COMMENT

EXPERIMENTAL USE EXCEPTIONS: CHANGES IN RESEARCH TOOL PATENT PROTECTION IN THE UNITED STATES AND A COMPARISON TO JAPAN

ABSTRACT

The scope and impact of the statutory experimental use exception provided by 35 U.S.C. § 271(e) of the Patent Act has created much controversy and uncertainty since it was enacted as part of the Drug Price Competition and Patent Term Restoration Act of 1984. For nearly twenty years, 35 U.S.C. §271(e) had been interpreted in an increasingly broad manner most favorable to parties who were utilizing the patented discoveries of others to perform research directed toward attaining Food and Drug Administration approval for pharmaceutical products prior to the expiry of the patents. In contrast, the parties that expended time and resources to perform the initial development work to obtain these patents saw their protection waning. In 2003, the U.S. Court of Appeals for the Federal Circuit, in Integra Lifesciences I, Ltd. v. Merck KGaA, attempted to reverse this trend, but the Federal Circuit decision was vacated by the U.S. Supreme Court approximately two years later. Because the economy and intellectual property have become increasingly globalized, such decisions can have far reaching implications. This comment considers the potential legal and economic impact of the Federal Circuit and Supreme Court decisions on research tool patent owners and the parties that were utilizing such tools under the previous court interpretations. Further, this article discusses how such decisions may result in the movement of research activities abroad, where there may be more favorable patent laws regarding experimental use. Japan's approach to the issue of experimental use and whether that approach would benefit the U.S. system is also examined in this comment.

I. INTRODUCTION

In recent years the interpretation of U.S. laws surrounding research tool patents¹ and the associated exemptions for experimental use² have been

---

¹Research tools are the various resources scientists use to conduct research and develop products. These tools can be patented in and of themselves and the patent provides the owner the right to exclude others from using the tool. If a non-owner uses a patented research tool without the consent of the patent owner the party using the tool may be liable for patent infringement even
anything but clear and stable in the pharmaceutical and biotechnology industries. Changes in the interpretation of U.S. patent statutes can have implications that span the globe and the legal system is generally thought to be a stabilizing element in the economy.\textsuperscript{4} Certainty and legal stability are important factors for both individuals and corporations when deciding where to make capital investments.\textsuperscript{5} In just twenty years, the courts have moved from applying a stable common law experimental use exemption that withstood scrutiny for more than 150 years\textsuperscript{6} to a system that retains the common law while simultaneously incorporating the industry-specific "experimental use exception" found in § 271(e)(1).\textsuperscript{7}

In 2001, the courts began to destabilize the law when they began broadening the interpretation of the § 271(e)(1) statutory exception.\textsuperscript{8} This

\begin{footnotes}
\item[2]See discussion \textit{infra} Part II.B.
\item[3]See Bayer AG v. Housley Pharmas., Inc., 169 F. Supp. 2d 328, 330 n.2 (D. Del. 2001) ("If § 271(g) were applicable to patents claiming screening methods or methods of use, any products subjected to those methods in foreign countries would infringe those patents upon importation to the United States. Such sweeping liability is beyond the scope of the statute.")., \textit{aff'd}, 340 F.3d 1367 (Fed. Cir. 2003); \textit{see also} Richard J. Warburg & Stephen B. Maebius, \textit{Warning: Research Dollars at Risk! IP Law Must Support Old Patents and New Research. Any Imbalance Threatens to Shut Down the New-Drug Pipeline}, 26 \textit{LEGAL TIMES} 26, 28 (Mar. 24, 2003) (concluding that the "Bayer decision means basic research can be performed outside the United States essentially without concern for the rights of U.S. patent holders").
\item[5]\textit{See} Warburg & Maebius, \textit{supra} note 3, at 26. 
\item[7]35 U.S.C. § 271(e)(1) (2000) states in part: It shall not be an act of infringement to make, use, offer to sell, or sell within the United States or import into the United States a patented invention . . . solely for uses reasonably related to the development and submission of information under a Federal law which regulates the manufacture, use, or sale of drugs . . . .
\item[8]Bristol-Myers Squibb Co. v. Rhone-Poulenc Rorer, Inc., No. 95 Civ. 8833 (RPP), 2001 U.S. Dist. LEXIS 19361, at *12-13 (S.D.N.Y. Nov. 28, 2001) (using a broad interpretation of "reasonably related" in 35 U.S.C. § 271(e)(1) to include activities under the exception if it would be "reasonable, objectively, for a party . . . to believe that there was a decent prospect that
continued in 2002 against the objections of the biotechnology industry and to the benefit of the pharmaceutical industry. The U.S. Court of Appeals for the Federal Circuit created a shockwave of uncertainty in 2003 when it decided *Integra Lifesciences I, Ltd. v. Merck KGaA*. The court reversed the broadening trend and proclaimed the most narrow interpretation to date regarding when the use of a research tool patent can be claimed under the § 271(e)(1) exception.

The Federal Circuit's *Integra* decision had temporarily left companies, which were relying on the use of screening tools covered by research tool patents, exposed to potential patent infringement suits. In contrast, the U.S. biotechnology companies that owned many research tool patents could potentially capitalize financially on their new position because continued use of any research tools now held to be outside the scope of the exception required the users to start paying biotechnology companies for their use. These inconsistent decisions left all parties involved wondering where the court was going next. The final resolution of the boundaries of the statutory experimental use exemption of § 271(e)(1), however, was not very far away. The U.S. Supreme Court has now decided this issue.

