Loyola of Los Angeles Entertainment Law Review

Volume 24
Number 1 *Symposia—2003 Stanford Law & Technology Association Conference: Ideas without Boundaries: Creating and Protecting Intellectual Property in the International Arena and At the Crossroads of Law & Technology: Fourth Annual Conference, Patenting the Human Genome*

Article 6

1-1-2004

Slip Opinion in the Matter of Salvador Dolly v. Nugenera, Inc.

SUPREME COURT OF THE UNITED STATES

SALVADOR DOLLY v. NUGENERA, INC.*

CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE THIRTEENTH CIRCUIT

No. 02-00. Argued November 1, 2002—Decided May 1, 2003

WARDLAW, J., delivered the opinion of the Court, in which all other Justices joined, except KOZINSKI, J., who filed a separate opinion, concurring in part and dissenting in part.

JUSTICE WARDLAW delivered the opinion of the Court:

We are asked to decide whether Respondent's patent on Petitioner's entire genome and on select gene sequences is enforceable against him, and whether he can be enjoined from selling samples of his own blood or tissue on grounds that such use infringes Respondent's patent.

I. BACKGROUND

Petitioner, Salvador Dolly ("Dolly"), provided a blood sample to Advanced Genetic Testing Company ("AGTC") on July 31, 1998, for routine preconception genetic testing. Marilyn Hall Patel, *Memorandum and Order,* 35 LOY. L.A. L. REV. 1073, 1074 (2002). Before providing his sample, Dolly and representatives from AGTC signed a consent form including a confidentiality provision limiting disclosure of Dolly's test results to a designated physician or genetic counseling service. *Id.* The consent form did not discuss disposal of Dolly's blood sample after testing was completed. *Id.*

Respondent, NuGenEra, Inc., purchased a sample of Dolly's blood from AGTC after the testing was completed. Patel, *Memorandum and Order* at 1074. At that time, AGTC disclosed its confidentiality agreement with Dolly and provided NuGenEra with a signed copy of the consent form. *Id.* NuGenEra proceeded to conduct research on Dolly's blood cells and found that they were completely resistant to human immunodeficiency

* This is a mock opinion that has no affiliation with the United States Supreme Court or *any* other court. As such, it has no legal effect nor does it purport to represent legal precedent at any time; past, present, or future. *Therefore, the legal citations and views expressed herein should in no way be relied upon or cited to as legal authority.*

virus (HIV). *Id.* *In vitro* and *in vivo* (transgenic mice) experiments demonstrated that certain sequences of Dolly's genes (the "P" sequences) conferred partial HIV resistance. *Id.* Based on these findings, NuGenEra filed a patent application on Dolly's entire genome ("Dolly Genome") and the P sequences, P1-P10, genetic sequences thought to confer the HIV resistance. *See* U.S. Patent No. F6,635,271 (issued to NuGenEra on May 28, 2000) ("the '271 patent").

The '271 patent contains three independent claims: Claim 1 comprises the entire Dolly Genome; Claim 2 comprises the ten genetic sequences P1-P10; and Claim 3 covers an immortalized human cell line containing the Dolly Genome. *See* Patel, *Memorandum and Order* at 1075.

Because AGTC had not removed identifying information from Dolly's blood sample prior to its sale, NuGenEra was able to learn that he was the source of the HIV-resistant cells. Patel, *Memorandum and Order* at 1075. NuGenEra notified Dolly of his natural HIV resistance. *Id.* Dolly then formed a limited partnership, DollyDeal Limited, which sold samples of Dolly's whole blood on November 30 and December 12, 2000 to research scientists at the University of California and California State University. *Id.* On January 28, 2001, DollyDeal offered to sell another whole blood sample to Infants' Hospital. *Id.*

In response, NuGenEra sued Dolly in the United States District Court for the Western District of California, alleging that Dolly's actions infringed Claims 1 and 2 of the '271 patent. Patel, *Memorandum and Order* at 1075. NuGenEra moved for summary judgment on November 9, 2001. *See id.* Dolly simultaneously filed a cross-motion for summary judgment, asserting that the patent claims were invalid and that even if they were valid, their enforcement violated his property and privacy rights. *Id.* at 1074. Chief Judge Marilyn Hall Patel granted Petitioner's motion for summary judgment as to Claim 1, finding that the entire Dolly Genome lacked utility. *Id.* at 1073. The district court, however, denied summary judgment as to Claim 2, upholding the patentability of the P sequences, and granted partial summary judgment against Petitioner's affirmative defenses. *See id.* at 1093, 1096–1104.

