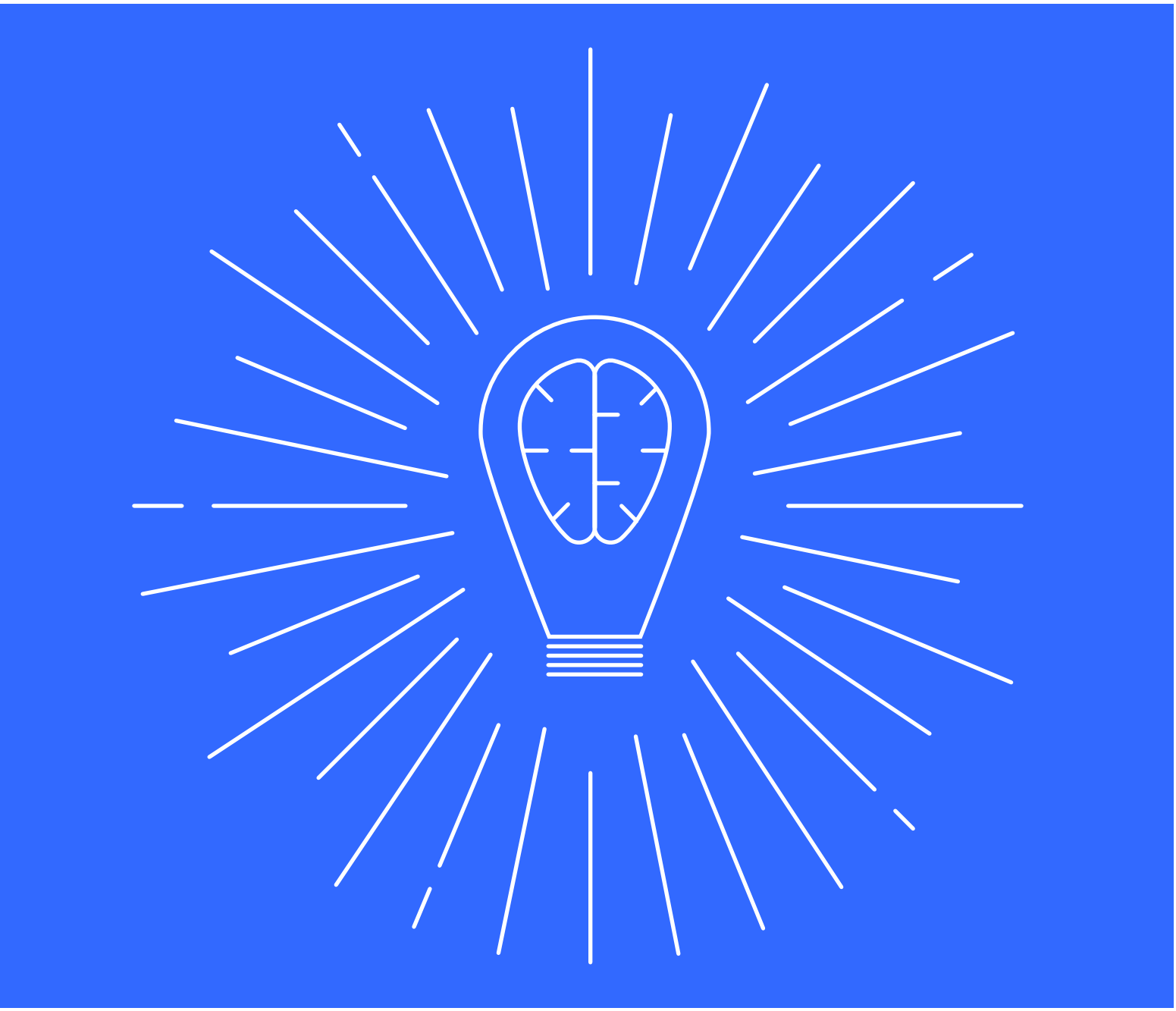
Inventor's Guide to Technology Transfer

UNIVERSITY OF TORONTO



The University of Toronto (U of T) is where research excellence comes together with a collaborative, entrepreneurial spirit. U of T inventors tackle global challenges and solve real-world problems.

Innovation comes in many forms, follows many pathways, and emerges from many disciplines. Our inventors have a common passion for ideas and a willingness to take risks. They might fail, but they might succeed in ways they could not have imagined. It is the possibilities that excite us all.

For more information, contact:

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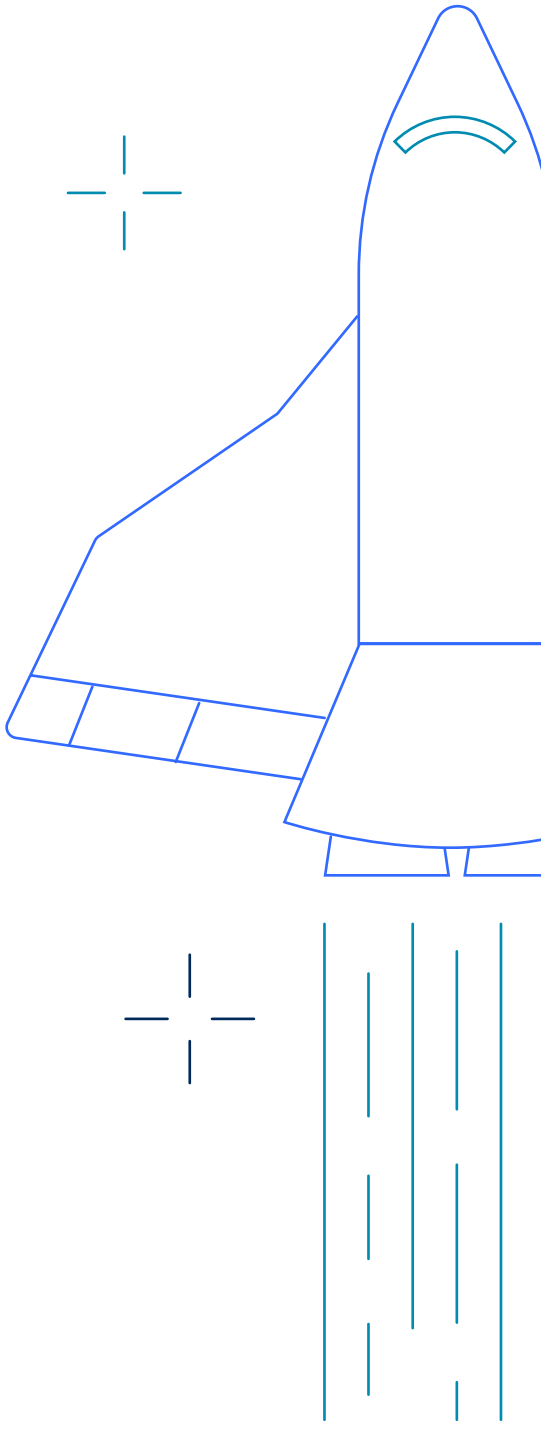
Certain sections contain information derived with permission from the *Inventor's Guide* to *Technology Transfer at the University of Michigan*. U of T is thankful for their support.

U of T's policies and practices may be revised from time to time. Inventors should refer to U of T's current policies—for example, Inventions Policy and *Policy on Conflict of Interest – Academic Staff*—as well as to any other university policies or guidelines that may be relevant to their situation. Additional information may be found on the Innovations and Partnerships Office (IPO) website.

University of Toronto Inventor's Guide to Technology Transfer



The Inventor's Guide to Technology Transfer outlines the essential elements of technology transfer at the University of Toronto (U of T). 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.

