STANFORD UNIVERSITY
BRAINSTORM
THE LATEST LICENSING NEWS FROM THE OFFICE OF TECHNOLOGY LICENSING (OTL)
Volume 1, Number 4 Winter 1992-93

OTL Has A New Address

The Office of Technology Licensing is literally moving into new territory in 1993. OTL has relocated to Welch Road, near the Medical Center and the Shopping Center. Our new address is:

Office of Technology Licensing
Stanford Univeristy
900 Welch Road, Suite 350
Palo Alto, CA 94304-1850
(Campus Mail Code: 1850)
Phone: (415) 723-0651
Fax: (415) 725-7295

The move is the result of normal University space reallocations and puts OTL nearer to its inventors in the Medical School and engineering departments.

We ask all our inventors, licensees, and other constituents to bear with the inevitable minor inconveniences as we get settled in.

Kissel Gives, Gets

Giving is its own reward, the saying goes. But for Brian Kissel, a former corporate strategist at Raychem Corporation, the reward also included a position at OTL as Manager, Planning and Development.

Kissel was one of a group of Stanford Business School alumni (called "ACT"—see *Brainstorm*, Autumn 1992) who volunteered their time and expertise last summer to help OTL increase its effectiveness and plan its strategy for the future.

Kissel's work so impressed OTL Director Kathy Ku that one day during the project she called him up and said, "I want you to come work for me." Kissel says he was "quite surprised and thankful for the opportunity."

Kissel's career began at the U.S.

*Please see **Kissel**, page 3*

The Long and Winding Road to Biotechnology Licensing

You might think that, given a technology that could potentially help hundreds of thousands of people (such as a cure for a terrible disease), concluding a license agreement would be a snap. This story may make you think again.

In the beginning, there was multiple sclerosis (MS), the most prevalent of neuroimmulogical diseases, affecting over 250,000 people in the U.S. MS usually strikes young adults without warning, attacking the central nervous system and causing weakness, paralysis, muscle tremors, and disturbed speech and vision.

An autoimmune disease (a disease in which, for reasons not understood, the body's own immune system attacks the body), MS is caused when "helper T cells," which normally fight disease, instead attack the sheaths insulating the body's own nerve cells.

In 1984 along came Lawrence Steinman, professor of immunology and neurology, Professors of Genetics Leonard and Leonore Herzenberg, research associate Subramanian Sriram, and graduate student Matthew Waldor, all interested in "selective immunotherapy"—treatments that attack the specific cells that cause a disease.

The group envisioned creating a monoclonal antibody (an antibody that zeroes in on a specific body component) that could seek out the T cells and destroy them, thereby slowing or stopping the disease.

First they tested the process in mice. After inducing an MS-like condition in some mice known as EAE, they created an antibody that would recognize the T cells

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Dr. Lawrence Steinman (r) and fellow researcher Dr. Claude Bernard: finding ways to help hundreds of thousands of people.

Also in this issue...

Stanford University BRAINSTORM

Eric Grunwald, Editor

BRAINSTORM offers the latest licensing news from Stanford's Office of Technology Licensing (OTL), including licensing deals, inventors and inventions, events and policies having an impact on licensing, and other items of interest to the licensing community.

OTL's services are available to any Stanford faculty, students and staff who invent technologies which may benefit the public or be of commercial value.

To find out about a specific technology, or to submit one of your own, contact us at:

Office of Technology Licensing
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Steinman

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via a molecule (CD4) on their surfaces, and destroy the cells.

Steinman notes the "incredible insight and technological assistance in measuring CD4 on T cells" given by Stanford Professors Leonard and Leonore Herzenberg, as such measurement was "a state of the art feat at the time."

The treatment was successful, stopping the EAE's progression and even reversing the paralysis that had developed. But getting the therapy to work in people would be different story, as antibodies made from mouse proteins are often rejected by the human body.

