

California State University, Long Beach • Fall 2011

# CHEMISTRY & BIOCHEMISTRY

**The \$110 million project was the most expensive building project to date in the California State University system. Our department occupies 14,200 of a total of 98,000 assignable square feet.**

**A**fter nearly three years of demolition and construction, the new Hall of Science (HSCI) opened its doors on March 23, slightly ahead of schedule. The department office immediately moved to its new quarters in HSCI 370, and faculty moved their offices and labs during the spring and summer. Lab classes were held in the new building during the summer, and the new lecture halls are being used for the first time this fall.

The \$110 million project was the most expensive building project to date in the California State University system. Our department occupies 14,200 of a total of 98,000 assignable square feet. Drs. Brazier, McClain, Mezyk, Nakayama and Slowinski all have their research labs on the third floor of HSCI, while the rest of the faculty labs are now on the second and third floors of the Molecular and Life Sciences Center, which was completed in 2004. With a bridge connecting the third floors of the two buildings, all the chemistry facilities are now close to each other.

In addition, a room in the basement houses our 400 MHz NMR and has space for a second instrument, and a room in the research area will house a laser lab. A suite of four general chemistry labs houses CHEM 111A, the first semester of general chemistry, as well as CHEM 100, our general education course. A separate lab is devoted to our instrumental analysis and physical chemistry lab courses.

*Continued on pg. 3*

*PhotoS by Victoria Sanchez*

## Hall of Science Opens for Fall 2011



*Preparing to cut the ribbon for the Hall of Science dedication and open house are, from left to right: CSU Trustee Debra Farar, CSU Chancellor Charles B. Reed, CSULB President F. King Alexander, ASI President Lucy Nguyen, CNSM Dean Laura Kingsford, Dr. Robert Decker ('65), Provost Donald J. Para and Vice President Mary Stephens.*

# Message by the Dean

This year has been an exciting one with the Hall of Science's completion in May. The fire marshal gave us a "conditional certificate of occupancy" in March, which meant we could start moving in prior to the building's completion and commissioning. Thus, the college administrative offices, most of the department offices, the Jensen Student Access to Science and Math (SAS) Center and several faculty members moved during spring break. Since then, there has been a continual stream of people moving "things" into the building—the NMR, chemicals, rocks and minerals, teaching and research equipment and materials, preserved plant and animal specimens, etc.

When you think that the new four-floor Hall of Science has 22 research labs, 31 teaching labs, two 180-seat and two 80-seat lecture halls, five department offices, the college administrative offices, the Jensen SAS Center,

three rooftop greenhouses, a rooftop observatory platform for six telescopes, the college shops, the marine lab and a number of storage areas, then you begin to realize how major our move was into the new building. It has gone amazingly well, and this is to the credit of all—faculty, staff and students alike—who have worked hard to make this happen.

Our Hall of Science dedication and open house, scheduled for Sept. 23, will have occurred by the time you read this message. Hopefully, you joined us in the celebration. If you haven't had the opportunity to name a seat in one of the new lecture halls, please contact Maryanne Horton, our college director of development (mhorton@csulb.edu; 562-985-1687). Alumni, faculty, staff and friends of the college are all welcome to name a seat. If you are interested in gift giving to set up student scholarships, to build and sustain programs, or to name a room in our new science building, Maryanne can help you.

Last year, President F. King Alexander asked our campus to launch a new Highly Valued Degree Initiative with the goal of boosting graduation rates even higher while sustaining and raising the value of our degrees. As part of this, we are establishing a new College of Natural Sciences and Mathematics Advising Center. We have hired Angela Tuan as the center's lead advisor, and we are in the process of hiring two additional advisors. These advisors will work with the faculty advisors and the staff in the Jensen SAS Center to help students stay on track in their respective majors and graduate in a timely manner. The advisors will also refer students to various campus resources that provide counseling, tutoring, career exploration, etc. Funding for the Advising Center comes from the new Student Excellence Fund fee, which started this summer. With this funding, we will be able to add additional supplemental instruction for classes that are traditionally difficult for students and expand our very successful peer mentoring program in the Jensen SAS Center. We see programs like these as essential in helping our students be successful the first time in what are traditionally low completion rate courses in the sciences and mathematics.

State budget cuts continue to make it increasingly difficult for us in higher education. We also recognize that the recent increase in student fees (see story on page 6) is making things very difficult for students and their families. However, the fee increase will allow us to offer needed classes so students can make progress and graduate. This, in particular, has allowed us to meet the high demand for the introductory general chemistry, general chemistry and organic chemistry courses for fall 2011.

Our top priority is student success, and this priority is shared by our friends and alumni in the community. We thank you—faculty, staff, students, alumni and friends—who have contributed in some way. Your support helps make it possible to provide the high-quality programs for our students so they leave CSULB with highly valued degrees.



Dr. Laura Kingsford

Photo by Victoria Sanchez

Photo by Victoria Sanchez



New lecture hall in the Hall of Science.

Dr. Jeffrey A. Cohlberg

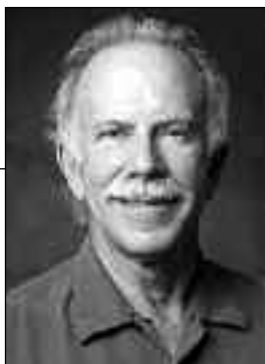


Photo by Victoria Sanchez

# Remarks by the Outgoing Chair

Greetings once again to our alumni and friends. As I write this, we are looking forward to changes, some welcome and others not so welcome, that are arriving with the 2011-12 year.

We moved into the new Hall of Science (HSCI) this past spring and summer. We began teaching laboratory classes in HSCI last summer and will be using the new lecture halls in the fall. Our facilities are now split between two buildings of vintage 2004 or younger, and we no longer are spread about the aging and increasingly dilapidated Peterson Hall buildings. The move to HSCI brought money to buy new major equipment for our analytical and physical chemistry teaching laboratories so that we can offer our students more hands-on experience with modern chemical instrumentation.

Coping with the California state budget situation continues to be challenging. Budget cuts forced us to sharply reduce offerings of General Education (CHEM 100) and Preparatory Chemistry (CHEM 101) classes in fall 2010, but a mid-year budget restoration allowed us to offer all the classes we needed the following spring. Faculty have continued to carry higher teaching loads, and there is less money available for equipment purchase and maintenance and support of research in general. As of this writing, the governor and legislature have just agreed on a plan that will cut \$650 million from the CSU budget next year, and we don't know yet how this will affect our department. We still hope to be able to offer all the classes that our students need to make progress toward graduation.

Nevertheless, our faculty and students have continued to amass an impressive record of accomplishments. Our students continue to gain acceptance to the best graduate and health professional schools and get jobs with leading scientific companies. Students and faculty continue to publish their results in leading journals and present them at national scientific meetings. Many faculty continue to receive major grants to support their research. We have 638 majors, more than ever before, and our graduate program is also thriving, with a record number of new students last year.

We are continuing to develop our curriculum. In CHEM 101, we have replaced the labs with discussion sections, with the goal of increasing the success rate in general chemistry. Technical writing, taught by the English Department, has been replaced by Chemical Communications (CHEM 361), taught by our own faculty. Instrumental Methods of Analysis (CHEM 451) has been expanded to a five-unit course with three hours of lecture each week. Majors can now opt to take Dr. Sorin's course in Biomolecular Modeling and Simulation (CHEM 480). We are conducting ongoing assessment of our courses' effectiveness so that we can modify the curriculum to provide the best training for our students.

It has been a privilege and a pleasure to serve as chair for the past three years. I look forward to another five years as a participant in the department's Faculty Early Retirement Program, and I wish Kris Slowinski success in his tenure as our next chair.



Photo by Victoria Sanchez

## Hall of Science Opens for Fall 2011

Continued from pg. 1

Four new lecture halls are located on the first floor, two with a seating capacity of 180 and two of 80. The basement also contains the science shops, storage, and both teaching and research labs for Biology. The dean's offices, advising offices, and additional teaching and research labs for Biology are found on the first floor. The Physics and Science Education Departments share the second floor, while Chemistry and Geology are on the third floor.

We are proud of our new modern facilities. Come pay us a visit to see for yourself!



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## from the Incoming Chair

### Dear Alumni and Friends:

I enthusiastically look forward to beginning my duties as department chair. While the chair's job has a fair share of challenges,



**Dr. Krzysztof Slowinski**

I am inspired by our department's willingness to continuously search for better ways to carry out our mission as a community of teachers and scholars.

I am amazed by the department's evolution since I was hired as an assistant professor in 2001. The number of research publications authored by faculty and students has increased tenfold over the last 10 years (yes, we now publish 10 times more papers annually than we did in 2001). Faculty grant

acquisition is at an all-time high, with external research funding exceeding \$1 million dollars annually. This summer, a record number of undergraduate and graduate students participated in research activities alongside faculty members. Our department's vision has evolved and now includes teaching and research as "equal and essential components of the education of our students." We are now truly a model of a research-driven, teaching-intensive department.

Student-oriented research creates sustained enthusiasm for science, in turn increasing retention of students in the sciences and their future professional success. Impressive job placements and admissions to some of the most prestigious Ph.D. programs and professional schools provide clear evidence of our programs' success.

Our professors and lecturers are also very involved in refreshing curriculum and developing new courses for our students. We have recently made significant changes to our graduate programs; introduced changes in our general chemistry curriculum; and developed, modified or updated several courses. Lastly, several of our faculty colleagues assumed leadership roles at the university and in the community.

Our focus this coming year will be on maintaining this level of success despite a challenging fiscal situation. We will work to improve efficiency of our operations, improve our internal faculty governance and continue to pursue excellence in teaching and research. This fall, the department will begin the self-study process, which will be followed by an external evaluation, offering us an excellent opportunity to reflect on our programs and identify our strengths and weaknesses. The feedback from our alumni and students would be of great help in this endeavor.

Finally, I would like to acknowledge the tremendous help we are receiving from our alumni and friends. We appreciate your past support and welcome your continued interest in our department.

—Dr. Krzysztof Slowinski

### Alumni on the Move

## Pentoney Promoted at Beckman Coulter

Stephen L. Pentoney has spent nearly his entire professional career within the Beckman corporate world, first at Beckman Instruments in Palo Alto and later at Beckman Coulter in Orange County.

The firm is an international leader in automated medical diagnostic

systems and improving laboratory processes. In September 2010, he was promoted to director of global research and development in its Molecular Diagnostics area, moving from director of advanced systems chemistry in its Advanced Technology Center.

A member of the Chemistry/Biochemistry Department Advisory Committee, he earned his B.S. in chemistry from CSULB in 1983 and a Ph.D. from UC Riverside, completed postdoctoral research at Stanford University in 1989 and published more



**Stephen L. Pentoney**

than 30 peer reviewed scientific articles. At Beckman, he received 20 U.S. patents, and he and his teams helped the company introduce several innovative product lines. Those accomplishments earned him a place in Beckman Coulter's Hall of Fame and CNSM's 2003 Distinguished Alumnus award.

"I love problem-solving, and I have always found the blend of people, chemistry and engineering that I encounter in my work to be both fun and stimulating," Pentoney noted. "Beckman has not only been a great place to work as a scientist, but they have also helped me to grow both personally and professionally" by sponsoring his Six Sigma black belt program and recently, his executive MBA completed in June at UC Irvine. He now spends about half of his time traveling to other Beckman Coulter sites, overseeing research, development and intellectual property strategy for the company's molecular diagnostics and genomics services areas.

But his world isn't all work. He's an avid boater and fisherman who holds a U.S. Coast Guard 50-ton captain's license that allows him to operate charter boats; still surfs a little; and hangs out with his three college-student children, one of whom is following Dad's footsteps in studying science.

Pentoney says, "CSULB was absolutely the right place for me, and I am grateful to the Chemistry Department for both the education I received as an undergraduate and for the continued affiliation I have had with the department all these years since. If I stick to my 'life plan,' I will finish my career giving a little more back by teaching at the undergraduate level for a while and, who knows, maybe I will be fortunate enough to teach at CSULB one day."

To learn more about Dr. Pentoney, visit <http://chemistry.csulb.edu/alumni.html>.

—By Anne Ambrose

By Anne Ambrose

## Weers Lab Looks at Lipids

Lipids, or fats, play an essential role in providing energy to organisms, and it's the mechanism of how lipids are transported through the blood to cells that intrigues Paul Weers, associate professor of biochemistry.

Animals accomplish this transport by means of large lipoprotein complexes, made up of lipids and small proteins called apolipoproteins.

"We work on exchangeable apolipoproteins from insects, which we call apolipoporphins to distinguish them from vertebrate apolipoproteins," Weers explained. Apolipoporphins, which were discovered about 30 years ago, include the protein studied by Weers, apolipoporphin III. "We use this protein as a model system



Dr. Paul Weers

Photo by Victoria Sanchez

because of the availability of three-dimensional structures," since there is limited high-resolution structural information available for human apolipoproteins. "Since we know the exact position of each amino acid in the protein, we are able to carry out structure-guided, site-directed mutagenesis to address fundamental and practical questions related to apolipoprotein function.

"One aspect of our research is to understand how apolipoproteins bind to lipids," he continued. "The resulting lipoprotein particles transport hydrophobic materials such as diacylglycerol, phospholipids and cholesterol through the blood. You need to have lipids in soluble form, and that's why the assembly of lipid/protein complexes is required for transport to cells."

With a four-year grant from the National Institutes of Health, Weers explores the protective role apolipoproteins play against bacterial infection. "Lipopolysaccharides are membrane components of gram-negative bacteria; their release in the blood often results in septic shock. There are treatments available, but those can be improved. We are investigating how apolipoproteins can help because they are circulating in the blood and associate with the toxic lipopolysaccharides."

