

No.

IN THE
Supreme Court of the United States

STEPHEN THALER,

Petitioner,

v.

KATHERINE K. VIDAL, Under Secretary of Commerce
for Intellectual Property and Director of the United
States Patent and Trademark Office;

UNITED STATES PATENT AND TRADEMARK OFFICE,

Respondents.

ON PETITION FOR A WRIT OF CERTIORARI TO
THE UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

PETITION FOR A WRIT OF CERTIORARI

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QUESTION PRESENTED

“The primary meaning of the word ‘invention’ in the Patent Act unquestionably refers to the inventor’s conception.” *Pfaff v. Wells Elecs., Inc.*, 525 U.S. 55, 60 (1998). Here, it is undisputed that an artificial intelligence (AI) system known as DABUS used generalized background knowledge of a technical field to conceive of two novel inventions and then recognize their utility, all without specific guidance from a human being. Thus, only DABUS fits the statutory definition of “inventor” under the Patent Act: the “individual ... who invented or discovered the subject matter of the invention.”

Nevertheless, the U.S. Patent and Trademark Office rejected patent applications on both inventions solely because the inventor listed in the applications was an AI system rather than a human being. The Federal Circuit, like the district court below it, upheld that rejection on the same basis. As both parties agree, this holding—which overlooks that “individual” may simply refer to a single entity as opposed to a collective such as a corporation or government—completely denies patent protection to any and all inventions created by an AI system without a human inventor.

The question presented is:

Does the Patent Act categorically restrict the statutory term “inventor” to human beings alone?

RELATED PROCEEDINGS

Thaler v. Vidal, No. 21-2347 (Fed. Cir. judgment entered Aug. 5, 2022)

Thaler v. Hirshfeld, No. 1:20-cv-00903-LMB-TCB (E.D. Va. judgment entered Sept. 2, 2021)

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INTRODUCTION

The Founders charged Congress with “promot[ing] the Progress of Science and useful Arts” by creating proper incentives for innovation. U.S. Const. art. I, § 8, cl. 8. Congress responded with broad patent protections, promising that any person that “*invents or discovers* any new and useful process, machine, manufacture, or composition of matter ... may obtain a patent therefor.” 35 U.S.C. § 101 (emphasis added). And it extended that protection to every invention made by an “inventor”—a term Congress defined as the “individual ... who invented or discovered the subject matter of the invention.” 35 U.S.C. § 100(f). By defining “inventor” in functional terms, Congress indicated its intent to extend patent protection broadly, to any sufficiently new and useful invention.

The Federal Circuit, however, has determined that an entire category of inventions does not qualify, no matter how new and useful they may be. In this case, an artificial intelligence (AI) system called DABUS learned no more than background knowledge of scientific disciplines and then arrived at two separate inventions, one for an innovative emergency beacon, and another for an innovative container for liquids. Yet the U.S. Patent and Trademark Office (USPTO) rejected patent applications on both, and the district court and Court of Appeals upheld that rejection on judicial review. Neither the agency nor the courts below dispute that DABUS conceived of these inventions autonomously, acting with no inventive contribution from its owner or any other human being. Nor has the government raised any challenge to the novelty or utility of the devices

DABUS invented. Each rejection rests solely on the ground that DABUS—the entity that all accept “invented or discovered the subject matter”—is not human.

That holding runs counter to the text and structure of the Patent Act and to this Court’s precedent. Nowhere in the text of the Patent Act has Congress restricted the term “inventor”—or the word “individual” within its definition—solely to natural persons. Nor does the plain meaning of the word do so; a host of dictionaries indicate that the word “individual” refers to any singular thing, rather than a collection. And by defining “inventor” in terms of function, Congress extended patent protection to the inventions of any entity. Expansive language throughout the Patent Act only confirms this conclusion. The Federal Circuit’s reading cramps the broad intent of the statute’s drafters in ways that this Court has repeatedly counseled against. Statutes like the Patent Act employ broad language that is meant to accommodate technological change.

This case is an ideal vehicle to consider the interpretation of “inventor” and “individual” under the Patent Act. It presents a pure question of statutory interpretation, the question was fully raised and squarely addressed in the proceedings below and is outcome-determinative, and no party disputes any material fact in the record.

The question presented is exceptionally important. AI-generated inventions are upon us. They are already appearing in industries from pharmaceuticals to energy, promising more rapid and cost-

effective development of new technologies and treatments. By denying patent protection to that whole category of innovation, the decision below curtails our patent system's ability—and thwarts Congress's intent—to optimally stimulate innovation and technological progress in this country, and, in addition, does so at a moment when nations across the world are examining the same question. The Court of Appeals' ruling is wrong on a matter of great consequence, and this Court should grant review.

OPINIONS AND ORDERS BELOW

The Federal Circuit's opinion is reported at 43 F.4th 1207 and reproduced at Pet. App. 1a-13a. The Federal Circuit's denial of panel rehearing and rehearing en banc is unreported and reproduced at Pet. App. 52a-53a. The district court's decision is reported at 558 F. Supp. 3d 238 and reproduced at Pet. App. 14a-37a.

JURISDICTION

The Court of Appeals affirmed the judgment of the district court on August 5, 2022, and denied panel rehearing and rehearing en banc on October 20, 2022. On January 10, 2023, this Court granted a 60-day extension of time to file a petition for certiorari, until March 19, 2023. This Court has jurisdiction under 28 U.S.C. § 1254(1).

STATUTORY PROVISIONS INVOLVED

35 U.S.C. § 101 provides:

Whoever 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.

35 U.S.C. § 100(f) provides:

The term “inventor” means the individual or, if a joint invention, the individuals collectively who invented or discovered the subject matter of the invention.

