II. Synthesis of 5-[4-(1-Methylcyclohexylmethoxy)-benzyl]thiazolidine-2,4-dione (ADD-3878) and Its Derivatives” (“Sodha II”). The Sodha II reference disclosed data relating to hypoglycemic activity and plasma triglyceride lowering activity for 101 TZD compounds. Those compounds did not include pioglitazone, but included compound b. Significantly, Sodha II identified three specific compounds that were deemed most favorable in terms of toxicity and activity. Notably, compound b was not identified as one of the three most favorable compounds. On the contrary, compound b, was singled out as causing “considerable increases in body weight and brown fat weight.”

The court also considered Takeda’s ’779 patent. That patent covers a subset of compounds originally included in the ’200 patent application, namely, TZD compounds “where the pyridyl or thiazolyl groups may be substituted.” Id. at 353. The broadest claim of the ’779 patent covers over one million compounds. Id. at 378. Compound b was specifically claimed in claim 4 of the patent. The court noted that a preliminary amendment in the prosecution history of the patent contained a statement that “the

compounds in which these heterocyclic rings are substituted have become important, especially [compound b]." Id.

Based on the prior art as a whole, however, the court found that a person of ordinary skill in the art would not have selected compound b as a lead compound for antidiabetic treatment. Although the prosecution history of the '779 patent included the statement that characterized compound b as "especially important," the court found that any suggestion to select compound b was essentially negated by the disclosure of the Sodha II reference. The court reasoned that one of ordinary skill in the art would not have chosen compound b, notwithstanding the statement in the '779 patent prosecution history, "given the more exhaustive and reliable scientific analysis presented by Sodha II, which taught away from compound b, and the evidence from all of the TZD patents that Takeda filed contemporaneously with the '779 [p]atent showing that there were many promising, broad avenues for further research." Id. at 380.

The court found that the three compounds that the Sodha II reference identified as "most favorable" and "valuable for the treatment of maturity-onset diabetes," not compound b, would have served as the best "starting point for further investigation" to a person of ordinary skill in the art. Id. at 376. Because diabetes is a chronic disease and thus would require long term treatment, the court reasoned that researchers would have been dissuaded from selecting a lead compound that exhibited negative effects, such as toxicity, or other adverse side effects, especially one that causes "considerable increases in body weight and brown fat weight." Id. at 376-77. Thus, the court determined that the prior art did not suggest to one of ordinary skill in the art that

compound b would be the best candidate as the lead compound for antidiabetic research.

Admissions from Alphapharm witnesses further buttressed the court's conclusion. Dr. Rosenberg, head of Alphapharm's intellectual property department, testified as a 30(b)(6) witness on behalf of Alphapharm. In discussing Sodha II, Dr. Rosenberg admitted that there was nothing in the article that would recommend that a person of ordinary skill in the art choose compound b over other compounds in the article that had the same efficacy rating. Dr. Rosenberg, acknowledging that compound b had the negative side effects of increased body weight and brown fat, also admitted that a compound with such side effects would "presumably not" be a suitable candidate compound for treatment of Type II diabetes. Alphapharm's expert, Dr. Mosberg, concurred in that view at his deposition when he admitted that a medicinal chemist would find such side effects "undesirable."

Moreover, another Alphapharm 30(b)(6) witness, Barry Spencer, testified at his deposition that in reviewing the prior art, one of ordinary skill in the art would have chosen three compounds in Sodha II as lead compounds for research, not solely compound b. In addition, Takeda's witness, Dr. Morton, testified that at the time Sodha II was published, it was known that obesity contributed to insulin resistance and Type 2 diabetes. Thus, one of ordinary skill in the art would have concluded that Sodha II taught away from pyridyl compounds because it associated adverse side effects with compound b.

We do not accept Alphapharm's assertion that KSR, as well as another case recently decided by this court, Pfizer, Inc. v. Apotex, Inc., 480 F.3d 1348 (Fed. Cir.

2007), mandates reversal. Relying on KSR, Alphapharm argues that the claimed compounds would have been obvious because the prior art compound fell within "the objective reach of the claim," and the evidence demonstrated that using the techniques of homologation and ring-walking would have been "obvious to try." Additionally, Alphapharm argues that our holding in Pfizer, where we found obvious certain claims covering a particular acid-addition salt, directly supports its position.

We disagree. The KSR Court recognized that "[w]hen 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." KSR, 127 S. Ct. at 1732. In such circumstances, "the fact that a combination was obvious to try might show that it was obvious under § 103." Id. That is not the case here. Rather than identify predictable solutions for antidiabetic treatment, the prior art disclosed a broad selection of compounds any one of which could have been selected as a lead compound for further investigation. Significantly, the closest prior art compound (compound b, the 6-methyl) exhibited negative properties that would have directed one of ordinary skill in the art away from that compound. Thus, this case fails to present the type of situation contemplated by the Court when it stated that an invention may be deemed obvious if it was "obvious to try." The evidence showed that it was not obvious to try.

Similarly, Alphapharm's reliance on Pfizer fares no better. In Pfizer, we held that certain claims covering the besylate salt of amlodipine would have been obvious. The prior art included a reference, referred to as the Berge reference, that disclosed a genus of pharmaceutically acceptable anions that could be used to form pharmaceutically

acceptable acid addition salts, as well as other publications that disclosed the chemical characteristics of the besylate salt. Pfizer, 480 F.3d at 1363. Noting that our conclusion was based on the "particularized facts of this case," we found that the prior art provided "ample motivation to narrow the genus of 53 pharmaceutically-acceptable anions disclosed by Berge to a few, including benzene sulphonate." Id. at 1363, 1367. Here, the court found nothing in the prior art to narrow the possibilities of a lead compound to compound b. In contrast, the court found that one of ordinary skill in the art would have chosen one of the many compounds disclosed in Sodha II, of which there were over ninety, that "did not disclose the existence of toxicity or side effects, and to engage in research to increase the efficacy and confirm the absence of toxicity of those compounds, rather than to choose as a starting point a compound with identified adverse effects." Thus, Pfizer does not control this case.

Based on the record before us, we conclude that the district court's fact-findings were not clearly erroneous and were supported by evidence in the record. Moreover, we reject the assertion that the court failed to correctly apply the law relating to prima facie obviousness of chemical compounds. Because Alphapharm's obviousness argument rested entirely on the court making a preliminary finding that the prior art would have led to the selection of compound b as the lead compound, and Alphapharm failed to prove that assertion, the court did not commit reversible error by failing to apply a presumption of motivation. We thus conclude that the court did not err in holding that Alphapharm failed to establish a prima facie case of obviousness. See Eli Lilly & Co. v. Zenith Goldline Pharms., 471 F.3d 1369 (Fed. Cir. 2006) (affirming the district court's

finding of nonobviousness upon concluding, in part, that the prior art compound would not have been chosen as a lead compound).

b. Choice of the Claimed Compounds

Even if Alphapharm had established that preliminary finding, and we have concluded that it did not, the record demonstrates that Alphapharm's obviousness argument fails on a second ground. The district court found nothing in the prior art to suggest making the specific molecular modifications to compound b that are necessary to achieve the claimed compounds. In reaching that conclusion, the court first found that the process of modifying lead compounds was not routine at the time of the invention. Takeda, 417 F. Supp. 2d at 380. Dr. Mosberg opined that the steps of homologation and ring-walking were "routine steps in the drug optimization process," but the court found that testimony unavailing in light of the contrary, more credible, testimony offered by Takeda's experts. Id. at 381. In addition, the court relied on Dr. Rosenberg's admission that a person of ordinary skill in the art would "look at a host of substituents, such as chlorides, halides and others, not just methyls" in modifying the pyridyl ring. Id.

Pioglitazone differs from compound b in two respects, and one would have to both homologate the methyl group of compound b and move the resulting ethyl group to the 5-position on the pyridyl ring in order to obtain pioglitazone. With regard to homologation, the court found nothing in the prior art to provide a reasonable expectation that adding a methyl group to compound b would reduce or eliminate its toxicity. Based on the test results of the numerous compounds disclosed in Sodha II, the court concluded that "homologation had no tendency to decrease unwanted side

effects" and thus researchers would have been inclined "to focus research efforts elsewhere." Id. at 383. Indeed, several other compounds exhibited similar or better potency than compound b, and one compound in particular, compound 99, that had no identified problems differed significantly from compound b in structure. Id. at 376 n.51. Moreover, Dr. Mosberg agreed with Takeda's expert, Dr. Danishefsky, that the biological activities of various substituents were "unpredictable" based on the disclosure of Sodha II. Id. at 384-85. The court also found nothing in the '200 and '779 patents to suggest to one of ordinary skill in the art that homologation would bring about a reasonable expectation of success.

As for ring-walking, the court found that there was no reasonable expectation in the art that changing the positions of a substituent on a pyridyl ring would result in beneficial changes. Dr. Mosberg opined that the process of ring-walking was "known" to Takeda, but the court found that testimony inapt as it failed to support a reasonable expectation to one of ordinary skill in the art that performing that chemical change would cause a compound to be more efficacious or less toxic. Id. at 382. Moreover, Dr. Mosberg relied on the efficacy data of phenyl compounds in Sodha II, but the court found those data insufficient to show that the same effects would occur in pyridyl compounds.

