CONTRIBUTING TO THE WHOLE

Stanford University Office of Technology Licensing Annual Report 2005-2006

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A principle that guides our work in the Office of Technology Licensing is that we, as individuals and as a team, should contribute to the whole. This philosophy calls on us to look beyond our own self-interests and our own individual jobs, broadening our perspectives so that we can make the greatest possible impact on our world.

At OTL, we seek to contribute to the whole in many ways.

CONTRIBUTING TO THE WORLD

Technology Transfer. Our mission of transferring technology for society's benefit results in many Stanford technologies benefiting the world at large. Google technology has made information on the World Wide Web easily accessible to the public. Asymmetric Digital Subscriber Line (ADSL) technology enables access to high speed broadband to countless homes and businesses over telephone lines. DNA cloning technology has given the world new medicines.

Research. Each day, OTL's Industrial Contracts Office (ICO) develops research agreements that enable the results of industry-sponsored research to be shared with the world through publication, allowing students and researchers all over the world to advance the state of the science.

Sharing our successes. Every year, visitors from across the country and around the world visit our office to see how OTL and Stanford interact with industry. Our Web site, too, contains information that enables others to understand our philosophies and how we work. Our policies, processes, example agreements, and licensing tools are accessible to inventors, companies, and other universities so that we can share what we have learned.

CONTRIBUTING TO THE STATE OF CALIFORNIA

IP Policy. OTL has been an active participant in several California state efforts with respect to university technology transfer, including the California Council on Science and Technology (CCST). In January 2006, CCST issued a report to the California Legislature and the Governor of the State of California entitled "Policy Framework for Intellectual Property Derived from State-Funded Research." The study group recommended that the State follow the spirit of the federal Bayh-Dole Act when the State funds research.

Stem Cell Research. OTL has also has been very involved in providing input to the California Institute of Regenerative Medicine (CIRM) about how intellectual property could be handled from the research funded by CIRM. With significant funding intended for stem cell research at California universities, it is important for CIRM to create reasonable intellectual property policies that will benefit all involved organizations, including the State of California.

Nanotechnology. U.S. Representative Mike Honda convened a Blue Ribbon Task Force on Nanotechnology to address how California can position itself to be at the forefront of nanotechnology research, development, and commercialization. OTL participated on the Commercialization Subcommittee, which made specific recommendations about how California can facilitate the development of new and existing clusters around the nascent nanotechnology industry, taking advantage of the entrepreneurial habitats in the state.

New License Agreements in 2005-06 109

CONTRIBUTING TO THE TECHNOLOGY TRANSFER PROFESSION

IP Conference. Last summer, then Dean of Research Arthur Bienenstock convened a small group of university research officers and their technology transfer directors to discuss important issues facing university technology transfer operations. We are preparing a "Points to Consider for Good Licensing Practice" white paper, which will provide suggested best practices to other licensing offices as they consider the choices they make amid the complexities of effective technology transfer.

University-Industry Relations. Both ICO and OTL participate in efforts to improve university-industry relations and address issues about research and intellectual property at the national, state, and local levels. These groups include: the nationwide University/Industry Congress; the University & Industry Innovation Summit on collaborative research principles; the California Council on Science and Technology study groups on intellectual property policies for stem cell and other state-funded research; and the Bay Area Science and Innovation Consortium.

AUTM. OTL is active in the Association of University Technology Managers (AUTM), the universities' professional technology transfer organization. Senior Licensing Associate Kirsten Leute is currently editor of the *AUTM Journal* and was recently elected vice president, communications. Senior Licensing Associate Mary Albertson remains a frequent speaker and organizer in AUTM, after having served on the AUTM Board. Administrative Manager Sally Hines continues to chair the TOOLS course designed for administrative staff of technology transfer offices throughout the world.

LES. Senior Licensing Associate Linda Chao has been active in another important licensing professional organization, Licensing Executives Society (LES). She was the 2006 Nanotechnology committee chair under the LES High Technology Sector and also a committee member for the LES student licensing competition and the LES 2007 Winter Meeting.

IPTEC. Senior Licensing Associate Luis Mejia is on the advisory board of IPTEC, an international marketplace designed to assist companies and organizations to develop their technology licensing business. OTL was one of three award recipients at the inaugural event in 2006, receiving the award for the university sector. Other reward recipients were IBM for the commercial sector and the European Space Agency for the government sector.

