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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte BOB D. BROWN and TIMOTHY A. RILEY

Appeal 2012-001310
Application 10/142,666
Technology Center 1600

Before LORA M. GREEN, FRANCISCO C. PRATS, and
ERICA A. FRANKLIN, *Administrative Patent Judges*.

GREEN, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the Examiner's rejection of claims 1-4, 7-9, 22-29, 31, and 33-44. We have jurisdiction under 35 U.S.C. § 6(b).

STATEMENT OF THE CASE

Claim 1 is the only independent claim on appeal, and reads as follows:

1. A pharmaceutical composition comprising an improved antisense oligonucleotide and a pharmaceutically acceptable carrier, wherein said oligonucleotide has increased specificity and ability to inhibit the expression of a gene, wherein the improvement comprises the incorporation of at least two juxtaposed universal bases and one or more flexible non-nucleotide linkers connecting bases in said oligonucleotide, and wherein said universal bases stack in duplex nucleic acid helices.

The following grounds of rejection are before us for review:

- I. Claims 1-4, 7-9, 22-29, 31, 34, 37-40, 43, and 44 stand rejected over the combination of Bergstrom,¹ Tormo,² and Jäschke³ (Ans. 4). As Appellants do not argue the claims separately, we focus our analysis on claim 1, and claims 2-4, 7-9, 22-29, 31, 34, 37-40, 43, and 44 stand or fall with that claim.
- II. Claims 35 and 41 stand rejected over the combination of Bergstrom, Tormo, and Jäschke, as further combined with Torrence⁴ (Ans. 7).
- III. Claims 36 and 42 stand rejected over the combination of Bergstrom, Tormo, and Jäschke as further combined with Krupp⁵ (Ans. 9).

¹ Bergstrom et al., US 5,681,947, Oct. 28, 1997

² Tormo et al., US 6,977,244 B2, Dec. 20, 2005

³ Andres Jäschke, *Oligonucleotide-Poly(ethylene glycol) Conjugates: Synthesis, Properties, and Applications*, in Harris et al., *Polyethylene Glycol ACS Symposium Series*, American Chemical Society Washington, DC 265-283 (1997)

⁴ Torrence et al., US 5,583,032, Dec. 10, 1996

We affirm.

ISSUE

Does the preponderance of the evidence of record support the Examiner's conclusion that the combination of Bergstrom, Tormo, and Jäschke renders claim 1 obvious?

FINDINGS OF FACT

FF1. As we agree with the Examiner's findings and conclusions with respect to the obviousness rejections (*see* Ans. 4-10), we adopt them as our own.

ANALYSIS

Appellants argue that Bergstrom "is directed primarily to oligonucleotide primers for use in Sanger Method sequencing" (App. Br. 7). Appellants assert that as Bergstrom teaches that "the inclusion of universal bases in order to allow the oligonucleotide primer to indiscriminately hybridize to mismatched sequences and to still initiate DNA synthesis in Sanger Method sequencing," that Bergstrom is disclosing "that universal bases would result in binding to ambiguous or mismatched sequences, thus **decreasing sensitivity**" (App. Br. 7-8). Appellants assert that Bergstrom only refers to the use of the bases in antisense oligonucleotides, and "fails to disclose any antisense oligonucleotides having universal bases that were

⁵ G. Krupp, *Antisense oligoribonucleotides and RNase P. A great potential*, 75 *BIOCHIMIE* 135-139 (1993)

actually made and found to be effective in inhibiting the expression of a gene, much less any antisense oligonucleotide having a combination of juxtaposed universal bases and flexible linkers, where the antisense oligonucleotide has increased specificity and ability to inhibit the expression of a gene” (*id.* at 8).

As to Tormo, Appellants argue that Tormo fails to remedy the deficiencies of Bergstrom, and that Tormo does not teach or suggest the claimed invention (*id.*). Appellants argue further that Tormo is drawn to oligonucleotides that are specific for Bcl-2 sequences, and as Bergstrom teaches that the universal bases decrease the specificity of an oligonucleotide for a target, Bergstrom teaches away from the combination (*id.* at 9). Appellants further assert that “there would be no reasonable expectation that the resultant oligonucleotides would have **increased specificity and ability to inhibit the expression of a gene** as is required by the claims” (*id.*).

