University of California
Louis Stokes Alliance for Minority Participation

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20+ Years of STEM Student Support
In Partnership with the National Science Foundation

2011 SYMPOSIUM PROCEEDINGS & PROFILES
CAMP

UNIVERSITY OF CALIFORNIA LOUIS STOKES ALLIANCE FOR MINORITY PARTICIPATION

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CAMP is one of 42 Louis Stokes Alliances for Minority Participation funded by The National Science Foundation, A. James Hicks, Ph.D., LSAMP Director, Education and Human Resources Division of Human Resource Development

www.california-lsamp.uci.edu
Greetings

We are pleased to present the annual publication of highlights from our UC Statewide Symposium. By participating in this event, the premier CAMP activity, students test their understanding and move forward in subject mastery. The statewide symposium affords students the occasion to share their scholarly work and grow in confidence in their own abilities to communicate effectively with faculty and peers. For first time presenters, the symposium is a gateway to other venues of scientific discourse. We also present exciting profiles of students on UC partner campuses. Additionally, we are very pleased that the California Alliance has been awarded funding by the National Science Foundation to sustain our work with STEM undergraduates. Our proposal for the California LSAMP Senior Level Alliance (2011-2016) supports the formal inclusion of UC Merced, UC's youngest campus.

Marjorie DeMartino, M.F.A.,
Symposium Chair,
California LSAMP Co-Project Director
Derek Dunn-Rankin, Ph.D.,
Professor Mechanical &
Aerospace Engineering,
California LSAMP Co-Project Director

The University of California Alliance has been awarded funding by the National Science Foundation to sustain our work with STEM undergraduates. Our proposal for the California LSAMP Senior Level Alliance (CAMP) supports the formal inclusion of UC Merced. Thanks to all of our UC partners for their commitment to minority student achievement. More students are persisting in STEM majors and planning for graduate education, due in part to successful research experiences, and in large part to effective mentoring and retention activities. Student scholarly work is reflected in the abstracts presented in this publication, and demonstrates a level of achievement that is a model for the nation.
General CAMP Information

Overarching Goal: Prepare High Caliber Professionals for Success in STEM

Summary  The University of California Louis Stokes Alliance for Minority Participation sustains a cooperative agreement between the National Science Foundation and UC Irvine, the lead campus and administrative center since 1991. The Alliance represents a significant investment by the University and the National Science Foundation. Institutional and faculty contributions as well as collaborative relationships and student services support the program. Minority students are offered development opportunities and hands-on experiences that increase retention, academic excellence, and degree completion. The primary goals are to significantly increase the number of baccalaureate degrees granted to underrepresented students in science, technology, engineering, mathematics (STEM) at the University of California, and encourage continuation to graduate studies. The Alliance facilitates a systemwide network of faculty, program staff and students contributing to student academic attainment and measurable outcomes, both quantitative and qualitative. Our overarching goals include preparing the future generation of scientists and engineers who will not only diversify the professional workplace but also enhance the economic health of our state and nation through innovation and creative research.

Program Impact  For 20 years, the Louis Stokes California Alliance for Minority Participation has pursued a comprehensive approach to support underrepresented students to complete B.S. degrees in STEM and prepare for graduate education and rewarding STEM careers. UC STEM baccalaureate degrees granted to underrepresented students increased by 178% since 1991, including 1,708 degrees granted in 2010. STEM enrollment has increased by 208% since 1990-91. The effort has been unwavering and demonstrates the effectiveness of one-on-one mentoring in retention efforts. CAMP participants are scholarly researchers and have co-authored published papers in refereed journals as undergraduates. Student academic performance is a key indicator of retention in STEM majors, and is perhaps most visible in high quality research presentations. The graduate school culture has made significant increases in students completing master’s and doctorate degrees, expanded through the NSF Bridge to the Doctorate activity. Approximately 40% of program participants have gone on to graduate or professional schools. They are also taking their places as faculty in UC, CSU, and four-year institutions both inside and outside California. Connectivity to LSAMP institutions nationwide strengthens impact.

SYSTEMWIDE DATA SNAPSHOTs

STEM Minority Enrollment

STEM Minority BS Degrees

STEM Minority MS Degrees

From left: fall 2010 UC Minority STEM enrollment (without Merced or UCSF) is up 961 students, a 9% increase since fall of 2009; Minority STEM B.S. Degrees granted are up 178% in 2010; UC Minority STEM M.S. Degrees granted are up 129% in 2010; Minority STEM PhD Degrees granted are up 74% in 2010. (All data is UC systemwide.)
**SYSTEMWIDE CORE PRINCIPLES & ACTIVITIES**

- **Power of Mentoring**: involvement in faculty mentored research and internships
- **Power of Performance**: presenting research at campus, statewide, and national venues; developing communication skills
- **Sphere of Influence**: fostering a sense of shared purpose and identity through study groups and networking
- **Academic Socialization**: peer counseling and retention activities
- **Technology Proficiency**: exposure to current trends in technology – software and instrumentation in the lab
- **Academic Attainment**: academic counseling and tutorials; co-authorship
- **Financial Assistance**: stipends to support research and professional development
- **Collaboration**: inter-campus, inter-agency, and community based
- **Student Tracking**: graduating senior questionnaire and annual data collection
- **Graduate School Preparation and Enrollment**: GRE Prep, application/admissions workshops and student panels; writing the personal statement; Bridge to the Doctorate opportunity
- **Connectivity to LSAMP nationwide** and graduate opportunities

“CAMP faculty and staff are committed to fostering academic excellence. Together we seek to educate the whole person, and through research experiences and other professional development, nurture our students to give them a competitive edge.”
—Michael V. Drake, M.D., Chancellor, CAMP Statewide P.I.

“IT was a knowledge enriching experience! There were many great research topics and passionate individuals that it motivated me to strive for more. Everybody seemed so welcoming and interested in what I had to say. It served as a great networking and friendship building environment.”
—Undergraduate Presenter
The CAMP Symposium Aims To:
- **Support** undergraduate research with a faculty member;
- **Encourage** first-time presenters with constructive feedback;
- **Develop** student written and oral communication skills;
- **Provide** a UC systemwide forum for faculty and students to meet and network;
- **Foster** preparation for and access to graduate education;
- **Set** national standards for undergraduate research.

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### Special Merit in Research Awardeees

**BIOLOGICAL/LIFE SCIENCES**

- **Rudolfo Hernandez**, UC Davis
- **Gilberto Cardenas**, UC Irvine
- **Roky Coria**, UC Los Angeles
- **Diana Ponce-Morado**, UC San Diego
- **Johnny Rodrigues**, UC Irvine
- **Kimberly Frutoz**, UC Los Angeles
- **Victoria Senechal**, UC Riverside

**PHYSICAL SCIENCES/ENGINEERING**

- **Rolando Bermudez**, UC Berkeley
- **Tyler Dillstrom**, UC Berkeley
- **Ana Bowlus**, UC Riverside
- **Narcisco Marmolejo**, UC San Diego
- **Maria Coca**, UC Berkeley
- **Daniel Estrada**, UC Santa Barbara
- **Ariel Anders**, UC Santa Cruz
- **Jorge Bustamante, Jr.**, UC Irvine

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### Honorable Mention Awardeees

**BIOLOGICAL/LIFE SCIENCES**

- **Stephany S Chacon**, UC Irvine
- **Michael Daniel**, UC Los Angeles
- **Sofia Jimenez**, UC San Diego
- **Rebekah Klint**, UC San Diego
- **Martina Mikail**, UC Riverside
- **Adilene Martinez**, UC Santa Barbara
- **Steven Nguyen**, UC Los Angeles
- **Irina Ortiz**, UC Los Angeles

**PHYSICAL SCIENCES/ENGINEERING**

- **Xorge Alanis**, UC Riverside
- **Adam Amarillas**, UC Irvine
- **Everardo Amarrillas**, UC Riverside
- **Gabriela Bernal**, UC Santa Barbara
- **Annie Caraveo**, UC Los Angeles
- **Edy Cardona**, UC Berkeley
- **Ricky Grant**, UC Santa Cruz
- **Karla Lanzas**, UC Davis

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### Undergraduate Poster Presenters

**BIOLOGICAL SCIENCES PRESENTERS**

- **Behaya Ahmed**, UC Riverside
- **Mackenzie Alvarez**, UC Riverside
- **Javier Anduaga**, UC Riverside
- **Gilberto Cardenas**, UC Irvine
- **Michael Cervantes**, UC Riverside
- **Stephany S Chacon**, UC Irvine
- **Roky Coria**, UC Los Angeles
- **Michael Daniel**, UC Los Angeles
- **Jason Del Rio**, UC Irvine
- **Kimberly Frutoz**, UC Los Angeles
- **Darlene Gomez**, UC Santa Barbara
- **Miriam Guemes**, UC San Diego
- **Ivan Hernandez**, UC Davis
- **Oghomwen Igiesuorobo**, UC Los Angeles
- **Sofia Jimenez**, UC San Diego
- **Rebekah Klint**, UC San Diego
- **Jose Lugo**, UC Riverside
- **Adilene Martinez**, UC Santa Barbara
- **Joaquin Michel**, UC Davis
- **Martina Mikail**, UC Riverside
- **Abel Morelos**, UC Irvine
- **Magdalena Moy**, UC Riverside
- **Veronica Munoz**, UC Santa Barbara
- **Steven Nguyen**, UC Los Angeles
- **Adam Olguin**, UC Riverside
- **Hilda Ortiz**, UC Irvine
- **Irina Ortiz**, UC Los Angeles
- **Lepe Paola**, UC Los Angeles
- **Rachel Perez**, UC Riverside
- **Diana Ponce-Morado**, UC San Diego
“I enjoyed learning about the numerous research fields in all different areas and witnessing true passions flowing within each individual. It’s really rewarding seeing students that look like me taking on such opportunities in science and engineering.”

