Professor Checkley Recognized for Global Economic Impact of Innovation

At the recent Tech Awards for Innovation, David Checkley, Ph.D., Professor of Oceanography at UCSD’s Scripps Institution of Oceanography (SIO), Integrative Oceanography Division, was feted along with a prestigious group of Laureates that were honored by the Tech Museum of Innovation in San Jose, California. These awards honor innovators and visionaries from around the world who are applying technology to profoundly improve the human condition in the categories of education, equality, environment, health, and economic development. Dr. Checkley was recognized for his innovative technology solution to further economic development. His invention, the Continuous Underway Fish Egg Sampler (CUFES), is a fish population management tool that enables people and economies to better manage fisheries around the globe.

Animal protein is necessary for proper human development and in many countries, the population relies heavily on fish for their protein needs. This occurs especially for many people that live in developing areas of the world where other protein sources such as beef or poultry are too costly or are not available. Of all the animal protein consumed by humans, 16% comes from fish.

Pelagic fish receive a lot of attention since they are easily harvested, feeding primarily in the surface layers of the ocean, and travelling frequently in large schools, turning and maneuvering in close formation. Common examples are anchovies, mackerels, sardines, and tuna. These fish are important since they comprise a large portion of the fish diet and economies of many coastal regions; and are susceptible to ocean conditions and overfishing. Careful management of populations of these fish is critical to sustaining their future availability.

The ability to track and estimate fish population is important for local economies and fishermen, whose livelihood depends on good catches. The fish population data can also be an indicator of the health of our oceans. Dr. Checkley’s interest in the spawning and growth patterns of pelagic fish and how they are affected by ocean physics led to the development of CUFES. In conjunction with colleagues from the U.S. National Oceanic and Atmospheric Administration and the Canadian Bedford Institute of Oceanography, CUFES was developed over a five-year period and consists of a submersible pump, a concentrating device, and a sample collector. The sample collector is linked to computers and other electronic devices that record

Did you know that Material Transfer Agreements (MTAs) for incoming and outgoing research materials are handled by two different departments? Call us for details or attend the MTA Workshop in March 2003.
UC Discovery Grants Available

Did you know that there are grants available specifically for UC Principal Investigators through UC and the State of California? The Industry-University Cooperative Research Program (IUCRP) awards UC Discovery Grants in six fields of science and engineering to promote and strengthen California's economy. These six fields are - Biotechnology; Communications, Networking and Operating Systems; Digital Media Innovation; Life Sciences: Information Technology; Microelectronics; Electronics Manufacturing and New Materials.

There are many benefits for participating UC Researchers which include: up to 4 years of funding and support for research projects; training opportunities and funding for students and postdoctoral researchers; special consideration for interdisciplinary and multi-investigator projects; frequent grant solicitations (three application deadlines per year); award notification within six weeks after deadline; and online proposal submission minimizes paperwork.

Proposals must be submitted by a UC researcher along with a binding letter of commitment to jointly fund the project, signed by a private sponsor, typically a California based for-profit enterprise. At least half of the direct costs and applicable indirect costs must be paid by the private sponsor. Forming a three-way partnership between UC, Industry Sponsors, and the State of California, UC Discovery Grants support hundreds of industry-university research projects each year. The next round for biotechnology proposals will be in February 2003. The Notice of Intent submission deadline is February 3, 2003 and the Proposal Submission deadline is February 14, 2003.

For more information on grants for other fields, submitting proposals online, and submission deadlines, please visit www.ucdiscoverygrants.edu.

Technology News

New Bridge Materials

Dr. Vistasp Karbhari, Chair of Structural Engineering at the Jacobs School of Engineering, received the first $75,000 installment of a three-year research grant from the DuPont Corporation for development of anticorrosion composite materials for use in civil infrastructure renewal. This technology will potentially lead to cost effective engineering solutions for the 25% of the national bridge inventory which is currently rated as structurally or functionally deficient due to corrosion damage. Development of an effective remediation scheme will provide a valuable tool in addressing this multibillion dollar national infrastructure crisis.

