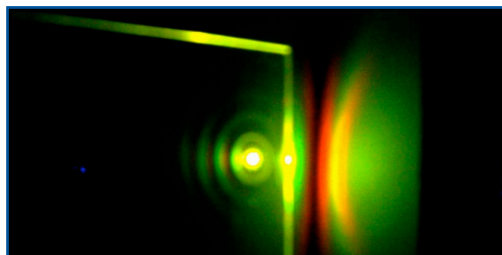
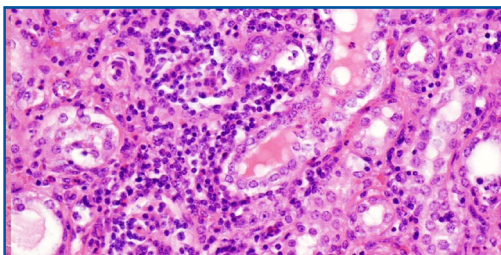
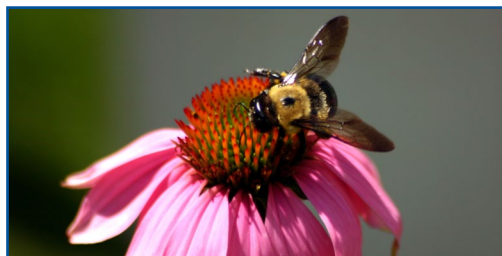


An Inventor's Guide to Technology Transfer

at Penn State University



PENNSTATE



Our mission is to protect Penn State intellectual property, identify its commercial potential, and stimulate economic development through the transfer of Penn State technologies to the marketplace.

Penn State University - Office of Technology Management

113 Technology Center Building, University Park, PA 16802

Phone: 814-865-6277 • otminfo@psu.edu

Note: This booklet is based on the University of Michigan's "Inventor's Guide to Technology Transfer," with adaptation for Penn State and the Penn State Office of Technology Management (OTM). We are very grateful to Ken Nisbet, Robin Rasor, and the staff of the UM Office of Technology Transfer for their kind permission to use their excellent material and to the University of Michigan for permission to use its copyright.

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The Inventor's Guide to Tech Transfer outlines the essential elements of tech transfer at Penn State.

This guide is organized to answer the most common questions we typically field from our research community and provides a broad overview of the tech transfer process and services available for researchers.

For more information, visit <http://www.research.psu.edu/offices/otm> or call OTM at 814-865-6277.

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OVERVIEW

Technology Transfer

What is technology transfer?

Technology transfer is the transfer of knowledge and discoveries to the public. It can occur through publications, educated students entering the workforce, exchanges at conferences, and relationships with industry, among other things. For the purposes of this guide, technology transfer refers to the formal licensing of technology to third parties under the guidance of professionals employed by universities, research foundations, and businesses.

What is Penn State's Office of Technology Management (OTM)?

OTM is a University service unit composed of specialists in licensing, patenting, business development, and legal matters who are experienced in technology transfer. OTM is responsible for managing IP and technology transfer for all 24 Penn State campuses.

Why would a researcher want to participate in the technology transfer process?

The reasons are unique to each researcher and may include:

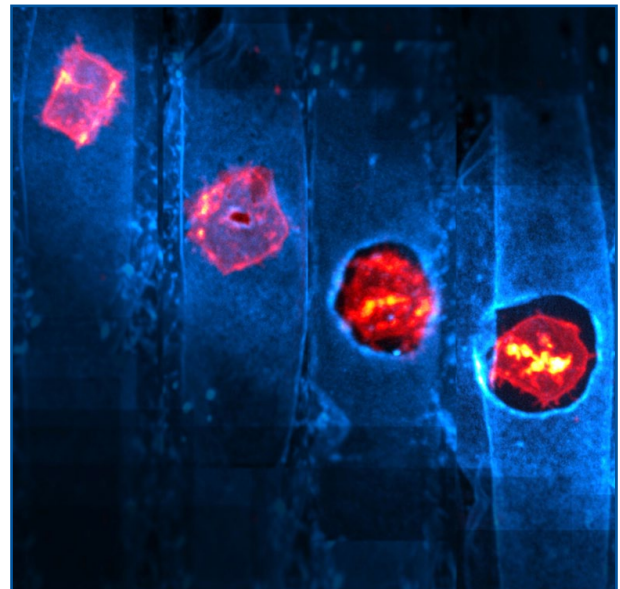
- Making a positive impact on society
- Feeling a sense of personal fulfillment
- Achieving recognition and financial rewards
- Generating additional lab/departmental funding
- Meeting the obligations of a research contract

- Attracting research sponsors
- Creating educational opportunities for students
- Linking students to future job opportunities

How is technology transferred?

Technology is typically transferred through a license agreement in which the University's technology transfer agent, The Penn State Research Foundation (PSRF), grants rights in the defined technology to a third party, often limited to a particular field of use and/or region of the world. The licensee (the third party licensing the technology) may be an established company or a new business start-up.

Licenses include terms that require the licensee to meet certain performance requirements and to make financial payments. These payments are shared with the inventors and with the administrative unit in which the invention was created.





What is the Bayh-Dole Act?

The U.S. Bayh-Dole Act of 1980 allows universities and other non-profit institutions to have ownership rights to discoveries resulting from federally funded research*, provided certain obligations are met. These obligations include making efforts to protect (when appropriate) and commercialize the discoveries, submitting progress reports to the funding agency, giving preference to small businesses that demonstrate sufficient capability, and sharing any resulting revenues with the inventors.

The Bayh-Dole Act is credited with stimulating interest in tech transfer activities and generating increased research, commercialization, educational opportunities, and economic development in the United States.

**The Bayh-Dole Act does not apply to industry sponsored research.*

[Throughout this manual, unless specifically described otherwise, the term inventor includes individuals listed on a patent as well as contributors who have shared in creating the value of intellectual property that is not patented.]

"Since its founding in 1855, Penn State has been at the forefront of new discoveries, finding ways to move these new technologies out into the real world for practical use. We are proud to be carrying on this tradition yet today."



-- Associate Vice President for Research and Technology Transfer, Ron Huss

Tech Transfer

Process of Technology Management

How to work with the Office of Technology Management?

We encourage you to contact OTM during your discovery process to ensure you are aware of the options that will best leverage the commercial potential of your research.

OTM staff members are trained to assist you with questions related to marketability, funding sources, commercial partners, pat-

enting and other protection methods, new business start-up considerations, University policies and procedures, and much more.

What are the typical steps in the process?

The process of technology transfer is summarized in the steps and diagram that follow. Note that these steps can vary in sequence and often occur simultaneously.

10 Steps to Commercialization

1) Research: Observations and experiments during research activities often lead to discoveries and inventions. An invention is any useful process, machine, composition of matter, or any new or useful improvement of the same. Often, multiple researchers may have contributed to the invention.

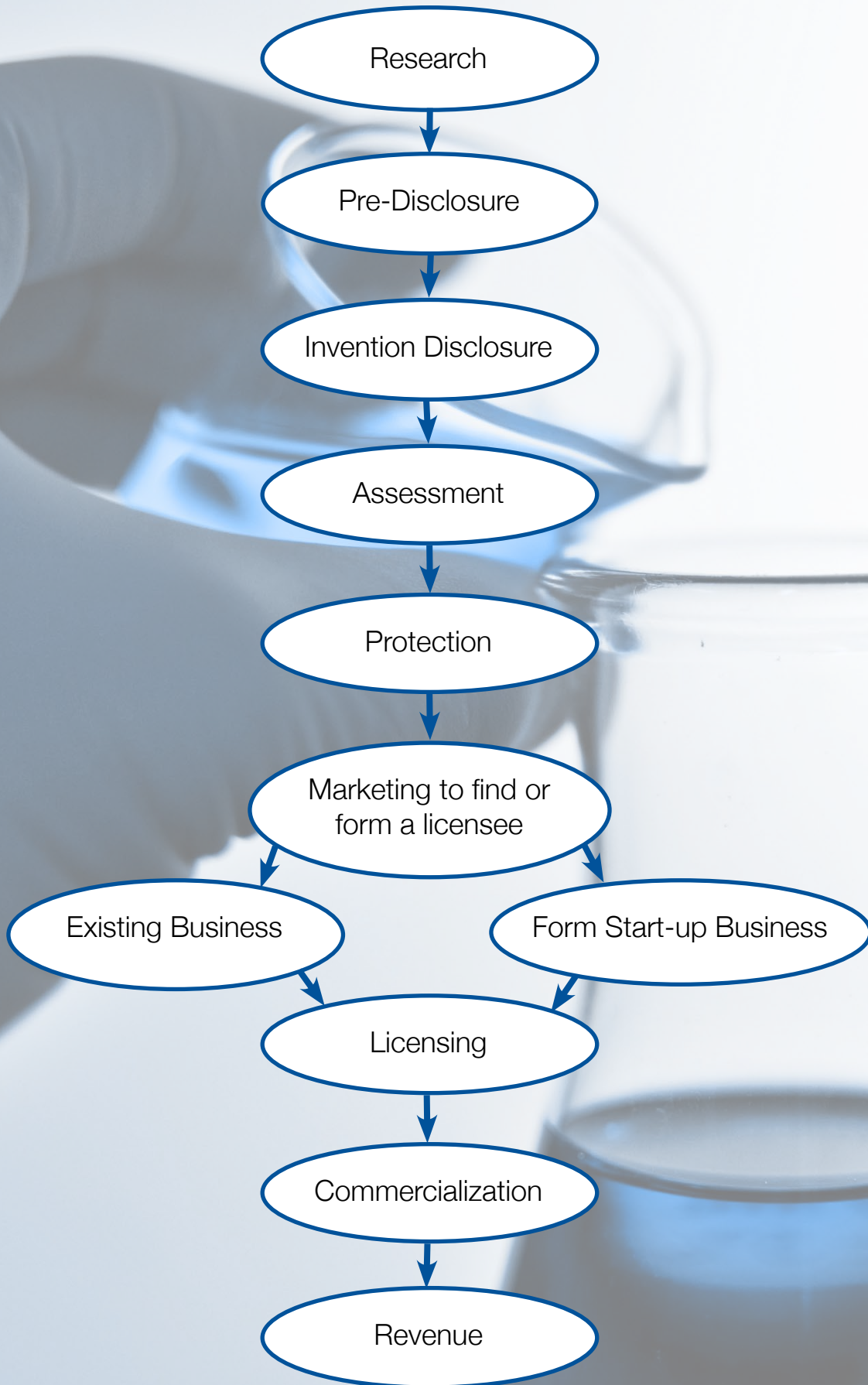
2) Pre-Disclosure: Contact OTM personnel early to discuss your invention and have them provide guidance with respect to the disclosure, evaluation, and protection processes described below.

