The UCSD Technology Transfer Advisory Committee (TTAC) is responsible for general oversight of the UCSD Technology Transfer Program. This standing committee is chaired by the vice chancellor of Research and meets periodically to assess UCSD technology transfer policy and guide the direction of the overall program.

The UCSD Technology Transfer Advisory Committee

Richard Attiyeh
Vice Chancellor, Research

Roger Bohn
Professor, International Relations and Pacific Studies

Maarten Chrispeels
Professor, Division of Biological Sciences

Fred Cutler
Executive Director, UCSD CONNECT

Linda Dale
Director, Office of Contract and Grant Administration

Gary Firestein
Professor, School of Medicine

Tom Jackiewicz
Chief of Staff, School of Medicine

William Kuperman
Professor, Scripps Institution of Oceanshgraphy

Marine Physical Laboratory

Rick LeFevre
Executive Director, William J. von Liebig Center

Paul Friedmann (FY2002)
Professor, Radiology

Roger Meyer (FY2002)
Associate Dean, School of Medicine

Lawrence Mästlein
Professor, Electrical and Computer Engineering

Alan Paau
Assistant Vice Chancellor, Technology Transfer and Intellectual Property Services (TechTIPS)

Bernhard Palsson (FY2002)
Professor, Bioengineering

Geert Schmid-Schoenbein
Professor, Bioengineering

Suresh Subramani (FY2002)
Professor, Division of Biological Sciences

Robert Sullivan
Dean, School of Management

John Woods
Vice Chancellor, Resource Management and Planning

UCSD TechTIPS
Technology Transfer
and Intellectual Property Services

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Disclosure, Policy, and Outreach Services
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Special Assistant to Assistant Vice Chancellor
Assistant Director

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Deborah Barber
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Contract Compliance
Dana Rilatos

Operations
Lance Post
Clifford Lindsay

Patent Services
Shihong Nicolaou, Ph.D.
Patent Manager
Kristine Cole
Vicki Palladino, M.A.

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p. 3 "People with glasses" courtesy of Cal-(IT)
p. 6 "Dissection" by Marc Tule
p. 12 "Beakers" by Marc Tule
Fiscal year 2002 was a banner year for technology transfer and intellectual property services at the University of California, San Diego (UCSD). UCSD Technology Transfer and Intellectual Property Services (TechTIPS), in conjunction with the systemwide office, reached record high numbers in several categories of intellectual property (IP) management. Propelled by the prolific creativity of the UCSD faculty, more than 300 inventions and copyright disclosures were registered, over 500 agreements originated, 202 patent applications were filed, 81 patents were issued, and a record $17 million income was generated from UCSD technologies. These numbers illustrate the breadth, depth, and power of the UCSD research engine.

Since the establishment of TechTIPS in November 1994, our campus office has successfully managed the entire technology transfer process, from predisclosure education to postlicensing contract management, including accounting and distribution of royalties. As FY2002 was winding down, we began to feel the effects of the burst “dot.com bubble” and the aftermath of the public company accounting fiascos. Licensing appetites of existing companies and the enthusiasm of investors to support new company formation had both begun to slow down; and in all likelihood will continue into FY2003 and beyond. Our office will continue to work towards creating partnerships that add extrinsic value to the innovations developed at UCSD. We will think locally, but act globally to leverage our IP to attract resources to the community. In partnership with the greater UCSD community, we hope to continue reaching new milestones by putting more innovations to work through licensing, to leverage IP value for the benefit of faculty and student research, and to foster a collaborative technology transfer environment that is diligent, yet provides the necessary flexibility for the faculty and staff of UCSD and our industry partners.

