

B STANFORD TECHNOLOGY BRAINSTORM

THE NEWSLETTER OF STANFORD UNIVERSITY'S OFFICE OF TECHNOLOGY LICENSING (OTL)

VOLUME 5, NUMBER 1
 SUMMER 1996

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OTL Turns 25 But Doesn't Get A Break on Insurance

By Eric Grunwald

OTL celebrated its 25th birthday in 1995 amidst another banner year, and the milestone provides an opportunity to look back and see how far we've come, how we got here, and what the future holds.

From a one-person, part-time pilot program bringing in \$55,000 from three technologies, OTL has grown to a staff of twenty handling over 1100 active inventions, 220 of them producing income. Last year OTL signed over 100 new licenses and brought in over \$39 million in royalties (see statistics, p. 4).

Informational Sessions

OTL still holds monthly informational sessions for potential and current inventors and licensees with questions about the office and the licensing process. The sessions are held the third Friday of every month, 10:00 - 12:00, at 900 Welch Road, Suite 350. All are welcome at any session, but if possible, please call Maria Gladfelter in advance at 723-0651 to inform us you will be attending.

Reimers's Vision

OTL had its beginnings in 1969 in the efforts of Niels Reimers, then Associate Director of the Sponsored Projects Office. Reimers, who had worked in engineering and contracts at Ford Aerospace, says he was interested in the commercialization of research: "That's what my background was and that's where I thought I could be most useful."

With the "great support and invaluable advice" of Frank Newman, then Director of Corporate Fund-raising, Reimers came forward to the Stanford Administration with a proposal for a one-year pilot program that he would run part time to commercialize Stanford inventions.

"When I thought about starting the office, I checked around to see how other people did things. I talked to MIT, the California system, Wisconsin, and others. Then I decided to go a different route."

Reimers says most licensing offices were staffed by attorneys. Stanford, however, "would have an office that was primarily a marketing organization and would contract out its legal work. Stanford

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Stanford Has Designs on Licensing Historic Landmarks

By Eric Grunwald

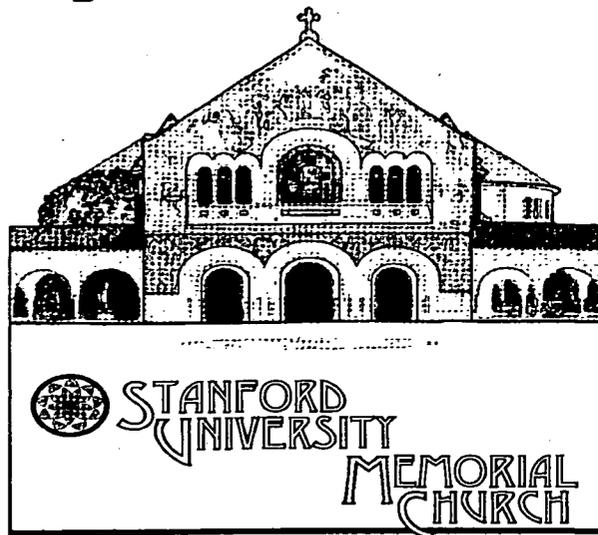
Stanford University has introduced a series of new emblems for licensing and use on such commercial merchandise as T-shirts, sweatshirts, and other University memorabilia.

Maria Gladfelter, manager of Stanford's emblematic licensing program at OTL explains the motivation for the new designs. "Our registered trademarks were pretty limited: the block S, the seal, and the Stanford tree. And we've seen about every variation of those designs you can imagine.

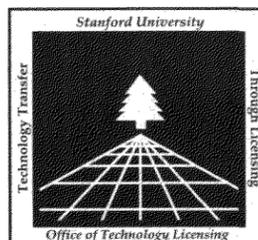
"So, since Stanford doesn't have a mascot, we were hoping to give our licensees a little more to work with." The new designs focus on well-known Stanford landmarks such as the Spanish-style arches, Memorial Church, Hoover Tower, and the Dish (the big satellite dish in the Stanford Foothills).

"We'll see which ones of these really get picked up and used," says Gladfelter. "Then we may

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O Come, All Ye Faithful, to the Stanford Bookstore, where new designs like this one will soon be appearing on t-shirts, sweatshirts, and the like. More designs are on pages 3 & 4.



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Stanford Technology BRAINSTORM is published quarterly in order to provide information about OTL and general information of interest to the licensing community, both within and outside Stanford.

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

To learn about a specific technology or to disclose one of your own, contact us at the above address.