So with help from scientists at Columbia University and the Becton Dickinson (BD) Monoclonal Center in Mountain View, the group developed a genetically hybrid antibody that was part mouse and part human. The mouse component would identify the CD4 on the T cells, and the human component would kill the cells.

Since its development, the antibody has been tested on 29 MS patients at Stanford, and, according to Steinman, the results have been so promising that a world-wide multi-center test of anti-CD4 immunotherapy is about to start.

Now the Hard Part: Licensing Anti-CD4

Because the anti-CD4 technique can be used for treatment of autoimmune diseases other than MS, including rheumatoid arthritis and juvenile diabetes, it presented Stanford with a potentially big licensing opportunity. Licensing, however, would turn out to be a difficult process.

The first challenge was to decide how royalties from successful licenses would be distributed. Having helped fund the research, the National Multiple Sclerosis Society (NMSS) was interested in seeing some of the royalties go toward further research on MS.

Stanford readily agreed, and one-third of all royalties were designated for research or educational projects relating to MS.

The next snag occurred in the patent prosecution when the U.S. Patent Office informed Stanford that a researcher at the Medical University of South Carolina (MUSC), Steven Brastoff, had filed for a patent on a similar technique.

In such a case, one party may file an "interference" with the U.S. Patent Office, which halts the progress of the other party's application until it determines whether the inventions are identical and who invented first.

Since such legal actions are time-consuming and, because of high legal fees, very expensive, Stanford and MUSC instead agreed to cooperate. Stanford would get the patent -- with Brastoff listed as an inventor -- and the authority to license it, and royalties would be shared with MUSC.

On the licensing side, the situation initially looked good. BD, which had helped in the research, had first rights to a license. But another company, Centocor, which had helped fund Steinman's work despite BD's priority, expressed strong interest in a license, and a co-exclusive arrangement was concluded in early 1991.

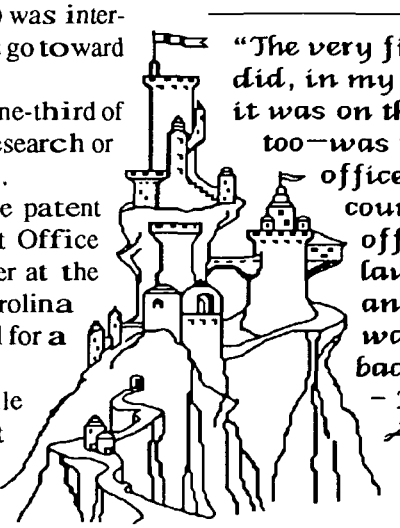
Just as things were looking settled, though, BD, with its tremendous success in diagnostic drugs, medical devices, and high-tech instrumentation, decided it did not want to spend the $100-plus million needed to develop a therapeutic drug and backed out.

With BD suddenly gone, Centocor tried to convert their license to exclusive status, arguing — correctly — that they had brought the technology a long way, at great cost to them, since licensing it a year previously.

But OTL felt that the market would support more than one licensee and resisted. Other companies were interested, and it was not in line with OTL's mission to limit a technology to one company with others willing to invest in it and with a market large enough to support them.

Thus in January of 1992, Burroughs Wellcome agreed to a co-exclusive license to the anti-CD4 technology. Finally, at least for now, the licensing has been settled.

But even with the licenses, it will likely be five or more years before the treatment appears on the market, pending final development and approval by the Food and Drug Administration.



"The very first official thing I did, in my administration—and it was on the very first day of it too—was to start a patent office; for I knew that a country without a patent office and good patent laws was just a crab, and couldn't travel any way but sideways or backwards..."
– Mark Twain, from A Connecticut Yankee in King Arthur's Court (1889)

Kissel

Continued from page 1

Naval Academy, where he studied mechanical engineering and "envisioned myself as a career naval officer." Wanting a technically challenging environment, he chose the nuclear submarine

Kissel escaped the undersea world, but now he's flooded with work at OTL

program.

