

The Ownership of Intellectual Property Rights and the Collaboration between Universities and Industry in Japan

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During the early days of the Meiji Restoration, universities were established in Japan for the purpose of training scientists and engineers for Japan's developing industry. The creation of the Japanese university system resulted in collaborations between the corporate and academic sectors. A natural result of this activity was the establishment of close relationships between industry and academia.

The career of Nagayoshi Nagai, PhD, in the Meiji era is an example of a successful relationship resulting from the movement within Japan to establish strong ties between academia and industry. Nagai, after completing his studies in Japan, traveled to Germany for further studies in the field of chemistry. Upon returning to Japan, Nagai was requested by the Japanese government to assume the position of professor in the Department of Pharmacology at the University of Tokyo. In addition, Nagai concurrently held the position of director of engineering in a Japanese pharmaceutical corporation.

Before the 21st century, official Japanese government statistics did not totally reflect the extent and complexity of industrial-academic collaborations. This is partly because these statistics tracked executed research agreements and may have missed many university and corporate partnerships that were not memorialized on formal research contracts. In 1978, the Japanese Ministry of Education announced that university-based inventions arising under government research grants would belong to the nation.¹

On the other hand, patent applications covering inventions arising under corporate donations could be applied for by the corporate sponsor and name the university inventor(s) as the inventor(s) of record on the application. As a result of this policy, Japanese companies and university professors established tight, informal connections, with the companies enjoying commercial benefits from these relationships.

By the end of the 20th century, the Japanese government instituted major changes in intellectual property policies affecting the national university system. These policy changes led to the enactment of two laws: The 1999 Law of Special Measures to Revive Industry and the University Incorporation Law. The latter law was enacted in 2004. These two laws enabled universities to file, own, and license patents arising from collaborative research.

Also, the initiative Innovation 25 was instituted by the Council for Science and Technology Policy in 2007.² The long-term goal of Innovation 25 is to foster innovation and growth in various fields such as medicine, engineering, and information technology in Japan by the year 2025. The renovation of social systems, globalization of science and technology, and fostering of human resources are also part of the long-term goal of Innovation 25. Collaboration between industry and academia across multiple science and technological disciplines is considered a key factor in this initiative.

From the time these legislative changes were instituted, the number of industrial-academic collaborations in Japan have steadily increased. For example, in 1995, there were about 1,700 collaborations between the various industries and the national universities. This number had surged to 9,400 cases by 2004. This represents a fivefold increase in the number of collaborations over a ten-year period. As a result, the revenues of universities from these types of collaborations have increased from 6.5 billion yen (approximately \$60 million) in 1999 to 21.9 billion yen (approximately \$200 million) in 2004. The revenue data show a continued tendency of further increase.

Increased interest in activities by university-industry partnerships have raised a number of issues with regard to intellectual property rights and ownership as derived from industrial-academic collaborative research. The major issues are discussed below.

Joint Patent Ownership under Japanese Patent Law

While some collaborative research may result in joint invention, some collaborative research may also result in sole invention. Determination of inventorship in Japan is similar to how inventorship is determined in the U.S. There are, however, some distinctions between Japanese and U.S. patent law pertaining to inventorship.

Joint patent rights (or joint inventorship) in Japan are controlled by Article 73 of Japanese patent law. Unless otherwise agreed upon by contract, jointly owned patent rights may be exercised by a patent owner without the consent of the other joint owners (Article 73, Paragraph 2).³ Namely, each owner may make, use, and sell patented product without the consent of a joint owner.

On the other hand, under Japanese patent law, it is necessary to obtain the consent of the other joint owners with regard to assignment, establishment of a right to pledge one's share of the patent rights, and to license any third party (Article 73, Paragraph 1 and 3).^{4,5} Therefore, there are two points that should be noted with regard to university licensing practices in Japan.

First, when there is a low likelihood of licensing a jointly owned patent to a third party, the university patent owner should seek compensation from the joint owner to cover the costs associated with filing the application and payments of annuities.