3) Invention Disclosure: The written notice of invention to OTM that begins the formal technology transfer process. An invention disclosure remains a confidential document and should fully document your invention so that the options for commercialization can be evaluated and pursued.

4) Assessment: The period in which your Technology Licensing Officer reviews (with your input) the invention disclosure, conducts patent searches (if applicable),

and analyzes the market and competitive technologies to determine the invention's commercialization potential. The evaluation process will guide our strategy on whether to focus on licensing to an existing company or creating a new business start-up.

5) Protection: The process in which protection for an invention is pursued. Patent protection, a common legal protection method, begins with the filing of a patent application with the U.S. Patent Office and, when appropriate, foreign patent offices. Once a patent application has been filed,





it typically will require several years and tens of thousands of dollars to obtain issued U.S. and foreign patents. Other protection methods include copyright, trademark, and confidential know-how.

6) Marketing:

With your involvement, OTM staff identify candidate companies that have the expertise, resources, and business networks to bring the technology to market. This may involve partnering with an existing company or forming a start-up. Your active involvement can dramatically enhance this process.

7a) Form a Start-up:

If creation of a new business start-up has been chosen as the optimal commercialization path, OTM will engage with our Penn State entrepreneur-

ial ecosystem to assist the founders in planning, creating and finding funding for the start-up.

7b) Existing Business:

If the invention will best be commercialized by one or more existing companies, OTM will seek potential licensees and work to identify mutual interests, goals and plans to fully commercialize this technology.

8) Licensing:

A license agreement is a contract between PSRF and a third party in which PSRF's rights to a technology are licensed (without relinquishing ownership) for financial and other benefits. A license agreement is used with both a new start-up business or with an established company. An option agreement is sometimes used

to enable a third party to evaluate the technology for a limited time before licensing.

9) Commercialization:

The licensee company continues the advancement of the technology and makes other business investments to develop the product or service. This step may entail further development, regulatory approvals, sales and marketing, support, training, and other activities.

10) Licensing Revenue:

Revenues received from licenses are distributed to inventors, the administrative units, and the Penn State Research Foundation (PSRF). Additional details can be found in the Revenue Distributions section of this document.

How long does the tech transfer process take?

The process of protecting the technology and finding the right licensing partner may take months—or even years—to complete. The amount of time will depend on the development stage of the technology, the market for the technology, competing technologies, the amount of work needed to bring a new concept to market-ready status, and the resources and willingness of the licensees and the inventors.

How can you help in this process?

- Call OTM at 814-865-6277 when you believe you have created or discovered something unique with potential commercial value.
- Complete and submit the Penn State Invention Disclosure Form (see <http://www.research.psu.edu/patents/protect-your-invention/invention-disclosure-form.pdf>) before publicly disclosing your technology or submitting a manuscript for review and publication.
- Contact OTM before having any discussions with people outside the Penn State community to avoid losing patent rights and possibly hindering the opportunity to commercialize your invention.
- Be sure to list companies and contacts you believe might be interested in your invention and anyone who has already contacted you about your invention on the Penn State Invention Disclosure Form. Studies have shown that over 70% of all licenses are executed with commercial entities known by the inventor, so your contacts can be extremely useful.
- Respond to OTM and outside patent counsel requests. While some aspects of the patent and licensing process may require significant participation on your part, we will strive to make efficient use of your valuable time.
- Keep OTM informed of upcoming publications or interactions with companies related to your intellectual property.



Research

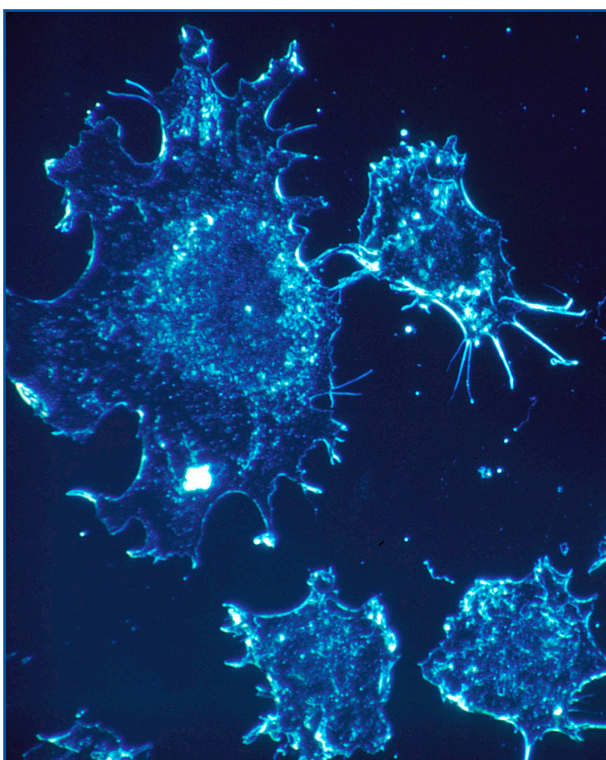
Considerations and Material Transfer Agreements

Research Considerations

Will you be able to publish the results of your research and still protect the commercial value of intellectual property?

Yes, but since patent rights are affected by these activities, it is best to submit an Invention Disclosure (discussed in next section) well before communicating or disclosing your invention to people outside Penn State. There are significant differences between the U.S. and other countries as to how an enabling public disclosure (i.e., publication, presentation at a conference, student thesis publication, student thesis defense, discussion with industry) affects the ability to patent.

Once publicly disclosed (published or presented in some form), an invention may have restricted or minimal potential for pat-



ent protection outside of the United States. Be sure to inform OTM of any imminent or prior presentation, lecture, poster, abstract, website description, research proposal submission, dissertation/masters thesis, publication, or other public presentation including the invention.

May you use material or intellectual property from others in your research?

Yes, but it is important to document carefully the date and conditions of use so that we can determine if this use may influence the ownership and license rights of your subsequent research results. If you wish to obtain materials from outside collaborators, an **incoming Material Transfer Agreement (MTA)** should be completed. Contact OTM for more information on incoming MTAs. For details, visit <http://www.research.psu.edu/offices/otm> or phone 814-865-6335.

Will you be able to share materials, research tools or intellectual property with others to further their research?