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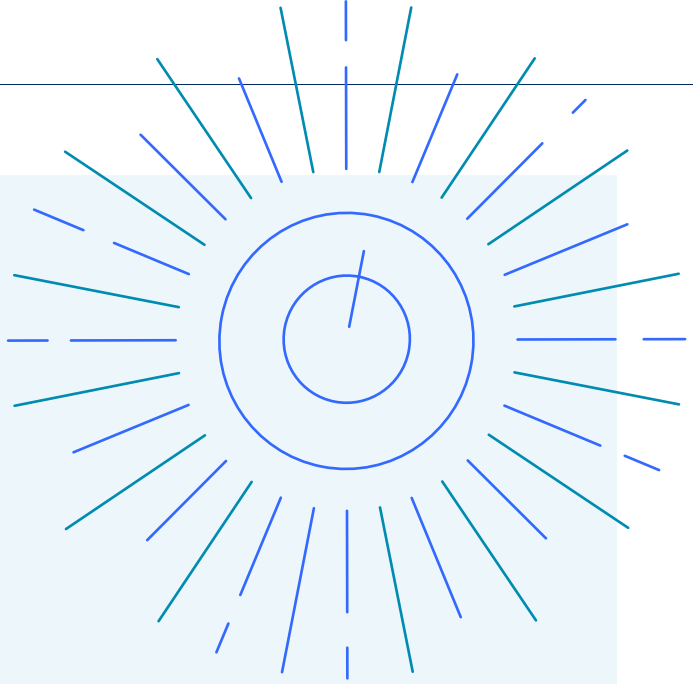
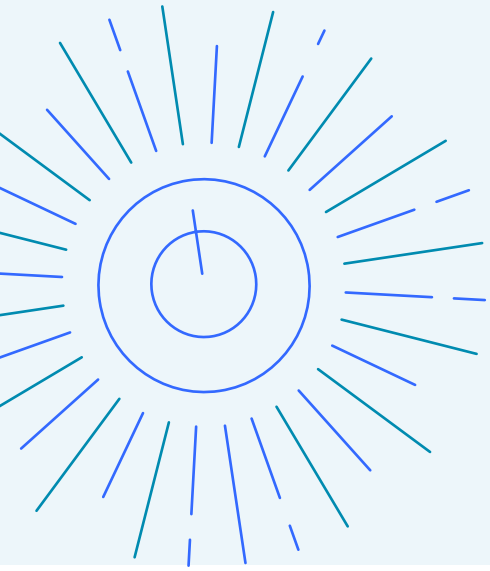




What is technology transfer?

Technology transfer is the movement of knowledge and discoveries to the general public. It can occur through publications, graduates entering the workforce and relationships with government entities, not-for-profit organizations, and industry, among others. In this guide, technology transfer refers to the licensing of inventions to a third party and describes some of the ways U of T can support this process.

Why do researchers participate in the technology transfer process?

The reasons are unique to each researcher and may include:

- Making a positive impact on society
- Seeing their ideas or inventions put into practice
- Feeling a sense of personal fulfillment
- Achieving recognition and financial rewards
- Generating additional research funding
- Meeting the obligations of a research contract
- Attracting research sponsors
- Enriching educational opportunities for students
- Linking students to future employment opportunities

What is intellectual property?

Intellectual property (IP) refers to creations of the mind, such as inventions; literary and artistic works; designs; and symbols, names and images used in commerce. IP is protected in law by, for example, patents, copyright, and trademarks, which enable people to earn recognition or financial benefit from what they invent or create.

How is IP transferred?

IP is typically transferred or disseminated through a license agreement in which the owner grants its rights in the technology to a third party. The rights may be limited by, for example, time, a particular field of use, or region of the world.

How does U of T support technology transfer?

As part of the portfolio of the Vice-President Research and Innovation, The Innovations & Partnerships Office (IPO) helps build successful partnerships between industry, government, and the University of Toronto research community. IPO also manages U of T's portfolio of intellectual property and is your first stop for technology transfer at U of T. IPO specialists in licensing, business development, and legal matters are experienced in transferring technologies from all U of T research settings.

U of T hospital partner has their own licensing/ technology transfer offices and IP policies. IPO collaborates with U of T hospital partners in the commercialization of joint IP.

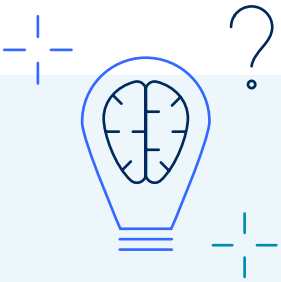
What is IPO's role in the transfer of technology and inventions?

IPO provides support to the University of Toronto community in many ways, including:

- Advice on U of T's Inventions Policy;
- Receiving and evaluating invention disclosures which describe technology created by U of T faculty, staff and students;
- Supporting the protection of U of T inventions through patenting and other means;
- Assisting in finding partners and funds to support developmental and proof-of-concept studies;
- Marketing U of T technologies to industry;
- Negotiating license agreements with the interested companies; and,
- Supporting long-term relationships with strategic partners that support and nurture early-stage discoveries into market-ready technologies and products.

How do I work with IPO?

We encourage you to contact IPO during your research activities to be aware of the options that will best support the commercial potential of your research. IPO can assist with questions related to marketability, funding sources, commercial partners, patenting and other protection methods, new business start-up considerations, university policies and procedures, and much more.



What is the inventor's role in this process?

Talk to IPO about your invention.

Contact a member of the Innovations Team (commercialization@utoronto.ca) when you believe you have created or discovered something unique with potential commercial or research value.

Complete and submit the U of T Invention Disclosure Form.

To avoid risking your patent rights, contact IPO before publicly disclosing your invention in a presentation, lecture, poster, abstract, website description, research proposal, dissertation/master's thesis, publication, or other public presentation.

Let IPO know if you want to own your invention.

U of T's policy is "Inventor's Choice": you may choose to take personal ownership and assume full responsibility for patenting costs and commercializing the invention, or you may choose to offer the invention to U of T. If you offer the invention to U of T, IPO will still involve you.

Help IPO prepare marketing materials and identify potential licensees.

Work with IPO to identify companies and contacts you believe might be interested in your invention and to create non-confidential marketing materials to share with potential licensees. Also, IPO relies on inventors to help respond to technical questions from interested companies.

Respond to IPO and outside patent counsel requests.

If U of T decides to pursue patent protection, your support is critical to reviewing the patent application for completeness and accuracy, and throughout the patent prosecution process.

Keep IPO informed and engaged.

Please let IPO know about significant developments, upcoming publications or interactions with companies related to your IP. IPO is also interested in helping you develop the IP. Remaining engaged will allow us to guide you to potential funding opportunities or other helpful resources.

How long does the commercialization process take?

The process of protecting your invention and finding the right licensing partner may take months or even years to complete. The amount of time depends on the development stage of the invention, the market for the invention, competing technologies, and the amount of work needed to increase the maturity level of the technology.

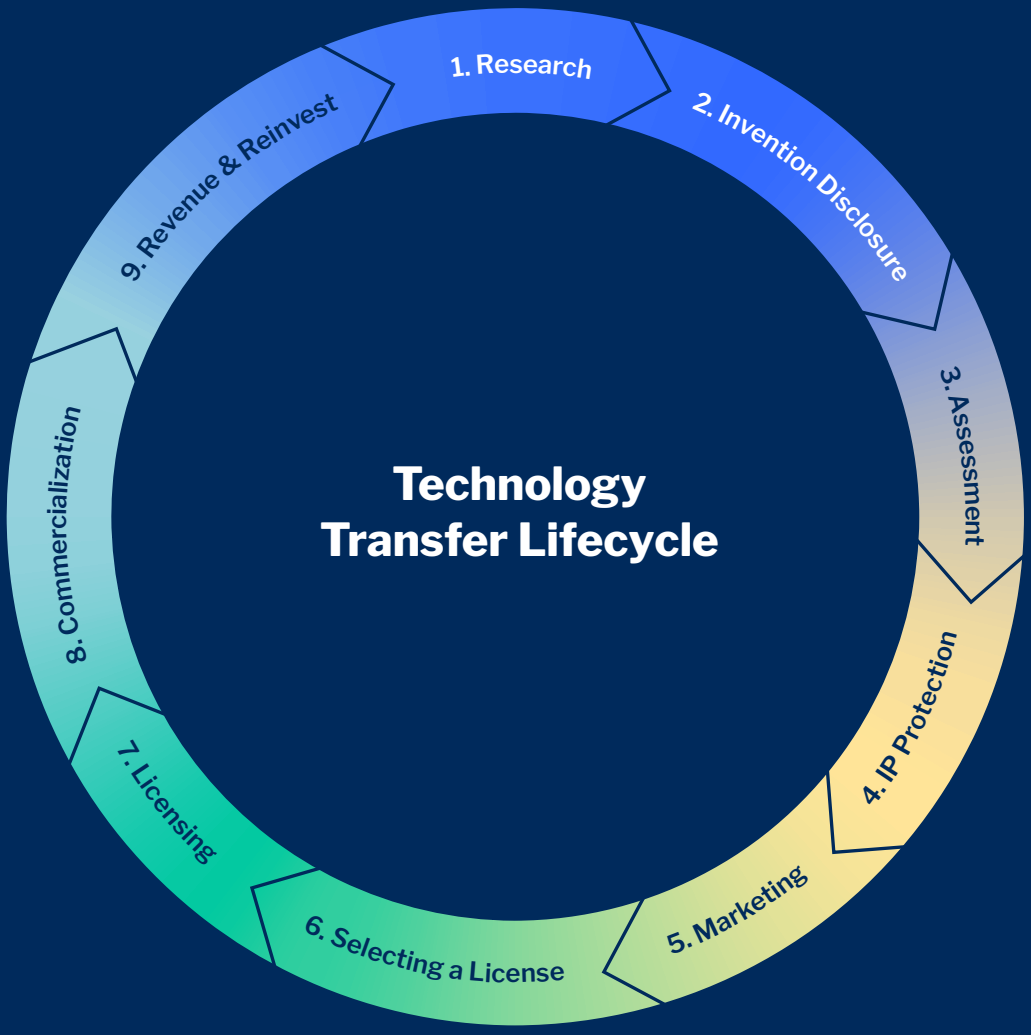
Technology Readiness Levels (TRL) are a type of measurement system used to assess the maturity level of a particular technology. Technologies rated at a TRL level of 7 or higher are easier to license. Because university technologies are often too early-stage to attract industry investment, IPO, in partnership with inventors, strives to increase the TRL rating, increasing the chances of successful licensing.