But after his first three-year tour at sea, Kissel changed his mind. "I realized I didn't want to spend the rest of my life under water," he explains.

Kissel then got his first taste of technology transfer on a shore tour, applying new technologies to submarines.

After leaving the Navy in 1988, Kissel went to Raychem and returned there after attending business school.

The OTL project, Kissel says, "was an intriguing opportunity." It was in line with his work at Raychem, and he was curious about an office which, while at Stanford, he hadn't known existed.

Once on the project, Kissel was "surprised at the magnitude and diversity of technologies being channeled through the office and at how overwhelming a task it seemed to wade through it all."

"It seemed that OTL was at a point of transition," he continues, "and it was exciting as part of ACT to assist in that transition."

Kissel says he has been impressed with the "entrepreneurial spirit which pervades the office and the collegial atmosphere."

At times, though, he finds it like "drinking from a fire hose—it all comes at you fast and furious and you don't have time to swallow all of it."

"Stealing" from MIT

The paths to OTL are strange and varied, but Donna Baranski-Walker's has to be one of the strangest.

Originally interested in both art and engineering, Baranski-Walker (B-W) took her father's advice to "Do what you can eat" and went to MIT to study electrical engineering.

But bothered by her neglect of the humanities, B-W went abroad for a year to Krakow, Poland, where she studied art, history and language.

There her Polish professors, teaching in English, felt safe to openly criticize the government and explain how its policies were leading to a cataclysm in the Eastern Bloc.

B-W then visited Polish villages, where she witnessed the reality of the cataclysm and "realized the importance of careful policy development," she says.

It was then that she decided to focus her career on technology transfer and agricultural development.

After finishing her degree at MIT, B-W joined the Science and Technology Laboratories at International Harvester, the company founded by Cyrus McCormack, inventor of the combine.

When IH folded two years later, she went to the University of Hawaii for an M.S. in agricultural engineering, spending three months in China designing a control system for a rural power grid.

Upon graduating, B-W returned to her electronics roots, taking a position at Perkin-Elmer working on E-beam lithography systems.

In 1988 she followed her husband back to Massachusetts and sent a résumé to her alma mater's Industrial Liaison Program.

They passed it on to MIT's Technology Licensing Office (TLO)—which B-W didn't know existed — and her move to tech transfer was complete.

Founded in 1938, TLO had been reorganized in 1985 under the supervision of OTL founder and then-director Niels Reimers.

"I loved it," B-W says of her job at MIT. "Though I joined the TLO to hone my negotiating skills, my favorite part was working with inventors."

Baranski-Walker, with that "MIT look" -- we'll convert her in no time.

Upon hearing about the position at Stanford, B-W was intrigued because she sensed that OTL had "stepped up a level" and was "setting a new tech transfer strategy for the rest of the country."

"Since it's now so important for the U.S. to think about technology transfer, to value it and use it effectively, I want to contribute to that new strategy."

After two months at OTL B-W says, "I really think this atmosphere is unique. The emphasis on teamwork provides a cooperative and creative atmosphere."

Editor's note: So do we call this a "technology transfer transfer?" (Ouch.)

OTL Fiscal Year 1991-92

Final Figures
(Dollars in millions)

Total Income: $25.45

Cohen-Boyer DNA patents:

- **Total Income: $14.66**
- **New Licenses: 58**
- **New License Income: $0.83**

All Other Technologies:

- **Total Income: $10.8**
- **New Licenses: 70**
- **New License Income: $1.22**

OTL Budget: $1.43

Royalty Distribution to

- **Schools: $4.54**
- **Departments: $4.54**
- **Inventors: $4.54**
- **Other Universities: $6.98**

New Inventions: 177

Total Active Inventions: 1050

Communication is the "Key" for Hellman

A brilliant professor takes on the National Security Agency (NSA) and the Soviet Union to ensure freedom and peace for America and the world.