A related project is examining the ability of apolipoporphin III to lyse bacteria. "Our protein has a high affinity for negatively charged phospholipids, which are abundant in bacterial membranes. We think that our protein has antimicrobial activity, and we're currently exploring that possibility."

Weers earned his Ph.D. in the biochemical physiology research group at Utrecht University in the Netherlands. He then began postdoctoral work in the Department of Biochemistry at the University of Alberta, Edmonton, Canada. He came to northern California when his professor moved the research lab to the Children's Hospital Oakland Research Institute in the Bay Area. He joined CSULB as an assistant professor in spring 2003.

And Weers continues to collaborate with several Canadian researchers. He and Robert Kiss of McGill University, Montreal, characterized a mutant protein of apolipoproteinA-I in a patient with abnormally low HDL levels, and their study was published in September 2010 in the *Journal of Lipid Research* (*J. Lipid Res.*, 2011. 52: 35-44; [www.jlr.org](http://www.jlr.org)). He also spent spring 2010 on sabbatical, working with Elmar Prenner at the University of Calgary on isothermal titration calorimetry—experience he now can apply in using CSULB's new calorimeter.

Weers finds it very rewarding to work with students. The ability to train students in all aspects of scientific research is a huge motivator, and they have contributed tremendously to the lab. Duc Le, a biochemistry student in his lab, won the CSULB 2011 Outstanding Undergraduate Research Student Award. Weers received the 2010 CNSM Faculty Award for Excellence, also known as the "Pretty Darn Good Professor Award," followed this spring by the CSULB Distinguished Faculty Scholarly and Creative Achievement Award.

The California State University system is facing another year of budget cuts. In Sacramento, the early months of 2011 were consumed by partisan disagreements over the budget. Governor Jerry Brown proposed a referendum on extending the higher sales and income tax rates that had been in effect since 2009. However, all tax increases require a two-thirds majority in both chambers of the legislature, and Brown was unable to attract any Republican support for his proposal. As a 2010 voter-approved ballot proposition allows the legislature to pass a budget lacking tax increases on a simple majority vote, an "all-cuts" budget was drawn up and passed by the Democrats, who hold a majority in both chambers.

The budget imposes sharp reductions on many areas of state spending, including cuts to higher education. The University of California and the CSU received cuts of \$650 million each, amounting to 22 and 25 percent, respectively, of their total state support.

The budget assumes that tax revenues will be \$4 billion higher in 2011-12 than in 2010-11. If this increase does not materialize by January, an additional \$100 billion will be cut from the CSU, an additional 4 percent cut.

The effects of the cuts will be offset by a number of factors. First, the CSU trustees have approved a 22 percent increase in student fees. With this increase, CSU students for the first time will be paying most of the cost of their education—about 57 percent—with only 43 percent coming from the state. CSU fees have more than tripled since 2001.

Additionally, a budget restoration near the end of 2010 came so late in the academic year that some funds remained unspent and are being carried over to this year. At CSULB, these carryover funds will be used to mitigate the effects of the cuts this year. Our campus still plans on offering all classes that students need to progress toward graduation. But the carryover funds will be consumed this year and will not be available to mitigate any continued cuts for 2012-13.

The cuts are being felt in many ways. Many faculty are carrying higher teaching loads. There is less money available for purchase and maintenance of instructional equipment, faculty and student travel, and matching funds for external grants. New faculty hiring has been sharply reduced. Programs like the University 100 orientation for entering freshmen and the annual Odyssey program, where CSULB welcomed visitors from the community, are now just fading memories, as are pay raises for faculty and staff.

We can only hope that an economic recovery is ahead—and not too far ahead. Meanwhile, the CSU needs to be resourceful in order to do our best to serve students and maintain the quality of our university system.

# A.G. Tharp

1927-2011

By Drs. H.N. Po and N.M. Senozan

Dr. A.G. Tharp, who taught in our department from 1959 to 1987, passed away in his Lakewood, Calif., home on June 20. He was 84 years old.

For 28 years, A.G. almost always taught one of the two lecture sections of the second half of



general chemistry, known originally as CHEM 1B and later as CHEM 111B. He also taught advanced inorganic courses, served as graduate advisor and conducted research on rare-earth elements,

including ytterbium, samarium and holmium. This research led to a total of 13 publications in leading chemistry journals. It is not an exaggeration to say that our department's tradition of excellence in inorganic chemistry can be traced to Dr. Tharp.

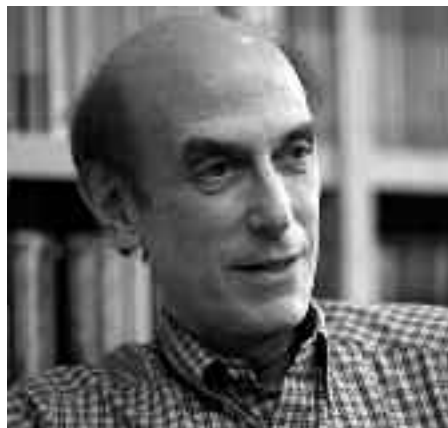
A.G.'s stoic demeanor sometimes masked an affectionate and generous person who had a deep appreciation of natural beauty. His passion for orchids reflected this appreciation. On the roof of Peterson Hall III, now replaced by the Hall of Science, he tended an orchid garden resplendent in color and form. His extensive knowledge of orchids landed him a position as an orchid judge in the Southern California section of the American Orchid Society, and later, recognition as a Distinguished Emeritus Orchid Judge.

After retiring in 1987, A.G. went to the Philippines and ventured into the orchid growing business with a Filipino grower. The tropical climate and the cheap labor helped the business thrive for some 10 years. Then, salt water seeped unexpectedly into the artesian wells, and the business went downhill. Dr. Tharp returned to California—not a bitter man but happy that he had 10 great years to do what he loved.

Dr. Tharp's deliberate, slow cadence in speech and motion hid another surprising skill from a casual observer. He was an avid flyer, who often treated his students and colleagues to the unforgettable thrills of flying in his small plane.

At times, A.G. could be quite quirky, and his charm, in part, rested on his idiosyncrasies. One that we remember well was his revulsion to any mention of the Henderson-Hasselbalch equation or any use of this equation by a student on an exam. He apparently could not accept that a simple rearrangement of the equilibrium constant expression would immortalize these two names.

Dr. Tharp is survived by a sister and her family in Kentucky.



## 2011 Distinguished Lecturer: MIT's Stephen J. Lippard

By Jeff Kohlberg

Stephen J. Lippard, a renowned bioinorganic chemist, visited our department on March 23 as this year's Allergan Distinguished Lecturer. Dr. Lippard is the Arthur Amos Noyes Professor of Chemistry at the Massachusetts Institute of Technology. His research focus is at the interface of inorganic chemistry and biology and combines theoretical and synthetic organometallic chemistry, structural and mechanistic biochemistry, and studies of cultured cells and living organisms.

Dr. Lippard presented a morning lecture entitled "Understanding and Improving Platinum Anticancer Drugs." Cisplatin (*cis*-diamminedichloroplatinum(II)) was serendipitously discovered to have anticancer activity in the 1960s and has been used as an approved anticancer drug since 1978, but our understanding of its mechanism of action is the result of subsequent studies in Dr. Lippard's lab. Dr. Lippard presented chemical and structural studies of adducts between a variety of platinum agents and DNA and on chromatin containing modified DNA. He showed evidence that DNA modified with platinum compounds causes the enzyme RNA Polymerase II to stall during transcription and thus inhibits the production of messenger RNA in tumor cells. He discussed his lab's work in designing and synthesizing new versions of platinum compounds with optimized drug properties, including platinum drugs attached to nanomolecular constructs.

Dr. Lippard's afternoon lecture was entitled "Probing Roles of Mobile Zinc and Nitric Oxide Signaling in Biology." He discussed his lab's development of new fluorescent sensors

capable of sensitively detecting and accurately quantifying zinc and nitric oxide in cells. Studies using these sensors have revealed new roles for zinc in the nervous system and may also lead to a new approach for early detection of prostate cancer. New probes for nitric oxide are being used to study changes in NO concentration during a wide variety of biological processes.

Dr. Lippard's lab also has a major focus on studying the mechanism of metalloenzymes, including diiron hydroxylase.

Dr. Lippard was a professor at Columbia University from 1966-83, before he moved to MIT. He is the author of over 750 publications and co-author of the text *Principles of Bioinorganic Chemistry* with Jeremy Berg. He is a member of the National Academy of Sciences, the National Institute of Medicine and the American Academy of Arts and Sciences. He has received many awards and honorary degrees, most notably the 2006 National Medal of Science, the nation's highest science honor. Also, he has received the Linus Pauling, Theodore W. Richards and William H. Nichols Medals. The American Chemical Society has recognized him with the Ronald Breslow and Alfred Bader Awards, the ACS Award for Inorganic Chemistry and the ACS Award for Distinguished Service in Inorganic Chemistry.

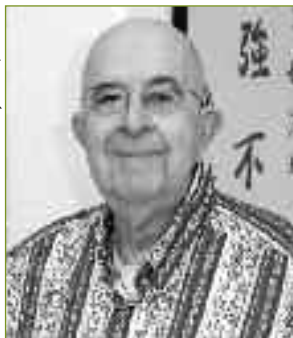
The talks were well attended by students and faculty. We are grateful to Allergan for their continued support of the Distinguished Lecturer program, making it possible for our students and faculty to meet and interact with truly outstanding scientists using chemistry to tackle problems at the frontiers of knowledge.

## Wynston and Sarno Fund New Student Awards

Two new student awards have been established through the generosity of a former faculty member and an alumnus of our department.

Dr. Leslie K. Wynston, professor emeritus of biochemistry, has established the Leslie K. Wynston Scholarship in Biochemistry. The annual \$1,000 scholarship awards and recognizes an outstanding junior who is pursuing a bachelor of science in biochemistry and planning to enter a health-related professional school upon graduation.

Photo by David J. Nelson



Leslie K. Wynston

A native of San Diego, Dr. Wynston received his undergraduate degree from San Diego State and his doctorate from the Biochemistry Department of UCLA's medical school. During his tenure at CSULB from 1965-00, Dr. Wynston, who was instrumental in developing the B.S. degree in biochemistry, served as chair of the Pre-Health Professions Advisory Committee, graduate council and several international student committees. He was president of the Western Association of Advisors for the Health Professions and later secretary of the national organization. He also served as a consultant for North American Aviation, now Rockwell International, conducting research, among many other projects, on osteoporosis resulting from the zero gravity of space travel.

Along with his second wife of 25 years, Anna, who shares his passion for traveling, Dr. Wynston spent a year as a visiting professor at the University of Zurich teaching a biochemistry course in the veterinary school; a year in Taiwan as an exchange professor teaching biochemistry; and went on a lecture tour throughout East Asia before returning to his duties at CSULB. Dr. Wynston also became known for developing and teaching a CSULB extension course about wine and conducting European winery tours. Since retiring from CSULB, Dr. Wynston has joined the Legacy Society and serves as a College of Natural Sciences and Mathematics fellow.

The second award is the Maria Erlinda Co Sarno Scholarship in Chemistry. This \$2,200 award is given out to an international student with research interests in compounds leading to the development of therapeutics for, or prevention of, disease.

Dr. "Linda" Sarno emigrated to the U.S. shortly after receiving her bachelor's degree magna cum laude from the University of Santo Tomas in the Philippines. She entered the M.S. program at CSULB and worked under the direction of Dr. Kenneth Marsi, an organic chemist who later served as chair of the department. After graduating with a 4.0 GPA in 1975, she worked for many years at Baxter Healthcare, where she developed many new products and processes. She was awarded the first Dave Winchell Patent Award by Baxter for the patent with the most significant business impact in the corporation.

Dr. Sarno also received a law degree cum laude from Western State University. In her second career as a patent and trademark attorney, Dr. Sarno focuses her practice in serving small businesses and independent inventors. She has been president of the Asian Business Association of Orange County and a leader of the Filipino American Chamber of Commerce of Orange County. She has also been active in advocating the causes of Filipino Americans, promoting green/conservation technology, mentoring young entrepreneurs and chairing a Pastoral Council of the Catholic Church. She is a recipient of numerous awards and recognition, both for her scientific achievements and for her civic involvement in the community, including the SBA Small Business Advocate Award in 2005, the Southern California Edison Leadership Award in 2010 and the Community Heroes Award of the Orange County Asian Pacific Islander Community Alliance in 2011.

Dr. Sarno established the award in gratitude for the training she received at CSULB. She hopes to help further the education of University of Santo Tomas graduates or other international students pursuing a career in chemical research relevant to human health.



Maria Erlinda Co Sarno

Two Department of Chemistry and Biochemistry faculty, Drs. Xianhui Bu and Young Shon, published papers this year that received special recognition as important pieces of work.

One of Dr. Shon's articles, "Synthesis and catalytic properties of alkanethiolate-capped Pd nanoparticles generated from sodium S-dodecylthiosulfate," by Elham Sadeghmoghaddam, Caroline Lam, Daeock Choi and Young-Seok Shon, (2011) *Journal of Materials Chemistry*, Vol. 21, 307-312, was named a "Feature Article" by the journal. Elham Sadeghmoghaddam is a graduate student in the department and Caroline is an undergraduate. The study, which forms the basis of Elham's M.S. thesis, demonstrated that these nanoparticles catalyze the isomerization of allyl alcohols and investigated the selectivity and mechanism of this process.

