UNITED STATES PATENT AND TRADEMARK OFFICE

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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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Ex parte JOHN McLAUGHLIN, ZACHARY PINCUS, and
JIM BERNSTEIN[1]

_____

Appeal 2017-001478
Application 12/985,237
Technology Center 1600

_____

Before ERIC B. GRIMES, JOHN G. NEW, and RICHARD J. SMITH,
Administrative Patent Judges.

GRIMES, *Administrative Patent Judge.*

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 involving claims relating to a

screening method, which have been rejected as directed to ineligible subject

matter, anticipated, and obvious. We have jurisdiction under 35 U.S.C.

§ 6(b).

We reverse.

_____

[1] Appellants identify the Real Party in Interest as Rigel Pharmaceuticals, Inc.
Appeal Br. 3.

STATEMENT OF THE CASE

Claims 1, 2, and 4–21 are on appeal. Claims 1 and 16 are illustrative and read as follows:

1. A screening method comprising:

a) contacting a population of test cells with a test compound to provide contacted test cells;

b) obtaining values for a plurality of cytological attributes of said contacted test cells;

c) determining whether the phenotype of the test cells matches the phenotype of cells that have been treated with a compound having known mode of action, wherein the determining is done by:

(i) obtaining a set of classifiers for a plurality of compounds of known mode of action, wherein the classifiers are defined using values for said cytological attributes obtained from cells that have been contacted with compounds of known mode of action; and

(ii) calculating a likelihood score indicating the likelihood that the values obtained for the contacted cells match a classifier of the set of classifiers,

wherein an increased likelihood score increases the confidence that the phenotype of the test cells matches the phenotype of cells that have been treated with a compound having known mode of action, and

d) identifying the test compound as having a desired mode of action, wherein said test compound has a profile of likelihood scores that is similar to that of a compound of known mode of action.

16. A method for providing a phenotypic classifier, comprising:

a) contacting a first population of cells with a first compound having a first known mode of action to provide a first population of contacted cells; and

b) contacting a second population of cells with a second compound having a second known mode of action to provide a second population of contacted cells;

c) obtaining values for a plurality of cytological attributes of:

i. said first population of contacted cells,

ii. said second population of contacted cells, and
iii. an untreated population of cells, and
d) identifying ranges of values for each of said cytological attributes that, together, distinguish said first population of contacted cells from said second population of contacted cells and said untreated population of cells.

The claims stand rejected as follows:

Claims 1, 2, and 4–21 under 35 U.S.C. § 101 as directed to patent-ineligible subject matter (Ans. 4);

Claims 16, 17, and 19–21 under 35 U.S.C. § 102(b) as anticipated by Adams[2] (Ans. 7);

Claims 1, 2, and 4–11 under 35 U.S.C. § 103(a) as obvious based on Adams, Callahan,[3] Gama,[4] and Jones[5] (Ans. 11); and

Claim 18 under 35 U.S.C. § 103(a) as obvious based on Adams.

I

The Examiner has rejected claims 1, 2, and 4–21 as directed to patent-ineligible subject matter. The Examiner finds that

> elements of claim 1 are directed to a JE [judicial exception], for example, the abstract ideas of "obtaining values . . . ," "determining whether the phenotype . . . matches . . . ," "obtaining a set of classifiers . . . ," "calculating a likelihood score . . ." and "identifying . . . ," which are claimed as a combination of mathematical steps operating entirely on data

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[2] Adams, 2007/0082327 A1, published Apr. 12, 2007.
[3] Callahan, US 2009/0285469 A1, published Nov. 19, 2009.
[4] Gama, *Combining Classifiers by Constructive Induction*, 1398 Machine Learning 178–189 (1998).
[5] Jones, *Predicting Gene Function from Images of Cells*, Dissertation, MASSACHUSETTS INSTITUTE OF TECHNOLOGY, 1–118 (2007).

(e.g. mathematical operations and logical comparisons). Each of these elements represents an abstract idea.

Ans. 4 (emphasis omitted).

The Examiner finds that "the additional elements in **claim 1**, other than the JE, amount to no more than: conventional experimental and data gathering steps routinely practiced in the art." *Id.*

Appellants argue that the "claims are directed to methods that endeavor to solve problems during drug discovery. In particular, the present claims help determine how drug candidates act in a biological system. The ability to determine how drug candidates act is paramount to high-throughput identification of candidates which may further be developed into therapeutics." Appeal Br. 7. Specifically, Appellants argue that the claimed methods "represent functional and palpable applications in the field of high-throughput drug discovery with specific improvements to technologies in the same." *Id.* at 8.

We agree with Appellants that the Examiner has not shown that the claims are directed to patent-ineligible subject matter. "[T]he examiner bears the initial burden, on review of the prior art or on any other ground, of presenting a *prima facie* case of unpatentability. *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992).

