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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/382,624	09/03/2014	Ratnakar Asolkar	MOI-42030-US	8371
134653	7590	12/08/2020	EXAMINER	
The Law Offices of Chainey P. Singleton Marrone Bio Innovations, Inc. 8330 LBJ Freeway Suite B245 Dallas, TX 75243			WHITE, DOUGLAS F	
			ART UNIT	PAPER NUMBER
			1653	
			NOTIFICATION DATE	DELIVERY MODE
			12/08/2020	ELECTRONIC

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte RATNAKAR ASOLKAR, ANA-LUCIA CORDOVA-KREYLOS,
MARJA KOIVUNEN, MARGARITA RODRIGUEZ,
LIJUAN XING, and PAMELA MARRONE

Appeal 2020-003149
Application 14/382,624
Technology Center 1600

Before JOHN E. SCHNEIDER, RYAN H. FLAX, and
RACHEL H. TOWNSEND, *Administrative Patent Judges*.

FLAX, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134(a) involving claims to a composition that has pesticidal or plant growth modulating activity. Appellant appeals the rejection of claims 3–5, 14, and 16 under 35 U.S.C. § 101.^{1,2} We have jurisdiction under 35 U.S.C. § 6(b).

We reverse.

¹ “Appellant” herein refers to the “applicant” as defined by 37 C.F.R. § 1.42. Appellant identifies “Ivy Investment Management Company” as the real party-in-interest. Appeal Br. 2.

² Oral argument was heard on November 16, 2020; a transcript of the hearing is, or will be made, a part of the record.

STATEMENT OF THE CASE

Claim 3 is the independent claim on appeal and is reproduced below:

3. A composition comprising
 - (a) a whole cell broth collected from *Flavobacterium* sp. H492 (NRRL Accession No. B-50584) agitated fermentation, and
 - (b) a carrier, diluent, surfactant or adjuvant;wherein said composition has pesticidal or plant growth modulating activity.

Appeal Br. 31 (Claims Appendix).

The Specification states that “[n]atural products are substances produced by microbes, plants, and other organisms” and that “natural product pesticides have a potential to play an important role in controlling pests in both conventional and organic farms.” Spec. 1:12–18. The Specification indicates that “metabolites produced by microbes (bacteria, actinomycetes and fungi) provide novel chemical compounds which can be used either alone or in combination with known compounds to effectively control insect pests and to reduce the risk for resistance development,” and goes on to list many bacterial species, including certain *Flavobacterium*, that are known to produce such toxins. Spec. 1:19–22, 3:7–26, 5:10–6:28.

The following rejection is on appeal:

Claims 3–5, 14, and 16 stand rejected under 35 U.S.C. § 101 as directed to a judicial exception to patentability, i.e., “a natural product,” without significantly more. Final Action 2; *see also* Answer 3, 5 (withdrawing all other rejections).

DISCUSSION

I. LEGAL STANDARDS

“[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. [Once] that burden is met, the burden of coming forward with evidence or argument shifts to the applicant.” *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992).

An invention is patent-eligible if it claims a “new and useful process, machine, manufacture, or composition of matter.” 35 U.S.C. § 101. However, the U.S. Supreme Court has interpreted 35 U.S.C. § 101 to include implicit exceptions: “[l]aws of nature, natural phenomena, and abstract ideas” are not patent-eligible. *See, e.g., Alice Corp. v. CLS Bank Int’l*, 573 U.S. 208, 216 (2014).

In determining whether a claim falls within an excluded category, we are guided by the Court’s two-part framework, described in *Mayo* and *Alice*. *Id.* at 217–18 (citing *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 75–77 (2012)). In accordance with that framework, we first determine to what concept the claim is “directed.” *See Alice*, 573 U.S. at 219 (“On their face, the claims before us are drawn to the concept of intermediated settlement, *i.e.*, the use of a third party to mitigate settlement risk.”); *see also Bilski v. Kappos*, 561 U.S. 593, 611 (2010) (“Claims 1 and 4 in petitioners’ application explain the basic concept of hedging, or protecting against risk.”).

If the claim is “directed to” an abstract idea or law of nature or natural phenomenon, we turn to the next step of the *Alice* and *Mayo* framework, where “we must examine the elements of the claim to determine whether it

contains an ‘inventive concept’ sufficient to ‘transform’ the claimed abstract idea [or law of nature or natural phenomenon] into a patent-eligible application.” *Alice*, 573 U.S. at 221 (internal quotation marks omitted). For example, “[a] claim that recites an abstract idea must include ‘additional features’ to ensure ‘that the [claim] is more than a drafting effort designed to monopolize the [patent-ineligible concept].’” *Id.* (alterations in original) (quoting *Mayo*, 566 U.S. at 77).