Alan S. Paau, M.B.A., Ph.D.
Assistant Vice Chancellor
Technology Transfer and Intellectual Property Services

Campus IP Services

TechTIPS endeavors to provide value-added services to the greater UCSD community and to foster a collaborative and innovative intellectual property environment. To that end, TechTIPS instituted improvements to facilitate the technology transfer process and protection of intellectual property. Formal “Innovation Review” meetings were launched throughout the year to enhance the staff’s capabilities to evaluate faculty inventions with their own assistance and that of members of the local industry and investment community.

To better support the technology transfer process, the TechTIPS Web site was updated to provide enhanced ease-of-use for faculty and staff with downloadable forms, guidelines, and policies. For example, a new shrink-wrap-style Material Transfer Agreement (MTA) template was designed to streamline the transfer procedures for UCSD-developed materials that satisfy certain criteria. This template is available online from the TechTIPS Web site to be executed by UCSD faculty members. Usage of this template is expected to increase as faculty members become more familiar with it.

In recognition of the achievements of UCSD innovators, TechTIPS along with UCSD Chancellor’s Associates sponsored the Innovator Showcase event held at the Birch Aquarium at Scripps in May 2002. The showcase highlighted recently licensed innovations by UCSD faculty with proper recognition by the chancellor and San Diego community leaders. In addition, selected UCSD faculty inventors are a special feature both on the front page of the TechTIPS newsletter and on the Web site.

Education

To bolster its educational mission, TechTIPS introduced an online newsletter to inform and educate UCSD employees about intellectual property matters that affect them. The newsletters contain explanatory articles about the disclosure process, marketing innovations, licensing activities, and general insight into UC policies and regulations. The office also organized and conducted presentations and seminars to many campus groups including the San Diego Supercomputer Center, Center for Magnetic Recording Research, Department of Bioengineering, Division of Biological Sciences, Center for Wireless Communications, and William J. von Liebig Center for Entrepreneurism and Technology Advancement. Seminar topics on various technology transfer- and IP-related issues included introduction to intellectual property, UC policies on intellectual property, and a “how-to” on starting a new company.
Sponsored Obligations

UCSD was a major recipient of government grants, receiving over $400 million from federal, state, and local funding in FY2002. Another $12 million was received from industry and private sources. Total research funds awarded during the last fiscal year was over $550 million.

When disclosures were registered with TechTIPS, funding sources were reviewed for compliance with obligations to the sponsors including reporting procedures for related intellectual property. Disclosures were also reviewed to determine potential joint titleholders and the need to have shared intellectual property management agreements with other organizations. While TechTIPS is not a “watchdog” group, the office ensured that the reporting process was complete and safeguarded against potential conflicting obligations regarding IP rights.

Global Outreach

TechTIPS participated in international conferences on intellectual property while promoting the university as a national and global player in advanced research and technology opportunities. During FY2002, Alan Paau, assistant vice chancellor, had the opportunity of accompanying Edward Holmes, vice chancellor for Health Sciences and dean of the School of Medicine, Eduardo Macagno, dean of the Division of Biological Sciences, and Kenneth Chien, director of the Institute of Molecular Medicine, on several relationship-building trips to Asia to promote UCSD. Paau also was invited to present seminars on technology transfer and IP management in Caxia do Sul and Porto Allegre, Brazil, and in Nagoya, Japan. TechTIPS staff, along with the UCSD Extension Bioscience Program, represented the university at the Biotechnology Industry Organization Annual Meeting, B82002, in Toronto, Canada. This meeting is the largest international gathering for the biotechnology and life sciences industry. TechTIPS staff also attended or presented at several regional and national meetings of the Association of University Technology Managers and the Licensing Executive Society.

TechTIPS assisted the San Diego Center for Molecular Agriculture in organizing the Agricultural Biotechnology Symposium, which attracted agricultural scientists and agribusiness representatives from around the world. In addition, the office cosponsored an Oncology Partnering Forum with the United Kingdom Oncology Mission, targeted toward creating industry and academic relationships in the fight against cancer.