35 U.S.C. § 115(a) provides:

An application for patent that is filed under section 111(a) or commences the national stage under section 371 shall include, or be amended to include, the name of the inventor for any invention claimed in the application. Except as otherwise provided in this section, each individual who is the inventor or a joint inventor of a claimed invention in an application for patent shall execute an oath or declaration in connection with the application.

STATEMENT OF THE CASE***An Artificial Intelligence System Makes New Discoveries, Which Petitioner Seeks To Patent***

Petitioner, Dr. Stephen Thaler, Ph.D., develops artificial intelligence systems that use machine learning to develop new concepts, products, and processes. Through “neural networks,” which simulate the way the human brain operates, these AI systems can generate inventive output on their own, without human direction or guidance.

One of the early AI systems that Dr. Thaler developed was called the Creativity Machine, which contained at least two neural networks; the first was trained with data from a particular knowledge area, and then generated novel ideas based on altering that data, while a second measured the novelty, utility, and value of the resulting ideas to identify which to pursue further. That system evolved to become DABUS, an acronym for “Device for the Autonomous Bootstrapping of Unified Sentience.” Pet. App. 16a n.3. The DABUS system includes a larger number of neural networks, each of which represents an individual concept such as “temperature,” or a positive outcome like “enjoyment” or “survival.” In supervised training, an external trainer combines individual concepts into simple consequence chains—for example, a drink at the appropriate temperature results in enjoyment. Later, in unsupervised activity, DABUS autonomously extends and combines those simple chains into more complex chains that result in positive outcomes, *e.g.*, fractal geometry increases surface area, greater surface area on a container improves grip,

improved grip promotes container functionality, greater functionality results in user enjoyment, etc.

DABUS developed two novel concepts at issue here. First, it generated the Neural Flame, an emergency light beacon that flashes in a specific pattern to attract the attention of rescuers and, thus, helps its users survive. DABUS also generated the Fractal Container, a beverage container that improves grip function and promotes heat transfer to increase the user's enjoyment. Pet. App. 16a-17a.

On July 29, 2019, Dr. Thaler filed, as the applicant and owner, two patent applications with USPTO for the Neural Flame and Fractal Container, which were assigned U.S. Application Serial Nos. 16/524,350 ('350 application) and 16/524,532 ('532 application) (collectively, the Applications). Pet. App. 15a-17a.

In the data sheets accompanying the Applications, Dr. Thaler identified the inventor's "given name" as "DABUS," and under "family name" wrote "Invention generated by artificial intelligence." Pet. App. 17a. Plaintiff included a "Statement on Inventorship" in the Applications "to explain that the inventor of the subject matter of the instant invention of the present application is an AI machine, being a type of 'creativity machine' named 'DABUS.'" Pet. App. 17a.

Petitioner also included a "Substitute Statement" under 37 C.F.R. § 1.64 in lieu of a declaration under 35 U.S.C. § 115(d), stating that the "inventor," DABUS, was "a Creativity Machine (i.e., an artificial

intelligence), with no legal personality or capability to execute this substitute statement.” Pet. App. 17a. Dr. Thaler therefore signed the substitute statement as the “the Applicant and the Assignor of the abovementioned application, as well as the owner of said Creativity Machine, DABUS.” Pet. App. 17a.

USPTO Denies The Patent Applications Because The Inventor Is Not A Human Being

After its initial review of the Applications, USPTO issued a “Notice to File Missing Parts of Non-Provisional Application.” Pet. App. 19a. USPTO gave Dr. Thaler two months to submit the missing items, noting that the “application data sheet or inventor’s oath or declaration does not identify each inventor or his or her legal name.” Pet. App. 19a. Dr. Thaler then filed a petition with USPTO’s Director under 37 C.F.R. § 1.181, asking USPTO to vacate its “Notice to File Missing Parts” and explaining why DABUS—the lone originator of the inventions claimed in each application—should be listed as the inventor. Pet. App. 19a.

Throughout the examination—and indeed throughout the legal proceedings that followed—USPTO has never disputed these factual statements, including Dr. Thaler’s unequivocal statement that DABUS, and DABUS alone, conceived of the two inventions at issue and recognized their utility.

On December 17, 2019, USPTO issued a written decision dismissing Dr. Thaler’s petition. As its sole reason for dismissal, the agency stated that “the United States patent laws do not support Petitioner’s

position that an inventor can be a machine.” Pet. App. 41a, 48a. Because it found that “a machine does not qualify as an inventor,” USPTO concluded that it had “properly issued the Notice ... noting the inventor was not identified by his or her legal name.” Pet. App. 43a, 49a-50a. Dr. Thaler sought reconsideration, which USPTO denied in a final written decision on April 22, 2020.

The District Court Holds AI-Generated Inventions Unpatentable, And The Court Of Appeals Affirms

Dr. Thaler sought review of USPTO’s decision in the Eastern District of Virginia under the Administrative Procedure Act. Pet. App. 15a-16a. Dr. Thaler sought an order compelling USPTO to reinstate the Applications and a declaration that “a patent application for an AI-generated invention should not be rejected on the basis that no natural person is identified as an inventor.” Pet. App. 16a.

After the parties filed cross-motions for summary judgment, the district court granted USPTO’s motion and denied Dr. Thaler’s request to reinstate the Applications. The district court held that, under the Patent Act, “an ‘inventor’ must be a natural person.” Pet. App. 25a.

The Court of Appeals affirmed. Pet. App. 13a. The court reasoned that, since 2011, the Patent Act has defined an “inventor” as “the *individual* or, if a joint invention, the *individuals* collectively who invented or discovered the subject matter of the invention.” Pet. App. 7a (quoting 35 U.S.C. § 100(f)).