—Undergraduate Presenter

Tamara Restrepo, UC Santa Cruz  
Johnny Rodriguez, UC Irvine  
Marcela Rodriguez, UC San Diego  
Miguel Sanchez, UC Irvine  
Richard Sanchez, UC Santa Barbara  
Victoria Senechal, UC Riverside  
Christie Villanueva, UC Santa Barbara

PHYSICAL SCIENCES PRESENTERS

Xorge Alanis, UC Riverside  
Maria Alcaraz, UC Riverside  
James Allen, UC Los Angeles  
Adan Amarillas, UC Irvine  
Ariel Anders, UC Santa Cruz  
Melesio Arambula Jr., UC San Diego  
Everardo Arias, UC Riverside  
Rolando Bermudez, UC Berkeley  
Gabriela Bernal, UC Santa Barbara  
Ana Bowlus, UC Riverside  
Jorge Bustamante Jr., UC Irvine  
Amie Caraveo, UC Los Angeles  
Edy Cardona, UC Berkeley  
Griselda Cardona, UC Berkeley  
Ruben Chavez, UC Santa Cruz  
Maria Coca, UC Berkeley  
Luis Cruz, UC Irvine  
Tyler Dillstrom, UC Berkeley  
Gonzalo Esparza, UC Santa Barbara  
Daniel Estrada, UC Santa Barbara  
Giovani Galicia, UC San Diego  
Edward Gandara, UC Irvine  
Narciso Genovese, UC San Diego  
Guillermo Gomez, UC Irvine  
Richard Gonzalez, UC Irvine  
Ricky Grant, UC Santa Cruz  
Eloisa Hernandez, UC Irvine  
Donez Horton-Bailey, UC Santa Cruz  
Karla Lanzas, UC Davis  
Yadira Leon, UC Berkeley  
Isaac Lomeli, UC Riverside  
Sapphire Lopez, UC Riverside  
Antonio Love, UC Berkeley  
Roseblim Lugo, UC Riverside  
Gilbert Marquez, UC Davis  
Everardo Maya-Ramos, UC San Diego  
Andres Munoz, UC Santa Barbara  
Mike Orellana, UC Davis  
Susana Ramirez, UC Davis  
Irene Ramirez, UC Davis  
Karina Reyes, UC Irvine  
Dominga Sanchez, UC San Diego  
Francisco Sarabia, UC Davis  
Rosa Serrano, UC Davis  
Brian Shevitski, UC Los Angeles  
Trinidad Sierra, UC Riverside  
Martha Sosa, UC Riverside  
Anabel Sotelo, UC Davis  
Alfredo Torres, UC Santa Barbara  
Mayra Vega, UC San Diego  
Debra Zepeda, UC Berkeley

STATEWIDE RESEARCH SYMPOSIUM  
FEBRUARY 26, 2011  
UCI STUDENT CENTER

Welcome by Chancellor  
Undergraduate Presenters UC systemwide  
Faculty Feedback on Posters  
UC-Wide Networking  
BD/Graduate & Alumni Panel  
Graduate School Coaching  
UCI Campus Tour  
Special Merit in Research Awards  
Keynote by Distinguished Researcher  
Special Recognition/Honorable Mention  
Student Centered  
Community College Opportunity  
Peer-to-Peer Support
Identification of Loci Regulating Root Architecture in Tomato

Rodolfo Ivan Hernandez, Junior, Biological Science, Professor Siobhan M. Brady, Departments of Systems Biology and Plant Biology, University of California, Davis

All plants depend on their roots for growth and maturity. The root's vital roles are to bring nutrients, solutes and water to the shoots of the plant while also serving as an anchor. Root architecture is important in that it must adapt to its environment in order to maximize the plant’s fitness and yield. We are focusing on identifying loci governing root development and architecture by QTL (Quantitative Trait Locus) mapping in S. pennelli (wild type) and S. lycopersicum (M82, domesticated) introgression lines. ILs (introgression lines) are formed by repeatedly backcrossing an interspecific hybrid (S. pennelli x M82) with one of the parent species (M82). The tomato ILs (76 total) are comprised of single marker-defined genomic regions of S. pennelli, and together the ILs cover the genome of S. pennelli. We can use the parent species and ILs to measure morphological and cellular root traits and identify the ILs with significant similarity to S. pennelli. These similarities are used to determine candidate regions and then used in combination of pre-existing molecular genomic data to identify loci that controls root development. We have identified multiple QTL that regulate these traits. This will lead us to a better understanding the complexity of individual loci and their important roles in root architecture and root development.

Predator Evasion in Zebrafish is Mediated by the Lateral Line System

Gilberto Cardenas, 5th Year Senior, Mathematics, Assistant Professor Matthew McHenry, Ecology & Evolutionary Biology, William Stewart, Ecology & Evolutionary Biology, University of California, Irvine

The ability to sense water flow plays a key role in a variety of fish behaviors. The flow created by prey swimming in the dark can be detected by the lateral line system of a fish predator. However, it is not clear whether flow can alert fish prey to a predator’s approach. We performed experiments that exposed larval zebrafish (Danio rerio) to predatory adult zebrafish. Adults attempted to feed on larvae with suction-feeding strikes and larvae often evaded these strikes with a fast-start startle response. We found that ablating the lateral line system of larvae diminished their ability to successfully evade feeding strikes. For example, adults required 5 times as many strikes to capture a larva with a functioning lateral line as compared to a larva with the lateral line ablated. In contrast, ablating the lateral line system in adults had a negligible effect on their ability to capture prey. Therefore, flow sensing is important for predator evasion, but is unnecessary for prey localization in zebrafish.
ENGINEERING AFFINITY REAGENTS FOR MOLECULAR RECOGNITION

Johnny F. Rodriguez, Junior, Biochemistry & Molecular Biology, Professor Gregory A. Weiss, Chemistry, Cathie Overstreet, Chemistry, Issa Moody, Molecular Biology, University of California, Irvine

Biological laboratories commonly use antibodies as affinity reagents due to their high affinity and specificity. Such immunoglobulins include both a scaffold core and flexible antigen-binding loops called complementary determining regions (CDRs) that can be modified to recognize many different targets. Despite their near universal applicability, the complicated structure and manufacturing of antibodies limits their practicality. This research aims to engineer simple protein scaffolds into high affinity reagents that can serve as readily accessible alternatives to antibodies for use in biomedical research. Preliminary scaffolds have been selected with loop regions to accept diverse sequences without altering structural stability. These scaffolds have successfully targeted the biologically important proteins HIV-1 Nef and integrase when modified with randomized combinatorial libraries consisting of all twenty amino acids. Despite the success of these randomized libraries, libraries restricted to amino acids most frequently identified in the CDRs of antibodies (Tyr, Ser, Gly) have been predicted to generate higher affinity binders. FLAG-tagged libraries using the degenerate codon KVT, which encodes for Tyr, Ser, Gly, Cys, Arg, and Asp in the loops of the scaffold protein, were displayed on M13 bacteriophage as a fusion to the minor coat protein P3. An enzyme-linked immunosorbent assay (ELISA) showed that the FLAG-tagged affinity reagents display robustly on phage. Currently, library members are being selected for binding to integrase using biopanning, and their affinities assayed using an ELISA-based screen. The highest affinity phage-displayed binders will be subcloned into an expression vector to assay their solubility and off-phage affinity for targeted proteins. Additional biophysical assays will be conducted to determine thermostability, folding characteristics, and KD. The best affinity reagents could be used as therapeutics, analogous to antibodies.

“I gained presentation skills! I’m typically a very reserved individual when it comes to being outspoken, but the judges and my fellow colleagues were extremely supportive that I didn’t want to stop talking about my NASA project! It was so much fun.”
—Undergraduate Presenter

EXAMINING PHENOTYPIC VARIATION IN LEAF TRAITS ACROSS THE GEOGRAPHIC DISTRIBUTION OF QUERCUS LOBATA (VALLEY OAK)

Roky Coria, Senior, Biology, Dr. Victoria Sork, Keith Gaddis and Josep Penuelas, Department of Ecology and Evolutionary Biology, UCLA, Universitat Autònoma de Barcelona, 08193 Bellaterra (Barcelona), Spain, University of California, Los Angeles

Global climate change has been shown to cause local and large-scale shifts in plant distributions and abundances. In order to avoid local and regional extinction, plants must physiologically tolerate, adapt by selection, or migrate to more tolerable climate zones. Studies have shown that local adaptation in leaf characteristics and morphology reflect predominant stresses caused by environmental factors. In this study we seek to examine patterns of variation in leaf traits including chlorophyll absorbance, leaf size, leaf thickness, lobe number, and leaf area. Preliminary data collected from our subsampling of the different sites (n=26) have shown a longitudinal pattern in traits. The collected data will be analyzed to determine if differences occur across various sites and if patterns can be found along geographic and climate gradients. This study is part of a larger project using genomic tools to identify variation in functional genes that might experience selection throughout the range of this species. Identifying local site characteristics will indicate selective pressures that have shaped the current distribution of this species and lend to the creation of a predictive model of the response of Quercus lobata Neé to future climate change.

“I gained presentation skills! I’m typically a very reserved individual when it comes to being outspoken, but the judges and my fellow colleagues were extremely supportive that I didn’t want to stop talking about my NASA project! It was so much fun.”
—Undergraduate Presenter
CHARACTERIZING RP58 IN NEURAL PROGENITOR CELLS OF THE DEVELOPING SPINAL CORD

Kimberly Frutoz, Senior, Physiological Science, Dr. Bennett Novitch and Zachary Gaber, Department of Neurobiology and Broad Center for Regenerative Medicine and Stem Cell Research, University of California, Los Angeles

One of the central questions in the study of neural development is how spinal progenitors produce the vast array of cell types found in the mature nervous system. Progenitors are organized into spatially-restricted domains committed to producing specific types of neurons early in development and, at later times, producing glia. For this progression, progenitors must balance differentiation and maintenance to produce the proper numbers of cells and to retain a progenitor population throughout development. The transcription factor PLZF, a member of the BTB/POZ gene family, has recently been implicated as a negative regulator of neurogenesis in early spinal development and consequently may serve a role in preserving a progenitor population for astrocyte production at later times in development. We have identified a closely related gene of the same family, RP58, which partially overlaps in tissue expression with PLZF suggesting that it may similarly inhibit neurogenesis. The focus of our study is to 1) characterize the function of RP58 in the developing chick spinal cord by documenting its endogenous expression pattern, and 2) manipulate its in vivo functions using plasmid misexpression and RNA interference approaches. Our preliminary experiments demonstrate that increasing the expression of RP58 mimics the actions of PLZF misexpression in maintaining progenitor populations, suppressing neuronal differentiation, and repressing radial glial markers. Currently, a short hairpin RNA (shRNA) vector approach is being pursued to investigate the consequences of reducing RP58 function from the spinal cord. Through this combination of gain and loss of function experiments, we aim to gain a comprehensive understanding of the role that RP58 and related BTB/POZ transcription factors play in sculpting the development of the nervous system.