This year, two more of Dr. Bu's research articles were recognized as "Hot Papers" in prestigious chemistry journals. Dr. Bu's research is in the area of synthesizing and characterizing new inorganic and inorganic-organic hybrid materials.

In February, the paper "Porous Lithium Imidazolate Frameworks Constructed with Charge-Complementary Ligands," by Shou-Tian Zheng, Yufei Li, Tao Wu, Ruben A. Nieto, Pingyun Feng and Xianhui Bu, (2011) *Chemistry - A European Journal*, Vol. 16, 13035-40, was listed as one of the "Hottest Articles in Inorganic Chemistry" by the Wiley publishing company. Yufei Li was a graduate student in the department, who received her M.S. degree this past spring. The article describes a new type of zeolite structure that, for the first time, uses a lithium-organic framework, which is of lower density than frameworks containing common transition metals. Lightweight porous adsorbents are of current interest for their potential applications in on-board fuel storage.

Then in July, the paper "Multi-Component Self-Assembly of A Nested Co<sub>24</sub>/Co<sub>48</sub> Metal Organic Polyhedral Framework," by Shou-Tian Zheng, Tao Wu, Burcin Irfanoglu, Pingyun Feng and Xianhui Bu, *Angewandte Chemie*, in press, was chosen as a "Hot Paper" by the editors "for its importance in a rapidly evolving field of current interest." Burcin Irfanoglu is a student in the M.S. degree chemistry program. The paper describes the intricate three-dimensional assembly of two types of polyhedra into a nested cage-within-cage architecture. This nested architecture offers a new method for partitioning the large internal pore space and maximizing the uptake capacity of gas molecules relevant to energy and environmental applications (e.g. CO<sub>2</sub>, H<sub>2</sub> and CH<sub>4</sub>).



# Reports from Faculty

Photo by David J. Nelson

## Dr. Roger Acey

There have been some major and exciting changes in the group this year. I'm very happy to report that Gwen Jordaan, Jim Yano and Simon Moon completed all their experiments and have nearly completed the writing of their theses. Paul Madera has been accepted into medical school and will return next summer to defend his thesis. I was very fortunate to have had these individuals as graduate students in my laboratory.

Gwen was able to clone the gene for Artemia metallothionein. It is unique in that there are no introns in the sequence. Gwen is currently working as a research associate at

Photo by Victoria Sanchez



Back row from left: Paul Madera, Steven Poyter, Mathew Kunicki, Dr. Roger Acey and Brent Wilkinson. Front row from left: Anna Smith, Joselyn Del Cid and Lauren Hartman.

the Los Angeles VA hospital. Simon was able to show that histone H1 undergoes dramatic changes in glycosylation during the early development of Artemia. He currently teaches high school chemistry and has recently presented his data at the American Society of Mass Spectroscopy in Denver, Colo. Jim was able to show that a unique down regulated protein in activated macrophages is localized to the nucleus; it is a tightly bound chromatin protein. Paul was able to clone both an individual metal binding domain of metallothionein and dimeric MT. We hope to adapt these derivatives to our water purification

From left: Dr. Eric Sorin, Dr. Christopher Brazier, Dr. Lijuan Li, Dr. Young Shon, Dr. Jeffrey Cohlberg, Dr. Krzysztof Slowinski, Dr. Robert Loeschen, Dr. Kasha Slowinska, Dr. Paul Buonora, Dr. Marco Lopez, Dr. Vasanthy Narayanaswami, Dr. Brian McClain, Dr. Paul Weers and Dr. Tom Maricich.

technology. A patent describing our technology was issued this year in Japan. We now have four U.S. patents and two international patents and are in discussion with potential investors to help us commercialize the technology.

New graduate students in the lab are Lauren Hartman and Anna Smith. Both Lauren and Anna will be working on the cholinesterase inhibitor project we have in collaboration with Dr. Nakayama. Lauren will be working to show if these compounds inhibit the formation of neurotoxic  $\beta$ -amyloid plaque. Anna will be working with a class of dual site reversible cholinesterase inhibitors.

Joselyn Del Cid, a MARC Scholar, was chosen to present her data to members of Congress in Washington, D.C. She was also accepted into the Amgen Undergraduate Research Program, and she will be spending this summer at Stanford. We will miss her tremendously and will welcome her back with open arms in the fall. Nolan Dunisch graduated and moved back to Sacramento, Calif. Brent Wilkinson will be in the lab this summer, working on the MT project. Rayna Raya was accepted into USC's pharmacy program in the fall, and Steve Poynter is a biochemistry major at UCLA. Mary Han, a Whitney High School student, now attends Johns Hopkins. A new undergraduate student to join the lab is Matthew Kunicki. He is a student majoring in both chemistry and psychology. He has extensive experience working with stem cells, so he will help me develop a brain stem cell culture system.

I spent time this year talking to high schools about career options and environmental issues. It was a very rewarding experience.

## Dr. Paul Buonora

The biggest news this year has been related to dealing with the department's NMR facilities. While I was working with the movers on the planning and schedule for bringing down the 400 MHz instrument for the move to the new Hall of Science facility, the magnet quenched on its own. Unfortunately, this was six months too soon for the move. This led to a number of problems as research groups had to deal with the limitations of the 300 MHz teaching instrument, which is of an older vintage than the 400 MHz and really only marginally useful for teaching. Fortunately, in late April, the 400 MHz was moved to the new location and brought back on line, just in time for the summer research season.

The 2010-11 year was a busy one with lots of changes in the Buonora lab. Three master's degree candidates are currently working on their theses. Crystal Jenkins and Jim Brady, as part-time graduate students, have been working off-campus while performing their theses research. Their research projects are tied to our longstanding studies involving 5,5-bicyclic lactams. Crystal is studying dynamic kinetic resolution in the cyclocondensation to produce the 5,5-bicyclic lactams. Jim is studying diversity oriented synthesis involving coupling in 5,5-bicyclic lactam based synthesis.

The third M.S. degree student completing a thesis is Straun Phillips, who is working on the new dioxepine project. His work, a spinoff, involves looking at the direct oxidation of alkenes to enones. We are studying



## Reports from Faculty

the electronics in cobalt salen complexes and how they impact the product distribution in the oxidation. We hope these results will support the continued investigation of this system through its own funding.

On the topic of funding, Dr. Ken Ishida of the Orange County Water District continued his support of our research with a second annual donation this year. His support has been instrumental in keeping our projects going during these tough fiscal times.

Our dioxepine project was the continued focus of attention for undergraduate Jose Guerrero and our 2010 summer Bridges to the Baccalaureate students, Adriana Bakhoun and Chris Nguyen from Cerritos and Cypress Community Colleges, respectively. Building on their progress is our new graduate student, Yong Shin, who is moving the project forward.

We started a new project in collaboration with Dr. Quang Le of the Long Beach VA Hospital, in which we are synthesizing compounds for his research use. Ralph Alvarez started the work in the fall semester, and Akira Ueno continued the project in the spring. Hopefully, this collaboration will result in some interesting medicinal chemistry.

During the last year, six students, Michael Kingham, Michiko Okawara, Mariko Yokokura, Lizeth Ramirez Perez, Kevin Mahle and Hannah Pham—most of whom had taken organic with me, have been working on the dynamic kinetic resolution studies. Kevin will be presenting some of this work at the fall National ACS meeting in Denver, Colo., and hopefully, Hannah and Lizeth will present at the spring meeting.

I have continued my work in student development through the NIH-RISE and NSF S-STEM programs, in which I serve as principle investigator for the CSULB grants. These programs develop and provide guidance to students as they move through their bachelor's degrees and on to graduate school. One of my former students, Joe Badillo, helped our S-STEM student Delora Gaskins as she successfully applied for an NSF Graduate Research Fellowship. Joe represents a good example of alumni giving back, even while they are in graduate school.

With the last of my 600 words, as the seminar coordinator, I would like to invite alumni interested in presenting their science at the seminar program to contact me.

### Dr. Jeff Cohlberg

The molecular modeling manual that I developed, "Studying Protein and Nucleic Acid Structure with Jmol," has been adopted by W.H. Freeman and Company as an online resource for both Berg, Tymoczko and Stryer, *Biochemistry* (7th Edition), and Nelson and Cox, *Lehninger Principles of Biochemistry* (6th Edition).

Since 2001, all students taking our first-semester biochemistry class (CHEM 441A) have learned how to download three-dimensional structure files from the Protein Database (PDB) and display and manipulate them with the use of a molecular modeling program. We started with the program Rasmol and switched in 2010 to the program Jmol. As they explore various aspects of protein structure, students follow a set of self-guided exercises that help them to gradually gain competence in using the program.

The exercises start with simple aspects of secondary and tertiary structure and lead to enzyme active sites, proteins with multiple domains and multiple subunits, and even complexes of the electron transport system. Each student writes a term paper on a protein of their choice, illustrated with figures that the student composes by using Jmol. Further exercises used in some sections of CHEM 441B deal with photosynthetic reaction centers, DNA, tRNA and ribosomes.

Most students can do the exercises without assistance, and many of them have told us that using molecular modeling helps them learn about protein structure. Also, use of molecular modeling is a skill that many students apply to their research and an essential tool for professionals in biochemistry and the biomedical sciences.

As I write this, I am working with an editor at W.H. Freeman and Company to iron out the kinks in the manual so that it will be online and ready for use in the fall as a supplement to the new Stryer text. The Lehninger text is scheduled to appear next spring. I am excited at the prospect that what we have developed at CSULB will become part of the biochemistry training of students throughout the world.

I'm looking forward to continue teaching our biochemistry students as I enter my first of five years in the Faculty Early Retirement Program (FERP).

### Dr. Tom Maricich

This past year was my last year of Faculty Early Retirement (FERP) teaching. Now, I will embark on a career as a full-time emeritus faculty doing writing, research, and consulting as an expert witness.

Five undergraduate students, Jessica Burton, Sarah Tabayoyong, Hai Nguyen, Brian Kammourieh and Glen Soxman, have been

Photo by David J. Nelson



*Standing from left: Glen Soxman, Dr. Tom Maricich and Jessica Burton. Seated from left: Hai Nguyen and Sara Tabayoyong.*

working in my research group. They are continuing their studies of sulfonimide alkylation reactions and syntheses of new sulfonimides.

I have filed a trademark with the U.S. Patent and Trademark Office for the sulfonimide alkylation reactions. The term SNAAP™ reaction and alkylation is an acronym for a facile Substitution Nucleophilic of Acids, Alcohols and Phenols. We are discussing the possible marketing of stable, crystalline sulfonimides with Sigma-Aldrich.

I have moved my office to PH2-223 (Dr. Nakayama's previous office) to make room for the faculty from the College of Liberal Arts while their buildings get seismic retrofitting. With the endorsement of the Department of Chemistry and Biochemistry faculty and the dean, I might be permitted to continue my research projects in PH2-217.

This past April, I presented a seminar in the Natural Sciences Seminar Series at Fullerton College (titled "Third Degree Burns from Hair Bleach") on the work of Sokrieth Sea and Cara Buffolini, who were CSULB consumer sciences students. We have shown that bleaching powders that contain alkali persulfates and sodium metasilicate can exotherm to over the boiling point of water in less than 10 minutes when mixed with aqueous hydrogen peroxide, if thermostated at 110 °F. This is about the temperature on the low setting of a hair dryer. Such burns may require skin grafts on the heads of the injured hair salon clients.

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I would be happy to hear from past students to know how you are doing. My e-mail address is: tmaricic@csulb.edu. Emeritus faculty don't have university phones, so you can reach me on my cell phone at 562-209-4306.

**Dr. Douglas McAbee**

This past May marked the end of my 14th year in this department. Last fall, I taught Chemical Communications (CHEM 361) for the first time. This relatively new course, which is required for all of our undergraduate majors, was developed about five years ago by Dr. Dot Goldish at my request as department chair. So, as the saying "what goes around, comes around" goes, it was only fitting that I should teach the course at some point. Even though it was a new experience for me, I enjoyed the challenge of getting students to think seriously and critically about clear communication. I must publicly acknowledge Dr. Goldish and Dr. Marco Lopez for providing me with ample course material, on which I relied heavily. As no good deed goes unpunished, I get to teach the class again this fall! Seriously, I'm looking forward to it. This past spring, it was a pleasure to teach my graduate Cell Membranes course. I'm not sure what the students got out of it, but I learned a lot! Biochemistry Laboratory (CHEM 443) was (mostly) fun this past year: most of the experiments worked, no one got hurt and no one threw their hemoglobin away (though some felt that impulse). And we made CHEM 443 lab T-shirts that everyone agreed were really cool.

Jeremy Wood, a former biochemistry student, left my lab last summer and started his Ph.D. program in biochemistry and molecular biology at Texas A&M University. Jeremy advanced the project identifying human serum lactoferrin-binding proteins and presented his work at the FASEB meetings in Anaheim, Calif., last April. Jeremy will do very well in his research and graduate courses, but the weather in College Station may kill him. And if he's not careful, he may develop a Texas hill country accent. I was fortunate to obtain a mini-grant from the university late this spring, which I am using to expand work begun by Aynur Bakirci, a former M.S. degree student in the lab, to study the effects of acute iron overload on the rat liver proteome. Erik Anderson, an undergraduate biology student, is assisting me with the analysis. Wendy Beck, an erstwhile refugee from Dr. Paul Weers' lab, is also learning to do two-dimensional gel

# Chemistry and Biochemistry Faculty Win Emmy Award

By Anne Ambrose

**F**ive faculty members in the Department of Chemistry and Biochemistry were honored for their roles in the video series "Understanding Chemistry in Our World," which won a 2010 Los Angeles Area Emmy Award for Best Instructional Series. Lecturer Nancy Gardner served as one of the project's chemistry advisors and appeared in the series as a chemistry expert along with Drs. Stephen Mezyk, Paul Buonora, Brian McClain and Marco Lopez. The series, produced by Coast Learning Systems, accompanies a textbook, lab manual, and study guide also co-authored by Gardner as part of an online class for liberal arts majors. Coast Learning Systems is part of Orange County's Coastline Community College. The series' chemistry team was led by producers Wendy Rakocho, Marie Hulett (a CSULB alumna) and Laurie Melby, and writer Susan Wilcox.