CONTRIBUTING TO STANFORD

Supporting Education and Research. The royalty revenue from licensing contributes in countless ways to supporting education and research at Stanford. Over the years, the schools (particularly the School of Medicine, School of Engineering, School of Humanities and Sciences, and the Independent Laboratories) have benefited from inventions that have made their way from the laboratory to the marketplace.

The School of Engineering has used proceeds from its licensed patents to support research in such areas as advanced materials for water purification, nanoscience, and computational nanotechnology; to help establish the Stanford Center for Position, Navigation, and Time (SCPNT), which aims to vastly expand the benefits of GPS in society; and to provide scholarships to graduate engineering students enabling them to participate in the Graduate School of Business Summer Institute for Entrepreneurship to learn the business skills needed to launch a new venture.

The School of Medicine has used revenues from royalties to fund start-up packages and renovation projects for faculty recruitment, and the development of the Stanford Institutes of Medicine, in particular the Neurosciences Institute. Recruitments supported in 2006 included faculty in psychiatry, neurobiology, and otolaryngology. In conjunction with the School of Engineering, royalty funds have supported recruitment and start-up for faculty in the interdisciplinary bioengineering department. Additional royalty funding was used in 2006 to support women's health at Stanford in the Department of Obstetrics and Gynecology.

Departments have benefited from royalties as well. The Department of Genetics and the Department of Electrical Engineering, in particular, have been steady recipients of royalty income. In Electrical Engineering, the OTL funds have been used to support start-up packages for new faculty, faculty search expenses, an increased number of course-assistant appointments, new teaching and research facilities, and faculty teaching and research initiatives.

Supporting the OTL Research and Graduate Fellowship Fund. Liquidated equity from license agreements is used by the dean of research to support research throughout campus. In fiscal year 2005-06, funds were used to renovate research space at Hansen Experimental Physics Laboratory and the Geballe Laboratory for Advanced Materials and to support faculty research, cost sharing, bird-seed requests, and research equipment/instrumentation proposals.

Promoting Entrepreneurship. The Stanford Entrepreneurship Network (SEN) provides a forum for communication and collaboration among all entrepreneurship-related programs at Stanford. We communicate with SEN colleagues about each other's programs, and work together with SEN colleagues on specific projects to support entrepreneurship among our faculty and students.

A NEW GENERATION OF CONTRIBUTIONS

In Medicine

Molecular imaging promises to revolutionize health care, giving doctors and other health care providers the tools to detect disease before symptoms arise. With the ability to make early diagnoses, many companies believe that molecular imaging will revolutionize healthcare and reduce the cost of patient care. Under Professor Sanjiv Gambhir, the Molecular Imaging Program at Stanford (MIPS) was established as an interdisciplinary program to bring together scientists and physicians who share a common interest in developing and using state-of-the-art imaging technology and developing molecular imaging assays for studying intact biological systems. Here researchers are exploring a multimodality approach using imaging technologies such as positron emission tomography (PET), single photon emission computed tomography (SPECT), digital autoradi-

ography, magnetic resonance imaging (MRI), magnetic resonance spectroscopy (MRS), optical bioluminescence, optical fluorescence, photoacoustic imaging, and ultrasound. The goals of the program are to fundamentally change how biological research is performed – using cells in their intact environment in living subjects – and to develop new ways to diagnose diseases and monitor therapies in patients. Areas of active investigation are cancer research, microbiology/immunology, developmental biology, cardiovascular imaging, and pharmacology. With 17 inventions to date, it is clear that molecular imaging will be an important emerging area for OTL.

2005-06 Royalty Revenue

$61.3M

Hepatitis C, a liver disease caused by the hepatitis C virus (HCV), affects over 100 million people worldwide with annual HCV-related costs totaling $1B in the U.S. While the disease is a significant cause of morbidity and mortality, current therapies for the disease remain inadequate. The best available treatment is a combination of interferon and ribavarin, which can be lengthy, difficult to tolerate, expensive, and often ineffective. Assistant Professor Jeffrey Glenn has identified new antiviral targets for HCV, methods to screen for new HCV-specific antiviral agents, and an animal model to test these agents. One such target and screen, and an animal model, were recently licensed to Presidio Pharmaceuticals. These technologies could make a positive contribution to HCV treatment throughout the world.

