

**PATENT POOLS: A SOLUTION TO THE PROBLEM  
OF ACCESS IN BIOTECHNOLOGY PATENTS?**

by

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## Table of Contents

<b>I. SUMMARY.....</b>	<b>2</b>
<b>II. PUBLIC CONCERNS ABOUT THE GRANTING OF U.S. PATENTS TO GENOMIC INVENTIONS ..</b>	<b>2</b>
<b>III. PATENT POOLS AND THEIR HISTORY.....</b>	<b>4</b>
<b>IV. LEGAL GUIDELINES FOR FORMING INTELLECTUAL PROPERTY POOLS .....</b>	<b>6</b>
<b>V. BENEFITS FROM THE POOLING OF BIOTECHNOLOGY PATENTS .....</b>	<b>8</b>
<b>VI. CONCLUSION.....</b>	<b>11</b>
<b>VII. APPENDIX.....</b>	<b>12</b>

## I. SUMMARY

One of the biggest public concerns voiced against the granting of patents by the United States Patent Office (USPTO) to inventions in biotechnology, specifically inventions based on genetic information, is the potential lack of reasonable access to that technology for the research and development of commercial products and for further basic biological research. One possible solution lies in the formation of patent pools. Part II of this document briefly discusses public concerns about the granting of intellectual property rights to genomic inventions. Part III defines a patent pool and summarizes their history in the United States. Part IV sets forth the legal guidelines issued by the Department of Justice and the Federal Trade Commission concerning intellectual property licensing arrangements. Finally, Part V analyzes the potential benefits of forming patent pools in the biotechnology industry to both commercial entities and the public at large.

## II. PUBLIC CONCERNS ABOUT THE GRANTING OF U.S. PATENTS TO GENOMIC INVENTIONS

In the mid-1980's a debate raged within the scientific community regarding the investment of limited public research funds into the Human Genome Project. Advocates suggested that by elaborating the core information relating to our common genetic heritage, we would foster innovation that would accelerate research. Contrary opinions opined that the information would develop on its own as a natural consequence of research in other areas. While it may have taken longer, the information would have been "richer" since it would include not only raw data, but the understanding of what this data means. Still others suggested that obtaining the sequence of research organisms such as *C. elegans* and the mouse would serve the scientific community better since the data could be immediately adapted to developmental research. Despite this debate, it was decided to proceed with the Human Genome Project.

Over the past 15 years, technological advances have allowed for the rapid sequencing of genetic information from a variety of organisms. In June of 2000, scientists completed a draft sequence of the human genome. Also, a sequence of *D. melanogaster* was recently completed and other organisms, such as the mouse, should be completed by year's end. The information from these projects has been obtained from both private and public research concerns, and the private entities, as well as some public entities such as universities, desire to profit from their investment. To this end, these entities use the patent system to protect their investment. However, this route of protection has sparked a public debate that will likely remain for some time.

Part of the public concern lies in the corporate utilization of information from several genome projects that have been placed in the public domain. Companies have used this information in their own proprietary research, thereby, capitalizing on publicly funded efforts and removing further developments of such efforts from the public domain. There is great consternation that

some private concerns are attempting to reap benefits from patented technologies that would not have been possible without publicly funded research, such as the Human Genome Project.

Of present concern to the public is the removal of valuable research resources from the public domain. The characterization of nucleic acid sequence information is only the first step in the utilization of genetic information. Significant and intensive research efforts, however, are required to glean the information from the nucleic acid sequences for use in, *inter alia*, the development of pharmaceutical agents for disease treatment, and in elucidating basic biological processes. Many feel that by allowing genetic information to be patented, researchers will no longer have free access to the information and materials necessary to perform biological research. This issue of access to research tools relates to the ability of a patent holder to exclude others from using the material. Further, if a single patent holder has a proprietary position on a large number of nucleic acids, they may be in a position to “hold hostage” future research and development efforts.

No single company or organization, however, has the resources to develop any significant fraction of the genetic information present in an organism. If proprietary information is not freely available or licensed in an affordable manner, researchers will be precluded from using these protected nucleic acids to develop new therapeutics and diagnostics. It would be, however, shortsighted of a patent holder to demand such a prohibitively expensive licensing agreement that would preclude anyone else from utilizing a patented invention. Rather, an owner of a patent is likely to make business decisions based upon profitability, and one element of such is the ability to obtain licensees. For example, two of the most profitable patents in the biotechnology area are those of Cohen and Boyer<sup>1</sup>, which are owned by Stanford University.<sup>2</sup> These patents cover the fundamental technology used throughout molecular biology, including recombinant DNA research.<sup>3</sup> By minimizing licensing fees and extending non-exclusive licenses, potential infringers were inclined to obtain licenses and the technology was therefore broadly distributed.<sup>4</sup> The dominance of these patents did not inhibit further development but instead spurred further innovation while providing profits to the patent owner.

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<sup>1</sup> United States Patent Nos. 4,237,224 and 4,468,538.

