

Technology Licensing and University Research in Japan

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1. Introduction

The Japanese Bayh-Dole Act was enacted in 1999 as part of the Industrial Revitalization Special Law¹. Since the Japanese economy has plunged into the current deep recession, the Japanese government has been looking for a measure to revive its economy. By reviewing US legislation from the eighties and early nineties, when the US was in a serious recession, Japan's Ministry of Economy, Trade and Industry (METI) was convinced that intellectual property related legislations encouraging technology transfer were the primary reason for the US recession recovery². To follow the US example, the government organized the Commission on Intellectual Property Rights in the Twenty-First Century. In its report published in April 1997, the Commission emphasized the need to promote exploitation of technologies developed by universities and research institutions in order to promote the development of breakthrough technologies³. Despite the significant increase in the number of patents issued to Japanese universities and research institutions, these institutions' royalty revenues have remained low⁴. A very small portion of patents issued to these institutions were

exploited because the government owned intellectual property rights resulting from the publicly funded research in national laboratory institutions, but had no mechanism to promote licensing the technologies.

Regarding research conducted in universities, University professors (inventors) owned the intellectual property rights resulting from their publicly funded research, unless the rights resulted from research that falls into one of two exceptions: (1) specially funded inventions and (2) inventions developed in special research facilities⁵. Due to the high cost and time-consuming process of procuring and licensing intellectual property rights, Japanese university professors were seldom able to obtain intellectual property rights in their research results. To promote procurement of intellectual property rights in research results and exploitation of their patents, the Commission proposed to set up technology-transfer offices as liaison offices in universities and national research institutions. It also recommended development of a mechanism to transfer technologies promptly.

Thus, this article examines Japanese Bayh-Dole Act and technology transfer related legislations from the comparative law perspective and review the impact of enactment of these laws. It also examines the current system for managing owner-

ship of intellectual property in university inventions. It also examines technology transfer organizations which promote both university-to-business transfer and business-to-business transfer. It concludes with a discussion of challenges for Japanese universities to successfully manage intellectual property rights in university inventions.

2. Japanese Bayh-Dole Act

2.1. Industry Revitalization Law and Related Laws

Responding to the Commission's proposal, the Japanese Bayh-Dole Act was enacted, aiming to encourage research activities and promote the utilization of inventions arising from research or development supported by the Japanese government⁶. The subject matter coverage under the Japanese Bayh-Dole Act is broader than that of the US Bayh-Dole Act, because it covers not only patent eligible subject matter but also other types of subject matter protected by other intellectual property rights. Such rights include (1) patent rights and rights for obtaining a patent⁷; (2) utility model registration rights and rights for obtaining utility model registration⁸; (3) design registration rights and rights for obtaining design registration⁹; (4) copyrights for computer programs and databases¹⁰; (5) semiconductor chip layout and rights for obtaining semiconductor chip rights¹¹; and (6) seed and seedling registration rights and rights for obtaining plant variety registration rights¹². Thus, the Act was enacted as part of a separate law, the Industry Revitalization Law, instead of part of the Patent Law¹³.

However, the main function of the Japanese Bayh-Dole Act is very similar to that of the US Bayh-Dole Act. It aims to give ownership to universities and research institutions and promote transfer of their technology to industry for commercialization. Before the enactment of the

Japanese Bayh-Dole Act, the government retained patents and all intellectual property rights resulting from contracting research and developments. The only exception to this rule was international research projects where foreign governments or non-profit organizations collaborated with Japanese contractors¹⁴.

The enactment of the Japanese Bayh-Dole Act changed the rule of ownership for inventions developed by universities and research institutions. The Bayh-Dole Act Chapter of the Industry Revitalization Law¹⁵ permits universities and research institutions to retain ownership of intellectual property rights arising from government contracted research and developments under the following conditions. First, universities and research institutions must report an invention to the government without delay after disclosure from researchers¹⁶. Second, with respect to the subject matter that universities and research institutions have acquired title, universities and research institutions must grant the government a royalty free license to exploit the subject matter if the government makes clear a reason that the exploitation of the subject matter is necessary for the public interest¹⁷. Third, they must grant a license to a third party if they have not exploited the subject matter for a reasonable period of time without any excuse, and the government makes clear a reason that the exploitation of the subject matter is necessary for the utilization of intellectual property rights¹⁸.