Down Syndrome. Mental retardation (defined by an IQ of less than 70) affects two to three percent of people in the industrialized world. Down Syndrome is the most common form of mental retardation, with an incidence of 1 in 600 births. Pharmacological intervention is currently non-existent. Brain growth and function in Down Syndrome-affected individuals proceeds normally for the first five to six months of life. However, soon after this period, the Down Syndrome-affected brain begins to show the abnormalities that characterize it in adulthood. The emergence of these abnormalities may coincide with the IQ decline in affected children.

Stanford graduate student Fabian Fernandez and Professor Craig Garner have discovered that the cognitive function of an individual suffering from Down Syndrome may be improved by the administration of a GABA antagonist. The cognitive improvement can be long term and continues after cessation of the treatment. Mouse models treated with the GABA antagonist showed improved learning and memory recognition compared to controls. The researchers also discovered a method of screening potential compounds to treat cognitive impairment.

Genetic Mutations. New assays from Professor Phyllis Gardner, Assistant Professor Iris Schrijver, and colleagues could provide comprehensive and low-cost screening for genetic mutations. By means of arrayed primer extension (APEX) technology, the researchers developed assays to detect an array of mutations prevalent in genetic diseases that afflict Ashkenazi Jews, cystic fibrosis, and hereditary hearing loss. Assays in other areas are currently under development.

The genotyping microarray format of the assays, combined with the simple and easy APEX technology procedure and low cost capital equipment for analysis, makes these assays more affordable than currently marketed versions of mutation detection assays. The assays can be easily modified to include newly identified mutations in known and presently unknown contributory genes, allowing rapid improvements to the comprehensive nature of the assay as further mutations are identified.

In Communications

MIMO. Who would want to be wired when you can be wireless? But wireless communication systems have technical problems, which logically present a plethora of opportunities for new technologies. Wireless systems using MIMO (multiple inputs and multiple outputs), a technique for boosting bandwidth and range in wireless applications such as cellular networks and local area networks, is an important technological advancement that is just now being introduced into products. Professor Arogyaswami Paulraj and Professor Thomas Kailith developed a key MIMO invention in 1993, which was patented in 1994. We have launched a licensing program around this technology.

In the Workplace

Ergonomics. Incorrect placement and use of equipment on employee desks can lead to injury. The Environmental Health and Safety Department at Stanford has developed the Computer Workstation Ergonomics Training Course, an interactive multimedia training program that instructs computer users so that risk of ergonomic-related injuries is minimized. This innovative course provides personal instruction on how to improve workspace arrangements, and how to perform various ergonomic-related stretches and exercises.

Pathogens. The Stanford University Bloodborne Pathogen (BBP) Web-based Training Course is designed to meet the requirements of federal and California OSHA standards for training anyone working with blood, blood products, or other potentially infectious material (OPIM). It can be customized to meet the specific training needs of hospitals, universities, research institutions, or other organizations whose employees are exposed to blood or OPIM.

Traffic Control. The Stanford Facilities Department has designed a new removable bollard that requires only one step to remove, is safe compared to other bollards, and, very importantly, is ADA compliant. If the construction industry embraces this new design, accidents will be reduced because people will no longer trip over the fixtures that protrude from the ground once bollards have been removed. Stanford is installing these bollards at Stanford and has received lots of interest from bollard manufacturers.

In Energy and the Environment

Fuel cells – electrochemical devices that combine hydrogen and oxygen to produce electricity – have been touted for many years as a potentially attractive source of energy but, so far, they have not been practical. Professor Fritz Prinz and colleagues have been working for many years on fuel cell technology, particularly micro-power fuel cells. Stanford's extensive fuel cell patent portfolio may soon be commercially used in portable power applications such as cell phones, PDAs, and laptops.

Contaminants. Chlorinated ethenes, such as tetrachloroethene (PCE) and trichloroethene (TCE), are some of the most prevalent contaminants of ground water in the U.S. and in the Western world. Microbial reductive dehalogenation of these toxic compounds to harmless ethane, via a vinyl chloride pathway, is an inexpensive, proven technology for groundwater remediation. Professor Alfred Spormann and Professor Emeritus Perry McCarty and their research group invented the only known method to detect, evaluate, and estimate vinyl chloride degradation, which could potentially increase the efficiency of current chloroethene remediation efforts.