The district court found that Claim 1 did not exhibit well-established utility because the whole Dolly Genome's stated use, whole-genome "restriction fragment length polymorphism" comparison analysis ("RFLP"), is not practical given the present state of technology. *See* Patel, *Memorandum and Order* at 1081–83. Additionally, it found that this use was not demonstrated in practice, meaning that Claim 1 lacked specific utility. *See id.* at 1086. It further found that NuGenEra had patented Dolly's whole genome before obtaining a proper understanding of where or

how it confers HIV immunity. *See id.* The district court concluded that the Dolly Genome should be available to the public for such research, and that upholding such a broad patent claim would not be justified absent a specific demonstrable benefit. *See id.* As for Claim 2, the district court found that the P sequences exhibited specific and substantial utility, but not well-established utility, by conferring HIV resistance in transgenic mice. *See id.*

Turning to Dolly's affirmative defenses, the district court held that the rights to privacy and bodily autonomy in the United States Constitution are only enforceable against government actors. Patel, *Memorandum and Order* at 1099. Reasoning that the only plausible state actor here, the United States Patent and Trademark Office ("PTO"), was not involved in the unauthorized research on Dolly's blood, it concluded there was no state action. *Id.* It also held that under California law there exist no property rights in excised tissue. *Id.* at 1094. Although the court recognized Dolly's strong policy arguments to the contrary, it concluded that the legislature was the more appropriate body to address them. *See id.* at 1095–96.

A direct appeal was filed in this Court. *See Genome Patent Has Day in Court,* THE PROGRAM FOR LAW & TECHNOLOGY AT CALIFORNIA INSTITUTE OF TECHNOLOGY & LOYOLA LAW SCHOOL (Fall 2002), *available at* http://www.techlaw.lls.edu/news/2002-newsletter.pdf. We granted certiorari and now affirm.

II. ANALYSIS

A valid patent must meet the requirements of the Patent Act of 1952, 35 U.S.C. § 101 (1994). These requirements include a patentable subject matter, novelty, utility, and non-obviousness. *Id.* §§ 101–103. An issued patent is presumed valid; a challenging party must present clear and convincing evidence to overcome this presumption. *Id.* § 282; *United States Gypsum Co. v. Nat'l Gypsum Co.*, 74 F.3d 1209, 1212 (Fed. Cir. 1996).

First, an invention must comprise patentable subject matter, which the statute defines as "any . . . process, machine, manufacture . . . composition of matter, or . . . improvement thereof." 35 U.S.C. § 101. We have identified laws of nature, physical phenomena, and abstract ideas as unpatentable "products of nature," as these are "manifestations of . . . nature, free to all men and reserved exclusively to none." *Funk Bros. Seed Co. v. Kalo Inoculant Co.,* 333 U.S. 127, 130 (1948); *see also Parker v. Flook*, 437 U.S. 584, 589 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972); *O'Reilly v. Morse*, 56 U.S. 62, 112–21 (1854); *Le Roy v. Tatham*,

55 U.S. 156, 174–75 (1853). However, a product of nature can be so altered by human hands as to render it patentable subject matter: this requires inventive work that essentially creates a new product that does not exist in nature. *See Diamond v. Chakrabarty*, 447 U.S. 303, 309–10 (1980).

Second, an invention must also be novel—creative and unanticipated by prior art. 35 U.S.C. § 102. The patentee must be the first inventor of the product. *See id.*

Third, an invention must be useful. *Id.* § 101. There are two ways for an invention to meet the utility requirement: (1) well-established utility (one skilled in the art of the invention will immediately recognize and appreciate the utility asserted), or (2) specific, substantial, and credible utility (particular to the subject matter claimed, capable of being defined in a real-world or practical context, and the underlying logic appears consistent with the facts on which it is based). *See* U.S. Patent & Trademark Office, Revised Interim Utility Guidelines Training Materials 3, 5–7 (1999) ("PTO Guidelines"), *available at* http://www.uspto.gov/web/offices/pac/utility/utilityguide.pdf (last visited Sept. 9, 2003). Potential utility is generally not enough to warrant the grant of a patent. *See Brenner v. Manson*, 383 U.S. 519, 534–35 (1966).