Second, unless agreed beforehand, the university may not license a jointly owned patent to a third party without the consent of the other joint owners. This is in contrast to U.S. patent law, which permits a joint owner of a U.S. patent to license a jointly held invention or patent to a third party without the consent of the other joint owners. It is important to note this difference if a research collaboration results in a joint patent or invention that is in part owned by a Japanese inventor.

In addition, when a joint invention is created, many Japanese universities expect their industrial collaborators to pay them a form of royalty payment called *nonimplementation compensation*.⁶ In exchange for this payment, the university joint patent owner

agrees not to exercise his or her patent rights. However, many corporations (such as electronic and engineering firms) protest paying such a royalty to universities citing as their main concern royalty-stacking obligations in the event that multiple patents are required to produce the resultant product. Nonimplementation compensation has been a controversial issue and the subject of much discussion between industry and academia in Japan.

Recently, many Japanese universities have attempted to implement a more flexible approach to nonimplementation compensation to promote collaborative research between industry and academia. Several different types of arrangements have been attempted.

One approach is to request that the corporate partner pay a royalty for the exclusive exercise of the jointly owned patent rights. In particular, this strategy is effective for pharmaceutical companies because, in many cases, they desire an exclusive license. In another approach, the corporation may not want exclusive patent rights and will allow the university to license the jointly owned patent rights to a third party without authorization of the joint corporate owner. Japanese universities may also assign their rights in the joint invention to the industrial collaborator if a mutually acceptable price can be agreed upon by the parties. Lastly, even if a corporation pays a nonimplementation compensation, Japanese universities may attempt to retain the right to license the patent to a third party if the corporation fails to make appropriate efforts for production and marketing the joint invention.

Guidelines for Collaborative Research Agreements

Guidelines have been issued for constructing collaborative research agreements in Japan. The Japanese Fair Trade Commission has issued antitrust guidelines with the expectation that joint collaborative research will result in fair and increased competition. These guidelines state that it is appropriate, in principle, for the parties to agree upon the ownership of the fruits of their collaboration and also to prevent the licensing of the joint invention to a third party. On the other hand, it would not be appropriate for the parties to agree to restrict research and development based upon the research results or to obli-

gate an inventor to assign an invention or agree to an exclusive license to improvements prior to the creation of the invention.

In March 2002, the Ministry of Education, Culture, Sports, Sciences, and Technology (MEXT) issued a model agreement for industry-academia collaborative research.⁷ The model agreement states that ownership of an invention resulting from an industrial-academic research collaboration will be determined by the laws of inventorship. The model agreement includes terms stating that, in the event of sole inventorship, consent to file a patent application must be given by the sole inventing party.

In the case of joint inventions, the model agreement states that a patent application must be filed jointly by the joint owners. Furthermore, the agreement states that a joint patent application agreement must be executed by the parties. The ministry advises that it is preferable that the parties negotiate the terms of intellectual property ownership and patent management prior to the execution of the research agreement. In addition, in the case of joint inventions, the agreement should confirm that the industrial party is responsible for the filing, prosecution, and maintenance of any patent application.

University Policies on Intellectual Property Ownership

In 2005, MEXT selected six universities: University of Tokyo, Tokyo University of Agriculture and Technology, Tokyo Institute of Technology, Kyoto University, Osaka University, and Nara Institute of Science and Technology, to participate in a project initiated by the Super-Industry-Government-Academia Headquarters in Japan. These universities were asked to develop a model program to promote the use of research and development resources for the acquisition of industrial research funds.

The six universities published their policies, rules, and collaborative research agreements on their Web sites. Included below are brief summaries of the approaches each of the participating universities have taken to implement this program.

