



Office of
Technology Development...

INVENTOR'S GUIDE
TO
INTELLECTUAL PROPERTY
AND
TECHNOLOGY TRANSFER

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Inventor's Guide To Intellectual Property and Technology Transfer

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This “Inventor’s Guide to Intellectual Property and Technology Transfer” is intended to familiarize the UMBC community with basic facts about IP protection and the tech transfer process. A general knowledge of IP law is useful for anyone involved in or thinking about obtaining a patent, copyright or some other form of IP protection. The UMBC IP Policy, including the revenue distribution process, is reviewed in this Guide. Licensing agreements, material transfer agreements, and confidentiality agreements are also discussed.

What Is Technology Transfer?

Technology transfer is the process by which a laboratory discovery is brought to the marketplace so it benefits the general public. The Office of Technology Development (OTD) was created to assist faculty and staff in this complex process.



OTD assists the UMBC community in all phases of intellectual property protection and commercialization including: evaluating disclosed inventions for patentability and market potential; reviewing and negotiating IP agreements; filing patent applications, copyright and trademark registrations; establishing partnerships with industry; and assisting entrepreneurial faculty in new company formation.

I’m An Academic, Why Should I Be Interested In Technology Transfer?

The Bayh- Dole Act, which passed in 1980, enables institutions to elect title to inventions developed under federal funding. It is the responsibility of the institutions who have received federal funds to comply with the laws and regulations mandated by Bayh-Dole. This simply means that the federal government expects the University to engage in technology transfer activity.



OTD is establishing a very active outreach program to companies. In this way we can bring the important discoveries made here at UMBC to the commercial marketplace for the benefit of the public good.

While corporate research funding is still a small portion of the total research funding of the University, it is an important resource for developing prototypes, proof of principle studies, and projects geared to reducing inventions to practice. Often, corporate sponsors are ready-made licensees of technologies developed under their corporate sponsored research.

You may be saying to yourself “that all sounds very interesting, but what’s in it for me?” The answer is ...\$\$\$ and prestige. There is often an opportunity to consult for a company that is working with the University to commercialize a licensed technology. Also, as discussed in more detail in the following sections, the University shares a portion of the revenue it receives from licensing with the inventors. In addition to the inventor’s share, the inventor’s department receives a portion to support additional research.

Is My Idea Patentable?

Intellectual property (IP) is the intangible value developed by human creativity that is protected by the legal mechanisms of patents, trademarks, service marks, copyrights, trade secrets, mask works, and plant variety protection certificates. In general, these mechanisms add value to the creator's idea by precluding others from using the idea. You may be familiar with the terms patent, copyright, trademark, trade secret, etc., but you may not be certain what is/is not protected by these and how to go about obtaining the appropriate protection.

What is a patent and what does it do?

A patent is a property right granted by the federal government in exchange for the public disclosure of the technology. It provides the owner with an exclusive right to exclude all others from making, using, selling, offering for sale or importing the invention for a specified term.



In the US, a utility patent may be obtained by whoever invents or discovers any new, useful and non-obvious process, machine, manufactured article or composition of matter or any new, useful and non-obvious improvement thereof. Inventions that are not patentable include laws of nature, theories, printed materials, plans of action, ideas and results.

If you have published or presented your invention or are planning to publish or present, please consider the following. The US allows a one year grace period between the time an invention was first described in a publication, was in public use, or was on sale and the filing date of a US patent application. The majority of foreign countries however, require absolute novelty.

So, if you have published your invention less than a year ago, we can still obtain US patent protection, but foreign rights, which are often quite important to a potential licensee, are lost. It is important to disclose inventions to OTD prior to any publication and to discuss any potential public disclosure of inventions at the time of submission. A quick provisional patent application can be filed so that patent rights may be preserved, without causing any delay in publication.