NEW SPECIES OF ASTYANAX (OSTARIOPHYSII: CHARACIFORMES: CHARACIDAE) FROM THE NEOTROPICAL RIO MAGDALENA SYSTEM, COLOMBIA

Victoria Senechal, Sophomore, Neuroscience, Mauricio Torres, and David Reznick, Department of Biology, University of California, Riverside

A new species of characid of the genus Astyanax is described from the tributaries of Rio Cascajales, within the Rio Magdalena system, Santander, Colombia. Astyanax is a genus of tropical freshwater fishes in the Characidae family of the order Characiformes, more commonly known by aquarium hobbyists as tetras. With roughly 128 described Astyanax species, this genus is the most diverse of the order Characiformes, and the third largest genus among the Neotropical freshwater fishes. Such diversity and taxonomical gaps makes the description of new species of Astyanax rather difficult. However, this particular species of Astyanax has such unique characteristics that it can be readily distinguished from all its congeners. These characteristics include the presence of two vertically elongated humeral bars, a distinct anteriorly directed chevron pattern along the midlateral line, and a caudal spot that extends to the end of the median caudal rays. To further confirm that this species is different from previously known species of Astyanax, we also measured other anatomical characteristics such as body shape and meristics by direct observation of specimens under the microscope, their pictures, and x-rays. We then used this data to compare the new species to the other species of Astyanax and Neotropical freshwater fishes and are in the process of publishing our findings.
Determining relationships between calling activity and group size for marine mammal species is useful for understanding population trends. However, determining relationships between these two categories is challenging, in part due to difficulties in obtaining reliable independent visual censuses of animals in open waters. In this study, the acoustic activities of eastern Pacific gray whales were measured over a four-week period during their 2008 breeding season in the sheltered lagoon of Laguna San Ignacio of Baja Mexico. Visual counts were conducted for six days during the deployment. It was found that the lagoon population more than doubled over the observational period. Acoustic data collected during those six days were manually reviewed to yield counts of various gray whale call types during each day. All call rates showed peaks in early morning and evening, with minimum rates generally detected in the early afternoon, a time of low background noise but high tourist boat activity. The number of S1-type calls, a popular call type in the gray whale repertoire, counted over 24 hours increased roughly as the square of the number of the animals in the lagoon, when call counts were adjusted for variations in background ambient noise levels. An exception to this trend occurred during a time of rapid population increase in the lagoon. Overall, long-term studies in Laguna San Ignacio have revealed complex relationships between sound production rates and its current population size of gray whales. These acoustic and census studies will help to establish a foundation for estimating whale populations.
MASONRY WALLS: THE STABILITY OF SERPENTINE, STRAIGHT, AND CURVED WALLS IN SMALL-SCALE TESTS

Rolando Bermudez, Senior, Civil and Environmental Engineering, Jennifer Furstenau (2), and John Ochsendorf, Ph.D., (2) Massachusetts Institute of Technology, Cambridge MA. University of California, Berkeley

The use of masonry walls is very common today in small and large structural designs, but their properties are not fully understood by engineers. Our research demonstrates in depth how the stability of serpentine walls surpasses that of straight and curved walls using inexpensive materials. Furthermore, we also exposed how stability varies on masonry walls due to different angles of embrace. All of these tests were performed with small-scale testing models. Our hypothesis is that serpentine walls can provide more stability than straight or curved walls. Six brick walls of different geometries were tested until they collapsed. Each wall had a different half-angle of embrace, $\alpha = 0^\circ, 30^\circ, 60^\circ, -30^\circ$, and $-60^\circ$. Also, three serpentine walls were tested at a radius of 13.1 centimeters and at an angle, $\alpha = 46^\circ$. The models were constructed using bricks with dimensions of 26.87, 14.36, and 53.84 millimeters in width, height, and length, respectively. For all tests, a manual tilting table and high speed camera were used. After the completion of the tests, we discovered how negative angles of embrace in curved walls show more stability than positive angles. This research has shown that serpentine walls are the most cost efficient walls to construct and have the best stability.

INVESTIGATION OF DIMETHYL ETHER COMBUSTION IN A HOMOGENEOUS CHARGE COMPRESSION IGNITION ENGINE

Tyler Dillstrom, Senior, Mechanical Engineering, Vi Rapp, and Robert Dibble, PhD, Mechanical Engineering, University of California, Berkeley

Using a single cylinder (610 cc) cooperative fuel research (CFR) engine, operating at 600 rpm, DME is port injected while varying Fuel/Air ratio ($\lambda$). In parallel, numerical modeling of DME chemical kinetics is performed and compared with the experimental results. Due to the low auto-ignition temperature of DME, it can be utilized at a low compression ratio (CR), as well as at atmospheric intake temperature and pressure. The combination of the low auto-ignition temperature, short ignition delay time, and high combustion velocity lead to an acceptable thermal efficiency despite the low CR.

“Networking with students from other UC campuses and learning about the ways the go about their research was one of the most valuable things I think I took away from this symposium.”

—Undergraduate Presenter
BENDING OF CRICKET (ACHETA DOMESTICUS) ANTENNAE

Jorge Bustamante, Junior, Mechanical Engineering, Lecturer SOE Catherine Loudon, Ecology and Evolutionary Biology, University of California, Irvine

Antennae are an integral part of an insect’s mechanosensory and chemosensory functions. Yet the actual physical bending properties of the antennae remain relatively unknown. Using a high-powered dissecting microscope, we took photos of the antennal flagellum when straight and when bent, and utilized digitizing software to plot the points of the sub-segments. With this, we evaluated the type of bending. Due to their irregular sub-segments, each individual flagellum had to be digitized in detail in order to properly landscape the images. The experiment was conducted with both male and female adult crickets (Acheta domestica) in four different orientations: dorsal, ventral, medial and lateral. In addition to improving the understanding of the functional design of insect antennae, the applications for such research include the incorporation of such biological designs to improve everyday technology in the fields of robotics and biomimetics.
EDA MEDIATED SYNTHESIS OF ZINC OXIDE BY HYDROTHERMAL REACTIONS

Ana Bowlus, Senior, Material and Science Engineering, Wenting Hou and David Kisailus, Department of Chemical Engineering, University of California Riverside, California

Zinc Oxide is a unique material because it exhibits semiconducting and piezoelectric dual properties. This inorganic compound is very sensitive to impurities and growth methods. Hydrothermal reaction experiments of ZnO were carried out using ethylenediamine (EDA) as a chelating agent. The effects of the molar ratio of Zinc Nitrate to EDA, the amount of NaOH in solution to increase or decrease the PH, and the temperature of the hydrothermal reaction on the morphology of the samples were studied. The samples were characterized by a scanning electron microscope (SEM) and an X-ray diffraction spectroscopy (XRD). The aspect ratio of ZnO crystals decreases as the molar ratio of Zinc Nitrate to EDA increases and as we change the PH of our samples, the crystal structure also changes.

DESIGN AND CONSTRUCTION OF $m=0$ AND $m=+1$ 15 CM DIAMETER HELICON WAVE ANTENNAE

Narciso Marmolejo, Junior, Aerospace Engineering, Dr. George Tynan, CER Pisces Group, Department of Mechanical and Aerospace Engineering, University of California, San Diego

Turbulent mixing in magnetically confined plasmas causes the loss of heat from the central region of confined plasmas, and must be overcome by power input to maintain fusion conditions. The spontaneous formation of sheared flows in such systems can help mitigate these heat losses, and thus is a problem of fundamental interest in fusion research. Experiments in laboratory-scale plasmas are underway at UCSD to study the basic physics of these processes. This report will trace and analyze the design and construction of three 15 cm diameter radio frequency $m=0$ and one $m=+1$ azimuthal mode antennae. These antennae create argon plasma inside a cylindrical, quasi-vacuum (~0.1 mTorr to ~10 mTorr) chamber, allowing the study of turbulence-shear flow interactions in fusion-relevant conditions. Complications in need of solutions during the design process include geometrical accuracy, compatibility with existing hardware, welding and soldering concerns, and cooling of the antennae during operation. In particular, there is concern that the differing inductance of the antennae might arc or overheat the capacitors in the match network at high power inputs, requiring replacements. The capacitors are 5-500 pF and 10-1500pF rated at 40A and 60A for current respectively and 5kV for potential difference. The coils have 1/8” radial clearance with a glass bell-jar, in which the plasma is created. This required a 6 DOF fixture to weld the coils to the plaques in order to avoid contact between the plexiglass and coils. Water cooling via copper tubing was soft-soldered on the plaque, which due to copper’s high heat conductivity (~400 W/mK), was not soldered onto the coils. Air cooling mechanisms on the Faraday Shield surrounding the antenna were implemented to increase the operational capacity of the antenna. The antennae are expected to create hydrogen plasma with 5kW of input power.
DENTAL ROBOTICS: CAD/CAM IN DENTISTRY

Ariel Anders, Junior, Computer Engineering, Professor Jacob Rosen Bionics Lab, Jack Baskin School of Engineering, University of California, Santa Cruz

The current non-automated methods for dental implants and crowns are less accurate than possible and may lead to sub-optimal procedures. Our goal is to execute Compute Aided Design (CAD) and Computer Aided Manufacturing (CAM) in dentistry via a robotic system to acquire a higher level of precision in dental restoration procedures. My research objective is to develop and experimentally verify a workflow for autonomous crowning and dental implants. First, a digital replica of the tooth is made using a 3D digitizer (Microscribe MX) and imported into CAD software (Solidworks). Milling trajectories are created using the virtual tooth and populated with evenly distributed via points. These coordinates are exported and transformed into a robot executable treatment program using our software. (CAM) software (Wincaps III) is used to import and execute this treatment plan with a robotic arm that has a dental drill attached. To experimentally verify our workflow, I register the origin of the tooth and “teach” the robotic arm the location of the tip of the dental tool, and then execute the program. Using this workflow we are able to autonomously mill a boundary around the tooth as in preparation for crowning. Our prototype model has room for expansion and improvement; I am working on improving the accuracy of the tool and tooth registration and developing software to send real-time feedback on the dynamic origin. This expansion will allow the device to be used in moving areas.

LOW TEMPERATURE AQUEOUS SOLUTION GROWTH OF EPITAXIAL ZnO FILMS DOPED WITH GALLIUM FOR USE AS GAN LED CURRENT SPREADING LAYERS

Daniel Estrada, Junior, Chemical Engineering, Professor Steve DenBaars, Materials Department, Dr. Jake Richardson, University of California, Santa Barbara

LED’s have the potential to be an efficient source of general illumination but the current price of the technology is too high for widespread adoption. The work reported here is aimed at lowering the cost of LEDs by developing low cost ZnO current spreading layers deposited from aqueous solution. Transparent current spreading layers improve LED efficiency by creating more uniform generation of light while simultaneously allowing more of the light generated to escape. The indium tin oxide (ITO) typically used for transparent current spreading layers is expensive and still absorbs some of the light from the LED. With higher transparency and good conductivity, along with much lower cost, ZnO is a strong potential candidate to replace ITO. ZnO also has a crystal lattice match that allows for epitaxy with GaN, the material that most white LEDs are based on. Another advantage of ZnO is, unlike ITO, it can be synthesized by using inexpensive, eco-friendly, aqueous solution deposition. Using aqueous solution deposition, we have shown that epitaxial ZnO current spreading layers can be deposited at 90°C on GaN LED wafers. Recent work has focused on optimizing the process for n-type doping of the ZnO films with Ga in order to maximize conductivity and transparency. With continued optimization of the ZnO growth process and composition, we anticipate that aqueous solution deposited ZnO current-spreading layers will lead to enhanced device performance, and ultimately lower the cost of LEDs.

“The NSF CAMP symposium was a great experience because the presenters allowed me to understand how one’s research is reviewed by an audience.”

—Undergraduate Participant
Judging criteria

- Depth of understanding and clarity—How well does the student know the material—big picture as well as details—and how well does the student express his/her understanding?

- Originality and innovation—How much original work did the student contribute? Did the student discuss his/her role in the research team?

- Moving Forward: Future Work—How well does the student articulate the long-term consequences or implications of his/her work?

Content, visual appearance and appeal were considered in overall effectiveness. Our goal was that students receive constructive, helpful feedback to continue their research experiences and gain insights and motivation to support their educational and career goals.
Thank you for your continued support.
UC Riverside will host Cohort VII of the UC Bridge to the Doctorate (BD), funding a graduate cohort of 12 underrepresented minority Science, Technology, Engineering, and Mathematics (STEM) Ph.D. students from around the state and nation for the University of California Louis Stokes Alliance for Minority Participation (LSAMP).