Alphapharm relies on In re Wilder, 563 F.2d 457 (CCPA 1977), for the proposition that differences in a chemical compound's properties, resulting from a small change made to the molecule, are reasonably expected to vary by degree and thus are insufficient to rebut a prima facie case of obviousness. In Wilder, our predecessor court affirmed the Board's holding that a claimed compound, which was discovered to be

useful as a rubber antidegradant and was also shown to be nontoxic to human skin, would have been obvious in light of its homolog and isomer that were disclosed in the prior art. The evidence showed that the homolog was similarly nontoxic to the human skin, whereas the isomer was toxic. The court held that "one who claims a compound, per se, which is structurally similar to a prior art compound must rebut the presumed expectation that the structurally similar compounds have similar properties." Id. at 460. While recognizing that the difference between the isomer's toxicity and the nontoxicity of the homolog and claimed compound "indicate[d] some degree of unpredictability," the court found that the appellant failed to "point out a single actual difference in properties between the claimed compound and the homologue," and thus failed to rebut the presumption. Wilder, 563 F.2d at 460.

We would note that since our Wilder decision, we have cautioned "that generalization should be avoided insofar as specific chemical structures are alleged to be prima facie obvious one from the other," Grabiak, 769 F.2d at 731. In addition to this caution, the facts of the present case differ significantly from the facts of Wilder. Here, the court found that pioglitazone exhibited unexpectedly superior properties over the prior art compound b. Takeda, 417 F. Supp. 2d at 385. The court considered a report entitled "Preliminary Studies on Toxicological Effects of Ciglitazone-Related Compounds in the Rats" that was presented in February 1984 by Dr. Takeshi Fujita, then-Chief Scientist of Takeda's Biology Research Lab and co-inventor of the '777 patent. That report contained results of preliminary toxicity studies that involved selected compounds, including pioglitazone and compound b. Compound b was shown to be "toxic to the liver, heart and erythrocytes, among other things," whereas pioglitazone

was "comparatively potent" and "showed no statistically significant toxicity." Id. at 356-57. During the following months, Takeda performed additional toxicity studies on fifty compounds that had been already synthesized and researched by Takeda, including pioglitazone. The compounds were tested for potency and toxicity. The results were presented in another report by Fujita entitled "Pharmacological and Toxicological Studies of Ciglitazone and Its Analogues." Pioglitazone was shown to be the only compound that exhibited no toxicity, although many of the other compounds were found to be more potent. Id. at 358.

Thus, the court found that there was no reasonable expectation that pioglitazone would possess the desirable property of nontoxicity, particularly in light of the toxicity of compound b. The court's characterization of pioglitazone's unexpected results is not clearly erroneous. As such, Wilder does not aid Alphapharm because, unlike the homolog and claimed compound in Wilder that shared similar properties, pioglitazone was shown to differ significantly from compound b, of which it was not a homolog, in terms of toxicity. Consequently, Takeda rebutted any presumed expectation that compound b and pioglitazone would share similar properties.

Alphapharm also points to a statement Takeda made during the prosecution of the '779 patent as evidence that there was a reasonable expectation that making changes to the pyridyl region of compound b would lead to "better toxicity than the prior art." During prosecution of the '779 patent, in response to an enablement rejection, Takeda stated that "there should be no reason in the instant case for the Examiner to doubt that the claimed compounds having the specified substituent would function as a hypolipidemic and hypoglycemic agent as specified in the instant disclosure." That

statement, however, indicates only that changes to the left moiety of a lead compound would create compounds with the same properties as the compounds of the prior art; it does not represent that lower toxicity would result. And even if the statement did so represent, it does not refer to any specific substituent at any specific position of TZD's left moiety as particularly promising. As the court correctly noted, the compounds disclosed in the '779 patent included a variety of substituents, including lower alkyls, halogens, and hydroxyl groups, attached to a pyridyl or thiazolyl group. As discussed supra, the district court found that the claims encompassed over one million compounds. Thus, we disagree with Alphapharm that that statement provided a reasonable expectation to one of ordinary skill in the art that performing the specific steps of replacing the methyl group of the 6-methyl compound with an ethyl group, and moving that substituent to the 5-position of the ring, would have provided a broad safety margin, particularly in light of the district court's substantiated findings to the contrary.

We thus conclude that Alphapharm's challenges fail to identify grounds for reversible error. The court properly considered the teachings of the prior art and made credibility determinations regarding the witnesses at trial. We do not see any error in the district court's determination that one of ordinary skill in the art would not have been prompted to modify compound b, using the steps of homologation and ring-walking, to synthesize the claimed compounds. Because the court's conclusions are not clearly erroneous and are supported by the record evidence, we find no basis to disturb them.

The court properly concluded that Alphapharm did not make out a prima facie case of obviousness because Alphapharm failed to adduce evidence that compound b would have been selected as the lead compound and, even if that preliminary showing

had been made, it failed to show that there existed a reason, based on what was known at the time of the invention, to perform the chemical modifications necessary to achieve the claimed compounds.

In light of our conclusion that Alphapharm failed to prove that the claimed compounds would have been prima facie obvious, we need not consider any objective indicia of nonobviousness.[5]

2. Scope and Content of the Prior Art

Alphapharm also assigns error to the district court's determination regarding the scope and content of the prior art. Alphapharm asserts that the court excluded the prosecution history of the '779 patent from the scope of the prior art after wrongly concluding that it was not accessible to the public. Takeda responds that the court clearly considered the '779 patent prosecution history, which was admitted into evidence on the first day of testimony. Takeda urges that the court's consideration of the prosecution history is apparent based on its extensive analysis of the '779 patent and the file history that appears in the court's opinion.

We agree with Takeda that the district court did not err in its consideration of the scope of the prior art. As discussed above, the court considered the prosecution history, and even expressly considered one of the key statements in the prosecution history upon which Alphapharm relies in support of its position that compound b would have been chosen as the lead compound. Takeda, 417 F. Supp. 2d at 378. In

[5] The concurrence, while agreeing that the question of the "overbreadth" of claims 1 and 5 has been waived, states further that the 6-ethyl compound, which is within the scope of claims 1 and 5, has not been shown to possess unexpected results sufficient to overcome a prima facie case of obviousness, and hence claims 1 and 5 are likely invalid as obvious. Since waiver is sufficient to answer the point being raised, no further comment need be made concerning its substance.

considering the prosecution history of the '779 patent, the court noted that Takeda filed a preliminary amendment on March 15, 1983, in which its prosecuting attorney stated that "the compounds in which these heterocyclic rings are substituted have become important, especially [the 6-methyl compound]." Id. The court rejected Alphapharm's assertion that that statement supported the conclusion that compound b would have been selected as a lead compound. Rather, the court found that viewing the prior art as a whole, the prior art showed "that Takeda was actively conducting research in many directions, and had not narrowed its focus to compound b." Id. at 379. Thus, while the district court may have incorrectly implied that prosecution histories are not accessible to the public, see id. at n.59, see also Custom Accessories, Inc. v. Jeffrey-Allan Indus., 807 F.2d 955 (Fed. Cir. 1986) ("[t]he person of ordinary skill is a hypothetical person who is presumed to be aware of all the pertinent prior art"), the court nonetheless considered the prosecution history of the '779 patent in its obviousness analysis and accorded proper weight to the statements contained therein. Thus, any error committed by the court in this regard was harmless error.

We have considered Alphapharm's remaining arguments and find none that warrant reversal of the district court's decision.

CONCLUSION

We affirm the district court's determination that claims 1, 2, and 5 of the '777 patent have not been shown to have been obvious and hence invalid.

AFFIRMED

United States Court of Appeals for the Federal Circuit

06-1329

TAKEDA CHEMICAL INDUSTRIES, LTD. and TAKEDA PHARMACEUTICALS NORTH AMERICA, INC.,

Plaintiffs-Appellees,

v.

ALPHAPHARM PTY., LTD. and GENPHARM, INC.,

Defendants-Appellants.

DYK, Circuit Judge, concurring.

I join the opinion of the court insofar as it upholds the district court judgment based on a determination that a claim to pioglitazone (the 5-ethyl compound) would be non-obvious over the prior art. The problem is that only one of the three claims involved here—claim 2—is limited to pioglitazone. In my view, the breadth of the other two claims, claims 1 and 5 of U.S. Patent No. 4,867,777 ("'777 patent")—which are also referenced in the judgment—renders them likely invalid.

All of the compounds claimed in claims 1, 2 and 5 were included in generic claims in the prior art U.S. Patent No. 4,287,200 ("'200 patent"). Unfortunately our law concerning when a species is patentable over a genus claimed in the prior art is less than clear. It is, of course, well established that a claim to a genus does not necessarily render invalid a later claim to a species within that genus. See Eli Lilly & Co. v. Bd. of Regents of Univ. of Wash., 334 F.3d 1264, 1270 (Fed. Cir. 2003). In my view a species should be patentable over a genus claimed in the prior art only if unexpected results have been established. Our case law recognizes the vital importance of a finding of

unexpected results, both in this context and in the closely related context where a prior art patent discloses a numerical range and the patentee seeks to claim a subset of that range. See Application of Petering, 301 F.2d 676, 683 (C.C.P.A. 1962) (species found patentable when genus claimed in prior art because unexpected properties of the species were shown); see also Pfizer, Inc. v. Apotex, Inc., 480 F.3d 1348, 1371 (Fed. Cir. 2007) (relying on lack of unexpected results in determining that species claim was obvious in view of prior art genus claim); In re Woodruff, 919 F.2d 1575, 1578 (Fed. Cir. 1990) (when applicant claims a subset of a range disclosed in a prior art patent, the applicant must generally show that "the claimed range achieves unexpected results relative to the prior art range.").

While the 5-ethyl compound (pioglitazone) is within the scope of the '200 patent, there is clear evidence, as the majority correctly finds, of unexpected results regarding that compound, and therefore its validity is not in question on this ground. However, at oral argument the patentee admitted that the prior art '200 patent also generically covers the 6-ethyl compound, which is within the scope of claims 1 and 5 of the '777 patent, and admitted that there is no evidence of unexpected results for the 6-ethyl compound. Under such circumstances, I believe that the 6-ethyl is likely obvious, and consequently claims 1 and 5 are likely invalid for obviousness. However, the argument as to the overbreadth of claims 1 and 5 has been waived, because it was not raised in the opening brief. In any event, as a practical matter, the judgment finding that the appellants' filing of the ANDA for pioglitazone is an infringement and barring the making of pioglitazone is supported by the finding that claim 2 standing alone is not invalid and is infringed.