Types of US Patents

The US Patent Office grants three types of patents: utility, design and plant. By far the largest group is the utility patents. The utility patent covers a process, machine, manufactured article, or composition of matter and includes, among other things, an enabling description of the invention, drawings, and claims that define the scope of the invention. The term is 20 years from the effective filing date (previously 17 years from the issue date).

Unlike utility patents, which cover function, a design patent is granted for any new, original and ornamental design for an article of manufacture. Design patents protect against infringing appearance and contain, among other things, a drawing or photo of the design, a brief statement regarding the nature and intended use of the article in

which the design is enabled and a single claim. The design patent term is 14 years from issue.

The third type of patent granted by the USPTO is the plant patent. A plant patent is granted on asexually reproduced (*i.e.*, propagated by means other than from seeds), distinct and new varieties of plants, including cultivated sports, mutants, hybrids, and newly found seedlings, other than tuber propagated plants (such as a potato) or a plant found in an uncultivated state. A plant patent includes, among other things, a description of the plant and its characteristics that distinguish it from known varieties and its antecedents, expressed in botanical terms, drawings and a single claim. A sample of the plant is not required. The plant patent has the same term as a utility patent, 20 years from filing.

Types of patent applications

In order to receive a patent, one must first file a patent application. In the US, there are numerous types of applications. For the purpose of this guide, we will focus on utility patent practice, since the majority of patents filed for by UMBC are of this type.

Provisional patent applications, introduced in 1995, are now playing a key role in the technology transfer process at UMBC and many other universities across the country. It is a quick and inexpensive mechanism to establish a priority date. This can be a key factor if the invention has been published or is pending publication. Provisional applications must include a completely enabling description of how to make and use the invention, and one or more drawings (often filed are manuscripts and journal articles). No claims are required and the application is not examined. If the applicant wishes to retain the priority date afforded by the provisional application, a non-provisional application must be filed within 1 year of the provisional filing.

Non-provisional applications or “regular” utility applications must contain an enabling description and drawings as in a provisional application but a non-provisional application must contain at least one claim and these applications are, of course, examined by a patent examiner at the USPTO. UMBC will generally retain outside patent counsel with expertise in the specific technical area to work with the inventors in drafting non-provisional applications. Because of the significant cost of drafting and filing non-provisional applications, only those inventions that have a strong IP position and commercial potential will make it to this stage.

There are numerous types of non-provisional applications that may claim priority from (result from) a co-pending parent non-provisional application including divisionals, continuations-in-part and continuations. The differences between these applications will not be discussed here, but feel free to contact OTD if you really want to know.

The PCT, or international application, is the means by which an applicant can start the foreign filing process. The PCT is an alternative to immediately filing national applications in those countries which are member nations of the Patent Cooperation Treaty. Typically, a US patent application is filed and then a PCT application is filed

within one year of the US date. Utilizing the PCT route allows for the delay of foreign filing decisions for a period of up to 30 months from the priority filing date.

Copyrights, What Do They Cover?

Now that we have thoroughly confused you with all of the various types of patents and patent applications, let us move on to the world of copyrights. An original work is copyrighted once it is written or fixed in a tangible medium of expression. So, unlike patents, one does not need to take action in order for a work to be copyrighted.

The simple step of putting © 2002 UMBC on a work is often enough to deter infringement. However, copyright registration is needed in order to file an infringement suit. Registration is a relatively simple process; please contact OTD for information regarding filing the appropriate forms.



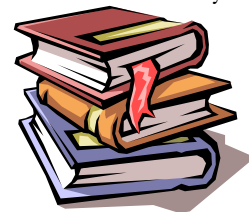
Some examples of works that can be protected by copyright are: literary works, books, tests, computer programs, databases, music, lyrics, dramatic works, choreography, pictures, sculptures, maps, drawings, works of art, movies, sound recordings, and architectural works. Items that may not be protected by copyright include: names, titles, slogans, short phrases, ideas, extemporaneous speeches, principles,

concepts, facts, plots, procedures, processes, systems, methods of operation and local, state and federal laws.