In contrast to the United States, Japan and the majority of the world
provide a much broader experimental use exception,\textsuperscript{15} which raises the question of whether the U.S. patent system's common law and industry specific statutory research use exception is the optimal approach to provide large pharmaceutical corporations, smaller biotechnology firms, and the public with equitable benefits. This comment reviews the impact of the \textit{Integra} decision and considers whether the Japanese approach to exempting experimental use and research tool patents would provide more consistent and equitable results, while recognizing how the globally unharmonized nature of patent law creates barriers to obtaining both local and global equity. Part II provides the historical basis for patent rights and then focuses on the origins of the experimental use exception and how the doctrine evolved in U.S. case law, describing the Japanese approach to experimental use. Part III analyzes the Federal Circuit decision in \textit{Integra} and the U.S. Supreme Court's response to that decision. Part III also discusses the Japanese approach to research tool patents. Finally, Part IV evaluates the impact of the \textit{Integra} decision on those who own patented research tools and those that utilize the tools. Part IV then evaluates the impact of adopting the Japanese approach on the U.S. patent system. Lastly, Part V provides concluding remarks.

\section*{II. BACKGROUND}

\subsection*{A. Patent Rights}

A patent grants the exclusive right to make, use, and sell an invention for a limited period of time.\textsuperscript{16} The patent system provides incentives to invent by granting inventors a monopoly on the invention of limited duration and scope. That monopoly provides the inventor with an opportunity to recover the costs associated with perfecting the invention. Without the protection of this limited monopoly, many have concluded that too few inventions would be made, since competitors could simply appropriate the invention without the burden of contributing to the development costs.\textsuperscript{17} Under this system, the patentee may exploit the monopoly created by the patent themselves, or may sell or license the


\textsuperscript{16}35 U.S.C. § 154(a)(1) (2000) states in part: "Every patent shall contain ... a grant to the patentee ... the right to exclude others from making, using, offering for sale ... ."

patent to others for compensation. In return for the temporary monopoly, the inventor is obligated to disclose the details of the invention to the public to enable an individual in the field of the invention to be able to reproduce the invention once the patent period expires. The importance of this system is firmly rooted in the U.S. Constitution with the goal of encouraging innovation and increasing the "public storehouse of knowledge."

B. Origins of the Experimental Use Exceptions to Patent Rights

1. The Common Law Experimental Research Exception and Limitations of its Application

Early in the nineteenth century, U.S. common law recognized experimental use as a defense for patent infringement. Under the defense, the party charged with patent infringement must demonstrate that the alleged infringement was exempt as an experimental use. A successful defense that an alleged infringement was actually a non-infringing experimental use turns on the ability of the defendant to show that their research activity had no commercial interest and was not for a business purpose.

The common law experimental use exception traditionally had been interpreted very narrowly and there are few examples where a defendant succeeded by using an experimental use defense in a patent infringement

---

18 Id. at 1021-22.
19 Id. at 1022.
20 "The Congress shall have Power . . . [t]o Promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries." U.S. CONST. art. I, § 8, cl. 8.
21 Eisenberg, supra note 17, at 1024; see also MARTIN J. ADELMAN ET AL., PATENT LAW 438 (2d ed. 2003) (analogizing the patent system to contract law, where a successful inventor is granted a defined period of exclusivity and in return the public receive full disclosure of the invention).
22 See Whittemore v. Cutter, 29 F. Cas. 1120, 1121 (D. Mass. 1813) (No. 17,600); Popponhusen v. Falke, 19 F. Cas. 1048, 1049 (C.C.S.D.N.Y. 1861) (No. 11,279); Roche, 733 F.2d at 862.
23 See Integra, 331 F.3d at 875 (noting that there have been few judicial decisions where the alleged infringement was found to be exempt as an experimental use).
24 Chesterfield v. United States, 159 F. Supp. 371, 375-76 (Ct. Cl. 1958) (holding experimental use of a metal alloy did not constitute infringement since it was only built experimentally, and not manufactured for sale or sold); see also Ruth v. Stearns-Roger Mfg. Co., 13 F. Supp 697, 713 (D. Co. 1935) (holding sales of parts for machines used for experimental purposes was not infringement).
suit. Bolar Pharmaceuticals challenged this long-standing historically narrow interpretation of the common law experimental use exception in *Roche Products, Inc. v. Bolar Pharmaceutical Co. (Roche)*, but failed to persuade the court.

Roche owned a patent on flurazepam hydrochloride, the active ingredient in its brand name sleeping pill "Dalmane," which was scheduled to expire January 17, 1984. In early 1983, in anticipation of the expiration, Bolar began to manufacture and conduct research with the patented active ingredient to obtain approval from the Food and Drug Administration (FDA) to market and sell a generic version of the drug. Bolar initiated these activities in advance of the patent's expiration because it can take more than two years to complete the necessary research and to obtain FDA approval. By beginning the experiments prior to Roche's patent expiry, Bolar planned to begin to manufacture and sell its generic version of the drug, "Dalmane," immediately upon the expiration of Roche's patent.

The manufacturing and research activities at issue were directly related to providing the FDA with the mandatory data required to obtain approval. Roche, however, sued Bolar for infringement, arguing that the Patent Act explicitly states that it is infringement to make or use any patented invention prior to a patent's expiry. Bolar responded that its use was solely experimental, but conceded that it did have an ultimate commercial purpose. Despite its ultimate commercial purpose, Bolar defended on grounds that the Patent Act is not consistent with public policy.