Here, the Examiner has pointed to "elements of claim 1 [that] are directed to a[n] . . . . abstract idea[]." Ans. 4. However, the analysis under § 101 begins with the issue of "whether *the claims* at issue are directed to one of those patent-ineligible concepts." *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2355 (2014) (emphasis added). The fact that the claims include elements that, by themselves, would not be eligible for

patenting does not make the claims as a whole patent-ineligible. *See id.* at 2358 ("[W]e held that a computer-implemented process for curing rubber was patent eligible. . . . The claim employed a 'well-known' mathematical equation, but it used that equation in a process designed to solve a technological problem in 'conventional industry practice.'" (citing *Diamond v. Diehr*, 450 U.S. 175 (1981)).

For example, claim 1 requires: (1) contacting a first and second population of cells with, respectively, a first and second compound; (2) obtaining values for a plurality of cytological attributes of the contacted test cells; (3) determining whether the phenotype of the test cells matches the phenotype of cells that have been treated with a compound having a known mode of action; and (4) evaluating the degree of confidence that the phenotype of the test cells matches the phenotype of cells that have been treated with a compound having known mode of action. Steps 1–3 require the performance of physical tests to determine the responses of two groups of test cells to determine whether the test compounds emulate the known mode of action of other, known, test compounds. Although step (4) may involve a mental process of evaluation (i.e., an abstract idea), we are not persuaded that the Examiner's conclusory finding that all of the remaining steps are directed to no more than "abstract ideas" are persuasive, because the Examiner's findings have not persuaded us that these are steps that, as abstract ideas, could be performed mentally, or that they do not add significantly more to the claim than the mere abstract idea itself. *See Gottschalk v. Benson*, 409 U.S. 63, 67 (1972) (holding that: "Phenomena of nature, though just discovered, mental processes, and abstract intellectual

concepts are not patentable, as they are the basic tools of scientific and technological work"); *but see also Mayo Collaborative Servs. v. Prometheus Labs, Inc.*, 566 U.S. 66 (2012) (recognizing that: "For all inventions at some level embody, use, reflect, rest upon, or apply laws of nature, natural phenomena, or abstract ideas").

We therefore conclude that the Examiner has not made a prima facie case that the claims as a whole are directed to patent-ineligible subject matter, and we reverse the rejection based on 35 U.S.C. § 101.

II

The Examiner has rejected claims 16, 17, and 19–21 as anticipated by Adams. The Examiner finds that Adams discloses all of the limitations of claim 16, including contacting cells with "compounds having known modes of action." Ans. 7.

Appellants argue that "[a]s defined in the instant specification, page 5 lines 21-22, the term 'mode of action' refers to 'a specific biochemical interaction through which a bioactive agent produces a pharmacological effect.[']". Appeal Br. 12. Appellants argue that

> Adams teaches the use of, e.g. "mp2 stimulus compounds" or
> "rice compounds" which are compounds that induce the mp2 or
> rice phenotype in contacted cells, respectively. . . . Adams is
> only interested in identifying a particular class of novel
> compounds that induce the mp2 phenotype (Adams, ¶38).
> Hence, Adams' mp2 and rice compounds are of unknown mode
> of action and are defined purely in terms of the mp2 and rice
> phenotypes they induce.

Id. at 13.

We agree with Appellants that the Examiner has not shown that Adams discloses all of the limitations of claim 16 under the broadest reasonable interpretation of the claim language. Adams discloses its "invention relates to specific phenotypes and the cells that exhibit these phenotypes." Adams ¶ 6. "The phenotype is referred to as the mp2 phenotype." *Id.* ¶ 7. "Typically, the mp2 phenotype will be produced by applying a stimulus to the cell or cell population that does not initially exhibit the mp2 phenotype." *Id.* ¶ 9.

Adams discloses experiments in which "cell populations [were] treated with two different mp2 stimulus compounds at various concentrations, as well as on DMSO-treated (control) cells, cells treated with 0.5 µM Taxol, and cells treated with compounds that produce a rice phenotype. (Rice compounds are another class of mitotic inhibitors.[)]" *Id.* ¶ 71. Adams does not, however, identify the mp2 stimulus compounds that were used, nor does it identify the biochemical interaction through which it produces its effect. Thus, reading claim 16 in light of the express definition of "mode of action" in the Specification, we conclude that Adams does not disclose contacting cells with "compounds having known modes of action."

We therefore reverse the rejection under 35 U.S.C. § 102(b).

III

The Examiner has rejected claims 1, 2, and 4–11 as obvious based on Adams, Callahan, Gama, and Jones. The Examiner has rejected claim 18 as obvious based on Adams. Each of these rejections relies on the Examiner's finding that Adams discloses compounds having a "known mode of action"

(Ans. 14), which, for the reasons discussed above, we disagree with. We therefore reverse the rejections under 35 U.S.C. § 103(a).

SUMMARY

We reverse all of the rejections on appeal.

REVERSED