"I am honored to have worked and learned from this team on their 19th Emmy-winning project," Gardner said.

Photo by Rebecca Gardner



L.A. Area Emmy Awards 2010 ceremony attendees included (left to right) Susan Wilcox, Joan Stover, Nancy Gardner, Wendy Rakocho, CSULB alumni Jeff Isbell and Marie Hulett, and Mark Abdou.

Photo by David J. Nelson



Xiao Wong

## Staff News

**Xiao Wong** is the new administrative support assistant in the department office. Xiao is a native of Chinatown in Los Angeles, who received a B.A. in recreation and leisure studies with a certificate in gerontology from CSULB in 2010. She spent five years working as a student assistant in the Department of Physics before moving to the Department of Chemistry and Biochemistry last August. Xiao enjoys swimming and has a passion for doing volunteer work in her home community.

**George "Buddy" Saxon**, our former administrative support coordinator, has taken a position as administrative support coordinator for the Department of Communication Studies at California State University, Stanislaus.

electrophoresis on this project while educating me on the joys of vegan cuisine! (At this point, I think she's getting the better end of the deal.)

I'm looking forward to my teaching and research opportunities in my 15th year at CSULB.

*Photo by Victoria Sanchez*



*Standing from left: Danny Pham, Katie Feher, Daniel Nguyen, Michelle Mendoza, Michael Toliver, Eliana Barraza, Jimmy Nguyen, Quynh Tran and Duc Le. Seated from left: Hae Kim, Kristy Kim, Dr. Douglas McAbee and Daisy Sanchez.*

#### **Dr. Stephen Mezyk**

Over the past 12 months, the CSULB Mezyk RadKEM group has again thrived, performing research in environmental water remediation, nuclear chemistry and chemical carcinogenesis. Our efforts produced 13 peer-reviewed published papers, two more accepted for publication, and 31 conference presentations. In addition, this year, I received an Emmy Award for Instructional Programming as an on-screen expert supporting the telecourse, "Liberal Arts Chemistry," textbook written by Nancy Gardner in 2010. I also received the CSULB's Alumni Association Most Valuable Professor Award.

My hardworking research group changed again this year with graduations and new students joining. Kimberly Rickman completed her B.S. biology degree and matriculated into a fully funded joint M.D./Ph.D. position at Cornell University. She joins two former students of mine, Edsel Abud (M.D./Ph.D., UC Irvine) and Michelle Dail (M.D./Ph.D., University of Pittsburgh), in looking forward to their next graduation in 2019! During her final year, Kimberly focused on her Beckman Scholars research, obtaining data on four separate projects that we are now writing up for journal publication. Her exceptional efforts culminated in her being chosen as CNSM's 2011 Outstanding Graduate. Delora Gaskins completed her dual B.S. degrees in chemistry and

mathematics, and she obtained an NSF Graduate Scholarship to support her Ph.D. at Brandeis University. Charlotte Hirsch completed her M.S. degree studying the radical-induced remediation of personal care contaminant chemicals in wastewater and will soon start her Ph.D. at UC Irvine. Garrett McKay is also completing his B.A. degree and undergraduate research this summer, thanks to a Department of Chemistry and Biochemistry Monahan Research Scholarship as well as a Women and Philanthropy award. He will return as an M.S. chemistry degree student next fall, continuing his research into the impacts of natural organic matter on advanced oxidation process applications in wastewater cleanup. Christine Malnick graduated with her B.S. chemistry degree and is now seeking employment in the business world. It has been a great pleasure mentoring these students to all of their great achievements, and we wish them even greater success in their futures.

New students who joined our laboratory are Matt Chagnon, who will study the kinetics of chloramine reactions with peroxide, and David Russell, who will look at the radiolytic stability of new actinide chelating agents. They join Thomas Cullen, who has finished his B.S. degree and returned for his M.S., in studying the radiolytic degradation of metal-loaded ligands; Jeremy Scheeler, who obtained a Beckman Scholars scholarship in 2011 to research the role of nitric oxide in nitrosamine carcinogenesis; Kimberly Johnston, who received the Target Scholarship to assist her investigations into the redox stability of model Tc-ligand systems used in tumor treatments; Stephen Mathew, who is studying the remediation of halogenated hydrocarbon contaminated soils; as well as my M.S. degree students Hanqing Pan and Mayumi Tamada, who are studying troposphere aerosol chemistry of nitrate and hydroxyl radical reactions with terpenes at low temperatures; and Anas Al-Qazzaz, who is investigating radical-based remediation of phthalates in contaminated waters.

This year's highlights notably included my students' conference attendance. Six students each attended the Boston, Mass., and Anaheim, Calif., American Chemical Society meetings, and four presented their work at the PacifiChem International meeting in Hawaii.

With such a strong focus on research, my teaching schedule was necessarily altered to only have classes in the fall 2010 semester,

covering General (CHEM 111B) and Physical (CHEM 377B) Chemistry in addition to my usual research-based courses of CHEM 695, CHEM 697 and CHEM 698. My CSULB service efforts were mainly concentrated on the Department Retention, Promotions and Tenure Committee for a second year.

Overall, it was another amazingly successful year, and I am looking forward to even more next year.

#### **Dr. Ken Nakayama**

Our collaborative work with Dr. Roger Acey's group on the cholinesterase inhibitors continued to be very fruitful over the past year. Drs. Eric Sorin and Katherine Kantardjieff (Cal Poly Pomona) have greatly assisted in the understanding of how these enzymes are inhibited through their expertise in computational chemistry. Every student in my research group has contributed to the progress made in this collaboration.

*Photo by Victoria Sanchez*



*Standing from left: Omar Gallegos, Nick Spurlock, Kim Ngan Tu, Robert Esquivel, Elise Van Fossen and Dr. Ken Nakayama. Seated: Trina Tran.*

Carmen Castillo and Juan Guerrero, undergraduates majoring in biology who I recruited from CHEM 323A, graduated in spring 2011. Carmen will be entering the accelerated teacher residency program at CSU Dominguez Hills, while Juan is looking into a master's degree programs in biology. Meanwhile, chemistry major Omar Gallegos will be working in industry, and biochemistry major Elise Van Fossen will continue through fall 2011 with the synthesis of the homobivalent versions of the organophosphorus inhibitors. These compounds have shown some interesting inhibitory properties, which will require further studies. A very nice poster on this subject was presented at the undergraduate conference held at UC Santa Barbara, Calif., in April 2011. Undergraduates who became group members more recently include Robert Esquivel, Nick Spurlock, Trina Tran, Zandra

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Gomez and Kelvin Oh. Graduate student Astor Suriano will be finishing up during summer 2011. Kim Tu, who completed her first year of our chemistry M.S. program, maintained a 4.0 in her course work and will be working on the chiral synthesis of organophosphorus compounds.

I have been involved in teaching the advanced organic laboratory course (CHEM 420) since fall 2007. While the course coordination has been passed along to Dr. Young Shon this past spring, I will continue to teach a lab section. I've also started teaching the CHEM 322 series, the organic chemistry lecture for biosciences majors. The course has its own challenges, but I enjoyed applying Cal State L.A. emeritus professor Don Paulson's active learning strategy in its instruction. During most of June 2011, our group was busy moving into the new Hall of Science laboratory. Everyone is excited about the brand new laboratory environment.

Photo by Victoria Sanchez



Darin Khumsupan, left, and Roy Hernandez try to figure out why their experiment did not work... maybe someone out there will have an answer.

### Dr. Vas Narayanaswami

It feels like a long time ago in a galaxy far, far away, but it's only been a year.... boy, it went with the speed of light.

I had a fantastic trip to Singapore to give a talk about the use of apoE-containing reconstituted HDL as drug delivery nanovehicles at NeuroTalk 2010, First Annual World Congress: From Nervous Functions to Treatment. I presented work initiated by Panupon Khumsupan, which was later continued by undergraduate students Ricardo Ramirez and Darin Khumsupan, who were funded by an NIH summer stipend and NHK Laboratories, Inc, respectively, in summer 2010. The work was subsequently published in *Biochim Biophys Acta* in early 2011.

During the fall semester, three new bio-

chemistry graduate students joined my lab: Roy Hernandez, Ken Irvine and Sea Kim. Gursharan Bains, a biochemistry degree graduate student, and I went to San Diego, Calif., for the Society for Neuroscience's 40th annual meeting. The fall semester ended on that fateful day in mid-November, which in retrospect seems like a bizarre and surreal dream, when I gave the Fellows Colloquium talk, fancifully titled "Could This 'Trojan Horse' Help End the War on Alzheimer's?". At exactly the time I was extolling the advantages of transporting bioflavonoids in HDL to potentially treat Alzheimer's disease, my family was performing the final rites for my mother halfway across the earth; she succumbed to an Alzheimer's like disease. The timing was uncanny! This is a tough one to come to terms with...time will surely help.

Our group stayed under the radar during the winter break. Several undergraduate students, Tuyen Tran, Tien Vu, Darin Khumsupan, Muhammad Rafay and Raul Vera; Gursharan and I presented our work at the January 2011 Annual CSU Biotechnology Symposium, which was held in Orange County. Gursharan was one of the finalists for the Don Eden Graduate Student Award competition at this meeting.

Spring semester rolled in, and with it, the deadlines for grants, awards, fellowships and conference visits. Tuyen Tran and Darin Khumsupan presented their work in oral presentations at the 2011 Southern California Undergraduate Research Conference in Santa Barbara, Calif. Gursharan and I attended the 2011 Arteriosclerosis, Thrombosis and Vascular Biology Council Meeting of the American Heart Association (AHA) in Chicago, Ill., where we had a poster presentation. She was also one of two students selected to represent CSULB at the 25th annual CSU Student Research Competition in Fresno, Calif., in May 2011. Tuyen Tran and Aishwarya Venkataraman, a Stanford University undergraduate student, applied for the 2011 AHA undergraduate summer fellowship to carry out research in my lab. Both won this prestigious and highly competitive award. Also, Tuyen Tran and biochemistry graduate student Roy Hernandez won the NIH-sponsored Children's Hospital Oakland Research Institute summer research fellowship. Roy plans to spend time this summer in our collaborator's lab, Oregon State University at Corvallis, performing mass spectral analysis of apoE. Lastly, the news of a successful 2011 CSUPERB Faculty Development Grant for the potential use of apoE containing HDL as a nanovehicle

to transport bioflavonoids signals the beginning of a busy summer ahead for us.

It is with a heavy heart that I am bracing myself to bid farewell to biochemistry graduate student Arti Patel, who will be defending her thesis at the end of the spring semester. I thank her for shouldering the bulk of the biophysical experimental work on HDL mimetic peptides in our collaboration with Dr. John Bielicki at the Lawrence Berkeley National Laboratory. It earned her a first co-authorship in *Biochemistry* in April 2011. She will be headed to Boston, Mass., to start her Ph.D. program at Tufts University this fall. Farewell, R2D2, may the force be with you!

### Dr. Michael Schramm

*"A guest has not to thank the host, but the host the guest"* –Russian Proverb

Molecular recognition is the study of how and why molecules interact. At its essence lies the attraction of molecules at energy levels "weaker than covalent." Hydrogen bonding, metal coordination and the hydrophobic effect cover some of these possible forces. In nature, we find countless, crucial interactions predicated on noncovalent interactions such as enzyme-substrate recognition, DNA-protein binding and ion-receptor transport. From a synthetic point of view, these principles have strongly influenced areas of research from drug design to materials science to molecular self-assembly. Our research uses molecular recognition as a design principle to develop new synthetic molecules that are compatible with, and capable of, regulating biological function.

Current efforts in the Schramm research group utilize the principles of molecular recognition to solve chemical problems. We are actively preparing and now screening a 1,000-member small-molecule library of alpha-helical peptidomimetics. This collection of compounds is designed to target a spectrum of protein-protein interactions based on the alpha-helix. In generating these molecules, we hope to have a collection of compounds suitable for modulating several biological pathways. Our first screens will target the p53-HDM2 and BAX-Bcl protein-protein recognition events, which are a cornerstone of study for the development of new chemotherapeutics. This year, Cindy Pham contributed significantly to this project. I presented this work at Pacificchem 2010 in Honolulu, Hawaii. While there, I had time

to catch up with countless colleagues from around the world that I haven't seen in many years. In addition to Pacificchem, I also presented this work at Cal Poly Pomona. Monica Royer presented this work as a poster in Santa Barbara, Calif., at SCURC in April.

A second project utilizes molecular recognition as a tool to develop synthetic small-molecule receptors that we hope will one day shuttle molecules of our choosing across biological membranes. We have prepared a collection of fluorescently labeled small molecules that are complementary for a synthetic receptor known as a cavitand. Cavitands sequester these guests when embedded in phosphocholine micelles. We are now turning our attention to vesicle systems that are composed of a lipid bilayer. Utilizing fluorescent microscopy, we are tracking the migration of host and guest. Through synthesis we aim to tune these molecules to control their localization and function. Katie Feher worked tirelessly throughout the year on this project, presenting her exciting results as a poster in Santa Barbara, Calif., at SCURC in April.