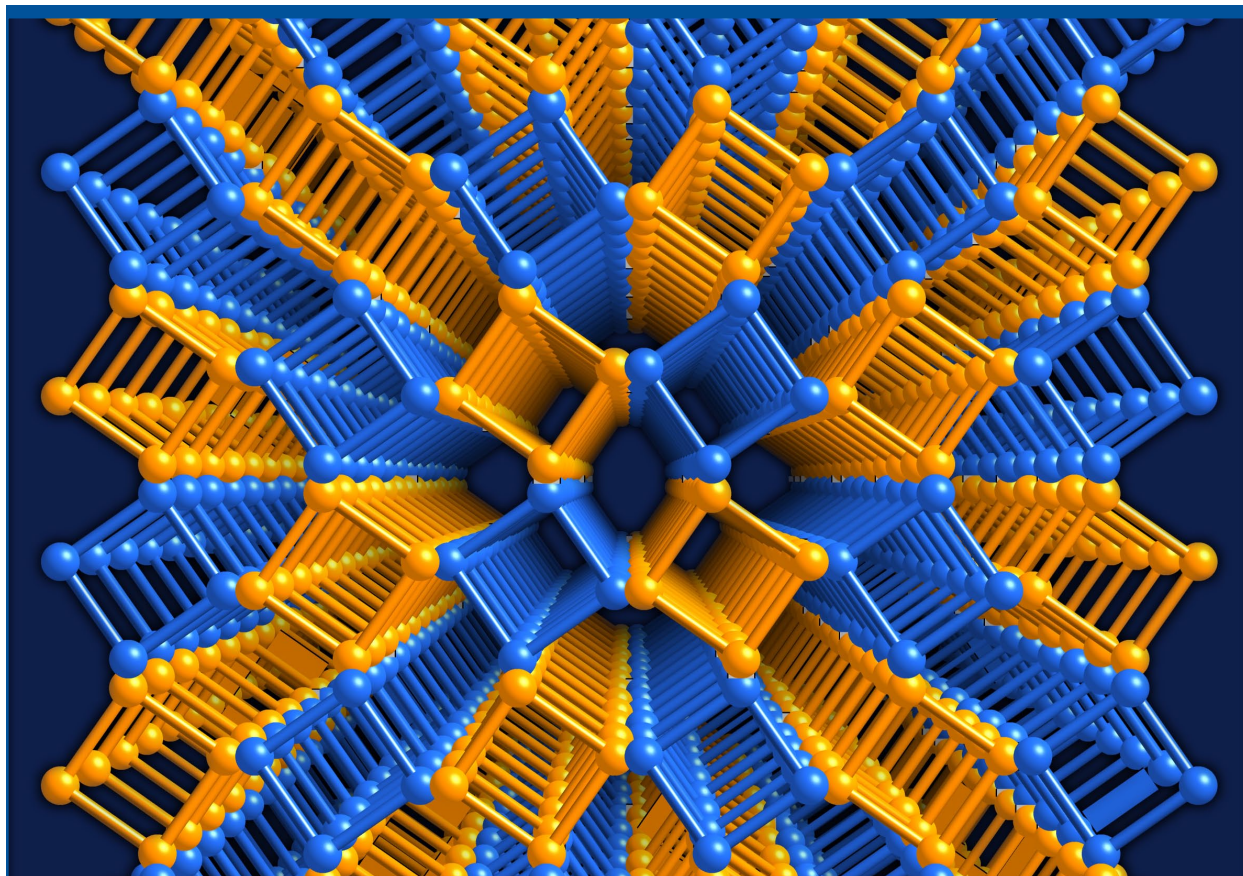
Yes. However it is important to document items that are to be shared with others and the conditions of use. If you wish to send materials to an outside collaborator, an **outgoing Material Transfer Agreement (MTA)** should be completed for this purpose. It also may be necessary to have a Confidentiality Agreement completed to protect your research results or intellectual property. Contact OTM at <http://www.research.psu.edu/offices/otm> or 814-865-6277 to assist you in completing outgoing MTAs or Confidentiality Agreements.

Who is an inventor?

In general terms, an inventor is someone who contributed to the conception of the invention or to the creative further development of an important element of the invention in reducing it to practice. Inventorship is not the same as authorship, however. A “pair of hands” who only carried out the orders of another person is not an inventor, even though such a person may be considered a co-author or contributor in a scholarly sense. Inventorship has a legal definition and will be determined by a patent attorney at the time of filing of any patent application. If needed, please contact OTM or see <http://www.research.psu.edu/offices/otm> for further guidance.

What about consulting?

When researchers enter into consulting agreements, they are deemed to be acting outside of the scope of their employment. Therefore consulting arrangements are not negotiated by the University nor formally reviewed by OTM. Researchers who enter into consulting agreements should familiarize themselves with the University’s policies relevant to consulting activities, and are expected to ensure that the terms of the consulting arrangement are consistent with these policies, including those related to IP ownership, employment responsibilities and use of Intellectual Property. OTM is available to provide informal advice on how your consulting agreement relates to Penn State Intellectual Property. (For additional information on consulting guidelines please visit: <http://guru.psu.edu/policies/RAG15.html> and <http://guru.psu.edu/policies/OHR/HR80.html>)



Invention Disclosures

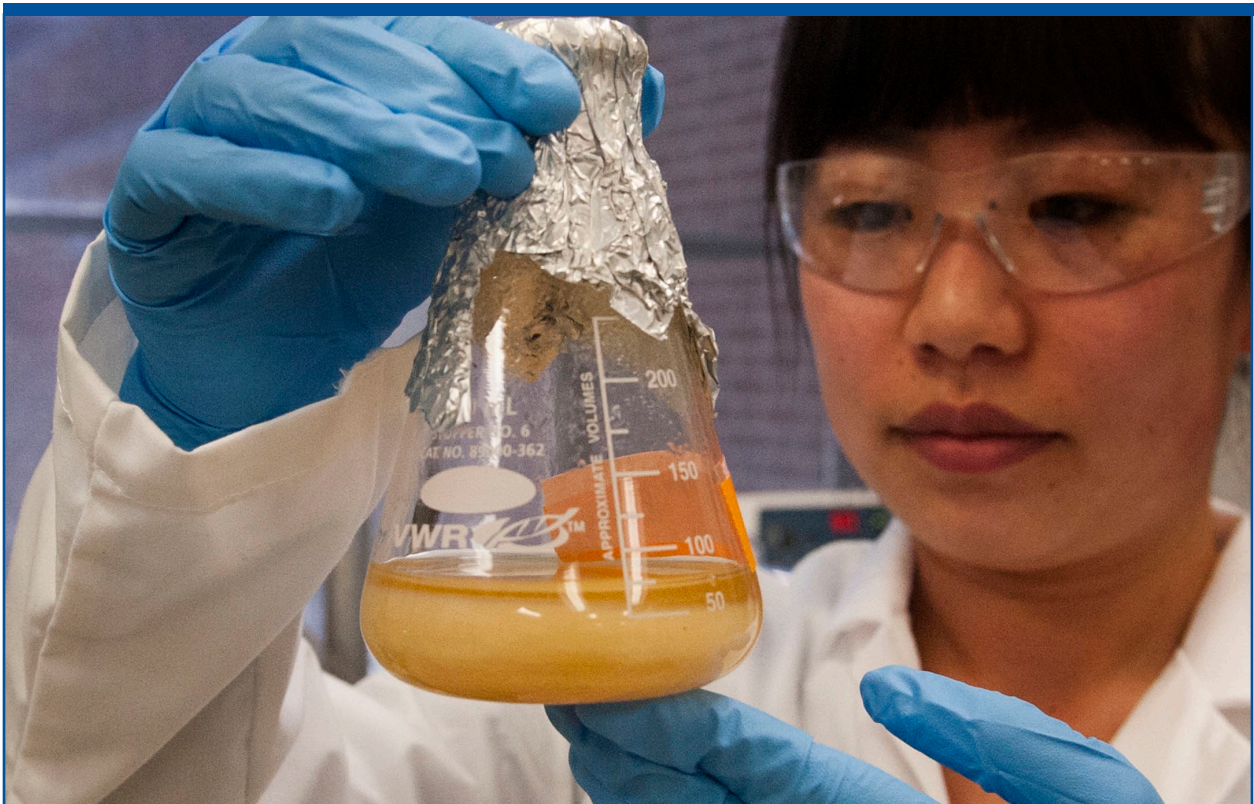
What is an Invention Disclosure?

An Invention Disclosure is a written description of your invention or development that is provided to OTM. The Invention Disclosure should list all sponsors of the research and include all of the information necessary to begin pursuing protection, marketing, and commercialization activities.

This document will be treated as “University Confidential”. Based on the Invention Disclosure, OTM may generate a non-confidential description of your invention in order to assist in marketing the technology. Once potential partners have been identified, and confidentiality agreements have been signed, more detailed exchanges of information can be made.

Why should you submit an Invention Disclosure?

When you disclose your invention to OTM, it starts a process that could lead to the commercialization of your technology. This may involve beginning the legal protection process and working to identify outside development partners. If government funds were used for your research, you are required to file a prompt disclosure, which will be reported to the sponsoring agency. If the research resulting in your invention was sponsored by a company, an invention disclosure is an important first step in fulfilling our obligations to the sponsor.



How do you know if your discovery is an invention?

You are encouraged to submit an Invention Disclosure for all inventions and developments that you feel may solve a significant problem and/or have potential commercial value. If you are in doubt, contact OTM to discuss the invention and strategies for commercialization.

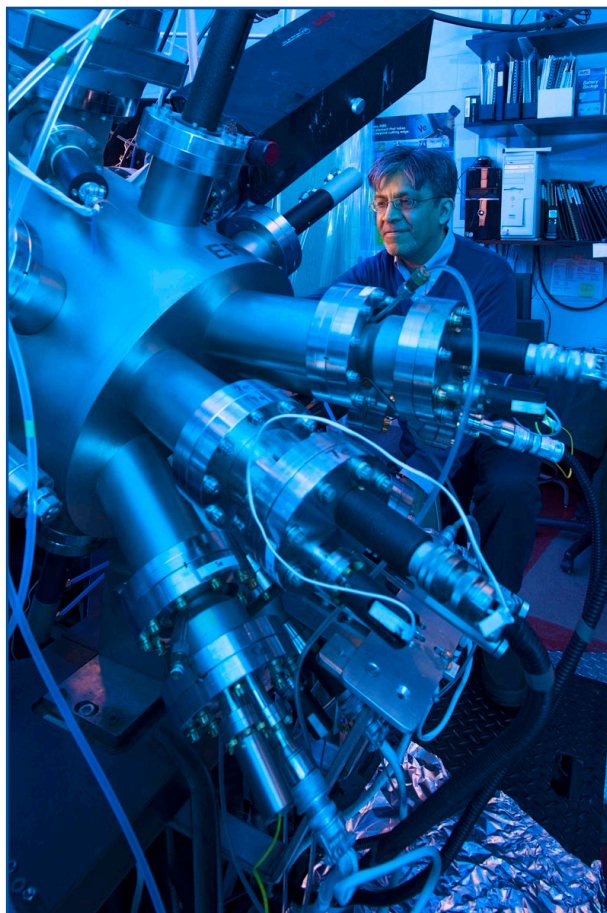
When should you complete an Invention Disclosure?