<sup>2</sup> See NATIONAL RESEARCH COUNCIL, INTELLECTUAL PROPERTY RIGHTS AND RESEARCH TOOLS IN MOLECULAR BIOLOGY (1996), reprinted at <<http://www.nap.edu/readingroom/books/property/5.html>> (a summary of a workshop held at the National Academy of Sciences on Feb. 15-16, 1996). As of early 1995, the royalty on the patents to Cohen and Boyer had increased exponentially to \$139 million. See *id.*, ch. 5.

<sup>3</sup> See *id.*

<sup>4</sup> See *id.*

### III. PATENT POOLS AND THEIR HISTORY

A “patent pool” is an agreement between two or more patent owners to license one or more of their patents to one another or third parties.<sup>5</sup> Alternatively, a patent pool may also be defined as “the aggregation of intellectual property rights which are the subject of cross-licensing, whether they are transferred directly by patentee to licensee or through some medium, such as a joint venture, set up specifically to administer the patent pool.”<sup>6</sup>

Over the last one hundred and fifty years, patent pools have played an important role in shaping both the industry and the law in the United States.<sup>7</sup> In 1856, the Sewing Machine Combination formed one of the first patent pools consisting of sewing machine patents.<sup>8</sup> In 1917, as a result of a recommendation of a committee formed by the Assistant Secretary of the Navy (The Honorable Franklin D. Roosevelt), an aircraft patent pool was privately formed encompassing almost all aircraft manufacturers in the United States.<sup>9</sup> The creation of the Manufacturer’s Aircraft Association was crucial to the U.S. government because the two major patent holders, the Wright Company and the Curtiss Company, had effectively blocked the building of any new airplanes, which were desperately needed as the United States was entering World War I.<sup>10</sup> In 1924, an organization first-named the Associated Radio Manufacturers, and later the Radio Corporation of America, merged the radio interests of American Marconi, General Electric, American Telephone and Telegraph (AT&T) and Westinghouse, leading to the establishment of standardization of radio parts, airway’s frequency locations and television transmission standards.<sup>11</sup> A more recent patent pool was formed in 1997, by the Trustees of Columbia University, Fujitsu Limited, General Instrument Corp., Lucent Technologies Inc., Matsushita Electric Industrial Co., Ltd., Mitsubishi Electric Corp., Philips Electronics N.V. (Philips), Scientific Atlanta, Inc., and Sony Corp. (Sony) to jointly share royalties from patents that are essential to compliance with the MPEG\_2 compression technology standard.<sup>12</sup> In 1998, Sony, Philips and Pioneer formed a patent pool for inventions that are essential to comply with certain

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<sup>5</sup> See JOEL I. KLEIN, AN ADDRESS TO THE AMERICAN INTELLECTUAL PROPERTY LAW ASSOCIATION, ON THE SUBJECT OF CROSS-LICENSING AND ANTITRUST LAW (May 2, 1997), reprinted at <http://www.usdoj.gov/atr/public/speeches/1123.htm> (noting that United States v. Line Materials, 333 U.S. 287, 313 n.24 (1948) states that the term “patent pool” is not a term of art.)

<sup>6</sup> See Klein, *supra at*, <http://www.usdoj.gov/atr/public/speeches/1123.html>.

<sup>7</sup> See Steven C. Carlson, Note, *Patent Pools and the Antitrust Dilemma*, 16 YALE J. ON REG. 359, 373 (1999).

<sup>8</sup> See Robert P. Merges, *Institutions For Intellectual Property Transactions: The Case for Patent Pools* (August 1999) <[www.law.berkeley.edu/institutes/bclt/pubs/merges](http://www.law.berkeley.edu/institutes/bclt/pubs/merges)>.

<sup>9</sup> See Harry T. Dykman, *Patent Licensing within The Manufacturer’s Aircraft Association (MAA)*, 46 J. PAT. OFF. SOC’Y 646, 648 (1964).

<sup>10</sup> See *id.* at 647.

<sup>11</sup> See *The Radio Manufacturers Association* (August 5, 1998) <[http://www.terraacom.net/~john\\_b/radiodocs/RETMA/ccodeindex.htm](http://www.terraacom.net/~john_b/radiodocs/RETMA/ccodeindex.htm)>

<sup>12</sup> See Letter from Joel I. Klein, Assistant Attorney General, Department of Justice, Antitrust Division, to Gerrard R. Beeney, Esq. (June 26, 1997) <<http://www.usdoj.gov/atr/public/busreview/1170.htm>> [hereinafter MPEG-LA review letter].

