

## Technology transfer and idea commercialization

Judith Sheft

**Technology transfer professionals work at the interface of science and business to help move discoveries forward for the public good.**

One alternative career path that scientists should consider outside the laboratory is that of technology transfer professional. This career provides the opportunity to leverage a technical background with business knowledge. If the technology transfer professional is successful, society will benefit from new goods and services in the marketplace.

So just what is technology transfer? It is the process of transferring scientific and technical knowledge from one individual or organization to another for economic advantage—generally for the purpose of commercializing that knowledge. In the academic environment, informal technology transfer happens when a student graduates and takes a job at a company: knowledge that the student has gained will be transferred to the employer in a diffuse way. More formally, we tend to think of academic technology transfer in the context of scientific or technical knowledge that is protected by a patent.

University inventions and discovery are playing an increasingly important role in economic development. The traditional model of the large, vertically integrated company has given way over the last 10–15 years to an approach to industrial development that depends on technology transfer from universities as a critical component. The pharmaceutical industry is an excellent example of this value chain. University inventions at the proof-of-concept stage are licensed to small biotech companies that conduct additional research and development work and then license the technology to large pharma companies for clinical trials and, if successful, market distribution.

### “Get it,” “know it,” “use it”

The Bayh-Dole Act of 1980 set the framework for universities to own their inventions that were created with federal funding. Because universities do not typically manufacture a good or service, the way for the technology to get commercialized and out to the public is through technology transfer. Since the Act's passage, virtually every university that is engaged in research has created a technology transfer office with the mission of helping the university commercialize their inventions. The process can be summed up as “get it,” “know it” and “use it.”

A successful technology transfer office will have a staff with a range of both business and scientific backgrounds, and preferably some industrial experience on either the technical or business side. Technical staff may have degrees ranging from BS to MS to PhD. In my case, I have a MS in mathematics and worked in telecommunications for over 20 years before joining the Office of Technology Development at New Jersey Institute of Technology.

The technology transfer process starts with “getting it”—an inventor submitting an invention disclosure to the technology transfer office. It should be pointed out that not all inventors readily come forward with inventions; they may not think that their work merits a patent. Thus, university technology professionals must constantly be on the lookout for ideas. At our university, we periodically attend seminars and poster sessions given by the faculty to scout for possible patentable inventions.

In the next stage, “know it,” the technology transfer office reviews inventions submitted by faculty, staff and students to assess both the patentability and market potential of each one. This patentability analysis is done to determine whether there is prior art that would preclude getting a patent or that severely limit the scope of the eventual claims. Questions are asked of the inventor about his or her knowledge of the state of the art, how this new invention differs from what is out there and whether the invention would be obvious to someone skilled in



*Judith Sheft is associate vice president of technology development at the New Jersey Institute of Technology, University Heights, Newark, New Jersey 07102, USA.  
e-mail: sheft@njit.edu*

“Each day in the technology transfer office brings new challenges,” says NJIT’s Judith Sheft.

the art. Needless to say, having a technical or scientific background is valuable in establishing rapport with inventors and having a meaningful dialogue with them.

For marketability, or “use it,” we look at the ‘so what’ factor. So what if we get a patent—would anyone care or, more to the point, would anyone pay to license the patent from us? Because patent prosecution can be expensive—averaging \$7,000–10,000 for a US patent alone and more for each foreign country in which protection is sought—it is important to understand the market value of the invention before spending money to obtain an asset that may just sit on the shelf. In looking for commercialization routes, we consider a variety of alternative paths: licensing to a large, established company, collaborating with a small firm in a spin-in relationship, or even helping to spin out the technology in a new company. For a technology transfer officer, analytical skills come in handy in weighing various alternatives.

### **A career for multitaskers**

It is frequently said that technology transfer is a contact sport. Locating a licensee involves

attending scientific conferences and various entrepreneurial gatherings. You need to talk to people about your institution and the work various faculty members are doing. You don’t need to be an expert in all the aspects of the technology; however, you should be in a position to discuss it with prospective licensees and gauge the level of possible interest for further in-depth follow-on discussion with the inventor. At this initial point, you are engaging in scientific small talk.

In addition to small talk with prospective licensees, a technology transfer professional must also establish a relationship with the inventor community at his or her institution. This is necessary not only at the initial scouting stage but also all along the “get it, know it, use it” pathway. You will need the input and involvement of the inventor during the patentability and patent prosecution phase. When you are working with a prospective licensee, the involvement of the inventor can be extremely helpful. A key element in working with inventors is to keep them apprised of what is happening with their invention. A short email or phone call with a status update can do wonders.

Each day in the technology transfer office brings new challenges. An inventor may call looking for advice on the technology transfer process, an email may arrive inquiring about the possibility of licensing technology from the university, senior administration may want an update on how the university’s licensing activities are progressing or a faculty inventor may inquire about starting up a new business based on technology developed at the university. A technology transfer professional must be able to multitask—especially one who works in a small office.

Being a technology transfer professional allows you the opportunity to work at the interface of science and business and to help move discoveries forward for the public good. It is an exciting and rewarding career. A good place to get more information is from the Association of University Technology Transfer Professionals (<http://www.autm.net>) or the Licensing Executives Society (<http://www.usa-canada.les.org>). You can also contact your university’s technology transfer office and ask to speak to the director. 