You should complete an Invention Disclosure whenever you feel you have discovered something unique with potential commercial value.

This should be done well before presenting the discovery through publications, poster sessions, conferences, press releases, or other communications. Once publicly disclosed (i.e., published or presented in some form), an invention may have restricted or minimal potential for patent protection outside of the United States. Differences exist between the U.S. and other countries on the impact of early publication on a potential patent. Be sure to inform OTM of any imminent or prior presentation, lecture, poster, abstract, website description, research proposal, dissertation/masters thesis, publication, or other public presentation describing the invention.

Should you disclose research tools?

Yes, if your new tools would benefit other researchers and you are interested in providing them to the research community. Typically, research tools are materials such as antibodies, vectors, plasmids, cell lines, mice, and other materials used as “tools” in the research process. Most research tools do not necessarily need to be protected by patents in order to be licensed to commercial third parties. If you have research tools



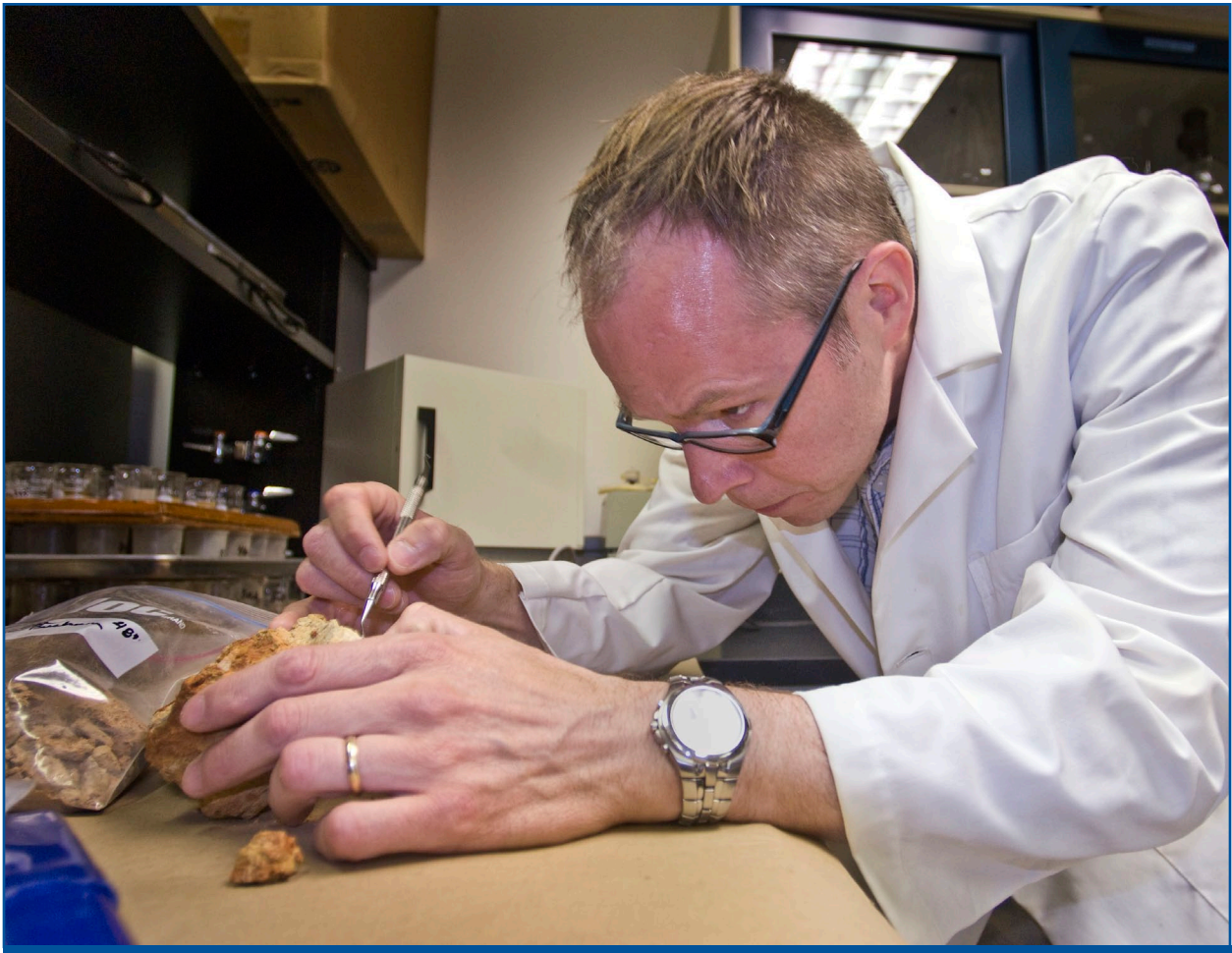
that you believe to be valuable, or wish to provide to others (including research collaborators), OTM will work with you to develop the appropriate protection, licensing, and distribution strategy.

How do you submit an Invention Disclosure?

You can download an invention disclosure form and simple instructions from <http://www.research.psu.edu/patents/protect-your-invention/invention-disclosure-form.pdf>. New invention disclosures are assigned to Technology Licensing Officers within OTM. If you have any questions, call OTM at 814-865-6277 or email us at otminfo@psu.edu.

Ownership

of Intellectual Property



What is "intellectual property"?

Intellectual Property (IP) is a legal concept which refers to creations of the mind for which exclusive rights are recognized. Under intellectual property law, owners are granted certain exclusive rights to a variety of intangible assets, such as musical, literary, and artistic works; discoveries and inventions; and words, phrases, symbols, and designs. Common types of intellectual property rights include copyright, trademarks, and patents.

Who owns what you create?

Ownership depends upon the employment status of the creators of the invention and their use of University facilities.

Considerations include:

- What is the source of the funds or resources used to create the invention?
- What was the employment status of the creators at the time the intellectual property was made?

- What are the terms of any agreement related to the creation of the intellectual property?

All Penn State employees, including researchers, are required to sign the Penn State Intellectual Property Agreement. Therefore, as a general rule, the University owns inventions made by its employees while acting within the scope of their employment or using University resources. Penn State assigns ownership to the Penn State Research Foundation (PSRF). The document, "Ownership and Management of IP" describes the applicable rules. See link: <http://guru.psu.edu/policies/IP01.html>. Additionally, the terms of a Sponsored Research Agreement or Materials Transfer Agreement may impact ownership. When in doubt, it is best to call OTM for advice.

What is the Penn State Research Foundation (PSRF)?

The Penn State Research Foundation (PSRF) is a non-profit corporation formed in 1934 "for the purpose of fostering the advancing scientific research, and, as incident to this general purpose, for the purpose of creating, purchasing, holding, and selling patent rights for intentions and designs, with the right to issue licenses for the exercises of rights relative to said inventions and designs, and to receive payment therefore, and to use and apply all moneys thus or otherwise received solely for the fostering and advancement of such scientific research."

Who owns rights to discoveries made while consulting?

The ownership of inventions made while consulting for an outside company depends on the terms of your consulting contract. It is important to clearly define the scope of work within consulting contracts to minimize any issues with ownership of inventions created from University research. If

you have questions, OTM is available for informal advice.

Who owns rights to discoveries made while on sabbatical?

Generally, if you are on a sabbatical paid by the University, Penn State still retains rights to any discoveries connected to your scope of employment. However it is important to address the ownership of IP with the host institute prior to starting the sabbatical. Contact OTM before your sabbatical to ensure that ownership considerations are documented.

Should you list visiting scientists or scientists at other institutions on your Invention Disclosure?

All contributors to the ideas leading to a discovery should be mentioned in your disclosure, even if they are not Penn State employees. OTM, along with legal counsel, will determine the rights of such persons and institutions. It is prudent to discuss with OTM all working relationships (preferably before they begin) to understand the implications for any subsequent inventions.

Can a student contribute to an invention?

Yes, many students contribute to inventions at Penn State under a wide variety of circumstances. Students should be named as Inventors when appropriate. Typically, undergraduate students own their rights to an invention unless the invention was created by a student in a capacity as a Penn State employee and/or the student signed an agreement with the University. Grad Students and Post Docs sign the Penn State Intellectual Property Agreement Form which states that all IP developed as a result of their efforts belongs to the University.