DVD-Video and DVD-ROM standard specifications.<sup>13</sup> Yet another patent pool was formed in 1999, this time by Toshiba Corporation, Hitachi, Ltd., Matsushita Electric Industrial Co., Ltd., Mitsubishi Electric Corporation, Time Warner Inc., and Victor Company of Japan, Ltd. for products manufactured in compliance with the DVD-ROM and DVD-Video formats.<sup>14</sup>

The law regarding patent pools has changed dramatically over the last century and a half.<sup>15</sup> A patent is a government-granted limited property right to exclude others from making, using or selling the patented invention.<sup>16</sup> Antitrust laws, such as the Sherman Act, however, were designed to prevent the creation of monopolies and restraints on interstate commerce. Although these laws seem to be incompatible, both antitrust law and patent law are “aimed at encouraging innovation, industry and competition.”<sup>17</sup> Nevertheless, antitrust laws and patents have often been conflict; especially where patent pooling or patent cross-licensing is concerned. In the early 1900’s, courts gave such sweeping deference to the licensing of patents that such activities were practicably immune from the Sherman Act.<sup>18</sup> Patent pools’ freedom from any scrutiny under the antitrust laws ended in 1912 with the Supreme Court’s decision in *Standard Sanitary Manufacturing Co. v. United States*<sup>19</sup> which dissolved a patent pool because of antitrust violations. In 1945, the Supreme Court dissolved one of the most notorious patent pools in *Hartford-Empire Co. v. United States*.<sup>20</sup> This patent pool of major glass manufacturers covered ninety-four percent of all the glass made in the United States, which allowed its members to sustain glass prices at unreasonably high levels.<sup>21</sup> By the 1960s, the Department of Justice closely evaluated all patent pools and created a list of nine patent licensing practices that were *per se* antitrust violations (known as the “Nine No-Nos”).<sup>22</sup> Recently, the Department of Justice

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<sup>13</sup> See Letter from Joel I. Klein, Assistant Attorney General, Department of Justice, Antitrust Division, to Gerrard R. Beene, Esq. (December 16, 1998) <<http://www.usdoj.gov/atr/public/busreview/2121.htm>> [hereinafter Sony Review letter].

<sup>14</sup> See Letter from Joel I. Klein, Assistant Attorney General, Department of Justice, Antitrust Division, to Carey R. Ramos, Esq. (June 10, 1999) <<http://www.usdoj.gov/atr/public/busreview/2485.htm>> [hereinafter Toshiba Review Letter].

<sup>15</sup> See Carlson, *supra* note 7 at 373.

<sup>16</sup> See *U.S. v. Line Material Co.*, 333 U.S. 287, 307 (1948).

<sup>17</sup> See *Atari Games Corp. v. Nintendo of America, Inc.*, 897 F.2d 1572, 14 USPQ2d 1034 (Fed. Cir. 1990).

<sup>18</sup> See Carlson, *supra* note 7 at 373. The Supreme Court established the dominance of patent law over antitrust law in *E. Bement & Sons v. National Harrow Co.*, 186 U.S. 70 (1902). See *id.* The Court did not find that a patent license that perpetuated the monopoly of the patent or fixed prices was a violation of the Sherman Act. See *id.*

<sup>19</sup> 226 U.S. 20 (1912). The Supreme Court dissolved a patent pool that fixed prices and locked out unlicensed manufacturers. See Carlson, *supra* note 7 at 374. Patent pooling, however, is not a *per se* violation of the Sherman Act. See *Standard Oil Co. (Indiana) v. United States*, 283 U.S. 163 (1931) (a settlement agreement between Standard Oil Co., the New Jersey Co., the Texas Co., and Gasoline Products Co. wherein patents were cross-licensed and the companies were thereby freed from litigation and allowed to concentrate instead on technical advancements, was ratified and found not be a restraint on trade).

<sup>20</sup> 323 U.S. 386 (1945). See also Carlson, *supra* note 7 at 374.

<sup>21</sup> See *id.* at 375. Justice Hugo Black wrote in *Hartford-Empire Co. v. United States*: “This history of this country has perhaps never witnessed a more completely successful economic tyranny over any field of industry than that accomplished by the appellants. 323 U.S. 386, 436-37.

<sup>22</sup> See Sheila F. Anthony, *Antitrust and Intellectual Property Law: From Adversaries to Partners*, 28 AIPA Q.J. 1, 3 (2000), reprinted at <http://www.ftc.gov/speeches/other/aipal.htm> (Commissioner Anthony’s remarks are adapted from her address at the Centennial Conference on Intellectual Property Law at the John Marshall School Center for

and the Federal Trade Commission (“FTC”) have recognized that patent pools can have significant procompetitive effects and may improve a business’ ability to survive this era of rapid technological innovation in a global economy.<sup>23</sup>

#### IV. LEGAL GUIDELINES FOR FORMING INTELLECTUAL PROPERTY POOLS

Since 1977, the Antitrust Division of the U.S. Department of Justice has had an official regulatory procedure for reviewing various types of business practices proposed by private firms.<sup>24</sup> Since 1979, the FTC has had a similar procedure, in which businesses may seek FTC advisory opinions concerning proposed business practices.<sup>25</sup> These procedures led to Justice Department and FTC policies in the intellectual property licensing area, and in 1995, these agencies issued *Antitrust Guidelines for the Licensing of Intellectual Property* (“*IP Guidelines*”), which sets forth their enforcement policies in this area.<sup>26</sup> The *IP Guidelines* specifically address pooling arrangements involving intellectual property owners and their rights.<sup>27</sup>

In particular, the *IP Guidelines* state that intellectual property pooling is procompetitive when it:

- (1) integrates complementary technologies,
- (2) reduces transaction costs,
- (3) clears blocking positions,
- (4) avoids costly infringement litigation, and
- (5) promotes the dissemination of technology.<sup>28</sup>

The *IP Guidelines* also discuss that excluding firms from an intellectual property pool may be anticompetitive if:

- (1) the excluded firms cannot effectively compete in the relevant market for the good incorporating the licensed technologies,
- (2) the pool participants collectively possess market power in the relevant market, and
- (3) the limitations on participation are not reasonably related to the efficient development and exploitation of the pooled technologies.<sup>29</sup>

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Intellectual Property Law in May of 1999). See also Andrea C. Brunetti, *Wading Into Patent Pooling: The Clinton Justice Department is Becoming More Tolerant of High-Tech Patent-Sharing Deals*, Intellectual Property (Nov. 1997) <<http://www.ipmag.com/brunetti.html>>.

<sup>23</sup> See *id.* at 5-6.

<sup>24</sup> See 28 C.F.R. § 50.6 (“Antitrust Division Business Review Procedure”).

<sup>25</sup> See 16 C.F.R. §§ 1.1-1.4 (“Advisory Opinions”).

<sup>26</sup> See U.S. DEP’T OF JUSTICE & FED. TRADE COMM’N, ANTITRUST GUIDELINES FOR THE LICENSING OF INTELLECTUAL PROPERTY (1995) (“*IP Guidelines*”), reprinted at <http://www.usdoj.gov/atr/public/guidelines/ipguide.htm>.

<sup>27</sup> *IP Guidelines*, § 5.5.

<sup>28</sup> See *id.*

<sup>29</sup> See *id.*

Anticompetitive effects may also occur if the pooling arrangement deters or discourages participants from engaging in research and development which is more likely "when the arrangement includes a large fraction of the potential research and development in an innovation market."<sup>30</sup>

The Justice Department has applied these guidelines in considering and approving three proposed patent pools. Its first review set forth the following additional guidelines:

- (1) the patents in the pool must be valid and not expired,
- (2) no aggregation of competitive technologies and setting a single price for them,
- (3) an independent expert should be used to determine whether a patent is essential to complement technologies in the pool,
- (4) the pool agreement must not disadvantage competitors in downstream product markets, and
- (5) the pool participants must not collude on prices outside the scope of the pool, e.g., on downstream products.<sup>31</sup>

Currently, the guidelines have been "collapsed" into the following two overarching questions: (1) "whether the proposed licensing program is likely to integrate complementary patent rights," and (2) "if so, whether the resulting competitive benefits are likely to be outweighed by competitive harm posed by other aspects of the program."<sup>32</sup> In analyzing these issues, the Justice Department has focused on the patents to be licensed (*i.e.*, an independent expert in the relevant technology determines that they are "essential" to complementing the central technology in the pool), the joint licensing arrangement (*i.e.*, collusion is unlikely, access to technology is enhanced), and the positive effects on innovation (*e.g.*, the pool participants are required to license to each other "essential" patents they obtain in the future, less of a chance for future "blocking" patents, newer patents weigh heavier in calculating royalties to patent owners).<sup>33</sup>

Biotechnology patent pooling agreements being considered should follow the above guidelines, prior to being submitted to the Antitrust Division of the Justice Department for a proposed business practice review, pursuant to 28 C.F.R. § 50.6, and to the FTC for an advisory opinion, pursuant to 16 C.F.R. §§ 1.1-1.4.

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<sup>30</sup> *See id.*

<sup>31</sup> *See* MPEG-LA Review Letter, *supra* note 12 (citing *IP Guidelines*, § 5.5) (affirming of the Motion Picture Experts Group pooling of video systems patents).

<sup>32</sup> Toshiba Review Letter, *supra* note 14 (approving of proposed patent pool concerning patents essential to the manufacturing of digital versatile discs and players). *See also* Sony Review Letter, *supra* note 13 (approving of proposed patent pool for essential patents concerning digital versatile discs and players).

<sup>33</sup> *See* Toshiba Review Letter, *supra* note 14.

## V. BENEFITS FROM THE POOLING OF BIOTECHNOLOGY PATENTS

The re-emergence of the formation of patent pools suggests that the social and economic benefits of such arrangements outweigh their costs. This section will discuss some of the significant benefits of patent pooling, as well as some of their costs.

A first benefit associated with the pooling of patents is the elimination of problems caused by “blocking” patents or “stacking” licenses.<sup>34</sup> In biotechnology, the granting of patents to nucleic acids may create blocking patents or lead to stacking licenses. As demonstrated in the emerging airplane technology in the early 1900’s, corporations that hold patents on an industry’s basic building blocks can prevent each other, as well as others, from bringing commercial products to the market.<sup>35</sup> By creating a patent pool of these basic patents, businesses can easily obtain all the necessary licenses required to practice that particular technology concurrently from a single entity.<sup>36</sup> This, in turn, can facilitate rapid development of new technology since it opens the playing field to all members and licensees of the patent pool.<sup>37</sup> For example, the recent patent pool encompassing MPEG-2 technology led to the rapid formation of a standardized protocol to protect copyrighted works on the Internet.<sup>38</sup> Similarly, patent pools can eliminate the problems associated with blocking patents or stacking licenses in the field of biotechnology, while at the same time encouraging the cooperative efforts needed to realize the true economic and social benefits of genomic inventions.<sup>39</sup> In addition, since each party in a patent pool would benefit from the work of others, the members may focus on their core competencies, thus spurring innovation at a faster rate.