2005-06 Royalty Producing Inventions

470

YEAR IN REVIEW

Stanford received $61.3M in gross royalty revenue from 470 technologies, with royalties ranging from $12.38 to $29.3M. We received equity from 10 licensees. Fifty of the 470 inventions generated $100,000 or more in royalties. Seven inventions generated $1M or more. We will likely evaluate over 470 new invention disclosures this calendar year. We spent $5.7M in legal expenses and concluded 109 new licenses. Of the new licenses, 68 were nonexclusive, 27 were exclusive, and 14 were option agreements.

With $61.3M in royalty revenue, 2005-06 was a notable year as the second best year in OTL's 36 year history. Several factors contributed to this revenue:

- a litigation settlement by our licensee, Texas Instruments, with GlobespanVirata;
- several licenses under our EPIC program
- increased revenue from our current biggest invention, the Functional Antibody patents.

The Asymmetric Digital Subscriber Line (ADSL) technology from Professor John Cioffi's laboratory had been exclusively licensed for many years to Amati Communications, which was acquired by Texas Instruments in 1988. In 2003, GlobespanVirata filed a lawsuit against Stanford and Texas Instruments asserting both patent and antitrust causes of action. The trial court bifurcated the case into two phases, patent and antitrust. The patent phase went to trial in January, 2006 (OTL's first experience participating in an actual trial.) The jury found all asserted patent claims were valid and infringed by GlobespanVirata, and awarded Stanford and Texas Instruments $112M in damages. The jury trial for the antitrust phase was scheduled to take place in October 2006; however, the entire lawsuit was settled in May 2006 on terms favorable to Texas Instruments and Stanford.

The EPIC Program ("Engineering Portfolio of Inventions for Commercialization") was a 5-year licensing program implemented in 2000 and ending at the end of 2005. Hewlett Packard and Intel participated in the program with both companies taking licenses. In fiscal year 2005-06, Intel took seven nonexclusive, fully-paid licenses under the program.

The "Functional Antigen-Binding Protein" technology was the university's biggest income-producing case this year, earning $29.3M gross revenue in 2005-06. The invention is jointly owned with Columbia University and, pursuant to an agreement between Stanford and Columbia, Columbia has responsibility for licensing the technology. The technology has been exclusively licensed to Johnson and Johnson (J&J), which sublicensed the technology to Medimmune. Medimmune has filed a lawsuit against J&J, Stanford, and Columbia, alleging invalidity and unenforceability. The lawsuit was dismissed by the district court and the dismissal was affirmed on appeal. Medimmune petitioned the Supreme Court for review and the Supreme Court has delayed ruling pending the outcome of a companion case (Genentech v. MedImmune), which was heard at the Supreme Court on October 4th. The dispute at issue in both the J&J case and the Genentech cases has implications for all licensors and licensees, namely whether a licensee in good standing (i.e., not in breach of the license agreement) may sue the licensor for patent invalidity. The Supreme Court is expected to rule early next year.

Legal Action

In October 2005, Stanford instituted a lawsuit against Roche for patent infringement of HIV diagnostic technology arising out of Professor Thomas Merigan's laboratory in the early nineties. Roche sells a FDA-approved product that infringes the patents. After many years of unsuccessful efforts in trying to negotiate a license with Roche, Stanford decided to pursue legal action. The judge decided to bifurcate the case to decide two broad issues: 1) contractual issues related to the ownership of the patented technology and 2) patent infringement. The ownership issues are being litigated first and, in December 2006, Stanford will seek summary judgment of the ownership issues.

Worldwide Licensing

The Stanford technology licensed in the most countries around the world is the Chronic Disease Self-Management Program, a series of self-help programs developed in the Stanford Patient Education Research Center by Professor Kate Lorig and her group. These programs address the needs of chronic disease sufferers with specialized programs for arthritis, diabetes, and HIV/AIDS, as well as versions specifically designed for Spanish speakers. The programs have been translated into more than 15 languages. Over 500 licenses have been granted in more than 13 countries to organizations ranging from local volunteer organizations to national health organizations in the United Kingdom, Australia, Wales, Canada, Japan, and the U.S.