Over summer 2010, Ashley Yeon Joo Kim from Cypress High School joined our lab and made great strides in developing molecules that switch orientation when bound inside cavitands that are themselves embedded in aqueous micelles. Mark Lek finished up this work, which was recently accepted by *Chemical Communications*. Ashley has since graduated and will be attending UCLA as a Regents Scholar.

Several new students began work on a chemical catalysis project aimed at making chiral building blocks while generating less chemical waste. Jeanice Rodriguez, Nicole Mangabat, Vince Marin and Jeremy Lek all contributed.

As of writing this report, I've been invited to present at the 2012 International Symposium on Macrocyclic and Supramolecular Chemistry in New Zealand. The two pressing questions remain: what to present and how long to stay... both questions to be answered in due course.

### Dr. Young Shon

Having completed my fifth year at CSULB, the past 12 months have certainly provided me with some good news and promising outlooks. I have been elected as an editorial board member for two different journals, *ISRN Nanotechnology* and *Journal of Surface Engineered Materials and Advanced Technology*, and have

received tenure and promotion to full professor, effective fall 2011.

Our research continued on the design, synthesis and application of nanoparticle-hybrid materials with more focus on nanoparticle catalysis and plasmonic sensing. A graduate student, Elham Sadeghmoghadam, continued her study on the mechanism and selectivity of the catalytic isomerization of allyl alcohols using poisoned Pd nanoparticles. She published an article entitled "Synthesis and Catalytic Property of Alkanethiolate-Protected Pd Nanoparticles Generated from Sodium S-Dodecylthiosulfate" in *Journal of Materials Chemistry*. This paper was selected as a "Feature Article" (January 2011) and co-authored by a former undergraduate, Caroline Lam. Linh Tran, another graduate student, successfully synthesized target final products, small water-soluble nanoparticle-cored dendrimers. He is currently working on further characterization of the materials and detailed kinetic studies to prepare for his thesis.

Two new graduate students, Diego Gavia and Yu Wang, joined my research group in fall 2010 and worked on regulating the catalytic property of Pd nanoparticles generated from various Bunte salts and the synthesis of large water-soluble nanoparticle-cored dendrimers as multifunctional biomarkers, respectively. Several undergraduate students, Khalil Gaïeb, Jordan Koeppen, Tae Y Kim and Minh Ho, investigated various catalytic reactions, including isomerization of propargyl alcohols and terminal alkenes using Pd nanoparticles.

A research paper entitled "Stability and Morphology of Gold Nanoisland Arrays Generated from Layer-by-Layer Assembled Nanoparticle Multilayer Films: Effects of Heating Temperature and Particle Size" was also published in the *Journal of Physical Chemistry C*. Michael Aquino and Paul Vaccarello, both undergraduate students, were the major contributors and included as co-authors. This paper also includes Dr. Kwon's group in the Department of Physics and Astronomy as co-authors. Leeann Korrapun, Josephine Yee and Alexander Zec participated in the preparation of nanostructured metal films for optical and chemoresistive sensing applications. Leeann was accepted into the Phi Beta Kappa Honor Society and is leaving my research group after completing her degree program in May. Several students, Linh, Elham, Diego, Paul and Khalil, had opportunities to present their research at the American

Chemical Society national meetings in Boston, Mass., (August 2010) and Anaheim, Calif., (March 2011) during the past year.

For teaching, I taught the advanced organic chemistry lab (CHEM 420) for the first time during the past year. I thoroughly enjoyed teaching this class, working more closely with undergraduate students in labs and reminding myself of some useful tricks that I had forgotten.

### Dr. Eric Sorin

My fourth year at CSULB has definitely been fast-paced for my team and me in the Sorin lab. I got my first taste of teaching Quantum Chemistry & Spectroscopy for Biochemistry and Non-chemistry Majors (CHEM 377B) this spring, which was an exciting new course to be teaching. I especially enjoyed having a large number of our biochemistry majors who stayed with me through the entire CHEM 377 sequence this year, which was a fantastic experience and allowed me to really get to know some of our majors quite well!

Graduating senior Edsel Abud will be starting the joint M.D./Ph.D. program at

Photo by David J. Nelson



Standing from left: Eugi Maravilla, Carolyn Kusaba, Erik Carpio, Edsel Abud, Sam Cao, and Ben Pham. Seated from left: Mona Bakhom, Prof. Eric J. Sorin, Kimberly Helm, Richard Wang, Michelle Dietz and Zeke Gonzalez-Fernandez.

UC Irvine in the fall, and Sorin lab alumnus Sarav Patel has accepted admission to the joint D.D.S./Ph.D. program at UCLA. We also added a number of new students to the lab this year, including chemistry majors Carolyn Kusaba and Tae Ji; M.S. chemistry degree student Ben Pham; chemical engineering major Kimberly Helm; and graduating biochemistry student Eugenia Maravilla, who will be joining our M.S. biochemistry program in the fall. In addition, Sorin lab members won several notable awards

# 2010-11 Research Publications for Department Faculty

## Dr. Xianhui Bu

- Zhang, Z., Q. Lin, D. Kurunthu, T. Wu, F. Zuo, S-T. Zheng, C.J. Bardeen, X. Bu, and P. Feng. 2011. Synthesis and photocatalytic properties of a new heteropolyoxoniobate compound:  $K_{10}[Nb_2O_2(H_2O)_2][SiNb_{12}O_{40}] \cdot 12H_2O$ . *J. Am. Chem. Soc.*, 133, 6934-6937.
- Zhao, X., T. Wu, S-T. Zheng, L. Wang, X. Bu, and P. Feng. 2011. Zeolitic porous lithium organic framework constructed from cubane clusters. *Chem. Commun.*, 47, 5536-5538.
- Kang, Y., S. Chen, F. Wang, J. Zhang, and X. Bu. 2011. Induction in urothermal synthesis of chiral porous materials from achiral precursors. *Chem. Commun.*, 47, 4950-4952.
- Zhang, Z., Q. Lin, S. Zheng, X. Bu, and P. Feng. 2011. A novel sandwich-type polyoxometalate compound with visible light photocatalytic H<sub>2</sub> evolution activity. *Chem. Commun.*, 47, 3918-3920.
- Wu, T., R. Khazhaky, L. Wang, X. Bu, S. Zheng, V. Chau, and P. Feng. 2011. Three-dimensional covalent co-assembly between inorganic supertetrahedral clusters and imidazoles. *Angew. Chem. Int. Ed.*, 50, 2536-2539.
- Zheng, S., F. Zuo, T. Wu, B. Irfanoglu, C. Chou, R.A. Nieto, P. Feng, and X. Bu. 2011. Cooperative assembly of 3-ring-based zeolite-type metal-organic frameworks and Johnson-type dodecahedra. *Angew. Chem. Int. Ed.*, 50, 1849-1852.
- Zheng, S., J.T. Bu, Y. Li, T. Wu, F. Zuo, P. Feng, and X. Bu. 2010. Pore space partition and charge separation in cage-within-cage indium-organic frameworks with high CO<sub>2</sub> uptake. *J. Am. Chem. Soc.*, 132, 17062-17064.
- Zhang, J., J. Bu, S. Chen, T. Wu, S. Zheng, Y. Chen, R. Nieto, P. Feng, and X. Bu. 2010. Urothermal synthesis of crystalline porous materials. *Angew. Chem. Int. Ed.*, 49, 8876-8879.
- Zheng, S., Y. Li, T. Wu, R. Nieto, P. Feng, and X. Bu. 2010. Porous lithium imidazolate frameworks constructed with charge-complementary ligands. *Chem. Eur. J.*, 16, 13035-13040 (VIP, inside cover).
- Wu, T., L. Wang, X. Bu, V. Chau, and P. Feng. 2010. Largest molecular clusters in supertetrahedral Tn series. *J. Am. Chem. Soc.*, 132, 10823-10831.

## Dr. Jeffrey Cohlberg

- Cohlberg, J. A. 2011. "Studying Protein and Nucleic Acid Structure with Jmol." Online supplement to Berg, Tymoczko and Stryer, *Biochemistry* (7th edition) and Nelson and Cox, *Lehninger Principles of Biochemistry* (6th Edition), Freeman, N.Y., in press.

## Dr. Shahab Derakhshan

- Greedan, J. E., Shahab Derakhshan, F. Ramezani-pour, J. Siewenie, and Th. Proffen. 2011. A search for disorder in the spin glass double perovskites  $Sr_2CaReO_6$  and  $Sr_2MgReO_6$  using neutron diffraction and neutron pair distribution function analysis. *Journal of Physics: Condensed Matter*, 23(16), 164213/1-164213/8.

## Dr. Stephen Mezyk

- Rickman, K.A., and S.P. Mezyk. 2011. Removing estrogenic steroids from waters: The role of reducing hydrated electron reactions. *J. Adv. Ox. Tech.*, 14, 81-85.
- Elias, G., B.J. Mincher, S.P. Mezyk, J. Muller, and L.R. Martin. 2011. Toluene nitration in irradiated nitric acid and nitrite solutions. *Rad. Phys. Chem.*, 80, 554-560.
- Swancutt, K.L., T.D. Cullen, S.P. Mezyk, G. Elias, W.F. Bauer, D.R. Peterman, C.L. Riddle, R.D. Ball, B.J. Mincher, and J.J. Muller. 2011. The radiation chemistry of the Cs-7SB modifier used in Cs and Sr solvent extraction. *Solv. Ext. Ion Exch.*, 29, 106-127.
- Peller, J.R., W.J. Cooper, K.P. Ishida, and S.P. Mezyk. 2011. Evaluation of parameters influencing removal efficiencies for organic contaminant degradation in advanced oxidation processes. *Journal of Water Supply: Research and Technology - AQUA*, 60.2, 69-78.
- Swancutt, K.L., S.P. Mezyk, R.D. Tillotson, S. Pailloux, M. Chakravarty, R.T. Paine, and L.R. Martin. 2011. Radiolytic degradation in lanthanide/actinide separation ligands - NOPOPO: Radical kinetics and efficiencies determinations. *Solvent Extraction and Ion Exchange*.
- Dong, M.M., S.P. Mezyk, and F.L. Rosario-Ortiz. 2010. Reactivity of effluent organic matter (EfOM) with hydroxyl radical as a function of molecular weight. *Env. Sci. Technol.*, 44, 5714-5720.
- Dail, M.K., and S.P. Mezyk. 2010. Hydroxyl radical-induced degradative oxidation of  $\beta$ -lactam antibiotics in water: Absolute rate constant measurements. *J. Phys. Chem. A*, 114, 8391-8395.
- Swancutt, K.L., M.K. Dail, S.P. Mezyk, and K.P. Ishida. 2010. Absolute kinetics and reaction efficiencies of hydroxyl radical induced degradation of methyl isothiocyanate (MITC) in different quality waters. *Chemosphere*, 81, 339-344.
- Rickman, K.A., and S.P. Mezyk. 2010. Sulfate radical remediation of chemically contaminated waters: Destruction of  $\beta$ -lactam antibiotic activity. *Chemosphere*, 81, 359-365.

- Mezyk, S.P., E.M. Abud, K.L. Swancutt, G. McKay, and D.D. Dionysiou. 2010. Removing steroids from contaminated waters using radical reactions. *ACS Symposium Series: Contaminants of Emerging Concern in the Environment: Ecological and Human Health Considerations*, Vol. 1048, Chapter 9, 213-225.
- Swancutt, K.L., S.P. Mezyk, and L.R. Martin. 2010. Kinetics and efficiencies of radiolytic degradation in lanthanide/actinide separation ligands - NOPOPO. *ACS Symposium Series: Nuclear Energy and the Environment*, Vol. 1046, Chapter 19, 231-242.
- Martin, L.R., B.J. Mincher, S.P. Mezyk, G. Elias, and R.D. Tillotson. 2010. Effects of aqueous phase radiolysis on lactic acid under TALSPEAK conditions. *ACS Symposium Series: Nuclear Energy and the Environment*, Vol. 1046, Chapter 20, 243-253.
- Elias, G., B.J. Mincher, S.P. Mezyk, T.D. Cullen, and L.R. Martin. 2010. Nitration mechanisms of anisole during gamma irradiation of aqueous nitrite and nitrate solutions. *ACS Symposium Series: Nuclear Energy and the Environment*, Vol. 1046, Chapter 17, 205-214.
- Mezyk, S.P., T.D. Cullen, G. Elias, and B.J. Mincher. 2010. Aqueous nitric acid radiation effects on solvent extraction process chemistry. *ACS Symposium Series: Nuclear Energy and the Environment*, Vol. 1046, Chapter 16, 193-203.
- Mezyk, S.P., K.A. Rickman, G. McKay, C.M. Hirsch, X. He, and D.D. Dionysiou. 2010. Remediation of chemically-contaminated waters using sulfate radical reactions: Kinetics and product studies. *ACS Symposium on Aquatic Redox Chemistry*, 239th American Chemical Society National Meeting, March 21-25, 2010, San Francisco, Calif.