Dr. Richard Cardullo serves as P.I. He is Divisional Dean, Life Sciences, College of Natural and Agricultural Sciences, and Professor of Biology.

UCR-BD seeks to remove minority students’ hesitancy about entering graduate school, and the fear of creating additional financial indebtedness associated with initial graduate education. The BD will support LSAMP students exclusively and offer newly-minted B.S. degree recipients an opportunity to enroll in graduate education without the financial burden of loans, providing stipends for the first two years and cost-of-education funds and support from the STEM departments and/or external fellowship funding for the duration of the doctoral program.

Dr. Christopher Olivera will serve as BD Director/Coordinator, expanding his work with CAMP; he has served as CAMP Coordinator for 5 years. Dr. Olivera teaches chemistry and heads the Academic Advising Center in the College of Natural and Agricultural Sciences.

UC Riverside offers an exceptional research environment and a comprehensive program of professional development, academic support, and social networking activities to propel BD scholars to success in their academic careers. The campus has recruited state- and nation-wide for BD applicants to populate the cohort of 12.

The BD at UC Riverside offers:

- A welcoming, vibrant campus environment
- Full graduate tuition and fees
- $30,000 stipend for first two years
- Tools for success in graduate education
- Engagement in the scientific community
- Participation in workshops, seminars, professional conferences
- Nurturing faculty mentors
- Professional preparation and support for successful applications to postdoctoral positions

Richard Cardullo, Ph.D., P.I. Divisional Dean of Life Sciences, Professor of Biology cardullo@ucr.edu

Christopher Olivera, Ph.D. BD Director/CAMP Program Coordinator christopher.olivera@ucr.edu
WENDELL-LAMAR BLACKWELL, PH.D.

UC Irvine BD Fellow Completes Doctorate

BD Fellows Achieve Ph.D.

ROBLES begins a postdoctoral position at Rutgers University November 2011. He is an alumnus of UC San Diego, where he earned a B.S. in Physics in 2006. Robles was an engaged CAMP participant at UCSD, and has had friends and colleagues following his doctoral degree progress at UCD. Robles plans to pursue a career in academia.
SAMP-BD Fellow Cynthia Perry defended her dissertation April 8, 2011, completing a Ph.D. in Molecular Pathology. The title of her dissertation is “Xenotransplantation of Mitochondrial Electron Transfer Enzyme, Ndi1, Treats Myocardial Reperfusion Injury.” Perry’s Thesis Advisor is Professor Roberta Gottlieb in the Departments of Biology at San Diego State University and Molecular Pathology at UCSD. Other committee members are Professors Ju Chen (Co-Chair), Immo Scheffler, Francisco Villarreal and Michael Hogan.

As a graduate student, Perry was very involved with the CAMP Science Program at UCSD. She has served as a role model to and mentored many CAMP students. She consistently engaged in undergraduate events, including presenting her research and participating as a panelist at the CAMP Statewide Research Symposium in 2006, 2007, and 2011.

Originally from Phoenix, Arizona, Perry attended Northern Arizona University, Flagstaff, Arizona, for her freshman year and transferred to University of Arizona, Tucson, in order to participate in an undergraduate research program. She was a research assistant in the Department of Cell Biology and Anatomy under the supervision of Dr. Carol Gregorio. She earned a B.S. in Molecular and Cell Biology, Magna Cum Laude, in 2004. She was a recipient of the University of Arizona Presidential Award for Excellence and the University of Arizona Department of Molecular and Cellular Biology Excellence in Undergraduate Research Award.

In addition to a strong academic record and commitment to professional development, Perry pursued volunteer opportunities, including hospice volunteer, health fair volunteer, and instructor for Science Connection for elementary school students.

In Fall 2004, Perry was admitted to UCSD and was selected for the Bridge to the Doctorate cohort. During her graduate education, Perry presented at numerous professional conferences, including at the National Heart Lung and Blood Institute Physician Scientist Trainees Conference at NIH (2010).

Perry is author and co-author on peer-reviewed publications, including most recently first author on “Xenotransplantation of Mitochondrial electron Transfer Enzyme, Ndi1, Treats Myocardial Reperfusion Injury,” PLoS One k6(2):e16288 (2011).

Awards include the NIH Ruth L. Kirschstein National Research Service Award.
Individual Fellowship to Promote Diversity in Health-Related Research (four year award) and the Cardiovascular Outreach Award of the American Heart Association.

Dr. Cynthia Perry: First Person

**Early influences**

“I knew from early in high school that I wanted to pursue a career in science. I was influenced early on by inspirational science teachers in 8th grade and high school to follow my career goals by getting involved in research programs and summer internships. I also had a very influential mentor, Dr. Carol Gregorio, as an undergraduate that showed me the possibilities of being a female professor.”

**Most memorable aspects of the graduate experience**

“The best part of my graduate career was traveling and networking at research conferences. My studies have taken me all over the globe and provided opportunities I never imagined possible. I have presented my work in London, at the NIH in Bethesda, at the American Heart Association conferences and others in New Orleans, Colorado, Chicago, Boston, DC and more. The most memorable of all my experiences has been attending the Institute for Teaching and Mentoring/Compact for Faculty Diversity both in Tampa, FL, and Washington, D.C. At these conferences, I was exposed to other minority students pursuing their doctorate and prepared for a career in academia. Participating in the CAMP-NSF Bridge to the Doctorate cohort also was very influential to my graduate career as it provided me not only financial support but a built-in moral support system which was very important.”

Perry continues on page 58

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**PABLO GARCIA-REYNA, PH.D.**

UC San Diego BD Fellow, Pablo Garcia-Reynaga, completed the Ph.D. in December 2010, and has a postdoctoral fellowship at his undergraduate institution, UC Berkeley. Garcia-Reynaga completed a B.S. in Chemistry and a B.A. in Comparative Literature at UC Berkeley in 2005. He was selected for the UCSD Bridge to the Doctorate cohort beginning Fall 2005. He is working in the lab of Dr. Richmond Sarpong, Associate Professor of Chemistry, with a focus on organic and organometallic chemistry. Central to Dr. Sarpong’s research interest is the total synthesis of natural products with a “keen eye toward the development of new synthetic methods and strategies.”

Garcia-Reynaga contributed substantially to the social and professional activities afforded by the BD fellowship, and engaged to the fullest extent in the scientific community, both locally at San Diego and in national disciplinary networks. He reflects on his path to the Ph.D. in the following question and answer series.

**Q&A With Dr. Pablo Garcia-Reynaga**

**What were some of the highlights of your graduate program?**

Some of the highlights include publishing my first article, passing my candidacy exam, and moving to a different state to complete my Ph.D. studies. It’s a great feeling to see work that you’ve done get peer-reviewed and accepted, especially when it’s based on ideas you have brought forward and developed yourself. Another highlight was to observe undergraduate students that I’ve mentored get excited about chemistry and afterwards pursue graduate work in the same field. Two of these will be pursuing their Ph.D. next year. Probably one of the best highlights was pursuing a graduate degree along with my wife, Teresa. It helped a lot to have each other for support.

**What challenges did you face in writing the dissertation?**

The biggest challenge writing my thesis was thinking about how to summarize years of research and deciding on how to best detail each struggle along the way, especially the ones that made the greatest impact. Having my data organized was important in communicating my work and a lot of prep work had to go in before the writing actually began. I had to comb through my experimental and make sure the data I had made sense, and was properly cited and organized.

**You were a double major at Berkeley for your undergraduate degrees—how does it feel to return to**
your alma mater at this point in your career?

It is incredibly amazing that I’ve received the opportunity to work in such a great institution such as UC Berkeley, twice! In a way it feels I have come full circle in my career. This is where I first discovered my passion for chemistry and where I obtained the opportunity to work in Professor Richmond Sarpong’s lab, one of the young stars in my field. Now, as a post-doc in his lab, it is a privilege to work again for the professor who inspired me to pursue doctorate work in organic chemistry.

What did it mean to you to be part of the BD Cohort?

It felt encouraging to be part of something important. I always felt we had a lot of support, but at the same time expected to succeed because of it and I think that was important. Our meetings with faculty as well as the push to attend and present professional meetings, along with the responsibility it necessitates, I believe helped in making us feel already part of the scientific community and it was more of a matter of finishing up our doctoral career than beginning it.

Initially, who/what influenced you to pursue chemistry?

I’ve always been drawn to science, but it’s been my teachers who’ve really pushed me in that direction. My third grade teacher first suggested science as a career option, while my high school teacher made chemistry look fun. In my first year of college, it was my general chemistry instructor, Professor Alexander Pines. He has an appealing way of explaining chemistry by placing it central to everyday life.

What research are you currently engaged in?

I am currently working on the synthesis of a certain subgroup of nitrogen-containing molecules called alkaloids. This particular subgroup displays both promising anti-cancer properties as well as antibiotic activity, particularly against multi-drug resistant bacteria. The ability to artificially produce these molecules and their derivatives is a key step in developing these as drugs. At the same time, based on the problems we encounter during our synthesis, we try to develop new chemical reactions which may help expedite future scientific research.

ALICIA GAMEZ, PH.D.

UC San Diego LSAMP-BD Fellow Alicia Gamez completed the Ph.D. in Chemistry and Biochemistry, August 30, 2011. The title of her dissertation is “Structural analysis of a forkhead-associated domain from the type III secretion system protein YscD.”

Gamez’s committee included Partho Ghosh, Chair, Chemistry and Biochemistry; Michael Burkart, Daniel Donoghue, and Susan Taylor, Chemistry and Biochemistry; and Victor Nizet, Group in Biomedical Sciences/Pediatrics.

Gamez participated in numerous CAMP activities, including advising undergraduates on preparing for poster presentations.

JAMES MARSHEL, PH.D.


From 2007-09, Marshel was awarded an NIH Training Grant Fellowship at the Institute for Neural Computations. In 2010, he was a Salk Science Poster Day Award Winner.

In 2005, Marshel completed B.S. degrees in Molecular and Cell Biology and Psychology at UC Berkeley.
Esmeralda Casas Ruiz completed a Ph.D. in Biomedical Sciences June 2011. Ruiz celebrated with family and friends following the hooding ceremony, June 11. The title of her dissertation is “The Role of the Snail2 Transcription Factor in Twist1-induced EMT and Metastasis.” Dr. Jing Yang served as her advisor. Dr. Yang is Assistant Professor of Pharmacology and Pediatrics, and Molecular Pathology Ph.D. Program (a track within the Biomedical Sciences doctoral program). Ruiz focused her research on cancer research, as she explains:

“My graduate research has been focused on determining genes downstream of Twist1 that are responsible for imparting otherwise benign cells with metastatic and invasive properties.” She adds, “I determined that the transcription factor Snail2 is a direct target of Twist1 and is an essential mediator of Twist1-induced EMT, invasion and metastasis.”

Previously, as a research assistant at the Salk Institute at UCSD, her research focused on determining the “interplay between transcription factors critical for proper motor neurogenesis and migration.”