OTL Turns 25 But Doesn't Get...

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didn't even have a legal office then.

"My idea was to focus on the forest of the collaboration between researchers and industry, not on the trees of a patent claim; that is, we could have an agreement in place before a patent even issued.

"Another idea was to write the agreements in plain English — no 'herewith,' 'whereas,' or Roman numerals. Instead of 'in the event that,' we'd just say 'if.'"

But Reimers was not certain this was the way to go. "These ideas could have been wrong. But as it turned out, we never screwed up an agreement." Far from it. In fact, in that pilot year, on a salary of \$13,500, Reimers brought in \$55,000.

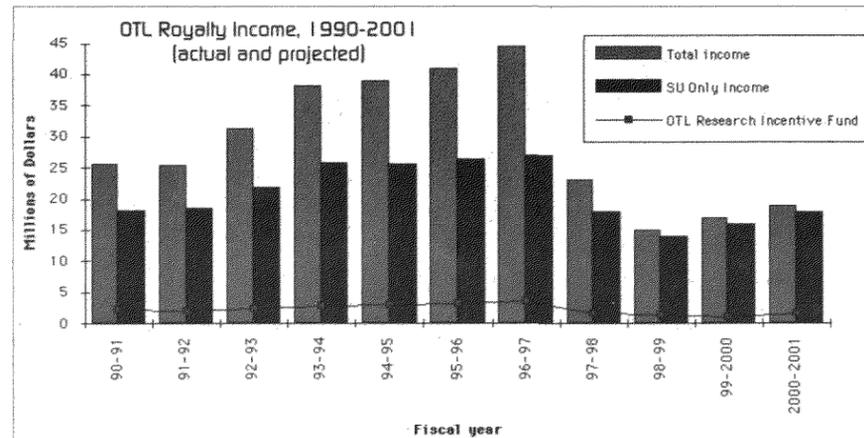
With the support of faculty such as physicist and Nobel laureate Arthur Schawlow, Reimers was allowed to go ahead full time. He was given a \$125,000 reserve for new patent expenses, against which he could write off the expenses of unlicensed patents (i.e., bad inventory).

A royalty distribution scheme was set up that is almost identical to today's. OTL's share of 15% of gross royalties was chosen, says Reimers, "largely because that's what UC did."

The inventors, departments, and the University each received a third of the remainder because "we wanted to give the departments incentives to get involved, and the University was the risk taker in the whole thing."

The first big milestone following the founding of the office was the fluorescent activated cell sorter (FACS), an invention developed in the lab of Leonard Herzenberg and licensed to Becton Dickinson (BD). The cell sorter went on to become one of OTL's top five all-time royalty generators.

"The cell sorter produced a significant amount



A Sampling of Licenses Granted by OTL in the Last Quarter

Docket(s)	Title(s)	Uses	Licensee(s)	License Type
S74-043	"Cohen-Boyer Recombinant Technology"	DNA Cloning – Production of proteins Total number of DNA licensees: 344	Minnesota Mining & Mfg.; Non-exclusive Gold BioTechnology; Ophidian Pharmaceuticals; OmniGene Bioproducts; Third Wave Technologies; Lifecodes; Cayman Chemical; Tanabe Research Laboratories; Viral Therapeutics	
S81-026	"Phycobiliproteins (PE)"	Diagnostics	SCL Bioscience Services	Non-exclusive
S81-035	"MINOS (Software)"	Optimization	Global Technologies	Non-exclusive
S87-057, et. al.	"Endothelial Molecules and the Control of Leukocyte Extra..."	Research reagents	Southern Biotech. Assoc.; Pharmingen	Non-exclusive
S92-134	"...SMA Actuator Film..."	Steerable catheters	Micro Motion Sciences	Exclusive
S93-098	"...Novel Polyketides"	Drug discovery	Kosan, Inc.	Exclusive
S95-004	"...Recombinant Retrovirus"	Gene therapy	SyStemix, Inc.	Option
S95-069	"Stanford Info Filtering Tool"	Microscopy	Pangaea Reference Sys.	Exclusive
S95-085	Sondius® trademark, patents	Sound synthesis	Seer Systems	Non-exclusive
S95-144	"Portable Motor Symptoms..."	Diagnosis	Axon Instruments	Exclusive
S96-002	"...Human Keratins 8 & 18..."	In-vitro diagnostics	Ciba Corning	TRP -- Non-ex.

of income in the early years," says Reimers. "And, with the help of Bernie Shoor at BD, it led to two new divisions of BD — one for the cell sorter, and another for monoclonal antibodies."