External Validation

Last year, many business delegations and technology transfer professional groups visited TechTIPS to observe firsthand the office’s technology transfer model. International delegations traveled from China, Germany, Japan, Korea, Portugal, and Taiwan with the primary goal of studying the synergy created between technology transfer and regional economic development in San Diego.
External Development

UCSD is a major contributor to the San Diego region’s prominence as one of the top high technology and biotechnology clusters in the United States. In two separate surveys conducted by the California Healthcare Institute and San Diego State University in the summer of 2001, sixty-three to sixty-four biomedical/biotechnology companies in the area were attributed as UCSD start-ups. About half of these were formed as an outcome of direct licensing of UCSD innovations.

As a consequence of the foundation laid by UCSD visionaries and other community leaders, the local region continues to have high job growth in the technology sectors. An important aspect of the TechTIPS mission is to facilitate the transfer of university innovation to benefit the public and to promote and target economic development.

Of the agreements TechTIPS executed in FY2002, more than 400 were with businesses in the U.S. and over 200 were with companies in California. Among California companies, 159 were in southern California, reflecting the regional focus of the office’s activities.

The formation of new companies is an example of new economic development for the local region through job creation and infusion of capital from private and public sources into California. Last year, nine new companies were formed with the licensing of UCSD innovations as the foundation of their product and business strategies. These licensed innovations represent diverse technologies developed at UCSD ranging from a trademarked health promotion procedure, to new medicinal approaches to treat HIV, rheumatoid arthritis, leukemia, and cancer. Other examples included flowering technology to accelerate crop production, computational modeling technology for medical device and drug discovery, novel treatments for tinnitus, diagnostic tools for cardiovascular disease, and chemoprotective agents.

“In FY2002, TechTips executed over 500 agreements . . . 159 were in southern California.”

IP Disclosures

The technology transfer process begins with a disclosure of an innovation by the innovator when an invention or copyright disclosure form is submitted. This disclosure form provides information necessary to evaluate the innovation, including patentability, inventorship or authorship, marketability, desirability of obtaining patent coverage or copyright registration, and obligations to re-search sponsors. Figure 1 (page 8) summarizes disclosure activities at UCSD in the last eight fiscal years, illustrating a trend that well reflects the growth of UCSD and the productivity of its researchers.

Of the 311 new disclosures registered in FY2002, 56 are copyrightable work, 92 are physical science inventions, and 140 are life science inventions.

Marketing

Upon receiving a disclosure, TechTIPS assigns a case number and a licensing officer with the relevant technical and business expertise. The disclosure is then evaluated by diligent technology and market research and discussions with the innovator to determine the proper strategies for protection and marketing.

TechTIPS’ marketing goals are to assess commercial interest in innovations and find qualified licensee(s) through active and equal opportunity marketing efforts. The process begins with distribution and promotion using nonconfidential disclosures (NCDs) which describe what particular UCSD technologies may accomplish without revealing proprietary methods or compositions. NCDs are regularly posted on the
TechTIPS Web site (invent.ucsd.edu) and are also communicated to potential licensees through the postal service and electronic mail. The desired end result of the office’s marketing efforts is to execute agreements to transfer IP rights and know-how to companies who can best commercialize UCSD innovations and offer useful products and services to the public. Through licensing of selected technologies to local businesses, the university can contribute significantly to the diversification and development of the local economy. Although TechTIPS prefers to promote local economic development, marketing efforts are not limited to this region. The office is also committed to working with businesses who can best develop UCSD technologies into useful products that serve the public. Our regional focus is also balanced by targeting national and international companies for licensing of selected technologies.

Agreements

In FY2002, over 500 agreements were executed with external parties demonstrating interest in UCSD innovations (Figure 2). Of these, over 380 confidential disclosure agreements were executed illustrating the active marketing efforts of TechTIPS, and thirty-eight letters-of-intent and nine option agreements were signed which offer businesses time-limited opportunities to evaluate UCSD innovations prior to licensing.