Although the court acknowledged that the statute does not define “individual,” it stated that, when used “as a noun, ‘individual’ ordinarily means a human being, a person.” Pet. App. 7a (quoting *Mohamad v. Palestinian Auth.*, 566 U.S. 449, 454 (2012)). The court also relied on several dictionary definitions, which in its view “confirm that this is the common understanding of the word.” Pet. App. 7a.

The court held that there was “no ambiguity: the Patent Act requires that inventors must be natural persons; that is, human beings.” Pet. App. 7a. It added that its holding was supported by two prior Federal Circuit decisions, which stated that inventors must be natural persons. Pet. App. 11a (citing *Univ. of Utah v. Max-Planck-Gesellschaft zur Forderung der Wissenschaften E.V.*, 734 F.3d 1315, 1323 (Fed. Cir. 2013), and *Beech Aircraft Corp. v. EDO Corp.*, 990 F.2d 1237, 1248 (Fed. Cir. 1993)). The court acknowledged, however, that those opinions “addressed different questions—concluding that neither corporations nor sovereigns can be inventors.” Pet. App. 11a.

The court rejected Dr. Thaler’s textual arguments, which noted that several provisions of the Patent Act supported his position that “inventor” can include an AI system. Pet. App. 8a-11a. It also rejected his argument that AI-generated inventions should be patentable to support the statutory purpose of the Patent Act and constitutional purpose of patents under Article 1, Section 8, namely, to encourage innovation, public disclosure, and commercialization of inventions. Pet. App. 12a-13a.

The court concluded: “In the Patent Act, ‘individuals’—and, thus, ‘inventors’—are unambiguously natural persons.” Pet. App. 11a.

REASONS FOR GRANTING THE WRIT

I. The Decision Below Conflicts With The Text And Structure Of The Patent Act.

A. The plain text and context of the Patent Act do not restrict “inventors” to human beings alone.

In any question of statutory interpretation, this Court “begins where all such inquiries must begin: with the language of the statute itself.” *United States v. Ron Pair Enters., Inc.*, 489 U.S. 235, 241 (1989); *see also Bittner v. United States*, 143 S. Ct. 713, 719 (2023) (“To resolve who has the better reading of the law, we begin with the terms of the most immediately relevant statutory provisions.”). Here, USPTO’s rejection of the Applications, and both of the opinions below, hinge entirely upon the statutory requirement that a patent application name the “inventor” of the claimed invention. *See, e.g.*, Pet. App. 4a-5a.

But the statutory definition of “inventor” does not bar an AI system from qualifying. Under the Patent Act, “[t]he term ‘inventor’ means the individual or, if a joint invention, the individuals collectively who invented or discovered the subject matter of the invention.” 35 U.S.C. § 100(f). The Patent Act similarly defines “joint inventor” as “any 1 of the individuals who invented or discovered the subject matter of a joint invention.” 35 U.S.C. § 100(g). Neither of these

definitions speak in terms of natural persons or human beings. See *Bittner*, 143 S. Ct. at 719. Instead, both definitions turn on the role that an inventor plays in the inventive process. And neither USPTO nor the courts below denied that DABUS played the inventive role in the conception of both claimed inventions. Nor could they in the present procedural posture—as the Federal Circuit acknowledged, its analysis “must be consistent with the undisputed facts in the administrative record,” including the fact, attested to by Dr. Thaler, that DABUS alone conceived of the inventions here. Pet. App. 4a n.2, 16a-17a. For that reason—because it is undisputed that DABUS “invented or discovered the subject matter of the invention”—the decision below is inconsistent with the plain text of the statute.

The decision below claimed to find the exclusion it imposed in the word “individual.” But while both statutory provisions above use the term “individual,” neither defines it. Under such circumstances, this Court “look[s] first to the word’s ordinary meaning.” *Mohamad*, 566 U.S. at 454. And while under some circumstances “the word ‘individual’” may refer to natural persons, it does not “invariably mean[] ‘natural person’ when used in a statute.” *Id.* at 455. Instead, the *Mohamad* Court turned to its normal tools of statutory analysis, tools that show the Federal Circuit’s interpretation of the word “individual” in this context is too narrow.

Dictionary definitions support the notion that an “individual” is a single entity rather than a collective such as a corporation or government. Each dictionary examined in *Mohamad* includes among its primary

definitions, “a person” or “a particular person.” *See, e.g.*, 7 Oxford English Dictionary 880 (2d ed. 1989) (OED); Random House Dictionary of the English Language 974 (2d ed. 1987) (Random House); Webster’s Third New International Dictionary 1152 (1986). And while these dictionaries include alternate and more specific definitions, each includes at least one focusing on the singular nature of the individual—excluding collective entities such as corporations—rather than on its human or non-human nature. For example, Webster’s has for decades given “a single or particular being or thing” and “a particular being or thing as distinguished from a class, species, or collection” as its primary definitions of “individual,” before ever mentioning human beings. Webster’s Third New International Dictionary 1152 (1986); *see also* Webster’s Seventh New Collegiate Dictionary 428 (1967). Random House similarly lists “a distinct, indivisible entity; a single thing, being, instance, or item.” Random House, *supra*, 974. And the OED’s first two definitions of “individual” are “[i]nseparable things” and “[a] single object or thing ...; a single member of a natural class.” OED, *supra*, 879. Other dictionaries do much the same. Black’s Law Dictionary defines the adjective “individual” as “[e]xisting as an indivisible entity” and “[o]f or relating to a single person or thing, as opposed to a group.” Black’s Law Dictionary 843 (9th ed. 2009). And the New Oxford American Dictionary defines “individual” as “a single member of a class.” New Oxford American Dictionary 885 (3d ed. 2010).