A second benefit is that patent pools have the potential to significantly reduce several aspects of licensing transaction costs.<sup>40</sup> First, patent pools can reduce or eliminate the need for litigation over patent rights because such disputes can be easily settled, or avoided, through the creation of a patent pool. A reduction in patent litigation would save businesses time and money, and also avoid the uncertainty of patent rights caused by litigation.<sup>41</sup> In addition, small businesses, which

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<sup>34</sup> See Carlson, *supra* note 7 at 379. A “blocking” patent is defined as patents which have claims that overlap each other in a manner that the invention claimed in one patent cannot be practiced without infringing the claims of the other patent and vice versa. See Brunetti, *supra* note 22 at 2. “Stacking” licenses give the owner of a patented invention used in upstream research rights in subsequent downstream innovations. See Michael A. Heller & Rebecca S. Eisenberg, *Can Patents Deter Innovation? The Anticommons in Biomedical Research*, 280 *Science* 698 (1998).

<sup>35</sup> See Dykman, *supra* note 9 at 647.

<sup>36</sup> See Merges, *supra* note 8 at 25.

<sup>37</sup> See Carlson, *supra* note 7 at 379.

<sup>38</sup> See *id.*

<sup>39</sup> See Lawrence M. Sung and Don J. Pelto, *Greater Predictability May Result in Patent Pools As the Federal Circuit Refines Scope of Biotech Claims, Use of Collective Rights Becomes Likely*, *NLJ* (Jun. 22, 1998), reprinted at <http://www.ljx.com/patents/0622pools.html>.

<sup>40</sup> See Merges, *supra* note 8 at 17.

<sup>41</sup> See Carlson, *supra* note 7 at 380-81. During litigation, a patented claim may be found to be invalid or unenforceable or may have its scope limited. See *id.*

cannot usually endure the costs of litigation, are more likely to survive and prosper if they are free from legal suits over patent rights in the future.<sup>42</sup> Second, a patent pool creates an efficient mechanism for obtaining rights to a patented technology.<sup>43</sup> Parties interested in a certain technology covered by a patent pool can, in one stop, license all the patents essential to a core technology.<sup>44</sup> Without a patent pool, a company would have to obtain licenses separately from each holder of the essential patents. Not only does the process of individual licensing require more time, money and resources, but it also establishes a motivation for some patent owners to hold out on licensing their patent.<sup>45</sup> For example, if a company knows that they own the last patent a consumer needs to practice a particular technology, they can demand a substantially higher royalty because they realize that the value of all the other licenses that the consumer already purchased depends on obtaining this last license.<sup>46</sup> Patent pools address this anticompetitive “hold out” problem by providing a means in which most, if not all, necessary licenses are obtained at one time. In addition, patent pools often require a grantback license of any improvement patents on the core technology of the patent pool to reduce the risk of future lawsuits.<sup>47</sup> A reduction in transaction costs is particularly important to biotechnology firms, where a significant portion of their research and development funds are being diverted to cover transaction costs, thus slowing down further innovation.<sup>48</sup>

A third major benefit from patent pooling is the distribution of risks. Like an insurance policy, a patent pool can provide incentive for further innovation by enabling its members to share the risks associated with research and development.<sup>49</sup> The pooling of patents can increase the likelihood that a company will recover some, if not all, of its costs of research and development efforts.<sup>50</sup> Depending on the structure of the pool, all members may receive a set income based upon a percentage of the pool’s royalty regardless of the “economic” value of their individual patent. For example, under the MPEG LA patent pool, all essential patents are equal in value no matter the cost of the research and development required for their actualization.<sup>51</sup> This arrangement evenly distributes the wealth of the pool to all its members. In addition, all members of a patent pool have equal access to the technology in the pool, which may enhance the commercial potential of the patented invention of an individual member.<sup>52</sup> A mechanism that distributes risks and provides greater access to related technology should be extremely attractive to biotechnology businesses that have to fund the high research and development costs inherent in this area of innovation.<sup>53</sup>

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<sup>42</sup> See *id.* at 382.

<sup>43</sup> See *Merges, supra* note 8.

<sup>44</sup> See *id.* at 25.

<sup>45</sup> See *Brunetti, supra* note 22.

<sup>46</sup> See *id.*

<sup>47</sup> See *Merges, supra* note 8 at 35.

<sup>48</sup> See *Sung, supra* note 39.

<sup>49</sup> See *Carlson, supra* note 7 at 381-82.

<sup>50</sup> See *id.*

<sup>51</sup> See Dana J. Parker, *Standard Deviations: Everyone Into the (Patent) Pool!* (Sept. 1998)

<<http://www.emediapro.net/EM1998/standard9.html>>.