Finding Cracks in Tracks

Dr. Robin Clark, Vice President for Engineering and R&D for Sperry Rail Service, visited the Structural Engineering lab of Francesco Lanza di Scalea, Ph.D. on November 4, 2002. Professor Lanza di Scalea currently leads a team researching new methods for enabling high speed defect detection in railroad track inspection. Sperry Rail Service is a world leader in rail inspection and Dr. Clark is a noted rail inspection expert. Dr. Lanza di Scalea’s work seeks to improve current rail inspection rates by up to tenfold, which would greatly increase the efficiency and accuracy of rail health monitoring systems.

Designer Bugs into Drugs

The development of engineered or “designer bacteria” using in silico or computer modeling to make specific drugs has been reported in a paper titled “Escherichia coli K-12 undergoes adaptive evolution to achieve in silico predicted optimal growth.” in the November 14, 2002 issue of Nature magazine. This modeling technology was developed by Professor Bernhard Pallson and his colleagues and licensed to UC start-up, Genomatica, Inc., of San Diego. The validation of the computer predictions using a “live” environment may lead to improved bacterial strains used for drug production.

UCSD Professor Publishes Second Novel

UCSD Faculty possess many talents in usually related and sometimes diverse fields. Perhaps capitalizing on his research experience with tissue regeneration, Sanjay Nigam, M.D., recently published his sophomore novel, The Transplanted Man, which has been well-received by the literary world. In addition to being an emerging novelist, Dr. Nigam is Professor of Pediatrics & Medicine and Adjunct Professor of Cellular & Molecular Medicine at the UCSD School of Medicine. His lab is focused on kidney development and regeneration and his recent innovation disclosed with TechTIPS is “Use of Pleiotrophin for Epithelial Tissue Repair, Regeneration and Bioengineering.”

Local Start-Up, PanCel Raises $3.2 M

PanCel Inc. has raised $3.2 million in a first round of financing in which they plan to raise a total of $4.2 million. PanCel was founded by UCSD Professor of Pediatrics, Fred Levine, M.D., Ph.D. The funds will be used for research and development contracts, technology licensing, and to conduct Good Laboratory Practices (GLP) animal studies. The data from these studies may be used for future Investigative New Drug (IND) submissions to the U.S. Food and Drug Administration (FDA), which are required prior to the initiation of testing in human clinical trials.
TechTIPS Round UP

On campus, the TechTIPS department partnered with the Biology Division to present the Agricultural Biotechnology Symposium. The symposium focused on the genetics of flower development and was very well attended by plant researchers and private companies from around the world. The meeting was able to showcase the San Diego Center for Molecular Agriculture, under the leadership of Professor Maarten Chrispeels.

TechTIPS sponsored an Intellectual Property Seminar, presented by patent attorneys from Morrison & Foerster, LLP. The seminar was well attended and provided information relevant to intellectual property issues and UC patent policy guidelines.

Groups from around the world have shown interest in the technology transfer process at UCSD. In early November, business leaders from Denmark visited TechTIPS to learn about technology transfer at UCSD.

Locally, the TechTIPS office continues to work with various groups in the Greater San Diego region to promote UCSD technology and local economic development.

TechTIPS staff members attended the San Diego Regional Technology Alliance: Attacking the Market Seminar, held at the Marriott in Mission Valley. This seminar was focused on developing a marketing strategy for start-up companies which including information on branding and trademarks. Members of venture capital and legal firms were represented on the panels, as well as veteran entrepreneurs.

Dr. Alan Paau was an invited speaker at the Barnett International Intellectual Property Strategy conference held at the Manchester Grand Hyatt. The conference focus was Advanced Patent Strategies for Biotechnology and Life Science Companies. Dr. Paau discussed the university perspective on academic-corporate licensing and UCSD’s technology transfer mission and goals. The life science and biomedical departments represent over 60% of the total innovations that are developed at UCSD.