Ruiz received several honors and awards throughout her doctoral program, including the Department of Defense Breast Cancer Training Grant (2008-2011), the AACR Minority Scholar in Cancer Research Travel Award (2010), and Howard Hughes Medical Institute Med-Into-Grad Fellow (2010-11). Among other honors, Ruiz won Best Poster in the UC San Diego Pharmacology Department in 2009, and won a National Science Foundation Pre-Doctoral Fellowship (2005-07).

Ruiz completed a B.S. in Biological Sciences at UC Irvine in 1998. She was an active undergraduate researcher, and earned honors in research as a CAMP student and Ronald E. McNair Scholar.

Professional memberships include the American Association for Cancer Research and the ACR Minorities in Cancer Research Association. Ruiz has consistently engaged in community service in a variety of ways: volunteer disaster assistance and translator for the American Red Cross; volunteer science instructor, Salk Mobile Lab; and CPR and First Aid instructor.

Ruiz is co-author on at least five publications in professional journals, including Cancer Research, Science, Genes Development, and Development (Dev.biologists.org).

As a BD Fellow she attended the National Science Foundations’ Joint Annual Meeting (JAM) in 2006 and the Mouse Models of Cancer Conference in Cambridge, Massachusetts, 2006, among others.

An active and engaged graduate student, Ruiz served as a role model and mentor to many CAMP and other students. She gave a tour of her lab to community college students during a UCSD Transfer Day visit, and attended a field trip to the IMAX Theater with a group of CAMP students. She has mentored undergraduates in other informal settings, including at the CAMP study break dinners.

Dr. Ruiz has begun a postdoctoral fellowship working in cancer research at The Scripps Research Institute, La Jolla, CA, in the lab of Dr. Brunhilde Felding-Habermann.

“My graduate research has been focused on determining genes downstream of Twist1 that are responsible for imparting otherwise benign cells with metastatic and invasive properties.”
ANTHONY N. FARINA, PH.D.

Anthony N. Farina, UC San Diego CAMP-NSF Bridge to the Doctorate Fellow, defended his dissertation, Functional assembly of NMDA-Rs controlled by the N-terminal domain of GluN1, May 13, 2011, completing the Ph.D. in Chemistry and Biochemistry. Farina currently has a postdoctoral fellowship at UCLA with Dr. Jeff Abramson, conducting research on membrane protein crystallography on sodium/calcium and sodium/glucose transporters.

He was awarded an NIH Cell and Molecular Genetic training grant from 2007-10, in the laboratory of Dr. Terunaga Nakagawa, Assistant Professor, Department of Chemistry & Biochemistry, Farina’s graduate advisor. The lab investigates the molecular and cellular biophysics of the synapse.

Farina's doctoral committee members also included Dr. Simpson Joseph, Dr. Jerry Yang, Dr. Andrew Chisholm and Dr. John E. Johnson.

Along the way to achieving the doctorate, Farina particularly recalls the moment of significant results – the day he first obtained protein crystals.

He says, “My research has always sustained me and so being a protein crystallographer, the day I first got protein crystals was by far the most exciting and memorable because I never thought I was going to get them.”

Farina, from Claremont, California, did his undergraduate work at UC Riverside. A number of faculty encouraged and inspired him to pursue graduate school. Their mentoring plus the opportunity to conduct research as an undergraduate ultimately prepared him for the Ph.D.

Among those who were instrumental in his academic growth and development were faculty mentors in the MARC-U program.

“I am extremely grateful to Dr. Ernest Marinez and Dr. Jolinda Traugh who are part of the MARC-U program at UCR. Ernest was my undergraduate research advisor and always challenged me and inspired me to continue doing research, even when I wanted to give up. Ernest always gave me challenging projects and treated me like a “real” scientist. “Dr. Jolinda Traugh was the main coordinator of the MARC program at UCR and she gave me a lot of encouragement. It was also very inspiring to get advice and mentorship from another minority scientist. I think we tend to forget that women are still grossly underrepresented as professors. Dr. Traugh is truly an outstanding scientist and she gave me a lot of input and direction for grad school.”

“Dr. Anthony Farina Discusses his Research

Scientific Passion

“My scientific passion is to understand the biochemical properties and molecular structures of protein and protein complexes. Such biochemical information can help us understand basic biology and also provide insights into new medical therapies or scientific advances. I have been pursuing this passion for the past 10 years by expressing and purifying a vast array of recombinant proteins from prokaryotic and eukaryotic expression hosts. The range of proteins I have successfully purified, and studied, are transcription factors, histones/nucleosome core particles, kinases, and transmembrane proteins.

Understanding Leads to Success

“As a result, I have acquired a variety of techniques that aid in protein expression and purification. I have learned how valuable functional and highly purified proteins are to any research lab. Understanding how macromolecules coordinate with each other to regulate various cellular functions will always require some type of structural biochemical study. During my graduate training, I worked to uncover structural information of membrane bound proteins, a daunting task due to their difficulty in purifying and studying biophysically. I have been trying to understand the structure and function of synaptic molecules using x-ray crystallography, electron microscopy, and cellular biology. I have been

“It was also very inspiring to get advice and mentorship from another minority scientist. I think we tend to forget that women are still grossly underrepresented as professors. Dr. Traugh is truly an outstanding scientist and she gave me a lot of input and direction for grad school.”
able to uncover the organization of the extracellular domain of the glutamate receptor subunit GluN1 by means of characterizing the N-terminal domain by x-ray crystallography and single particle electron microscopy. Understanding the organization of the extracellular regions of GluN1 I have contributed insights into the field of glutamate receptor trafficking. Trafficking of glutamate receptors is critical for their function in the brain and misregulation can lead to various pathological diseases such as schizophrenia and stroke.

MANUEL RUIDIAZ, PH.D.

UC San Diego LSAMP-BD Fellow Manuel Ruidiaz has completed the Ph.D. in Bioengineering. He defended his dissertation, “The Surgical Margin Interface,” August 18, 2011. Ruidiaz is an NSF CAMP Alumnus (UC San Diego) who was very involved with the CAMP Science Program as an undergraduate and later as a graduate student.

While in graduate school he attended several CAMP events, including presenting his research and being a panelist at the CAMP Statewide Symposium in 2006, 2007 & 2011. In addition, he was a guest speaker at several of CAMP’s “Coffee and Conversation with Graduate Students.”

Professor Andrew Kummel, Department of Chemistry & Biochemistry, served as Ruidiaz’s advisor. Other committee members were Professors Michael Heller, Co-Chair, and Sadik Esener (Nanoengineering); Shankar Subramaniam (Bioengineering); and William Trogler (Chemistry & Biochemistry).

KRISTINA POHAKU MITCHELL, PH.D.

Kristina Pohaku Mitchell defended her dissertation, “Iron(III)-doped, Silica: Biodegradable, Self-targeting Nanoparticles,” August 4, 2011. Her doctoral degree is in Chemistry (Inorganic). Professor William Trogler, Department of Chemistry & Biochemistry, served as her advisor. Other committee members included Professors Seth Cohen (Chemistry & Biochemistry), Richard Herz (Nanoengineering), Charles Perrin (Chemistry & Biochemistry) and Arnold Rheingold (Chemistry & Biochemistry).

Mitchell is an NSF CAMP Alumna (University of California, Santa Barbara) and a UC San Diego NSF Bridge to the Doctorate (BD) Fellow. She was very involved with the CAMP Science Program at UCSD, serving as a chemistry tutor. Other committee members included Professors Seth Cohen (Chemistry & Biochemistry), Richard Herz (Nanoengineering), Charles Perrin (Chemistry & Biochemistry) and Arnold Rheingold (Chemistry & Biochemistry).

Mitchell is an NSF CAMP Alumna (University of California, Santa Barbara) and a UC San Diego NSF Bridge to the Doctorate (BD) Fellow. She was very involved with the CAMP Science Program at UCSD, serving as a chemistry tutor. She served as a role model to- and mentored many students over the years in informal and formal settings, including presenting her research and being a panelist at the CAMP Statewide Symposium.

Additionally, Kristina Pohaku Mitchell was an NSF GK-12 STEM Fellow (Science Bridge/Socrates program) in 2009-2011, and served as a GUIDE (Graduates United in the Interest of Diversity and Excellence) advocate at UCSD for four years.

Mitchell is a Christine Mirzayan Science and Technology Policy Graduate Fellow at The National Academies, Washington, D.C.
Raymond Valdes, LSAMP Bridge to the Doctorate Fellow at UC Santa Barbara, has co-authored a paper, *Differential Phase of Photothermal Emission Analysis for thermal property measurement of thermal barrier coatings*, with Dr. Ted Bennett, Associate Professor, UCSB Department of Mechanical and Environmental Engineering.

Valdes, UCI Class of 2009, participated in CAMP-UCI as a mentor and tutor and presented his research at SACNAS and AAAS. He has served on the graduate student panel at the CAMP Statewide Undergraduate Research Symposium, and shares his graduate student experience thus far. He has received a Ford Fellowship to support his doctorate.

Valdes, who is pursuing a Ph.D. in Mechanical Engineering, gives his perspective on several areas, including the first year in graduate school, the impact of being part of the BD cohort, and the professional (and moral) support he receives from his faculty mentor. His thesis topic is “Thermal Property Measurement Techniques for Thermal Barrier Coatings.”

**First year experience in grad school?**

I served as a laboratory mentor as part of the UCSB SIMS (Summer Institute in Math and Science) program for four incoming freshmen during the summer. Before starting, I had no idea the impact it would have on me and my career goals. Yet, it was such an exhilarating experience that it helped me realize my passion for teaching and mentoring. I enjoyed the challenge of crafting a research project for them, guiding them through it, and seeing them get excited about my research. I realized that I can combine my goal of being a technical leader with teaching/mentoring by moving into academia.

**Benefits of being a BD Fellow at UCSB?**

The BD activity is the perfect combination of financial support, professional development, mental sanity check and it has helped me find mentors and strengthen my connections on campus with faculty and staff. The funding was great because it helped me spend my time focusing on developing my research and excel in my coursework. However, the best benefit is the built-in peer support group. It is great being part of a cohort with other students of similar backgrounds and experiences.
Stephanie Mendes is entering her third year of doctoral studies at UC Santa Barbara. Her research, focused on a range of Earth Science and Marine Geochemistry topics, includes such areas as monitoring water temperature in hydrothermal systems and microbial consumption of natural gases.

Mendes is an alumna of California State University Chico, having completed a B.S. in Professional Chemistry in 2009. She has co-authored several published articles and is first author on at least two published abstracts.

In Summer 2010, Mendes participated in the NOAA Pisces Cruise, in the Gulf of Mexico, monitoring dissolved hydrocarbon plumes formed as a result of the Deepwater Horizon Oil Spill. In Winter 2010, she joined a research cruise off the Chilean Coast, with the objective of locating and measuring methane seep areas, including in the Peru-Chilean Trench. Previously she gained at-sea research experience on the R/V Atlantis, on the SEEPS 2009 Cruise, Santa Barbara, CA.