The first condition parallels the "report requirement" for the disposition of rights under US Bayh-Dole Act¹⁹. The second and third conditions parallel the "march-in rights" including compulsory license provisions²⁰. However, the Japanese Bayh-Dole Act is much simpler than the US Bayh-Dole Act. The Japanese Act does not provide for any restriction with respect to the entitlement of intellectual property rights as done by the US Bayh-

Dole Act²¹. Further, the Act does not provide for a prohibition of assignment of rights²² and, regarding licensing of such rights, the Act does not provide for any small business preference²³ or domestic industry preference²⁴.

These differences resulted from the broader goal of the Industry Revitalization Law rather than the US Bayh-Dole Act. The US Bayh-Dole Act aims to promote participation of small business firms in federally-supported research and development efforts²⁵. The Industry Revitalization Law aims to maximize business resources in Japan for recovery of Japan's economy from recession²⁶. Further, the Japanese Bayh-Dole Act provides that "the government can choose to refuse a transfer of patent and other rights" from contractors²⁷. This suggests a broad discretion on the government to decide whether to allow contractors to retain intellectual property rights arising from contracting research and developments. Thus, it is not necessary to provide exceptions for refusing to let contractors retain intellectual property rights, because the government can simply exercise its discretion of refusal.

In practice, when the government funds a university or research institute to engage contracted research projects, it uses a uniform agreement to execute a contract. The uniform agreement clarifies that the university or research institute retains any intellectual property rights resulting from the contracted research project. If it is necessary, the government can change the term and specify that intellectual property rights, resulting from the research projects, will be transferred to the government.

The Japanese Bayh-Dole Act does not discriminate small business firms and nonprofit organizations from profit organizations and large corporations. The Act allows profit organizations and large corporations to retain patents and intellectual property rights. These contractors are free to

license technologies to both domestic and foreign profit and nonprofit organizations.

The Japanese Bayh-Dole Act does not provide any requirement of compensation for inventors. This is because the Patent Act provides a requirement of compensation, thus a provision is unnecessary²⁸. Regarding the compensation for university professors, MEXT (Ministry of Education, Culture, Sports, Science and Technology) publishes an instruction for compensating employee inventions and other intellectual property rights developed by employees of MEXT²⁹. The instruction provides that when a patent right or right to obtain a patent is transferred to the government, resulting from an application filed prior to the 1987 Patent Law Revision, the government must pay to the inventor-university professor 4,500 yen for each patent right or application in addition to the 4,500 yen for each claim included in the patent right or application³⁰. When a patent right or right to obtain a patent, resulting from an application filed after the 1987 Patent Law Revision, is transferred to the government, the government must pay an inventor-professor 7,500 yen for each patent right or application in addition to 7,500 yen for each claim included in the patent right or application³¹. The same rule applies when the government obtains a foreign patent right or a right to obtain a foreign patent right. If the government receives license revenues from the patent right transferred by an inventor-professor, the government must pay the inventor according to the following table³²:

Revenues < 1,000,000 yen	50% of revenues
Revenues ≥ 1,000,000 yen	(Revenues - 1,000,000 yen) × 25% + 5,000,000 yen

The Industry Revitalization Law also requires the Ministry of Economy, Trade and Industry (METI) and Ministry of Education, Culture, Sports, Science and Technology (MEXT) to

implement measures to promote technology transfer of results arising from research activities in universities to private industry through licenses or assignments of intellectual property rights in such results³³. Utilizing such measures, METI enacted (1) Law for Promoting University-Industry Technology Transfer (TLO Promotion Law³⁴), (2) Improvement of the Deduction System of Incremental R&D Tax Credits³⁵ (From 1999), (3) Law of Small and Medium-size Business Innovation Research System (Japanese SBIR) (December 1998³⁶), and a revised Patent Law in 1998 and 1999³⁷.

2.2. TLO Promotion Law

The Law for Promoting University-Industry Technology Transfer (TLO Promotion Law) aims to promote (1) the progress of industry and creation of new industry, and (2) research activities through technology transfer of research results developed by universities and public research institutions to industry³⁸. The Law provides a definition of “technology licensing organization” (TLO) as a business for arranging assignments, licenses and other activities of intellectual property to appropriate private institutions, which rights are owned by university professors and researchers, and private and public universities³⁹. According to the Law, TLO’s business includes (1) the discovery, evaluation and selection of research results, which can be commercialized by private institutions; (2) procurement, maintenance and enforcement of intellectual property rights in such research results; (3) providing information about such research results; (4) technology transfer of such intellectual property rights to industry; and (5) distribution of revenues resulting from such technology transfer. The TLO Promotion Law requires METI and MEXT developing guidelines for encouraging transfer of university developed technologies to industry by

identifying the direction and conditions to set up a technology transfer office within a university⁴⁰. According to the guidelines, METI and MEXT review and approve business plans⁴¹.