Technology Readiness Levels

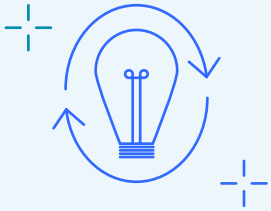
1	Basic principles observed and reported	Research Lab
2	Technology concept or application formulated	
3	Analytical and experimental critical function or characteristic proof of concept	
4	Component validation in a laboratory environment	
5	Component validation in a simulated environment	Simulation
6	System/subsystem model or prototype demonstration in a simulated environment	
7	System prototype demonstration in an operational environment	Operational Environment
8	Actual technology is completed and qualified through test and demonstration	
9	Actual technology is proven through successful use in an operational environment	

Source: Adapted from NASA TRL system.

The Technology Transfer Process and the Cycle of Innovation



The technology transfer process is a continuous cycle in which research drives innovation and the creation of licensed products and services in the marketplace, which in turn help fund future research and innovation.



What are the typical steps in the technology transfer process?

1. **Research:** Observations and experiments during research activities often lead to discoveries and inventions or the development of software and other copyrighted works. 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. **Invention Disclosure:** The written notice of invention to IPO begins the formal technology transfer process. An invention disclosure remains a confidential document and should fully describe your invention, including the critical solution it provides and its advantages and benefits over current technologies. It should also include information on co-inventors, sponsors of the work and other important details. Invention disclosures can be submitted through the Inventor Portal.

3. **Assessment:** The period in which the invention is reviewed and may include patentability, market, and commercialization assessments. This evaluation process, which may lead to a broadening or refinement of the invention, will guide strategy on whether to focus on licensing to an existing company or create a new business start-up.
If inventors choose to take personal ownership of their invention, IPO will not assess the invention.

4. **Protection (if appropriate, necessary, or warranted):** Patent protection, a common legal protection method, begins with the filing of a patent application. Once a patent application has been filed, it requires several years and tens of thousands of dollars to obtain an issued patent. Other common forms of IP protection include copyright and trademark. Unique biological materials and software can often be successfully licensed without formal IP protection.

5. **Marketing:** With your support, IPO specialists identify candidate companies that have the expertise, resources, and business networks to bring the technology to market, which may involve partnering with an existing company or forming a start-up. If the creation of a new business start-up has been chosen as the optimal commercialization path, IPO will use its express start-up licensing model to provide IP rights to the company. See U of T's Start-up Guide for information about creating a start-up at U of T.

6. **Selecting a Licensee:** If an appropriate and interested company, or companies, are selected as a potential licensee, IPO licensing specialists work with those potential licensees to develop the appropriate financial and diligence terms.
If there are several parties interested in a license, we will endeavour to license non-exclusively or grant field-of-use licenses, if possible. If it is not possible to accommodate all interested parties, we will license to the company most committed and able to bring the technology to the marketplace.

7. **Licensing:** For U of T-managed inventions, IPO negotiates and executes an option, license, or assignment agreement. These agreements give the licensee rights to a technology in return for financial benefits. A license or assignment agreement is used with both a new start-up and with an established company.
An option agreement is sometimes used to enable a third party to evaluate the technology for a limited time before deciding on licensing. In other cases, an option agreement is used by a start-up to hold the technology while financing is secured.

   When licensing an invention or technology to a third party, especially to a start-up company where investment may be involved, it is important to manage conflict of interest.

8. **Commercialization:** The licensee 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.

9. **Revenue:** Any invention revenues received by U of T are distributed annually to inventors, departments, units, and the Connaught Fund as per U of T's Inventions Policy.

Reinvest: U of T uses these funds to support additional research and education and to encourage further participation in the tech transfer process.

Ownership of Intellectual Property

Does U of T's invention policy apply to all my inventions?

Not always. If U of T resources are not used in the creation or development of the invention, U of T's *Inventions Policy* does not apply.

What do you mean by the use of U of T resources?

Use of U of T resources means:

- Use of facilities owned, operated or administered by U of T (unless leased by a company) or
- Use of funds from, or administered by, U of T

What is U of T's policy on invention ownership?

Under U of T's *Inventions Policy*, in most cases, the inventor(s) and U of T jointly own inventions which were created or developed using U of T resources.

One exception to joint ownership is if the rights to an invention were granted to a third party under a separate prior agreement, such as a sponsored research agreement or a material transfer agreement. Please contact IPO for more information.

U of T's inventions policy applies to my invention. Now what?

In short, if U of T's policy applies;

- Inventions must be disclosed to U of T.
- Inventors may choose to take personal ownership of the invention or offer full ownership to U of T.
- In all cases:
  - IP access agreements must include commercially reasonable terms.
  - Revenue from the agreement is shared between inventors and U of T.
  - U of T retains the rights to use the invention for research and teaching.

Please read the *Inventions Policy* or contact IPO for more information.

What if I invented something but didn't use U of T resources?

You don't need to disclose inventions created without the use of U of T resources or funding.

Use the following scenarios to help you determine if the U of T *Inventions Policy* applies to your situation.

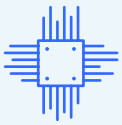
Scenario 1

Ramin is a fourth year undergraduate engineering student doing a multidisciplinary capstone design project to solve a real business need for an industry partner developing autonomous vehicles. His work on the project is done onsite at the company. During the course of the project, Ramin invents a new sensor component that improves on the company's current geospatial mapping technology, an advancement that will have great commercial potential if developed.

Does U of T's *Inventions Policy* apply to Ramin's situation?

Answer: The *Inventions Policy* does not apply to Ramin's situation.

Considerations: In this case, Ramin did not use U of T resources and therefore, U of T does not have an ownership interest in the invention. As well, the company likely required U of T to sign an agreement waiving any possible rights to any invention made by Ramin at the company's premises.



Scenario 2

Ariel is a doctoral student in computer science whose dissertation project is funded largely through a research grant. Working in her supervisor's lab, she invents a new machine learning algorithm that will not only solve the pattern recognition problem she's investigating but that may also have commercial applications in areas such as biometrics, speech recognition, medical diagnosis, and fraud detection.

Does U of T's *Inventions Policy* apply to Ariel's invention?

Answer: U of T's *Invention Policy* applies, and she jointly owns the invention with U of T. Ariel may choose to offer the invention to U of T, or she may choose to take personal ownership and full responsibility for patenting and commercializing the invention, including licensing it to a company or creating her own start-up.

Considerations: In this scenario, because the invention was created in a U of T facility using funds that were administered by U of T, the *Inventions Policy* applies. Specifically, Ariel and U of T jointly own the invention. There are several options open to Ariel. IPO can help her navigate these choices.

Should I list visiting scientists or scientists at other institutions on my Invention Disclosure?

Yes, everyone involved should be mentioned in your disclosure, even if they are not U of T employees. It is prudent to discuss with IPO all working relationships to understand the implications for any subsequent inventions.

Can a student be an inventor under the Inventions Policy?

Yes. Students may be inventors and may file invention disclosure forms if they used U of T resources in the creation of their invention.

More information is available through the School of Graduate Studies or IPO.

What should I consider before entering into a consulting contract?

