

The Caltech Office of Technology Transfer: Making Friends and Start-Ups

by Fred Farina

Ten thirty on a sunny Tuesday morning. A handful of yellow leaves on Holliston Avenue. The first signs of a timid Southern California autumn. The San Gabriel Mountains decide to join us today. The haze temporarily lifts. It's a good day. Professor Smith and one of his doctoral students, Sarah, pass by Human Resources walking decisively. They can see the mountains in front of them. Their destination: the Office of Technology Transfer (OTT). Their mission: a start-up. Their secret dream: the next Microsoft. Their reality check: Larry Gilbert. Their best ally: OTT Director Larry Gilbert.

Larry's assistant, Penny, announces the visitors. Larry gets off the phone. He was talking to a VC. He greets Professor Smith and Sarah with a nonchalant, "What have you got?" Smith replies, "a funded company." The news arrived this morning, his start-up has received funding to the tune of \$5 million. This day is getting even better.

Because Caltech only took a small equity position in the company, the founders, Professor Smith

and Sarah, were able to retain substantial ownership. Together with the management team they have put in place with the help of OTT, they will embark on the development of a competitive product while valiantly leading the company to a possible IPO or maybe an acquisition. Smith and Sarah are glad they have been disclosing their inventions to OTT over the years. They are happy OTT aggressively filed patent applications to protect their inventions, provided

advice and guidance through the start-up process, gave them a fair licensing deal for the patent rights owned by Caltech, introduced them to top venture capitalists, and referred competent professionals such as lawyers and accountants so critical in the early stage of a start-up. In fact, they are really glad they came to OTT, and today they are here to share their success.

Nice story. Very nice story. And not that uncommon. Every year, five to ten start-ups get off the ground hoping to successfully commercialize Caltech/JPL technology. OTT's involvement includes negotiating a licensing deal, as well as fully assisting the young company in all aspects of the start-up process.

Beyond start-ups, OTT is involved in a multitude of activities revolving around the transfer of technology developed at Caltech and JPL to the commercial sector. Despite OTT's young age (it was founded in 1995), Caltech has become a nationwide leader in the transfer of university-based technology, ranking near the top in the number of technologies disclosed and licenses executed every year. OTT consists of nine members

known as the "Otters," including five licensing professionals and four administrative staff. The activities of the office can be divided into four main categories:

- Identifying promising technologies and evaluating their commercial viability.
- Selecting inventions which warrant patent protection and managing the patent portfolio (this responsibility is shared with the Office of Intellectual Property Counsel).
- Negotiating and drafting license agreements with commercial companies.
- Fostering start-ups and assisting Caltech entrepreneurs.

These activities embody the four main facets of the Institute's philosophy on technology transfer.

The first aspect of this philosophy relates to building and maintaining relationships with faculty and other inventors in order to maximize the influx of invention disclosures. The office takes particular care to create a friendly and non-bureaucratic environment in which inventors feel comfortable about reporting new inventions and regard the process as painless, almost fun. To this end, Otters routinely meet with faculty and other technologists, discuss their research, and solicit their input. Aside from making the work more interesting for the Otters as they actively interact with our distinguished faculty, this strategy has resulted in a dramatic increase in the number of inventions disclosed to the Institute. In 1995, less than 80 inventions were disclosed; in 2001 the office received more than



Members of the Office of Technology Transfer (left to right): Penny Wolfe, Traci Arnold, Melinda Bakarbessy, Bob Gallagher, Larry Gilbert, Scott Carter, Rich Wolf, Liz Olson, Fred Farina.

160 invention disclosures.

Protecting the Institute's intellectual property is a central OTT responsibility. The general approach is one whereby inventions are evaluated for their commercial viability, and patent applications are filed for those which are deemed to have the potential to be successful in the marketplace. In particular, market trends are identified, areas of technology in high demand are determined, and invention disclosures which relate to these technologies are aggressively protected using the patent system. In order to efficiently implement this strategy, the Otters stay abreast of the trends by monitoring areas of high market demand and constantly researching promising areas of technology.

Strategically limiting the number of patent applications filed to those inventions that have the potential to generate royalties greatly reduces the high cost of developing and maintaining a strong patent portfolio.

Then there is licensing strategy. Here, the difficulty is to determine whether the technology at hand would have the best chance to quickly and profitably reach the marketplace if licensed to a larger company, a medium size corporation, or a start-up. To accommodate differences between this wide range of licensees, license agreements are tailored to the needs of the licensee and may include royalties only, equity only, or a combination of both, in exchange for the transfer of intellectual property.