Mendes was an engaged undergraduate at Chico State, where she learned skills in quantitative comparison of nutrients in organic and conventionally grown oranges. In another project, she collected volcanic gases, conducted soil sampling for CO$_2$, and conducted other field work on interdisciplinary projects.

As a BD Fellow, Mendes enjoys mentoring undergraduates and creating research opportunities for students seeking experience in marine geochemistry. In her mentoring and teaching activities for the Summer Institute for Math and Science, she designed lab and research experiences for incoming freshman enrolled at UC Santa Barbara. She also serves as a CAMP mentor and chemistry tutor.

In addition to the LSAMP BD Fellowship, Mendes has received a three year fellowship from the National Research Council – Ford Foundation Pre-Doctoral Fellowship.
RUBEN CHAVEZ

UCSC Electrical Engineering Alum Gains New Perspective in Germany

Ruben Chavez, Class of 2011, completed a B.S. in Electrical Engineering and has plans for a bright and rewarding future. Chavez transferred from Cuyamaca College, El Cajon, CA, with an enrollment of more than 9,000 students. Cuyamaca is one of the fastest growing community colleges in the nation, anticipating an enrollment of 15,000 students in the next several years. The exciting campus community and dedicated faculty supported Chavez’s completion of an Associate of Arts degree in Telecommunications Technology and his successful transition to UC Santa Cruz.

In Summer 2009, Chavez had an internship in Wetzlar, Germany, where he conducted experiments on advanced optical manufacturing systems. This experience supported his concentration in electronics and optics, his special area of interest. In 2010-11, he conducted research in Professor Ali Shakouri’s lab that resulted in a poster, “Thermoreflectance Imaging of Light Emitting Devices,” which he presented at the 2011 CAMP Statewide Undergraduate Research Symposium.

Chavez earned Dean’s Honors from 2009-11. He tutored for various engineering courses for the Multi-Ethnical Engineering Association both at Santa Cruz and at Cuyamaca College, where he coached students in the Cisco Networking Academy courses.

His postbaccalaureate plans include returning to Germany, to the University of Duisburg-Essen to continue research in thermal characterization in microelectronics for academic and industry. He plans to pursue graduate studies in winter 2012. One day he hopes to become a community college faculty member. He shares some of his experiences and insights with us in the adjoining question and answer piece.

Q&A With Ruben Chavez, B.S., Class of 2011

What impact did your international research experience have on you and your goals?

My experience in Germany as a Systems Development Intern was definitely a life changing experience in so many aspects. I had the opportunity to work with a multi-disciplinary team of engineers to whom I constantly presented my results as we prepared a prototype into the commercial stage. Personally, by getting the taste of working in a real research and development laboratory, I learned the value of the math, the laboratory notebook, the experiments and the things we learn in classrooms because I was able to see how all of those took an idea and put it into an actual product.

How did you plan for international placement and travel?

A friend gave me the contact of an engineer in Germany so I followed up with him, sent him my transcripts (learned the importance of taking care of them) and my resume (important to stay involved). In this aspect I must say that I had luck factor. Sometimes
I thought that engineering machines, systems and even going to Germany was beyond my reach, but in the long run I learned that underrepresented students should not be afraid to set themselves high and ambitious goals. Not to mention the cultural experience of traveling to Europe and learning another culture.

Please tell us about the Crown Fellowship you received.

The Crown Fellowship is awarded to about ten students who are actively doing research and are affiliated with Crown College within UCSC. We needed to present a summary of our research project and obtain a supporting statement from our mentor. It came with $800 in support for one quarter.

When did you enter community college?

I went to Community College after a few months of working in minimum wage labor because I wanted to improve my English skills and study a technical carrier to aspire for a better job. I decided to pursue a technical career because I did not think I would make it in a four year institution since I had to drop two introductory mathematics classes during my first year. Professor Raymond Funk and Ross Cohen adopted me as a baby—academically speaking. Their dedication, patience and availability to help was the equivalent of teaching me to crawl, walk and run.

Why did you choose UC Santa Cruz for your transfer destination?

I was truly unsure if I could afford University, [but] I chose UCSC because they had a good robotics program under the Civil Engineering Department, but eventually I

Chavez continues on page 58

RICKY GRANT

Computer Science Grad Sets Sights on Dream Job at Facebook

Ricky Grant, Class of 2011, completed the B.S. in Computer Science at UC Santa Cruz. He had received a Google CSSI fellowship and served as the vice president, student chapter, National Society of Black Engineers. Grant created several projects, including a MovieBot question/answering system for the movie domain; Expert Agent for Predicting Stock Price Movement using Artificial Neural Networks; and a technology tool for animating 3D models.

Ricky Grant, First Person

“Working in a lab has allowed me to do many things I would not have been able to do otherwise. It allows me to work on projects involving technologies and disciplines I will not get to use in industry and has also allowed me to travel. Most of all, it has given me skills that I can take and use on homework or my own personal projects.

“Doing research as an undergraduate gave me the ability to identify interesting problems or projects and the skills to investigate and solve those problems. Research has challenged and changed my perspective on what I can accomplish. I will be continuing my work on Spyfeet and Natural language generation during Summer 2011 in Professor Walker’s lab. I plan to find a position in the Technology industry.

“I think my dream job would be software engineering at Facebook. A lot of the really interesting problems in Computer Science are being tackled at Facebook. I’d like to work in Silicon Valley. I am from Los Angeles, CA and in 5 to 10 years, I’d like to be back in school working towards my Ph.D.”
Studying and researching abroad has profoundly impacted my undergraduate career and personal life. Throughout my experiences in several international schools, I have become acquainted with many different cultures which has intensified my appreciation for my own personal heritage and traditions. Overall, I am a more confident, better-prepared student and a definitely stronger applicant for graduate school applicant.

The various programs I participated in provided me with greater academic and scientific versatility as well as substantial ‘hands-on’ experience that I did not find at UCSD. Specifically, I participated in study abroad programs in Australia, Costa Rica and South Africa, and an internship in Switzerland, and conducted research at all except South Africa. I sought and obtained complete or partial funding though federal or private scholarships for all programs and research. In Australia, while amazed by encounters with endemic fauna such as kangaroos, koalas, echidnas, platypus and amazing marine life, I assessed the role of seagrasses as nursery habitat in Moreton Bay. I also investigated the tropho-dynamics of sandy patches along the coral reefs of Lady Elliot Island in the Great Barrier Reef. Having a rain forest as my backyard and hundreds of mosquitoes after my neck, I learned a great deal of tropical biology in Costa Rica. There, I studied moray eel diversity along a habitat complexity gradient and compared community structure of morays in a Marine Protected Area (MPA) to that of morays living in a physically similar but non-protected habitat. In South Africa, I became more conscious of cultural diversity in the world as I made friends with people of extraordinary backgrounds and by traveling to almost every country bordering South Africa. In Switzerland, I acquired critical laboratory skills conducting my own project researching hybridization as a source of genetic variation in eastern Pacific Syngnathus pipefish species.

All of these experiences have tremendously increased the value of my education but the greatest impact of my international endeavors has been my growth as a person and as
DIANA PONCE-MORADO

Biologist is Budding Science Writer

Diana Ponce-Morado plans to complete a B.S. in General Biology in Spring 2012. She was a transfer student from San Diego Mesa College, where she held a 4.0 GPA and participated in the Bridges to the Baccalaureate Program. In her junior and senior years at UCSD, Ponce-Morado has been a research analyst in the Marine Physical Laboratory at the Scripps Institution of Oceanography, La Jolla, CA, supported by the McNair Scholars Program. Her team explored a new approach to estimate gray whale populations. She used MatLab for sound analysis under Dr. Aaron Thode, research supervisor. She presented at SACNAS 2009 and at the 2011 CAMP Statewide Undergraduate Research Symposium, where she won Special Merit in Research recognition.

In Summer 2010, Ponce-Morado devoted 12 weeks at Woods Hole Oceanographic Institution in a rigorous NSF-sponsored program. She is a certified open water SCUBA diver.

Ponce-Morado is a McNair Scholar and serves as a review board member for the Saltman Quarterly, a UCSD undergraduate research journal. She is also a staff writer for Ecology and Conservation, Under the Scope, UCSD undergraduate conference committee.

She volunteered for the Marine Animal Rescue Program and the Dolphin Observation Program at the National Aquarium in Baltimore, Maryland and received an appreciation award for “Five Years of Loyal and Dedicated Service.”

a citizen of this world. I now think outside the box and beyond what is in front of me. I seek excellence in everything I do and I expect more of myself and of situations. Studying in numerous countries has also developed within me a global awareness. I am no longer only concerned with what happens in my local community, city or country but rather the planet in its entirety. I now understand that what happens in the world matters even in my own neighborhood and that my actions could also have an impact on the world.

Studying abroad in my undergraduate career has been a taste of success, now I want to eat the whole cake and complete a Ph.D. program with research collaborations across the globe.”

Editor’s Note: Eric Garcia, B.S. in Ecology, Behavior and Evolution, has conducted international research in Costa Rica, Switzerland, and Australia, ranging from tropical biology and conservation to marine biology and terrestrial ecology. In 2010, he also completed a semester abroad at the University of Cape Town, Cape Town, South Africa. He has shared his international experiences to fellow CAMP students in his presentation “Study Abroad Rocks,” which he developed in 2010.

Garcia has won numerous awards and honors, including the Benjamin A. Gilman International Scholarship and the Eleanor Roosevelt College Abroad Scholarship in 2010, and the Friends of the International Center Scholarship and Education Abroad Program Scholarship (both in 2007 and 2010). He earned Provost’s Honors and Dean’s List, 2005-2008.

ESPOIR KYUBWA

Gilliam Fellowship

Espoir Kyubwa, an MD/Ph.D. student, has been awarded the prestigious Gilliam Fellowship for Advanced Study by the Howard Hughes Medical Institute (HHMI). The fellowship will provide full support for up to five years of study. A CAMP alumnus, Kyubwa is one of nine 2011 recipients of this award. He was eligible to apply for this award because as a Hughes Scholar he was nominated to participate in the Exceptional Research Opportunities Program of the HHMI. As part of this program, he conducted research at UCSD under the guidance of Dr. Robert Sah, Department of Bioengineering.

Kyubwa has long nurtured a desire to use medicine to help people in Zaire, the country of his birth (now the Democratic Republic of Congo). In a country traumatized by war, he wants to become a healer. He pursued a B.S. in Bioengineering at UCSD, where he was president of the National Society of Black Engineers.
Dr. Brandon Brown, UCI Class of 2004, is an epidemiologist who focuses on infectious diseases in developing countries. He completed the Ph.D. in International Health at Johns Hopkins University, December 2010. He has a Master's in Public Health, specializing in Epidemiology, from UCLA (2006), and a B.S. degree in Applied Mathematics from UC Irvine, Class of 2004.

The doctoral hooding ceremony "was special," Brown says, "it marked the formal issuing of the Ph.D."