Bolar argued that public policy mandated an expansion of the common law experimental use rule to include mandatory FDA pre-approval

---

25See supra note 24; Integra, 331 F.3d at 875.
26733 F.2d 858 (Fed. Cir. 1984).
27Id. at 867.
28A company that intends to market and sell a drug in the United States is required to first perform mandatory testing and submit results to the FDA that demonstrate the product is safe and effective prior to being granting approval to manufacture and sell the drug. Federal Food, Drug, and Cosmetic Act of 1938, Pub. L. No. 75-717, 52 Stat. 1040 (1938), amended at Pub. L. No. 87-781, § 102, 76 Stat. 780, 781 (1962); 21 C.F.R. § 314.50 (2004).
29Roche, 733 F.2d at 860.
30Id.
31Id. at 860.
32Patent Act of 1952, Pub. L. No. 82-593, 66 Stat. 792, ch. 14, § 154 (codified as amended at 35 U.S.C. § 271(a) (2000) ("Except as otherwise provided in this title, whoever without authority makes, uses, offers to sell, or sells any patented invention ... infringes the patent."); id. § 154(9)(1) ("Every patent shall contain ... a grant to the patentee ... the right to exclude others from making, using, offering for sale ... .")
33Roche, 733 F.2d at 863.
testing.\textsuperscript{34} Without this expansion, the public would be forced to wait an additional two years beyond the expiry of the patent to receive the benefit of generic drug products.\textsuperscript{35} The patent holder would effectively receive an additional two year period of patent exclusivity beyond what the Patent Act authorized.\textsuperscript{36} According to Bolar, this scenario would create a windfall for the patent holder at the expense of the public, during the time the generic company performed the required FDA testing.\textsuperscript{37} Despite Bolar’s arguments, the court refused to expand the common law experimental use rule.\textsuperscript{38} Given that Bolar’s activities would ultimately serve a commercial purpose once the Roche patent expired, such a planned commercial use could not be reconciled with the Patent Act. The court concluded that such an expansion to the exception would be legislative in nature and only proper for Congress to address.\textsuperscript{39}


Congress recognized the conflict raised in Roche \textit{v.} Bolar\textsuperscript{40} where public policy favored the rapid entry of generic drugs into the market, but the combination of the statutory language of the Patent Act and the time required to generate data and obtain FDA approval undermined the public policy goal. Congress sought to resolve this problem by creating an industry-specific statutory experimental research exception, 35 U.S.C. § 271(e)(1),\textsuperscript{41} to the Patent Act\textsuperscript{42} as part of the Hatch-Waxman Act of 1984.\textsuperscript{43} The practical effect of § 271(e)(1) was to reverse the decision in

\textsuperscript{34}Id.
\textsuperscript{35}Id. at 864.
\textsuperscript{36}Id.
\textsuperscript{37}Roche, 733 F.2d at 860-64.
\textsuperscript{38}Id. at 863-64.
\textsuperscript{39}Id. at 864.
\textsuperscript{40}See supra Part II.B.1 (providing details of the conflict that led Congress to create the statutory experimental use exception).
\textsuperscript{41}35 U.S.C. § 271(e)(1) (2000) states in part:
It shall not be an act of infringement to make, use, offer to sell, or sell within the United States or import into the United States a patented invention... solely for uses reasonably related to the development and submission of information under a Federal law which regulates the manufacture, use, or sale of drugs ....
\textsuperscript{42}See supra note 32.
\textsuperscript{43}Drug Price Competition and Patent Term Restoration Act of 1984, Pub. L. No. 98-417, 98 Stat. 1585, 1603 (1984) (commonly referred to as Hatch-Waxman Act); see also Bristol-Myers, 2001 U.S. Dist. LEXIS 19361, at *10 (recognizing Congressional balancing in that although § 271(e)(1) permits a patented invention to be used for research for purposes for FDA
Roche by exempting research activities that would otherwise qualify as infringement, provided the experimental use was necessary to fulfill mandatory requirements of the Federal Food, Drug and Cosmetic Act (FDCA).44

3. Inconsistent Application Broadened the Statutory Experimental Use Exception

While district courts have consistently construed the common law experimental use doctrine narrowly,45 they have been inconsistent in their application of the statutory exception. In particular, many district courts have used different standards to determine what constitutes research performed to fulfill FDCA requirements.46

In Bristol-Myers Squibb Co. v. Rhone-Poulenc Rorer, Inc.,47 Rhone-Poulenc Rorer, Inc. (RPR) brought suit against Bristol-Myers Squibb Co. (BMS) for infringement under § 271(a)48 based on BMS' use of four of RPR's patented chemical intermediates used to manufacture the drug taxol.49 RPR argued that BMS' use of their patented intermediates was beyond the scope of the safe harbor provision of § 271(e)(1).50 In support of its position, RPR cited legislative history that supported excluding the use of chemical intermediates under the § 271(e)(1) exception.51 In

approval, the fruits of that research may not be sold prior to the expiry of the patent).  
45See Pfizer, Inc. v. Int'l Rectifier Corp, No. 73-58, 1982 U.S. Dist. LEXIS 17411, at *11-12 (C.D. Cal. July 20, 1982) (finding in a pre-§ 271(e)(1) case, that if the products of experiment are sold or conducted with a view to adapt to the experimenter's business, the act is infringing); see also Baxter Diagnostics, Inc. v. AVL Scientific Corp., 798 F. Supp. 612, 620 (C.D. Cal. 1992) (finding in a post-§ 271(e)(1) case, that the "[common law experimental use] exception . . . is a very narrow one").
46Compare Bristol-Myers Squibb Co., 2001 U.S. Dist. LEXIS 19361, at *12-13, with Nexell Therapeutics, Inc., 199 F. Supp. 2d at 204-05. See also infra Part II.B.3 (providing the different standards the district courts have used).
48See 35 U.S.C. § 271(a) (2000); see supra note 32.
49Bristol-Myers, 2001 U.S. Dist. LEXIS 19361, at *1. Taxol is an anticancer drug. Id. at *14.
50Id. at *5.
51Id. at *10 n.6 (explaining that "the legislative history of Section 271(e)(1) for the proposition that 'the only activity which will be permitted by § 271(e)(1) is a limited amount of testing so that generic manufacturers can establish bioequivalency of a generic substitute") (quoting Sum. of H.R. 3605, reprinted in Drug Price and Patent Term Act of 1984, Pub. L. No. 98-417, 1984 U.S.C.C.A.N. 2689, at 2692 ).
EXPERIMENTAL USE EXCEPTIONS

contrast, BMS argued that its use of the patented chemical intermediates was protected by § 271(e)(1) because these screening activities were generating data reasonably related to obtaining FDA approval. BMS argued that there was also legislative history supporting its claim that its activities were protected under § 271(e)(1).\(^\text{52}\)