Investment in OTL

This year, OTL devoted significant resources to upgrade our information management system. Companies can now go our Web site and register to receive automatic email notices of inventions within their areas of interest, defined by keywords they select. We have expanded our inventor Web portal so that faculty can also look up the status of their industry-sponsored research, in addition to their invention, marketing, patent, and royalty distribution information. We have improved our Web-based invention disclosure so that inventors can assign keywords to their own inventions and help develop a marketing abstract that will be sent to potential licensees. Digital signature capabilities have been implemented to enable inventors, PI's, and witnesses to digitally sign invention disclosures on line. We are making a serious and concerted effort to digitize all agreements, always hoping to move to a more paperless office, reducing storage needs and improving data retrieval. Data from patent firms can be downloaded into our database to reduce data entry tasks. And lastly, for our own internal use, we have established a Wiki (a collaborative Web site) so that documents and information are readily updatable in real time. All these changes support our goal of using technology to streamline data collection, retrieval, and dissemination while allowing each of us to spend more time contributing our most valuable skills to the business of technology transfer.

AMOUNT GIVEN TO	
Inventors	**$11.9M**
Departments	**$15.9M**
Schools	**$15.3M**
Dean of Research OTL Funds	**$5.0M**

The Long Tail Phenomenon

The business of technology transfer fits easily into the "long tail" phenomenon, in which much of the royalties come not only from a few top moneymakers but from the combined revenue of many licensed products. Three inventions generated 66 percent of OTL's cumulative royalty revenue, while the rest of the approximately 1400 inventions generated 34 percent of royalties. In 2005-06, one invention generated 48 percent of the revenue, with 469 inventions accounting for the rest. Stanford is lucky to have both "big winners" and a steady flow of income and inventions that provide a solid base of royalties for the university. We don't approach technology transfer as a means of making money, although royalties often reflect the impact a particular invention makes on society. As long as OTL continues to plant licensing seeds in the marketplace, we can feel confident that we are contributing to the whole.

Royalty Distribution

Stanford's royalty-sharing policy provides for the distribution of cash net royalties (gross royalties less 15% for OTL's administrative expenses, minus direct expenses) to inventors, their departments, and their schools.

In 2005-06, inventors received personal income of $11.9M, departments received $15.9M, and schools received $15.3M. The University assessed an 8% infrastructure charge on the department and school shares of royalty income.

We contributed $2.4M to the OTL Research Incentive Fund, which is administered by the dean of research for the support of early-stage, innovative research ideas, cost sharing of shared instrumentation, and similar research items. In addition, we contributed $2.6M to the OTL Research and Graduate Fellowship Fund; this $2.6M was the dean's portion of the liquidated equity. Stanford also paid the University of California and other organizations $735,000 for jointly-owned technologies for which Stanford has licensing responsibility.

Expenses

OTL spent $5.7M on legal expenses, of which $1.9M was reimbursed by licensees. We have an inventory of $8.4M, which represents patent expenses for unlicensed inventions. Our operating budget for the year (excluding patent expenses) was $3.7M.

New Licenses

In 2005-06, we concluded 109 new license agreements totaling $3.2M in up-front license fees. We received equity from 10 start-up companies. The average upfront royalty was more than $29,000. Sixty-eight of our 109 licenses were nonexclusive; three of these nonexclusive licenses were "ready-to-sign" agreements (i.e., downloadable from the OTL Web site, set price and no negotiation).

Equity

As of August 31, 2006, Stanford held equity in 71 companies as a result of license agreements. The market for initial public offerings was slow this year and share prices were down. For institutional conflict-of-interest reasons and insider trading concerns, the Stanford Management Company sells our public equities as soon as Stanford is allowed to liquidate rather than holding equity to maximize return. This year, we received $3.3M in liquidated equity from five companies.

Start-ups

While Stanford entrepreneurs are still starting companies, the uncertain economy clearly affects the Silicon Valley entrepreneurial ecosystem. Venture capital investors are generally shying away from early-stage technology. Yet we licensed these companies: Aviir, DxTerity, IGEOSS, Innate, PEAK, Singulex, SwitchGear, Telomolecular, Tumri, and Virosys.

New Disclosures

In calendar year 2006, we received over 470 new technology disclosures. Approximately 50% were in the life sciences and 50% were in the physical sciences, including computer science technologies. We received approximately 20 disclosures for medical devices, many of them from students in the Stanford Biodesign Innovation Course and Fellowship.

Stanford Trademark Enforcement Fund

The Chief Financial Officer and General Counsel of Stanford recommended that Stanford provide a permanent source of funding for extraordinary cases associated with the protection of the Stanford name and associated logos and trademarks. Based on their recommendation, the president and provost approved the creation of the Stanford Trademark Enforcement Fund (STEF). Funding for the STEF comes from 1% of the department and school shares of net revenue OTL receives. In 2005-06, we transferred $311,354 to STEF.

