



**Technology Transfer and
Intellectual Property Services**

...pipeline to innovation

University of California, San Diego

TechTIPS

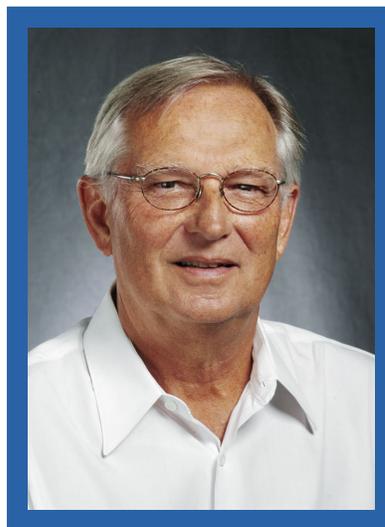
March 2004

Balancing the Best of Both Worlds

This issue's featured innovator, **Professor Karl Hostetler**, is an outstanding representative of the group of physician/scientist/entrepreneurs who continue their research work at the University, while maintaining successful relationships with industry. Karl Hostetler, M.D., is professor of medicine at the UCSD School of Medicine and director of the Endocrine and Metabolism Clinic at the Veterans Affairs San Diego Healthcare System (VASDHS). Dr. Hostetler leads the scientific and clinical aspects of his research, while being adept at business via pharmaceutical consulting and through new company formation. In addition to authoring numerous journal articles, and being a member of many professional societies, Dr. Hostetler is a co-inventor on 28 U.S. patents and multiple foreign patents and pending applications.

Dr. Hostetler's current research focus is viral diseases and the design and synthesis of new drugs to treat them. His group is pursuing the design and testing of antiviral agents with increased oral availability. These compounds are being developed for the treatment of diseases, such as smallpox and HIV and, additionally, are highly active against HPV-positive cervical cancer cells. Dr. Hostetler's technology has provided the foundation for **Chimerix Inc.**, a start-up company that will continue the necessary development and testing to bring the novel drugs to market.

Chimerix (www.chimerix-inc.com) was founded by Dr. Hostetler in 2002, to develop orally available medicines from bioactive molecules and is headquartered in San Diego with drug development and regulatory affairs offices in North Carolina. Besides smallpox, Chimerix is also working on the discovery and development of oral drugs for the treatment of drug-resistant HIV infection and viral hepatitis.



*Karl Hostetler, M.D.
Professor of Medicine*

In early 2003, Dr. Hostetler and his collaborators published research results showing that a single dose of the oral smallpox drug he had developed was effective in protecting against lethal cowpox virus infection in mice. The drug (octadecyloxyethyl-cidofovir) is an analog of a FDA-approved antiviral called cidofovir, which has been chemically modified using Dr. Hostetler's proprietary technology. In September 2003, Chimerix received a \$36 million National Institute of Allergy and Infectious Diseases (NIAID) grant for the development of an oral smallpox therapeutic. With this five-year NIAID grant, Chimerix is continuing the development of new compounds for the treatment of smallpox.

Why smallpox, since the disease was eradicated in the United States in 1972 when routine vaccination was halted? Prior to

TechTIPS Calendar:

- March 22, 2004
TechTIPS Mixer with presentation to the MIT Alumni Club.
- March 24, 2004
Physical Sciences Innovator Review Meeting.
- March 31, 2004
UCSD @ Sand Hill Road. TechTIPS to showcase selected UCSD technologies to Silicon Valley venture capitalists.
- April 1, 2004
The Venture Forum, hosted by LARTA and LAEDC is a venture forum for companies seeking financing. TechTIPS is a consortium member.
www.theventureforum.com
- April 8, 2004
UCSD Connect Financial Forum. Showcases innovative technology and life science companies seeking venture funding. TechTIPS is involved with the planning and selection of featured companies. <http://www.connect.org/programs/index.htm>
- April 21, 2004
Breakfast with TechTIPS. Guest Speaker: Professor Michael Sailor. Invited industry representatives only.
- April 27, 2004
Intellectual Property Seminar with the VonLiebig Center, 1-3 p.m. at the Fung Auditorium. Katherine White, patent attorney with Enterprise Partners Venture Capital, will present approaches in reviewing patent claims.