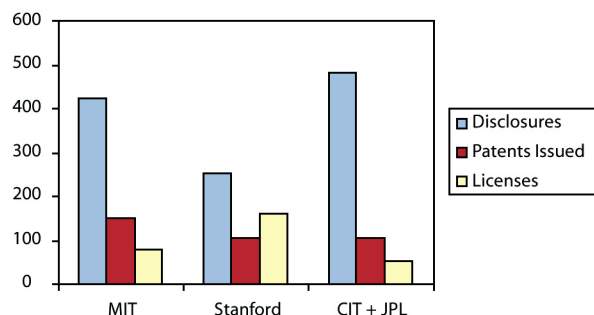
By investigating which technologies are being pursued by major corporations, it is possible to identify the inventions that are best suited for a strict royalty licensing deal with a large company. Using as an example a single patent covering a therapeutic, it would be costly and inefficient to base a start-up entirely on this invention, while a large pharma-

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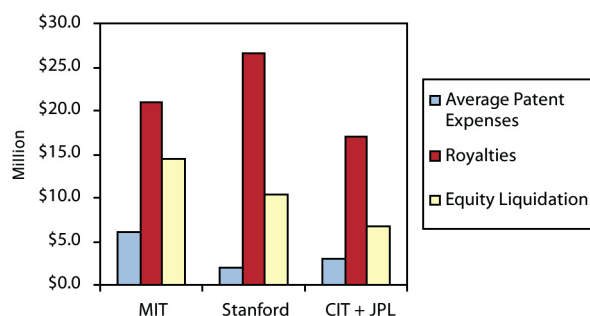
ceutical company will have the resources and expertise to develop a drug, bring it to market, and generate revenues. On the other hand, a group of patents covering a certain area of technology, such as optical switching, may best be licensed to a start-up. Indeed, a substantial patent portfolio will attract investors, and the start-up will devote all of its resources to the development of a competitive product. At a large company, technology development opportunities often abound, and certain technologies may be left on the shelf in favor of more profitable pursuits. Additionally, historical data from Caltech and other leading universities also show that revenues generated from equity deals with small businesses are second only to a few large royalty deals with major cor-

porations. Unless a technology is clearly best suited for a "strict royalty/large company" licensing deal, OTT will first consider equity opportunities with start-ups, and then explore licensing opportunities with established companies if the elements of a start-up are not present.

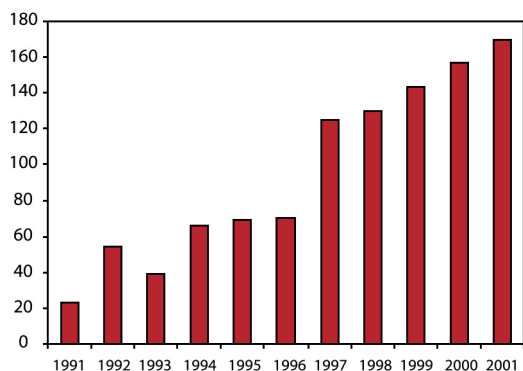
All things considered, the "two bites of the apple" approach informs everything OTT does. By fostering entrepreneurial activities of the inventors, creating a friendly environment for entrepreneurs, providing support, contacts, and valuable services to start-ups, and allowing entrepreneurs to hold large equity positions in companies, OTT is earning the trust and support of Caltech innovators. In addition to the direct impact on the Institute's community, the region benefits from the high-tech industry growth generated by Caltech's entrepreneurial activities. This reflects well on the Institute, and also produces prosperous entrepreneurs who will remember the role Caltech played in their success and will likely give back to the Institute. This concept is what is referred to as "two bites of the apple," the first bite being the equity consideration in the company for the license, and the second being the charitable donation. Caltech has already been the beneficiary of charitable gifts of stock from Umachines and Codegrok, largely because of OTT's role in their early development.



Plot 1 illustrates the number of invention disclosures received, patents issued, and licenses completed at Caltech, Stanford, and MIT over fiscal year 2000.



Plot 2 illustrates the patent expenditures relative to revenues at Caltech, Stanford, and MIT over fiscal year 2000.



Plot 3 illustrates the number of campus invention disclosures received (JPL not included).

In the future, OTT hopes to increase the number of start-ups created every year while securing a number of high-revenue royalty deals. This can be realized only with the help of Caltech/JPL inventors and entrepreneurs. Otters always welcome inquiries and are happy to assist with issues relating to the patent and licensing process, start-up information, business contacts and referrals to professionals, or any other technology-transfer related questions.

It's spring and two winters have passed since Professor Smith and his student received their first round of funding. Much has happened. Positive things for the most part. Several Caltech students joined the company after graduation and the company's Pasadena offices have expanded. A second round of funding came in last year and a product has been developed. Today is a defining day for the company. Smith and Sarah have asked Larry to meet them at the Ath for dinner. Champagne is on the table. "What have you got this time?" asks Larry. Hardly containing her excitement, Sarah jumps in: "Today we signed on our first customer, and the order is big big big ..." **E N G**

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For additional information, including a comprehensive list of start-ups, please see <http://www.caltech.edu/ott>