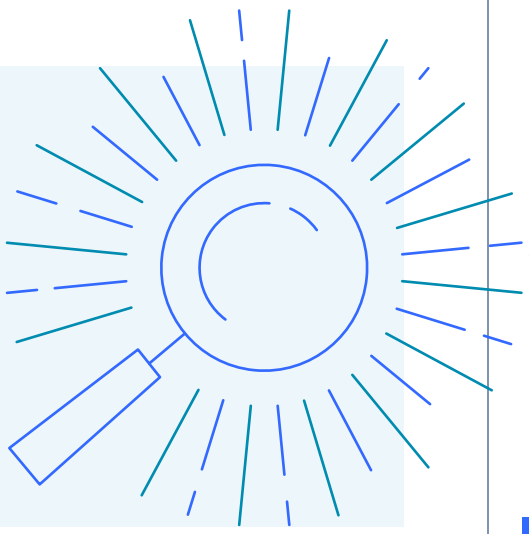
Since U of T does not ordinarily review consulting agreements, inventors should be clear about the delineation between university work and private consulting. U of T inventors cannot enter into any agreement that creates obligations that conflict with the U of T's *Conflict of Interest Policy – Academic Staff*. Faculty members must separate and distinguish ongoing university research from work being conducted for others.

U of T will ordinarily presume that IP developed while a faculty member is consulting at a company and on an ongoing company program (e.g., drug development, medical device, chip development, software issue, or any other specific company research or design activity) ***belongs to the company as long as there has not been more than incidental use of U of T resources.*** U of T resources are considered to include facilities; equipment (unless leased by the company); the time and expertise of students, post-doctoral fellows, and research staff; and non-trivial use of personal computers, telephones, or library resources.

When a faculty member is consulting for a company with which she or he has another financial relationship, it is particularly important to make certain that the separation between the faculty member's academic program, including research and teaching activities, is clear to all parties. When a question arises as to the appropriate delineation between a researcher's university responsibilities and a researcher's consulting obligations, the researcher should discuss the situation with her or his cognizant department chair or division head.

If there is ever a question of IP ownership, the IP should be disclosed to U of T.

Research Considerations



Will I be able to publish the results of my research and still protect the commercial value of my IP?

Yes, but patent rights are affected by these activities. It is best to submit an Invention Disclosure (discussed above) well before communicating or disclosing your invention publicly. There are significant differences between Canada and the U.S., and other countries as to how a publication may affect a future patent. Once publicly disclosed (published or presented in some form), an invention cannot get patent protection outside of Canada or the United States. Be sure to inform IPO of any imminent or prior public disclosure if you are considering a patent application.

Can I use material or IP from others in my research?

Yes, however it is important to understand if there are any use restrictions around the materials. IPO can help determine if this use may influence the ownership and license rights of your subsequent research results. If you obtain materials from outside collaborators, an incoming Material Transfer Agreement (MTA) will outline the restrictions. Contact IPO for more information on MTAs.

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

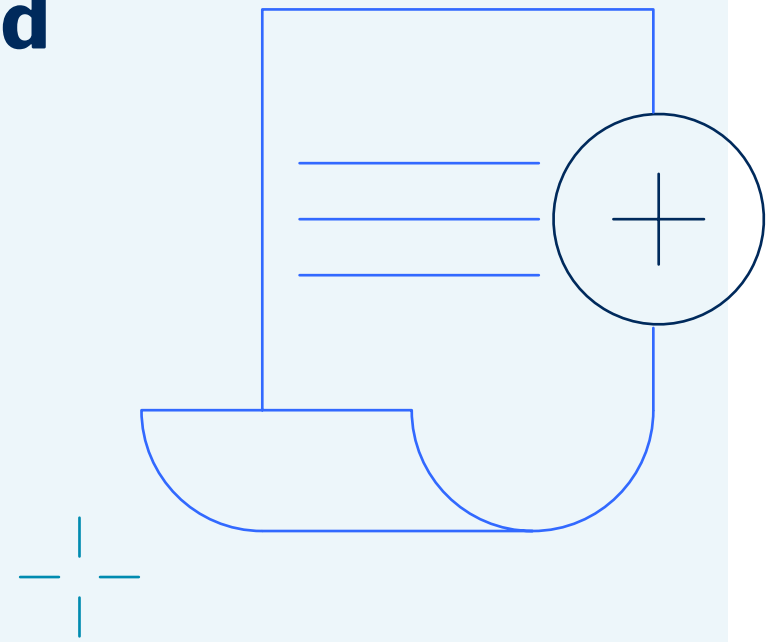
Yes. However, it is important to document items that are to be shared with others and the conditions of use, which is often done using a collaboration agreement or a Material Transfer Agreement (MTA).

What rights does a research sponsor have to any discoveries associated with my research?

The Sponsored Research & Collaboration Agreement will usually contain provisions pertaining to IP. The sponsor may have rights to obtain a license to the defined and expected outcomes of the research. Often, corporate-sponsored research contracts allow the sponsor a limited time to negotiate a license for any patent or intellectual property rights developed under the scope of work that the sponsor funded. Even so, the sponsor generally will not have contractual rights to discoveries that are clearly outside of the scope of the research. Therefore, it is important to define the scope of work within a research agreement.

Sponsored research agreements, collaboration agreements, MTAs, and other contracts related to sponsored research are handled by IPO's Partnerships team, whose representatives work closely with their commercialization, licensing, and business development colleagues on IP issues. If you have questions about sponsored research, please contact innovations.partnerships@utoronto.ca.

Invention and Technology Disclosures



What is an Invention Disclosure?

An Invention Disclosure is a written description of your invention or development provided to IPO. The disclosure should list all sources of support and include all of the information necessary to begin pursuing protection, marketing, and commercialization activities. This document will be treated as confidential. It is very important to disclose inventions before publication in case you wish to pursue patent rights. It is also critical that you note the date of any previous or upcoming publication or other public disclosure describing the invention.

How do I know if my discovery is an invention that should be disclosed?

You are encouraged to submit an Invention Disclosure for all inventions and developments that you feel may solve a significant problem or have significant commercial value. If you are in doubt, contact IPO to discuss the invention and strategies for commercialization. We can also advise on alternatives to patenting and licensing. It is also important to disclose in case a research partner or sponsor has an option to license your invention.

Should I disclose research tools?

Typically, research tools are materials such as antibodies, vectors, plasmids, cell lines, live mice, and other materials used as "tools" in the research process. These are sometimes referred to as Tangible Research Property. Research tools do not necessarily need to be protected by patents in order to be licensed. If you have research tools that you believe to be of value, IPO will work with you to develop the appropriate licensing, and distribution strategy. Please contact IPO to discuss.

How do I submit an Invention Disclosure?

You can find detailed information about the process on our Disclose an Invention web page.

When should an inventor disclose an invention to U of T?

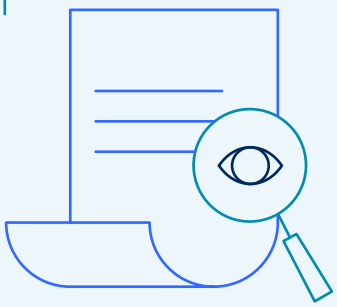
Early disclosure to U of T is encouraged to allow time for ownership to be determined, and patentability and market potential assessed. Disclosures should be filed as soon as the invention or work is clearly conceptualized or as soon as you can fully describe your new product or process so that someone else familiar with the field could use it. You absolutely must disclose before you plan to sell, license, or otherwise assign your invention or encumbered copyright material.

What happens after I submit an Invention Disclosure?

You will be contacted by an Intellectual Property Officer from IPO to acknowledge receipt of your disclosure. If a research partner or sponsor has an option to license your invention, we will notify the partner that an invention disclosure has been submitted and await their response before additional action is taken.

If there are no sponsor obligations and you request personal ownership, the Intellectual Property Officer will provide you with assignment documentation shortly after your request is made. If there are no partner obligations and you wish to assign the invention to U of T, IPO will perform an evaluation before accepting the invention into U of T's portfolio.

Assessment of an Invention Disclosure



How does U of T assess Invention Disclosures?

Specialists at IPO examine each invention disclosure to review the novelty and commercial potential of the invention.

Factors considered in the evaluation include:

- Ability to protect the invention (patent, copyright or other)
- Ability to use the invention (freedom to operate or "background" rights)
- Ability to market the invention, product or service, which is based on size and growth potential of the market, and potential competition from other products/technologies
- Development risk (the amount of time, money and expertise required for further development)

This assessment may consider whether the intellectual property is better suited for a new business start-up vs. a license to an established company. IPO typically will consult with the inventors, patent attorneys, and industry contacts as part of this process.