Although anyone can create a TLO without an approval, METI-MEXT approved TLOs are entitled to advantages under the TLO Promotion Law. First, such TLOs are eligible for receiving grants from METI, up to 30,000,000 JPY⁴². METI guarantees TLO debts with respect to approved business, which facilitates TLOs to obtain bank loans. Second, the Japanese Patent Law was revised to make approved TLOs eligible for discount, exemption or deferral of patent annual fees and official fees for requesting examination⁴³. Other intellectual property laws were also revised to make similar discounts for official fees available for approved TLOs with respect to procurement for other types of intellectual property rights. Further, approved TLOs are eligible to use government-owned facilities such as space in national universities without charge when they work at transferring technologies developed by these universities. Finally, the Law of Small and Medium-size Business Innovation Research System⁴⁴, was enacted to make it possible for small and medium size firms to receive exemption from investment made for commercializing technologies transferred from universities.

3. University Inventions

3.1. 1977 Science Council Draft Report

The Japanese Bayh-Dole Act primarily relates to intellectual property rights resulting from government contract research projects. Thus, intellectual property rights resulting from research and developments conducted by university professors, as course of their regular responsibility, are outside the scope. Even if university professors are government employees and their research is con-

ducted by publicly funded research funds and facilities, their intellectual property rights usually belong to the inventors (professors and researchers), instead of their employers (universities).

Japanese universities follow a MEXT notice, clarifying a policy regarding how to handle patents and other intellectual property⁴⁵. The notice was based on a draft report prepared by the Science Council in 1977⁴⁶. In determining the ownership of university inventions, the council focused on the goal of promoting research and education, and maintaining the freedom of study⁴⁷. Also, when the draft report was published, it was very unlikely that scientific research done by university professors resulted in subject matter of intellectual property rights because computer and biotechnology industries had not fully developed in 1977. Thus, the Council paid very little attention to the commercialization of inventions developed by university professors. As a result, the Council adopted an approach that limits the opportunities for universities to obtain ownership of inventions from their professors.

3.2. Ownership Rule under the 1977 MEXT Draft Report

The 1977 draft report made clear the principle that professors should retain ownership of their inventions. The Science Council interpreted the employee invention provision in the Patent Act and clarified which inventions constitute the definition of the employee invention⁴⁸. Japanese Patent Law prevents employers from contracting with their employees to transfer ownership of inventions before completion, unless such inventions fall into the definition of “employee invention”⁴⁹. To qualify as an “employee invention,” an invention must be within the scope of business and the employee’s act that results in the invention as part of the employee’s duties. The Science Council viewed professor duties to include teaching and

supervising student research projects and engaging their own research projects, but did not view making inventions as part of their duties. Thus, unless any special circumstance exists, university inventions do not qualify for employee’s invention.

The Council set forth two types of inventions that results from such special circumstances: (1) inventions resulting from research activities funded by a special research budget from the Japanese government with a specific research topic given by the government in application technology⁵⁰; and (2) inventions resulting from research activities conducted in special research facilities owned by the government, such as a nuclear reactor and fusion reactor, with a special topic given by the government in application technology⁵¹. Thus, university professors and researchers retain the ownership of inventions developed under the ordinary course of research activities and educational instructions. However, these professors can offer to transfer ownership of such inventions if they prefer.

3.3. Procedure under 1978 MEXT Notice

In 1978, MEXT adopted the ownership rule under the 1977 draft report and sent out a notice to national universities⁵². This notice was effective until it lost influence when national universities acquired independent legal status as of April 1, 2004. The notice requires universities to prepare rules and procedures for handling intellectual property rights in university inventions⁵³. Such rules and procedures must impose a duty on professors to report the inventions that fall under the two categories of employee invention to the head of universities. It also requires universities to organize an invention committee to determine whether the government should retain the ownership of the inventions developed by the university professors. The duty of reporting an invention applies not only to inventions that clearly fall into

the two categories of employee inventions, but also to those which appear outside the two categories so the invention committee can decide whether an invention falls into the two categories⁵⁴.

An invention committee's responsibility includes not only a decision of ownership by the government, but also a decision of patent and other intellectual property procurement. Since Japanese patent law follows the first-to-file principle, which requires the novelty of the invention as of the application date, it is necessary to decide whether to file an application with the JPO before invention publication. To proceed to the decision quickly, MEXT's notice suggests: (1) creation of an invention committee for each department, center, and program; (2) development of a simple form to report an invention; (3) frequent meetings of the committee upon submission of the invention report and other necessary measures to accelerate filing process if it is necessary to file quickly⁵⁵.