Birdseed Fund

The OTL Birdseed Fund, administered by the Dean of Research, has provided small amounts of money (typically up to $25,000) to fund prototype development or modest reduction-to-practice experiments for unlicensed technologies. This year, the Birdseed Fund funded seven new projects, for a total of 75 projects funded to date. The rate of licensing of Birdseed funded inventions is about the same as unfunded inventions (20-30%) but without this funding, many of these inventions would likely have remained unlicensed.

INDUSTRIAL CONTRACTS OFFICE

Annual Report 2005-2006

In its ninth year of operation, OTL's Industrial Contracts Office (ICO) negotiated more than 650 sponsored research and other research-related agreements. Among these, just over 450 were material transfer agreements with industry and nonprofit organizations worldwide, for incoming and outgoing research materials ranging from human and mouse embryonic stem cells to microfluidic chip systems.

Computer Science. During the last year, the Industrial Contracts Office (ICO), which is part of OTL, negotiated research agreements for participation in the 2007 DARPA Urban Challenge by Associate Professor Sebastian Thrun and others at Stanford. They will create and assemble robotic technology to address problems such as merging into traffic, four-way stops, and interacting with pedestrians and other moving vehicles.

ICO also negotiated a joint study research agreement with IBM for Professor Terry Winograd and his graduate student Manu Kumar. Under the project, Professor Winograd will supervise research with IBM to design and test prototypes of computer interfaces that gauge user attention by tracking eye movements. The goal: a more intelligent computer interface that can adjust its interactions with human users.

Chemical Engineering. Also during the year, ICO completed Amendment #9 for Professor Channing Robertson's long-running sponsored research agreement with Genencor on molecular modifications to enzymes to enhance surface reactivity.

Chemistry and Chemistry Operations. In a two-year research agreement sponsored by start up Helicos Biosciences, Associate Professor Chris Chidsey in chemistry operations and his graduate student are enabling "click" chemistry for certain layers on microarray chips. They hope to pave the way for new biomedical discoveries through high speed sequencing by making the reactions in a multi-step synthesis fast, efficient and predictable. ICO also negotiated a three-year collaborative agreement in which videogame players on Sony's new PlayStation 3 console can contribute their spare computing power to Associate Professor Vijay Pande's Folding@home, a distributed computing project that seeks to understand protein folding, misfolding, and related diseases. It is interesting to note that PS3 offers more computing power than many PCs!

ICO also negotiated a second research agreement with CellGate, sponsoring research in Professor Paul Wender's chemistry lab. Professor Wender is studying molecular transporters – molecules that enable or enhance

the uptake of molecules into cells and tissues that the molecules would not ordinarily enter. The goal is the delivery and release of significant levels of drugs into cells and tissues. Beckman Coulter continued to sponsor research in biomedical instrumentation in Professor Richard Zare's lab. Advancing the discovery of biomarkers in proteins is a goal of this research. Professor Zare is comparing a heat-cured sol gel material created by Beckman Coulter with a macroporous, photopolymerized sol gel created in his lab.

Stanford has an active research relationship with IBM's Almaden Labs. ICO negotiated Joint Study Agreements for Professor of Management Science and Engineering Nick Bambos, who is investigating pricing and risk management in information services with IBM. Professor Philip Wong in electrical engineering and Professor Stacey Bent in chemical engineering also started joint studies with IBM during the year. Perhaps the shortest-ever agreement with IBM lasted about a month: Almaden Labs loaned an argon ion laser to Professor Gerald Fuller's chemical engineering lab when Stanford's laser broke.

Ophthalmology. During the year, the ICO also negotiated a long-term research agreement with Optobionics for Assistant Professor Daniel Palanker. Professor Palanker will continue research on an artificial retina project, developing and refining a pulse-powered, optoelectronic prosthesis for the retina, using a device created by Optobionics.

Active Inventions

about 2,600

Radiology. Radiology helped keep ICO busy during the year. ICO negotiated a number of agreements for Assistant Professor Rebecca Fahrig, including the loan of and research with a Varian digital flat panel detector and a Siemens gated 3D DynaCT for cardiac applications. ICO also finalized agreements with GE Healthcare for Professor Gary Glazer, Professor Norbert Pelc, and Professor Robert Herfkens, and an extension on Professor Sandy Napel's research project sponsored by Siemens.