<sup>52</sup> See *Sung, supra* note 39.

<sup>53</sup> See *id.*

Finally, a fourth benefit of patent pooling is an institutionalized exchange of technical information not covered by patents.<sup>54</sup> A patent pool provides a mechanism for free sharing of technical information related to patented technology among its contributing members and its licensees.<sup>55</sup> By fostering lines of communication between the members, trade secrets would become less prevalent. Instead, the members would have an incentive to avoid overlapping efforts, especially in the field of biotechnology. Competitive success in the market place depends upon access to information in order to use limited resources efficiently, and patent pools would provide greater access to information for its members. This is particularly important in biotechnology where the potential for commercial development is staggeringly high, especially if limited resources are used effectively and efficiently.<sup>56</sup>

Critics have stated that patent pools have several anticompetitive effects. The first criticism is that patent pools inflate the costs of competitively priced goods.<sup>57</sup> This argument is based on the assumption that while certain patents may be considered to be legally blocking, such patents actually cover competitive alternatives to a certain technology, and that the pooling of these patents will expand monopoly pricing.<sup>58</sup> This criticism can be dismissed by careful evaluation of patent pool arrangement as to whether the patents are truly “blocking” as outlined in the *IP Guidelines*.<sup>59</sup>

A second reason why critics feel patent pools should not be encouraged is that pools shield invalid patents.<sup>60</sup> Companies who fear that their patents will be invalidated in court are eager to settle by creating a patent pool.<sup>61</sup> This, in turn, will force the public to pay royalties on technology that would have become part of the public domain if the patents were actually litigated in court. While certainly a valid concern, patent pools can avoid this situation if the patents for the pool are selected and monitored by an independent expert to evaluate the patents.<sup>62</sup> In addition, oversight of patent pools by the Department of Justice and the FTC provide further assurance that the pools are not shielding invalid patents. For example, recently, a FTC complaint against Summit and VISX charged the companies with unlawful price fixing involving their patent pool.<sup>63</sup> In addition, the FTC challenged the patent pool because it was protecting an invalid patent.<sup>64</sup> Thus, the formation of a patent pool does necessarily prevent the technology in an invalid patent from being returned to the public domain.

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<sup>54</sup> See *Merges*, *supra* note 8 at 22.

<sup>55</sup> See *id.*

<sup>56</sup> See *Sung*, *supra* note 39.

<sup>57</sup> See *Carlson*, *supra* note 7 at 385-86.

<sup>58</sup> See *id.*

<sup>59</sup> See *IP Guidelines*, *supra* note 26.

<sup>60</sup> See *Carlson*, *supra* note 7 at 386-87.

<sup>61</sup> See *id.*

<sup>62</sup> See *Klein*, *supra* note 5 at 7.

<sup>63</sup> See *Summit Technology, Inc.*, Dkt. No. 9286 (August 21, 1998) <<http://www.ftc.gov/os/1998/9808/d0928viagr.htm>>.

<sup>64</sup> See *Carlson*, *supra* note 7 at 387.

A final criticism of patent pools is that such pools eliminate competition by encouraging collusion and price fixing.<sup>65</sup> Careful evaluation of patent pools under the *IP Guidelines* should alleviate this important concern. One of the many factors that the *IP Guidelines* evaluate is the patents' relationship to the industry and to each other.<sup>66</sup> If the patent pool harms competition and reduces further innovation, then the members of that pool may face antitrust violations, which should discourage the formation of anticompetitive patent pools.<sup>67</sup>

## VI. CONCLUSION

The use of patent pools in the biotechnology field could serve the interests of both the public and private industry, a win-win situation. The public would be served by having ready access with streamlined licensing conditions to a greater amount of proprietary subject matter. Patent holders would be served by greater access to licenses of proprietary subject matter of other patent holders, the generation of affordable pre-packaged patent "stacks" that could be easily licensed, and an additional revenue source for inventions that might not otherwise be developed. The end result is that patent pools, especially in the biotechnology area, can provide for greater innovation, parallel research and development, removal of patent bottlenecks, and faster product development.

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<sup>65</sup> *See id.* at 388-92.

<sup>66</sup> *See Klein, supra* note 5 at 8.

<sup>67</sup> *See IP Guidelines, supra* note 26 at 13.

## VII. APPENDIX

## **Summary of the Structure of Recent Patent Pools**

### **Common Attributes of Recent “Successful” Patent Pools**

Recent patent pools, such as MPEG-2, DVD, and 1394 pools (discussed in further detail below) seem to have the follow common attributes:

- (1) All licensors of the patent pool grant non-exclusive licenses to the pool, e.g., the licensors are free to license their patent(s) outside of the patent pool;
- (2) An independent patent expert evaluates which patents are deemed essential in the formation of the patent pool. There is also some mechanism for future review of the current patents in the pool as well as evaluation of any desired additions to the patent pool;
- (3) The pool is licensed to any interested party in the technology in a non-discriminatory manner;
- (4) All royalty rates are reasonable and distributed based on an agreed upon formula; and
- (5) All grant back provisions are limited to essential patents and require non-exclusive licenses with fair and reasonable terms. These provisions must be reasonable so as not to discourage further innovation.