Assessment

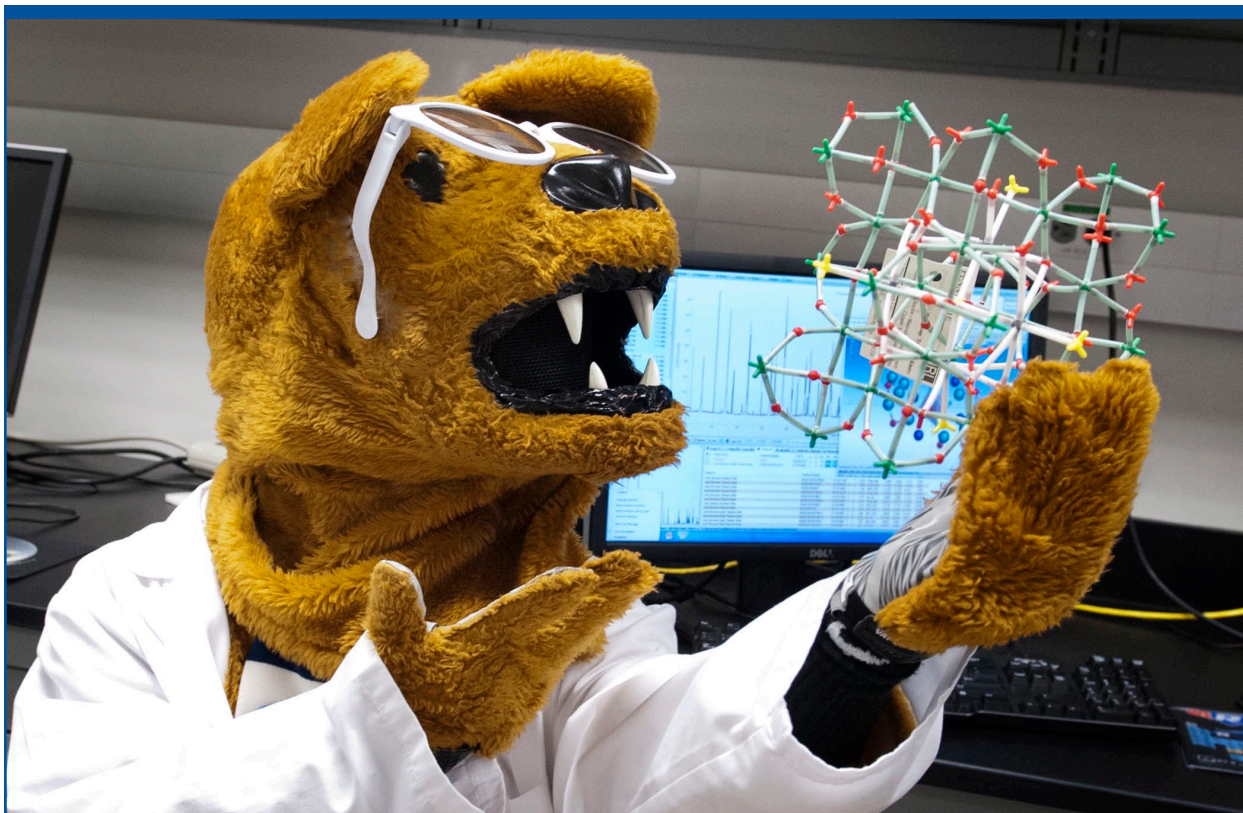
of an Invention Disclosure

How does OTM assess Invention Disclosures?

Technology Licensing Officers (TLOs) at OTM examine each invention disclosure to review the novelty of the invention, protectability and marketability of potential products or services, relationship to related intellectual property, size and growth potential of the relevant market, amount of time and money required for further development, pre-existing rights associated with the intellectual property (IP), and potential competition from other products/technologies. This assessment may also include consideration of whether the intellectual property can be the basis for a new business start-up.

If the inventors believe that all IP should be licensed non-exclusively to all potential users for the public good, will the University honor this request?

OTM will work with you to develop the appropriate commercialization strategy for the invention. Some technologies lend themselves to non-exclusive licensing (licensing to multiple third parties), while others will only reach the commercial marketplace, and therefore the public, if they are licensed on an exclusive basis. We will try to accommodate inventors' commercialization wishes. However, the final decision will be determined by our assessment of which





strategy will produce the most benefits for the general public, consistent with governmental or institutional policies and other obligations.

How does OTM decide whether to commercialize with a traditional or an "open source" license for software?

Generally, OTM supports University software developers who choose to essentially give their programs away through open source mechanisms, provided the University retains the right to distribute the program freely, that open sourcing is consistent with obligations to sponsors, and that each developer's unit supports the decision. Developers should seek authorization from an appropriate department chair or dean.

Is an invention ever assigned to an Inventor?

If OTM decides not to pursue patent protection and/or chooses not to actively market the invention, the University may transfer ownership to the inventor(s), provided all inventors agree. Reassignment of inventions funded from U.S. government sources requires the government's prior approval. Among the key factors in deciding to reassign are whether additional University resources or private resources could best improve marketability.

You can find a "Petition for Assignment of Patent Rights to Inventor" here at this site: <http://www.research.psu.edu/patents/ip-agreement-forms/petition-for-assignment-of-patent-rights-to-inventor.pdf>

Patents

& other Legal Protection

What is a patent?

A patent gives the owner the right to exclude others from making, using, selling, offering to sell, and importing any patented invention. Note, however, that a patent does not provide the owner any affirmative right to practice a technology, since it may fall under a broader patent owned by others; instead, a patent only provides the right to exclude others from practicing it. Patent claims are the legal definition of an inventor's protectable invention.

What type of subject matter can be patented?

Patentable subject matter includes processes, machines, compositions of matter, articles, some computer programs, and methods (including methods of making compositions, methods of making articles, and even methods of performing business).

Can someone patent a naturally occurring substance?

Not in its natural state. However, a natural substance that has never before been isolated or known may be patentable in some instances, but only in its isolated form (since the isolated form had never been known before). A variation of a naturally occurring substance may be patentable if an inventor is able to demonstrate substantial non-obvious modifications that offer significant advantages in using the variant.

What is the United States Patent and Trademark Office (USPTO)?

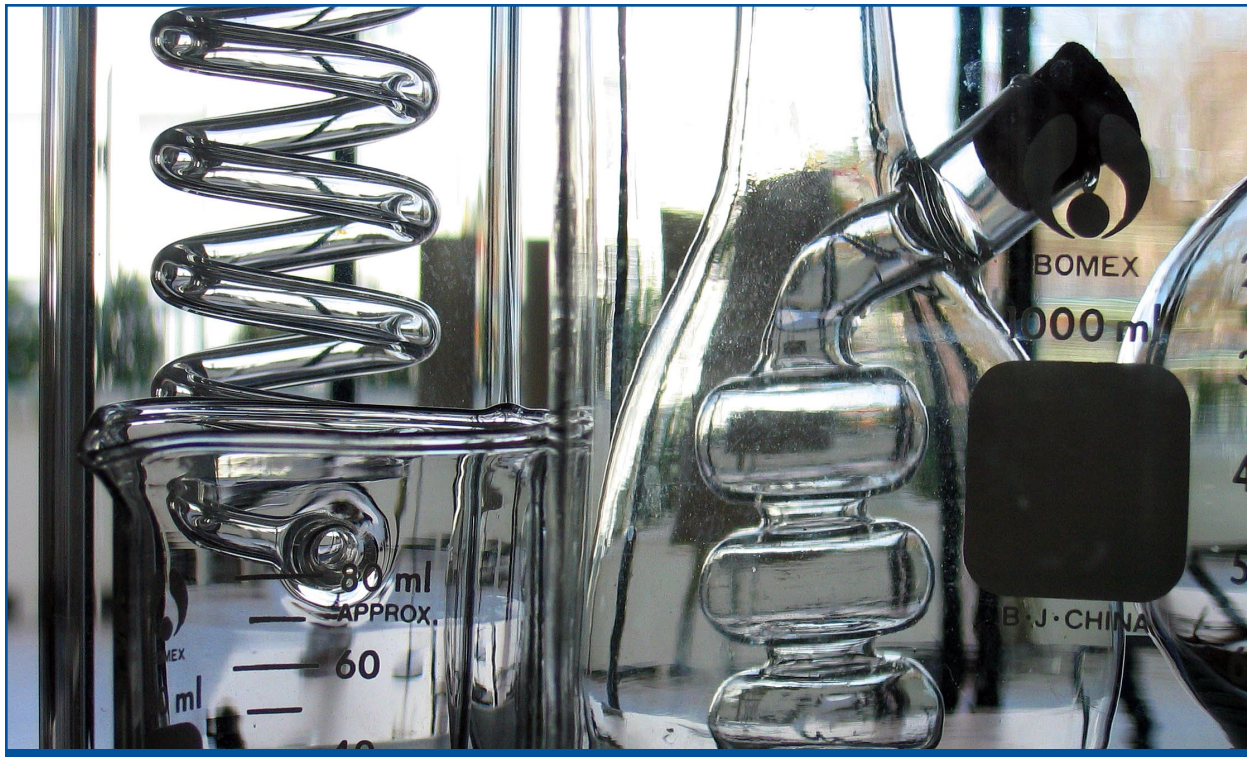
The USPTO is the federal agency, organized under the Department of Commerce, that administers patents on behalf of the government. The USPTO employs patent examiners skilled in all technical fields in order to examine patent applications. The USPTO also issues federal trademark registrations.

What is the definition of an inventor on a patent and who determines inventorship?

Under U.S. law, an inventor is a person who takes part in the conception of the ideas in the patent claims of a patent application. Thus, inventorship of a patent application may change as the patent claims are changed during prosecution of the application. An employer or person who furnishes money to build or practice an invention is not an inventor. Inventorship may require an intricate legal determination by the patent attorney prosecuting the application. Keep in mind that inventorship is very different from authorship.

Who is responsible for patenting?

OTM contracts with outside patent law firms to prepare and prosecute patent applications, thus assuring access to patent specialists in diverse technology areas. Inventors work with the patent counsel in drafting the patent applications and responses to patent offices in the countries in which patents are filed.