The owner of a copyright has the right to exclude others from photocopying, preparing derivative works of, distributing copies of, and performing or publicly displaying the work. Rights to a copyright are granted for a period lasting the life of the author plus 70 years. If a work is anonymous, the term is 95 years from publication or 120 years from creation. After the term, the work falls into the public domain.

Unless it is a “work made for hire”, the owner of a copyright is the person who created the work. In a “work made for hire” situation the employer, or the commissioning party for whom the work was prepared, is considered the author/owner.

UMBC policy states that faculty have all rights in copyrights of traditional scholarly works such as textbooks, journal articles, monographs, and other literary and artistic works with the exception of those works produced under a sponsored research agreement or other written agreement. All works created by non-faculty employees in the course of their employment are considered “works made for hire” and are owned by UMBC. Computer programs and software created by faculty within the scope of their employment, with the use of university resources, or under Sponsored Research Agreements or other written agreements are owned by the University.



Trademarks/Service marks/ Trade dress – What does that ® mean?

Trademarks and service marks are distinctive letters, numbers, words, phrases, slogans, sounds, or graphic symbols and combinations thereof that identify a product, service and/or the source of, quality of, the producer of or the distributor of specific goods and services. The purpose of these marks is to avoid confusion in the marketplace. As long as it is being used in interstate commerce, a mark is protectable.



Federal registration is not necessary for trade/service mark protection. A trade/service mark is identified by affixing the TM or SM symbol. Registration does provide advantages in cases of infringement and when filing an application in a foreign country. Following registration, the TM or SM symbol can be replaced by the ® symbol.

Trade dress is a broad IP category related to commercial image and appearance. It may include features such as size, shape, color, layout, format, overall look, packaging, texture, graphics, or even sales techniques, anything that conveys a visual impression to consumers. Proprietary trade dress may be registered as a trademark. Trade dress which can not be registered may be protected under unfair competition laws.

Trade secrets and know-how – shhhh!



A trade secret (often referred to in university cases as know-how) can be any information not commonly known which is used in connection with a business to obtain a competitive advantage. The information must be kept confidential (secret), it must be identifiable and must not be readily ascertainable to be protected. It is estimated that more technologies worldwide are protected as trade secrets than patents. The formula for Coca-Cola has been protected as a trade secret for many years.

As a general rule, the University will not agree to accept trade secreted information from a company because of the legal burden of keeping the information secret.

Last but not least- mask works, plant variety protection certificates, and tangible research property

Mask works refer to the series of related images representing the predetermined, three-dimensional patterns of metallic, insulating, or semiconducting layers of a semiconductor chip. Registered mask works are protected for a period of approximately 10 years after registration or the date the mask work was first commercially exploited. A mask work is often denoted by the symbol ^M or ^{*M*}.

Plant variety protection certificates (which are different from plant patents) cover any sexually reproduced or tuber propagated plant variety. The certificates have a term of 20 years, 25 for trees and vines. A viable sample must be deposited and replenished in a public repository.

Tangible research property includes the physical embodiments of intellectual effort such as models, machines, devices, designs, apparatus, instrumentation, circuits, computer programs and visualizations, biological materials, chemicals, other compositions of matter, plants, and records of research.

I Think I Have Developed Something With Commercial Potential, What Do I Do Now?

Well, we are very glad you asked! The first step is to come and talk to the nice folks at OTD. After our initial discussion, we may ask you to provide additional information in order for us to properly evaluate your invention. Don't panic, the Invention Disclosure Form is only 2 pages and is available on line at www.umbc.edu/otd. The information requested includes: an enabling disclosure (you may attach a manuscript), list of inventors and their contact information, any publication dates, research sponsor and grant numbers, and minimal market information.