### **Summary of Three Recent, “Approved” Patent Pools**

The Department of Justice conducts a business review of proposed and established patent pools, using the IP guidelines outlined in the attached paper. The pooling arrangements discussed in three recent business reviews will be discussed below. In all three reviews, the Department of Justice stated that it is not presently inclined to initiate antitrust enforcement actions.

#### **MPEG-2 Standard (1997)**

MPEG-2 includes the fundamental technology for the efficient transmission, storage and display of digitized moving images and sound tracks on which high definition television (HDTV), Digital Video Broadcasting (DVB), direct broadcast by satellite (DBS), digital cable television systems, multichannel-multipoint distribution services (MMDS), personal computer video, digital versatile discs (DVD), interactive media and other forms of digital video delivery, storage, transport and display are based. The technology in MPEG-2 compresses digital information by reducing spatial and temporal redundancies in the binary data streams, thereby conserving transmission resources and storage spaces.

The MPEG-2 patent pool was created in July of 1997 when the Trustees of Columbia University, Fujitsu Limited, General Instrument Corp., Lucent Technologies Inc., Matsushita Electric Industrial Co., Ltd., Mitsubishi Electric Corp., Philips Electronics N.V. (Philips), Scientific Atlanta, Inc., and Sony Corp. (Sony) licensed 27 patents to the patent pool that were all considered essential to the making or using of the video and systems parts MPEG-2 standard into a single portfolio managed by a common license administrator (MPEG-LA). Currently, the

MPEG-2 patent pool has grown to include additional patents from France Telecom, Hitachi, JVC, KDDI and NTT and comprises about 230 patents total. As of November 20, 2000, the patent pool had 256 licensees.

During the MPEG-2 patent pool's formation, a patent was considered essential to compliance with the MPEG-2 standard if there was no technical alternative to the patent. The expert reviewed approximately 8,000 U.S. patent abstracts and over 800 patents owned by over 100 different patentees. No submission was denied review. The license is worldwide and MPEG-LA is required to grant a license to any potential licensee, without discrimination, at the same reasonable royalty rate. MPEG-LA also enforces the portfolio, collect royalties and distribute them among the licensors pursuant to a pro-rata allocation based on each licensor's proportionate share of the total number of patents in the portfolio. The agreement has a grant back provision which requires the licensee to a grant to the licensor a nonexclusive grant back any essential patent that it has a right to license or sublicense on fair and reasonable terms and conditions. The portfolio license imposes no obligation on the licensee to use only the licensed patents and explicitly leaves the licensee free to develop competitive products outside of the MPEG-2 standard.

The MPEG-2 patent pooling arrangement was created by four different agreements:

- (1) an Agreement among Licensors, in which the licensors commit to license their MPEG-2 essential patents jointly through a common license administrator and agree to basic terms of the portfolio, such as authorized field of use, the amount and allocation of royalties and the procedures for adding or deleting patents from the portfolio;
- (2) a Licensing Administration Agreement between the licensors and MPEG-LA;
- (3) a license from each licensor to MPEG-LA for the purpose of granting a portfolio license; and
- (4) the portfolio license.

### **DVD-ROM and DVD-Video Formats I (1998)**

Under this patent pooling arrangement, Sony Corporation of Japan (Sony) and Pioneer Electronic Corporation of Japan (Pioneer) agreed to nonexclusively license all essential patents necessary for compliance with DVD Standard Specification to Koninklijke Philips Electronics, N.V. (Philips). Philips, in turn, agreed to grant licenses of the essential patents to "all interested parties ... to manufacture, have made, have manufactured components of, use and sell or otherwise dispose of" discs and players that conform to the Standard Specification. All three licensors can license their essential patents independently of the portfolio. The licensors retained a patent expert to review the designated patents and to make an independent judgement as to what patents are essential. The portfolio royalty rate is set at 3.5% of the net selling price for each player sold and \$0.05 for each disc sold. In addition, the portfolio license requires an initial payment of \$10,000, half of which is creditable against the per unit royalties. The allocation of the royalties is determined on a per-unit sold basis and not on the number of patents contributed to the pool. The portfolio license does require that the licensee must grant the licensors and fellow licensees a nondiscriminatory and reasonable license of any essential patents that they own or control to either the disc or player manufacture in conformity with the Standard Specification.

The DVD patent pooling arrangement was created by two agreements:

- (1) two separate but substantially identical licenses to Philips from Sony and Pioneer of the essential patents to enable Philips to grant a portfolio license to all interested third-parties without discrimination; and
- (2) the portfolio license.