Are you a researcher creating new breakthroughs in engineering, materials, or in the physical sciences that would have great industry applications?

Who do you call......?

Dr. Gelernt received his B.A. degree from Rutgers University and a Ph.D. in Physical Chemistry from Temple University. His postdoctoral research at Cambridge University (England) and York University (Toronto) was in gas-phase kinetics and molecular spectroscopy.

Barry was process engineering manager in plasma processing for Perkin-Elmer Corporation and Director of R&D for electronic materials at Air Products & Chemicals Corp.

Prior to joining UCSD, he was a Division Manager in Technology and Patent Licensing at Lucent / Bell Laboratories in New Jersey. Presently, he is a Senior Licensing Officer with TechTIPS, focusing on Engineering and Physical Sciences.

UCSD TechTIPS has three Licensing Officers focused on engineering and physical sciences to consult regarding your latest innovations.

UCSD Technology Transfer & Intellectual Property Services

Dr. Checkley - continued from page 1

Data collected by CUFES in a specific area is cross-referenced with satellite imagery for the same area. This feature allows the analysis of spawning habitat and to estimate spawning biomass. CUFES is currently being used to sample fish eggs off the coasts of the United States, Canada, Mexico, Peru, Chile, France, Spain, Portugal, and South Africa. This innovation contributes to the knowledge of oceans and the management of fish populations. UCSD TechTIPS licensed the CUFES trademark to Ocean Instruments, of San Diego.

Dr. Checkley has been a professor with UCSD since 1992 and has also taught at the University of Alaska, the University of Texas, and North Carolina State University. He received his B.S. in Oceanography and Zoology at the University of Washington and his Ph.D. in Biological Oceanography from UCSD and SIO. His many writings have focused on the spawning and development of pelagic fish and zooplankton ecology.

Currently, Dr. Checkley is the Co-Chair of the Small Pelagic Fish and Climate Change (SPACC) Executive Committee of GLOBEC International and Editor-in-Chief of the journal Fisheries Oceanography.
A delegation of business representatives and scientists from Zhongguancun Life Science Park located in Beijing, China was hosted by Dr. Alan Paau and other TechTIPS staff members. This delegation traveled a great distance to learn about technology transfer at UCSD.

Dr. Paau travels to Asia and South America to promote the university, share the UCSD Technology Transfer model and also to develop relationships with emerging research and technology organizations that may have interest in licensing UCSD innovations. This is an important outreach activity for our campus as we increase our visibility in other parts of the world to attract the best faculty and students from around the globe.

UCSD Chemists Develop Nanowire Technology

A silicon polymer “nanowire” capable of detecting trace amounts of explosives, such as TNT, has been developed by a group of researchers from UCSD’s Department of Chemistry & Biochemistry. This technology has important potential applications relevant to the current geopolitical climate as we seek more effective methods for homeland security applications and solutions to prevent tragic accidents from unexploded land and ocean mines abandoned in previous battle zones.

Honglae Sohn, Ph.D. presents data on nanowire research.

Honglae Sohn, Ph.D., (pictured above) is a postdoctoral associate in Professor Michael Sailor’s research group. He produced the silicon wire and discovered its explosive detection qualities in collaboration with Dr. Sailor and William C. Trogler, Ph.D., who are both professors of chemistry and biochemistry at UCSD. Nanowires have numerous potential applications for explosive residue detection on hands or clothing, in air, and even in water. Compared to existing detection methods, this new approach is fast, inexpensive, and versatile. This work was supported by grants from the National Science Foundation and the Defense Advanced Research Projects Agency, or DARPA.

A piece of paper treated with the silicon polymer “nanowire” shows a glowing handprint, that contains small amounts of explosive residues, under black light.

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