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Benjamin Aaron Adler
ADLER & ASSOCIATES
8011 Candle Lane
Houston, TX 77071

EXAMINER

NEGIN, RUSSELL SCOTT

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte SUZANNE KLIMBERG and LARRY SUVA

Appeal 2014-009712
Application 11/332,702
Technology Center 1600

Before FRANCISCO C. PRATS, JEFFREY N. FREDMAN and
KRISTI L. R. SAWERT, *Administrative Patent Judges*.

PRATS, *Administrative Patent Judge*.

DECISION ON APPEAL

This appeal under 35 U.S.C. § 134(a) involves claims to a method of identifying protein patterns that are diagnostic for breast cancer. The Examiner rejected the claims for obviousness.

We have jurisdiction under 35 U.S.C. § 6(b). We reverse the Examiner's obviousness rejection. Pursuant to 37 C.F.R. § 41.50(b), however, we enter a new ground of rejection under 35 U.S.C. § 101.

STATEMENT OF THE CASE

The sole rejection before us for review is the Examiner's rejection of claims 1 and 4, under 35 U.S.C. § 103(a), for obviousness over Morris,¹

¹ WO 98/35229 A1 (published Aug. 13, 1998).

Zwick,² and Hitt³ (Final Action 4–9).⁴

Claims 1 and 4 are on appeal and read as follows (Br. 12–13):

Claim 1: A method of identifying protein pattern(s) that is diagnostic for breast cancer in an individual, comprising the steps of:
obtaining a tear sample from an individual with breast cancer;
acquiring protein profile data during surface-enhanced laser desorption/ionization time-of-flight mass spectrometry performed on said individual's tear sample and on a control tear sample, said acquired data optimized for protein molecular weights in the range of about 1 kDa to about 40 kDa;

comparing the acquired protein profile in said individual's tear sample with the acquired protein profile of said control tear sample to detect proteins that are differentially present in said individual's tear sample with respect to said control tear sample; and

indicating that said individual has an increased risk of having breast cancer compared to said control,

wherein pattern(s) comprising the protein profile containing at least one protein that displays a peak at

a mass-to-charge ratio of about 35,000 of statistically greater intensity than the corresponding peak in said control tear sample;

a mass-to-charge ratio within the range of 6,000 to 7,000 of statistically greater intensity than the corresponding peak in said control tear sample; or

a mass-to-charge ratio within the range of 3,750 to 6,000 of statistically lesser intensity than the corresponding peak in said control tear sample,

or a combination thereof;

wherein the presence of said peak(s) is diagnostic for at least a risk of having breast cancer.

Claim 4: The method of claim 1, wherein said control sample is from a healthy individual.

² US 2004/0033613 A1 (published Feb. 19, 2004).

³ US 2003/0004402 A1 (published Jan. 2, 2003).

⁴ Final Action entered June 14, 2013.

OBVIOUSNESS

The Examiner cited Morris as describing a method of diagnosing diseases, including breast cancer, by analyzing the proteins present in tears. Final Action 5. The Examiner found that Morris differs from Appellants' claim 1 in a number of respects, including in that Morris does not use the surface-enhanced laser desorption/ionization time-of-flight mass spectrometry ("SELDI-TOF") technique required by claim 1 to analyze its tear samples. *Id.* at 6.

To address that deficiency, the Examiner cited Zwick as using SELDI-TOF in protein profiling methods in which the protein profile in a test sample, which may be saliva, is compared to a control sample from a different individual, thereby diagnosing diseases, including breast cancer. *Id.* The Examiner found that Figure 3 of Zwick, displaying data from cancer patients, exhibited at least one peak having a mass-to-charge ratio meeting claim 1's requirement of detecting a peak having a mass-to-charge ratio of about 35,000, the detected peak having a statistically greater intensity than the corresponding peak in a control sample. *Id.* at 7.

The Examiner cited Hitt as evidence that SELDI-TOF was known in the art to be a suitable technique for generating data from biological samples, including from saliva and tears. *Id.*

Based on the references' teachings, the Examiner concluded that it would have been obvious to use SELDI-TOF in the analytical methods taught by Morris, and to compare the SELDI-TOF profile from a tear sample from a healthy control to an individual with cancer. *Id.* at 8–9.

As stated in *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992):

[T]he examiner bears the initial burden . . . of presenting a *prima facie* case of unpatentability. . . .