At fiscal year-end, activities resulted in fifty-one licenses—twenty-three of which were for copyrightable work, twenty-seven were for inventions and patent rights, and one was for a trademarked health promotion procedure. From these licenses, nine new companies were formed (see a partial list of the new companies, page 13). Figure 3 provides a summary of the licensing results at UCSD in recent years.

Among the agreements executed by TechTIPS, 130 were material transfer agreements to transfer tangible research materials created at UCSD to external entities.
Communications and Education

TechTIPS provides information on UC policies to the greater UCSD community. The office’s communications and educational activities are complementary. Various communications tools are used for educational activities as well as marketing and image branding endeavors. The “branding” of TechTIPS began during the fiscal year with a new logo and tagline (. . . pipeline to innovation) that reflects the resources available at its office and were embodied in its mission and the southern California tradition of San Diego. This new image has been incorporated into external communications, including redesigned marketing and educational brochures, Web site, newsletter, and additional collateral materials. These different vehicles are used to effectively reach out to potential industry partners and inform and educate faculty and staff about UC policies and various issues important in the transfer of UC technologies.

TechTIPS conducted seminars on intellectual property and licensing issues for a campuswide audience and often invited external guests both as speakers and attendees. Staff members also participated on industry panels outside the university in local, regional, national, and international forums.

Professional Development

TechTIPS staff members took part in continuing education and staff development to keep their skills current. The office participated in UC systemwide patent coordinators meetings and licensing forums that encouraged sharing of information and knowledge on UC patent policy issues, faculty consulting issues, state and federal regulations, and licensing negotiation skills. The staff was also active in several professional, technology, and trade organizations including the Association of University Technology Managers, Licensing Executive Society, Regional Technology Alliances in San Diego and Los Angeles, and Biotechnology Industry Organization.

IP Support

TechTIPS provided intellectual property services and support to departments on the UCSD campus. As a service organization, it furnished assistance and support services for many types of agreements negotiated and managed by other campus units such as the Office of Contract and Grant Administration, Conflict of Interest, Purchasing, School of Medicine, San Diego Supercomputer Center, and many other academic departments and administrative units. Whenever an intellectual property component required help in an agreement, TechTIPS provided assistance.

TechTIPS also actively participated in UCSD’s endeavor to manage conflict of interest. The staff provided background research support, advice, and clarification for technical and IP issues both to the UCSD Conflict of Interest Independent Substantive Review Committee and its management subcommittee.

IP Protection

UC patent policy encourages the practical application of university research results for the broad public benefit. In addition, this policy is a guide to appraise and determine relative rights and equities of all concerned parties, and to facilitate patent applications, licensing, and the equitable distribution of royalties, if any. Appropriate patents or patent applications in place can attract potential licensees, assist in obtaining external funds for research, provide for the use of invention-related income for the further support of research and education, and provide a uniform procedure in patent matters when the university has a right or equity.

The total number of patents filed for UCSD has increased steadily over the past few years, reflecting the growth of the campus and the maturation of its IP services. Within constraints of its limited patent budget, TechTIPS expects this upward trend to continue, adding valuable new patents to the university’s growing intellectual property portfolio. Table 1 (page 12) summarizes the patent activities for the last eight years.

Among provisional applications filed in previous years, FY2002 saw seventeen converted into non-provisional U.S. utility applications for U.S. only rights, and sixteen converted to Patent Cooperation Treaty applications preserving both foreign and U.S. rights. Together with the Office of External Relations and Jacobs School of Engineering (JSOE),
TechTIPS successfully secured an intellectual property gift from E.I. du Pont de Nemours and Company (DuPont) of TackyDot technology. This donation included eleven issued and pending patents, trademark, and research support over two years for Professor Ian Talbot at JSOE to further advance the technology. TechTIPS is responsible for maintaining this IP and for seeking industrial partners to make the technology beneficial to the public.