He returned to his undergraduate alma mater in Spring 2011 to give a presentation to CAMP students, coming full circle to the program that supported his degree aspirations beginning as a newly enrolled freshman. While a master's student Brown decided that academia was the career path he would pursue, and he has accepted a lecturer position in the Department of Population Health and Disease Prevention at the University of California, Irvine. He says working in the university environment affords him the freedom to follow his passion for research and teaching.

Brown has recently been honored as a New Investigator in Global Health Fellow. He is an early stage investigator with five years of research experience with female sex workers in Peru, and with ongoing studies of HPV and HIV. He is currently a postdoctoral fellow at UCLA in the Department of Medicine, Program in Global Health, working under Thomas Coates, Ph.D., Professor of Medicine. Dr. Coates has directed a new study examining HIV testing programs in communities in Africa and Southeast Asia.

For his work, Brown has received numerous awards and fellowships, including the Mary and Carl Taylor Fund in International Health, the NRSA Dissertation Fellowship, the Delta Omega Scholarship, the Dan David Prize, and the Clements Mann Fellowship in Vaccine Sciences. He also received the NIH International Maternal and Child Health training grant, the Carol Eliasberg Martin scholarship in cancer prevention, and the International AIDS Research Training Award. Brown's research interests include vaccines, human papillomavirus, women's health, cervical cancer prevention, and recruitment and retention of high risk groups in clinical trials. He has significant experience with study management and logistics, statistical analysis, survey design, manuscript preparation, NIH and industry proposal preparation, data collection in the field, and data interpretation.

Publishing his research is a top priority at this point in his career. He is first author on four publications in professional journals including the Journal of Infectious Diseases, Journal of Nutrition, Health and Aging, Culture, Health...
Richard Komai, UCI Class of 2010, completed double majors in Mechanical Engineering and Materials Science Engineering, with a specialization in Materials and Mechanical Design. He is taking his education to the next level in the graduate program in Materials Science Engineering at Northwestern University. His research topic, Martensitic Phase Transformations in Biological Systems, is being conducted under Professor Gregory B. Olson.

Komai served as a CAMP program tutor in several STEM fields—mathematics, chemistry, physics and engineering—for three years, and he also provided tutoring to students in physics taking advantage of UCI's Learning and Academic Resource Center.

Under UCI Professor Farghalli Mohamed, Komai conducted research on superplasticity and nanocrystalline grain boundary sliding, in the Department of Chemical Engineering and Materials Science. Komai also experienced research at the Lawrence Berkeley Lab, working on mechanical behavior of nanocrystal superlattices under Dr. Paul D. Ashby, Molecular Foundry.

Komai garnered many honors and awards as a UCI CAMP student and CAMP Summer Scholar. Among these are Sigma Xi, Research Honor Society; Hispanic Scholarship Fund Mazda Scholarship; Pi Tau Sigma Mechanical Engineering Honors Society; Campuswide Honors; and University of California Regents Scholar.

Supporting his doctoral work at Northwestern, Komai received a GEM Ph.D. Engineering Fellowship in 2010-11. Additionally, Komai has demonstrated his leadership skills and abilities in the Materials Science Engineering Club, serving as president, executive secretary, and recruitment and retention chair, respectively. He also served as president and corresponding secretary for Tau Beta Pi Engineering Honor Society.

Komai is enjoying his lab work at Northwestern. Future plans are to become a university faculty member, hopefully in the University of California system.

“The doctoral hooding ceremony was special,” Brown says, “it marked the formal issuing of the Ph.D.”
Franklin Garcia, UCI Class of 2010, Neurobiology and Behavior, is entering his second year of a Ph.D. program at Columbia University in the City of New York.

Garcia had participated in the CAMP-UCI Summer Science Academy as an entering freshman in Fall 2006. He states that it was “really beneficial” in helping him to get oriented to UCI and the academic demands that awaited his freshman year.

Garcia had applied to seven graduate programs, and his decision came down to UCI and Columbia. He had developed a level of engagement and comfort at UCI but his mentors encouraged him to expand his horizons. They emphasized that Columbia would bring new experiences, challenges, and exposure to new opportunities. Additionally, there was the offer of a fellowship and a diversity supplement, including a stipend through the National Institute of Aging – further supporting his research on Alzheimer’s.

For Garcia, it was the “right decision” to experience the East Coast. He quickly gained a sense of belonging because of the collaboration in labs and the proximity of labs and offices, conducive to forming professional relationships.

Garcia says, “I’m always in lab until ridiculous hours— I just want to get something complete.”

Reflecting on his time at UCI, and the support he received preparing the way for a doctoral program, he says, “I appreciate the time that Dr. Marlene de la Cruz spent with me. It was a great benefit to receive her advice and guidance.”

“What’s the best way for me to have the biggest impact on the community? Where can I make a difference? I’m motivated by where I can make a broadest impact.”

As a MARC student in his junior and senior year, he was required to present at AAAS and ABRCMS. He also received support through MIRT (Minority International Research Training) to conduct research in Spain.

Garcia says, “I presented to incoming freshman on my experience in Spain, which was an introduction to what it means to gain trust from a graduate student [in the research team] . . . It was a nurturing experience. I interacted with a Professor who knew me as “the American,” because I spoke Spanish.”
He has presented posters at ACS, AAAS, ABRCMS, and Sigma Xi.

After completing his first year, he decided to experience other fields, like cancer. He says, “I recently joined the Peter Connell lab, focusing on Aglioma cancer.” Additionally, Garcia has been admitted to the “Med Into Grad” program—the dual MD/Ph.D. degree, affording the skills of both a researcher and a clinician.”

ANDRE PINESSETT, MPH

Andre Pinesett completed a B.S. degree in Biochemistry and Molecular Biology at UC Irvine (2008) and a Masters in Public Health at UCLA (2010). He is entering medical school at Stanford University Fall 2011, and expects to finish his M.D. in 2015.

Pinesett plans to become an anesthesiologist, and he has a personal mission to work for access to STEM careers for underrepresented minorities. He hopes to some day be on the UCI faculty, and continue his commitment to mentoring the next generation. He has served as a mentor for the CAMP Summer Science Academy for several summers, and in 2011, he was the director.

As a UCI undergraduate, Pinesett was actively involved in CAMP and took advantage of the benefits of related programs, including MARC and MBRS. He was also a member of Chicanos/Latinos for Community Medicine.

He has long engaged in research activities as an undergraduate, having conducted research in the laboratory of UCI Vice Chancellor Susan V. Bryant, Ph.D., and Dr. David M. Gardiner in the Department of Developmental and Cell Biology. He experienced a summer abroad in 2005 at the University of Sussex, England, studying organic chemistry. Pinesett was a researcher in the laboratory of Dr. Derek Dunn-Rankin, Professor and Chair, Department of Aerospace and Mechanical Engineering. Additionally, as an MHIRT participant, he worked in the laboratory of Dr. Victor Ramirez-Amaya at the Institute of Neurobiology in Queretaro, Mexico, Summer 2007. Subsequently, Pinesett gave a poster presentation at the Sigma Xi Research Conference, Orlando, Florida. These activities and more contributed to where he is today, on the threshold of becoming a medical practitioner with a broad vision for public health.

Awards and honors include the Governor's Scholarship, Sigma Xi, Golden Key International Honour Society, and Arthur Ashe Sports Scholar, among others.

UC Irvine faculty and staff wish Andre Pinesett every success as he pursues his studies in medicine at Stanford.

ANDRES MADRIGAL

Andres Madrigal, UCI Class of 2000, B.S. Biological Sciences, is nearing completion of his path to the MD/Ph.D. from Boston University School of Medicine, completing requirements for the Ph.D. in 2011, and the M.D. in 2013.

“Between now and then,” Madrigal says, “I am polishing up my thesis, analyzing some stored samples, and working on at least one manuscript to send out for publication.”

His thesis project is “Porhyromonas gingivalis mediated cleavage of RIPK2.” Professor Caroline A. Genco is his advisor.

Madrigal has additional projects: To assess the role of TLR2- and TLR4-dependent signaling pathway in atherosomatous plaque development in Apolipoprotein E-deficient mice following P. gingivalis oral challenge. Lab skills acquired: Harvesting mouse aortas for atheromatous plaque assessment, and RNA and protein expression profiles by quantitative PCR and antibody array analysis. Tissue culture of human endothelial cells and siRNA.

Madrigal is the co-founder and member of the Boston University School of Medicine Hispanic Health Outreach and Leadership Association student organization. He also had previously served as co-president of the Latino Medical Students organization.

He has approximately 20 peer reviewed manuscripts and abstracts.

For 2007-2011, he was a recipient of the NIH Diversity Research Supplement Award, supporting his research, “Invasive Bacteria Accelerate Atherosclerosis Through TLRs.”

He received the Henry I. Russek Student Achievement Award in the Department of Molecular Medicine at Boston University.

To relax, Madrigal attends Boston Red Sox games and enjoys concerts, having recently heard “an amazing pianist, Nobuyuki Tsujii.”
Victoria Senechal is interested in biomedical research as the broad area of science that looks for ways to prevent and treat diseases. A Neuroscience major (anticipated B.S. degree completion, June 2013) and CAMP participant, she experienced summer research with support from the Minority Access to Research Careers (MARC) program, with the long-term goal of preparing for competitive admission to a prestigious MD/Ph.D. program.

In Professor David Resnick’s lab (Ecology and Evolutionary Biology/NERE, Network for Experimental Research on Evolution, a UC multi-campus research project) Senechal handles many types of equipment and does everything from cleaning fish tanks to photographing and dissecting fish to analyzing data using various software.

Graduate student Mauricio Torres, Senechal’s advisor, gives her plenty of free rein to make discoveries on her own—including a new species of fish using an arduous (and archaic) process. She says, “in order to compare my fish to other species I needed to use the same comparisons.” And she worked diligently 40 hours every week for the entire summer for the rewarding results.

In 2010-11, Senechal and Torres began a new project on guppy jaw morphology. The goal is to learn more about the differences between plasticity and evolution by studying a bending mechanism—intramandibular bending—in the guppy jaw.

She won a Special Merit in Research Award at the 2011 CAMP Statewide Undergraduate Research Symposium for her work on tropical freshwater fishes within the Rio Magdalena system, Santander, Columbia.

Senechal graduated from Sage Hill High School in Newport Beach, CA, having had her sights set on a UC education. When she enrolled at UC Riverside, she became involved in academic service and leadership activities. Her service activities include tutoring, the Red Cross, Pink Ribbon Club, Mercy House, and Sunday school. She volunteers at the Veterans Hospital in Long Beach, and has shadowed Dr. Robert Kaplan and his medical team in Internal Medicine since 2010.

Even with all her interests and activities, Senechal made the Dean’s Honor Roll during her freshman year, and was Sophomore Honors Representative. She is an avid reader and enjoys experimenting with cultural cuisines.

Q&A with Victoria Senechal

What are your educational and career goals?

My goal in life is to study and utilize biotechnological techniques and mechanisms to discover new treatments for neurological diseases that still elude scientists today. My family members suffer from various diseases, such as MS, Alzheimer’s and Sciatica, that are currently incurable and minimally treatable. I also wish to be a physician and to pursue a dual career in which I can help people in the present while searching for better solutions for the future.
Who inspires you?