After evidence or argument is submitted by the applicant in response, patentability is determined on the totality of the record, by a preponderance of evidence with due consideration to persuasiveness of argument.

Appellants argue, among other things, that “the data reported by *Zwick et al.* based on SELDI-TOF analysis of saliva does not teach any of three specific peaks required by Applicant’s claims.” Br. 9.

The Examiner responds that “Figure 3 of *Zwick* teaches mass to charge ratios of ABOUT 35,000.” Ans. 2.

We find that Appellants have the better position.

Claim 1 requires comparing (a) the SELDI-TOF protein profile obtained from a tear sample of an individual with breast cancer to (b) the SELDI-TOF protein profile obtained from a control tear sample obtained from another individual, “to detect proteins that are differentially present in [the breast cancer] individual’s tear sample with respect to [the] control tear sample.” Br. 12. The difference in protein profiles “indicat[es] that said individual has an increased risk of having breast cancer compared to said control.” *Id.*

Claim 1 requires the protein profile from the individual with breast cancer to display at least one protein at a statistically greater intensity than the corresponding peak from the control tear sample. *Id.* Among those differentially detected proteins, claim 1 includes a protein with a mass-to-charge ratio of about 35,000. *Id.*

The Examiner does not persuade us that Figure 3 of Zwick displays a protein with a mass-to-charge ratio of about 35,000 of statistically greater intensity than the corresponding peak in other samples shown in the Figure. As the Examiner notes, Figure 3 of Zwick shows SELDI-TOF spectra from 8 cancer patients, “4 class I and 4 class II.” Zwick ¶ 18.

At best, however, the highest values shown in Figure 3 of Zwick are about 25,000. *See* Zwick Fig. 3. Thus, not only does Figure 3 not show any peaks at 35,000, the highest possible peak Figure 3 might show has a mass to charge ratio about 10,000 less than 35,000. Because the Examiner does not identify specifically which peaks allegedly meet the requirement in claim 1, and because the highest possible peak shown in Figure 3 differs by nearly one-third from the value recited in claim 1, the Examiner does not persuade us that Zwick’s Figure 3 shows a peak encompassed by claim 1.

We recognize that claim 1 uses the term “about 35,000” to describe the detected peak. Br. 9.

As our reviewing court has explained, “use of the word ‘about,’ avoids a strict numerical boundary to the specified parameter.” *Ortho-McNeil Pharmaceutical, Inc. v. Caraco Pharmaceutical Laboratories, Ltd.*, 476 F.3d 1321, 1326 (Fed. Cir. 2007).

However, “the word ‘about’ does not have a universal meaning in patent claims[;]” rather, “the meaning depends on the technological facts of the particular case.” *Pall Corp. v. Micron Separations, Inc.*, 66 F.3d 1211, 1217 (Fed. Cir. 1995); *see also Eiselstein v. Frank*, 52 F.3d 1035, 1039 (Fed. Cir. 1995) (“The meaning of the word ‘about’ is dependent on the facts of the case, the nature of the invention, and the knowledge imparted by the totality of the . . . disclosure to those skilled in the art.”).

Thus, in evaluating the scope of “about,” it is appropriate to look to how the Specification and other claims use the term, as well as considering the effects of varying the parameter described by the term. *Pall Corp.*, 66 F.3d at 1217.

In the instant case, the Examiner does not explain persuasively why a skilled person in this art, viewing the totality of Appellants’ disclosure, would consider the term “about” to encompass a value that differs by nearly one-third from the claim-recited value. Given that Figure 3 of Zwick shows many different peaks within a span of 10,000, the Examiner does not persuade us that varying the mass-to-charge ratio by 10,000 would be insignificant. To the contrary, if “about” encompassed a range of plus or minus 10,000 as the Examiner seems to posit, most of the peaks shown in Zwick’s Figure 3 would be effectively indistinguishable.

In sum, because we are not persuaded, for the reasons discussed, that the Examiner has explained persuasively why the cited combination of Morris, Zwick, and Hitt teaches or suggests all of the features required by claim 1, we reverse the Examiner’s rejection of that claim, and its dependent claim 4, over those references.

NEW GROUND OF REJECTION

Under the provisions of 37 C.F.R. § 41.50(b), we enter the following new ground of rejection:

Claims 1 and 4 are rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter.