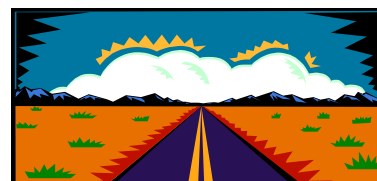
OTD reviews each invention disclosure and provides feedback to the inventor within 3-4 weeks of submission, sooner if there is a pending publication. The review process may include additional discussions with the inventors, a demo of the technology, patent and literature searches, market analysis, etc. The evaluation criteria include strength of the IP position, length of time to development of the technology into a product, market size, and competition. Unfortunately, the constraints of a limited patent budget also must be factored in when making the decision to pursue or waive title to an invention.

Should OTD choose to pursue your invention, the process may go something like this. OTD will, in the vast majority of cases, file a provisional patent application which is prepared in-house. The current PTO fee for filing a provisional application is \$80. Within 10 months of filing a provisional patent application, the decision will be made to pursue a non-provisional application or to waive title of the invention either to the sponsor or to the inventors, whichever is required (special circumstances such as copyrightable software may not follow this pattern).

The majority of non-provisional applications are drafted by outside patent counsel. As you can imagine, this is an expensive endeavor. The current cost of obtaining a US patent is between \$10-25K. Filing applications in foreign countries is even more costly and typically only pursued when a technology is licensed.

The Art Of Licensing –The Light At The End Of The Tunnel

One of the confusing steps in the technology transfer process from the inventor's perspective is licensing. This is probably because license negotiation is an art, not an exact science. No two deals will ever be exactly alike. Despite what you have



read, technologies are not all licensed for a \$10K fee and 5% royalty rate. Some may be worth more, some may be worth less.

Frequently seen license terms

Typical financial terms that you may see in a university technology license include; reimbursed patent expenses, upfront fees, equity, royalties on net sales, annual fees, milestone payments and termination fees. OTD will stay in contact with the inventor during the license negotiation process and provide feedback as often is necessary. The process can take anywhere from 1 month to 1 year, so patience is needed during this time.

Take home message about licensing

The most important thing to remember about technology licensing in a university environment is that the majority of licenses result from the inventor's interaction with industry. All of the other methods of marketing such as mailings, web pages, personal OTD contacts, and the like result in far fewer successful hits than the inventors own efforts in making industry contacts and more recently, forming university start-up companies.

Start-up companies

UMBC encourages its faculty to have an entrepreneurial spirit. Should an inventor wish to start a company, OTD can assist in that endeavor by working with the faculty member. OTD and the UMBC Incubator have developed the BASE Program (Business Advisory Services for Entrepreneurs) which will assist faculty in developing business plans, applying for grants and attaining other forms of financing

Revenue Distribution – Show Me The \$\$\$\$!



This is the part of the process that is the most fun for OTD, when one of the inventors we have worked closely with is financially rewarded for all of their additional time and effort. UMBC IP policy provides that a share of revenue from licensing patents, copyrights and related trademarks, service marks, trade dress as well as tangible research property, mask works, and plant varieties be distributed to inventors and also to the inventors department. The remainder is retained by the university to cover general and project specific costs and a portion is devoted to research.