Notably, the *Mohamad* Court supplemented its examination of dictionaries with a functional analysis of how the term “individual” is used “in everyday

parlance.” 566 U.S. at 454. And again, this Court’s examples underscore that the most relevant distinction is between single and collective entities. It noted that in ordinary use, “no one ... refers ... to an organization as an ‘individual.’” *Id.* Instead, it noted, an “individual” may “le[ave] the room” or “t[ake] the car”—things that a corporation, or the government entity under examination in *Mohamad*, is categorically incapable of doing by itself. *Id.*

Thus, as the Court noted, Congress typically uses the term “individual” to distinguish an “individual” from various collective entities. *Id.* But where Congress wants to specifically address whether an “individual” is human, it knows how to do so and uses much more specific language. For example, in one part of the Dictionary Act, Congress specifically expanded the definition of “individual” (among other terms such as “person” and “child”) to include “every infant member of the species homo sapiens who is born alive.” 1 U.S.C. § 8(a). Had Congress wished to use specific terms in the Patent Act to restrict the definition of “individual” solely to human beings, it certainly could have done so. But it did not, choosing instead to define “inventor” in functional terms and to leave the definition of “individual” open. The Court of Appeals’ decision fails to respect that drafting choice.

B. The structure and context of the Patent Act indicate that the Act recognizes a broad category of inventors.

The structure of the Patent Act further indicates that the term “inventor” encompasses a broad category of “persons,” not just human persons.

For example, in 35 U.S.C. § 103 Congress instructed that patentability cannot be denied based on “the manner in which the invention was made.” Notably, the text of § 103, though falling within a section pertaining to whether an invention is obvious in light of existing knowledge, is not expressly limited to that obviousness inquiry. Rather, it precludes any bar to “patentability” resulting solely from how the invention was conceived or discovered. As this Court recognized long ago in *Graham v. John Deere Co.*, 383 U.S. 1 (1966), that statutory sentence was intended to abolish the so-called “flash of genius” test for patentability, instead making it possible to achieve patent protection for an invention resulting from the *mechanical* process of investigating possibilities until hitting upon a new and workable invention. *See id.* at 15-16 & n.8 (the second sentence of § 103 makes it “immaterial whether [the invention] resulted from long toil and experimentation or from a flash of genius”). Yet the Court of Appeals’ decision, if left in place, would resurrect that bar, categorically denying patentability to an invention merely because it was conceived by an AI system such as DABUS rather than a human being. And it flies in the face of the fact—undisputed in the record—that DABUS both conceived of these inventions and recognized their utility.

Similarly, 35 U.S.C. § 101 provides that “[w]hoever invents or discovers” something in one of the patentable categories of inventions “may obtain a patent therefor.” This broad statement of patent eligibility is not limited to natural persons, either. Indeed, within the Patent Act, Congress used the term “whoever” to refer to both human and non-human “persons,” such

as unauthorized practitioners of a patented invention who may be held liable for infringement, *see* 35 U.S.C. § 271, and unauthorized disclosers of private patent applications, *see* 35 U.S.C. § 186. To be sure, the formulation of patent eligibility in § 101 is “subject to the conditions and requirements of this title,” but none of those conditions and requirements by their terms excludes AI systems from the set of those that may invent or discover useful innovations.

Other sections of the Patent Act likewise indicate that a broad class of “persons” can both make inventions and be disclosed as inventors. For example, § 102(a) provides that “[a] person shall be entitled to a patent” which is not anticipated by the prior art in the relevant field, and § 102(c) provides that information disclosed to co-inventors “shall be deemed to have been owned by the same person” and therefore is not considered prior art in that analysis. 35 U.S.C. § 102. Similarly, the co-inventorship provisions in § 116 refer to the inventor named in a patent application using the broad term “person.” *See* 35 U.S.C. § 116(a) (“When an invention is made by two or more persons jointly, they shall apply for patent jointly and each make the required oath...”); *see also* 35 U.S.C. § 116(c) (“Whenever through error a person is named in an application for patent as the inventor...”).

No section of the Patent Act cited by the Court of Appeals is to the contrary. The decision below opined that the Patent Act “uses personal pronouns—‘himself’ and ‘herself’—to refer to an ‘individual’” but “does not also use ‘itself,’ which it would have done if Congress intended to permit non-human inventors.” Pet. App. 8a-9a (citing 35 U.S.C. § 115(b)(2)). As discussed

in further detail below, § 115 indicates at most that Congress was not thinking about whether individuals using other pronouns might fall within its definition of “inventor.” Yet that by itself is not sufficient to place an entire category of potential inventors outside the statute’s scope. *See infra* 22. Indeed, under the Court of Appeals’ analysis, any human inventors who elected not to identify themselves using the pronoun “him” or “her” might be denied the protection of the patent laws—an absurd result that could not be Congress’s intent. And by the same token, some computerized systems (for example, digital assistants like Amazon’s “Alexa” and Apple’s “Siri”) are referred to by both their creators and the general public using gendered pronouns. Congress could not have intended inventorship to turn on which pronouns are used to describe a given inventor.

The Court of Appeals’ abbreviated analysis of § 115(b)(2) also reflects an unwarranted skepticism of AI’s capacities. While examining the requirement that an inventor submit an oath or declaration that “such individual *believes* himself or herself to be the original inventor,” the Court of Appeals carefully did not “decide whether an AI system can form beliefs” but nevertheless observed that “nothing in our record shows that one can.” Pet. App. 9a (emphasis added). Yet the question whether DABUS could form beliefs was not considered by USPTO—it raised no objection to the filed declaration—and thus was not before the Court of Appeals.¹ And as noted above, it is

¹ USPTO also did not dispute that under current law, DABUS is *legally* unable to offer a sworn oath or declaration,

undisputed that DABUS conceived of these inventions and recognized their utility.

