



Guidelines for Technology Transfer and Partnering

In the past 30 years, biotechnology tools and techniques have permeated into nearly every type of academic life science research. As a result of this wide scale technology decentralization, academic researchers have discovered new drugs that today treat millions of people worldwide:

- Natalizumab (Tysabri)¹, a humanized antibody targeting **α 4 integrin** for treatment of multiple sclerosis, discovered in part by the laboratory of Lawrence Steinman of Stanford University Medical Center.
- Imatinib (Gleevec/Glivec)², a compound that was found to be effective against the mutated **BCR-ABL fusion gene** after a long series of academic advancements in elaborating the pathway. This was one of the first of what are now many therapeutics to specifically target kinase enzymes in what is now standardized as targeted therapeutics.
- Antibody humanization, as pioneered by Greg Winter of Cambridge University. The original discovery was subsequently formed into a spinoff company, Cambridge Antibody Technology³ that has contributed to humanized antibodies for treatment of **cancer and immunological disease**. Humira™ was humanized using this technology and has become the largest selling antibody therapeutic, reaping \$12.5 billion in sales in 2015⁴.

Despite the many years and complexity required to bring these drugs to market, each one of them started with academic science that was empowered with tools and technologies that are equally available to many thousands of researchers globally. Broad adoption of common life science technologies, methodology, and development steps allows researchers worldwide to make discoveries and patent inventions that can eventually be 'partnered' to a commercial party in order for broader development activities to occur.

This document will introduce the reader to the concepts of partnering and technology transfer. There are 3 major concepts that support this process:

Reduction to practice:

Is the science robust and reproducible?

Adequate financial, legal and developmental support:

Are the raw materials of commercializing the scientific discovery in place?

Finding a commercial partner for mutual benefit to both parties:

How to make contact in order to enter a commercial dialogue?

In its broadest sense, technology transfer relies upon the ability to transfer robust and reproducible science (i.e. the technology) from one party (i.e. an academic research, acting via their technology transfer office) to another party (i.e. a commercial company partner). Often this science is represented within inventions that are patented, with the rights to use these inventions covered through legal license agreements that cover the terms of use and resulting financial compensation. Patents are forms of property that give the holders of these

¹ <http://jcb.rupress.org/content/199/3/413.full>, accessed 21.11.2016

² <https://www.cancer.gov/research/progress/discovery/gleevec>, accessed 21.11.2016

³ https://en.wikipedia.org/wiki/Cambridge_Antibody_Technology, accessed 21.11.2016

⁴ <http://www.biospace.com/News/top-10-best-selling-biotech-drugs/393360>, accessed 21.11.2016

patents - both owners ('applicants') as well as inventors - certain legal advantages in commercialization of the products or services described in the patents. Patents can cover specific chemical structure, a specific antibody or oligonucleotide sequence, or specific methods that improve the production of the aforementioned.

Please see the online resource "Features of Intellectual Property" for a more detailed view of intellectual property forms and details of each type.

Reduction to practice

If this all seems too abstract, there is one simple point regarding technology transfer that makes it concrete, and which connects the invention to its potential use; ultimately, technology must be robust enough for commercialization, as well as having attainable commercial applications. Often technology coming from academic research is in an early stage, and requires some maturation and further development before it is ready for 'partnering' or licensing to outside parties. Evaluation of the stage of technology is an inexact science, and potential external partners may have certain objectives in mind regarding the specific stage of technology that they are seeking.

Financial, legal, and developmental support

Developing a life science technology toward commercialization is a challenging affair. Aside from the technical complexities of biology and chemistry, there are further considerations that transport scientists into the potentially unfamiliar realm of commercialization and business.

Some considerations to be made during this transformation:

- Does the technology patent portfolio match the ultimate development and commercialization aims?
- Is the technology best developed further: (1) internally in an academic setting; (2) outlicensed to an external party; or (3) outlicensed to a spinoff company specifically founded for further development of the technology?
- Given the aforementioned points, how much financing is realistically needed to advance the technology, including not only direct funding for research and development but also funding to cover patent administration and business development activities?
- Does the researcher have access to the appropriate legal resources to permit adequate considerations for patents, licenses and other legal agreements, and legal support for company foundation?

Finding an external partner for mutual benefits

Once it has been decided that a technology is best suited to be (co)developed with an external partner, the next question that arises could be where to make initial contact with potentially interested parties. Fortunately, some of the contact routes are part of the standard realm of science, including:

- scientific conferences
- literature searches to identify potentially interesting commercial contacts
- inclusion of commercial parties as part of grant or subsidy applications

Furthermore, other contact routes may be more directed toward commercial contact:

- LinkedIn searches to identify specific decision makers from potential commercial partners
- Life science partnering conferences for business development
- Patent database searches to identify potential partners (and competitors) working in similar technology fields
- Internet searches to identify companies working in related fields
- Life science databases showing targets, drugs, companies, technologies, and trials by field, disease indication, mechanism, and stage of development

Once potential partners are identified and contacted, the discussion will revolve around collaboration terms that need to be satisfactory to both parties. Legal agreement 'terms' are the ground rules of the partnership and can include duration of the relationship, confidentiality for both parties, financial considerations, exclusivity, and what defines performance within the partnership. Some basic legal elements such as the governing law by which the contract is enforced can take serious effort to negotiate. Documents that may be attached to a legal agreement may include work plans, budgets, and financial payment schedules.

Your local technology transfer office may be your first contact point to learn more about the partnering process, and we at CORBEL are standing by for assistance if you have any further questions.

Keywords: patent, partnering, technology development, technology transfer, commercialization

Further references by topic, hyperlinked:

[Drugs discovered by academia](#)