United States Court of Appeals for the Federal Circuit

2008-1404, -1405, -1406

THE PROCTER & GAMBLE COMPANY,

Plaintiff-Appellee,

v.

TEVA PHARMACEUTICALS USA, INC.,

Defendant-Appellant.

William F. Lee, Wilmer Cutler Pickering Hale & Dorr LLP, of Boston, Massachusetts, argued for plaintiff-appellee. With him on the brief were Vinita Ferrera and Allen C. Nunnally. Also on the brief were David B. Bassett and Christopher J. Meade, of New York, New York.

James Galbraith, Kenyon & Kenyon LLP, of New York, New York, argued for defendant-appellant. With him on the brief were Maria Luisa Palmese, and A. Antony Pfeffer.

Appealed from: United States District Court for the District of Delaware

Judge Joseph J. Farnan, Jr.

United States Court of Appeals for the Federal Circuit

2008-1404, -1405, -1406

THE PROCTER & GAMBLE COMPANY,

Plaintiff-Appellee,

v.

TEVA PHARMACEUTICALS USA, INC.,

Defendant-Appellant.

Appeal from the United States District Court for the District of Delaware in 04-940, 08-066, and 08-191, Judge Joseph J. Farnan, Jr.

DECIDED: May 13, 2009

Before MAYER, DYK, Circuit Judges, and HUFF,[*] District Judge.

HUFF, District Judge.

Teva Pharmaceuticals USA, Inc. ("Teva") appeals from a final judgment of the United States District Court for the District of Delaware in favor of The Procter & Gamble Company ("P&G") in three cases upholding the validity of P&G's U.S. Patent 5,583,122 (the "'122 patent"). Procter & Gamble Co. v. Teva Pharmaceuticals USA, Inc., 536 F. Supp. 2d 476 (D. Del. 2008). After a bench trial and a stipulation for

[*] Honorable Marilyn L. Huff, District Judge, United States District Court for the Southern District of California, sitting by designation.

judgment in the related cases, the district court rejected Teva's invalidity defenses of obviousness and obviousness-type double patenting. We affirm.

I. BACKGROUND

The '122 patent claims the compound risedronate, the active ingredient of P&G's osteoporosis drug Actonel®. In August 2004, P&G sued Teva for infringement of the '122 patent after Teva notified P&G that it planned to market risedronate as a generic equivalent of Actonel®. Specifically, P&G alleged that Teva's proposed drug infringed claim 4 of the '122 patent for the compound risedronate, claim 16 for pharmaceutical compositions containing risedronate, and claim 23 for methods of treating diseases using risedronate. In its defense, Teva argued that the '122 patent was invalid as obvious in light of P&G's expired U.S. Patent 4,761,406 (the "'406 patent"), filed on June 6, 1985 and issued on August 2, 1988. Alternately, Teva argues that the '122 patent is invalid for obviousness-type double patenting.

Risedronate, the subject of the contested claims, is a member of a group of compounds referred to as bisphosphonates. Bisphosphonates, in general, are active in inhibiting bone resorption. The first two promising bisphosphonates studied for the treatment of metabolic bone diseases, etidronate (EHDP) and clodronate, had clinical problems which prevented their commercialization. P&G conducted a significant amount of experimentation involving hundreds of different bisphosphonate compounds, but could not predict the efficacy or toxicity of the new compounds. Eventually, researchers at P&G identified risedronate as a promising drug candidate.

On December 6, 1985, risedronate's inventors applied for a patent on the compound. P&G is the owner by assignment of the '122 patent, entitled

"Pharmaceutical Compositions Containing Geminal Diphosphonates," which issued on December 10, 1996.

Risedronate is neither claimed nor disclosed in the '406 patent. Instead, the '406 patent, entitled "Regimen for Treating Osteoporosis," claims an intermittent dosing method for treating osteoporosis. As the trial court noted, the '406 patent "addresses the central problem seen in bisphosphonates at the time, namely that they inhibited bone mineralization, by teaching the use of a cyclic administrative regimen to achieve a separation of the benign effect of anti-resorption from the unwanted side effect of anti-mineralization in patients." Procter & Gamble, 536 F. Supp. 2d at 492. The '406 patent lists thirty-six polyphosphonate molecules as treatment candidates and eight preferred compounds for intermittent dosing, including 2-pyr EHDP. Teva contends that the structural similarities between risedronate and 2-pyr EHDP render the challenged claims of the '122 patent obvious.

From the testimony at trial, the district court concluded that the '406 patent would not have led a person of ordinary skill in the art to identify 2-pyr EHDP as the lead compound. In light of the extremely unpredictable nature of bisphosphonates at the time of the invention, the district court also found that a person of ordinary skill in the art would not have been motivated to make the specific molecular modifications to make risedronate. The district court concluded that unexpected results of risedronate's potency and toxicity rebut a claim of obviousness. The district court found that secondary considerations of non-obviousness supported its conclusions. Similarly, the court found that the '122 patent was not invalid for obviousness-type double patenting.

This consolidated appeal followed. We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(1).

II. DISCUSSION

I. Standard of Review

"On appeal from a bench trial, this court reviews the district court's conclusions of law de novo and findings of fact for clear error." Golden Blount, Inc. v. Robert H. Peterson Co., 365 F.3d 1054, 1058 (Fed. Cir. 2004). Whether the subject matter of a patent is obvious is a question of law and is reviewed de novo. PharmaStem Therapeutics, Inc. v. ViaCell, Inc., 491 F.3d 1342, 1359 (Fed. Cir. 2007). Factual determinations underlying the obviousness issue are reviewed for clear error. Alza Corp. v. Mylan Labs., Inc., 464 F.3d 1286, 1289 (Fed. Cir. 2006). The evidentiary burden to show facts supporting a conclusion of invalidity is one of clear and convincing evidence. AK Steel Corp. v. Sollac & Ugine, 344 F.3d 1234, 1238-39 (Fed. Cir. 2003). Non-statutory double patenting is a legal question reviewed without deference. Georgia-Pacific Corp. v. U.S. Gypsum Co., 195 F.3d 1322, 1326 (Fed. Cir. 1999).

II. Patent Obviousness – Legal Standard

Under the U.S. Patent Act, an invention cannot be patented if "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 said subject matter pertains." 35 U.S.C. § 103(a). Patents are presumed to be valid. Kao Corp. v. Unilever U.S., Inc., 441 F.3d 963, 968 (Fed. Cir. 2006). A party seeking to invalidate a patent based on obviousness must demonstrate "by clear and convincing evidence that a skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the

claimed invention, and that the skilled artisan would have had a reasonable expectation of success in doing so." Pfizer, Inc. v. Apotex, Inc., 480 F.3d 1348, 1361 (Fed. Cir. 2007). Clear and convincing evidence places in the fact finder "an abiding conviction that the truth of [the] factual contentions are highly probable." Colorado v. New Mexico, 467 U.S. 310, 316 (1984) (quotation marks omitted).

The obviousness determination turns on underlying factual inquiries involving: (1) the scope and content of prior art, (2) differences between claims and prior art, (3) the level of ordinary skill in pertinent art, and (4) secondary considerations such as commercial success and satisfaction of a long-felt need. Graham v. John Deere Co., 383 U.S. 1, 17 (1966). The Supreme Court has explained that the Federal Circuit's "teaching, suggestion or motivation" test provides helpful insight into the obviousness question as long as it is not applied rigidly. KSR Int'l Co. v. Teleflex Inc., 550 U.S. 398, 127 S. Ct. 1727, 1741 (2007). Accordingly, under KSR, "it remains necessary to identify some reason that would have led a chemist to modify a known compound in a particular manner to establish prima facie obviousness of a new claimed compound." Takeda Chem. Indus., Ltd. v. Alphapharm Pty., Ltd., 492 F.3d 1350, 1357 (Fed. Cir. 2007).

If a patent challenger makes a prima facie showing of obviousness, the owner may rebut based on "unexpected results" by demonstrating "that the claimed invention exhibits some superior property or advantage that a person of ordinary skill in the relevant art would have found surprising or unexpected." In re Soni, 54 F.3d 746, 750 (Fed. Cir. 1995). We consider the relevant factors in turn.

III. Identification of a Lead Compound

An obviousness argument based on structural similarity between claimed and prior art compounds "clearly depends on a preliminary finding that one of ordinary skill in the art would have selected [the prior art compound] as a lead compound." Takeda, 492 F.3d at 1359; see also Eisai Co. Ltd. v. Dr. Reddy's Labs., Ltd., 533 F.3d 1353, 1359 (Fed. Cir. 2008) (stating that "post-KSR, a prima facie case of obviousness for a chemical compound still, in general, begins with the reasoned identification of a lead compound" in the prior art). Teva argues that the '406 patent identifies 2-pyr EHDP as the most promising molecule for the inhibition of bone resorption. The trial court disagreed and concluded from the evidence that a person of ordinary skill in the art would not have identified 2-pyr EHDP as a lead compound for the treatment of osteoporosis.

We need not reach this question because we conclude that even if 2-pyr EHDP was a lead compound, the evidence does not establish that it would have been obvious to a person of ordinary skill at the time of the invention to modify 2-pyr EHDP to create risedronate.