As to Jäschke, Appellants argue that Jäschke fails to remedy the deficiencies of Bergstrom and Tormo (*id.*). Appellants reiterate the argument that Bergstrom teaches away from the combination as Bergstrom that the universal bases decrease the specificity of an oligonucleotide for a target (*id.*). Appellants further argue that there is no reasonable expectation of combining the reference to achieve the claimed invention without the use of improper hindsight (*id.*).

Appellants’ arguments have been carefully considered, but are not convincing.

In determining whether obviousness is established by combining the teachings of the prior art, “the test is what the combined teachings of the

references would have suggested to those of ordinary skill in the art.” *In re Keller*, 642 F.2d 413, 425 (CCPA 1981). In addition, a reference disclosure is not limited only to its preferred embodiments, but is available for all that it discloses and suggests to one of ordinary skill in the art. *In re Lamberti*, 545 F.2d 747, 750 (CCPA 1976). Moreover, all that is required is a reasonable expectation of success, not absolute predictability of success. *In re O’Farrell*, 853 F.2d 894, 903, 7 USPQ2d 1673, 1681 (Fed. Cir. 1988).

As found by the Examiner, Bergstrom teaches that the incorporation of universal bases increases the effective specific activity of the oligonucleotide to the correct target (Ans. 5; Bergstrom, col. 2, ll. 45-47). In addition, as found by the Examiner (Ans. 8), Bergstrom specifically teaches that the oligonucleotides containing the universal bases will find “widespread applicability in both clinical and therapeutic settings,” such as in antisense oligonucleotides (Bergstrom, col. 8, ll. 55-65). Tormo teaches a bcl-2 antisense peptide (Ans. 5-6), and Jäschke teaches the use of PEG for linking oligonucleotides in nucleic acid based drugs (*id.* at 5). Thus, based on the teachings of Bergstrom, as discussed in the Answer and above, it would have been well within the level of skill of the ordinary artisan to incorporate two juxtaposed universal bases into the bcl-2 antisense peptide of Tormo, as well as a flexible non-nucleotide linker such as PEG as taught by Jäschke, to obtain the composition of claim 1.

Thus, the references as combined suggest the composition of claim 1. “[T]he patentability of apparatus or composition claims depends on the claimed structure, not on the use or purpose of that structure.” *Catalina Mktg. Int’l, Inc. v. Coolsavings.com, Inc.*, 289 F.3d 801, 809 (Fed. Cir.

2002). That is, “[f]rom the standpoint of patent law, a compound and all of its properties are inseparable; they are one and the same thing.” *In re Papesch*, 315 F.2d 381, 391 (CCPA 1963). As found by the Examiner (Ans. 14), the claim limitation that the oligonucleotide have increased specificity and ability to inhibit the expression of a gene does not impart additional structural limitations, and would be an inherent property of the composition of claim 1. Also, as noted above, Bergstrom explicitly teaches that the incorporation of universal bases increases the effective specific activity of the oligonucleotide to the correct target (Ans. 5; Bergstrom, col. 2, ll. 45-47).

We also do not agree with Appellants that Bergstrom teaches away from the combination of Tormo, and Jäschke with Bergstrom. “Under the proper legal standard, a reference will teach away when it suggests that the developments flowing from its disclosures are unlikely to produce the objective of applicant’s invention. A statement that a particular combination is not a preferred embodiment does not teach away absent clear discouragement of that combination.” *Syntex (USA) LLC v. Apotex, Inc.*, 407 F.3d 1371, 1380 (Fed. Cir. 2005) (citations deleted). Here, Bergstrom specifically teaches that the universal bases may be used in antisense oligonucleotides, and thus does not teach away from the combination.

As to Rejections 2 and 3, Appellants argue that neither Torrence nor Krupp remedy the deficiencies of the combination of Bergstrom, Tormo, and Jäschke (App. Br. 10-11). Those arguments are not found to be convincing for the reasons set forth above with respect to claim 1.

SUMMARY

We affirm the rejection of claims 1 over the combination of Bergstrom, Tormo, and Jäschke. Claims 2-4, 7-9, 22-29, 31, 34, 37-40, 43, and 44 fall with that claim.

We also affirm the rejection of claims 35 and 41 over the combination of Bergstrom, Tormo, and Jäschke, as further combined with Torrence; and the rejection of claims 36 and 42 over the combination of Bergstrom, Tormo, and Jäschke as further combined with Krupp.

TIME PERIOD FOR RESPONSE

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.R.R. § 1.136(a)(1)(iv).

AFFIRMED

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