It also led to increased interest in OTL within Stanford. "As [royalty] money went to the departments," says Reimers, "they encouraged department inventors to come forward with their inventions. The number of disclosures rapidly increased."

Throughout this period, however, OTL remained a two-person shop. Reimers had the help of his original office manager, Sally Hines (still with OTL today), and a number of students from the business school. In the mid-1970's he hired another associate, John Poitras.

Serendipity Strikes

Another of OTL's "big five" was also invented early on. In 1971, John Chowning, a Stanford Ph.D. and a lecturer in the

music department, was trying to develop new ways of producing (synthesizing) music when he stumbled on what he calls "an ear discovery."

"Amid the electronic-sounding tones the computer usually produced, I heard rich musical tones," Chowning recalls. Believing the discovery to have commercial potential and having worked with OTL on a previous invention (Stanford's first patent application), Chowning disclosed the technique.

Reimers then set about finding a licensee, approaching several American organ makers who declined the invention and, finally, Yamaha. "They quickly perceived its value," he says.

Yamaha licensed the invention in 1975 and, with Chowning's help, introduced its first product using the technology in 1981. But it was in 1983 that Yamaha hit it big with its enormously popular DX-7 synthesizer. "FM Synthesis," as the invention is known, became the world-wide standard for synthesized music.

It also became the largest benefactor for Stanford's Center for Computer Research in Music and Acoustics (CCRMA). "The relationship with Yamaha has meant a lot for CCRMA," Chowning has said (*Brainstorm*, Summer, 1994). "It's helped us to maintain computer music at a level we certainly

couldn't have otherwise. The FM patent has spawned the opportunity for other patents, which in turn will do the same."

One such opportunity is the heir apparent to FM, called "waveguide synthesis," invented in the mid-1980s by another CCRMA researcher, Julius Smith.

In 1994 OTL launched a trademark licensing program (Sondius™) built around waveguide and other sound synthesis technologies from CCRMA.

By the time the patent expired in April, 1994, FM Synthesis had become OTL's second largest royalty generator ever, bringing in almost \$23 million in royalties.

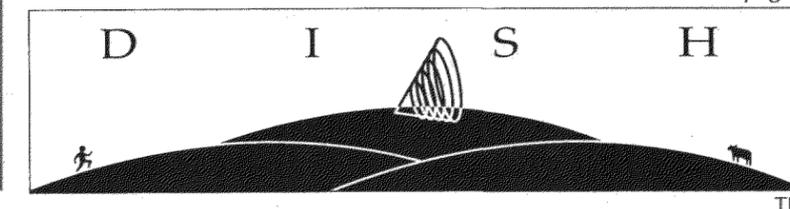
"In retrospect," Chowning has said, "one is amazed at the consequences of serendipity." (*Brainstorm*, Summer, 1992)

Cloning for Dollars

In the spring of 1973, Professors Stan Cohen of Stanford and Herbert Boyer of UCSF performed the first successful cloning of DNA. Reimers learned of their work in May of 1974 and persuaded the researchers to let him explore the possibility of patenting the technology.

In 1981 OTL began licensing the three resulting patents — the founda-

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Stanford Has Designs on Licensing Historic Landmarks

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introduce more designs with those same themes."

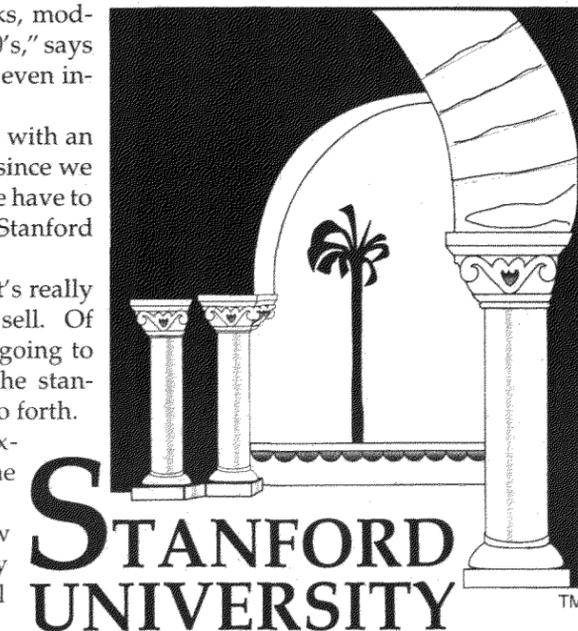
Stanford is not alone in its efforts. "Right now a lot of schools are redesigning their marks, modernizing them for the 90's," says Gladfelter. "Some are even introducing new marks.