Although the rule and procedure in 1978 MEXT Notice applies only to national universities, most private universities adopted the same rule and procedure for handling university inventions. However, despite that the notice encourages frequent meeting of invention committees, Japanese universities seldom held invention committees, and thus the mechanism for handling intellectual property in university inventions did not function as aimed by the 1978 notice⁵⁶.

The rule and procedure in the 1978 MEXT Notice does not apply to students. Because students are not employees of professors or universities, their inventions are outside the scope of employee inventions. Thus, professors and universities can contract with them to transfer invention ownership before invention completion.

3.4. Proposed Changes for University Inventions

In 2002, MEXT organized a working group on intellectual property, and published a report to clarify the policies relating to intellectual property rights in university research and developments⁵⁷. Reflecting the changes in circumstances surrounding universities and the policy announced by the Japanese Government on national intellectual property strategies, the Working Group redefined university missions. It made clear that the contribution to society by commercialization of university inventions is one of the missions for Japanese universities. University professors must contribute to this mission through, not only development of inventions but also protection and commercialization of their inventions. Commercialization of inventions also brings funds for engagement of further research and developments.

Reflecting this mission, the IP Study Working Group concluded that the current rule to give ownership to professors does not work well for commercializing university inventions⁵⁸. This is because the recent enactment of the Japanese Bayh-Dole Act and the TLO Promotion Law made it possible to establish a mechanism within a university to procure and manage intellectual property. The group proposed to adopt a rule to give ownership of inventions to universities so that universities can use their mechanism to manage intellectual property and promote transfer of technologies to industry through licensing. This view was endorsed by IP Headquarters in Cabinet. Thus many Japanese universities adopted the IP ownership policy suggested by the Working Group.

In short, it is likely that Japanese universities will shift to the US model where each university adopts its own intellectual property policy and clarifies the scope of inventions that fall into the definition of employee invention⁵⁹. As part of an employment contract between professors and uni-

versities, such scope should be clarified⁶⁰. Through transfer of ownership in university inventions, universities should procure and manage intellectual property in these inventions under a uniform policy adopted by the university, to not only fulfill the duty under Patent Law Article 35, but also to give incentives to professors to develop inventions. Universities should adequately compensate professors for their inventions⁶¹.

Further, with respect to inventions made by students, the group also suggests to manage their inventions if the invention results from research activities supervised by professors or engaged in university facilities⁶². If a student is employed by the university, the university should contract to transfer the ownership of the invention as an employee invention⁶³. If a student is not employed by the university, the university should contract with the student for an assignment of the invention outside the scheme of employee invention⁶⁴.

3.5. National Laboratories

Inventions made by researchers-employees of national laboratories fall into employee inventions⁶⁵. Each national laboratory adopts its own rules for handling employee inventions and clarifies the scope of duties and compensation for invention transfer⁶⁶. For example, the National Institute of Advanced Industrial Science and Technology (AIST)⁶⁷ adopted rules for handling employee inventions, which makes it clear that the government owns a right in an invention that falls within the definition of an employee invention. The rules require inventors to report such inventions to their supervisors. When a report is filed regarding an employee invention, a right to obtain a patent to the invention is transferred to the government. The AIST compensates the transfer of employee invention according to the same scheme as the MEXT summary for compensating their employees⁶⁸.

4. Impact of the Bayh-Dole enactment

Although it is too early to make an impact assessment from the enactment of the Japanese Bayh-Dole Act, MEXT's statistics indicate a significant increase in the number of collaborative research projects between universities and industries in 2000 and 2001⁶⁹. There is a particular increase in the field of biotechnology after the enactment of the Bayh-Dole Act, furthermore, the number of invention reports, as well as patent applications filed with a private institute have drastically increased after the enactment. The number of patent applications filed by Japanese universities has significantly increased since the enactment of Japanese Bayh-Dole Act⁷⁰, particularly, the number of applications filed by technology licensing organizations has increased from 16 in 1998 to 699 in 2001⁷¹.

5. Technology Transfer Organizations

5.1. University/Academic Technology Transfer

Japan's METI and the Japanese Patent Office (JPO), provides a variety of measures to encourage procurement and management of intellectual property on fruits resulting from research and development activities in universities and academic research institutions. In addition to the advantages provided under the TLO Promotion law⁷², the JPO send, at their expense, intellectual property advisors to facilitate establishment of technology license offices in universities and research institutions⁷³. Intellectual property advisors are those who worked in patent and legal departments of Japanese companies and have experience in procuring and licensing patents and other intellectual property. These advisors train staff in technology transfer offices regarding patent appli-

cation preparation, conduct prior-art searches, and develop a system within the universities to discover patentable subject matter and file patent applications. Further, the JPO also send, at their own expense, patent attorneys who give legal advice in licensing and litigation.