## Dr. Vasanthy Narayanaswami

- Zheng, Y.\*, A.B. Patel\*, V. Narayanaswami, G.L. Hura, B. Hang, and J.K. Bielicki. 2011. HDL mimetic peptide ATI-5261 forms an oligomeric assembly in solution that dissociates to monomers upon dilution. *Biochemistry*, 50, 4066-4076, April 20 (e-pub ahead of print).
- Khumsupan, P., R. Ramirez, D. Khumsupan, and V. Narayanaswami. 2011. Apolipoprotein E LDL receptor-binding domain-containing high-density lipoprotein: A nanovehicle to transport curcumin, an antioxidant and anti-amyloid bioflavonoid. *Biochim. Biophys. Acta*, 1808, 352-359.
- Hauser, P. S., V. Narayanaswami, and R.O. Ryan. 2011. Review: Apolipoprotein E: From lipid transport to neurobiology. *Prog. Lipid Res.*, 50, 62-74.

## Reports from Faculty

Continued from pg. 13

this year. Both Carolyn and Samantha Cao (B.S., biochemistry) were awarded Women & Philanthropy Summer Research Fellowships to support their summer 2011 research efforts. Samantha was also awarded a Kenneth L. Marsi Scholarship from the department, and computer science major Richard Wang won this year's Hypercube Award.

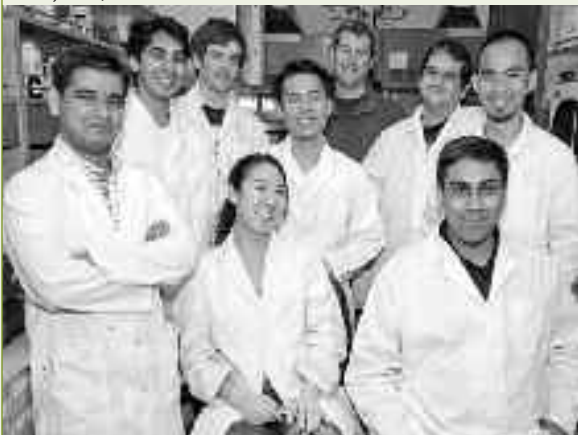
While my back injury early this spring kept me out of the lab for much of the 2010-11 academic year, Sorin lab student Mona Bakhom presented her work on RNA folding at the 2011 CSUPERB Biotechnology Symposium. Mona and grad student Ben Pham are currently hard at work on an article about their work on RNA folding, which we expect to submit this summer. Students Edsel Abud and Samantha Cao are preparing a second manuscript on the thermodynamics and mechanism of butylcholinesterase inhibition, which we also expect to see submitted this summer.

On the service front, my first year on the Academic Senate was a truly eye-opening experience, and I look forward to continuing to learn about faculty governance throughout the remainder of my term. I continued to act as our department website administrator and saw the new website mature significantly this year. I was also excited to spend some time this spring organizing and preparing for our New Graduate Student Orientation Program, which will begin in fall 2011. Thanks to the help from several of my colleagues, we will provide our incoming M.S. degree students with an informative and fun introduction to our department and community starting this year!

### Dr. Paul Weers

The Weers laboratory had a successful year. We published a research paper in *Biochimica Biophysica et Acta* (biomembranes section), which was based on the thesis research of Leon Wan, who is now a graduate student in pharmaceutical sciences at the University of British Columbia, Canada. The paper reports on the formation of nanodisks, prepared with phospholipids and insect apolipoproteins. Nanodisks are small lipid-protein complexes that can be used for structural studies of apolipoproteins and membrane proteins, as well as for drug delivery. Xiping "Angela" Wu also contributed to the paper with a thorough proteolysis analysis of the nanodisks. Angela is now a Ph.D. student in the Chemistry Department at the University of Southern California. A col-

Photo by David J. Nelson



Standing from left: Pankaj Dwivedi, Anthony Tabet, Jake Thistle, Duc Le, Dr. Paul Weers, Chris Adams and Ivan Biglang-Awa. Seated: Wendy Beck and Suprit Deol.

laboration project with Dr. Kiss of the McGill University, Montreal, Canada, resulted in a second paper published in the *Journal of Lipid Research*. In this study, we characterized a novel mutant of human apoA-I found in a patient with abnormal low levels of HDL. Co-authors Leon Wan and Arti Patel from the Weers laboratory made significant contributions to the project. My personal highlights were receiving CSULB's Distinguished Faculty Scholarly and Creative Achievement Award and the CNSM "Pretty Darn Good Professor" Award.

Our research group was three graduate and six undergraduate students strong: Daisy Martinon, Chris Adams, Suprit Deol, Wendy Beck, Duc Le, Anthony Tabet, Jake Thistle, Ivan Biglang-awa and Dustin Wong. Wendy Beck recently graduated with degrees in biochemistry and criminal justice. Sean Lee graduated one year ago and was admitted to the School of Dentistry at the University of Michigan, Ann Arbor. Daisy Martinon is graduating in summer 2011 and is going to study cancer biology at the University of Texas Graduate School of Biomedical Sciences in Houston, Texas. At the annual CSU Program for Education and Research in Biotechnology meeting in Anaheim, Calif., Wendy Beck, Chris Adams, Duc Le and Pankaj Dwivedi presented their research projects. Duc Le successfully participated in the CSULB campus research competition and was awarded first place. In addition, he received the University Achievement Award for outstanding undergraduate research. Departmental awards were given to Pankaj Dwivedi (Henderson Award) and Anthony Tabet (NHK Laboratories, Inc. Award).

### Dr. Michael Schramm

- Kim, Y.J., M.T. Lek, and M.P. Schramm. 2011. pH influenced molecular switching with micelle bound cavitanids. *Chemical Communications*, accepted.

### Dr. Young Shon

- Shon, Y.-S., M. Aquino, T.V. Pham, D. Rave, M. Ramirez, K. Lin, P. Vaccarello, G. Lopez, T. Gredig, and C. Kwon. 2011. Stability and morphology of gold nanoisland arrays generated from layer-by-layer assembled nanoparticle multilayer films: Effects of heating temperature and particle size. *J. Phys. Chem. C*, 115, 10597-10605.
- Sadeghmoghaddam, E., C. Lam, D. Choi, and Y.-S. Shon. 2011. Synthesis and catalytic property of alkanethiolate-protected Pd nanoparticles generated from sodium S-dodecylthiosulfate. *J. Mater. Chem.*, 21, 307-312.

### Dr. Kasha Slowinska

- Schuetz, T., N. Richmond, M.E. Harmon, J. Schuetz, L. Castaneda, and K. Slowinska\*. 2011. Unusual collagen type I microstructure formed as a result of modification with multivalent crosslinker. *Acta Biomaterialia*, submitted.

### Dr. Krzysztof Slowinski

- Adaligil, E., and K. Slowinski\*. 2010. Electron tunneling through monolayers of alkanethiols self-assembled on a hanging mercury drop electrode in the presence of aliphatic alcohols. *J. Electroanal. Chem.*, 649, 142.

### Dr. Paul Weers

- Wan, C.-P. L., M.H. Chiu, X. Wu, S. Lee, E. Prenner, and P.M.M. Weers\*. 2011. Apolipoprotein-induced conversion of SUVs into nanodisks. *Biochim. Biophys. Acta*, (Biomembranes) 1808, 606-613 (PMID: 21111706).
- Weers, P.M.M., A.B. Patel, C.-P.L. Wan, E. Guigard, C.M. Kay, A. Hafiane, R. McPherson, Y.L. Marcel, and R.S. Kiss. 2011. Novel N-terminal mutation of human apolipoprotein A-I reduces self-association and impairs LCAT activation. *J. Lipid Res.*, 52, 35-44 (PMID: 20884842).

\* These authors contributed equally.

# Awards & Scholarships

Chemistry and Biochemistry Students 2011

## Endowed Awards

### Robert B. Henderson Award

Dr. Robert B. Henderson, a distinguished scientist and teacher of organic and general chemistry, was a founding member of the Department of Chemistry and Biochemistry and taught from 1955-82. He served as chair of Physical Sciences and associate dean of the college. This award is given to a student best exemplifying Henderson's scholarship and commitment to the profession of chemistry. This year's award of \$2,000 was presented to **Pankaj Dwivedi**, a graduate student in Dr. Paul Weers' lab.



Pankaj Dwivedi



Samantha Cao

### Kenneth L. Marsi Scholarship

The Kenneth L. Marsi Scholarship was established by faculty, staff, family, friends and former students of Dr. Kenneth L. Marsi on the occasion of his retirement in 1996. Dr. Marsi was a distinguished scientist, teacher of organic chemistry, and served superbly as department chair for 21 years. He passed away in 2005. The \$2,500 scholarships are used to defray registration fees of outstanding junior and senior chemistry or biochemistry majors. This year's awards of \$2,500 went to **Samatha Cao**, who works with Dr. Eric Sorin, and **Malinda Tan**, who works with Dr. Shahab Derakhshan.



Malinda Tan



Vincent Nguyen

### McAbee-Overstreet Fellowship

The McAbee-Overstreet Fellowship recognizes a graduate student for excellence in scholarship and commitment to research. It was established by a donation from Cathie Overstreet, who received her M.S. degree in biochemistry at CSULB in 2004 under the supervision of Dr. Doug McAbee and went on to a Ph.D. in molecular biology at UC Irvine. This year, an award of \$1,780 was given to **Andrew Parker**, a biochemistry graduate student working with Dr. Brian McClain.



Anthony Tabet



Roy Hernandez

### Michael Monahan Fellowship

The Monahan Award was established through a generous bequest from Dr. Michael Monahan, an alumnus of our department who received his B.S. in chemistry in 1963 and his Ph.D. in physical organic chemistry in 1968 at UC San Diego. He was a distinguished scientist and member of the faculty at the Salk Institute and subsequently a senior research scientist at Beckman Instruments. Dr. Monahan was also the founder and president of California Medicinal Chemistry Corporation. In 1985-87, following his retirement, he served as an adjunct faculty member in the Department of Chemistry and Biochemistry. According to his will, the income from his bequest is to be used to support student research in the department. This year's awards of \$3,000 were given to **Gurshuran Bains**, a graduate student working with Dr. Vas Narayanaswami, and **Garrett McKay**, who works with Dr. Steve Mezyk.



Mariko Yokokura



Kim Tu

### Spyros Pathos IV Award

The Spyros Pathos IV Award is presented annually to a student excelling in the second semester of general chemistry (CHEM 111B). This award was made possible by the friends of Spyros Pathos IV, who was an undergraduate

Photos by Victoria Sanchez

chemistry major in the department at the time of his death in 1993. This year's recipient is **Deeann Asamoto**.

### David L. Scoggins Award

This award memorializes David L. Scoggins, a 1968 B.S. chemistry graduate of CSULB and a graduate student and teaching assistant in the Department of Chemistry at the time of his death in 1969. The award recognizes outstanding scholarship and promise by a graduating chemistry or biochemistry student who intends to pursue a career in one of the health-related professions. The Scoggins scholar this year is **Kenny Tran**.

### John H. Stern Award in Physical Chemistry

The Stern Award, consisting of a cash prize, is given in memory of Dr. John H. Stern, internationally known for

his work in solution thermodynamics and author of many publications in that field. The award was established by colleagues, former students and friends of Dr. Stern, who was a member of the faculty from 1957-87 and a distinguished teacher of physical and general chemistry. **Vincent Nguyen** was named the recipient of the \$1,000 Stern Award for 2011.

### NHK Laboratories, Inc. Biochemistry & Organic Chemistry Award

NHK Laboratories is a family-owned, private label contract manufacturer of vitamins, minerals, herbs, nutritional supplements and over-the-counter pharmaceuticals. NHK operates two facilities in Santa Fe Springs, as well as a subsidiary company, NHK Chemical Corporation. Along with the \$1,000 NHK scholarship, the recipient also has the opportunity to complete a course-credit internship at NHK's Santa Fe Springs laboratory. This year's recipient is **Anthony Tabet**.

### Louis M. Perlgut Scholarship

Dr. Louis M. Perlgut, professor of biochemistry in the department from 1965-82, taught the biochemistry courses for both science majors and nursing students, and supervised both graduate and undergraduate research. Dr. Perlgut served as the first graduate adviser for the M.S. program in biochemistry and was largely responsible for launching the program. Upon his death in 2003, his family established this scholarship to defray the tuition expenses of a graduate student in biochemistry. Donations to the Perlgut Scholarship fund can be made through the Community Foundation of Tompkins County (N.Y.). This year, a \$1,000 scholarship was presented to **Roy Hernandez**, a graduate student working with Dr. Paul Weers.

### Leslie K. Wynston Scholarship

Dr. Wynston was a biochemistry professor in the department from 1965-98. He served as chair of the Pre-Professions Health Advisory Committee for many years and was active in both the western and national Association of Advisors for the Health Professions. The award recognizes an outstanding junior who is pursuing a B.S. in biochemistry and planning to enter a health-related professional school the following year. This year's winner is **Mariko Yokokura**.

### Maria Erlinda Co Sarno Scholarship in Chemistry

Dr. Sarno received her B.S. from the University of Santo Tomas, Philippines, and her M.S. in chemistry from the CSULB Department of Chemistry and Biochemistry in 1975. After a highly successful career as a chemist at Baxter Healthcare, she became a U.S. patent attorney in private practice that focuses on serving small businesses and independent inventors. The award recognizes an international graduate student with research interests in compounds leading to therapeutics or prevention of disease. This year, the recipient is **Kim Tu**, a graduate student working with Dr. Ken Nakayama.