### **DVD-ROM and DVD-Video Formats II (1999)**

In this patent pool, Hitachi, Ltd., Matsushita Electric Industrial Co., Ltd., Mitsubishi Electric Corporation, Time Warner, Inc., and Victor Company of Japan, Ltd., agreed to license their present and future essential patents for compliance with the DVD-ROM and DVD-Video formats to Toshiba Corporation (Toshiba). Toshiba agreed to assemble the essential patents, including its own, in a portfolio and to license the portfolio to all makers of DVD products and to distribute the royalties from the licensing to the other licensors. All the companies are free to license their essential patents outside of the pool. Once a licensor has designated a patent as essential, an expert individual or panel will evaluate the patent to see if the patent is indeed essential. The expert will perform a comprehensive review of all patents in the pool every four years. In addition, a mechanism is in place for the expert to review any patent whose essentiality comes into question. The patent pool agreement states that the expert's determinations are conclusive and nonappealable. The patent pool is also open to any owner of an essential patent willing to license on the portfolio's terms and conditions. The royalty rate is 4% of the net sales price for each DVD players and \$0.075 for each DVD disc sold. The agreed upon formula for the allocation of the royalties from the portfolio considers (1) how often a licensor's essential patents are infringed, (2) the age of the patent, and (3) for patents essential to the disc standards, whether the patents related to optional or mandatory features of the standard. The licensees are required to grant back to the licensors, their affiliates and all other licensees of the portfolio all essential patents on "fair, reasonable and non-discriminatory terms." Disputes between the licensors and the licensees are subject to arbitration.

This DVD patent pool is formed by four agreements as follows:

- (1) a license from each of the companies to Toshiba to enable Toshiba to license to parties who use the Standard Specification for DVDs, DVD players and DVD decoders;
- (2) a sublicense from Toshiba to makers of DVD products involving the patents in the portfolio;
- (3) an agreement among the licensors concerning the retention and authority of experts to select and evaluate patents for the pool; and
- (4) the "Ground Rules for Royalty Allocation," which provides the formula to determine how the royalties from the patent pool will be distributed among the licensors.

### **Summary of the 1394 Standard Patent Pool**

The 1394 Standard (IEEE 1394-1995, IEEE P1394a, IEC 61883-1 and IEEE P1394b) is a new, very fast external bus standard that supports data transfer rates of up to 400 Mbps (400 million bits per second). Products supporting the 1394 standard go under different names, depending on the company. Apple, which originally developed the technology, uses the trademarked name FireWire. Other companies use other names, such as i.link and Lynx, to describe their 1394 products. A single 1394 port can be used to connect up to 63 external devices.

In addition to its high speed, 1394 also supports isochronous data, e.g., delivering data at a guaranteed rate. This makes it ideal for devices that need to transfer high levels of data in real-time, such as video devices.

In the Fall of 1999, Apple Computer Inc., Compaq Computer Corp., Matsushita Electric Industrial Co. Ltd. (Panasonic), Royal Philips Electronics, Sony Corp., STMicroelectronics and Toshiba Corp. formed a patent pool of the essential patents for the IEEE 1394 digital interface standard. Currently, Canon, Inc. and Hitachi have also joined the patent pool, which now comprises 34 patents and is licensed to 56 licensees. In as far as can be determined, a business review of this patent pool has not been submitted to the Department of Justice.

A patent is essential to the 1394 standard if one or more of its claims is infringed by compliance or implementation of the standard. An independent patent expert evaluates whether a patent is considered essential to the 1394 standard. Therefore, any company that makes or uses 1394 products requires a license from the patent pool. The patent pool is administered by a company called 1394la, subsidiary of the MPEG-LA licensing group. The license from the 1394 patent pool is worldwide, nonexclusive and nontransferable, but a licensee can extend coverage of the 1394 Patent Portfolio License to its affiliates. Licensors are obligated to include all of their 1394 essential patents wherever they issue and cannot withdraw coverage of patents to licensees that already have signed up during a period when a particular licensor and/or patent(s) was in the patent pool. Evaluation of patents for inclusion in the patent pool is ongoing. The royalty is \$0.25 upon the sale or manufacture of each system that implements, or is compliant with, the 1394 standard, regardless of the number of 1394 ports per system.

### **Summary of the VISX and Summit Technology Patent Pool**

In contrast to the four above-mentioned patent pools, the patent pool created by VISX and Summit Technology (Summit), the only two FDA-approved manufacturers of lasers used in photo refractive keratectomy (PRK), was basis for a Federal Trade Commission (FTC) complaint alleging a violation of Section 5 of the FTC Act, as amended, 15 U.S.C. § 45. The complaint charged that both VISX and Summit had the intellectual property and the other asserts to enter the market as independent competitors. The companies, however, chose to form a patent pool as a tool to fix prices. One of the terms of the patent pool was a \$250 licensing fee each time laser eye surgery was performed using equipment covered by either company's patents. The royalties were divided between VISX and Summit according to a set formula. As a result, the prices for laser eye surgery were higher than if VISX and Summit remain competitors. It is estimated that the consumers paid over 30 million in 1997 to cover the licensing fee of the patent pool. According to the complaint, the patent pool eliminated horizontal competition between VISX and Summit. The FTC accepted a proposed consent order from VISX and Summit, in which all the patents in the patent pool are available to cross-license on a royalty-free and non-exclusive basis to third parties.