IV. Obviousness of Risedronate in Light of the Prior Art

To decide whether risedronate was obvious in light of the prior art, a court must determine whether, at the time of invention, a person having ordinary skill in the art would have had "reason to attempt to make the composition" known as risedronate and "a reasonable expectation of success in doing so." PharmaStem Therapeutics, Inc. v. ViaCell, Inc., 491 F.3d 1342, 1360 (Fed. Cir. 2007).

The district court concluded that, even if 2-pyr EHDP were a lead compound, it would not render the '122 patent's claims on risedronate obvious because a person having ordinary skill in the art would not have had reason to make risedronate based on the prior art. The district court's findings also support the conclusion that there could have been no reasonable expectation as to risedronate's success.

The question of obviousness "often turns on the structural similarities and differences between the claimed compound and the prior art compound[]." Eisai Co. Ltd. v. Dr. Reddy's Labs., Ltd., 533 F.3d 1353, 1356-57 (Fed. Cir. 2008); see also Sanofi-Synthelabo v. Apotex, Inc., 550 F.3d 1075, 1086 (Fed. Cir. 2008) ("Precedent establishes the analytical procedure whereby a close structural similarity between a new chemical compound and prior art compounds is generally deemed to create a prima facie case of obviousness . . . ."); In re Mayne, 104 F.3d 1339, 1343 (Fed. Cir. 1997) ("Structural relationships often provide the requisite motivation to modify known compounds to obtain new compounds."); In re Payne, 606 F.2d 303, 313-15 (CCPA 1979) (discussing the presumption of obviousness based on close structural similarity). In this case, risedronate and 2-pyr EHDP are positional isomers; they each contain the same atoms arranged in different ways. In risedronate, the hydroxy-ethane-diphosphonate group is connected to the #3 carbon of a pyridine ring, while in 2-pyr EHDP, the hydroxy-ethane-diphosphonate group is connected to the #2 carbon. Because the nitrogen atom is in a different position in the two molecules, they differ in three dimensional shape, charge distribution and hydrogen bonding properties.

To successfully argue that a new compound is obvious, the challenger may show "that the prior art would have suggested making the specific molecular modifications

necessary to achieve the claimed invention." Takeda, 492 F.3d at 1356 (quotation marks omitted). "In keeping with the flexible nature of the obviousness inquiry, the requisite motivation [to modify] can come from any number of sources." Eisai, 533 F.3d at 1357 (citation omitted). Thus, in addition to structural similarity between the compounds, a prima facie case of obviousness may be shown by "adequate support in the prior art" for the change in structure. In re Grabiak, 769 F.2d 729, 731-32 (Fed. Cir. 1985). As we noted in Takeda:

> A known compound may suggest its homolog, analog, or isomer because such compounds often have similar properties and therefore chemists of ordinary skill would ordinarily contemplate making them to try to obtain compounds with improved properties. . . . [However,] it remains necessary to identify some reason that would have led a chemist to modify a known compound in a particular manner to establish prima facie obviousness of a new claimed compound.

492 F.3d at 1356-57 (citation omitted).

At trial, P&G's expert witnesses testified that, in 1985, a person having ordinary skill in the art realized that the properties of bisphosphonates could not be anticipated based on their structure. Additionally, the trial court relied on contemporaneous writings from Herbert Fleisch, the preeminent authority on bisphosphonates during the relevant time period. Dr. Fleisch wrote in 1984 that "every compound, while remaining a bisphosphonate, exhibits its own physical-chemical, biological and therapeutic characteristics, so that each bisphosphonate has to be considered on its own. To infer from one compound the effects in another is dangerous and can be misleading." Herbert Fleisch, Chemistry and Mechanisms of Action of Bisphosphonates, in Bone Resorption, Metastasis, and Diphosphonates 33-40 (S. Garattini ed., 1985). In this case, P&G synthesized and tested 2-pyr EHDP, risedronate (3-pyr EHDP) and 4-pyr

EHDP, another structural isomer. Confirming the unpredictability of bisphosphonates, test results for 4-pyr EHDP revealed that it was not active in inhibiting bone resorption despite its close relationship with potent compounds. In light of the Supreme Court's instruction in KSR, the Federal Circuit has stated that, "[t]o the extent an art is unpredictable, as the chemical arts often are, KSR's focus on [] 'identified, predictable solutions' may present a difficult hurdle because potential solutions are less likely to be genuinely predictable." Eisai, 533 F.3d 1353, 1359 (quoting KSR, 127 S. Ct. at 1742). The district court found that Teva failed to clear that hurdle, establishing insufficient motivation for a person of ordinary skill to synthesize and test risedronate. This finding was not clearly erroneous.

Additionally, there was an insufficient showing that a person of ordinary skill in the art would have had a "reasonable expectation of success" in synthesizing and testing risedronate. PharmaStem, 491 F.3d at 1360. In KSR, the Supreme Court stated that when an obvious modification "leads to the anticipated success," the invention is likely the product of ordinary skill and is obvious under 35 U.S.C. § 103. 127 S. Ct. at 1742. "[O]bviousness cannot be avoided simply by a showing of some degree of unpredictability in the art so long as there was a reasonable probability of success." Pfizer, 480 F.3d at 1364 (citing In re Corkill, 771 F.2d 1496, 1500 (Fed. Cir. 1985)). Here, the district court's findings indicate that there was no reasonable expectation in 1985 that risedronate would be a successful compound.

Cases following KSR have considered whether a given molecular modification would have been carried out as part of routine testing. See, e.g., Takeda, 492 F.3d at 1360 (discussing the district court's finding that a modification was not known to be

beneficial and was not considered "routine"). When a person of ordinary skill is faced with "a finite number of identified, predictable solutions" to a problem and pursues "the known options within his or her technical grasp," the resulting discovery "is likely the product not of innovation but of ordinary skill and common sense." KSR, 127 S. Ct. at 1742. So too, "[g]ranting patent protection to advances that would occur in the ordinary course without real innovation retards progress." Id. at 1741. In other cases, though, researchers can only "vary all parameters or try each of numerous possible choices until one possibly arrive[s] at a successful result, where the prior art [gives] either no indication of which parameters [are] critical or no direction as to which of many possible choices is likely to be successful." In re O'Farrell, 853 F.2d 894, 903 (Fed. Cir. 1988). In such cases, "courts should not succumb to hindsight claims of obviousness." In re Kubin, __ F.3d __, No. 2008-1184, slip op. at 14 (Fed. Cir. Apr. 3, 2009). Similarly, patents are not barred just because it was obvious "to explore a new technology or general approach that seemed to be a promising field of experimentation, where the prior art gave only general guidance as to the particular form of the claimed invention or how to achieve it." In re O'Farrell, 853 F.2d at 903.

In this case, there is no credible evidence that the structural modification was routine. The district court found that the appellee's expert was evasive on this topic, stating that the witness "did not directly respond to most questions posed to him about whether it would be common for a chemist who develops a pyridine compound to conceive of and make [2-pyr EHDP, 3-pyr EHDP, and 4-pyr EHDP] isomers." Procter & Gamble, 536 F. Supp. 2d at 486. But evidence of evasion is not necessarily evidence that the testimony would otherwise have been favorable. The only direct evidence that

the structural modification was routine was presented by an expert witness that the district court judge discredited.[1]

Accordingly, we conclude that the district court did not clearly err in finding that Teva had not established a prima facie case of obviousness as to the challenged claims of the '122 patent.

V. Unexpected Results

The district court found that, even if Teva could establish a prima facie case of obviousness, P&G had introduced sufficient evidence of unexpected results to rebut such a showing. Such evidence included "test data showing that the claimed composition[] possess[es] unexpectedly improved properties or properties that the prior art does not have." In re Dillon, 919 F.2d 688, 692-93 (Fed. Cir. 1990). Because Teva did not establish a prima facie case of obviousness, P&G need not rely on this evidence to defend the '122 patent.

Nonetheless, we note that P&G's witnesses consistently testified that the properties of risedronate were not expected. For example, Dr. Benedict testified that he and other researchers did not predict the potency of risedronate. Ms. McOsker testified that she was "very surprised" by the low dose at which risedronate was effective. Dr. Miller stated that the superior properties of risedronate were unexpected and could not have been predicted. In a test to determine the lowest dose at which these compounds

[1] Appellant's expert testified that "if someone was aware that [2-pyr EHDP] was safe and effective, they would immediately in terms of the drug discovery effort, make the [3-pyr EHDP]." However, the district court concluded that this witness "had no specialized experience in the area of bisphosphonates" aside from his preparation to testify in the litigation. Procter & Gamble, 536 F. Supp. 2d at 480. Additionally, the expert prepared his opinion by reviewing drug profiles in the current version of the Physician's Desk Reference instead of drug profiles from the relevant time, causing his opinions to be "marred by hindsight." Id. at 495.

caused toxic reactions, risedronate outperformed 2-pyr EHDP by a substantial margin. Risedronate showed no observable toxic effect at a dose of 0.75 mg P/kg/day, while 2-pyr EHDP's "no observable effect level" was only 0.25 mg P/kg/day. In another test involving live animals, 2-pyr EHDP was lethal at a dose of 1.0 mg P/kg/day while risedronate was not. Ultimately, the district court weighed the evidence and evaluated the credibility of the witnesses in concluding that P&G had introduced sufficient evidence of unexpected results to rebut any finding of obviousness.

VI. Secondary Considerations of Non-Obviousness

Secondary considerations of non-obviousness include the commercial success of the invention at issue and its satisfaction of a long-felt need. B.F. Goodrich Co. v. Aircraft Braking Sys. Corp., 72 F.3d 1577, 1582 (Fed. Cir. 1996). The district court found that secondary considerations supported a finding of non-obviousness. When present, such factors "may often be the most probative and cogent evidence [of non-obviousness] in the record." Stratoflex, Inc. v. Aeroquip Corp., 713 F.2d 1530, 1538 (Fed. Cir. 1983).