The district court concluded that the plain language of § 271(e)(1) outweighed any legislative history and therefore the use of the patented intermediates to screen for compounds similar to taxol was permissible because BMS had made two submissions to the FDA containing information on compounds similar to taxol.\(^\text{53}\) The court based its determination of whether the activity was within the statutory exception by applying a standard of whether it was reasonable to believe that there was a "decent prospect" of using this information for an FDA approval.\(^\text{54}\)

The § 271(e)(1) safe harbor provision was further broadened in *Nexell Therapeutics, Inc. v. AmCell Corp.*\(^\text{55}\) Nexell had two patents for methods to prepare purified suspensions of stem cells and AmCell was using these patented methods in preparation of an FDA submission for approval of its own product.\(^\text{56}\) Nexell brought suit against AmCell for infringement under § 271(a), arguing that AmCell's activities constituted "offers to sell"\(^\text{57}\) in violation of § 154(a).\(^\text{58}\) Nexell cited specific AmCell activities that included: recruiting clinicians to participate in its research program to provide the FDA with safety and effectiveness data, maintaining a booth at a professional meeting to solicit protocols for research studies, providing the device for free to FDA approved clinical investigators in return for generating data, and other similar activities.\(^\text{59}\)

AmCell, like BMS, argued that its use of Nexell's patented separation method was within the scope of § 271(e)(1) because the activities were generating data reasonably related to obtaining FDA approval.\(^\text{60}\) The court emphasized that because the FDA actively enforces its own guidelines, only in the

---

\(^{52}\) *Id.* at *4-12.


\(^{54}\) *Id.* at *9-20.


\(^{56}\) *Id.* at 198-99.

\(^{57}\) *Id.* at 199.

\(^{58}\) 35 U.S.C. § 154(a) (2000); *see supra* note 33 [OR *Roche*, 733 F.2d at 863].

\(^{59}\) *Nexell*, 199 F. Supp. at 199.

\(^{60}\) *Id.*
extreme case in which either it is clear that certain otherwise infringing activities are outside the FDA approval process or the FDA itself affirmatively indicates that a party's activities are not reasonably related to obtaining its approval, the court will not find that accused activities . . . are not "reasonably related" to obtaining FDA approval.61

The court therefore held that AmCell's activities were within the scope of § 271(e)(1). In doing so, the court further broadened the standard for the determination of activities that are "reasonably related" to obtaining FDA approval by declaring that such activities only exceed the scope of the exception "when they have no objectively reasonable application towards obtaining FDA approval."62

C. The Japanese Approach to Experimental Use and Research Tool Patents

The Japanese experimental use exception63 is much broader than that of the United States and is not industry specific. Japanese case law has developed to require that the experimental use of patented material be directed toward an advancement in technology.64 Initially, Japanese courts held that research conducted in advance of patent expiry to develop generic versions of patented drugs to market and sell once the pioneer product's patent expired constituted infringement. The Japanese lower courts found that such activities were outside of the experimental exception because they were not "advancing science," but merely imitating other previously patented products.65 The Osaka High Court, however, found that the earlier entry of generic drugs into the market after patent expiry is a benefit to the general public and held that technological advancement is not always required to be tangible nor direct.66

61Id. at 203.
62Id. at 203-05.
66Id.
The general Japanese experimental use exception permits many beneficial activities, including investigating patentability, analyzing function, and developing and improving an invention prior to patent expiry.67 Japanese patent law, however, contains no special provisions for research tool patents and its general experimental use provisions are in harmony with the Trade-Related Aspects of Intellectual Property Agreements (TRIPS) and with the majority of the rest of the world.68

III. ANALYSIS

The Federal Circuit decision in *Integra Lifesciences I, Ltd. v. Merck KGaA* is a recent Federal Circuit interpretation of the statutory experimental use exception in § 271(e)(1) as applied to biotechnology research tool patents.69 This section analyzes the *Integra* decision and then investigates how the Japanese patent system addresses both research tool patents and experimental use.

A. Integra Lifesciences I, Ltd. v. Merck KGaA

1. Factual and Procedural History

Integra successfully developed and patented a biotechnology research tool for identifying compounds with wound healing properties.70 Integra learned that Merck KGaA was utilizing five of its patents71 as a research screening tool to identify compounds for potential development into drug products.72 Because Integra considered Merck KGaA's activities to be of a commercial nature and therefore an infringement of its patented research tool, it offered Merck KGaA an opportunity to purchase a license to use its patented research tool. Licensing negotiations, however, broke down and Integra brought a patent infringement suit against Merck KGaA.73 Merck KGaA responded by challenging the validity of the patents

---

68Id. at 524.
69After this comment was accepted for publication, the U.S. Supreme Court vacated the narrow interpretation of § 271(e)(1) by the Federal Circuit and decided this issue unanimously in favor of Merck KGaA. Merck KGaA *v. Integra Lifesciences I, Ltd.*, 125 S. Ct. 2372 (2005).
71*Integra*, 331 F.3d at 862 (identifying the five patents at issue owned by Integra Lifesciences: 4,988,621; 4,792,525; 5,695,997; 4,879,237; and 4,789,734).
72Id. at 863.
73Id.
and claiming that its use of the patents was protected by the experimental use exception of § 271(e)(1) because Merck KGaA was screening for potential drug candidates to develop for FDA approval.\(^{74}\)