DO YOU KNOW?

UCSD TechTIPS also handles selected trademark disclosures. These trademarks are mostly related to software and product names that arise from UCSD innovations. Like patent applications, TechTIPS manages the filing and registration of trademarks. Costs, such as filing fees, can be recharged to the relevant units in the university or to the licensee(s), if applicable.

Call (858) 534-5815 for questions about trademarks at UCSD. For general trademark information visit <http://www.uspto.gov/main/trademarks.htm>

(Continued on Page 2- Hostetler)

Round two is underway for TransMed 2004. UCSD School of Medicine, UCSD Technology Transfer & Intellectual Property Services (TechTIPS), and UCSD CONNECT established the TransMed (*Translational Medicine*) Program in 2003, to bridge the “translational gap” between NIH funding and traditional start-up venture funding, and to benefit the public by improving clinical care.

The *TransMED* program brings together clinical investigators and basic research scientists across disciplines to propose innovative medical research collaborations. These proposals are reviewed by a School of Medicine faculty committee, and the most suitable for private industry sponsorship are announced to the public. Funding opportunities for the selected proposals are identified in partnership with the private sector. The submission deadline for this round of proposals was March 1, 2004.

Interested capital providers or industry professionals should contact:

Melissa Fitzgerald, Ph.D.

Assistant Director–Partnership Development
(858) 822-2672 (TransMed Hotline) or
transmed@ucsd.edu. ☎

UCSD will be well-represented at BIO2004, the Biotechnology Industry Organization’s annual international convention. This year’s annual meeting will be held June 6-9, 2004 in San Francisco’s Moscone Convention Center. UCSD TechTIPS partners with UCSD Extension- Bioscience Division, Division of Biological Sciences, and UCSD CONNECT in showcasing the campus at the largest biotechnology meeting of the year. This event provides an excellent venue to promote UCSD excellence in education, professional development training, business development, and technology transfer to the large biotechnology industry.

Specifically for TechTIPS, these activities allow the opportunity to make new contacts in the life science industry and learn about specific technology interests from the private sector. This information is invaluable to our partnership development and technology marketing efforts. The location of this year’s meeting should attract phenomenal attendance since the greater San Francisco region gave birth to the biotechnology industry and remains as a top technology cluster nationally and globally.

Visit <http://invent.ucsd.edu> for updates on the UCSD exhibit at BIO2004. ☎

UCSD researchers continue their prolific innovation activities. Members of the Jacobs School of Engineering faculty listed below have disclosures with the TechTIPS office and recently were awarded grants to advance their research towards commercialization. The grants were from the Von Liebig Center and can be used to develop commercialization strategies for the technologies.

Professor Shu Chien (Bioengineering) with Postdoc Researcher Yingxiao Wang, for “Development and Application of Biosensors to Monitor Kinase Activity with High Temporal and Spatial Resolution in Live Cells” – received \$25,000.

Professor Rajesh K. Gupta (CSE), for “High-level Synthesis Using Aggressive Parallelization of System C Code” – received \$50,000.

Professor George Varghese (CSE) for “NetControl: Setting the Internet on AutoPilot” – received \$50,000.

Professor Sujit Dey (ECE) for “Enabling Affordable, Predictable, Reliable Wireless Data Services through Adaptive Content Shaping” – received \$50,000.

Professor Kenneth S. Vecchio (MAE) for “New Method to Create Synthetic Bone” – received \$50,000. ☎

Hostetler (continued from Page 1)

2002, the U.S. government provided the smallpox vaccine only to a small group working with smallpox and similar viruses in a research setting. Recently, there has been a renewed interest in smallpox vaccination and new treatment options as the danger of intentional release of the smallpox virus by terrorist groups has increased.

New treatment options for smallpox are sorely needed since the current vaccination approach has many disadvantages. Dr. Hostetler’s work on oral antiviral drugs provides an alternative approach with the potential to develop a safer and more effective drug for the treatment of smallpox, especially for the approximately 40 million people in the U.S. who can not safely use the current vaccine.