The district court found that risedronate, marketed as Actonel, has been an undisputed commercial success and satisfied a long-felt unmet need.[2] This conclusion was based on the testimony of Dr. Daniel C. Smith, who stated that risedronate experienced favorable growth and had amassed $2.7 billion in aggregate domestic

[2] The court rightly gave little weight to risedronate's commercial success because the prior art '406 patent was also assigned to P&G. As of December 6, 1985, the filing date of the '122 patent, 2-pyr EHDP could be found only in a pending application for the '406 patent, which was not available to the public. See Merck & Co., Inc. v. Teva Pharma. USA, Inc., 395 F.3d 1364, 1377 (Fed. Cir. 2005) (holding that commercial success is not significantly probative of non-obviousness where others are barred from acting on the prior art).

sales. The district court based its finding of a long-felt unmet need on the fact that, in the mid-1980s, osteoporosis was recognized as a serious disease and existing treatments were inadequate. However, because the competing drug alendronate was available before risedronate, Teva contends that risedronate could not have satisfied any unmet need. Teva argues that the long-felt need must be unmet at the time the invention becomes available on the market, when it can actually satisfy that need. To support this argument, Teva cites Monarch Knitting Mach. Corp. v. Sulzer Morat GmbH, 139 F.3d 877 (Fed. Cir. 1998). In fact, Monarch rejects a similar argument partly because the competing inventions were not actually produced until after the claimed invention's filing date. Id. at 884. Here, alendronate was not produced until ten years after the filing of the '122 patent. Under Monarch, we look to the filing date of the challenged invention to assess the presence of a long-felt and unmet need. Accordingly, it was not clear error for the district court to conclude that risedronate met such a need and that secondary considerations supported a finding of non-obviousness.

VII. Whether the '406 Patent is Prior Art

As an alternative to its position that risedronate was not obvious, P&G argues that the '406 patent should not be considered prior art with respect to the '122 patent because risedronate was first synthesized by P&G before the '406 patent was filed. At trial, Dr. Benedict, one of the inventors named in the '122 patent, testified that he synthesized risedronate in May 1985. P&G submitted a portion of Dr. Benedict's laboratory notebook which contains a May 3, 1985 entry detailing the structure of risedronate and the procedure for its synthesis, but this entry was unwitnessed and was not corroborated by any other evidence.

"It is well established that when a party seeks to prove conception via the oral testimony of a putative inventor, the party must proffer evidence corroborating that testimony." Shu-Hui Chen v. Bouchard, 347 F.3d 1299, 1309 (Fed. Cir. 2003). The inventor "must provide independent corroborating evidence in addition to his own statements and documents." Hahn v. Wong, 892 F.2d 1028, 1032 (Fed. Cir. 1989). Because P&G did not provide adequate corroborating evidence of an earlier invention date for risedronate, the district court correctly concluded that the '406 patent qualifies as prior art for purposes of this inquiry.

VIII. Obviousness-Type Double Patenting

In addition to its obviousness defense, Teva also asserted that the '122 patent was invalid for double patenting. The double patenting doctrine is designed to prevent a patent owner from extending his exclusive rights to an invention through claims in a later-filed patent that are not patentably distinct from claims in the earlier filed patent. Geneva Pharm., Inc. v. GlaxoSmithKline PLC, 349 F.3d 1373, 1378 (Fed. Cir. 2003.) In general, the obviousness analysis applies to double patenting, except for three distinctions. First, statutory obviousness compares claimed subject matter to the prior art, while non-statutory double patenting compares claims in an earlier patent to claims in a later patent or application. Id. at 1377 n.1. Second, double patenting does not require inquiry into a motivation to modify the prior art. Id. Finally, double patenting does not require inquiry into objective criteria suggesting non-obviousness. Id.

Having concluded that risedronate was not obvious under 35 U.S.C. § 103, we similarly conclude that the '122 patent is not invalid for obviousness-type double patenting. Additionally, we agree with the district court that the claims of the '122 patent

are distinct from the claims of the ’406 patent. Comparing the claims of the ’122 patent to those of the ’406 patent, we note that, while claims 4 and 16 of the ’122 patent explicitly claim the risedronate compound, the ’406 patent claims an intermittent dosing regimen for the treatment of osteoporosis and claims no new compounds. Accordingly, Teva failed to present clear and convincing evidence of overlap between the claims of the two patents to invalidate the ’122 patent based on obviousness-type double patenting.

III. CONCLUSION

For the foregoing reasons, we affirm.

AFFIRMED

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte FRANCIS Y.F. LEE

Appeal 2011-002616
Application 10/850,072
Technology Center 1600

Before DEMETRA J. MILLS, ERIC GRIMES, and MELANIE L. McCOLLUM, *Administrative Patent Judges*.

Opinion for the Board filed by *Administrative Patent Judge* GRIMES.

Opinion Dissenting filed by *Administrative Patent Judge* MILLS.

GRIMES, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 involving claims to a method of treating cancer. The Examiner has rejected the claims for obviousness and obviousness-type double patenting. We have jurisdiction under 35 U.S.C. § 6(b). We reverse the obviousness rejections but affirm the double patenting rejection.

STATEMENT OF THE CASE

Claims 121-127 and 141-143 are on appeal. Claim 121 is representative and is directed to a method of treating pancreatic or lung cancer by administering, in combination, two compounds:

(a) Compound (1), which is also known as ixabepilone (Lee Declaration,[1] ¶ 3), C-15-Aza-EpoB (Appeal Br. 7), 15-Aza-EpoB (*id*. at 8), or BMS 247550 (*id*.), and

(b) antibody C225, which is also known as cetuximab (Appeal Br. 7). The full text of claim 121 is reproduced in Appellant's Claims Appendix (Appeal Brief 17).

Claims 121-127 and 141-143 stand rejected under 35 U.S.C. § 103(a) as obvious based on Danishefsky[2] and Chen[3] (Answer 3) or based on Vite[4] and Chen (Answer 5). Claims 121-127 and 141-143 also stand rejected for obviousness-type double patenting based on the claims of Lee[5] in view of Chen (Office Action mailed July 8, 2009, pp. 2-3[6]).

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[1] Declaration under 37 C.F.R. § 1.132 of Francis Y.F. Lee, executed Feb. 19, 2009.
[2] Danishefsky et al., US 6,867,305 B2, Mar. 15, 2005.
[3] Chen et al., US 2002/0147198 A1, Oct. 10, 2002.
[4] Vite et al., WO 99/02514, Jan. 21, 1999.
[5] Lee, U.S. RE41,393 E, reissued June 22, 2010.
[6] The double-patenting rejection is not set out in the Answer but the record shows that Examiner intended to maintain the rejection, as discussed in more detail infra.

I.

Issue

The Examiner has rejected all of the claims on appeal as obvious based on either Danishefsky or Vite, combined with Chen (Answer 3, 5). The Examiner finds that Danishefsky and Vite teach Compound (1) for treating cancer (*id*. at 3-4, 6) and Chen teaches treatment of cancer using cetuximab (*id*. at 5, 6). The Examiner concludes that it would have been obvious to treat cancer, including lung or pancreatic cancer, using a combination of Compound (1) and cetuximab because Danishefsky and Vite teach that Compound (1) is useful for treating cancer in combination with other cancer-treating agents (*id*. at 4, 6).

Appellant contends that the references would not have made obvious the specific combination of agents required by the claims (Appeal Br. 7-10). Appellant also contends that he has provided evidence of synergism that rebuts any prima facie case of obviousness (*id*. at 10-14).

The issues with respect to this rejection are:

Do the cited references support the Examiner's conclusion that treating pancreatic cancer or lung cancer with a combination of Compound (1) and cetuximab would have been prima facie obvious?

If so, has Appellant presented evidence of unexpected results that outweighs the evidence supporting the prima facie case of obviousness?

Findings of Fact – Prima facie obviousness

1. The Examiner finds that Danishefsky discloses Compound (1) recited in the claims (Answer 3). Appellant does not dispute this finding (*see* Appeal Br. 7-8).

2. Danishefsky teaches treatment of tumors in mice using Compound (1) (aka C-15-Aza-EpoB) (Danishefsky, Fig. 33).

3. Danishefsky teaches that Compound (1) (aka BMS 247550) "is currently under clinical investigations" (*id*. at col. 109, ll. 45-46).

4. Danishefsky teaches that its "compounds and pharmaceutical compositions . . . can be employed in combination therapies" (*id*. at col. 59, ll. 45-47), including in combination with other cancer-treatment agents (*id*. at col. 60, ll. 2-14).

5. Appellant acknowledges that Vite teaches "Compound (1) as an Example" (Appeal Br. 9).

6. Vite teaches that its compounds are "useful in the treatment of a variety of cancers" (Vite 8: 21).

7. Vite teaches that its compounds "are also useful in combination with known anti-cancer and cytotoxic agents" (*id*. at 10: 10-11).

8. Chen teaches that "anti-neoplastic agents" include cetuximab (Chen 19, ¶ 291).

Analysis – Prima Facie Obviousness

We agree with the Examiner that the teachings of Danishefsky or Vite, viewed in combination with Chen, would have made obvious the method of the claims on appeal. Danishefsky and Vite disclose that Compound (1) is useful in treating cancer, and both suggest combining different cancer-treatment agents. Chen discloses that cetuximab was also a known anti-neoplastic agent. Therefore, it would have been obvious to combine Compound (1) with cetuximab with a reasonable expectation that

the combination would provide more effective cancer treatment than either Compound (1) or cetuximab alone.