In addition to the discount of patent annual fees and examination official fees under the TLO promotion law, the JPO accelerates application examination from the MEXT and METI approved TLO without charge, if a petition explaining the necessity of prompt examination is filed. However, this system has not been extensively used⁷⁴.

The JPO frequently sponsors seminars on procurement and management of intellectual property and encourage universities to develop IP curriculum in both legal and other departments⁷⁵. It sends their examiners to lecture in these universities and speak at the seminars. Further, it distributes a variety of publications to promote technology transfer between universities and industries.

TLO in Japanese universities are classified into four types based on their organization. The first type is established as a corporation (Kabushiki Kaisha) or limited corporation (Yugen Kaisha), which are incorporated based on investments by university professors and researchers. Many TLOs for national universities adopted this type of organization⁷⁶. The second type is joint venture between universities and private sectors. The third type is existing corporations which expanded their business to start technology transfer. The fourth type is an organization within universities.

An example of the first type is CASTI, which handles intellectual property in research and development, developed by faculty members and researchers at the University of Tokyo⁷⁷. CASTI's business includes intellectual property procurement, and licensing and technology consulting relating to the transferred technology. In addition, CASTI collaborates with Recruit Japan, a private

technology-licensing corporation and market their technology nationally and internationally.

An example of the second type is Kansai TLO, which was established to serve universities and researchers in the Kansai region (great Osaka/Kyoto area)⁷⁸. Members are faculty and researchers of national and private universities in the Kansai area, including the University of Kyoto (National), University of Osaka (National), Ritsumeikan University (Private), and other universities. Kansai TLO business goes beyond intellectual property procurement and management, and facilitates technology entrepreneurship. Working with Kyoto Research Park Corporation and a group of venture capitalists, Kansai TLO helped university faculty members and researchers to start a technology startup and transfer technologies to these startups.

The Tokyo Institute of Technology (TIT) TLO is an example of the third type⁷⁹. TIT's TLO is based on the alumni foundation for the Tokyo Institute of Technology and obtained TLO approval to start technology transfer. The Waseda University TLO is an example of the fourth type⁸⁰. Approved TLOs and the number of licenses to transfer technology are as follows : Indicated in the previous page.

5.2. Business to Business Technology Transfer

The METI and the JPO also promote business-to-business technology transfer and created the Japan Technomart foundation in 1985⁸¹. Technomart facilitates business-to-business technology transfer through a registration system where a party, who wants to license a technology, registers his intellectual property rights. However, to obtain a license of these registered rights, a party must subscribe for membership and pay annual fees. Thus, Technomart encourages technology transfer only to a group of parties who can

Year of Approval	Name of TLO	Affiliated Universities License ⁸²	
1998	Center for advanced Science & Technology Incubator (CASTI)	University of Tokyo	43
	Kansai TLO	Kyoto University Ritsumeikan University	28
	Tohoku Techno Arch	Tohoku University and other universities in Tohoku area	56
	Nihon Univ. Int'l Industry Technology Business Center	Nihon University	9
'99	Institute of Tsukuba Liaison Co.Ltd.	Tsukuba University	3
	Waseda University Intellectual Property Center	Waseda University	11
	Tokyo Institute of Technology TLO	Tokyo Institute of Technology	25
	Keio University Intellectual Property Center	Keio University	27
	Yamaguchi TLO	Yamaguchi University	8
	Hokkaido TLO	Hokkaido University	10
'00	The New Industry Research Organization	Kobe University etc.	11
	Nagoya Industrial Science Research Institute	Nagoya University etc.	6
	Kyushu TLO Co. Ltd.	Kyushu University	6
	Tokyo Denki Univ. TLO	Tokyo Denki Univ.	0
	Yamanashi TLO	Yamanashi Univ.; Yamanashi Medical Univ.	2
	Tama TLO	Kougakuin Univ., Toyo Univ. Tokyo City Univ. etc.	2
'01	Meiji Univ. Intellectual Property Center	Meiji University	1
	Yokohama TLO	Yokohama National University Yokohama City Univ. etc.	0
	Technology Network Shikoku	Tokushima Univ. Kayama Univ. Ehime Univ. Kochi Univ. etc.	1
	The Foundation for the Industrial Science	Univ. of Tokyo (Research Institute for the Industrial Science)	8
	Osaka TLO	Osaka University	0
	Kumamoto Technology and Science Foundation	Kumamoto University etc.	0
	Tokyo University of Agriculture and Technology TLO	Tokyo University of Agriculture and Technology	4
	Niigata TLO	Niigata University etc.	0
	Hamamatsu Science and Technology Foundation	shizuoka University etc.	0
'02	Kitakyushu Academic Promotion Foundation	Kyushu Institute of Technology	1
	Mie TLO	Mie University	—

afford to pay the annual fees.