At the outset, we note that the Examiner withdrew a rejection of claims 1 and 4 for non-statutory subject matter under § 101. Final Action 2.

For the reasons discussed below, however, we conclude that it was not appropriate to withdraw that rejection.

35 U.S.C. § 101 states that “[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.”

The Supreme Court has “long held that this provision contains an important implicit exception: Laws of nature, natural phenomena, and abstract ideas are not patentable.” *Alice Corp. Pty. Ltd. v. CLS Bank Intern.*, 134 S.Ct. 2347, 2354 (2014).

In *Mayo Collaborative Services v. Prometheus Labs, Inc.*, 132 S.Ct. 1289 (2012), the Supreme Court held ineligible under § 101 claims directed to a process of optimizing the efficacy of a drug treatment. In particular, the claims recited administering a specific drug to a subject, and determining the level of a particular metabolite in the subject, with the determined level of the metabolite indicating whether the amount of the drug should be increased or decreased. *Id.* at 1295.

In concluding that the claims were ineligible subject matter under § 101, the Court explained in *Mayo* that “the claims inform a relevant audience about certain laws of nature; any additional steps consist of well-understood, routine, conventional activity already engaged in by the scientific community; and those steps, when viewed as a whole, add nothing significant beyond the sum of their parts taken separately.” *Id.* at 1298.

In the instant case, like the law of nature in *Mayo* (the correlation between the metabolite level and the need for increasing or decreasing the amount of administered drug), claims 1 and 4 involve the law of nature

discovered by Appellants, that an increased level in tears of at least one of the three proteins recited in the claims correlates with an increased likelihood of having breast cancer. As is seen by the prior art cited by the Examiner, the steps recited in Appellants' claims—obtaining a tear sample from a patient with breast cancer to perform protein profiling (*see, e.g.*, Morris, abstract and page 2), using SELDI-TOF to acquire a protein profile from a fluid sample for the purpose of diagnosing diseases such as breast cancer (*see, e.g.*, Zwick, abstract; *id.* at ¶ 15 (SELDI-TOF); *id.* at ¶ 46 (protein marker diagnostic for breast cancer); *id.* at ¶ 61 (saliva or lachrymal fluid samples)), and comparing obtained the protein profile to a control individual (Zwick ¶ 15)—were all known in the art to be applied in the type of analysis involved in Appellants' claims.

As discussed above in relation to the Examiner's obviousness rejection, the law of nature discovered by Appellants has not been shown on this record to have been known to those skilled in the art. Nonetheless, as in *Mayo*, the remainder of Appellants' claims, beyond that law of nature, consists of “well-understood, routine, conventional activity already engaged in by the scientific community.” *Mayo*, 132 S.Ct. at 1298.

Accordingly, because claims 1 and 4 are directed to the law of nature discovered by Appellants, that an increased level in tears of at least one of the three proteins recited in the claims correlates with an increased likelihood of having breast cancer, and because the remaining subject matter of the claims adds nothing to that natural law, except conventional activity which the scientific community is already engaged in, claims 1 and 4 are not directed to patentable subject matter encompassed by 35 U.S.C. § 101. We,

therefore, enter this rejection of claims 1 and 4 under § 101, for lack of statutory subject matter.

SUMMARY

For the reasons discussed, we reverse the Examiner's obviousness rejection and enter a new ground of rejection under 35 U.S.C. § 101.

TIME PERIOD FOR RESPONSE

This decision contains a new ground of rejection pursuant to 37 C.F.R. § 41.50(b) (effective Sept. 13, 2004; revised, 76 FR 72270, Nov. 22, 2011, effective Jan. 23, 2012). 37 C.F.R. § 41.50(b) provides "[a] new ground of rejection pursuant to this paragraph shall not be considered final for judicial review.

37 C.F.R. § 41.50(b) also provides that the appellant, WITHIN TWO MONTHS FROM THE DATE OF THE DECISION, must exercise one of the following two options with respect to the new ground of rejection to avoid termination of the appeal as to the rejected claims:

(1) *Reopen prosecution.* Submit an appropriate amendment of the claims so rejected or new evidence relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the proceeding will be remanded to the examiner

(2) *Request rehearing.* Request that the proceeding be reheard under § 41.52 by the Board upon the same record

REVERSED, 37 C.F.R. § 41.50(b)