Appellant argues that Danishefsky discloses that Compound (1) was a known compound, but Danishefsky's invention was directed to different epithilone derivatives (Appeal Br. 7-8); therefore "[a]t best, what Danishefsky teaches is the combination of the 12,13 desoxy epithilones and other cytotoxic agents" (*id*. at 8). Appellant also argues that Vite's general teaching of combining its compounds with other anti-cancer agents "does not teach or suggest the specific combination of Compound (1) with cetuximab" (*id*. at 10), and that Chen "gives a 3-page laundry list of the anti-cancer agents, one of which happens to be cetuximab" (*id*. at 8). Appellant argues that these teachings would not have made obvious the instantly claimed method.

We are not persuaded. Danishefsky and Vite provide evidence that it was known in the art to treat cancer using combinations of known cancer-treatment agents. The cited references also disclose that the two compounds recited in the claims on appeal were known cancer-treatment agents, and therefore would have made it obvious to treat cancers – including lung cancer and pancreatic cancer – using the combination.

Findings of Fact – Secondary Considerations

9. Appellant has provided a declaration under 37 C.F.R. § 1.132 (Declaration of Francis Y. F. Lee, signed Feb. 19, 2009).

10. The Lee Declaration presents data showing the effect of Compound (1) (aka ixabepilone) in combination with cetuximab in treating

human lung carcinoma L2987 xenografts in nude mice (Lee Declaration, ¶ 5).

11. The Lee Declaration compares the results of treating human lung carcinoma with a combination of ixabepilone and cetuximab to the results of treating lung carcinoma with either ixabepilone or cetuximab alone (*id*. at ¶ 6).

12. The Lee Declaration states that the combination therapy produced an LCK (gross log 10 cell kills) of >3.8 and 75% cures, compared with an LCK of 3.2 and 13% cures for ixabepilone alone and an LCK of 3 and 13% cures with cetuximab alone (*id*. (Table A-B)).

13. The Lee Declaration states that a second study of lung carcinoma L2987 resulted in an LCK of >6.5 and 38% cures for the combination of ixabepilone and cetuximab, compared to an LCK of 3.1 and 0% cures for ixabepilone alone and an LCK of 2.4 and 0% cures for cetuximab alone (*id*.).

14. The Lee Declaration states that the "combination of the two agents surprisingly yielded synergistic anti-tumor efficacy results for the combination which were significantly superior to either of the single agent ixabepilone alone, or, the single agent cetuximab alone" (*id*. at ¶ 5).

15. The Lee Declaration presents data showing the treatment of lung carcinoma A549 xenografts in nude mice with ixabepilone alone, cetuximab alone, or ixabepilone in combination with cetuximab (Lee Declaration, ¶¶ 8, 9).

16. The Lee Declaration states that the combination therapy produced an LCK of 2.7 and a growth delay of 55 days, compared with an LCK of 1.2

and a growth delay of 25 days for ixabepilone alone and an LCK of 0.7 and a growth delay of 14.8 days with cetuximab alone (*id*. at ¶ 8 (Table C)).

17. The Lee Declaration states that treatment with the combination "was substantially more effective than each drug alone in tumor growth. These results are indeed surprising, unexpected and synergistic" (*id*. at ¶ 9).

18. The Lee Declaration presents data showing the treatment of human pancreatic carcinoma Bx-PC3 xenografts in nude mice with ixabepilone alone, cetuximab alone, or ixabepilone in combination with cetuximab (Lee Declaration, ¶ 12).

19. The Lee Declaration states that the combination therapy produced a delay in tumor growth of 31.2 days, compared with 21.5 days with ixabepilone alone and 5 days with cetuximab alone (*id*. (Table E)).

20. The Lee Declaration states that these results "are surprising, unexpected and synergistic given that the combination of ixabepilone and cetuximab produced a significant delay in tumor increase over the ixabepilone alone and the cetuximab alone" (*id*.).

Principles of Law – Secondary Considerations

"One way for a patent applicant to rebut a *prima facie* case of obviousness is to make a showing of 'unexpected results,' *i.e*., to show that the claimed invention exhibits some superior property or advantage that a person of ordinary skill in the relevant art would have found surprising or unexpected." *In re Soni*, 54 F.3d 746, 750 (Fed. Cir. 1995).

"Mere improvement in properties does not always suffice to show unexpected results. In our view, however, when an applicant demonstrates *substantially* improved results . . . and *states* that the results were

unexpected, this should suffice to establish unexpected results *in the absence of* evidence to the contrary." *Id.* at 751.

"If an applicant demonstrates that an embodiment has an unexpected result and provides an adequate basis to support the conclusion that other embodiments falling within the claim will behave in the same manner, this will generally establish that the evidence is commensurate with [the] scope of the claims." *In re Kao*, 639 F.3d 1057, 1068 (Fed. Cir. 2011).

Analysis – Secondary Considerations

The Lee Declaration presents evidence showing the results of treating human lung carcinoma and human pancreatic carcinoma in an animal model with a combination of Compound (1) and cetuximab. The evidence provided shows that treatment with the combination is more effective than treatment with either agent alone (FFs 12, 13, 16, 19), and Dr. Lee has stated that the results observed showed synergism and were unexpectedly superior (FFs 14, 17, 20). Thus, Appellant has demonstrated substantially improved results and stated that the results were unexpected; "this should suffice to establish unexpected results *in the absence of* evidence to the contrary." *In re Soni*, 54 F.3d at 751.

The Examiner responds that "although the data can be considered synergistic, they are based on a single dosage for each active agent. . . . Examiner submits that a showing of a few data points regarding dosages will not support the entire claimed range, which is any dosage amount." (Answer 8-9.)

The Examiner, however, has not provided any evidence or technical reasoning to support a conclusion that the results shown in the Lee

Declaration would not be representative of other dosages. The Examiner therefore has not provided an adequate basis for concluding that the data are not commensurate with the scope of the claims. *Cf. In re Kao*, 639 F.3d at 1068.

The Examiner also argues that

> it is not certain what conclusions can be gathered from Table A-B. For example, the LCK and Tumor Growth Delay variables for L2987 (Lung) No. 140 seem to show mere additive effects, while the % cures seem to show synergism. In Table C, there seems to be additive effects for LCK and synergism for Tumor Growth Delay, while no data is given for % cures. The same goes for Tables D-E. Taking all the data as a whole, it appears that there are some synergistic results along with some additive effects.

(Answer 9.)

This argument is also unpersuasive, because the Examiner has provided no analysis of the data to show that they would have been expected or do not show synergism. Dr. Lee has testified that the data show synergistic results for the combination of ixabepilone and cetuximab, compared to the results for either agent alone (FFs 14, 17, 20). If the Examiner's position is that Dr. Lee's conclusion is not supported by the evidence presented in the Lee Declaration, the Examiner must provide adequate evidence or technical reasoning to show that the evidence does not support the declarant's conclusion. The Examiner, however, has provided only conclusory statements of disagreement with Dr. Lee's view of the evidence, which is not adequate to cast doubt on the accuracy of the evidence provided by the Lee Declaration.

Conclusions of Law

The cited references support the Examiner's conclusion that treating pancreatic cancer or lung cancer with a combination of Compound (1) and cetuximab would have been prima facie obvious, but Appellant has presented evidence of unexpected results that outweighs the evidence supporting the prima facie case of obviousness.

II.

In the Final Rejection, the Examiner rejected claims 121-127 and 141-143 for obviousness-type double patenting based on the claims of either U.S. Patent 6,686,380 B2 or U.S. Patent 7,312,237 B2, combined with Chen (Office Action mailed July 8, 2009, pp. 2-3). The Examiner also provisionally rejected claims 121-127 and 141-143 for obviousness-type double patenting based on the claims of either co-pending application 11/009,579 or application 11/346,579, combined with Chen (*id*. at 3).

In the Appeal Brief, as a ground of rejection to be reviewed on appeal, Appellant included "[w]hether claims 121-127 and 141-143 are unpatentable under the judicially created doctrine of obviousness-type double patenting over claims 1-15 of US Patent 6,686,380 or claims 38-50 of US application No. 11/346,579 (reissue application of US Patent 6,686,380) in view of Chen" (Appeal Br. 6). Appellant addressed these rejections on the merits (*id*. at 14-15).

In the Answer, the Examiner did not repeat any of the double-patenting rejections from the Final Rejection but stated that the "appellant's statement of the grounds of rejection to be reviewed on appeal is correct" (Answer 2). The Examiner also responded to Appellant's argument

concerning the double patenting rejections, and concluded that it did not overcome the rejection (*id*. at 10-11).

In the Reply Brief, Appellant noted that application 11/346,579 issued as RE41,393 on June 22, 2010, effecting the surrender of the '380 patent and thus the "rejection based on claims 1-15 of US Patent 6,686,380 in view of Chen is moot" (Reply Br. 2, n.1). Appellant also noted that the rejections outstanding after the Appeal Brief was filed were discussed by telephone on May 11, 2010, and that "Appellant was still of the opinion that the obviousness-type double patenting rejection was improper and thus declined to file a TD" (*id*. at 3). Appellant again presented arguments addressing the Examiner's position on double patenting (*id*. at 6).

Based on the record, we understand the Examiner to maintain the rejection of claims 121-127 and 141-143 for obviousness-type double patenting based on application 11/346,579[7] (now RE41,393) in view of Chen. We understand the Examiner's failure to reproduce this rejection in the Answer to be an oversight rather than a decision to withdraw the rejection. We note that Appellant apparently shared this understanding, as indicated by the comments and argument in the Reply Brief regarding the rejection.

The Examiner concludes that the claims of RE41,393, read in view of Chen, are unpatentable for obviousness-type double patenting based on "the same reasoning as set forth in the 103(a) rejection" (Office Action mailed

[7] The Examiner apparently also meant to maintain the double patenting rejection based on the '380 patent but, as noted by Appellant, this rejection is moot now that the '380 patent has been reissued as RE41,393.