To extend technology transfer opportunities, METI and the JPO adopted a policy for promoting patent distribution in 1997, and provide a variety of support to promote businesses, which include academic-to-business as well as business-to-business⁸³. A survey conducted by the JPO in 1999, revealed that 69% (660,000) of all Japanese patents have never been exploited by the patent owner, and in 51.5% (340,000) of the unexploited patents the patentee is willing to grant a license. To reduce the number of unexploited patents, the JPO dispatched patent distribution advisors to match a party who needs a certain technology with a party who can provide the technology and facilitate technology transfer between the parties. The number of licenses executed through the facilitation of technology transfer by patent distribution advisors has increased from six in 1997 to 1478 in 2001⁸⁴. Among the parties who provide technologies, TLOs in universities and national laboratories occupy 41%, which is expected to further increase⁸⁵. Of the parties who received technologies, 76% are small business firms and 22% are large business firms⁸⁶.

Further, the JPO maintains a database listing patents for which the patentee is seeking a license opportunity⁸⁷. Any party can register her patent by posting the technology information and license conditions. A party can also post technology needs. The database is open to the public on-line so anyone can obtain access to the posted information without charge. The JPO also sponsors a variety of seminars promoting technology transfer and trains technology license managers.

6. Conclusion: Future and Challenges

Japanese Bayh-Dole Act successfully increased the number of applications from universities and made universities ready for transferring their

technologies to Japanese industry. However, the government does not see the result sufficiently. Japan's Prime Minister Junichiro Koizumi organized Strategic Council of Intellectual Property and started an extensive review of current intellectual property protection and system to encourage innovation⁸⁸. The Council has its own secretariat, and the secretariat is led by a former JPO commissioner, Mr. Hisamitsu Arai, who achieved an extensive patent law revision, including a revision to increase patent infringement damages. One of the Council's focuses is technology transfer of university inventions to encourage creation of new business and technology⁸⁹.

Based on the outlines, on July 8, 2003, the Council published detailed plans for promoting creation, protection and utilization of intellectual property⁹⁰. Among actions that the government will take to promote creation and utilization of intellectual property rights developed by universities is selecting research proposals which may result in more intellectual property rights. The government plans to review activities at the existing TLOs and concentrate its funding on selected TLOs. It will also encourage creation of technology incubator centers within universities. To facilitate TLOs to file applications for subject matters which are presented at science meetings in a timely fashion without losing the novelty, JPO follows the example of US patent law and adopts an expansive grace period and provisional application.

Despite these supports from JPO and the Japanese government, none of the Japanese universities' TLOs is self-sustaining because the costs for filing and prosecuting patent applications are much more expensive than revenues earned by licensing their technologies. Many Japanese TLO officers wonder if there will ever come a time when any of the Japanese TLOs will be self-sustaining. After all, many of the US universities'

TLOs are not self-sustaining either. They lose money by filing applications for inventions that are unable to find licensees. Since drug patents are the ones that bring money to the universities, universities which have no medical school wonder how they can raise money from their technologies to balance the prosecution budget. These Japanese TLOs will face a serious challenge when the government stops the funding to support TLO activities.

However, even failing to balance the budget, the benefit of technology transfer to the society is tremendous : creation of new business and employment opportunities and education opportunities for students through participation in TLO activities. In short, the Japanese government and TLOs should focus more on these social benefits from university technology transfer than financial benefits brought by university technology licensing. After all, the university TLOs' mission should be very much different from license offices of the industry. Their mission should be to create new technologies and taking over the risk of commercializing technologies, which is unlikely for the industry due to a grave risk involved in commercialization. At least, Japanese TLOs can take advantage of the experience at US TLOs and learn from their failures and successes.