Fourth, a patentable invention must be non-obvious. 35 U.S.C. § 103. That is, an invention must not only be new to the public domain, but display ingenuity of such degree that its conception and reduction to practice would not occur without a great amount of inventive effort. A "flash of creative genius" is not required. *See Graham v. John Deere Co. of Kan. City*, 383 U.S. 1, 15 (1966) (citing *Cuno Corp. v. Automatic Devices Corp.* 314 U.S. 84 (1941)). Rather, we determine non-obviousness by examining several factors, including "the scope and content of the prior art," the "differences between the prior art and the claims at issue," and "the level of ordinary skill in the pertinent art." *Graham*, 383 U.S. at 17.

Finally, some cases suggest that courts should not enforce an otherwise valid patent if its enforcement violates constitutional rights or contravenes public policy, or if it was procured on the basis of inequitable conduct. *See, e.g., Winbond Elecs. Corp. v. Int'l Trade Comm'n*, 262 F.3d 1363, 1372 (Fed. Cir. 2001) (discussing inequitable conduct); *Tol-O-Matic, Inc. v. Proma Produkt-Und Mktg.*, 945 F.2d 1546, 1552–53 (Fed. Cir. 1991) (discussing public policy), *abrogated on other grounds by Markman v. Westview Instruments, Inc.*, 52 F.3d 967 (Fed. Cir. 1995); *Lowell v. Lewis*, 15 F. Cas. 1018, 1019 (C.C.D. Mass. 1817) (No. 8568). *But cf. Juicy Whip, Inc. v. Orange Bang, Inc.*, 185 F.3d 1364, 1367 (9th Cir. 1999) (construing the public policy exception narrowly).

We review a lower court's grant or denial of summary judgment *de novo*. *Eastman Kodak Co. v. Image Technical Servs., Inc.*, 504 U.S. 451, 465 n.10 (1992).

A. Claim 1—Patentability of the Entire Dolly Genome

We affirm the district court's ruling as to Claim 1. We agree with Dolly that Claim 1, the entire Dolly Genome, lacks utility. NuGenEra contends that Dolly's entire genome could be used as a diagnostic tool for HIV resistance. However, such utility is neither well-established nor specific, substantial, and credible. *See* PTO Guidelines, at 3–7. Presently available genetic diagnostic techniques can only compare a small portion of one genome with the corresponding portion of another genome to determine whether they have an identical genetic sequence, making NuGenEra's asserted use impractical under existing technology. Furthermore, use of the entire genome in a diagnostic test would be inordinately cumbersome and could not produce meaningful results due to the natural genetic variation among humans. Thus, we agree with the district court that Claim 1 is purely a "hunting license," and that NuGenEra's claim is premature. *See* Marilyn Hall Patel, *Memorandum and Order*, 35 LOY. L.A. L. REV. 1073, 1080 n.14 (2002); *see also Brenner*, 383 U.S. at 536. NuGenEra would have to conduct a great deal more research before it could show a practical use for Claim 1. Additionally, Claim 1 is not novel or non-obvious. The techniques used to isolate the Dolly Genome are common; thus, prior art precludes patenting the entire Dolly Genome on this basis. Although the particular genome at issue has unique properties, only the genetic sequences that confer these properties may be the proper subject of a patent claim. Because the human genome, the sequence of which has been published by the Human Genome Project, is 99.99% identical across the human species, NuGenEra expended neither creativity nor inventive effort in sequencing the vast majority of Dolly's genome. Thus, we conclude that Claim 1 is invalid.

B. Claim 2—Patentability of the P1-P10 Sequences

We also affirm the district court's ruling as to Claim 2. Claim 2 of NuGenEra's patent covers the P1-P10 sequences of Dolly's genome. NuGenEra isolated these sequences from the entire Dolly Genome and determined that, when expressed in combination, they conferred the majority of the observed HIV resistance. The observed HIV resistance was reduced by the removal of any one of the P sequences.

1. Novelty and Non-Obviousness

The P sequences of Claim 2 are novel because they never existed in the public domain prior to NuGenEra's isolation of the genetic material. They are also non-obvious because these variant gene sequences could not have been predicted by the prior art. Moreover, the isolation of the P sequences was non-obvious because NuGenEra was the only entity that knew of Dolly's HIV resistance. Dolly's genome is the first known HIV-resistant genome; the P1-P10 sequences that NuGenEra isolated are the likely keys to this resistance. NuGenEra creatively searched through the Dolly Genome to determine which of its sections conferred HIV resistance. In doing so, NuGenEra used inventive effort and did not rely on prior art.