What is the patenting process?

Patent applications are generally drafted by a patent attorney or a patent agent (a non-attorney with a science education licensed to practice by the USPTO). The patent attorney generally will ask you to review an application before it is filed and will also ask you questions about inventorship of the application claims. At the time an application is filed, the patent attorney will ask you to sign an Inventor's Declaration and an Assignment, under which you assign your rights in the patent to the Penn State Research Foundation (PSRF).

In about one year, depending on the backlog at USPTO and the technology space, the patent attorney will receive written notice from the USPTO as to whether the application and its claims have been accepted in the form as filed. More often than not, the USPTO rejects the application because either certain formalities need to be cleared up, or the claims are not patentable over the "prior art" (all existing publicly disclosed information in this technol-

ogy space). The response by the USPTO is referred to as an Office Action.

If the application is rejected, then the patent attorney must file a written response, usually within three to six months. Generally the attorney may amend the claims and/or point out why the USPTO's position is incorrect. This procedure is referred to as patent prosecution. Often it will take two USPTO Office Actions and two responses by the patent attorney—and sometimes more—before the application is resolved. The resolution can take the form of a USPTO notice that the application is allowable; in other words, the USPTO agrees to issue a patent. During this process, input from the inventor(s) is often needed to confirm the patent attorney's understanding of the technical aspects of the invention and/or the prior art cited against the application. The USPTO holds patent applications confidential until published by the USPTO, 18 months after initial filing. The time between the initial filing of the patent application and the issuance of the patent is the "patent pending" period.

Is there such a thing as a provisional patent?

No. However, there is a provisional patent application, which is described below.

What is the difference between a provisional patent application and a regular (or “utility”) patent application?

In certain circumstances, U.S. provisional patent applications can provide a tool for preserving patent rights while temporarily reducing costs and providing extra time to prepare a regular application. This occurs because the application is not examined during the year in which it is pending and claims are not required. A regular U.S. application and related foreign applications must be filed within one year of the provisional filing in order to receive the benefit of the provisional application’s early filing date. However, since an applicant only receives the benefit of the earlier filing date for material that is adequately described and enabled in the provisional application, we may still need you to work with a patent

attorney even when an application is filed as a provisional.

What’s different about foreign patent protection?

Foreign patent protection is subject to the laws of each individual country, although in a general sense the process works much the same as it does in the United States. In most foreign countries, however, an inventor will lose any patent rights if they publicly disclose the invention prior to filing of the first (or “priority”) application in one country. In contrast, the United States has a one-year grace period in which a patent may be filed after any enabling public disclosure.

What is gained by filing an application under the Patent Cooperation Treaty (PCT)?

The PCT application provides two advantages. First, it delays the need to file costly foreign applications until 30-months after the filing date. This 30-month period gives



an applicant the opportunity to further develop, evaluate and/or market the invention for licensing. Second, the international preliminary examination often allows an applicant to simplify the patent prosecution process by having a single examiner assess the patentability of the claims, which can save significant costs in prosecuting foreign patent applications.

What is the time line of the patenting process and resulting protection?

Currently, the average U.S. utility patent application is pending for about three years, though inventors in the biotech and computer fields should plan on a longer waiting period. Once a patent is issued, it is enforceable for 20 years from the initial filing of the application that resulted in the patent, assuming that USPTO-mandated maintenance fees are paid.

Why does Penn State protect only some intellectual property through patenting?

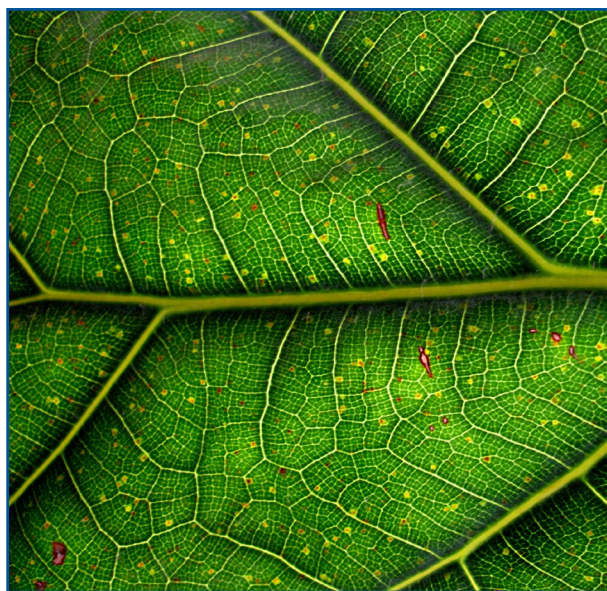
Patent protection is often a requirement of a potential commercialization partner (licensee) because it can protect the commercial partner's often sizable investment required to bring the technology to market. Due to the expense and the length of time required to obtain a patent, patent applications are not possible for all Penn State invention disclosures. We carefully review the commercial potential for an invention before investing in the patent process. However, because the need for commencing a patent filing usually precedes finding a licensee, we look for creative and cost-effective ways to seek early protections for as many promising inventions as possible. Because provisional patent applications (the first step in the patenting process) are relatively low cost, OTM will pursue provisional patent applications for most invention disclosures that come into the office.

Who decides what gets protected?

Approximately one third of provisional patent applications are licensed within 1 year. The licensees make the patenting decisions and reimburse associated patent expenses. The remaining two thirds of the provisional patent applications that are not licensed within 1 year go to the Patent Review Committee (PRC). The PRC consists of the Research Deans (or their representatives) from the colleges most engaged in research or technology transfer. The PRC reviews the provisional patent applications and decide which ones will be converted to Utility U.S. patent applications based on their potential commercial value and the availability of resources.

What does it cost to file for and obtain a patent?

The cost of a provisional patent application can range between \$2,000 to \$3,500. Filing a regular U.S. patent application may cost between \$8,000 and \$12,000. To obtain an issued patent may require an additional \$10,000 to \$20,000 for patent prosecution. Without a licensee, OTM rarely pursues international patent protection beyond filing a PCT because it is cost prohibitive.



What if you created the invention with someone from another institution or company?

If you created the invention under a sponsored research or consulting agreement with a company, OTM will need to review that contract to determine ownership and other rights associated with the contract and to determine the appropriate next steps. Should the technology be jointly owned with another academic institution, OTM will usually enter into an “inter-institutional” agreement that provides for one of the institutions to take the lead in protecting and licensing the invention, sharing of expenses associated with the patenting process and allocating any licensing revenues. If the technology is jointly owned with another company, OTM will work with the company to determine the appropriate patenting and licensing strategy.

Will OTM initiate or continue patenting activity without an identified licensee?

Upon recommendation of the Patent Review Committee, OTM accepts the risk of filing a patent application before a licensee has been identified. After the invention has been licensed to a licensee, OTM negotiates with the licensee to pay the patenting expense. If OTM has been unsuccessful in identifying a licensee (or if it is determined that OTM cannot obtain reasonable claims from the USPTO), it may be necessary to terminate further patent prosecution.

What is a copyright and how is it useful?

Copyright is a form of protection provided by the laws of the United States to the authors of “original works of authorship.” This includes literary, dramatic, musical, artistic, and certain other intellectual

works as well as computer software. This protection is available to both published and unpublished works. The Copyright Act generally gives the owner of copyright the exclusive right to conduct and authorize various acts, including reproduction, public performance and making derivative works. Copyright protection is automatically secured when a work is fixed into a tangible medium such as a book, software code, video, etc. In some instances, the University registers copyrights, but generally not until a commercial product is ready for manufacture.

What is a derivative work?

A “derivative work” is a work based upon one or more preexisting works, such as a translation, musical arrangement, dramatization, fictionalization, motion picture version, sound recording, art reproduction, abridgment, condensation, or any other form in which a work may be recast, transformed or adapted. A work consisting of editorial revisions, annotations, elaborations, or other modifications, which, as a whole, represent an original work of authorship, is a “derivative work.” The owner of a copyright generally has the exclusive right to create derivative works.

How do you represent a proper University copyright notice?

Although copyright-able works do not require a copyright notice, we recommend that you use one. For works owned by the University, use the following template with the first year of publication:

© The Pennsylvania State University 2013

How can you learn more about University copyright policies?

We recommend that you begin by reviewing material at: <http://guru.psu.edu/poli->



cies/IP01.html under the heading “Instructional and Scholarly Intellectual Property”. If you have additional questions, please contact OTM.

What is a trademark or service mark and how is it useful?

A trademark includes any word, name, symbol, device, or combination, that is used in commerce to identify and distinguish the goods of one manufacturer or seller from those manufactured or sold by others, and also to indicate the source of the goods. In short, a trademark is a brand name. A service mark is any word, name, symbol, device, or combination that is used, or intended to be used, in commerce to identify and distinguish the services of one provider from those of others, and to indicate the source of the services.

What is trademark registration?

Trademark registration is a procedure in which the United States Patent and Trademark Office (USPTO) provides a determination of rights based upon legitimate use of the mark. However, it is not necessary to register a trademark or service mark to prevent others from infringing upon the trademark. Trademarks generally become protected as soon as they are adopted by an organization and used in commerce, even before registration. With a federal trademark registration, the registrant is presumed to be entitled to use the trademark throughout the United States for the goods or services for which the trademark is registered.