The University of Tokyo has created the “Guideline Concerning the Handling the Joint Invention by Collaboration Research with Private Corporation.” The University of Tokyo

guideline states that the ownership of the intellectual property rights obtained from collaborative research should be determined using the laws of inventorship. The document provides guidance on how negotiations should be conducted with industrial collaborators. Kyoto University's and Tokyo Institute of Technology's policies, as described in their guidelines, state that the intellectual property rights resulting from collaborative research will be jointly owned and based upon the relative contributions of the inventors.

Nara Institute of Science and Technology states in its guideline that intellectual property rights will be jointly owned in principle and that an invention may be independently owned when the invention was completed by one party.

The ownership of patent rights is also described in model agreements published by each university. In principle, all of the agreements provide that ownership of an invention is to be determined by the affiliation of the inventor. That is, an invention made by a university researcher shall be owned by the university. If the invention was made by a researcher employed by a corporation, the invention shall be owned by the corporation. Ownership of a joint invention made by both university and corporation researchers is to be determined by mutual discussion between parties and according to the relative contributions of the inventors. All of the six universities' model agreements state that joint inventions will be covered under a joint patent application agreement.

Five of the six universities' model agreements require that a confirmation (Nara's agreement states that consent must be provided) should be obtained from the noninventing party before the inventing party files a patent application. The University of Tokyo agreement states that only a notice to the noninventing party is required.

Many Japanese universities have instituted invention committees whose responsibility is to make a determination as to whether or not an invention is to be assigned to the university. If the committee decides that the university will not take assignment to an invention, then the university shall allow the inventor to manage his or her invention freely. The model agreement of the University of Tokyo states that, if the university decides not to require assignment, it will provide notice to the collaborative partner. If the partner

desires to file a patent application to protect the invention, the partner may negotiate the conditions for assignment of the intellectual property rights directly with the university inventor.

In summary, all six universities determine ownership of patent rights based upon the laws of inventorship. This means that the ownership of patent rights is not predetermined. Instead, the ownership of the patent rights shall be determined after an invention is created. We believe that these policies are reasonable and should not result in any major problems in determining ownership of patent rights resulting from collaborative research between universities and corporations.

Challenges for the Future

As the system to promote industrial-academic collaborations improves through the leadership of the Japanese government, the number of research collaborations between university and corporations will substantially increase. This trend is likely to continue into the future. Hereafter, research collaborations between industry and academia are likely to become more strategic. The scheme is likely to change from individual, small-scale collaboration to comprehensive large-scale collaboration and from short-term collaboration to longer-term collaboration.

The changes in the ownership policy of intellectual property rights may be minor, however, Japanese universities are likely to be asked to be more flexible with their management of intellectual property rights in their negotiations for strategic alliances. There have been some large-scale strategic alliances between Japanese corporations and American universities. Such alliances are likely to provide ideas and important insights for future collaborations between corporations and Japanese universities. We hope that the issue of ownership of intellectual property rights will be handled properly between corporations and universities and expect industrial-academic collaborations to result in the creation of true innovation.

Endnotes

1. See http://www.mext.go.jp/b_menu/hakusho/nc/t19780325001/t19780325001.html (In Japanese).
2. See http://www.kantei.go.jp/foreign/innovation/index_e.html.
3. Where a patent right is jointly owned, unless otherwise agreed upon by contract, each of the joint owners of the patent right may work the patented invention without the consent of the other joint owners.
4. Where a patent right is jointly owned, no joint owner may assign or establish a right of pledge on the said joint owner's own share without the consent of all the other joint owners.
5. Where a patent right is jointly owned, no joint owner may grant an exclusive license or nonexclusive license with regard to the patent right to any third party without the consent of all the other joint owners.
6. *Nonimplementation compensation* means royalty to university, which does not implement patent rights (exclude execution in research activity) generally for joint invention. However, some think it is inappropriate to call nonimplementation compensation for royalty to university about joint invention.
7. See http://www.mext.go.jp/a_menu/shinkou/sangaku/sangakuc/sangakuc4_8.htm (In Japanese).