If the inventors believe that all IP should be licensed non-exclusively to all potential users for the public good, will U of T honour our request?

IPO 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. IPO will try to accommodate the inventors' commercialization preferences. However, the final decision will be determined by the assessment of which strategy will produce the most benefits for the general public, consistent with governmental or institutional policies and other obligations.

Alternatively, inventors may place their inventions in the public domain if they believe that would be in the best interest of technology transfer and if doing so is not in violation of the terms of any agreements that supported the work.

How do we decide whether to commercialize software with a traditional or an "open source" license?

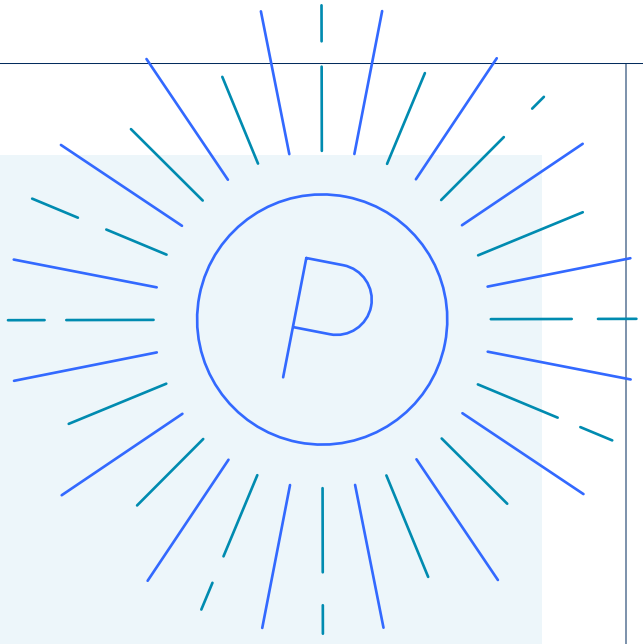
U of T supports software developers who choose open source, provided that U of T retains the right to distribute the program freely, that open sourcing is consistent with the university's contractual obligations, and that each developer's unit supports the decision. Open sourcing is different from simply putting software in the public domain. Before open sourcing software, all developers must agree, and the software must not contain any third party code.

Is an invention ever assigned to an Inventor?

Yes, U of T's policy on invention ownership is "Inventor's Choice." If you would like to take full responsibly for the legal protection or commercialization of an invention, you should inform U of T. Barring any obligations to research partners or sponsors, U of T will assign sole ownership of the invention to the inventor(s), subject to certain obligations. For more details on this topic, consult the U of T *Inventions Policy*.

Patents

The basics of patenting are provided below. For a more comprehensive explanation please see the IP Education Program



What is a patent?

A patent is a government license that gives the holder of that license an exclusive right to prevent others from making, using, or selling the holder's invention from the day the patent is granted to a maximum of 20 years after the day the patent was filed in exchange for detailed public disclosure of the invention. Note that the rights granted by a particular jurisdiction only protect the invention within that jurisdiction. A Canadian patent therefore only grants exclusive rights within Canada. Conversely, foreign patents do not protect an invention within Canada.

What can be patented?

Different countries have different rules about what is patentable subject matter. In the United States, 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). Non-patentable subject matter includes theories, ideas, laws of nature, natural substances, and scientific principles. IPO can provide additional guidance.

There are three basic criteria for patentability:

- **Novelty:** to be granted a patent, the invention must be the first of its kind in the world;
- **Utility:** a valid patent cannot be obtained for something that does not work or that has no useful function;
- **Inventiveness:** to be patentable, your invention must be a new development or an improvement of an existing technology that would not have been obvious to someone working in your area of specialty.

Although you may obtain a patent for an improvement to an existing invention, keep in mind that the original patent may still be in force. If this is the case, manufacturing or marketing the product with your improvement may be an infringement of the original patent. This situation is often resolved by agreement between the patentees (the people who own the patents) to grant licenses to each other.

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

An inventor is a person who conceives of an essential element of the invention claimed in the patent. Inventorship is determined by patent law and may change as patent claims are changed during prosecution of the patent. Inventorship is different from authorship on a manuscript.

If a patent application is filed based on your invention disclosure, the patent practitioner will ask you about your contribution to the conception of the invention to determine the correct inventors. Please contact IPO to discuss.

Who is responsible for patenting?

If the inventors assign their invention to U of T, IPO will contract with outside patent counsel for IP protection. This assures access to patent specialists in diverse technology areas. Inventors work with IPO in drafting the patent applications and responses to worldwide patent offices. IPO will select the patent practitioners, oversee the patent prosecution and pay patent-related expenses.

If the inventors take personal ownership, they are responsible for patenting and all other commercialization activity and expenses.

What is the patenting process?

There are two types of patent applications: provisional (less formal) and non-provisional (formal) patent applications. Both are described below.

Filing a patent application means preparing a formal application and asking the Commissioner of Patents to grant you a patent. Patent applications are usually drafted by a registered patent agent. IPO will expect the inventor(s) to review an application.

When an application is filed, the patent practitioner will ask the inventor(s) to sign a declaration (an oath stating that you are an inventor) and an Assignment, which confirms the inventor's assignment of the patent to U of T.

Depending on the technology, the patent practitioner will receive written notice from the patent office as to whether the patent application and its claims have been accepted by the patent office.

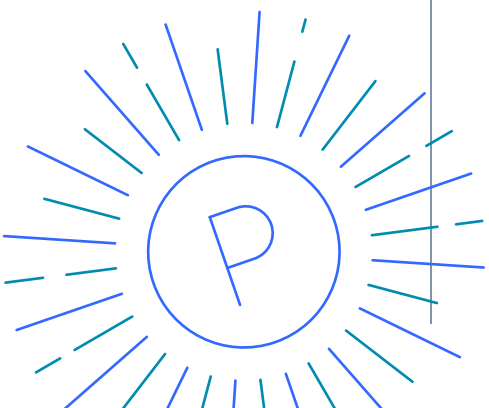
It is not unusual for the patent office to reject an application because questions need to be clarified or the claims are not patentable for a variety of reasons. For example, the examiner may find previous patents or publications that show features of one or more claims in your application. Or, the examiner may feel some claims would be obvious to a person with ordinary skills in the field. The examiner's objections will be outlined in a report or letter called a "Patent Office Action," which will list the objections and set a date for you to reply. The action may object to your whole application, or it may ask for changes to the claims.

If the application is rejected, a written response must be filed within the period that the examiner specifies, usually within three to six months. The claims can be amended or a defence of the claims provided. During this process, referred to as "patent prosecution," input from the inventor(s) is essential. Inventors are in the best position to provide an understanding of the technical aspects of the invention or the prior art cited against the application.