Microbiology and Immunology. During the year, ICO and Intel's Digital Health Group negotiated a research collaboration agreement in support of Associate Professor Garry Nolan's research. Intel will loan Stanford its specialized nanotechnology detection equipment for the study of single cell signaling. Intel also is providing a new class of reagents for novel cellular analysis. The goal of the research is to be able to provide more simultaneous measurements of cellular activities than can be accomplished with current reagents and instrumentation.

2005–06 ROYALTY PAYMENTS TO STANFORD SCHOOLS	
School of Medicine	$11,195,208
School of Engineering	$3,585,455
School of Humanities and Sciences	$264,121
Dean of Research	$112,907
Graduate School of Business	$54,420

JUST SOME OF THE NEW INVENTIONS OF 2006

Array tomography

Activation of beta-catenin

Stem cells and activation of MAPK pathway

Development of fatty alcohols as new biofuels

Monolithically stacked field programmable gate array

Multiplex identification of HLA null alleles

Neural network analysis of electrocardiograms

An automatic compensation algorithm for flow cytometry data

Functional limitations and independency ratings

Analysis and optimization of immune response with targeted therapy for cancer

Device and method for growing a neuronal tract

Semiconductor optoelectronic switching device

A method for magnetic resonance image reconstruction

Piximagic: identifying and displaying images relevant to an audio stream

Design of misaligned nanodevices immune logic standard cells

A method for parallel imaging with calibration to a separate coil

Flow cytometry panel for detecting juvenile myelomonocytic leukemia

NgR mice - Nogo receptor

Ear-sensing ear-bud

Anti-osteopontin antibody

Interferometric calibration of scanning light modulators

Integrin binding proteins based on knottin scaffolds

A method to track 3D target motion with a dynamic multileaf collimator

Method for designing dielectric multilayer stacks for OLED outcoupling

Printing of electronic devices using atomic layer deposition

Imaging of electron spins on the nanometer scale

Transparent, conductive contacts for optical devices

Enhanced exciton diffusion and energy transfer in organic materials

A 3D multi-aperture image sensor

A method for universal denoising of discrete-time analogue-amplitude data

Securifly: preventing security vulnerabilities

Fabrication of size-controlled, spatially distributed nanoparticles

Modulation of oligodendrocytes lineage cells

In vivo sarcomere length measurement

Assessing genome-wide gene expression by non-invasive imaging

Peptides derived from the C2 domain of PKC isozymes

Identification of cancer stem cells

Development of Salmonella typhimurium strains

Hydroxyurea as a treatment

Method of identification of objects of interest in images

Tyrosine kinase inhibitors and vaccinia oncolytic viruses

A method for generating siRNA nanoparticles for improved delivery

Spray heat transfer contrast

Higher-resolution image sensors through lower-resolution image sensors

A system to facilitate fascial closure of laparoscopic trocar sites

Using manganese-enhanced magnetic resonance imaging to image nociception in living subjects

Protection against tumor growth and angiogenesis

BZ194 mAb specific for mouse CMKLR1

Pbx1 knockout mice

DNA purification scheme

Modification of surface for biomolecule immobilization

Spring-based force vectoring robotics system

Site-specific therapeutic intervention in Alzheimer's disease

High mobility organic semiconductors

Proxy identity based encryption

Using an E. coli protein as an immune stimulator

Neurotensin as a biomarker and therapeutic target for sepsis

GPCR functional assay

Allowing patients to communicate while on a ventilator

Eye gaze based scrolling

Mismatched end DNA ligase

Simultaneous DNA sequencing and methylation pattern determination

Shared dithering for syncronizing real-time network audio devices

THE OTL STAFF

Number of Employees

29

Average Years at OTL

8

Cumulative Experience

363.5 years

Row One: Mary Albertson, Ana Mendoza, Angela Law, Katharine Ku, Lisa Freitas, Maria Gladfelter, Andrea Blecken; Row Two: Patty Lucatero, Becky Wu, Stefani Shek, Neil Morimoto, Betsy Saiz; Row Three: Sara Nakashima, Imelda Oropeza, Linda Chao, Ximena Ares, Heather Mocabee; Row Four: Sally O'Neil; Row Five: Sally Hines, Jody Sumrall, Kirsten Leute, Caroline Massee; Row Six: Sandra Bradford, Irit Gal, Nancy Fuller, Shawn Harlan, Brenda Martino; Row Seven: Luis Mejia, Gregg Kyle, Jeremiah Shepard

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