C. Other statutes and regulations likewise reflect an expansive rather than restrictive scope of the term “individual.”

Neither do other Congressional enactments suggest that the term “individual” should exclude AI systems. To be sure, Congress has not always defined the scope of the term “individual” standing alone. But the instances where it has done so do not preclude it from encompassing AI systems.

Rather, where Congress takes up the question at all, it typically employs only inclusive language that adds to the plain meaning of the word “individual.” For example, a section of the tax code provides that “[f]or purposes of this paragraph,” certain organizations and trusts that are set up for specific defined purposes “shall be considered an individual.” 26 U.S.C. § 542(a)(2). Similarly, as noted above, the Dictionary Act makes clear that unless otherwise noted, acts of Congress referencing “individuals” apply to any human being that is born alive. Definitions such as these are expansive in nature; they do not exclude anything, including AI systems, from the scope of the term.

thus necessitating the substitute statement filed by Dr. Thaler, who is the owner of the applications and any ultimately granted patents.

Where Congress *does* wish to restrict a particular statute to apply solely to human beings, it typically does so explicitly by employing more specific language that leaves no doubt. For example, in 43 U.S.C. § 390bb(4), pertaining to water rights, Congress defined “individual” as “any natural person, including his or her spouse, and including other dependents thereof” under the tax code. Government agencies do likewise in their regulations. *See, e.g.*, 45 C.F.R. § 5b.1(e) (defining, for purposes of regulations under the Privacy Act, “[i]ndividual” as “a living person who is a citizen of the United States or an alien lawfully admitted for permanent residence”). In other instances, Congress chose instead to define narrower compound terms such as “young individual,” 42 U.S.C. § 12302(6), “homeless individual,” 42 U.S.C. § 290cc-34(2), and “individual with mental illness,” 42 U.S.C. § 10802(4), each of which turns on characteristics possessed only by human beings. Further, even when portions of the U.S. Code do limit the meaning of individual to human beings, the definition is generally accompanied by a disclaimer that it only applies to that particular statutory provision. *See, e.g.*, 43 U.S.C. § 390bb(4) (“As used in this subchapter ... [t]he term ‘individual’ means ...”). The Court of Appeals’ narrow statutory construction in this case was unwarranted.

II. The Decision Below Conflicts With This Court’s Prior Decisions.

The decision below also conflicts with the reasoning of several cases of this Court.

A. Although the Federal Circuit relied on language from *Mohamad*, 566 U.S. 449, defining “individual,” Pet. App. 7a-8a, its analysis missed the forest for the trees. In *Mohamad*, this Court considered whether two organizations (the Palestinian Authority and the Palestinian Liberation Organization) could be sued under the Torture Victim Protection Act (TVPA), which authorizes a cause of action against “[a]n individual’ for acts of torture and extrajudicial killing committed under authority or color of law of any foreign nation.” *Mohamad*, 566 U.S. at 451. The Court held that “the term ‘individual’ as used in the [TVPA] encompasses only natural persons,” and therefore “does not impose liability against organizations.” *Id.* at 451-52.

Mohamad did not consider whether the statutory term “individual” could encompass a *non-human*, but only whether it could encompass an *organization*. This is consistent with the way that “individual” is regularly used—to distinguish the singular from the collective. Indeed, as noted above, several of the dictionary definitions used in *Mohamad* can cover a singular person or thing, but not groups, such as corporations or organizations. *See supra* 11-12. As the Court explained, “federal statutes routinely distinguish between an ‘individual’ and an organizational entity of some kind.” *Mohamad*, 566 U.S. at 455.²

² Likewise, when lower courts have examined the term “individual,” they have generally distinguished it from collective entities such as corporations, organizations, or government entities. *See, e.g., Michigan Flyer LLC v. Wayne Cnty. Airport Auth.*, 860 F.3d 425, 431 (6th Cir. 2017) (holding that

Nor did *Mohamad* define “individual” for all statutory contexts: “This is not to say that the word ‘individual’ invariably means ‘natural person’ when used in a statute.” *Id.* Rather, the Court looked to the surrounding statutory context to support its interpretation of the term. *Id.* at 455-56. The TVPA consistently referred to “individuals” as both the perpetrators and victims of torture. Only natural persons, and not organizations, could fit that context, since “[o]nly a natural person can be a victim of torture or extrajudicial killing.” *Id.* at 456. The Court therefore explained that “the statutory context strengthens ... the

“individual” under Americans with Disabilities Act “does not include corporations”); *Univ. of Utah v. Max-Planck-Gesellschaft zur Forderung der Wissenschaften E.V.*, 734 F.3d 1315, 1323 (Fed. Cir. 2013) (“[I]nventors must be natural persons and cannot be corporations or sovereigns.”); *In re Spookyworld, Inc.*, 346 F.3d 1, 7 (1st Cir. 2003) (“There is currently a circuit split. Two circuits hold that the term ‘individual’ [in the Bankruptcy Code] includes corporations, and four circuits hold that it does not.”); *Beech Aircraft Corp. v. EDO Corp.*, 990 F.2d 1237, 1248 (Fed. Cir. 1993) (The corporation “could never have been declared an ‘inventor,’ as [it] was merely a corporate assignee and only natural persons can be ‘inventors.’”); *Mar. Asbestosis Legal Clinic v. LTV Steel Co.*, 920 F.2d 183, 184-85 (2d Cir. 1990) (holding that “individual” under the Bankruptcy Code means “human beings” rather than “corporations and other legal entities”). *Cf. United States v. Middleton*, 231 F.3d 1207, 1210-13 (9th Cir. 2000) (holding that “individual” in statute criminalizing computer crime includes both natural persons and corporations); *United States v. Badische & Co.*, 3 U.S. Cust. App. 528, 530 (Ct. Cust. App. 1913) (explaining that “individual,” as a noun, “means one distinct being, a single one, and when spoken of the human kind it means one man or one woman,” but “[a]s used in statutes relative to taxation the term applies equally to corporations and individuals”).

conclusion that Congress intended to create a cause of action against natural persons alone.” *Id.* at 455.