2. Utility

a. Well-Established Utility

Claim 2 does not possess well-established utility. NuGenEra argues that the potential use of the P sequences in gene therapy would satisfy this requirement. A well-established utility is one considered to be in common use in the field by an average person skilled in the art. While gene therapy may be widely discussed in the scientific literature, and its mechanism of action widely understood by practitioners in the field, the technique is far from commonly practiced. Indeed, the success of gene therapy has been very limited until now. While some recent research has shown more promise in this field, those results were not yet available at the time the patent application was filed, which is the relevant time period for this inquiry. Because we agree with the district court that gene therapy at that time was far from well established, we affirm its finding that Claim 2 does not possess well-established utility.

b. Specific, Substantial, and Credible Utility

Claim 2 satisfies the specific and substantial utility requirement. NuGenEra has demonstrated partial HIV resistance in *in vivo* transgenic mice studies. The PTO Guidelines allow for laboratory tests in standard experimental animal models to demonstrate this type of utility. *See In re Krimmel*, 292 F.2d 948, 953 (C.C.P.A. 1961) (holding that such animal research results are "significant and useful"); *see also In re Brana*, 51 F.3d 1560, 1565 (Fed. Cir. 1995) (holding that a drug demonstrating positive results against experimental cancer cell lines in animals was specifically useful).

Dolly argues that Claim 2 lacks specific and substantial utility because it fails to identify the distinct "sub-cellular factors," protein products, or specific genes within the P sequences that actually impart HIV resistance. He contends that in the absence of this information, any utility possessed by Claim 2 is merely potential. We reject this argument: "[I]t is not a requirement of patentability that an inventor correctly set forth, or even know, how or why the invention works . . . ." *Newman v. Quigg*, 877 F.2d 1575, 1581 (Fed. Cir. 1989) (citing *Diamond Rubber Co. v. Consol. Rubber Tire Co.*, 220 U.S. 428, 435–36 (1911)); *accord In re Storrs*, 245 F.2d 474, 478 (C.C.P.A. 1957). The absence of an operative theory for the P sequences does not, as Dolly contends, mean that the patent grants an undue monopoly over an expansive scientific field. Rather, Claim 2 discloses a specific and limited combination of sequences proven to exhibit a beneficial outcome according to accepted scientific methods.

Claim 2 also possesses sufficient credibility in its application and use. The PTO Guidelines provide that a claim is credible if a person of ordinary skill in the art would consider the asserted utility to be credible in view of the disclosure and other evidence in the record. *See* PTO Guidelines, at 5. NuGenEra asserts two credible applications for Claim 2: (1) a diagnostic tool for determining whether another genetic sequence contains the P sequence and its HIV-resistant properties, and (2) an actual combination of DNA sequences, as was used in NuGenEra's transgenic mice studies and was found to be responsible for the resulting partial HIV resistance.

We find both proffered uses to be credible. As to the P sequences' use as a diagnostic tool, Dolly argues that there are insufficient facts to show that the P sequences of Claim 2 are the definite source of the exhibited HIV resistance. He also maintains that even if they were, such use would be too laborious and costly to be credible. We conclude that the use of the P sequences for diagnosis was a recognized technique in the art at the time of patent application. We do not consider cost in determining whether a proffered use is credible. As the district court correctly noted, "while the value of the Claim 2 sequences may presently be useful only to establish absence or presence of HIV resistance in a manner similar to [Dolly's], this remains a credible application . . . therapeutically useful to the medical care system." Patel, *Memorandum and Order* at 1087–88. We therefore affirm the district court's finding that Claim 2 has specific, substantial, and credible utility.

The utility of a patent claim can rest *either* on a finding of specific, substantial, and credible utility, *or* on a finding of well-established utility. Although Claim 2 does not satisfy the standard of well-established utility, it is patentable on the basis of its specific, substantial, and credible utility.

Because we find that Claim 2 of the '271 patent meets the statutory requirements of novelty, non-obviousness, patentable subject matter and utility, we affirm the district court's holding.

C. Public Policy Challenges

1. Privacy Rights

We need not consider whether Dolly's constitutional right to "genetic privacy" was violated, or even opine on whether such a right exists, although at least one court of appeals has recognized such a right in certain circumstances. *See Norman-Bloodsaw v. Lawrence Berkeley Lab.*, 135 F.3d 1260, 1269 (9th Cir. 1998) ("One can think of few subject areas more personal and more likely to implicate privacy interests than that of one's health or genetic make-up.") Even if such a constitutional right exists, it could be violated only by state action, which is not present. The only governmental entity that had any involvement here is the PTO, which approved NuGenEra's patent. Dolly does not allege, however, that the PTO's actions violated his constitutional rights. Although we have recognized that in certain instances government entities that play indirect roles in producing an unconstitutional outcome are sufficiently entwined to satisfy the state action requirement, we decline to extend *Shelley*'s reasoning to this case. *See Shelley v. Kraemer*, 334 U.S. 1, 20 (1948) (holding that state courts may not enforce racially restrictive covenants on real estate).