## Subject Area Awards

- American Chemical Society Polymer Chemistry Award  
Sean Donovan
- Analytical Chemistry Award  
Garrett McKay
- Biochemistry Award  
Wendy Beck
- Freshman Chemistry Award  
Nicole Hanson
- Hypercube Award  
Richard Wang
- Inorganic Chemistry Award  
Delora Gaskins
- Merck Award in Organic Chemistry  
Garrett McKay
- Organic Chemistry Award  
Jessica Servin
- Spyros Pathos IV Award  
Deeann Asamoto
- John H. Stern Award in Physical Chemistry  
Vincent Nguyen



Sean Donovan



Nicole Hanson



Richard Wang



Delora Gaskins



Jessica Servin



Deeann Asamoto

## Special Departmental Awards

- American Institute of Chemists Baccalaureate Award  
Chemistry: David Rudd  
Biochemistry: Kim Nguyen
- American Institute of Chemists Graduate Award  
Chemistry: Yufei Li  
Biochemistry: Arti Patel
- Robert B. Henderson Memorial Scholarship  
Pankaj Dwivedi
- Toni Horalek Award  
Cindy Pham
- Kenneth L. Marsi Award  
Samantha Cao, Malinda Tan
- McAbee—Overstreet Award  
Andrew Parker
- M. Monohan Memorial Summer Research Fellowship  
Gursharan Bains, Garrett McKay
- NHK Laboratories, Incorporated Award  
Anthony Tabet
- Outstanding Teaching Associate Award  
Charlotte Hirsch
- Louis Perlgut Scholarship  
Roy Hernandez
- Maria Erlinda Co Sarno Scholarship  
Kim N. Tu
- David L. Scoggins Memorial Award  
Kenny Tran
- Leslie K. Wynston Scholarship  
Mariko Yokokura



David Rudd



Kim Nguyen



Cindy Pham



Andrew Parker



Gursharan Bains



Charlotte Hirsch



Kenny Tran



Edsel Abud



Wendy Beck



Garrett McKay

## Departmental Honors

- Undergraduates  
Edsel Abud, Wendy Beck, Garrett McKay
- Graduates  
Charlotte Hirsch, Yufei Li, Arti Patel

## College Awards

- Graduate Dean's List of University Scholars & Artists  
Yufei Li, Arti Patel
- James L. Jensen Undergraduate Research Fellowship  
Samantha Cao
- 2010-11 Phi Beta Kappa Inductees  
Edsel Abud, Wendy Beck
- Robert B. Rhodes Award  
Jason Barca



Yufei Li



Arti Patel



Jason Barca

Photos by Victoria Sanchez

### Van Buzzo

"Synthesis and Characterization of Bridging Iron Dinitrosyl Complex  $[(NO)_2Fe(\mu-1-Adam)_2(NO)_2]$ "  
Research Adviser: Dr. Lijuan Li

### Miguel A. Camacho Fernandez

"Spectroscopic and DFT Studies of Thiol and Olefin Coordinated Non-Heme Iron Dinitrosyl Complexes"  
Research Adviser: Dr. Lijuan Li

### Jonathan L. Kleinman

"Influence of Dissolved Organic Matter in the Free-Radical-Induced Destruction of Hydrazines in Water: Kinetics of Hydroxyl Radical Reactions"  
Research Adviser: Dr. Stephen Mezyk

### Wei Liao

"The Epitope Specificity of the Human Anti-Candida Albicans Antibody M1g1"  
Research Adviser: Dr. Mason Zhang

### Thomas J. Neubauer

"Absolute Free-Radical-Induced Oxidative and Reductive Kinetics and Degradation Efficiencies of Sulfa Drugs in Water"  
Research Adviser: Dr. Stephen Mezyk



From left: Hannah Phan, Carolyn Kusaba, Akira Ueno, Nicole Hanson and Michelle Stadick.

Photo by Victoria Sanchez

# SMACS

## Student Members of the American Chemical Society

By Dr. Brian L. McClain

The 2010-11 academic year was a very productive one for the student members of the American Chemical Society (SMACS). The school year started off with our now annual SMACS Bowling Night, where members gathered to consume pizza and challenge each other for bragging rights on the hardwood lanes.

The SMACS officers decided to commit this year to giving back through several community service activities. Over the past year, SMACS members organized and participated in a monthly beach cleanup of the Belmont Shore beaches. In addition, members volunteered with Jim McKibben and the Mobile Science Museum to provide science demonstrations to local area elementary, middle and high school students. They also worked demonstration booths at the fall Homecoming event and the Young Women in Engineering conference, which was held at CSULB in October 2010. SMACS members Carolyn Kusaba, Marina Zeledon and Akira Ueno traveled to local high schools to participate in roundtable discussions about the future of science and to help promote careers in science.

In April 2011, two SMACS members, Carolyn Kusaba and Charmaine Jimenez, submitted a successful proposal, "Hydrogen Fuel Cell Energy Demonstration," to the ACS International Year of Chemistry Student Chapter grant program. They received a \$750 grant to construct a demonstration about renewable and stored green energy, which will be presented at local area K-12 schools. With \$750 in matching funds from the Department of Chemistry and Biochemistry, a total budget of \$1,500 is available for the project. SMACS students will begin construction of the demonstration in the fall semester. Also, SMACS will partner with the Science Learning Center and the Mobile Science Museum to showcase this emerging technology to the community.

In addition to the hard efforts and focus that all SMACS students brought to the club and their studies, they did find some time to relax together. SMACS took two field trips this past year: one to the Orange County crime lab where students were able to see modern chemical methods being used in forensics; and a second trip to Bootleggers Brewery in Fullerton, Calif., where students learned about the complex biochemical processes that control brewing. And, as always, students, faculty and staff shared their Friday mornings throughout the semester at the coffee and donut social hour. This year, faculty and staff contributed to the social hour's success by providing the refreshments. SMACS would like to give a big thanks to all the faculty and staff who stepped up and helped this past year.

This year's chemistry club was headed by President Michelle Stadick, Vice Presidents Akira Ueno and Marina Zeledon, Secretary Carolyn Kusaba and Treasurer Nicole Hansen. Advisors to the club were Drs. Michael Schramm and Brian McClain.

## First Annual

# Career Day

The Department of Chemistry and Biochemistry held its first annual Career Day on Saturday, Oct. 9, 2010. The event was designed to help our students learn about the different types of careers that they can pursue with a degree in chemistry or biochemistry. Six speakers, four of them our own alumni, gave half-hour presentations describing their own career paths and detailing how they spend their working hours.

Two speakers represented the area of education. Dr. Melanie Cocco, professor of molecular biology and biochemistry at UC Irvine and an expert on protein NMR, told the students how she fell in love with research and pursued a career in the upper echelons of academia. Kiana Tabibzadeh (B.A., chemistry, 1990; M.S., chemistry, 1994), now chair of the School of Physical Sciences at Irvine Valley College, described the opportunities for teaching in community colleges and gave the students an idea of what life as an academic administrator is like.

The area of laboratory work was represented by two of our alumni. Steve Jones (B.S., chemistry, 1979) is the owner of Jones Analytical, an analytical testing firm in Fullerton, Calif., that provides consultation, analyses and other chemistry-related services, with many clients from the oil industry. Steve gave a hugely entertaining talk, describing his work as an analytical chemist for many local companies, how that led to starting his own company, and how he recruits new chemists for his firm. Danny Dinh (B.S., chemistry, 1995), a chemist at Allergan and the co-inventor of a number of drugs and developer of award-winning patents, described opportunities to work in research in the biotech and pharmaceutical sector.

Finally, two speakers represented the careers of people who use chemistry indirectly in their work. Maria Erlinda (Linda) Co Sarno (M.S., chemistry, 1975), a leading patent attorney, described how our graduates can pursue a career that combines an interest in chemistry with the practice of law. John Kulluk described how his expertise in chemistry allowed him to get a position as a hazardous materials chemist for the city of Torrance, Calif., a position that requires some knowledge of chemistry but is mainly concerned with risk analysis and a host of regulatory matters.

Forty students attended the event, which lasted from 9 a.m. to 2 p.m. and included a lunch that gave the students time to talk informally to the speakers. The talks drew lots of questions from the students. Many of the students said that they enjoyed the event and that they were going to tell their friends not to miss next year's Career Day.

Ernie Valfre (B.S., chemistry, 1978), a chemist at Baxter Healthcare and a member of the Advisory Council, along with Drs. Jeff Cohlberg and Brian McClain, organized the event. Michelle Stadick, president of SAACS, and several other SAACS members helped out with publicity and onsite registration.



## Chemistry Students Publish Own Newsletter

Students in the Department of Chemistry now publish their own newsletter, *The Beaker*. *The Beaker* made its first appearance on Jan. 26, and five more issues were published during the spring semester.

Students who felt the need to find a new medium for disseminating information to fellow students about what is happening in the department started the newsletter. Editor in Chief Cindy Pham spearheaded the project, with assistance from Ian Henley, Angel Meza, Lauren Olson, Kimmy Phan, Monica Royer, Andrew Sykahua and Karen Yu. Karen and Monica are the current editors along with Cindy.

The front page of each issue lists upcoming events that are of interest to students, including lectures and seminars, as well as reminders of academic deadlines. Each issue also features an in-depth profile of a faculty member.

*The Beaker* hosted a contest to design a new logo, and Darin Khumsupan's award-winning design debuted in Issue #6 (see the figure).

We welcome *The Beaker* as a new tradition in our department and wish the editors continued success. You can read current and past issues of the newsletter at the department website, <http://chemistry.csulb.edu/thebeaker.html>.

# Alumni News

1970

**George Mast** (B.S., chemistry) writes, "I was fortunate to do independent research at CSULB under Dr. Nail Senozan. I received my M.Sc. and Ph.D. from Brown University. While doing postdoctoral research with Dr. Jack Decius at Oregon State, I wrote 140 letters trying to get a job. I received 114 absolute rejections and two nibbles. I received an offer to teach for one year at Furman University. Because of my lack of success (which Dr. Senozan attributed to the end of the Apollo program), I looked over my skills and decided to pursue a scientific programming job. My programming skills started at Brown when I had to teach an undergraduate chemistry student to program in FORTRAN. During my time at Brown, I gained additional programming skills, becoming a pretty good programmer for a chemist. Subsequently, at Oregon State during my post doc, I added to my programming skills and started performing system administration duties on a PDP-10 mini-computer. I then moved to Edmonton, Alberta, Canada as a postdoc under John Bertie, where I assisted in some computer calculations for a journal article. While there, I came back to Southern California to look for a programming job, getting two offers in two weeks of searching. I joined a small computer software company, called Intermetrics, which had developed the HAL language used for the space shuttle's flight computers. I spent 24 years as a programmer/systems administrator/network administrator. I retired because of health reasons."

1977

**Ray Calloway** (B.S., chemistry), formerly of Aerospace Corporation, is now happily retired. His hobbies are golf and woodcarving.

**Frederick "Fritz" Coffman** (B.S., chemistry) received his Ph.D. at UC Riverside in 1986, working on hexamer formation by insulin, and then served as a postdoc studying the mechanism of tumor necrosis factor (TNF). He was a faculty member at Hahnemann University Medical School in Philadelphia, Penn. Fritz is currently associate professor in the Department of Pathology at the New Jersey Medical School. He does research in several areas related to cancer, including the role of the chitinase family protein CHI3L1 (or YKL-40) in tumor survival/progression/angiogenesis, the enhancement of TNF-mediated cytotoxicity by certain DNA topoisomerase II inhibitors, the initiation of DNA replication in human leukemic cells from the origin region

within the ribosomal RNA gene, and biophysical profiling of tumors using optical devices related to plasmon resonance, impedance measurements and laser Raman instruments. He also teaches and is the director of the graduate core course, "Introduction to Medical Science," which "covers an impossible number of complex topics in the time allotted."

1978

**Betty Burri** (M.S., biochemistry) writes, "I got my Ph.D. at UC San Diego in 1982. For the past 25 years, I have been a research chemist at the Western Human Nutrition Research Center, U.S. Department of Agriculture, in Davis, Calif. I am also adjunct professor at the Nutrition Department and a member of the Food Science and Technology group at UC Davis. My major research focuses now are: the functions and metabolism of beta-cryptoxanthin, a member of the carotenoid family that forms vitamin A (like the better-known beta-carotene); and developing new food-based interventions to increase vitamin A status. Vitamin A deficiency blinds about half a million children each year and causes millions of deaths during childhood in southern Asia and sub-Saharan Africa. I am combining those two interests in a research project that feeds mandarin oranges (a great source of beta-cryptoxanthin) or sweet potatoes (an even better source of beta-carotene) to lactating Bangladeshi women with low vitamin A to improve their vitamin A status. Another project tests the efficacy of cassava, a staple crop in Africa and South America, biofortified with beta-carotene to increase vitamin A. We joke that we have a license to import plants from Colombia and a fully equipped laboratory—and what do we use them for? Cassava. Oh well, you become a scientist because it is interesting, not to get rich."

**Chris Pritsos** (M.S., biochemistry program, 1975-78) writes, "Upon leaving CSULB, I entered the Ph.D. program in biochemistry at the University of Nevada, Reno (UNR), where I earned my doctorate in 1982. My dissertation focused on the mechanism of action of quinone anticancer agents, particularly focusing on their redox interactions with mitochondria. I continued my study of cancer chemotherapy during my postdoctoral work at the Yale University Comprehensive Cancer Center. In 1985, I was recruited back to UNR as a research assistant professor in the Biochemistry Department. In 1988, I was asked to help form a new

Department of Nutrition, where I have been ever since. I have served as department chair since 2000. Over the years, I have continued my work in the cancer chemotherapy area, looking at activation pathways and alternative targets for these compounds. I have also expanded my research interests to include the toxicity of exposure to environmental pollutants. I have conducted several studies related to the health effects of exposure to environmental tobacco smoke, particularly as it pertains to casino workers in Nevada. My newest challenge is in serving as the chair of a newly organized Department of Agriculture, Nutrition and Veterinary Sciences, which joins faculty from several departments. I remain married (29 years) to my wife, Karen, who I met in grad school at UNR, and we have two children, Jenna (law school, University of Wisconsin) and Evan (junior, Occidental College)."