The Patent Act, by contrast, focuses on the act of conception, referring to the “individual” as the one who “invented or discovered the subject matter of the invention.” 35 U.S.C. § 100(f). There is no indication that only a human being can invent or discover something new. Indeed, only DABUS came up with the inventions under the undisputed facts here. *See supra* 7, 11. And there is no indication that the Patent Act should be read narrowly to silently exclude such inventions from patentability.

B. Far from requiring a narrow reading of the Patent Act, this Court demands breadth. In *Diamond v. Chakrabarty*, for example, the Court “cautioned that courts ‘should not read into the patent laws limitations and conditions which the legislature has not expressed.’” 447 U.S. 303, 308 (1980) (quoting *United States v. Dubilier Condenser Corp.*, 289 U.S. 178, 199 (1933)). The Court explained that the Patent Act purposefully uses broad terms: “Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter ... may obtain a patent therefor” *Id.* at 307 (quoting 35 U.S.C. § 101). “In choosing such expansive terms as ‘manufacture’ and ‘composition of matter,’ modified by the comprehensive ‘any,’ Congress plainly contemplated that the patent laws would be given wide scope.” *Id.* at 308 (quoting 35 U.S.C. § 101).

Looking back to the Patent Act of 1793, the Court stated that the “relevant legislative history also supports a broad construction” of the patent laws.

Chakrabarty, 447 U.S. at 308. The Patent Act, authored by Thomas Jefferson, “embodied Jefferson’s philosophy that ‘ingenuity should receive a liberal encouragement.’” *Id.* at 308-09 (quoting 5 Writings of Thomas Jefferson 75-76 (Washington ed. 1871)). Section 101’s provisions therefore “have been cast in broad terms to fulfill the constitutional and statutory goal of promoting ‘the Progress of Science and the useful Arts’ with all that means for the social and economic benefits envisioned by Jefferson.” *Id.* at 315.

As a result, courts cannot arbitrarily restrict a statute “to the ‘particular application[s] ... contemplated by the legislators.’” *Id.* (quoting *Barr v. United States*, 324 U.S. 83, 90 (1945)). “This is especially true in the field of patent law,” where “the inventions most benefiting mankind are those that ‘push back the frontiers of chemistry, physics, and the like.’” *Id.* at 316 (quoting *Great Atl. & Pac. Tea Co. v. Supermarket Equip. Corp.*, 340 U.S. 147, 154 (1950) (Douglas, J., concurring)). “Congress employed broad general language in drafting § 101 precisely because such inventions are often unforeseeable.” *Id.*; *see also* 35 U.S.C. § 103 (“Patentability shall not be negated by the manner in which the invention was made.”).

Similarly, courts cannot create categorical rules denying patent protection for “inventions in areas not contemplated by Congress” because doing so would “frustrate the purposes of the patent law.” *Chakrabarty*, 447 U.S. at 315. The decision below runs counter to these admonitions. As described in more detail below, it renders an entire class of novel and useful inventions—crucial to American

enterprise—categorically outside the protection of the patent laws.

C. As this Court recently reaffirmed, where the march of technological progress renders the literal terms of a statute like the Patent Act ambiguous, the statute “must be construed in light of its basic purpose.” *Google LLC v. Oracle Am., Inc.*, 141 S. Ct. 1183, 1197 (2021) (quoting *Twentieth Century Music Corp. v. Aiken*, 422 U.S. 151, 156 (1975)). Put another way, statutes addressing and protecting intellectual property—the Patent Act here and the Copyright Act in *Google*—“set forth general principles, the application of which requires judicial balancing, depending upon relevant circumstances, including ‘significant changes in technology.’” *Id.* (quoting *Sony Corp. of Am. v. Universal City Studios, Inc.*, 464 U.S. 417, 430 (1984)).

Congress has exercised its constitutional authority to broadly protect inventions under the Patent Act. Courts cannot withdraw that protection for inventors absent clear congressional intent to do so. *See Goldstein v. California*, 412 U.S. 546, 561 (1973) (“These terms [of the Intellectual Property Clause of the Constitution] have not been construed in their narrow literal sense but, rather, with the reach necessary to reflect the broad scope of constitutional principles.”); *see also Pfizer, Inc. v. Gov’t of India*, 434 U.S. 308, 318-19 (1978) (“Nothing in the [Sherman] Act, its history, or its policy, could justify so restrictive a construction of the word ‘person’” so as “[t]o exclude foreign nations from the protections of our antitrust laws”); *Urie v. Thompson*, 337 U.S. 163, 181-82 (1949) (“To read into this all-inclusive wording a restriction ... would

be contradictory to the wording, the ... purpose, and the constant and established course of liberal construction of the [Federal Employers' Liability] Act followed by this Court.”); *Provost v. United States*, 269 U.S. 443, 458 (1926) (“Nor are we able to find in the [Revenue Act] any expression of a general purpose to exclude from the application of its express language the type of transactions now under consideration.”). The decision below is at odds with this Court’s teachings.

III. This Case Presents An Ideal Vehicle For Resolving The Question Presented.

This case is ideal for resolving the question presented, for several reasons.

This case squarely and cleanly presents a pure and outcome-determinative question of law. The Patent Act requires that each patent application list the “inventor” of any inventions claimed in the application. 35 U.S.C. § 115(a). USPTO and both courts below have reached no further than the Act’s definition of “inventor.” The Court of Appeals described the “sole issue on appeal” as a pure question of statutory interpretation: “whether an AI software system can be an ‘inventor’ under the Patent Act.” Pet. App. 6a. The agency’s rejection of the Applications and the district court’s holding also rely exclusively on a categorical denial that the patent laws can protect inventions conceived by an AI system. *See* Pet. App. 40a-42a, 47a-49a; Pet. App. 14a, 29a-31a. This Court’s reversal on that purely legal question would therefore remove the basis for USPTO’s rejection of the Applications and revive the ordinary examination process for each.