As the U.S. Patent and Trademark Office and European Patent Office began posting issued patents and pending applications on the Internet for easy and free public access, TechTIPS experienced a surge in requests for information regarding UCSD employees whose names appear as inventors or coinventors in patents and applications for which the regents of the University of California is not the assignee. TechTIPS successfully clarified, for the record, many of these assignments resulting in reclaiming or disclaiming ownership of certain inventions by the implementation and enforcement of the UC Patent Policy. Many inquiries concerned inventions prior to the establishment of the campus office. TechTIPS’ presence on campus can increase UCSD employees’ awareness of their obligations to the university by continuing educational outreach. Through these efforts, TechTIPS hopes to retain valuable intellectual property assets generated from creative research activities in the university, for UCSD and the community it serves.

TechTIPS also assisted campus researchers in copyright issues including advice on copyright registration, fair use, prearrangement of resolution of joint rights that subsist in group or class projects, and obtaining permissions to use third-party copyrights for university work. TechTIPS made available to campus software developers a template statement for use with software or other copyrightable work, should the developers decide to freely share their work with the public. The statement affirmatively asserted copyright rights for the regents of the University of California and disclaimed all liabilities and warranties for the university and the developers.

### Table 1: Patent Activities FY1995 to 2002

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<td>95</td>
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**Selected Start-up Highlights**

An important aspect of the TechTIPS mission is to facilitate the transfer of university technology to benefit the public good and promote and target economic development by leveraging university innovations. Nine new UCSD start-ups were produced last year. Kudos to the local entrepreneurs highlighted below.

- **Androclus Therapeutics**, an early-stage biotechnology company, was founded by a team of scientists that include Professor Salvatore Albanis (pediatrics). Androclus is developing novel therapies for diseases involving the immune system and related inflammatory response, and is currently in Phase II trials with an orally-administered peptide for rheumatoid arthritis.

- **Atherotope**, a San Diego-based start-up, was formed with licensed technology from the lab of Professor Joseph Witztum (medicine) that allows the development of an imaging diagnostic for identifying and treating unstable blood vessel wall plaques.

- **Chimerix, Inc.**, an emerging biotechnology company developing orally-available, targeted medicines from bioactive molecules. Chimerix technology is based on proprietary chemistry developed in the laboratory of Professor Karl Hostetter (medicine). The company’s initial efforts are in infectious diseases and developing drugs for the treatment of smallpox, cytomegalovirus, and multidrug resistant human immunodeficiency virus (HIV).

- **Insilicomed** based in San Diego, is a computational biology start-up company that develops in silico models for biomedical engineering design and drug discovery. The company was cosponsored by Professors Andrew McCalloch (bioengineering), Jeffrey Omens (medicine), and Dr. Lewis Waldman.

- **Nuplant Ltd.**, based in Australia, is a plant biotechnology company focused on plant improvement. The company licensed an accelerated flowering technology invented by Professor Martin Yanofsky (biological sciences). The company will accelerate conventional breeding improvement of species used for lumber, pulpwood, nuts, and fruit.

- **Otsonus**, a start-up biomedical therapeutics firm, was formed in collaboration with Professor Erik Väärä (surgery) and Jaime Pineda (cognitive science). The company’s goal is to commercialize promising new technologies developed for the treatment of the prevalent disease tinnitus, commonly known as “ringing in the ears.” Customized Sound Therapy (CST), a novel and cost-effective medical device-based method of treatment, has demonstrated efficacy in human test subjects. CST is based on a new understanding of the disease pathology for the most common causes of tinnitus. Currently, Otsonus is seeking U.S. Food and Drug Administration (FDA) approval for this medical device.

- **Phylogix, Inc.**, is developing an innovative class of lectin-based drugs focused on tissue protection, oncology, and immunology. The company licensed an invention jointly held by Professor Maarten Chrispeels (biological sciences) and another company. Phylogix is based in Scarborough, Maine.