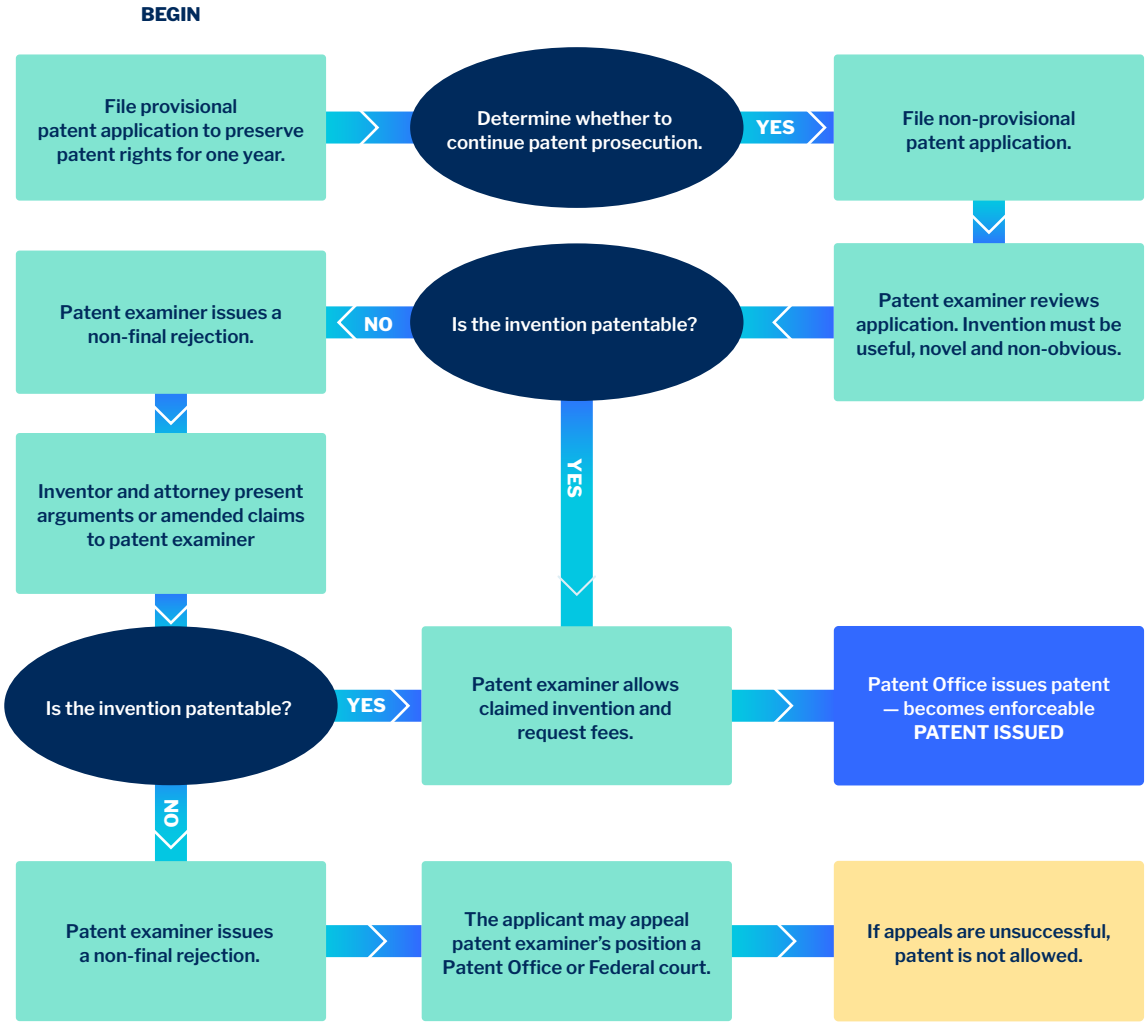
A successful end to prosecution is a "notice of allowance" informing you that your application is allowable. This process may take several years.

Is there such a thing as a provisional patent?

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



Road Map for Typical Patent Prosecution



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

In certain circumstances, provisional patent applications can provide a tool for preserving rights while reducing costs. The application is not examined, and claims are not required. A regular patent application and related foreign applications must be filed within one year of the provisional application and must include claims. An applicant only receives the benefit of the provisional application filing date if the material is adequately described and enabled in the provisional application.

What is 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 Canada or the U.S. Outside Canada and the U.S., however, an inventor will lose patent rights if he or she publicly discloses the invention prior to filing a patent application.

In contrast, both Canada and the U.S. provide a one-year grace period that protects an applicant if public disclosure is made before a patent can be filed.

Is there such a thing as an international patent?

Although an international patent does not exist, an international agreement known as the Patent Cooperation Treaty (PCT) provides a streamlined filing procedure for most industrialized nations. A PCT is generally filed one year after the original filing (either provisional or regular). The PCT application must later be filed in the national patent office of any country in which the applicant wishes to seek patent protection and must happen within 30 months of the original filing, a part of the process called the "national phase."

What is gained by filing a patent application under the PCT?

The PCT provides two advantages. First, it delays the need to file costly foreign applications. This gives the applicant the opportunity to further develop, evaluate 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 speak to the patentability of the claims, which can save significant costs in prosecuting foreign patent applications.

What is the timeline of the patenting process and resulting protection?

Currently, the average utility patent application is pending for about three years, though inventors in the biotech, computer, networking, and communications fields should plan for a longer waiting period. Once a patent is issued, it is enforceable for 20 years from the initial filing of the application. Fees need to be paid to keep the patent active.

Why does U of T protect 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 their expense and the length of time required to obtain a patent, patent applications are not possible for all U of T intellectual property. 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 inventions that are deemed to have commercial potential.

Who decides what gets protected?

IPO and the inventor(s) together discuss relevant factors in deciding whether to file a patent application. Ultimately, for IPO managed technologies, IPO makes the final decision as to whether to file a patent application or seek another form of protection.

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

Filing a regular patent application may cost between $10,000 and $20,000. To obtain an issued patent may require an additional $30,000 or more for patent prosecution. Filing and obtaining issued patents in other countries may cost $30,000 or more per country. Also, once a patent is issued, certain maintenance fees are required to keep the patent alive.

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

Typically, the invention will be jointly owned. In most cases, the inventor assigns the invention to her or his employer and the two organizations enter into an Inter-Institutional Agreement (IIA) whereby one of the institutions will take the lead in negotiating. This way a company can negotiate a single agreement with an exclusive license to both parties' IP rights.

Will U of T initiate or continue patenting activity without an identified licensee?

Often U of T accepts the risk of filing a patent application before a licensee has been identified. If an invention is not licensed within a defined period or there are technology development or patent prosecution challenges, IPO may stop patent activity. After the patent rights have been licensed to an exclusive licensee, the licensee assumes the patenting expenses.

Other Intellectual Property

What is a copyright and how is it useful?

Copyright is the exclusive legal right to produce, reproduce, publish or perform original literary, artistic, dramatic or musical works (including computer programs), as well as performances, sound recordings and communication signals. This protection is available to both published and unpublished works.

The Canadian Copyright Act automatically secures protection when a work is fixed into a tangible medium such as a book, software code, video, etc. In some instances, U of T registers copyright, but generally not until a commercial product is ready. By registering copyright with the Canadian Intellectual Property Office, a certificate is received that can be used in court as evidence of ownership.

In Canada, copyright protection lasts the lifetime of the creator and for 70 years following death. After that, the work is in the public domain, and anyone can use it.

What is a derivative work?

A derivative work is a work based upon one or more pre-existing work that is recast, transformed or adapted. The owner of a copyright generally has the exclusive right to create derivative works.

How can I learn more about U of T's copyright policies?

We recommend that you begin by reviewing material on U of T's copyright website. U of T's *Copyright Policy* describes the applicable rules for copyrightable works.

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 or services 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.

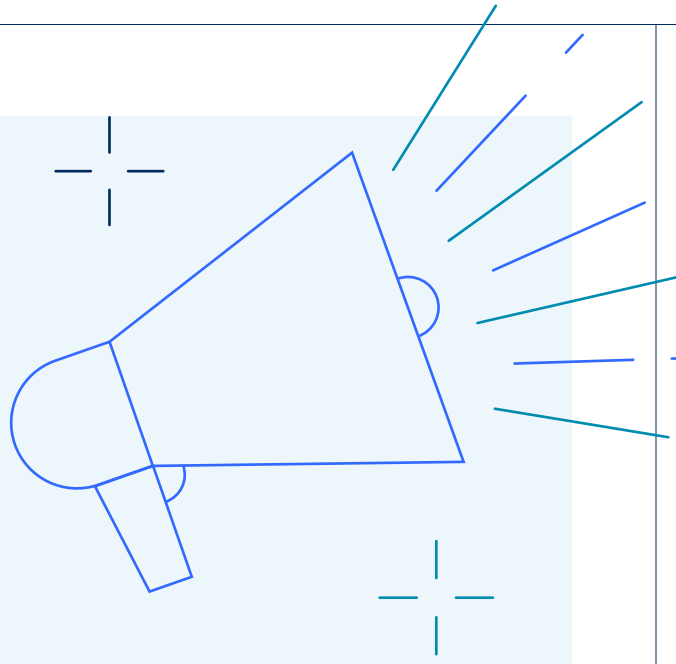
What is trademark registration?

When you register your trademark, you get the sole right to use the mark across Canada for 15 years. You can renew your trademark every 15 years after that. You do not have to register your trademark; by using a trademark for a certain length of time, you can come to own it according to common law. However, it is best to register trademarks.

What is the policy on trade secrets?

As a public institution, U of T does not keep trade secrets as research results are to be shared, disclosed, and published widely. However, tangible research property (e.g., biological material) can be licensed as "know-how," which falls into the trade secret category of intellectual property.

Marketing an Invention



Does IPO market inventions?

We are committed to finding the best licensee for your invention—a company that will dedicate resources (time, money and people) to developing the technology. Marketing a technology ensures that we have found the best licensee for the technology and avoids perceived conflicts of interest.

How does IPO market my inventions?