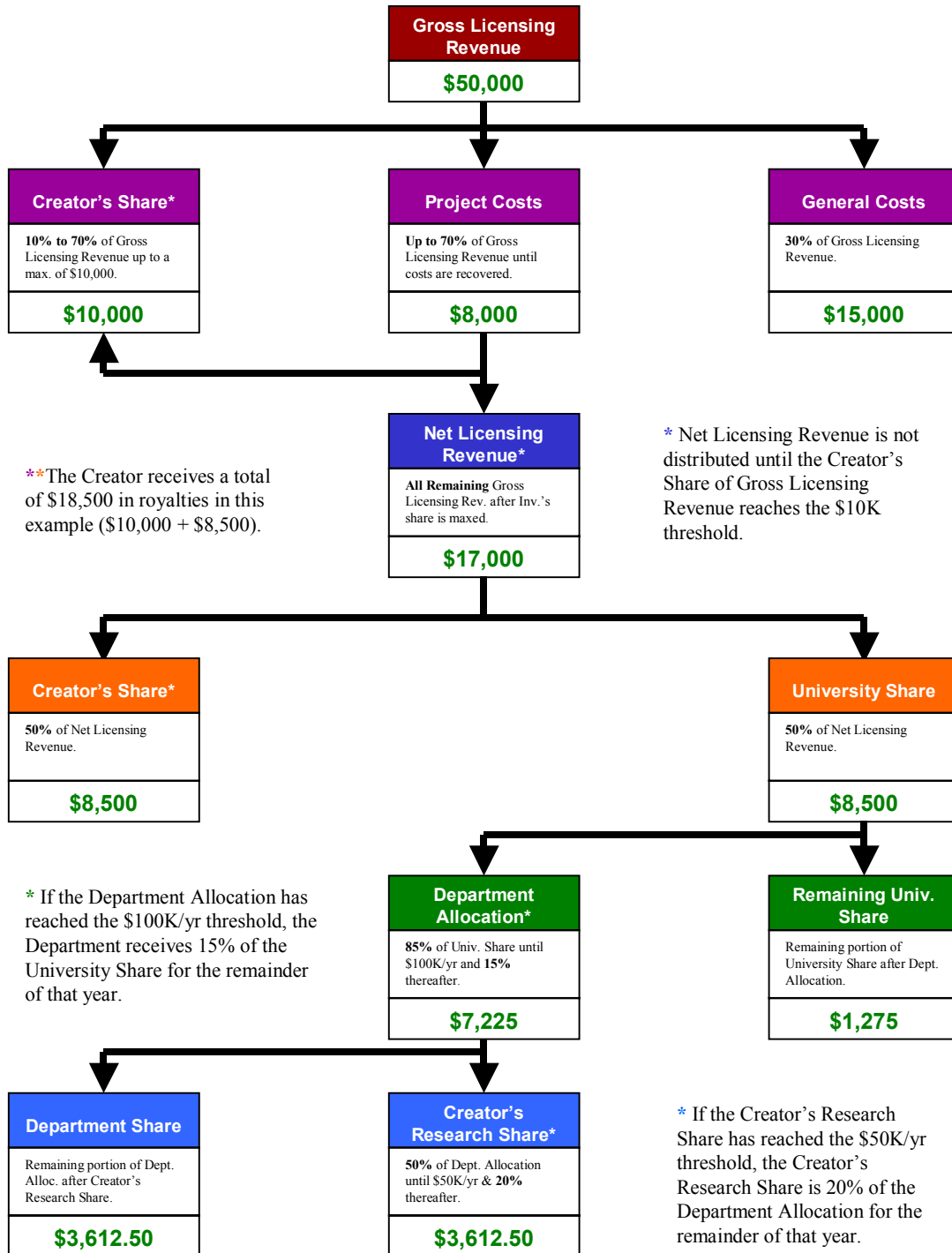
Unless otherwise agreed to in writing, the inventor's share is distributed equally among all inventors. Equity received as consideration for a license is distributed in a different manner than outlined below, it is shared equally between the University and the inventors.

The distribution of revenue is covered in Section XI of the UMBC IP Policy effective July 1, 2002 which can be found at www.umbc.edu/otd. You may choose to read the noted section or follow the distribution chart below. Hint: the chart is much easier to understand than the written policy.

Note that the policy referenced and the diagrams provided here cover those inventions disclosed after July 1, 2002. Those inventions disclosed prior to that date come under the

old Copyright and Patent Policies, which provided for a different revenue distribution. The old policies can also be found at www.umbc.edu/otd.

UMBC's Royalty Distribution Example



CDAs, MTAs, SRAs , etc.

All IP related agreements such as confidential disclosure agreements (CDAs), material transfer agreements (MTAs) and the like must be signed by the Director of OTD as the authorized campus official.