- **Salmedix, Inc.**, a San Diego-based start-up company, was formed by Professor Dennis A. Carson (medicine) and Lorenzo Leoni, Ph.D. (medicine), along with biotechnology veteran David Kabakoff, Ph.D., to develop and commercialize new drugs initially targeted toward hematologic cancers. Recently Salmedix raised an additional $27.5 million dollars in a second round of financing, bringing the total funds raised to $37.5 million for this nascent oncology-focused pharmaceutical firm.
Income

Campus intellectual property income increased in FY2002 to over $17 million, the highest single year total for UCSD (Figure 4). Income included over $7 million in license fees and royalties from inventions, over $200,000 in license fees and royalties from copyrights, over $1 million in fees from the transfer of tangible research materials, almost $3 million in patent cost reimbursement, and a nonrecurring fee of $5.5 million. For a detailed categorical breakdown of total income, refer to the appendix.

To accommodate the cash-strapped situation of most start-up companies, TechTIPS received, in lieu of licensing fees, equity in seven of the nine new UCSD start-up companies totaling almost 2.5 million shares of founders stock. When these start-up companies successfully reach specified milestones, the university may receive additional founder stock totaling an additional 2.5 million shares. Upon a liquidity event, such as an initial public offering or acquisition, future redemption value will be applied to licensing fees and royalties.

Mandatory Distributions

In FY2002, TechTIPS distributed over $6 million to inventors, joint titleholders, research support, and the UC State General Fund Pool in accordance with various UC systemwide policies and campus guidelines. Distribution from invention income was based on income received in FY2001. Distribution from copyright income and transfer of tangible research materials was based on income received in FY2002. Figure 5 summarizes mandatory distributions by TechTIPS in the recent years.

Expenses

UCSD Technology Transfer and Intellectual Property Services incurred a total expenditure of $9.2 million. Expenditures included approximately $1.7 million for UCSD office operations, $750,000 for systemwide office operations, $3.8 million in patent prosecution costs, and $2.9 million in one-time, nonrecurring litigation expenses. A detailed categorical breakdown of total expenses is in the appendix.

Research Impact

UCSD Technology Transfer and Intellectual Property Services, as part of its mission, managed to confirm a positive impact on the university research environment. TechTIPS distributed funds received to support research by providing incentives in the form of recognition or inventor/author share of income for faculty retention and recruitment, and by leveraging licenses for research sponsorship. In FY2002, the total research impact at UCSD was estimated to be about $7 million, a slight increase from $6.7 million of the previous fiscal year (Figure 6). The total estimate included distributions to researchers and authors, research laboratories and academic departments, and joint titleholders from income received for inventions, copyrights, tangible research materials, and sponsored research pledges as a result of licenses and matching grants from the UC Discovery Grant Program.
### Income

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1: Extraordinary income includes nonrecurring items such as legal settlements.

### Expense

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<td>$112,897</td>
</tr>
<tr>
<td>Total Expense</td>
<td>$2,404,094</td>
<td>$3,033,459</td>
<td>$3,640,000</td>
<td>$5,217,889</td>
<td>$4,114,344</td>
<td>$6,113,408</td>
<td>$8,482,082</td>
<td>$10,903,956</td>
</tr>
</tbody>
</table>

2: Extraordinary expense includes legal expenses for litigation and settlement.

### Net Income

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Total Income (after expenses)</td>
<td>$561,685</td>
<td>$641,093</td>
<td>$618,599</td>
<td>$114,246</td>
<td>$1,991,534</td>
<td>$2,942,099</td>
<td>$2,461,235</td>
<td>$6,112,871</td>
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</tbody>
</table>
The UCSD Technology Transfer Advisory Committee (TTAC) is responsible for general oversight of the UCSD Technology Transfer Program. This standing committee is chaired by the vice chancellor of Research and meets periodically to assess UCSD technology transfer policy and guide the direction of the overall program.

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