IPO staff use many sources and strategies to identify potential licensees and market inventions. Existing relationships of the inventors or IPO staff are sometimes useful in helping IPO validate the commercial potential of the invention and market an invention widely. Market research or complementary patent analysis can assist in identifying prospective licensees. Academic publications and presentations are often excellent marketing tools, as well as, website promotions.

How are most licensees found?

Statistics show that 70% of licensees are already known to the inventors or IPO staff. Research and consulting relationships or existing relationships with IPO staff are valuable sources for licensees. We attempt to broaden these relationships through personal networking, market research, and industry events.

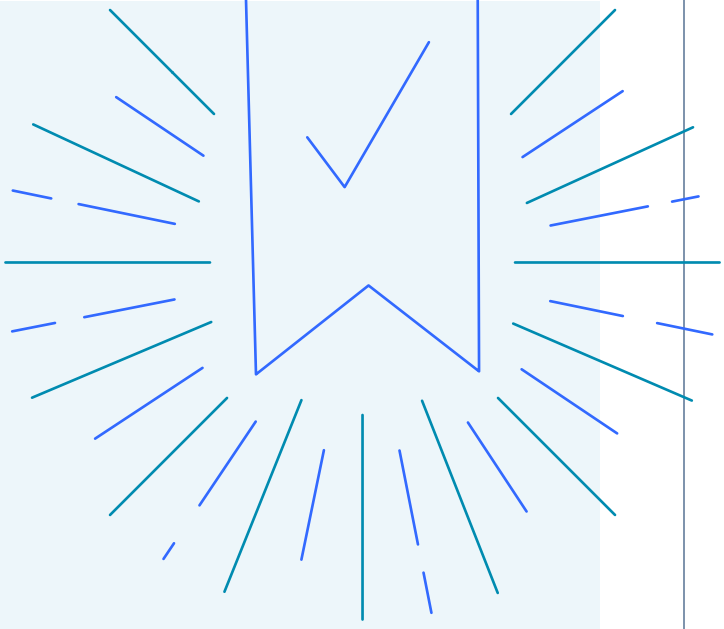
How long does it take to find a potential licensee?

It can take months and sometimes years to locate a potential licensee, depending on the attractiveness of the invention, its stage of development, competing technologies, and the size and intensity of the market. Patience, perseverance, and a broad network are essential.

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.

Licenses and Other Agreements



What is a license?

A license is a 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 developed at U of T. University license agreements usually stipulate that the licensee should diligently seek to bring the intellectual property into commercial use for the public good and provide a reasonable return to U of T.

How is a company chosen to be a licensee?

A licensee is chosen based on its ability to commercialize the technology for the benefit of the general public. Sometimes an established company with experience in similar technologies and markets is the best choice. In other cases, the focus and intensity of a start-up company is a better option. Typically, U of T does not have multiple potential licensees bidding on an invention.

What can I expect to gain if my IP is licensed?

According to university policy, a share of any financial return from a license is provided to the inventor(s). Most inventors also benefit from 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 activities. In some cases, additional sponsored research may result from the licensee.

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

Many licensees require the active assistance of the inventor to facilitate their commercialization efforts, at least at the early stages of development. This can range from infrequent, informal contacts to a more formal consulting relationship. 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 U of T.

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

Non-Disclosure Agreements (NDAs), also known as Confidential Disclosure Agreements (CDAs), are often used to protect the confidentiality of an invention during evaluation by potential licensees. U of T does not sign separate NDAs that bind principal investigators and co-investigators who have access to the confidential information. Rather, investigators and co-investigators acknowledge the agreement into which U of T has entered.

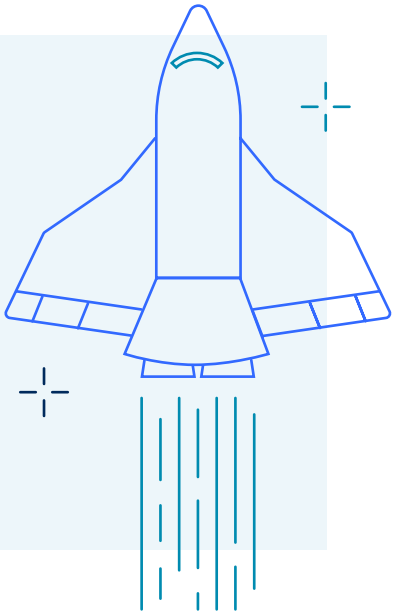
Material Transfer Agreements (MTAs) are used for incoming and outgoing materials at U of T. IPO administers MTAs for incoming and outgoing materials for research purposes. These agreements describe the terms under which U of T researchers and outside researchers may share materials, typically for research or evaluation purposes. Intellectual property rights can be endangered if materials are used without a proper MTA.

Inter-Institutional Agreements (IIAs) describe the terms under which two or more institutions (generally 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 U of T 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, or Option Agreements are entered into with third parties wishing to evaluate the technology before entering into a full license agreement.

Sponsored Research Agreements describe the terms under which sponsors provide research support to U of T. These are negotiated by IPO.

Commercialization



What activities occur during commercialization?

The signing of a License Agreement is usually the beginning of a long-term relationship. 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 and further development to improve performance and other characteristics. The licensee's performance is monitored by the licensing specialist for the duration of the license. Most License Agreements require periodic financial or development reports from the licensees.

What is my role during commercialization?

The inventor(s) are critical participants in commercialization. Your role can vary depending on your interest and on the interest of the licensee in utilizing your services.

What royalties are generated for U of T if commercialization is successful or unsuccessful?

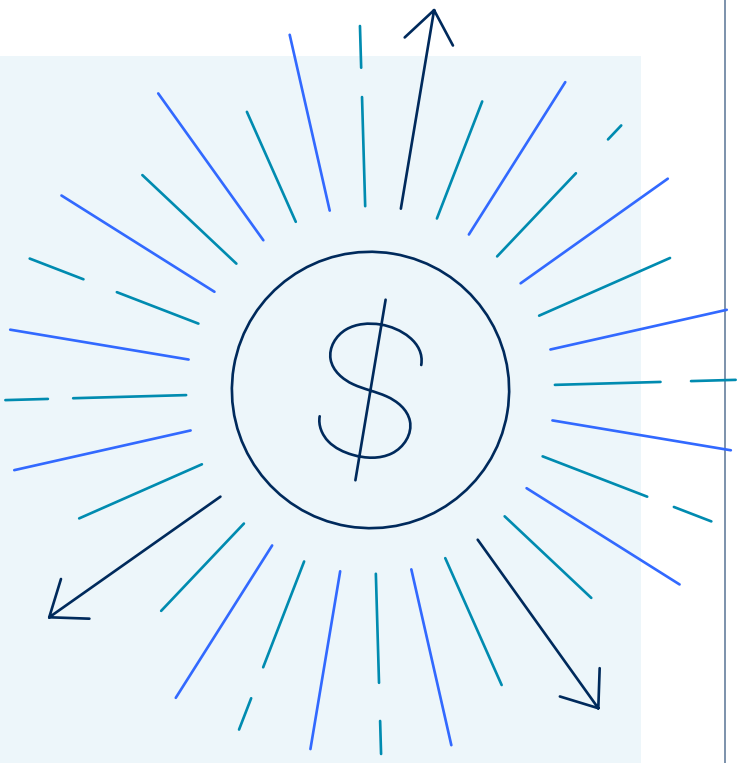
License agreements often include requirements for payments in the form of upfront fees, minimum annual royalties, milestone payments, earned royalties and sometimes equity. Licensing fees (upfront, annual minimum, milestones) range from very modest amounts to hundreds of thousands of dollars. If licensed products are eventually developed and sold (which can take years), earned royalties can generate revenues. These payments are usually based on product sales and can vary considerably. If equity is included in a license, it may yield a return for the investors and U of T, but only if the equity can be liquidated through a successful public offering or the sale of the company.

Most licenses do not yield substantial revenues. A recent study of licenses at U.S. universities demonstrated that only 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 my 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 unmet, can result in termination of the license. Termination allows IPO to pursue subsequent licensing to another business. However, delays and other considerations can hinder any effort to re-license.

Revenue Distributions



How are license royalties distributed?

IPO is responsible for managing the patent expenses and license revenues associated with technology assigned to U of T. Revenues from license fees, royalties, and equity are shared with inventors according to U of T's *Inventions Policy*.

What are the tax implications of any revenues I receive from U of T?

License revenues are typically reported as T5 income. You should consult a tax advisor for specific advice.