Entering the business world and starting a new company is not new to Dr. Hostetler. He successfully founded two other companies besides Chimerix over the past two decades, qualifying him as a serial entrepreneur. In the 1980s he cofounded local biotechnology company Vical Inc. (www.vical.com), and, in the 1990s, Triangle Pharmaceuticals based in Durham, North Carolina. During his time with these businesses, Dr. Hostetler served as director and vice president for research in the early years of Vical and continued to consult on their scientific advisory board for a period thereafter. Vical, publicly traded on the NASDAQ Market, develops biopharmaceutical products based on patented DNA delivery technologies for the prevention and treatment of cancer and infectious diseases. In

1995, Dr. Hostetler co-founded Triangle Pharmaceuticals to license and market novel antiviral and anticancer therapies. Triangle was subsequently acquired by Gilead Sciences in December 2002 for \$464 million.

While Dr. Hostetler continues his innovative research at UCSD and the VA Hospital, Chimerix will advance the development of his compounds under its license agreement with the University. This symbiotic relationship allows university research discoveries to continue down the development pathway to commercial markets through technology transfer licensing. This is in keeping with the goals of university technology transfer, contributes to economic development, and strengthens university/industry relationships. ☎

TechTIPS organized a “Breakfast with TechTIPS” in December, an informal introduction for senior-level local industry executives to the TechTIPS office and an opportunity to hear about the latest research from a leading UCSD researcher. The focus of the breakfast was physical science technologies and the high-tech industry. **Professor Jan B. Talbot**, of the Chemical Engineering Program, gave a talk titled “Nano-Structured Films” and an overview of her current research. The event was well-attended by members of the local high-tech industry with representatives from Kyocera, SAIC, General Atomics, among others. These breakfast briefings will be held regularly to introduce UCSD’s technology transfer process to a wider audience and to strengthen our relationships with current and future industry partners.

(left) Professor Jan Talbot presenting Nano-Structured Films and an overview of her current research activities.



(right) Jerry Wolf (General Atomics), Norm Brown (SAIC), and guest speaker Jan Talbot.



In January, the Institute for Information Industry (III), an IT think tank based in Taipei, Taiwan, joined TechTIPS for a half day technology review as part of their Global CONNECT member visit. III's trip covered several purposes, including learning more about UCSD's research interests, capabilities, and opportunities for collaboration; as well as specifically seeking technologies which could be in-licensed to Taiwan for local value-adding development and commercialization. A variety of UCSD technologies from the Jacobs School of Engineering were profiled and taken back to Taiwan for further review. As a result of this visit, TechTIPS was invited to Taiwan for a future multi-day symposium to introduce Taipei industry representatives to UCSD and its available technologies. ☞

(left) Laura Wolszon, Ph.D., Barry Gelernt, Ph.D. (both of TechTIPS), and Martha Dennis, Ph.D. (Windward Ventures).



(left to right) Rick Switzer (Global CONNECT), Dr. Barry Gelernt, Nicole T.I. Chan (Managing Director of III), Dr. Jyh-Sheng Ke (President/CEO, III), David Gibbons, Dr. Donna Shaw, and Alexa Falkenstein.



Technology, License, & Copyright News

Omnilux, Inc., a developer and manufacturer of affordable ultra-broadband wireless solutions, is one of UCSD's newest licensee, taking on the exclusive development rights for a family of patents developed by **Professor Anthony Acampora** of the Jacobs School of Engineering. Omnilux's technology features a repeating mesh topology over free space optics links and is the only commercially available solution with redundant optical data paths to improve robustness and reliability. The licensing of these patents strengthens Omnilux's existing patent portfolio and will further enable Omnilux to deliver the lowest cost-of-ownership, and highest bandwidth networking solutions available to enterprises, system integrators, and access providers. Omnilux equipment is currently deployed in six countries around the world and is expanding rapidly.



The company will unveil its Version 2.0 mesh solution later this year, following a comprehensive field trial expected to kick off in southern California.