"Some are doing it with an athletic emphasis, but since we don't have a mascot, we have to go with what makes Stanford unique.

"In this business, it's really the athletic logos that sell. Of course, you're always going to have alumni buying the standard sweatshirts and so forth.

"But kids, for example, they go after the teams that are hot."

Stanford's cool new marks were created by the University's Visual Arts Services. ▲



OTL Turns 25 But Doesn't Get a Break on Insurance

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tions of genetic engineering — to the entire and then-nascent biotechnology industry.

Over 70 companies signed up that year, and since then hundreds more have taken licenses. "Recombinant DNA," as the patents are collectively known, has brought in over \$125 million in royalties, which are shared with the University of California.

Reimers credits the efforts of Andy Barnes, a Stanford Business School student who helped market the patents, and Floyd Grolle, Ph.D., now Licensing Administrator for the patents.

"I'm glad to have had the chance to expand the family of Cohen-Boyer licensees and provide a contribution to research and education at Stanford," says Grolle.

OTL Takes Off

Based on these and other inventions, OTL expanded significantly, growing by 1987 to a staff of 17 (9 licensing associates) and an income of \$9 million.

OTL did so well that by 1988 it was able to provide for the establishment of the OTL Research Incentive Fund. The fund offers seed grants to researchers to explore ideas that may not be ready for outside funding. Last year OTL gave \$3 million to the Fund.

"It was a matter of great pride and pleasure," says Reimers, "when our 15% covered both our budget and patent reserve, and we were able to give more back to research."

Reimers left OTL in 1991 to start his own company, Intellect Partners, and is now building a licensing program at UC San Francisco.

"Niels had the vision and the ideas," says OTL Senior Associate Hans

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Wiesendanger, Ph.D. "It was the first licensing office in the country that really worked well. He did a hell of a job with what he had to work with."

OTL Fiscal Year 1994-95

Total Income: \$39 Million (M)

Invention Disclosures: 157

Patent Applications Filed: 124

Patents Issued: 70

Cohen-Boyer DNA Patents:

Total Income: \$27.4 M

New Licenses: 37

New License Income: \$215,000

All Other Technologies:

Total Income: \$11.6 M

New Licenses: 68

New License Income: \$984,000

Companies in which Stanford took equity: 3

Distribution:

OTL Budget: \$1.89 M

Other Institutions: \$12.9 M

SU Departments: \$7.3 M

SU Schools: \$6.5 M

Inventors: \$5.6 M

Research Incentive Fund: \$3 M

All Good Things...

Unfortunately, patents by law have a finite life — 17 years if issued before June, 1995. And when patents expire, royalties are no longer paid.

The basic cell sorter patent expired in 1991. FM Synthesis, in 1994. The CAT scanner, 1995. And the Cohen-Boyer patents will expire in December, 1997.

Despite the first three losses, OTL's royalties have continued to rise, largely due to the DNA patents. But when they expire, royalties will take a sharp drop, referred to at OTL as "the cliff" (see graph, p. 2).

But revenues from other technologies have been rising steadily, last year bringing in almost \$13 million. Currently 22 technologies bring in over \$100,000 in royalties annually.

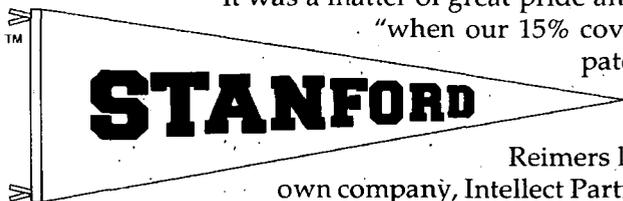
For example, the technique of conjugating phycobiliproteins (PE) — pigments that occur naturally in marine algae — to cells that are to be studied, is licensed to over 40 compa-

nies and generates over \$2.5 million annually.

But looking into the future, says current Director Katharine Ku, "is like trying to read tea leaves, because very few predictive factors, such as sales and market acceptance, are in our control.

"We've got the Sondius™ trademark, and we're concentrating on atomic microscopy, fiber optic technology, lasers, and genome inventions. We're also lowering our operating budget.

"All we can do is keep moving forward and wait for serendipity to strike again."▲



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