2. Right to Bodily Integrity

We also reject Dolly's assertion that enforcement of NuGenEra's patent violates his constitutional right to bodily integrity. We have never recognized as broad a right as the one Dolly asserts; specifically, no cases have recognized any such rights that extend beyond the corporeal body. *Cf. Cruzan v. Dir., Mo. Dep't of Health*, 497 U.S. 261, 287 (1990) (O'Connor, J., concurring) ("[T]he liberty interest in refusing medical treatment flows from decisions involving the State's invasions into the body."). We decline Dolly's suggestion to do so here. Moreover, any violation would also require state action, which is absent in this case.

3. Property Rights

Nor do we see any violation of Dolly's property rights sufficient to invalidate Claim 2. Property rights are created and defined by state law,

and thus we look to California law to determine what property rights, if any, Dolly has in his blood and the genetic information contained therein. *See Bd. of Regents of State Colls. v. Roth*, 408 U.S. 564, 577 (1972). In California, a person retains no property rights in excised tissue. *See Moore v. Regents of the Univ. of Cal.*, 793 P.2d 479, 487–88 (Cal. 1990). There is no reason to limit the holding of *Moore* to cases where the excised tissue or sample is not identifiable or genetically unique. Thus, we conclude that enforcement of the '271 patent is not barred by any property right.

4. Consent

Consent *vel non* is not a relevant consideration. Although Dolly contends that NuGenEra should not be allowed to enforce its patent because it obtained Dolly's blood in violation of the consent agreement between Dolly and AGTC, NuGenEra is not a party to that agreement, and, thus, is not bound by it. We express no opinion on the merits of a breach of contract claim by Dolly against AGTC.

The judgment of the district court is affirmed.

It is so ordered.

WARDLAW, J.

CHIN, J.

CHIEF JUSTICE KOZINSKI, concurring as to Claim 1 and dissenting as to Claim 2:

I agree with the majority that Claim 1 is invalid. I dissent, however, as to Claim 2. NuGenEra's invention, "[a] combination of isolated nucleic acid sequences . . . comprising [sequences] P1-P10," is a product of nature that falls outside the scope of patentable subject matter under 35 U.S.C. § 101. Marilyn Hall Patel, *Memorandum and Order*, 35 LOY. L.A. L. REV. 1073, 1075 n.5 (2002) (quoting U.S. Patent No. F6,635,271 (issued May 28, 2000) at 971).

It is elementary that "phenomena of nature" are "free to all men and reserved exclusively to none." *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 130 (1948). A biologist who finds a new species of bacteria in a pond may have made an important discovery, but he cannot seek refuge in the patent laws. *See id.* This is so, even if he used ingenious methods to track down the organism and even if his activity is one we prize as highly socially useful. However industrious he was, Congress has not afforded protection. Patents are for *inventors*, not *finders*.

Courts have finessed this principle somewhat by holding that a purified version of a naturally occurring substance is actually a new

substance altogether. *See, e.g.*, *In re Bergstrom*, 427 F.2d 1394, 1401–02 (C.C.P.A. 1970). This theory is debatable; the chemical compound itself is naturally occurring, even if it is typically found adulterated. But, taking these cases as settled law, I cannot see how NuGenEra created anything merely by *isolating* a particular set of gene sequences. One who isolates something does not change its nature; he merely plucks it from its context—like the biologist who fishes bacteria out of a pond. A gene sequence is a gene sequence, whether isolated or embedded in some larger structure.

The intractable problem for NuGenEra is that, however much work it put into locating the P sequences, all it ever did was *find* them. It did not create anything that was not already there; indeed, the genes were already performing the very function that makes them valuable. NuGenEra did not patent the process it used to isolate the sequences; it did not patent some useful application for them; it did not patent some serum it created from them. Rather, it sought to patent the gene sequences themselves, and that, it seems to me, it may not do.

We do not know who "invented" Dolly's genes—a question doubtless better left to theologians. But it wasn't NuGenEra, and that resolves the case.