*Anthony Acampora, Ph.D.
Professor of Electrical &
Computer Engineering*

Professor Acampora is the founding Director of UCSD's Center for Wireless Communications (CWC).

MEME—Multiple EM for Motif Elicitation has recently been licensed to several companies. MEME is a software tool used for analyzing macromolecular sequences in drug development. New licenses have been finalized for **Vialactia** of New Zealand, **Pharma Design** of Tokyo, **Accelrys** of San Diego and **Silico Informatics** of San Jose. The MEME/MAST system was developed by Timothy Bailey, **Charles Elkan** (Computer Science & Engineering), and Bill (Grundy) Noble with input from **Michael Gribskov** (Computational Molecular Biology) at the San Diego Supercomputer Center. ☞

The following US Patents were recently issued to UCSD innovations:

Lead Inventor	Patent Number	Title
David Barba et al.	6,663,858	In Vivo gene transfer using implanted retroviral producer cells
Dennis A. Carson et al.	6,610,661	Immunostimulatory polynucleotide/immunomodulatory molecule conjugates
Wolfgang H. Dillmann et al.	6,605,274	Method for in vivo regulation of cardiac muscle contractility
Sadik C. Esener et al.	6,605,453	Electric-field-assisted fluidic assembly of inorganic and organic materials, molecules and like small things including living cells
Fred H. Gage et al.	6,599,695	Method for assaying for early gene expression in neuroblasts
Lawrence S. Goldstein et al.	6,645,748	Plus end-directed microtubule motor required for chromosome congression
Michael Karin et al.	6,610,505 6,649,654	Oncoprotein protein kinase Methods for identifying and using IKK inhibitors
Trevor C. McMorris et al.	6,639,105	Illudin analogs useful as antitumor agents
Eyal Raz et al.	6,589,940 6,613,751	Immunostimulatory oligonucleotides, compositions thereof and methods of use thereof Method for treating inflammatory bowel disease and other forms of gastrointestinal inflammation
Julian I. Schroeder et al.	6,635,803	Method to improve drought tolerance in plants
Roger Y. Tsien et al.	6,596,522 6,608,189	Detection of transmembrane potentials by optical methods Fluorescent protein sensors for measuring the pH of a biological sample
Ajit Varki et al.	6,596,705	Inhibition of L-selectin and P-selection mediated binding using heparin
Edward Yu et al.	6,624,452	Gallium nitride-based HFET and a method for fabricating a gallium nitride-based HFET

Campus

As part of our continuing outreach efforts, TechTIPS welcomes the opportunity to educate the UCSD community about various intellectual property issues that may arise in their work at the university. Recent presentations by TechTIPS staff include:

- Assistant Director for Physical Sciences Licensing William J. Decker, Ph.D., gave a presentation to the Committee on Academic Information Technology on “Copyright, Open Source, and Technology Transfer”. The committee consists of faculty and staff members from a variety of departments, including theater & dance, sociology, the library, mathematics, and other more technical departments.
- Senior Licensing Officer Donna Shaw, Ph.D., gave presentations to Biomedical and Clinical Research Center faculty in Hillcrest on “Innovation and Technology Transfer” and to the School of Medicine Neuroscience Department faculty on “TechTIPS and Technology Transfer.”

TechTIPS Outreach

UCSD @ Puget Sound

Woodcock Washburn, Vulcan Capital, and Silicon Valley Bank hosted an evening reception for UCSD TechTIPS in Seattle, Washington. This event is part of our ongoing effort to introduce university technologies and UCSD to a broad audience. TechTIPS targets established technology/entrepreneurial centers that may have an interest in learning more about UCSD technologies and its excellence in research. At the Seattle technology showcase, Assistant Vice Chancellor Alan Paaug gave a presentation on ten exciting technologies in the life science and high-tech fields, and discussed their commercial potential. In addition, Ed Field, CEO of **Inologic, Inc.** (a UCSD start-up) was invited to present an overview of his company and their technology transfer experience with TechTIPS.

A previous showcase was held in San Francisco last spring with **Dr. Karl Hostetler**, of the School of Medicine and **Chimerix Inc.**, as our guest speaker. 📞