START-UPS

THINGS TO CONSIDER

What is a start-up company and why choose to create one?

A start-up is a new business entity formed to commercialize one or more related intellectual properties. Forming a start-up business is an alternative to licensing the IP to an established business. A few key factors when considering a start-up company are:

- development risk (often large companies in established industries are unwilling to take the risk for unproven technology)
- development costs versus investment return (can the investors in the start-up obtain their needed rates of return?)
- potential for multiple products or services from the same technology (few companies survive on one product alone)
- sufficiently large competitive advantage and target market
- potential revenues sufficient to sustain and grow a company

Penn State promotes and supports entrepreneurship including the formation of start-up companies with an entrepreneurship resource network that includes the following resources:

- Office of Technology Management (OTM) - <http://www.research.psu.edu/offices/otm>
- Innovation Park - <http://www.innovationpark.psu.edu/>
- BenFranklin Technology Partners (BFTP) - <http://cnp.benfranklin.org/>
- BFTP Transformation Business Services Network - <http://cnp.benfranklin.org/>

[programs-services/transformation-business-services-network/](http://www.benfranklin.org/programs-services/transformation-business-services-network/)

- BFTP Techcelerator - <http://www.techceleratorstatecollege.org/>
- Small Business Development Center (SBDC) - <http://sbdc.psu.edu/>

Who decides whether to form a start-up?

The choice to establish a new company for commercializing intellectual property is a joint decision made by the inventor(s) with advice and support from the entrepreneurship resource network at Penn State. If a new business start-up is chosen as the preferred commercialization path, then the entrepreneurship resource network can assist you and the other founders in meeting investors, consultants, and entrepreneurs and accessing other resources for advice at Penn State to help you in founding the company. Then OTM will negotiate with a representative of the company to grant a license to the new company. Also it is wise for investors to have agreements regarding their roles with the start-up reviewed by their own legal counsel to ensure that all personal ramifications - including taxation and liabilities - are clearly understood.



MARKETING

TO FIND A LICENSEE



How does OTM market your inventions?

Technology Licensing Officers use many sources and strategies to identify potential licensees and to market inventions. Sometimes existing relationships of the inventors, OTM, and other researchers are useful in marketing an invention. Market research can also assist in identifying prospective licensees. In addition we also examine other complementary technologies and agreements to assist our efforts. Faculty publications and presentations are often excellent marketing tools as well.

How are most licensees found?

Studies have shown that a large majority of licensees were already known to the

inventors. Thus research and consulting relationships are often a valuable source for licensees. We attempt to broaden these relationships through contacts obtained from personal networking and from website inquiries, market research, industry events and the cultivation of existing licensing relationships.

How long does it take to find a potential licensee?

There are many variables that affect how long it takes to find a potential licensee including, for example, the attractiveness of the invention and the size and stage of the development of the market. Often, especially at universities, the invention is "ahead of its time" and it could therefore be 5 to 10 years until a use or need is identified.



How can you assist in marketing your invention?

Your active involvement can dramatically improve the chances of matching an invention to an outside company. Your research and consulting relationships are often helpful in both identifying potential licensees and technology champions within companies. Once interested companies are identified, the inventor is the best person to describe the details of the invention and its technical advantages. The most successful tech transfer results are obtained when the inventor and the licensing professional work together as a team to market and promote the use of the technology.

Can there be more than one licensee?

Yes, an invention can be licensed to multiple licensees, either non-exclusively to several companies or exclusively to several companies, each for a unique field-of-use (application) or geography.

License Agreements

What is a license?

A license is permission granted by the owner of intellectual property that allows another party to act under all or some of the owner's rights, usually under a written license agreement.

What is a license agreement?

License agreements describe the rights and responsibilities related to the use and exploitation of intellectual property. Penn State license agreements usually stipulate that the licensee should diligently seek to bring the Penn State intellectual property into commercial use for the public good. License agreements include financial terms such as; fees, royalties, milestone payments and/or equity.

How is a company chosen to be a licensee?

A licensee is chosen based on its interest, ability, resources and commitment to commercialize the technology for the benefit of the general public.

What can you expect to gain if your invention is licensed?

Per Penn State policy, a share of any financial return from a license is provided to the

inventor(s). For more information please refer to the revenue section on page 32.

In addition, inventors enjoy the satisfaction of knowing their inventions are being deployed for the benefit of the general public. New and enhanced relationships with businesses are another outcome that can augment one's teaching, research and consulting.



What is the relationship between an inventor and a licensee, and how much of your time will it require?

Many licensees require the active assistance of the inventor to facilitate their commercialization efforts. This can take the form of infrequent informal contacts, consulting relationships, or more formal Sponsored Research Agreements. Working with a new business start-up can require substantially more time, depending on your role in or with the company and your continuing role within Penn State. Your participation with a start-up is guided by Penn State conflict of interest policies (see page 30 for more information).

What other types of agreements and considerations apply to tech transfer?

- Non-Disclosure Agreements (NDAs) are often used to protect the confidentiality of an invention during evaluation by potential licensees. NDAs also protect proprietary information of third par-



ties that Penn State researchers need to review in order to conduct research or evaluate research opportunities. OTM enters into NDAs for Penn State proprietary information shared with someone outside of Penn State. The Office of Sponsored Programs (OSP) <http://www.research.psu.edu/offices/osp> manages NDAs related to research contracts and potential research relationships.

- Material Transfer Agreements (MTAs), used for incoming and outgoing materials are administered by OTM. These agreements describe the terms under which Penn State researchers and outside researchers may share materials, typically for research or evaluation purposes. Intellectual property rights can be endangered if materials are exchanged without a proper MTA.
- Inter-Institutional Agreements describe the terms under which two or more institutions (e.g., two universities) will collaborate to assess, protect, market, license, and share in the revenues received from licensing jointly-owned intellectual property.
- Option Agreements, or Option Clauses within research agreements, describe the conditions under which Penn State preserves the opportunity for a third party to negotiate a license for intellectual property. Option clauses are often provided in a Sponsored Research Agreement to corporate research sponsors at Penn State; option agreements are entered into with potential licensees wishing to evaluate the technology prior to entering into a full license agreement.
- Research Agreements describe the terms under which sponsors provide research support to Penn State. These agreements are negotiated by the Office of Sponsored Programs.

Commercialization

What activities occur during commercialization?

Most licensees continue to develop an invention to enhance the technology, reduce risk, prove reliability, and satisfy the market requirements for adoption by customers. This can involve additional testing, prototyping for manufacturability, durability and integrity, and further development to improve performance and other characteristics. Documentation for training, installation and marketing is often created during this phase. Benchmarking tests are often required to demonstrate the product/service advantages and to position the product in the market.

What is your role during commercialization?

Your role can vary depending on your interest and involvement, in the interest of the licensee in utilizing your services for various assignments, and any contractual obligations related to the license or any personal agreements.

What revenues are generated for Penn State if commercialization is successful?

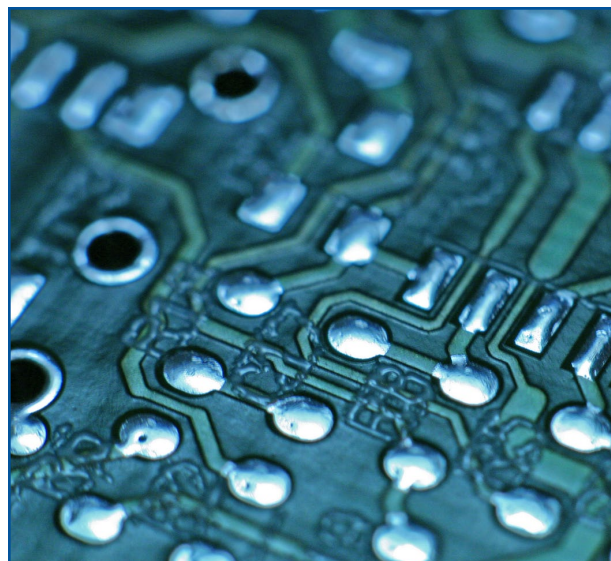
Most licenses have licensing fees that can be very modest (for start-ups or situations in which the value of the license is deemed to warrant a modest license fee) or can reach hundreds of thousands of dollars or more. Royalties on the sales of the licensed products can generate revenues, although this can take years to occur. Equity, if included

in a license, can yield similar returns, but only if a successful equity liquidation event (public equity offering or a sale of the company) occurs. Most licenses do not yield substantial revenues.

A recent study of licenses at U.S. universities demonstrated that less than 1% of all licenses yield over \$1 million. However, the rewards of an invention reaching the market are often more significant than the financial considerations alone.

What will happen to your invention if the start-up company or licensee is unsuccessful in commercializing the technology? Can the invention be licensed to another entity?

Licenses typically include performance milestones that, if un-met, can result in termination of the license. This allows for subsequent licensing to another company. However, time delays and other considerations can hinder this re-licensing.



Conflict of Interest



How does the University define a conflict of interest?

A real or perceived conflict of interest exists when a researcher's Significant Financial Interest(s) could directly and significantly affect the design, conduct, or reporting of University research.

How does the University manage conflict associated with research and tech transfer transactions?

Penn State Conflict of Interest Program staff can advise you on conflict of interest issues. It is the responsibility of each researcher to disclose any outside activities that constitute Significant Financial Interests as described in University Policy RA20.