July 8, 1009, p. 3). That is, the reissued claims are directed to a method of using Compound (1) to treat cancer and Chen teaches cetuximab to treat cancer, in combination with other cancer-treating compounds, so the combination therapy method of the instant claims is an obvious variation of the method defined by the reissue claims (*see id*. at 4-6 (reasoning of the rejection based on 35 U.S.C. § 103(a)).

We agree with the Examiner's reasoning and conclusion.

Appellant argues that the showing of unexpected results in the Lee Declaration rebuts the obviousness-type double patenting rejection for the same reason that it rebuts the rejections based on 35 U.S.C. § 103 (Appeal Br. 14-15).

We agree, however, with the Examiner that "while a Declaration showing unexpected results can overcome a 103(a) obviousness rejection, the same Declaration cannot overcome an obviousness double patenting rejection" (Answer 11). The Examiner's position is supported by the case law. *See Geneva Pharms., Inc. v. GlaxoSmithKline PLC*, 349 F.3d 1373, 1378 n.1 (Fed. Cir. 2003) ("The distinctions between obviousness under 35 U.S.C. § 103 and nonstatutory double patenting include: . . . Obviousness requires inquiry into objective criteria suggesting non-obviousness; nonstatutory double patenting does not."); *Procter & Gamble Co. v. Teva Pharms. USA, Inc.*, 566 F.3d 989, 999 (Fed. Cir. 2009) ("In general, the obviousness analysis applies to double patenting, except for three distinctions. . . . Finally, double patenting does not require inquiry into objective criteria suggesting non-obviousness.").

Thus, unexpected results cannot be relied on to rebut a rejection for nonstatutory, obviousness-type double patenting. Since the claims were not argued separately, we affirm the rejection of claims 121-127 and 141-143. 37 C.F.R. § 41.37(c)(1)(vii).

SUMMARY

We reverse the rejection of claims 121-127 and 141-143 under 35 U.S.C. § 103(a) based on either Danishefsky and Chen or Vite and Chen. We affirm the rejection of claims 121-127 and 141-143 for obviousness-type double patenting based on the claims of RE41,393 in view of Chen.

TIME PERIOD FOR RESPONSE

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED

Mills, *Administrative Patent Judge,* concurring in part, dissenting in part.

I concur with the majority decision with regard to the obviousness rejections over Danishefsky and Vite in view of Chen.

I respectfully dissent from the decision of my colleagues with respect to the obviousness-type double patenting rejection for the following reasons.

ISSUES

The issues are:

> 1. Whether the pending claims are encompassed by the claims of the Lee '380, now RE41,393, and whether the pending claims are patentably distinct from the Lee RE41,393 patent in view of Chen.
>
> 2. Whether in view of secondary considerations such as unexpected results, the patentee obtains a timewise extension of a patent for the same invention or an obvious modification thereof.

PRINCIPLES OF LAW

"The policy underlying a double patenting rejection is an important policy because it precludes the improper extension of the statutory term of patent protection for an invention." *In re Applied Materials, Inc. v. Advanced Semiconductor Materials Am., Inc.*, 98 F.3d 1563, 1577 (Fed. Cir. 1996).

> "The doctrine of double patenting is intended to prevent a patentee from obtaining a timewise extension of [a] patent for the same invention or an obvious modification thereof." *In re Basell Poliolefine Italia S.P.A.*, 547 F.3d 1371, 1375 (Fed. Cir. 2008). The proscription against double patenting takes two forms: (1) statutory

> double patenting, which stems from 35 U.S.C. § 101 and prohibits a later patent from covering the same invention, i.e., identical subject matter, as an earlier patent, and (2) obviousness-type double patenting , which is a judicially created doctrine that prevents a later patent from covering a slight variation of an earlier patented invention. *Perricone*, 432 F.3d at 1372-73[8]; *see Geneva*, 349 F.3d at 1377-78.[9]
> The second type of double patenting, obviousness-type double patenting, prohibits "claims in a later patent that are not patentably distinct from claims in a commonly owned earlier patent." *In re Basell*, 547 F.3d at 1375. An obviousness-type double patenting analysis, which "compares claims in an earlier patent to claims in a later patent or application," *Geneva*, 349 F.3d at 1378 n.1, consists of two steps, *Pfizer*, 518 F.3d at 1363. First, the court "construes the claim[s] in the earlier patent and the claim[s] in the later patent and determines the differences." *Id.* Second, the court "determines whether those differences render the claims patentably distinct." *Id.* "A later claim that is not patentably distinct from," i.e., "is obvious over[] or anticipated by," an earlier claim is invalid for obviousness-type double patenting. *Eli Lilly & Co. v. Barr Labs., Inc.*, 251 F.3d 955, 968 (Fed. Cir. 2001).

Sun Pharmaceutical Industries Ltd. v. Eli Lilly and Co., 611 F.3d 1381, 1384 (Fed. Cir. 2010).

> If one claimed invention has a broader scope than the other, the court must proceed to a second inquiry: whether one claim defines merely an obvious variation of the other patent claim. *Vogel*, 422 F.2d at 441. Without a patentable distinction -- because the pending claim defines merely an obvious variation of the patented claim -- the patentee may overcome the double patenting rejection by filing a terminal disclaimer. *See In re Eckel*, 393 F.2d 848, 157 USPQ 415 (CCPA 1968).

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[8] *See Perricone v. Medicis Pharm. Corp.*, 432 F.3d 1368, 1372-73 (Fed. Cir. 2005)

[9] *See Geneva Pharms., Inc. v. GlaxoSmithKline PLC*, 349 F.3d 1373, 1378 n.1 (Fed. Cir. 2003)

In re Goodman, 11 F.3d 1046, 1053 (Fed. Cir. 1993).

> "The opinion in *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970), undertook a "restatement of the law of double patenting as enunciated by this court." To summarize it, the opinion says that the first question is: Is the same invention being claimed twice? If the answer to that is no, a second question must be asked: Does any claim in the application define merely an obvious variation of an invention claimed in the patent asserted as supporting double patenting? If the answer to that question is no, there is no double patenting. The court was speaking, of course, about the PTO rejection of a pending patent application intended to forestall double patenting. If the rejected claim defines *more* than an obvious variation, it is *patentably distinct."*

In re General Foods Corp. v. Studiengesellschaft Kohle mbH, 972 F.2d 1272, 1278 (Fed. Cir. 1992).

> "The extensive opinion in *In re Borah*, 354 F.2d 1009, 148 USPQ 213 (CCPA 1966), … shows beyond question that the determining factor in deciding whether or not there is double patenting is the existence vel non of *patentable difference* between two sets of claims. The phrases actually used in the opinion include "patentably distinguishable," "patentable distinctions," and "whether such differences would have been obvious to one of ordinary skill in the art." They are all equivalent."

Id at 1279 .

> In determining patentable distinctiveness or "obvious variant",
>
> we ask whether the identified difference renders the claims of the … patents non-obvious to a person of ordinary skill in the art in light of the prior art. *See In re Kaplan*, 789 F.2d 1574, 1580 (Fed. Cir. 1986). This part of the obviousness-type double patenting analysis is analogous to an obviousness analysis under 35 U.S.C. §103. *See In re Longi*, 759 F.2d 887, 892 n.4 (Fed. Cir. 1985) ("[A] double patenting

> of the obviousness type rejection is analogous to [a failure to meet] the non-obviousness requirement of 35 U.S.C. §103, except that the patent principally underlying the double patenting rejection is not considered prior art." (quotation marks omitted)).

Amgen Inc. v. F. Hoffmann-La Roche Ltd., 580 F.3d 1340 (Fed. Cir. 2009).

There are "certain instances" where the specification of an earlier patent may be used in the obviousness-type double patenting analysis. … Specifically, the specification's disclosure may be used to determine whether a claim "merely define[s] an obvious variation of what is earlier disclosed and claimed," "to learn the meaning of [claim] terms," and to "interpret[] the coverage of [a] claim." *See Geneva Pharm., Inc. v. GlaxoSmithKline PLC*, 349 F.3d 1373 (Fed. Cir. 2003).

In Pfizer, Inc. v. Teva Pharms. USA, Inc. 518 F.3d 1353, 1363 and In *Geneva Pharms., Inc. v. GlaxoSmithKline PLC*, 349 F.3d 1373,1385-86, the court

> found claims of a later patent invalid for obviousness-type double patenting where an earlier patent claimed a compound, disclosing its utility in the specification, and a later patent claimed a method of using the compound for a use described in the specification of the earlier patent. *See Pfizer*, 518 F.3d at 1363; *Geneva*, 349 F.3d at 1385-86. We held that a "claim to a method of using a composition is not patentably distinct from an earlier claim to the identical composition in a patent disclosing the identical use." *Pfizer*, 518 F.3d at 1363; *Geneva*, 349 F.3d at 1385-86.

Sun Pharmaceutical Industries Ltd. v. Eli Lilly and Co., 611 F.3d 1381, 1384 (Fed. Cir. 2010).

In re Longi, 759 F2d 887, 894 (Fed. Cir. 1985), considered unexpected results to overcome obviousness-type double patenting rejection, implied they may be considered, but found them unconvincing.

"Disclosure of chemical genus does not render obvious all species that fall within it." *In re Jones*, 958 F.2d 347, 350 (Fed. Cir. 1992); *In re Baird*, 16 F.3d 380, 382 (Fed. Cir. 1994).

"The use of *per se* rules, while undoubtedly less laborious than a searching comparison of the claimed invention—including all its limitations—with the teachings of the prior art, flouts section 103 and the fundamental case law applying it." *In re Ochiai*, 71 F.3d 1565, 1572 (Fed. Cir. 1995).