**Martin Schroeder** (M.S., biochemistry), executive vice president and managing director of the Emmes Group, Inc., a strategic business consulting firm, was appointed to the board of directors at Genesis Biopharma, Inc.

1980

**Brian Imai** (M.S., biochemistry program, 1977-80) received his Ph.D., working on the structural biology of chromatin in Dr. Morton Bradbury's lab at UC Davis, and continued for several years as a postdoc under Bradbury at Los Alamos National Laboratory, where he "along the way ended up getting married." He did a brief postdoc at UC Santa Barbara, working on the structure of reverse transcriptase. He writes, "This was cut short when I was offered a job in the protein/DNA core facility at Rockefeller University to be in charge of peptide synthesis. After a couple of years, I became director of the facility and oversaw the operations of the DNA sequencing, protein sequencing, protein analysis and peptide synthesis units. After several more years, the facility was restructured into a proteomics facility, and I became associate director. I spent a total of nine years there, and along the way, my wife and I had a son. Then six years ago, I had an opportunity to come to the University of Illinois's Carver Biotechnology Center's Protein Sciences Facility as a proteomics bioinformatics specialist. Trying to stay on top of the software that we use to analyze the data is the primary component of my job, but I am also involved in 2-D gel analysis (DIGE), running and maintaining our LC-MS/MS mass spectrometers

*Continued*

## Alumni News

(Q-ToF and LTQ-FTICR), Edman sequencing, amino acid analysis, LC-separations and, of course, peptide synthesis. As you can see, the biochemistry and chemistry I learned while at CSULB have served me well in my career. I am still learning a lot and still having a good time in science! Moving to the Midwest from the New York City area took some adjusting, but being within a couple of hours' drive from Chicago does help. Rural Illinois isn't a whole lot different from rural California, so maybe it wasn't as big an adjustment for me."

### 1985

**Deborah Schwyter** (M.S., biochemistry; B.S., liberal studies, biology, 1980) writes, "For over 15 years, I've been on the faculty at Santa Monica College, where my teaching repertoire has included Introductory Chemistry, General Chemistry, Organic Chemistry, and Biochemistry. My classes are filled with a diverse group of talented and interesting students. It's been challenging, fulfilling and very fun. I have such fond memories of my years at CSULB and am so grateful for the guidance I got from the professors there."

### 1988

**Elizabeth (Siegfried) Ronnau** (B.A., chemistry; B.S., business administration/accountancy, 1998) writes, "I have been married for almost 20 years to my husband, Andrew, and we have three wonderful children: Matt (12), Will (7) and Zoe (5). After pursuing a second career in accounting, I am currently a CPA, working as the controller of Sea Launch in Long Beach, Calif."

### 1990

**Denis Guttridge** (M.S., biochemistry) was a graduate student in Dr. Roger Acey's laboratory, working on the effects of copper on Artemia hemoglobin. He received his Ph.D. in biological sciences from UC Irvine in 1996. Denis then left the West Coast to perform a postdoctoral fellowship at the University of North Carolina, where he worked on the NF-kappa B signaling pathway. In 2001, he joined the faculty of Ohio State University as an assistant professor in the Department of Molecular Virology, Immunology, and Medical Genetics. Denis is now an associate professor in the same department and maintains an active laboratory with graduate students and postdoctoral fellows, where the central focus of the lab remains on NF-kappaB signaling. He and his family are happy Buckeyes, but he admits

missing the beaches and waves of Southern California. Denis gave a seminar in our department this past spring entitled "Deciphering NF- B Signaling in Muscle Health and Disease."

### 1993

**Robert "Chip" Stevens** (B.S., biochemistry) is currently working as a consular officer in the Foreign Service at the U.S. Embassy in London, adjudicating passport and visa applications. Previously, he worked for Beckman Instruments in Fullerton, Calif., and served as a Peace Corps volunteer in the Kingdom of Tonga. Robert credits the outstanding life science professors and research opportunities he had at The Beach with helping to launch his current career.

### 1995

**Jason Atalla** (B.S., biochemistry; M.S., biochemistry, 2002) writes, "I am still an account sales consultant with Beckman Coulter, responsible for the sales of flow cytometry products in the San Diego, Arizona and Hawaiian Islands territories. My role has diversified, and my client base has expanded. I now interact with and sell into all sectors—universities, biotechnology, biopharmaceutical, clinical labs and hospitals. I am really enjoying the variety of interfacing that my role affords me. During a typical week, I learn about the cutting edge research of major universities and biotechnology companies while simultaneously assisting clinical labs and hospitals who are performing primary patient care and testing. This allows me to be a part of the entire spectrum, from scientific R&D all the way to diagnosis and treatment of disease. On a personal note, I purchased a home in Buena Park, Calif., in 2008, and in March 2010, my son, Tyler, was born."

### 1996

**Ali Ansari** (M.S., biochemistry) did research at City of Hope for a few years after getting his M.S. degree and then discovered a passion for teaching. He has been a faculty member at Pasadena City College since 2003.

### 1998

**Jawdat Al-Bassam** (B.S., biochemistry), the first President's Scholar to receive a degree from CSULB (graduating after three years), received his Ph.D. in molecular cellular structure from the Scripps Research Institute in 2004, working under Dr. Ronald Milligan. He then spent six years as a postdoctoral fellow in Dr. Steven Harrison's laboratory at Harvard Medical School. Since 2010,

he has been an assistant professor in the Department of Molecular and Cellular Biology at UC Davis. His research, starting with his doctoral work, has focused on how the structure and dynamics of microtubules are regulated by conserved proteins, including microtubule-based motor proteins, neuronal microtubule associated proteins and microtubule polymerase proteins. He writes, "My research is focused on imaging protein structure and function using approaches that span a large resolution range from nanometers to micrometers. These biophysical approaches include cryo-electron microscopy and three-dimensional image analysis, x-ray crystallography and single molecule fluorescence microscopy." He is currently trying "to understand the mechanism of molecular machines called microtubule polymerases and microtubule depolymerases, and how they accelerate the rate of microtubule dynamic assembly and disassembly during cell division."

### 2006

**Kristin Clark** (M.S., chemistry) completed her Ph.D. this summer at UC Santa Barbara in the Bren School of Environmental Science and Management and will be starting her first job as a GS11 chemist with the Forensic Analytical Center at Edgewood Chemical and Biological Center in Edgewood, Md. She writes, "The mission of the group I'm working with is to 'integrate lifecycle science, engineering and operations solutions to counter CBRNE (chemical, biological, radiological and nuclear) threats to U.S. forces and the nation!'"

### 2008

**Casey Curran** (B.S., biochemistry) writes, "I am now finishing up my third year of medical school at Northwestern University. If everything goes as planned, I will be applying for a residency in diagnostic radiology with hopes of becoming an interventional radiologist sometime in 2018! I've enjoyed Chicago, but I miss The Beach daily. As I write this, it is mid-April and snowing."

**Chad MacArthur** (M.S., biochemistry) writes, "I have been working for Invitrogen (now a part of Life Technologies) for the past three and a half years. I am part of an R&D group that works on human stem cell research. I have primarily been focusing on human ESC engineering and on methods for the generation of human iPSC. It's been a great experience working for Invitrogen so far, and I really like it. As far as personal life goes, my wife and I were married back in July of 2009, and we are currently living in San Clemente, Calif., while she finishes up her Ph.D. in psychology."

## Advisory Council New Members

Since its inception over 30 years ago, the Department of Chemistry and Biochemistry's Advisory Council has supported the department's mission to provide students with excellence and opportunities in chemical and biochemical education. The current group of 21 members represents a variety of chemical, pharmaceutical and biotechnology companies in Southern California. This past year, the department welcomed three new members to the council, all of them representing companies based in Torrance, Calif.

Alex Gharagozlow is executive director of operations at Phenomenex, Inc., a leading provider of advanced technology solutions for separation science techniques in the areas of sample preparation, high-performance liquid chromatography and gas chromatography. The company offers a wide selection of separation devices and chromatography consumables.

Lynnae Jones represents Inspectorate, a leading global inspection and testing organization that provides services in the areas of oil and petrochemicals, metals and minerals, food safety and agriculture, and consumer products.

Dr. Jason Moss is manager of technical sales at Bachem America. Bachem specializes in the process development and the manufacturing of biologically active peptides and complex organic molecules as active pharmaceutical ingredients (APIs) and as innovative biochemicals for research purposes. Dr. Moss, a synthetic organic chemist, gave a seminar in our department last fall entitled, "Commercial Manufacturing of Peptide APIs: The Economics of Innovation."

Both Phenomenex and Inspectorate recently conducted job recruitments in our department and hired several of our students to work in their companies.

We are very happy to welcome all three of these locally based companies to our Advisory Council community and look forward to continued mutually fruitful interactions.

## Alumni Giving Makes A Difference!

Your donations to the Department of Chemistry and Biochemistry make a BIG difference. Simply put, your support determines how rich an educational experience we can provide to our students: time to do research instead of working off campus, use of state-of-the-art equipment in their classes and research labs, travel to professional meetings to present their results, and access to seminars and lectures by leading scientists discussing their own research.

About 95 percent of our budget is fixed in the form of salaries for faculty, teaching assistants, graduate assistants and staff. Only a small portion of our budget, around 5 percent (approximately \$160,000), is allocated for department operating expenses and what the state ironically terms "non-instructional" expenses. These include faculty and student travel, equipment purchase and maintenance (both for classroom labs and research labs), our seminar and Distinguished Lecturer series, our Advisory Council activities, and student awards, scholarships and research fellowships.

Where does that 5 percent come from? A little more than half comes from the state; the remainder comes from private sources, including small annual distributions from the department's endowment, a return from the overhead on research grants, gifts from corporate donors and, most importantly, donations from alumni and friends.

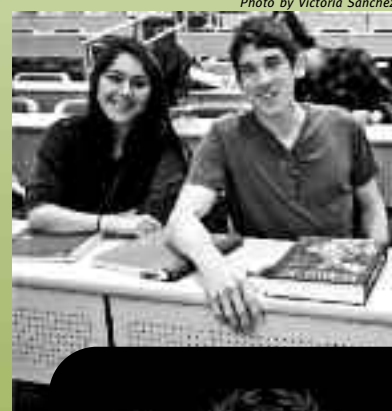
What is the outlook for the near future? Expenses will continue to rise while state funding continues to decline. This means that private philanthropy will play an increasing role in the department's ability to provide students with the opportunities and experiences essential to a first-rate scientific education. Your donations to our department are more important than ever. They make possible additional scholarships in the face of rising tuition. They provide opportunities to introduce students to the public nature of scientific work at professional meetings. They help purchase, maintain and repair key instructional research equipment. Each gift makes a difference.

Please consider the difference a CSULB education in chemistry and biochemistry has made in your success and give back as generously as you can.

To make a gift, use the enclosed envelope or give online at <https://cf.papubs.csulb.edu/giving/>. Scroll down to the College of Natural Sciences and Mathematics and choose "Chemistry and Biochemistry Department." For endowments or naming opportunities in the chemistry wing of the new Hall of Science, contact Maryanne Horton at 562-985-1687 or e-mail [mhorton@csulb.edu](mailto:mhorton@csulb.edu).

## What do all these people have in common?

Elliott Berkihiser '73  
Bruce Fellows '79  
Professor Dot Goldish  
Woody Jackson '89  
Professor Robert Loeschen  
Roger Meyer '68  
Michelle Pizzorno '92  
Tom Pruitt '73  
Mary Sabol '60  
Linda Sarno '75  
Gregory Whitaker '90  
Curtis Winters '79



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They're just a few of the Chemistry & Biochemistry alumni and faculty who have named a seat in the new Hall of Science.

Visit [www.csulb.edu/cnsmseats](http://www.csulb.edu/cnsmseats) to name yours!  
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## Gifts by Individuals

During the 2010-11 fiscal year, the department received gifts totaling **\$234,663**, including \$23,755 from individual donors.

Cash gifts are used for scholarships, awards, the seminar program, and purchase of supplies and equipment for which there is not adequate state funding. Also, the costs of publishing the Department of Chemistry and Biochemistry newsletter are met with private giving. You may give an income tax-deductible gift directly to the department by sending a check to:

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The Office of University Relations and Development is informed of all gifts, and you will receive a personal letter of acknowledgement from the department. You might investigate the possibility of your company matching employee gifts, which multiplies the value of your gift to the department.

If you are contacted through the university giving program and a gift is requested, please specify the Department of Chemistry and Biochemistry as the recipient of your gift, if that is your intention.

Thank you!

## Corporate Gifts to the Department

Total value of cash and in-kind gifts to the department during the fiscal year ending June 30, 2011 was **\$210,908**.

Companies and foundations contributing cash and in-kind gifts were:

Allergan Foundation\*  
American Chemical Society (Research)  
American Heart Association (Research)  
Amgen Inc.\* (Matching Gifts)  
Battelle (Research)  
The Boeing Company\* (Matching Gifts)  
Fidelity Charitable Gift Fund (Matching Gifts)  
NHK Laboratories, Inc\* (Scholarship)  
Research Corporation (Research)  
Scientia Advisors LLC

\* Companies represented on the Chemistry and Biochemistry Advisory Council.

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*Photo by David J. Nelson*

***Members of the 2010-11 graduating class with members of the Chemistry and Biochemistry Department faculty.***

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