2. District Court Holding in *Integra*

The District Court for the Southern District of California concluded that four of the five Integra patents were valid. In addition, the district court concluded that § 271(e)(1) "did not immunize Merck [KGaA] against liability" with regard to its use of the other four Integra research tool patents.\(^{75}\) On appeal, Merck KGaA contending that the district court erred in its interpretation of § 271(e)(1).\(^{76}\)

3. Federal Circuit Court Holding in *Integra*

The Federal Circuit affirmed the district court's interpretation of § 271(e)(1). Additionally, the Federal Circuit agreed that the activities in question were focused on the use of Integra's patented research tool to "identif[y] the best drug candidate to subject to future . . . testing under the FDA processes" and Merck KGaA's activities exceeded the scope of the exception and were not reasonably related to obtaining FDA approval.\(^{77}\)

The majority held that the non-clinical research tool patent at bar used for screening for new drug development candidates was beyond the scope of what Congress intended to include within § 271(e)(1).\(^{78}\) The court noted that the activities exempted by § 271(e)(1) were only to be a *de minimis* encroachment on the rights of the patentee.\(^{79}\) The court, however, found that the expansive use of the exception condoned by the district courts would "effectively vitiate the exclusive rights of patentees owning biotechnology [research] tool patents."\(^{80}\) The majority defended its position against the use of a broad interpretation of § 271(e)(1) by emphasizing that a broad interpretation of the exemption "would swallow the whole benefit of the Patent Act for some categories of biotechnolog[y] inventions . . . [and] deprive entire categories of inventions of patent

\(^{74}\text{Id.}\)

\(^{75}\text{Integra, 331 F.3d at 862.}\)

\(^{76}\text{Id. at 864.}\)

\(^{77}\text{Id. at 865.}\)

\(^{78}\text{Id. at 865-66.}\)

\(^{79}\text{Integra, 331 F.3d at 867.}\)

\(^{80}\text{Id.}\)
protection.\footnote{Id.}

The Federal Circuit focused its decision on the statutory language such as "solely" and "reasonably related" (to FDA approval) as well as the legislative history of the Hatch-Waxman Act. It concluded that the term "solely" was to be construed as strictly limiting, and focused the exemption on the "provision of information to the FDA."\footnote{Id. at 866.} The court found that the inclusion of the word "solely" within the statute limits the flexibility a court could apply to the "reasonably related" language when interpreting the applicability of the statute.\footnote{Id. at 866.} This holding is in contrast to the earlier district court decisions of BMS and Bolar that interpreted "reasonably related" very broadly.\footnote{Integra, 331 F.3d at 866.}

Accordingly, the court concluded that the activities that were conducted for the purpose of identifying compounds for further testing were distinct from activities that were required for the FDA approval process.\footnote{See supra Part II.B.3.} Therefore, since Merck KGaA's activities were focused on a pre-cursor step of identifying compounds, Merck KGaA's activities were not covered by the statutory experimental use exception.

The court also commented that "screening" activities, such as the activities performed by Merck KGaA, only occur in the search for novel pioneer compounds and are not required for generic drugs that have already been discovered and are merely being imitated.\footnote{Id. at 867.} The majority found the Act to have the express objective of bringing generic drugs expeditiously into the marketplace upon the expiry of a pioneer drug patent; meanwhile, the phrase "reasonably related" was found to not extend to information for FDA approval of new innovative pioneer drugs.\footnote{Id. at 866-67.}

The Federal Circuit therefore limited the application of the § 271(e)(1) experimental use exception to research activities conducted on known drug compounds that are undergoing testing required as part of the FDA approval process for generic drugs. Furthermore, the court held that the exception cannot be applied to such broad ranging activities as research for pioneer compounds, which the district courts previously held did not constitute infringement. Accordingly, Merck KGaA appealed to the U.S. Supreme Court, which vacated the decision on June 13, 2005.\footnote{Merck KGaA v. Integra Lifesciences I, Ltd., 125 S. Ct. 2372 (2005).}
4. Federal Circuit Dissent

The dissent contended that the majority's conclusion was not required by law or policy, and that it is "ill-suited to today's research-founded, technology-based economy." The dissent also pointed out that the decision "eliminate[d] the common law research exception" and is at odds with the original purpose of the patent system. Instead, the dissent advocated focusing on the broader question of "whether, and to what extent, the patentee's permission is required in order to study that which is patented" under either the common law or statutory research exception, and without making specific distinctions for research tool patents.

The dissent reminded the court that patents also require "disclosure of the details of patented inventions" that facilitates further knowledge and understanding of the patentee's invention and may lead to further technological advance. It argued that the disclosure requirement is absolutely useless if the information disclosed cannot be used for seventeen to twenty years. Disclosure "facilitates further knowledge and understanding of what was done by the patentee, and may lead to further technological advance." Additionally, disclosure is "integral to the advancement of technology" and the limits established by the majority will reduce research in currently patent protected areas, thereby reducing competition.

Although the dissent found the decision unfocused and inconsistent with some of the tenets of the patent system, the dissent conceded that the research exemption required boundaries. The dissent suggested that the "generally recognized distinction between 'research' and 'development'... may serve as" a better dividing line for determining the boundary of permissible experimental use.