A financial disclosure must be submitted in COINS, Penn State's electronic CONflict of INterest System, <http://coins.psu.edu/>. The Individual Conflict of Interest Committee will work to manage any potential conflicts, a process which must be completed before any associated agreements can be approved.

What kinds of issues do conflict of interest reviewers take into consideration?

Examples include the appropriate and objective use of research, the protection of human research subjects, the treatment and academic progress of students, and supervision of individuals working at both the University and a related company. Reviewers may also take into consideration issues

such as a researcher's ability to influence the University's business, research, or other areas that may lead to direct or indirect financial gain; the possibility of adversely impacting or influencing one's research or teaching responsibilities; or providing improper advantage to a particular company, to the disadvantage of others.

When should you seek guidance on conflict of interest?

Whenever a question or uncertainty arises, you should seek guidance from a staff member in the Conflict of Interest Program, within the Office for Research Protections. You can contact the COI Program by emailing coistaff@psu.edu. Guidance is particularly important when research proposals are submitted to external sponsors in which you also have a financial interest, and when

you acquire a new financial interest related to your work at Penn State, such as starting a new company or beginning work on commercializing a technology that is related to your research.

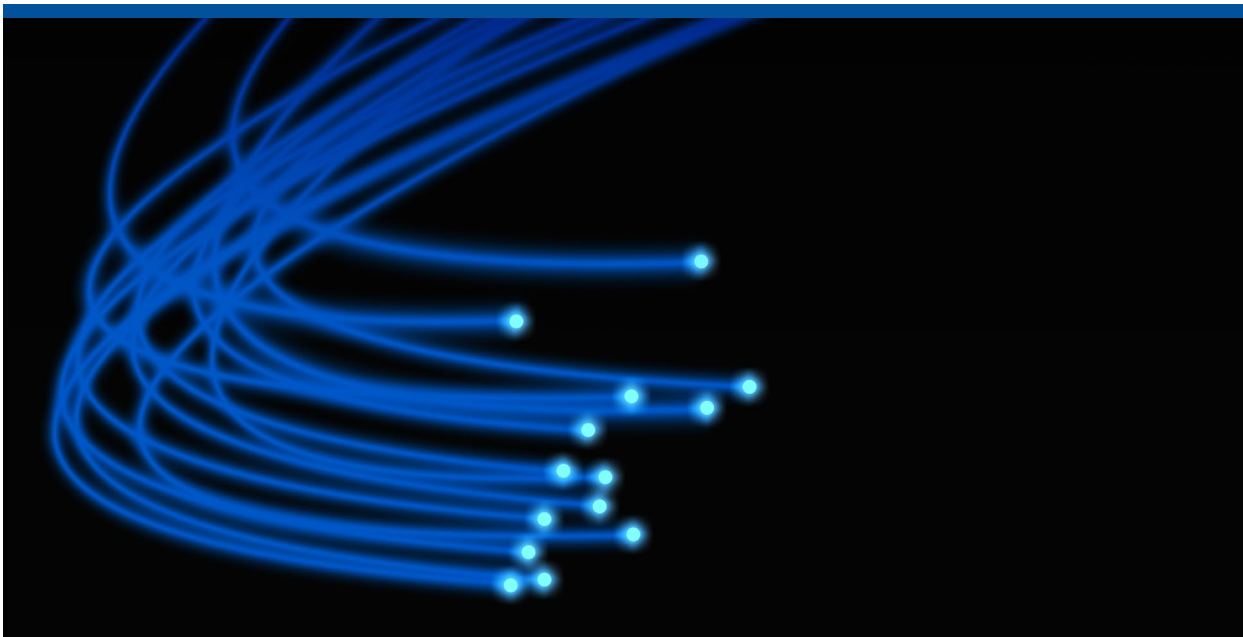
What are examples of a conflict of commitment?

A conflict of commitment may exist, for example, if outside activities could adversely affect the University's interests or mission, require an excessive amount of time, interfere with an employee's primary University responsibilities, or compete with coursework or services provided by the University. Conflict of Commitment is addressed in Penn State Policy AD77, and any questions related to it should be discussed with your department head or dean.

FOR MORE INFORMATION:

Conflict of Interest Program
<http://www.research.psu.edu/orp/coi/individual-coi>.

Frequently Asked Questions about Conflicts of Interest
<http://www.research.psu.edu/orp/coi/individual-coi/frequently-asked-questions-regarding-the-disclosure-process>



Revenue

Distributions

How are license revenues distributed?

OTM is responsible for managing the expenses and revenues associated with licensing agreements. Per Penn State policy, revenues from license fees, royalties and equity—minus any unreimbursed patent expenses—are distributed as follows:

- Inventor(s); 40%
- Administrative unit; 20%
- Penn State Research Foundation; 40%

For purposes of revenue distribution, “inventors” are defined as named inventors on patents or authors of copyrighted materials.

What if you receive equity from a company?

If an inventor has received or will receive equity directly from a licensee. Penn State policy allows the inventor(s) to share in the



benefit of equity received by Penn State in connection with the license.

What are the tax implications of any revenues you receive from Penn State?

License revenues are typically taxed as Form 1099 income. Consult a tax advisor for specific advice.

How are licensing revenues distributed if there are multiple inventors and/or multiple inventions in a license?

The “inventor’s share” of licensing revenue is distributed among the inventors in proportion to their contributions to the invention. The inventors themselves are responsible for determining these proportions and coming to an agreement. It is not unusual for multiple inventions to be included in a license agreement. With input from the licensee and researchers, OTM weighs the value of each invention licensed.

How is equity from a license distributed?

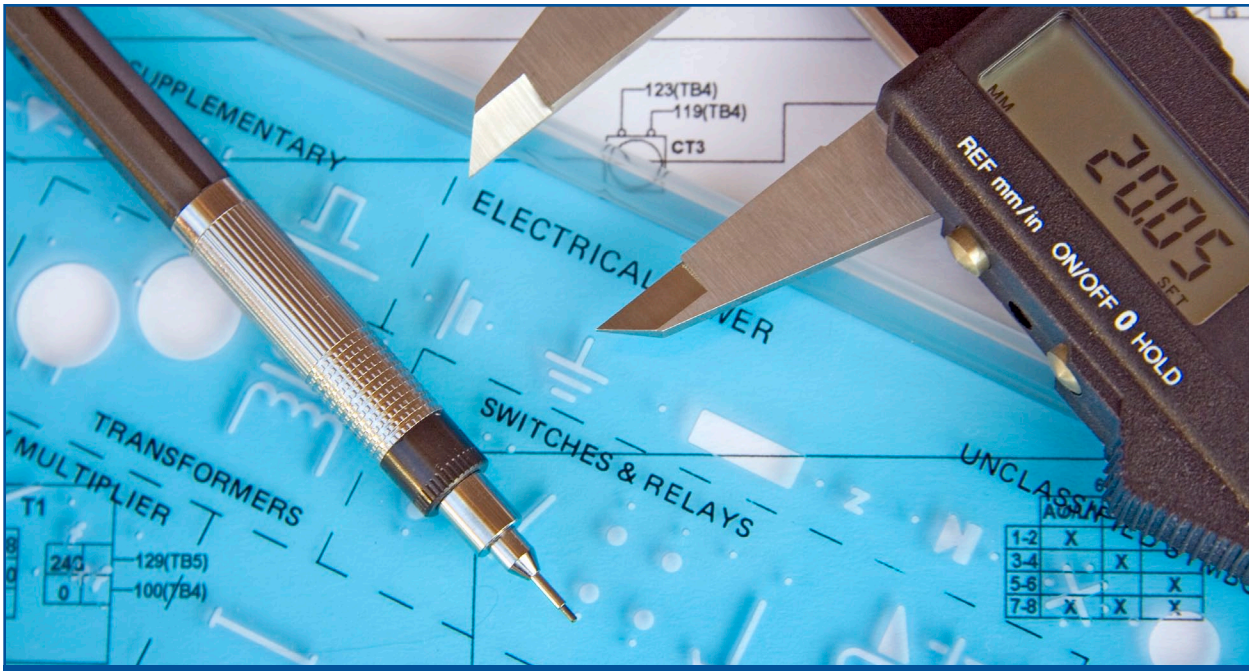
PSRF holds equity received from license agreements until the equity is publicly tradable. At such time, an outside advisor, currently T. Rowe Price, decides when to liquidate the equity. Upon liquidation, the resulting revenue is considered to be licensing revenue and is distributed as described previously.

Commitment to Success

In recent years, Penn State has taken bold steps with its policies on how we manage Intellectual Property resulting from collaborations with industry partners. This combined with a renewed focus and commitment to entrepreneurship across the University offers advantages to our students, faculty and industry partners alike that have never before been available.

Every year, OTM, working with our Penn State inventors and licensees:

- Execute 15 to 20 license agreements
- Execute 5 to 7 option agreements
- Execute over 100 Material Transfer Agreements (MTA's)
- Receive over 140 invention disclosures
- File over 80 provisional patent applications
- File over 60 U.S. Utility patent applications
- Receive 40 issued U.S. Patents on average



The Office of Technology Management is committed to success. We strive for excellence in all that we do whether it is the quick turn-a-round of a simple MTA or the negotiation of a multi-million dollar license agreement. Everything is important. How may we serve you today?

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Notes