ANALYSIS

I am not persuaded that the facts and legal precedent before us support a finding of obviousness-type (non-statutory) double patenting.

> 1. Whether the pending claims are encompassed by the claims of the Lee '380, now RE41,393, and whether the pending claims are patentably distinct from the Lee RE41,393 patent in view of Chen.

It is well settled that

An obviousness-type double patenting analysis, which "compares claims in an earlier patent to claims in a later patent or application," *Geneva*, 349 F.3d at 1378 n.1, consists of two steps, *Pfizer*, 518 F.3d at 1363. First, the court "construes the claim[s] in the earlier patent and the claim[s] in the later patent and determines the differences." *Id.* Second, the court "determines whether those differences render the claims patentably distinct." *Id.* "A later claim that is not patentably distinct from," i.e., "is obvious over[] or anticipated by," an earlier claim is invalid for obviousness-type double patenting.

Eli Lilly & Co. v. Barr Labs., Inc., 251 F.3d 955, 968 (Fed. Cir. 2001).

Comparing the claims

The RE41,393 patented claims are to a method of treating a tumor resistant to oncology therapy with taxane with a compound of the formula of compound 1 (RE41,393 claim 16) which encompasses pending claim compound 1 but does not encompass a method of treating cancer with a combination therapy of compound 1 with antibody C225. Thus, the prior patent claims and the pending claims are not to the same invention. The difference between the patented subject matter and the pending claimed subject matter is the C225 antibody.

We then must determine whether this difference in the pending claims renders the claim patentably distinct from the RE41,393 patent claims in view of Chen. One way of determining this is inquiring whether the pending claims are an obvious variant of the RE41,393 patent claims. This inquiry follows.

The obviousness-type double patenting rejections are set forth in the Final Rejection at pages 2-3.

In addition to the RE41,393 patent claims the Examiner relies on Chen in the obviousness-type double patenting rejection for the disclosure of the C225 antibody (cetuximab) for the treatment of cancer.

In determining patentable distinctiveness or "obvious variant",

> "we ask whether the identified difference renders the claims of the … patents non-obvious to a person of ordinary skill in the art in light of the prior art. *See In re Kaplan*, 789 F.2d 1574, 1580 (Fed. Cir. 1986). This part of the obviousness-type double patenting analysis is analogous to an obviousness analysis under 35 U.S.C.

> §103. *See In re Longi*, 759 F.2d 887, 892 n.4 (Fed. Cir. 1985) ("[A] double patenting of the obviousness type rejection is analogous to [a failure to meet] the non-obviousness requirement of 35 U.S.C. §103, except that the patent principally underlying the double patenting rejection is not considered prior art." (quotation marks omitted)).

Amgen Inc. v. F. Hoffmann-La Roche Ltd., 580 F.3d 1340 (Fed. Cir. 2009).

Since the double patenting of the obviousness-type rejection is analogous to a failure to meet the non-obviousness requirement of 35 U.S.C. §103, we look to relevant obviousness analysis. The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) the level of ordinary skill in the art; (3) the differences between the claimed invention and the prior art; and (4) secondary considerations of nonobviousness, if any. *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966).

This analysis was not performed by the Examiner and is error. The Examiner merely determined that Appellants evidence of non-obviousness in the Lee Declaration was not relevant to the obviousness-type double patenting rejection. The majority agrees citing *Geneva,* fn1.

I respectfully disagree.

When the appropriate 103 analysis is performed, patentable distinctiveness is found and the obviousness-type double patenting rejection should be reversed.

In reviewing the obviousness rejections over Danishefsky or Vite and Chen, the majority performed the 103 analysis of *Graham* and concluded that the Declaration of Lee provided convincing evidence of unexpected and

synergistic results when compound 1 is combined with cetuximab. The majority reversed the obviousness rejections based on secondary considerations of non-obviousness.

I agree with the majority's conclusion that the Declaration of Lee overcomes the obviousness rejections. For the same reasons, I find that the Declaration also overcomes the obviousness-type double patenting rejection and shows patentable distinctiveness of the claimed invention. *See* also, *In re Procter and Gamble Co. v. Teva Pharms USA, Inc.* 566 F.3d 989, 999 (Fed. Circ.2009) wherein the Federal Circuit determined that risedronate was not obvious under 103, considering a showing of long-felt need, and thus for the same reason the obviousness-type double patenting rejection was not affirmed.

Distinguishing *Geneva* and *Pfizer*

The Examiner assumes per se that a Declaration and secondary considerations cannot overcome an obviousness-type double patenting rejection. The majority cites *Geneva* and *Procter & Gamble* for this proposition of law. I do not find this case law persuasive or relevant to the pending facts. Moreover, "[t]he use of *per se* rules, while undoubtedly less laborious than a searching comparison of the claimed invention—including all its limitations—with the teachings of the prior art, flouts section 103 and the fundamental case law applying it." *In re Ochiai*, 71 F.3d 1565, 1572 (Fed. Cir. 1995).

The facts before us are distinct from those of *Geneva* cited by the majority. The facts before us are not a "claim to a method of using a composition [which] is not patentably distinct from an earlier claim to the

identical composition in a patent disclosing the identical use" as set forth in *Geneva*, 349 F.3d at 1385-86. The holding in *Geneva* should be limited to its specific facts.

To the contrary, the facts before us are, RE41,393 patented claims to a method of treating a tumor which is taxane resistant with a compound of formula 1 (claim16.) Unlike *Geneva*, the Specification of the RE41,393 patent does not disclose a method of treating cancer selected from pancreatic and lung cancers by administration of the claimed compound with antibody C225 (Imclone antibody immunospecific for the EGFR, Spec. 24, l. 14-16)[10] as presently claimed.

A careful review of *In re Procter and Gamble* suggests a holding consistent with the legal precedent cited herein. In *Procter* the Federal Circuit determined that risedronate was not obvious under 103. In that case the Federal Circuit, in addition to 103 considerations, also considered a showing of long-felt need, and thus for the same reason the obviousness-type double patenting rejection was not affirmed. 566 F.3d at 999.

In the present case, as in *Procter*, the secondary considerations suggest a patentably distinct invention is being claimed and that the obviousness-type double patenting rejection should be reversed for the same reasons as the obviousness rejections.

Moreover, footnote 1 in *Geneva*, espousing that non-statutory double patenting does not require objective criteria suggesting non-obviousness is legally unsupported and is *simplex or obiter dictum* to the *Geneva*

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[10] In Pfizer, the newly claimed use was described in the specification of the earlier patent.

decision. [11] To the contrary, *In re Longi,* 759 F.2d 887, 897 (Fed. Cir. 1985) considered whether unexpected results can overcome obviousness-type double patenting rejection, implied that they could, but found them unconvincing on the facts of that case. Moreover, the holding in *Geneva* addresses "the situation in which an earlier patent claims a compound, disclosing the utility of that compound in the specification, and a later patent claims a method of using that compound for a particular use described in the specification of the earlier patent." *Sun Pharmaceutical Industries Ltd. v. Eli Lilly and Co*., 611 F.3d 1381, 1384 (Fed. Cir. 2010). Those are not the facts in the present case.

Therefore, in view of secondary considerations, the pending claims define a patentably distinct invention from those of Lee RE41,393, and the holding and dicta in *Geneva* is not germane to the facts in the present case.

2. Whether the secondary considerations such as unexpected results provide the patentee with a timewise extension of a patent for the same invention or an obvious modification thereof.

It has long been recognized in the law that unobvious improvement patents do not result in a timewise extension of a patent for the same

[11] As the United States Supreme Court has put it: "dicta may be followed if sufficiently persuasive but are not binding." Central *Green Co. v. United States*, 531 U.S. 425 (2001), quoting *Humphrey's Executor v. United States*, 295 U. S. 602, 627 (1935).

invention or an obvious modification thereof. As there has been a showing of patentable distinctiveness on the facts in the present case in the Declaration of Lee, there is no timewise extension of a patent for the same invention or an obvious modification thereof. The modification of coadministering compound one with antibody C225 for the treatment of specific cancers is an unobvious modification of the Lee Rexamined '380 claims. Further, when the patent term on the Lee Reexamined '380 patent expires, the use of compound 1 for the treatment of taxane resistant cancers by the public is no longer controlled by the patent, and thereafter, only the patentably distinct use of the compound 1 in combination with antibody C225 would be covered by a distinct patent term. Thus, no extension of patent term would result.

CONCLUSION

The pending claims are partially encompassed by the Lee RE41,393 patent, however the pending claims are patentably distinct from the claims of the Lee RE41,393 patent in view of Chen.

No timewise extension of patent protection results from patentability of the pending claims.

For these reasons, the obviousness-type double patenting rejection should be reversed.

lp

NOTE: This order is nonprecedential.

United States Court of Appeals for the Federal Circuit

IN RE FRANCIS Y.F. LEE

2012-1296
(Serial No. 10/850,072)

Appeal from the United States Patent and Trademark Office, Board of Patent Appeals and Interferences.

ON MOTION

Before LOURIE, SCHALL and DYK, *Circuit Judges.*

PER CURIAM.

O R D E R

The Director of the United States Patent and Trademark Office moves without opposition to remand this matter to the Board of Patent Appeals and Interferences to consider evidence of secondary considerations in the first instance.

Upon consideration thereof,

IT IS ORDERED THAT:

(1) The motion to remand is granted.

(2) Each side shall bear its own costs.

FOR THE COURT

JUL 26 2012
Date

/s/ Jan Horbaly
Jan Horbaly
Clerk

cc: Christopher N. Sipes, Esq.
Raymond T. Chen, Esq.

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