5. U.S. Supreme Court Holding

The U.S. Supreme Court vacated the decision of the Federal Circuit and returned to a broader interpretation of the experimental use exception
under the § 271(e)(1) safe harbor provision. The Court specifically stated that "(1) experimentation on drugs that are not ultimately the subject of an FDA submission or (2) use of patented compounds in experiments that are not ultimately submitted to the FDA" are not categorically excluded from the exemption.\(^97\) Instead, the exception from infringement covers "all uses of patented compounds 'reasonably related' to the process of developing information for submission under any federal law regulating the manufacture, use, or distribution of drugs."\(^98\) It should be noted, however, that the Court was careful to frame the issue very narrowly. Because there was no argument nor evidence that these particular compounds were used as research tools, the Court did not express a view regarding "whether, or to what extent, § 271(e)(1) exempts from infringement the use of 'research tools' in the development of information for the regulatory process."\(^99\)

**B. Japanese Experimental Use and Research Tool Patents**

The Japanese experimental use exception\(^100\) provides a single broad statutory experimental use exemption that applies to all industries. Experimental use in Japan is exempt from liability for patent infringement\(^101\) provided the use is directed toward the advancement of technology. Initially, Japanese courts held that imitation by generic drug manufacturers in advance of patent expiry was infringement, since they were not "advancing science," but merely imitating.\(^102\) The Osaka High Court, however, found that the early entry of generic drugs is a benefit to the general public and held that technological advancement is not always required to be tangible nor direct.\(^103\)

The Japanese approach favors promoting the use of new knowledge to further increase and accelerate technological advances and permits many other beneficial activities, including investigating patentability, analyzing function, and developing and improving an invention prior to patent

---

\(^97\) *Integra*, 125 S. Ct. at 2382.
\(^98\) *Id.* at 2383 (first emphasis and citation omitted).
\(^99\) *Id.* at 2382 n.7.


\(^101\) Heath, *supra* note 64.

\(^102\) AIPPI Japan Case Study Group, *supra* note 65.

\(^103\) *Id.* at 109.
expiry. The system, however, also protects the rights of patent holders by prohibiting both the stockpiling and sale of improvements that were developed through research that used existing patented material until the expiration of the patent the knowledge was gained from. Research activities associated with obtaining regulatory approval for pharmaceuticals in Japan are included under the Japanese experimental use exception. Japanese courts have recognized that research required to obtain regulatory approval does not constitute patent infringement.

Although Japanese patent law contains no special provisions for research tool patents, its general experimental use provisions are in harmony with TRIPS and most of the world. The breadth of the Japanese experimental use exception permits researchers in Japan, as well as researchers in other countries with broad research exemptions, to freely utilize their patented material, including research tool patents for research purposes. This exception permits researchers to design around existing patents with no liability for infringement. This broad exception is consistent with Japan's stated policy goals of encouraging the development of industry and encouraging scientific progress.

In addition, the Japanese patent laws do not prevent products protected by U.S. patents from being utilized in Japan for experimental purposes, and provisions in treaties such as the 1994 TRIPS Agreement contain liberal conditions for exceptions to exclusive patent rights, including experimental use. Further, Japan has successfully dispelled the myth that a broad experimental use exception would reduce the incentive to innovate. To the contrary, Japan was recently ranked the sixth most

---

106 Keiji D. Kondo, Clinical Testing Falls into Permissible R & D Exception of Patent Infringement, 26 AIPPI J. 290, 290-91 (2001). In order to market a novel or generic pharmaceutical product in Japan, the product must first be approved in accordance with the provisions of the Pharmaceutical Product Regulation Act that is also referred to as "Yakuji-Ho." Id.
107 See id. at 293.
108 Johnson, supra note 15, at 524.
109 Id. at 520-21.
110 Id. at 521; see also Kondo, supra note 106, at 291 (stating "[t]he underlying policy of [the Japanese research] exception is to promote development of new technologies").
111 John F. Duffy, Harmony and Diversity in Global Patent Law, 17 BERKELEY TECH. L.J. 685, 688 (2002) (explaining that TRIPS is a treaty signed by more than one hundred countries agreeing to align their patent laws within a "uniform framework of international standards").
112 Johnson, supra note 15, at 524-25.
innovative country based on a National Innovation Index and is expected to replace the United States as number one in 2005.\footnote{See id. at 532.}

In summary, the Japanese approach to experimental use does not include a specific law regarding research tool patents. Instead, Japan has a broad, non-industry specific, statutory experimental use exception that applies to all inventions and is consistent with the majority of the world. The statute promotes technological advances by permitting research with existing patents, while protecting the rights of the patentee by prohibiting the sale of materials developed from the research until the patent expires. This system has led to increased innovation in Japan.

IV. Evaluation

The U.S. Supreme Court decision in \textit{Integra} adopted a broad view of the statutory experimental use exception in 35 U.S.C. § 271(e)(1) but has failed to fully address the narrow experimental use issue that was at the heart of the \textit{Integra Lifesciences I, Ltd. v. Merck KGaA} controversy. Although the Supreme Court clarified (1) that the § 271(e)(1) exception can be applied to all phases of research, including both pre-clinical and clinical studies,\footnote{Merck KGaA v. Integra Lifesciences I, Ltd., 125 S. Ct. 2372, 2380 (2005).} (2) that the § 271(e)(1) exception applies to both research on drugs that are included in a "submission to the FDA" for approval and for research on those "drugs that are not ultimately the subject of an FDA submission,"\footnote{Id. at 2382-83.} and (3) that the "exemption from infringement extends to all uses of patented inventions that are reasonably related to the development and submission of any information under the FDCA," the Court has still left research tool patent holders in a state of uncertainty.\footnote{Id. at 2380.} The Court failed to define what is "reasonably related," stating, "We therefore need not—and do not—express a view about whether, or to what extent, § 271(e)(1) exempts from infringement the use of 'research tools' in the development of information for the regulatory process."\footnote{Id. at 2382.} Research tool patent holders, therefore, remain uncertain as to the amount of protection available to them under the Patent Act.