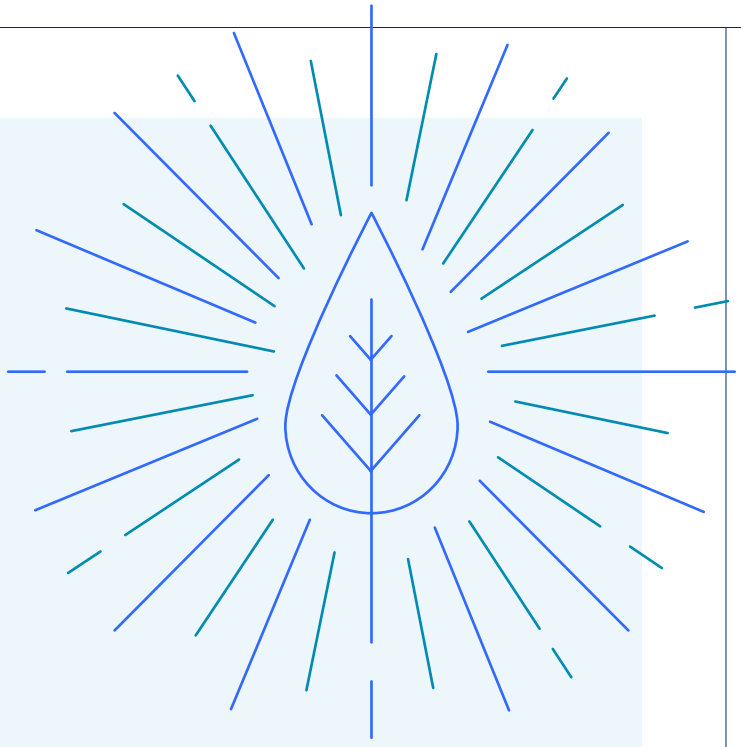
How are inventor revenues distributed if there are multiple inventors or multiple inventions in a license?

For patented inventions, the "inventor's share" of royalties is divided equally among the inventors unless all inventors agree in writing to another distribution formula of their collective choice. If multiple inventions are included in one license agreement, IPO will develop an appropriate allocation plan.

What does IPO do to reinvest in research and education?

IPO shares the royalties it generates with U of T inventors, faculties, departments, and in some cases, partnering institutions or the funders of the research. In turn, these returns are reinvested in additional research and education. In particular, licensing proceeds support the University of Toronto Connaught Fund, administered by the Vice-President, Research and Innovation, which provides U of T researchers with funding to further research that meets society's challenges.

Start-up Companies



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

A start-up is a new business entity sometimes formed to commercialize one or more inventions. Forming a start-up company 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 companies in established industries are unwilling to take the risk on an unproven technology;
- **Development costs versus investment retur**n—because of the high-risk involved in start-ups, investors will consider the potential for very high rates of return before committing funds to a new company;
- **Platform technology**—few companies survive on one product alone; technologies that can be commercialized for multiple products or services are more likely to enable successful start-up companies;
- **Competitive advantage and target market**—these must be sufficiently large for the start-up to succeed;
- **Potential revenues**—these must be sufficient to grow and sustain a company.

Who decides whether to form a start-up?

An entrepreneur must decide to form a start-up. The entrepreneur can be from within or outside U of T. If a new business start-up is chosen as the preferred commercialization path, it is important for inventors to abide by U of T's conflict of interest guidelines.

Will IPO issue a license to a start-up?

If a new business start-up is the best choice for commercializing the technology, we will negotiate with a representative of the company to grant rights to the company. From a technology transfer perspective, the start-up company with an entrepreneur committed to developing particular technology may be the best licensee. To facilitate negotiations, the start-up should offer a viable plan to commercialize an invention.

What assistance and resources are available to the inventor?

IPO commercialization specialists serve as coaches, advisors, resource locators, and project planners to help fill the gap between the technology and the formation of a start-up. Their activities may include developing a funding strategy, making introductions to potential investors, reviewing business plans, and engaging experts to work on key issues. IPO professionals can also draw upon an extensive network of resources and experience to assist you. However, IPO focuses its resources on U of T-owned inventions.

For additional information and available resources for all entrepreneurs, please visit Entrepreneurship at U of T.

What role does an inventor usually play in a company?

U of T inventors often serve as technology consultants, advisors or in some other technical developmental capacity. Occasionally, inventors choose to join and lead the start-up. In many cases, the start-up investors and management team identify the best role for an inventor based on the inventor's expertise and interests. As the company matures, and additional investment is required, the inventor's role may change. No matter what type of inventor/entrepreneur you are, U of T has accelerator or development programs that can help a start-up reach its highest potential.

Faculty involvement with a licensee (start-up or established company) will require a conflict of interest review. It is also wise for inventors to have agreements regarding their roles with a start-up reviewed by their counsel to ensure that all personal ramifications—including taxation and liabilities—are understood.

How much of my time and effort will it take?

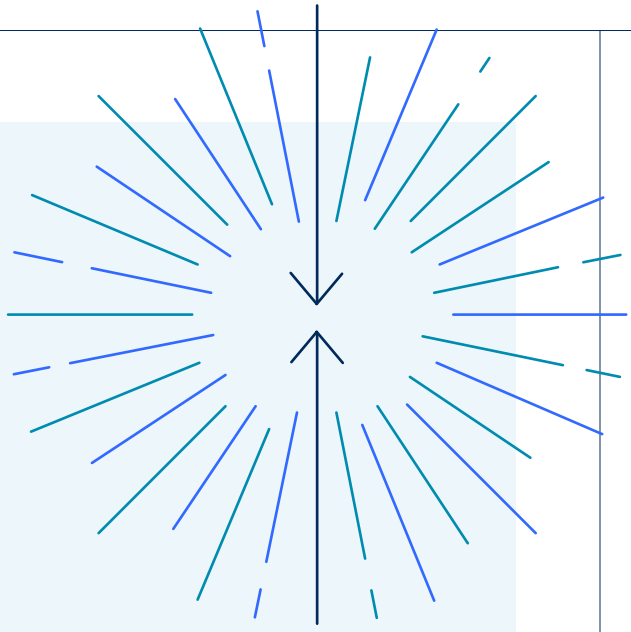
Starting a company requires a considerable amount of time and effort. Until the start-up team is identified and engaged, the entrepreneur may need to champion the formation effort. U of T often works with commercialization partners or U of T entrepreneurship programs for assistance.

Can U of T accept equity in the company?

U of T can accept equity as part of the financial terms of the license. Equity may be substituted for other cash considerations that are often difficult for start-ups. It is also a way for U of T to share some of the risk associated with the start-ups. A decision to take equity must make sense for both the university and the company.

For more information on start-ups, please see U of T's Start or Grow a Company page.

Navigating Conflict of Interest



How does U of T define a conflict of interest?

A conflict of interest (COI) occurs when there is a real or perceived conflict between an individual's private interests and their professional obligations to U of T. A COI depends on the situation and can often be dealt with through transparency. Please see U of T's *Policy on Conflict of Interest – Academic Staff* for details on how to report and manage conflict of interest.

When should I seek guidance on conflict of interest?

Whenever a question or uncertainty arises, you should seek guidance from your department chair, faculty dean, or academic supervisor. For faculty, declarations of COI under U of T policy are distinct from annual accountability reports or COI reports to funding agencies.

What kinds of issues will concern those reviewing COI?

Typically, those reviewing COI are concerned with whether or not a researcher/faculty member can separate U of T research from company research, provide unbiased and appropriate guidance and support to students, maintain academic integrity in research and education, and adhere to government-mandated policies. The best approach is to fully disclose your situation to the appropriate person (within U of T or a funding agency) and discuss the implications for your university responsibilities and mechanisms to manage it.

What are examples of a conflict of interest?

Here are several examples of when guidance is required: 1) when research proposals involve a company in which you have a financial interest; 2) when a license or option is being considered for a company in which you have additional financial relationships (e.g., equity, sponsored research, consulting); 3) when consulting activities exceed the permitted limits; 4) whenever a full-time faculty member's primary professional loyalty is not to U of T.

How does U of T manage conflict?

The first step is reporting the conflict. A report is required whenever a current or prospective relationship creates the potential for COI (e.g., when there are additional financial relationships proposed between a faculty member and a prospective licensee or research sponsor). Researchers and faculty members are responsible for documenting and disclosing any arrangements that could constitute a COI by following U of T's Policy on Conflict of Interest –Academic Staff.