Confidential Disclosure Agreement

A confidential disclosure agreement should be obtained before discussing a technology with anyone outside the University, such as a company or colleague at another institution. OTD also has a form for thesis/dissertation defense situations. Companies may ask researchers to sign CDAs prior to discussing any possible research collaborations. Please do not sign a CDA, it should be reviewed by OTD and signed by the Director of OTD.

Material Transfer Agreement

A material transfer agreement is used when a researcher sends out or receives material, such as biological materials or compounds. It enables researchers to share materials while safeguarding proprietary rights to the materials. Materials can be cell lines, viruses, bacteria, monoclonal antibodies, compounds, etc.

Sponsored Research Agreement

OTD assists the Office of Sponsored Projects Administration (OSPA) in reviewing intellectual property language in sponsored research agreements (SRAs). There are a number of potential problem areas in SRAs that should be avoided because they can be roadblocks to future licensing and funding efforts including: IP ownership issues of any kind, non-exclusive royalty free licenses to corporate sponsors, granting rights to background technologies, and granting rights to future technologies.

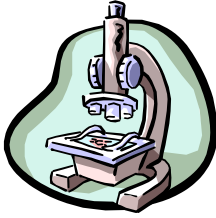
Additionally, OTD will negotiate SRAs linked to licensed technologies. Licensees often wish to sponsor additional or follow-on research projects to expedite the product development process.

A Word Or Two About Conflicts Of Interest

As UMBC and its faculty establish more partnerships and collaborations with for profit business entities and other organizations, the potential for financial conflicts of interest and conflicts of commitment that involve both the individual faculty and the university are created. Some potential conflicts are obvious, such as the case of a faculty member's lab receiving research funding from a company in which the individual owns equity or receives significant consulting fees or gifts. Other potential conflicts are not so obvious, such as when the university is negotiating a license or sponsored research agreement with a company who has promised to provide philanthropic dollars to the university.

In all situations where a University employee has a potential conflict of interest or commitment, that employee must inform his or her Supervisor or Department Chair in accordance with the Conflict of Interest Guidelines. A copy of the COI Guidelines can be found on the OTD website at www.umbc.edu/otd.

APPENDIX A: A Guide for Keeping Laboratory Records



In the US, laboratory records are crucial in deciding disputes over who was first to invent. While scientists in industry are accustomed to a daily routine of logging in detailed laboratory activities, ideas, and data into notebooks, some academic researchers are not. The following are rules which every researcher is advised to observe. In fact, state auditors look to ensure such rules are followed.

- Make daily entries, in ink, into a bound notebook. Title, date, and sign each entry. Record conceptions, laboratory data, and drawings.
- Do not erase. Draw a line through errors in text or drawings. Enter the material in corrected form. Initial and date all major changes.
- Draw a line through blank spaces on the page. Start a new page for each new experiment.
- Refer to photographs, charts, etc. that may be on separate pieces of paper.
- When an experiment or run is completed and it represents reduction to practice of only one or a limited number of species, include a statement explaining still other species and parameters of variables stating the reason they are expected to be effective or ineffective.
- Record observations of results even if they are not fully understood or appreciated at that time.
- Have all entries signed and dated by a witness. The witness must be someone who has read the material and is capable of understanding it. He or she may not be a co-worker or collaborator. Obtain additional witnesses when something important or highly unusual is observed.
- Prior to discarding samples or records of any kind, be sure they are of no value to any other member of the project.
- To fully protect and preserve property rights to an invention or innovation, provide proposed publications (including abstracts) to OTD. OTD may advise the researcher that a patent application should be filed prior to the anticipated publication date. OTD will not require that the proposed publication be delayed pending the filing of a patent application. We will work with inventors to preserve patent rights if at all possible. The filing of a patent is meant to help inventors, not to obstruct the dissemination of important scientific findings.

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