The Supreme Court decision represents the fourth change in the interpretation of § 271(e)(1) in four years. These rapid and significant changes threaten the stability of the pharmaceutical and biotechnology
industries. The law must strike a balance between the protection of patent rights and permissible experimental use. If the U.S. common law and statutory experimental use exception is too narrow, experimentation may not be encouraged. If the exception is too broad, however, innovators may not take the risks to develop novel products fearing that they will not receive adequate patent protection. If the proper balance is not achieved, the constitutional goal of the Patent Act—to promote scientific progress and innovation—may also be threatened. In contrast, Japan's rate of innovation is growing due to their single statutory-based experimental use exception.9 While the Japanese system has its advantages, adopting the Japanese approach in the United States without any modification presents unique challenges and will most likely produce inequitable results within the United States and the global marketplace.

A. Impact on Research Patent Tool Holders

With each change in interpretation of § 271(e)(1), the courts disrupt a delicate balance that has evolved since 1984 when the Hatch-Waxman Act created the statutory research exception.120 As the district courts began to favor a broader interpretation, which they found consistent with the Hatch-Waxman Act's goal of encouraging faster drug approvals, the court failed to recognize that the benefit given to the pharmaceutical companies was at the expense of the biotechnology sector. This broadening trend reduced the monetary value of research tool patents and undermined the expectations of investors. Instead of realizing significant returns on their investments, the biotechnology sector watched the courts remove the expected patent protection and saw the benefits flow freely to the pharmaceutical companies utilizing the research tools.121 Therefore, the companies that focused on developing research tools with the purpose of selling or licensing them were at risk of financial destruction with each broadening decision. Such sudden changes in legal interpretation have far reaching economic implications to which the marketplace cannot always react swiftly.122 As the biotechnology sector complained about its situation, the Federal Circuit reversed the trend in Integra and made a significant swing in the other direction. That decision

118 See supra Parts II.B.3, III.A.
119 See supra Part III.B.
120 See supra Part II.B.2-3.
121 See supra note 10.
122 See supra notes 3-5.
suddenly shifted the advantage to the research tool patent holders.\textsuperscript{123}

Although the Federal Circuit in \textit{Integra} restored patent protection to an entire category of research tool patents that were previously stripped of the patent protection the Patent Act was designed to provide,\textsuperscript{124} it also created new problems. This sudden shift now created a dilemma for many larger pharmaceutical companies left with the possibilities of infringement suits, or rapidly purchasing licenses from the research patent tool holders, or searching for other methods to perform such work. This swing has potentially far reaching consequences, seemingly not considered by the majority in \textit{Integra}.\textsuperscript{125} Although, on its surface, the Federal Circuit's literal interpretation of the statutory experimental use exception is much more consistent with traditional U.S. patent policy regarding experimental use, the majority apparently failed to realize that neither the pharmaceutical nor the biotechnology industries are designed to re-align themselves as rapidly as the court can swing back and forth.

As the dissent pointed out, the Federal Circuit's \textit{Integra} decision has effectively eliminated the common law research exception, since its application is limited to situations where there is no conceivable future intent to use any knowledge gained from an experimental use in a commercial manner. The dissent in \textit{Integra} highlighted how rarely the exception was successfully applied and was only able to find two such cases, both of which were over thirty-five years old.\textsuperscript{126} In addition, the majority's interpretation of the statutory research exception gave it the narrowest meaning yet. Although such narrowing may seem like an opportunity for the biotechnology sector to capitalize, the interconnection between the pharmaceutical and biotechnology sectors may actually prevent such a benefit.

For the biotechnology sector to capitalize, the pharmaceutical companies must be willing and able to either purchase the research tool patent rights or license the tools for use. This has wide ranging downstream effects: (1) if the result of each licensing agreement requires that the licensee pay the research tool patent owner a royalty upon the successful development of a drug product, and many tools are utilized throughout the development, the royalties may make it prohibitively

\textsuperscript{123}See supra Part III.A.

\textsuperscript{124}\textit{Integra}, 331 F.3d at 867.

\textsuperscript{125}See supra Part III.A.4 (providing the more pragmatic and broad interpretation favored by the dissent).

\textsuperscript{126}See \textit{Integra}, 331 F.3d at 875 (noting that there have been few judicial decisions where the alleged infringement was found to be exempt as an experimental use); \textit{Chesterfield}, 159 F. Supp. at 375-76 (holding experimental use of a metal alloy did not constitute infringement since it was only built experimentally, and not manufactured for sale or sold).
expensive to develop the product for commercial sale or may result in significant price increases for drug products;¹²⁷ and (2) companies may just send this work overseas,¹²⁸ as the majority of countries have a single broad experimental use exception similar to Japan.¹²⁹

This last scenario is possible since the courts have already held that it is not infringement to import information into the United States in the form of knowledge, even though such knowledge was generated by using a patented research tool that had it been used in the United States, would have constituted patent infringement.¹³⁰ Although it is not known whether these scenarios will come to fruition, their realization would significantly impact the incentive to develop new drug products. The pricing will also be impacted, as well as the ability to introduce generic drugs into the market faster in furtherance of the goals of the Hatch-Waxman Act.¹³¹

Given the many changes and inconsistencies discussed above that resulted from the decision by the Federal Circuit, the U.S. Supreme Court has since vacated that decision.¹³² While there was an expectation that the Court would resolve the controversy of experimental use of patented research tools completely, it failed to do so because the record indicated that Integra's patented tools were not actually used as tools and highlighted a distinction between the use of an existing tool in research and study of the tool itself. Therefore, while the Court clarified that the § 271(e)(1) exception can be applied to all phases of research, including both preclinical and clinical studies, and that qualification under the exception is not solely determined by whether the research is actually submitted to the FDA,¹³³ the fate of how § 271(e)(1) will be interpreted with regard to patented biotechnology research tools remains uncertain.