- 1 *Sangyou Katsuryoku Saisei Tokubetsu Sochiho*, Chapter 3, Art. 30 to 33, Japanese Law No. 131 of 1999. General information about the law is available in English at: <http://www.meti.go.jp/english/information/data/cIP9972e.html>, (Last Visited 11/21/02).
- 2 INDUSTRIAL PROPERTY RIGHT COMMITTEE, JAPANESE PATENT OFFICE, TOKYO HOU TOU NO KAISEI NI KANSURU TOSHIN (Invitation of Comments on the Proposal for Revising Patent Law and Other Industrial Property Laws) 10 (Dec. 16, 1997).
- 3 COMMISSION ON INTELLECTUAL PROPERTY RIGHTS IN THE TWENTY FIRST CENTURY, TOWARD THE ERA OF INTELLECTUAL PROPERTY CREATION : CHALLENGES FOR BREAKTHROUGH (April 7, 1997). This report is available online at www.jpo-miti.go.jp/pate/repo/rep21eng.doc.
- 4 *Id.* at 19.
- 5 National Academy of Science, Report regarding how to handle patents and other intellectual property rights of inventions made by university professors and researchers (June 1977). More detailed discussions on these inventions are included in *infra* notes 51 and 52.
- 6 Industrial Revitalization Law, *supra* note 1, Art. 30, Paragraph 1
- 7 Patent Act, Law No. 121 of 1959.
- 8 Utility Model Registration Act, Law No. 123 of 1959.
- 9 Design Registration Act, Law No. 125 of 1959.
- 10 Copyright Act, Law No. 48 of 1970. Traditional works of authorship, such as literary and music works are excluded from the scope of Japanese Bayh Dole Act.
- 11 Law concerning Semiconductor Integrated Circuit Layout, Law No. 43 of 1995.
- 12 Seed and Seedling Act (Japanese Plant Variety Protection Act), Law No. 83 of 1998.
- 13 The Bayh Dole Act and other technology transfer related legislations were enacted to amend U.S. Patent Law. For detailed discussion of U.S. Bayh Dole Act and the U.S. technology transfer system, see Robert Kneller, University-Industry Cooperation and Technology Transfer in Japan Compared with the United States : Another Reason for Japan's Economic Malaise? 24 U.Pa. Int'l Econ. L. 329 (2003); Rebecca S. Eisenberg, Public Research and Private Development: Patents and Technology Transfer in Government-Sponsored Research, 82 Va. L. Rev. 1671.
- 14 International Research Collaboration Promotion Act, Law No. 57 of 1996. Law of Enhancing Research and Development Structure for Industrial Technology, Law No. 33 of 1998. Both laws were revised upon the enactment of the Japanese Bayh-Dole Act in 1999.
- 15 *Id.* at Chapter 4: Promotion of Research Activities (Art. 30 to Art. 33).
- 16 *Id.* at Art. 30, Paragraph 1, Item 1.
- 17 *Id.* at Art. 30, Paragraph 1, Item 2.
- 18 *Id.* at Art. 30, Paragraph 1, Item 3.
- 19 35 U.S.C., § 202 (c) (1).
- 20 35 U.S.C., § 203.
- 21 35 U.S.C., § 202 (a). The Act prevents contractors from taking the ownership of intellectual property rights if one of three conditions exists.
- 22 35 U.S.C., § 202 (b) (7) (A).
- 23 35 U.S.C., § 202 (b) (7) (C).
- 24 35 U.S.C., § 204. However, a METI's new model contract for government agencies includes a Japan manufacturing preference clause. *Kneller*, University-Industry Cooperation, *supra* note 13, at 426.
- 25 35 U.S.C., § 200.
- 26 Industry Revitalization Law, *supra* note 1, Art. 1.
- 27 *Id.* Art. 30, Para. 1.
- 28 JAPANESE PATENT ACT, Art. 35.
- 29 See, http://www.mext.go.jp/a_menu/shinkou/sangaku/sangakuc/030201a.htm.
- 30 *Id.* Art. 2.
- 31 *Id.*
- 32 *Id.* Art. 3.
- 33 *Id.* Art. 31.
- 34 Law No. 52 of 1998.
- 35 Law No. 132 of 1999.
- 36 Law No. 18 of 1999.
- 37 Law No. 51 of 1998; Law No. 41 of 1999.
- 38 TECHNOLOGY TRANSFER PROMOTION LAW, Article 1.
- 39 TECHNOLOGY TRANSFER PROMOTION LAW, Art. 2.
- 40 TECHNOLOGY TRANSFER PROMOTION LAW, Art. 3.
- 41 TECHNOLOGY TRANSFER PROMOTION LAW, Art. 4.
- 42 TECHNOLOGY TRANSFER PROMOTION LAW, Art. 6.
- 43 INDUSTRY REVITALIZATION LAW, Art. 32 and Art. 33. TECHNOLOGY TRANSFER PROMOTION LAW, Art. 12 and Art. 13.
- 44 Law No. 18 of 1999.
- 45 MEXT, Notice regarding How to Handle Patents and Other Intellectual Property Rights in inventions and other subject matter developed by professors and other members of universities, 1978. For IP ownership rules and procedure regarding industry-university collaborative-research under this notice, see *Kneller*, University-Industry Cooperation, *supra* note 13,