No barriers prevent this Court from reaching that question. As noted, at no stage of this case has USPTO disputed any relevant factual issue, including the critical fact that DABUS—and DABUS alone—conceived of the two inventions described and claimed in the Applications. *See supra* 7, 11. Rather, USPTO’s rejection of patentability was premised solely on its interpretation of the inventorship requirement in the Patent Act. Both parties have pressed their positions on that legal question at each stage of judicial review below. *See supra* 6-10. Both lower courts not only rendered a holding on that question, but relied exclusively on that holding in rendering their decisions and judgments. *See supra* 8-10. Thus, the legal question is presented in pristine form for this Court’s review.

Critically, this case likely presents this Court with the only opportunity it will have to decide the question presented. Because the Federal Circuit is the only court of appeals with jurisdiction over questions of patent law, no percolation can occur among the courts of appeals. And the Federal Circuit has already denied en banc rehearing on the question presented, in this very case. *See* Pet. App. 53a. As a result, if the decision below is allowed to stand, no district court in the United States will be able to uphold a patent for an invention conceived by an AI system. Applicants will not even file such applications, preferring either to inaccurately designate a human being as the “inventor”—thus potentially rolling the dice on a later court battle over patent validity—or to forgo the patent system entirely in favor of other avenues, such as trade secret protection. *See Gemstar-TV Guide Int’l, Inc. v. Int’l Trade Comm’n*, 383 F.3d 1352,

1381 (Fed. Cir. 2004) (“A patent is invalid if more or fewer than the true inventors are named.”).

The decision below also truncates USPTO’s ability to reconsider its stance on AI-generated inventions in the face of advancements in artificial intelligence. The agency has recently suggested that it wishes to undertake such a reconsideration process, acknowledging that “there is a growing consensus that AI is playing a greater role in the innovation process” in industries ranging from drug development to microchip design, and even that AI systems may currently “be able to contribute at the level of a joint inventor in some inventions today.” Request for Comments Regarding Artificial Intelligence and Inventorship, 88 Fed. Reg. 9492, 9493, 9494 (Feb. 14, 2023). Consequently, USPTO plans to hold stakeholder engagement sessions on “inventorship and AI-enabled innovation” and has called for public comments regarding the use of AI “in the invention creation process.” *Id.* at 9494. But its call for comments also implicitly acknowledges the constraints imposed by the decision below—it asks not whether it should acknowledge AI systems as inventors under the existing statute, but rather whether and how humans can work around the current jurisprudence to obtain patent protection for inventions conceived by or alongside AI systems. *See id.* Thus, if left standing, the decision below will cramp the agency’s ability ultimately to utilize its technical expertise, adapt to the rapidly changing technical landscape of artificial intelligence, and acknowledge the advent of AI systems that generate inventions on their own.

IV. The Patentability Of AI-Generated Inventions Is Exceptionally Important To The United States And Across The World.

A. The question presented is of enormous consequence. The aim of the U.S. patent system—and the goal of the Patent Act’s drafters—is to foster innovation, incentivize technological progress, and promote creativity and investment by offering protection to novel and useful inventions. Yet the practical effect of the decision below is to make many legitimate inventions—those that are conceived of and generated by AI systems—unpatentable in the United States.

The ramifications of the Court of Appeals’ ruling are extraordinarily serious. The AI revolution is upon us. Mark Minevich, *The Generative AI Revolution Is Creating The Next Phase Of Autonomous Enterprise*, Forbes, Jan. 29, 2023. AI will be integral to many forthcoming technological breakthroughs that are likely to revolutionize global industries.

As one example, AI research in the U.S. pharmaceutical industry has already gone well past the theoretical stage. See, e.g., Madura K.P. Jayatunga et al., *AI in small-molecule drug discovery: a coming wave?*, 21 Nature Reviews Drug Discovery 175-76 (Feb. 2022). In 2020, an AI system able to independently “learn new patterns unknown to human experts” identified a new antibiotic, more effective than existing treatments, from a pool of more than 100 million molecules. Jo Marchant, *Powerful antibiotics discovered using AI*, Nature, Feb. 20, 2020. And 2022 saw phase one trials on the first wholly AI-developed drug; an AI system independently identified an unknown

protein it could link to a disease, and then developed a small-molecule drug to target it in less than half the typical time and at a tiny fraction of the typical cost. Calum Chace, *First Wholly AI-Developed Drug Enters Phase 1 Trials*, *Forbes*, Feb. 25, 2022. Other complex industries, like those in the energy sector, have also turned to AI, in part because new, original innovation done by humans is becoming prohibitively expensive. David Rotman, *AI is reinventing the way we invent*, *MIT Tech. Rev.*, Feb. 15, 2019.

AI-generated inventions are increasingly important in many sectors of the economy. But without a reliable ability to patent their breakthroughs, companies large and small will have little protection for the significant investments they must make in research and innovation. The Federal Circuit’s categorical denial of patent protection for AI-generated inventions threatens to discourage technological advancement and needlessly squander the United States’ opportunity to be the global leader at the forefront of AI and the law.

B. There can be little question that the decision below makes AI-generated inventions entirely unpatentable. The government conceded as much at oral argument in the Federal Circuit. Oral Argument at 0:18:50-0:19:10, *Thaler v. Vidal*, No. 21-2347 (Fed. Cir. June 6, 2022), <https://tinyurl.com/22sjec2h> (on this record, “there is no doubt that there is no patentability ... of this subject matter”). And its recent call for comments only underscores USPTO’s belief that under the Federal Circuit’s decision, it now has no flexibility to grant a patent for an AI-generated invention. *See* 88 Fed. Reg. 9493-94.