B. Applying Principles of the Japanese Approach
to the U.S. Patent System

The discussion now turns to whether the Japanese system can provide a remedy to balance the interest of the biotechnology firms,

¹²⁸Id.
¹²⁹See Johnson, supra note 15, at 527; supra Part III.B.
¹³⁰See Warburg & Maebius, supra note 3; see also Maebius & Wegner, supra note 12, at 5 (concluding that, under the current state of the law, a court would have to find that "knowledge" is a "product" by itself).
¹³¹See supra Part II.B.2.
¹³²Integra Lifesciences I, Ltd. v. Merck KGaA, 331 F.3d 860 (Fed. Cir. 2003), vacated, 125 S. Ct. 2372 (2005).
¹³³Integra, 125 S. Ct. at 2382-83.
pharmaceutical companies, and the public. The Japanese system does not encounter the problems described above because they have a single broad experimental use exception. The exception applies to all inventions in all industries and has been in place for over one hundred years providing substantial stability. Although this system works for Japan, it would not be easy to change the U.S. system without negatively impacting the companies with research tool patents unless other changes are simultaneously made.

Prior to § 271(e)(1), the narrow U.S. common law experimental use exception historically provided broad protection for patented research tools and, therefore, biotechnology companies were created for the sole purpose of developing and selling such products. These companies saw the protection wane during the few years prior to the Federal Circuit's decision in Integra. The decision temporarily restored the prior protections. A direct move to a broad system like that of Japan, however, would be extremely problematic in that it would render research tool patents essentially valueless.

Therefore, due to the historical background that has brought the experimental use exception to its present form in the United States, it seems more reasonable to advocate for a hybrid between the Japanese and U.S. systems. One such possibility would be to: (1) maintain the narrow statutory research exception of § 271(e)(1) declared by the majority in the Federal Circuit's Integra decision to promote the rapid entry of generic drugs into the market; and (2) convert the U.S. common law exception to a broad statutory exception similar to Japan's, while adding the distinction between "research" purposes and "development" purposes advocated by the Federal Circuit dissent in Integra. Experimental use would be permitted where the "research" has the purpose of designing around an existing patent or promotes a technological advance in the same subject matter. In contrast, experimental use of a patented research tool would be prohibited if the purpose were to "develop" a product in another area. This would bring the United States closer to the Japanese system. Such a system advocates innovation by permitting research to design around patents, but would also distinguish the United States because it would not otherwise allow for the free usage of existing patented research tools.

While the above represents a possible alternative to the dilemma of how to modify the combined common law and statutory schemes in an

---

134 See Johnson, supra note 15, at 519-21.
135 Integra, 331 F.3d at 872.
136 See supra notes 87-88 and accompanying text.
137 See supra Part III.A.4.
equitable manner without destroying an industry that has developed in reliance on the existing legal environment, the proposed solution does not fully safeguard U.S. biotechnology companies and research tool patents in the increasingly globalized marketplace. In reality, due to a lack of harmonization among global patent laws, U.S. companies wishing to freely utilize such U.S. research tool patents can simply utilize the tools abroad, and import the knowledge gained without paying royalties or risking liability for infringement. This is because there is currently no bar from importing knowledge into the United States that was generated by a patented research tool.\(^{138}\) Although an in depth analysis of this scenario is beyond the scope of this comment, it is nonetheless raised because it is ultimately relevant to developing a long-term solution for how to address patent protection for U.S. research tool patents.

V. Conclusion

The rapid and significant changes in the legal interpretation of 35 U.S.C § 271(e)(1) have threatened the economic stability that the legal system is expected to provide. These decisions are especially significant because they have the potential to undermine the constitutional goal of the patent system to promote scientific progress. Rather than promoting progress, the courts have created uncertainty that has reduced the incentive to invest and invent. Moreover, the pharmaceutical and biotechnology industries are not able to react to these rapid changes in the interpretation of the law. Although the U.S. Supreme Court has provided some further clarity regarding the scope of the statutory section in § 271(e)(1), it failed to adequately address the narrow issue regarding research tool patents, leaving the biotechnology research tool industry and patent holders in a continued state of uncertainty.

The uncertainty, created by the courts, combined with the increase in global industrialization and the establishment of precedent that knowledge gained from the use of U.S. patented research tools abroad can be imported without penalty, provides the users of such products an avenue and rationale to abandon conducting such research activities in the United States. Unfortunately, these considerations provide incentive to utilize U.S. patented research tools on foreign soil where companies will be free from the threat of liability for infringement and the requirement to pay for licensing fees.

\(^{138}\) See Warburg & Maebius, supra note 3; see also Maebius & Wegner, supra note 12, at 8 (noting that while methods of making or producing a product are protected by patent law, mere information gathered about a potential substance is not protected).
Although the Federal Circuit and the Supreme Court attempted to achieve an equitable result among the developers and the users of biotechnology research tool patents, the courts can only address activities conducted within the borders of the United States. Therefore, the process for achieving global equity in biotechnology research tool patent protection is beyond the power of the court. Yet the legislative adoption of select principles of the Japanese system, such as the adoption of a single broad experimental use exception that would permit research to design around a patent, could lead to significantly greater innovation. The recommendation is not a magic solution, given the complexities that arise when industries and practices develop over an extended period of time in different legal environments, creating reliance on specific aspects of each legal system.

Richard Jahn