A movie from the 1980s? Would you believe instead the career of a Stanford professor? Try Martin Hellman in the department of electical engineering.

Born in the Bronx, Hellman attended Bronx High School of Science, got a B.S. in electrical engineering from New York University ('66), then headed to Stanford for an M.S ('67) and a Ph.D. ('69).

After doing research at IBM and teaching at MIT for three years, he returned to Stanford as an assistant professor in 1971.

In the 1970s Hellman led a group of graduate students in developing a series of inventions known as "public key" encryption systems, methods for coding and decoding data for protection against unwanted or unauthorized access.

Virtually impenetrable, the systems are now coming to fruition under a five-way license agreement and are used for such things as protecting email messages, medical files and financial information.

When you input your PIN code into your ATM, you're telling it how to decrypt your account information.

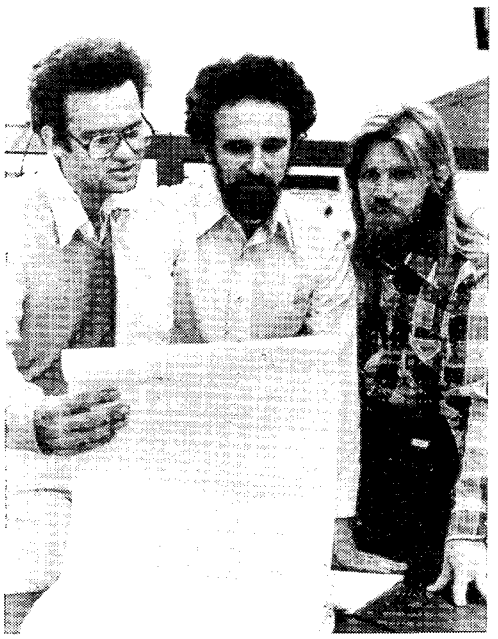
Because of its strength, public key encryption aroused the interest of the NSA and the FBI. Both agencies have traditionally tried to suppress publication of advances in encryption techniques.

The NSA is concerned with these technologies as weapons of war, while the FBI wants to be able to wire tap suspects in the U.S. when necessary.

"I had the government very unhappy," Hellman says of his decisions to publish. He describes his relations with NSA during the late 1970s as "all-out war...They hated me, I hated them."

Hellman and NSA eventually made peace, thanks in part to Robert Inman's ascension to the head of NSA. "Bobby's a very intelligent man," Hellman says.

PHOTO: STANFORD NEWS SERVICE



Professor Martin Hellman (c) with fellow "public key" inventors Ralph Merkle (l) and Whitfield Diffie in 1978, analyzing some obviously "cryptic" code.

"He takes in perspectives other than his own, which is rare in government and the military." The two even became friends.

But while now sympathetic to law enforcement's concerns about encryption, he is still " convinced the commercial interests outweigh the others."

He also sees a broader security issue, explaining, "I picture a day in the not too distant future when every financial transaction is done electronically."

"If we build an inadequate [encryption] system," he continues, "which I believe we're doing, someone—even a 12-year-old hacker—will be able to get in there and crash the American economy with bogus transactions."

Hellman's battles with the powers that be also prompted him to pursue his interest in the societal implications of technology, or as he puts it, "how humanity is going to survive now that its technology has advanced beyond its social development."

Hellman had become involved in the 1980s in Beyond War, a group he describes as "a grass roots movement in people's living rooms...to get them to think about the unthinkable."

Having also had frank discussions with fellow scientists in the Soviet Union, Hellman organized the publication of *Breakthrough*, a book published in both the U.S. and the USSR offering "new thinking" about the arms race.

Finally, through these experiences Hellman has become interested in ethnic conflict both around the world and here on campus. "It's the same problem," he says. "People come together with vastly different perspectives, and we have to figure out ways to communicate."

Perhaps the true "public key" Martin Hellman has found is communication.

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