In January 2019, the U.S. Patent and Trademark Office (USPTO) published revised guidance on the application of § 101. *See 2019 Revised Patent Subject Matter Eligibility Guidance*, 84 Fed. Reg. 50 (Jan. 7, 2019) (“Revised Guidance”).³ “All USPTO personnel are, as a matter of internal agency management, expected to follow the guidance.” *Id.* at 51; *see also* October 2019 Update at 1. Under the Revised Guidance and the October 2019 Update, (as “Step 2A”) we first look to whether the claim recites:

- (1) any judicial exceptions, including certain groupings of abstract ideas (i.e., mathematical concepts, certain methods of organizing human activity such as a fundamental economic practice, or mental processes) (“Step 2A, Prong One”); and
- (2) additional elements that integrate the judicial exception into a practical application (*see* MPEP §§ 2106.05(a)–(c), (e)–(h) (9th ed. Rev. 08.2017, Jan. 2018)) (“Step 2A, Prong Two”).⁴

³ The Office issued further guidance on October 17, 2019, clarifying the Revised Guidance. USPTO, *October 2019 Update: Subject Matter Eligibility* (the “October 2019 Update”) (available at https://www.uspto.gov/sites/default/files/documents/peg_oct_2019_update.pdf).

⁴ This includes (a) identifying whether there are any additional elements recited in the claim beyond the judicial exception, and (b) evaluating those additional elements individually and in combination to determine whether the claim as a whole integrates the exception into a practical application. *See Revised Guidance — Section III(A)(2)*, 84 Fed. Reg. at 54–55.

Revised Guidance, 84 Fed. Reg. at 52–55.

Only if a claim (1) recites a judicial exception and (2) does not integrate that exception into a practical application, do we then look, under Step 2B, to whether the claim:

(3) adds a specific limitation beyond the judicial exception that is not “well-understood, routine, conventional” in the field (*see* MPEP § 2106.05(d)); or

(4) simply appends well-understood, routine, conventional activities previously known to the industry, specified at a high level of generality, to the judicial exception.

Revised Guidance, 84 Fed. Reg. at 52–56.

With these standards in mind, we address the Examiner’s rejection and Appellant’s arguments thereover.

II. ANALYSIS

The Examiner determines that the claims “are directed to a natural product (i.e., a law of nature/a natural phenomenon)” and “do not include additional elements that are sufficient to amount to significantly more than the judicial exception.” Final Action 2. The Examiner determines that the claimed whole cell broth collected from *Flavobacterium* sp. H492 (NNRL Accession No. B-50584) fermentation results in a product that is “not markedly different from its naturally-occurring counterpart because there is no indication that the extract composition has any characteristics or properties that are different from the naturally-occurring counterpart” and “there is no indication that the instantly claimed preparatory steps have caused the resulting composition to have any characteristics that are different from the naturally-occurring counterpart.” *Id.* at 2–3.

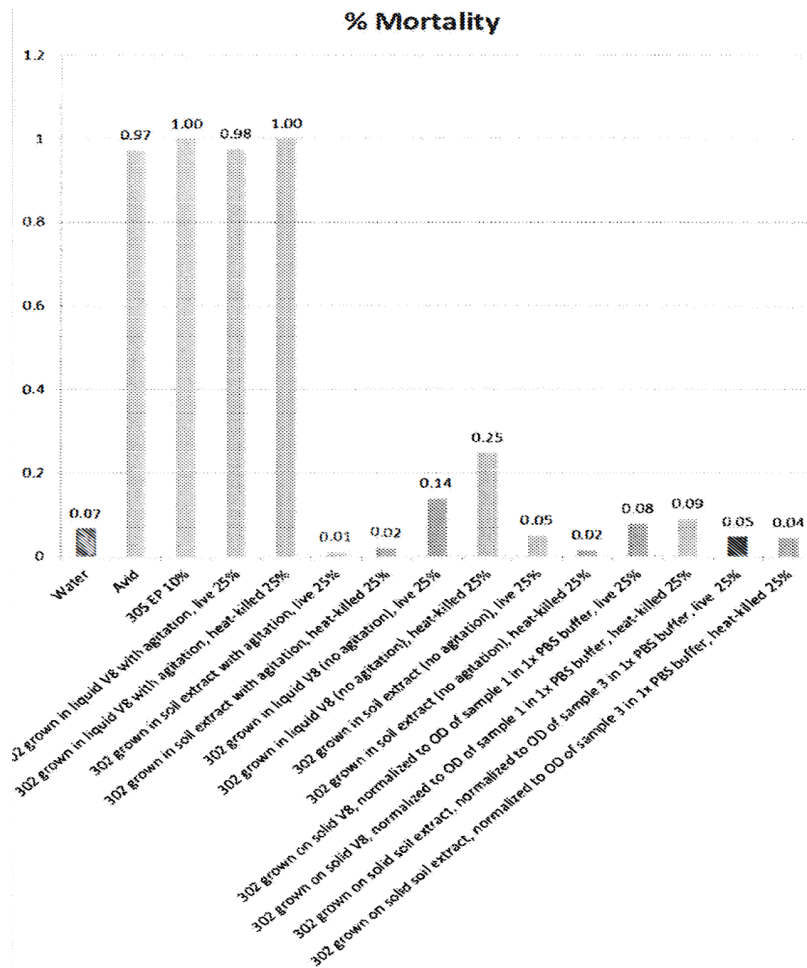
Appellant presents evidence, which we discuss further below, in support of its position that the claimed composition is different from any