- at 365.
- 46 Science Council, Draft Report for Handling Patents and Other Intellectual Property Rights in inventions and other subject matter developed by professors and other members of universities, June 1977.
- 47 For the process to prepare the report see, Yoshinobu Someno, "The Criterion of Employee's Invention" for the Scientific Researches and its Basic Character, *Japan Association of Industrial Property*, 4 ANNUAL OF INDUSTRIAL PROPERTY LAW, 125 (1981).
- 48 PATENT ACT, Art. 35. See *infra* at note 29.
- 49 PATENT ACT, Art. 35, Para. 1.
- 50 *Id.* Criterion, Art. 4 Para. 1 (1).
- 51 *Id.* Criterion, Art. 4 Para. 1 (2).
- 52 1978 MEXT Notice, *supra* note 47, at Art. 1.
- 53 1978 MEXT Notice, *supra* note 47, at Art. 2.
- 54 *Study Group Regarding How to Handle Outside Funding for National Universities etc.* Laws Forms and Materials Necessary for Research Collaborations between Universities and Industry, 69 (4ed., 2002).
- 55 1978 MEXT Notice, *supra* note 47, at Art. 2 (3).
- 56 Japan Society of Kansei Engineering, IP Study Group, Employee Invention and Intellectual Property National Strategies, 185 (2002).
- 57 Report available at : http://www.mext.go.jp/b_menu/shingi/gijyutu/gijyutu8/toushin/021101.htm.
- 58 *Id.* the MEXT working group report, Section II.
- 59 A summary proposal prepared by the working group available at : http://www.mext.go.jp/b_menu/shingi/gijyutu/gijyutu8/toushin/021102q.htm.
- 60 *Id.* Summary II, 2 (1).
- 61 *Id.* Summary II, 2 (2).
- 62 *Id.* Summary II, 2 (4).
- 63 *Id.*
- 64 *Id.*
- 65 IP Study Group, Employee Invention and Intellectual Property National Strategies, *supra* note 56, at 161.
- 66 For technology transfer from national laboratories, see Kneller, University-Industry Cooperation, *supra* note 13, at 409.
- 67 Information on AIST available at : http://www.aist.go.jp/index_en.html.
- 68 MEXT Summary, *supra* note 45.
- 69 See, http://www.mext.go.jp/a_menu/shinkou/sangaku/index.htm.
- 70 JPO, 2002 Patent Administration Annual Report, 61 (2002).
- 71 *Id.* at 62.
- 72 *Supra* note 37.
- 73 JPO, 2002 Patent Administration Annual Report, 63 (2002).
- 74 Less than 1% of applications filed by the approved TLOs requested accelerated examination in 2001. *Id.* at JPO Annual Report, 64.
- 75 *Id.* at JPO Annual Report, 65.
- 76 National universities adopted this type due to the complexity of ownership issues and restrictions on government employees. However, as of April 1, 2004 Japanese national universities have become a type of independent administrative agency, which brought changes to the ownership and TLO structures. See, Kneller, University-Industry Cooperation, *supra* note 13, at 404.
- 77 CASTI's English home page is at : <http://www.casti.co.jp/e/index-e.html>
- 78 Kansai TLO's home page is at <http://www.kansai-tlo.co.jp/>.
- 79 TIT TLO's home page (Japanese only) is http://www.titech-tlo.or.jp/index_m4.html
- 80 Waseda TLO's home page (Japanese only) is <http://www.waseda.ac.jp/gakugai/index1.htm>
- 81 Information of Technomart available at: <http://www.e-technomart.jp/>
- 82 The number of licenses executed as of July, 2002. JPO Annual Report, *supra* note 57, at 64.
- 83 Information on the policy available at: <http://www.jpo.go.jp/ryutue/ryutue.htm>
- 84 Annual Report, *supra* note 57, at 70.
- 85 *Id.*
- 86 *Id.*
- 87 The database address is: <http://www.ryutu.ncipi.go.jp/db/index.html>
- 88 http://www.kantei.go.jp/foreign/policy_e.html
- 89 Intellectual Property Policy Outlines available at: http://www.kantei.go.jp/foreign/policy/titeki/kettei/020703taikou_e.html
- 90 Strategic Promotion for the Creation, Protection, and Exploitation of Intellectual Property. English translation is available at: http://www.kantei.go.jp/foreign/policy/titeki/kettei/030708f_e.html