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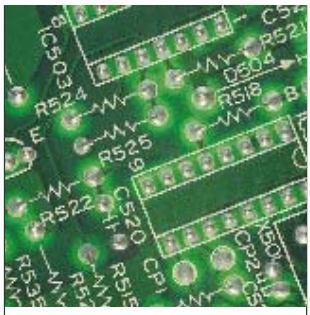

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The Job Market

Transferring Skills to Tech Transfer

Dermot Leonard's first experience with technology transfer was as a mechanical and manufacturing engineering student in 2002. He and his teammates at **Queen's University (http://www.qub.ac.uk/)** in Belfast, U.K., won £10,000 in a Northern Ireland Science Park competition for their business plan to develop and market a self-powered medical pump. The invention never made it to market, Leonard says: The team took a half-hearted stab at marketing their idea--but then they graduated. They spent the rest of the money paying off student loans.

Technology transfer "requires someone who has a real interest in science and who enjoys continually hearing about new research." --Dermot Leonard

Leonard had another chance to flex his entrepreneurial muscles while working as a research associate and part-time Ph.D. student at the **Medical Polymers Research Institute (http://www.qub.ac.uk/mpri/)** at Queen's. He used radiation to improve medical polymers, which can be used as degradable bandages for healing ligaments. His supervisor, **Alistair Fee (http://www.qub.ac.uk/schools/SchoolofMechanicalandAerospaceEngineering/Staff/AcademicStaff/FeeAlistair/)** , told some industry contacts about the technique, and one company wanted to license the technology. Leonard worked with his university's technology transfer office to arrange a patent and the license.

Leonard, who also worked with Fee as a teaching assistant during his last year as a Ph.D. student, says his supervisor "played a big part in my choosing tech transfer as a career." By then, Leonard was looking for a way to use his research experience in the business realm. His efforts paid off when he landed a job as a technology transfer associate at **Cambridge Enterprise (http://www.enterprise.cam.ac.uk/)** , a tech transfer arm of the **University of Cambridge (http://www.cam.ac.uk/)** , U.K.

Courtesy, Dermot Leonard

Dermot Leonard

Science Ph.D.s who go into technology transfer need a serious grounding in both bench science and business development. They also need to be able to communicate successfully with both communities, which have very different priorities. "I think the job ... requires someone who has a real interest in science and who enjoys continually hearing about new research," Leonard says.

Making the transfer

Most technology transfer officers work at universities or university-affiliated organizations guiding the process of turning ideas or inventions into commercial products. Here's how the process typically works: A research team discloses to their institution's tech transfer office a technology or research result that they think has commercial potential. Then associates such as Leonard evaluate the technology's potential, perform market research, and discuss it with colleagues in the technology transfer office and the inventors. If they agree that the idea has potential, they use a network of industry contacts to clarify the idea and bring its possibilities to the attention of potential investors.

Those discussions and negotiations require a keen understanding of the science and the possibilities it offers for new technologies--and that means business possibilities. "Less and less is it possible for somebody to come in without a master's degree, and, in fact, these days a lot have Ph.D.s" in the sciences, says Richard Cahoon, director of **Cornell University's (http://www.cornell.edu/) Technology Commercialization Team (http://www.cctec.cornell.edu/technology/)** . "There's also an expectation that people have worked in a business domain," he adds. Applicants for even entry-level jobs often have postdoctoral research experience, says Lita Nelsen, director of the **Technology Licensing Office (http://web.mit.edu/tlo/www/)** at the **Massachusetts Institute of Technology (http://www.mit.edu/)** in Cambridge.

Not every scientist can point to their own patent when they apply for technology transfer jobs, but a patent is definitely a credential. Leonard and other recent hires say it is possible--and worthwhile--to get an initial familiarity with patents and business norms in other ways before leaving the bench. Leonard cites as advantages modules within his engineering course that touched on aspects of entrepreneurialism such as patent law, contracts, and basic management skills. Participation in student business clubs and competitions is another way to demonstrate serious interest to potential employers, he adds.

One of Cahoon's recent hires demonstrated her interest and aptitude by interning part-time in her university's tech transfer office while wrapping up her Ph.D. An indication of serious interest is important. "We've wanted to see some evidence that people have had a sustained interest in [the business and legal sides of tech transfer] and have done something about it," says Andrew Walsh, a licensing manager at Cambridge Enterprise.

A routine of surprises

Rachel Atfield, a technology transfer associate at Cambridge Enterprise, acquired such business experience by working in temporary jobs at various patent offices and by spending 18 months at Thompson Scientific in London as a patent searcher after finishing her Ph.D. at the University of Cambridge. From her perspective, those experiences lent her just "a small amount of patent knowledge"--enough to give her confidence when she applied for, and started, her present job, but it was only a small taste of the variety that confronts tech transfer professionals every workday.

Similarly, Leonard's considerable experience did not prepare him for the variety and breadth of a tech transfer associate's workload. Since starting in January 2008, "I've worked with electrical engineering, chemistry, physics--stuff that I really hadn't encountered before," Leonard says.

Researchers accustomed to working intensely on a single project for months or years need to adapt to different time frames when they move into technology transfer. Seeing a technology through to fruition still takes months at the least, but a single office may handle hundreds of technologies in a given year, says Cahoon. Individual officers handle dozens of technologies at a time. Leonard says he was surprised by "the speed with which you've got to get to a stage where you can work with the technology--and that you don't have to understand everything" to work with it.

Atfield says she enjoys the unpredictability of her daily routine. One day she might be out meeting academics to discuss invention disclosures, the next she'll spend at her desk seeing what similar inventions exist. She says she might also "look into what the markets are and who would be interested."

Later, "if we decide to take the technology on, we would then be involved with a patent attorney," disentangling the ownership claims. This can be especially complicated when an idea is developed by a large research group, with funding from multiple sources, over a long period of time. "That's the due diligence," Leonard says. Patent associates are often responsible for "making sure we know everyone who's contributed to" an idea.

Closing the deal

Courtesy, Lita Nelsen

Lita Nelsen

Technology transfer "is still a relatively young profession. It hasn't really gelled" into a career with rigid training or educational requirements, Cahoon says. Applicants need to have "a basic level of technical knowledge, ... grasp concepts quickly, and be good at working with people," he adds.

Getting an MBA or a law degree does not instantly qualify a scientist to work in technology transfer. "I'm generally looking more for business experience than degrees," Nelsen says. Evidence of an interest in business--an internship or employment experience, for example--are good qualifications. It's even possible to pick up business experience while working at the bench within industry--research scientists can "get to know people in the intellectual property and technology transfer side of their company and migrate over and work on relevant projects," advises Nelsen.

Outfits such as **Praxis Technology Transfer Training (http://www.praxiscourses.org.uk/)** , a Cambridge, U.K.–based nonprofit organization, and the **Association of University Technology Managers (http://www.autm.net/)** run multiday training courses in technology transfer. Both Leonard and Atfield have taken the Praxis 3-day course. But the courses are not sufficient training on their own, says Nelsen, a Praxis committee member. She tells her recent hires that "there's no formal way to train you. You're gonna have to help train yourself."

"Inevitably," Walsh says, "it's a job you learn on the job."