found in nature due to the processing technique of “agitated fermentation,” as claimed. *See* Appeal Br. 12–16. The Examiner’s response to this evidence is that a tested “embodiment of *Flavobacterium* sp. H492 (MBI-302) + soil extract + agitation (reads on agitated fermentation),” meaning this bacteria sample was fermented in soil while agitating, resulted in “only . . . 1-2% killing activity,” and because this process “is within the scope of the instant claims” the claimed invention “is not markedly different from its naturally-occurring counterpart.” Answer 5. The Examiner relies on the determination “that the soil extract reads on fermentation media,” meaning it is his understanding that agitated fermentation of bacteria in soil is a natural occurrence within the scope of the claims. *Id.*

In response to the Examiner’s rejection, Appellant argues that “[t]he present invention is directed to a man-made, post-fermentation bacterial broth that has different properties than the natural bacteria,” because the claimed properties of the whole cell broth of “pesticidal or plant growth modulating activity” are exhibited only as a result of the claimed “agitated fermentation,” and are not exhibited under natural conditions. Appeal Br. 12–16. In support of this position, Appellant submits the 35 U.S.C. § 101 Rule 1.132 Declaration of Dr. Amit Vasavada, dated March 15, 2018 (“Vasavada Declaration”).

Dr. Vasavada states “that under natural conditions *Flavobacterium* sp. H492 (MBI-302) was unable to produce nematicidal compounds that resulted in a high mortality of nematodes,” but under “the claimed conditions *Flavobacterium* sp. H492 (MBI-302) was able to produce nematicidal compounds that resulted in a high mortality of nematodes.” Vasavada Declaration ¶¶ 30–31. Dr. Vasavada included data of the results

of testing the nematicidal (pesticidal) properties of *Flavobacterium* sp. cells cultured under various conditions, which show that only such bacteria that underwent agitated fermentation (grown in liquid V8 with agitation) exhibited pesticidal activity. *Id.* at Table 1. The data show that natural bacteria, without undergoing such agitated fermentation (e.g., grown in soil with or without agitation, grown in V8 without agitation), did not have such activity. Table 1, reproduced below, is a graph illustrating the experimental data, as follows:



As shown above, the fourth and fifth bars from the left illustrate pesticidal activity of bacteria cultured via agitated fermentation. Vasavada Declaration

¶¶ 23–25. Each bar thereafter to the right represents an omission of either the fermentation or the agitation from processing, and some test examples indicate culturing in soil, seeking to replicate natural conditions. *Id.*

We find Appellant’s evidence persuasive. Upon analyzing the claims pursuant to the *Alice/Mayo* steps and the Office’s Revised Guidance, as set forth above, we conclude that Appellant demonstrates that the claimed composition exhibits phenotypic differences compared to what would be exhibited by a similar, natural composition, which are due to processing by agitated fermentation, as claimed. Thus, contrary to the packaged bacteria of *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127 (1948), the bacterial species of the claims here does not have “the same effect it always had” and does not “perform in [its] natural way.” *Funk Bros.*, 333 U.S. at 131. And, unlike the cloned sheep of *In re Roslin Inst. (Edinburgh)*, 750 F.3d 1333 (Fed. Cir. 2014), the claimed composition “possesses ‘markedly different characteristics from any found in nature,’” in the form of phenotypic differences that have come about by the effort of the inventors, not independently as a natural phenomenon. *In re Rosslin*, 750 F.3d at 1336.

The Examiner has not explained why culturing the claimed bacterial species in agitated soil would constitute the claimed agitated fermentation. Further, the Examiner has not explained how or where the claimed bacteria would naturally experience the claimed agitated fermentation. Moreover, the Examiner has not provided evidence showing that any naturally occurring sample of the claimed bacterial species exhibits the claimed “pesticidal or plant growth modulating activity.” In other words, there is no evidence of record that contradicts Appellant’s evidence, as set forth in the Vasavada Declaration.

For these reasons, we find that the claims are do not recite a law of nature or natural phenomenon under Step 2A, Prong One, and we need analyze the issue no further. We reverse the rejection of the claims as directed to patent ineligible subject matter.

CONCLUSION

In summary:

Claims Rejected	35 U.S.C. §	Basis	Affirmed	Reversed
3-5, 14, 16	101	Eligibility		3-5, 14, 16

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)(1)(iv).

REVERSED