Nor is any viable workaround available. Dr. Thaler cannot properly list himself as the inventor with respect to either of the two applications at issue—to claim inventorship, he must attest that he at least “contribute[d] in some significant manner to the conception ... of the invention.” *Pannu v. Iolab Corp.*, 155 F.3d 1344, 1351 (Fed. Cir. 1998); *see also* 35 U.S.C. § 115(b)(2) (inventor must “believe[] himself or herself to be the original inventor or an original joint inventor of a claimed invention in the application”). He cannot do that because he provided DABUS with only general information about the state of the art in multiple scientific fields. *See Caterpillar Inc. v. Sturman Indus., Inc.*, 387 F.3d 1358, 1377 (Fed. Cir. 2004) (a co-inventor must do “more than explain to the real inventors concepts that are well known [in] the current state of the art” (alteration in original) (quoting *Fina Oil & Chem. Co. v. Ewen*, 123 F.3d 1466, 1473 (Fed. Cir. 1997))). He expressly did *not* “hav[e] a firm and definite idea of the claimed combination as a whole,” which is required of any inventor. *Nartron Corp. v. Schukra U.S.A., Inc.*, 558 F.3d 1352, 1356 (Fed. Cir. 2009) (quoting *Ethicon, Inc. v. U.S. Surgical Corp.*, 135 F.3d 1456, 1460 (Fed. Cir. 1998)). Even had Dr. Thaler suggested the “idea of a result to be accomplished, rather than means of accomplishing it,” or reviewed and opined on “the acceptability of [DABUS’s] offered products,” he could not be recognized as an inventor. *Id.* at 1359 (citations omitted); *Drone Techs., Inc. v. Parrott S.A.*, 838 F.3d 1283, 1306 (Fed. Cir. 2016) (Newman, J., concurring). But in any event, Dr. Thaler did none of those things—it is undisputed here that Dr. Thaler simply trained DABUS and provided

it with information. DABUS's creations are attributable only to DABUS itself, not to Dr. Thaler.

As a result, the government's narrow interpretation of the patent statutes leaves an entire class of otherwise novel, useful inventions entirely without patent protection under U.S. law. This is "an 'absurd' result Congress could not plausibly have intended." *Mohamad*, 566 U.S. at 455 (discussing *Clinton v. City of New York*, 524 U.S. 417 (1998)). The Constitution bestowed upon Congress the authority "[t]o promote the Progress of Science." U.S. Const. art. 1, § 8, cl. 8. Patent systems exist to foster technological innovation through economic incentives. *Patents*, World Intellectual Prop. Org., <https://www.wipo.int/patents/en> (last visited Mar. 14, 2023); Kevin J. Hickey, Cong. Rsch. Serv., R46525, *Patent Law: A Handbook for Congress* 1 (2020). The decision below, if left standing, will result in a patent system contrary to the intentions of Congress—a patent system that excludes a whole category of inventions, and, indeed, a category that may ultimately represent one of this era's landmark technological leaps.

C. The issue is not just a domestic one. At a time when many other countries are considering the relationship between AI and inventorship, the decision below threatens without basis to cut the United States out of the conversation, and thereby leave other countries to lead in our stead.

As is common with patent applications, the applications in this case have been filed in numerous foreign jurisdictions—jurisdictions which are now considering the patentability of AI-generated

inventions. South Africa has granted Dr. Thaler a patent with DABUS listed as the inventor (Application No. 2021/03242), and Saudi Arabia has accepted Dr. Thaler’s ownership of an application with DABUS listed as the inventor (Application No. 521422019). The European Patent Office has recognized that the “owner of a device involved in an inventive activity” may designate himself or herself as the inventor—a workaround not available under our Patent Act. Legal Board of Appeal, EPO, Case No. J 0008/20, ¶ 4.6.6 (Dec. 21, 2021). The Supreme Court of the United Kingdom is currently addressing the patentability of foreign counterparts of the present applications, having heard oral arguments in March 2023. *Thaler v. Comptroller-General of Patents, Designs and Trade-marks*, Supreme Court Case No. 2021/0201. Australia is currently the only jurisdiction where the inventions have been held unpatentable in a non-appealable decision. The Federal Court of Australia originally granted Dr. Thaler’s petition, *Thaler v. Commissioner of Patents*, [2021] FCA 879 (July 30, 2021), before reversing course after an en banc hearing, *Commissioner of Patents v. Thaler*, [2022] FCAFC 62 (Apr. 13, 2022). And there are pending, related patent applications in Germany, Brazil, Canada, China, India, Israel, Japan, New Zealand, Republic of Korea, Singapore, Switzerland, and Taiwan, either before patent offices or in the process of judicial review. See, e.g., WIPO IP Portal, <https://tinyurl.com/nh96443e> (last visited March 15, 2023). To be sure, Dr. Thaler’s case in each of these countries implicates the patent law of that specific nation. But the broad array of proceedings highlights the importance of carefully

examining the interaction of AI with existing patent systems.

Especially against this backdrop, the question presented is of exceptional importance to the American economy and its relationship with the rest of the world. Embracing useful inventions that meet all the substantive criteria for patentability set forth by Congress is fully consistent with the statutory text, legislative intent, and underlying purposes of the current and past versions of the Patent Act. The Federal Circuit's decision nonetheless effectively bans patents for AI-generated inventions in the United States. The decision of the Court of Appeals is fundamentally misconceived and warrants this Court's review.

CONCLUSION

The Court should grant this petition for a writ of certiorari.

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