I found out a long time ago that I cannot depend on just one special person to motivate or inspire me, otherwise I may become disappointed or motivated only in waves. My professors, particularly Dr. Richard Cardullo and Dr. Thomas Perring, inspire me. Our CAMP coordinator, Dr. Christopher Olivera is an awesome listener and extremely helpful mentor. I also have my huge Hispanic and non-Hispanic family. My dad’s reassurances help me emotionally and my mom’s high expectations strengthen my will. My boyfriend is the most supportive, however. He is an optimist, always encouraging me.

What convinced you that the MD/Ph.D. is for you?

Initially, doctor shows! I am riveted by the medical terminology, procedures, and high-stress situations. Stress is something that I am intimately familiar with and have learned to deal with. I have learned what my limitations and weaknesses are and how to work with/on them. The doctors I see in my volunteer activities motivate me, as do conferences in medical and health careers.

What interests you besides science?

I played the cello from elementary through high school, although sadly now at UCR I have too much on my plate to continue with it. Prior to my undergraduate schedule, with my daily commute, studying, research, pre-med extracurriculars, and time for family, I was involved in dance and volunteered at The Wooden Floor (Formerly Saint Joseph’s Ballet) in Santa Ana. As my mom likes to say, I may be well rounded, but I always risk spreading myself too thin.

“I strongly desire to help my family and others suffering from various nerve and brain diseases.”

EVERARDO ARIAS

Everardo Arias is a UCR senior who anticipates graduating in June 2012 with a B.S. in chemistry. Arias has engaged in a number of academic experiences and community service activities that support his goal of applying for the MD/Ph.D. He has conducted research with Dr. Pingyun Feng in the Department of Chemistry, and presented at his first symposium during the Summer 2010 RISE (Research Internship in Science and Engineering) program. He feels that his faculty mentor has motivated him to continue asking questions and applying concepts to work that is considered graduate-level research.

Arias says, “Being able to conduct research and working alongside a mentor has influenced my decision to apply to graduate school.”

Arias enjoys interacting with newly enrolled freshmen as a mentor in the Chicano Link peer mentoring program, guiding new freshmen on study skills development, time management for academic success, and joining in on student activities that engage students in the full undergraduate experience.

His health-related volunteerism includes working at the free clinic in downtown Riverside, a clinic that engages medical students and thus affording interaction with future doctors. Arias was a student intern at the Riverside Community Hospital, where he helped nurses in various departments. He also participated as the undergraduate officer in the smoking cessation program, guiding smokers through the steps to quit smoking. It provides another opportunity for Arias to utilize his excellent communication skills.

Arias, who began participating in CAMP in 2008, presented at the 2011 CAMP Statewide Undergraduate Research Symposium, receiving Honorable Mention for his poster presentation, “Creating Open-Metal Sites in Metal-Organic Frameworks for Hydrogen Storage.”

His hometown is Costa Mesa, California.
Martina Mikail, Future Neurologist

Martina Mikail is a senior majoring in neuroscience at the University of California, Riverside where she has been conducting research in epilepsy. Mikail is fascinated by the complexity of the brain and has set her goal to achieve an MD/Ph.D. in neuroscience. The program at UC Irvine is her top choice.

She hopes one day to conduct research on Guillan Barre Syndrome, a fatal and complicated disorder of the immune system that attacks the nervous system. Her reason strikes close to home: she lost her father to the disease. She says, “My father’s death motivates me and inspires me to find a cure.”

Mikail, whose hometown is Philadelphia, graduated from Redlands High School, CA, where she was enrolled in the college prep program. While still in high school she volunteered at Loma Linda Hospital. In summer 2009, following her freshman year at UCR, she was a research volunteer in the Department of Biomedical Science under Dr. Neal L. Schiller, Senior Associate Dean and Professor of Biomedical Sciences, School of Medicine Health Science Research Building.

“I love UCR because of the many opportunities here,” Mikail says.

She recently began our Mentor Program Initiative, and is now working diligently to promote our CAMP Newsletter. Martina is a great asset to CAMP. We are proud to have her as part of the UCR CAMP team!”

—Dr. Christopher Olivera, UCR CAMP Coordinator

“Martina is the heart of CAMP. As our Logistics Coordinator, one of our officers for CAMP, she is the guiding side of our program.

She is often leading our student research connections, she is actively engaged in two research labs, and is always seeking new ways to help CAMPers bridge the student-faculty interaction.

She recently began our Mentor Program Initiative, and is now working diligently to promote our CAMP Newsletter. Martina is a great asset to CAMP. We are proud to have her as part of the UCR CAMP team!”

—Dr. Christopher Olivera, UCR CAMP Coordinator
ROLANDO BERMUDEZ, TYLER DILLSTROM, EDY CARDONA, AND MARIA CECILIA CHAVEZ

Berkeley Celebrates the Achievements of Outstanding Students

ROLANDO BERMUDEZ, CLASS OF 2011

Rolando J. Bermudez completed a B.S. in Civil and Environmental Engineering in May 2011, with an emphasis in project management and structural engineering. He is currently experiencing the international workplace with Bechtel Engineering in Dubai. During his undergraduate externship, he forged a relationship with Bechtel while working on a major transportation project, the BART/VTA Extension Project. Additionally, his research experience at the Massachusetts Institute of Technology (MIT), Summer 2010, supported his professional engineering career goals. While at the MIT Technology Lab, he built and analyzed physical small-scale models to study stability resistance under earthquake loads.

A scholar and community service advocate, Bermudez received the UC Regents and Chancellor’s Scholarship for outstanding academics and community volunteer work.

Throughout his distinguished undergraduate career, he has engaged in a wealth of professional development and service activities. These include:

Project Executive 2011, LEED Specialist (Leadership in Energy and Environmental Design, an internationally recognized green building certification system); highest score during 2010 national competition;

Team Leader, Construction Management Class, completing a construction proposal for a tennis court; and

Founder and CEO, Bermudez Scholar Foundation, establishing a non-profit dedicated to help high school students achieve academic success.

Bermudez also has strong communication skills, which he put to good use when raising funds for the Berkeley campus. His efforts resulted in nearly $10,000 in funds raised from alumni and parents of enrolled students, all in a six-month period.

For his outstanding work and effective presentation, “Masonry Walls: The Stability of Serpentine, Straight, and Curved Walls in Small-Scale Tests,” Bermudez earned Special Merit in Research at the 2011 CAMP Statewide Undergraduate Research Symposium. Faculty shared that he would have a great future as a UC faculty mentor.

Future plans include graduate education, but for the immediate future, international work experience is the opportunity of a lifetime.

TYLER DILLSTROM, CLASS OF 2011

Tyler Dillstrom, whose hometown is Redding, CA, completed a B.S. in Mechanical Engineering with concentration in combustion. He is enrolled in the Ph.D. program in Mechanical Engineering at the University of Michigan. Dillstrom chose Michigan for “the atmosphere and the faculty who work with many other universities as well as research centers.”

He has received the Rackham Merit Fellowship, with guaranteed research funding for six years. His special interest focuses on chemical kinetics projects combining experimentation and computational work.

At Berkeley, Dillstrom worked in the Combustion Analysis Laboratory as a student research associate for two years. He analyzed data and results collected from experiments performed on a Homogeneous Charge Compression Ignition and a Spark-Ignited engine. The field of combustion
has long captured his imagination, “I want to be a part of the progress in the combustion field because society will always depend on combustion.”

He enjoys the pairing of theory and experimental work to attempt to describe “something that has been around for so long, things as elemental as fire and engines.”

Dillstrom has enjoyed an exciting undergraduate career enhanced by innovative engineering design projects. He entered a national engineering society design competition with his assistive device for wheelchairs which aids users to be more self-sufficient and independent. He was a finalist in the paper competition, and is currently pursuing a patent for his design.

He co-authored a paper on Ethanol salt blends, which he presented at the 2009 Western States Section/Combustion Institute Conference. In 2011, he received the Special Merit in Research Award at the CAMP Statewide Undergraduate Research Symposium.

Looking back on his path to graduate school, Dillstrom says, “Cal is an amazing experience that has shaped my personal and professional life tremendously. The personal and social experiences have taught me as much about myself as the rough classes and problem sets.”

Throughout his education, Dillstrom has been inspired by people who work hard and are passionate about what they do for the greater good.

Among his fondest memories are “Being a Golden Bear and enjoying that feeling with friends at athletic events. I have [already] forgotten about the all-nighters doing homework and studying!”

EDY CARDONA, CLASS OF 2012

Edy Cardona anticipates completing the B.A. in Physics in May 2012. He transferred to UC Berkeley from Berkeley City College and he also attended Santa Monica College. Cardona hails from Los Angeles.

While Excelling in the rigorous undergraduate physics curriculum, he finds time to tutor, prepare for and engage in research.

In Summer 2010, he received a research internship at Harvard University’s Center for Nanoscale Systems. He had applied through NNIN (National Nanotechnology Infrastructure Network), a nationwide organization that offers undergraduates the opportunity to conduct research at an affiliated research sites. Under Professor Michael Aziz, with mentoring by Ph.D. candidate Daniel Recht, Cardona worked with lasers on the physics behind pulsed-laser-melting and optoelectronic silicon.

To prepare for this experience, Cardona had undergone a “research apprenticeship” through Environmental Leadership Pathway (ELP), at Berkeley, where he learned and practiced the principles of research in an academic environment. ELP director Sang Lee supported Cardona’s application for the opportunity at Harvard.

Cardona says, “My experience was very gratifying and productive. I was able to collaborate with students and professors conducting cutting edge research.”

Future plans include graduate school, but in the meantime he has a rich array of academic and professional development pursuits, including memberships in the Society of Physics Students, Berkeley Engineers and Mentors, and Hispanic Engineers and Scientists, as well as Cal-NERDS (New Experiences for Research and Development in Science).

Cardona was awarded Honorable Mention at the 2011 CAMP Statewide Symposium for his project, “Automation of Sample Positioning and Data Collection for Pulsed Laser Melting Experiments.”

Of his experience at the Statewide Symposium, he says, “I gained knowledge of all the research fields that students engage in throughout the whole UC system. I also gained insights from the different perspectives people had about my research project.” He adds, “I enjoyed talking to my fellow CAMPers the most because they shared the same level of enthusiasm about conducting research.”

He has received a Department of Energy Scholarship (2010). For his research, “Feet design and gecko-inspired fibers improve hexapedal robot’s ability to climb vertical surfaces,” he won first place research poster at COINS (Center of Integrated Nanomechanical Systems) Symposium (2009).

He says, “I have been truly fortunate to be surrounded by generous and motivated people at every stage in my career.”
M aria Cecilia Coca Chavez completed a B.A. in Applied Mathematics in Fall 2009. Since then, she has continued conducting research with her mentor, Professor Fraydoun Rezakhanlou, and preparing for graduate school by auditing graduate courses. Her research interests include applied partial differential equations, probability theory, stochastic processes with emphasis in Brownian Motions, and numerical analysis.

In Summer 2010, she pursued a project, The Length of the Longest increasing subsequences and the Aldous-Diaconis-Hammersley (ADH) Model under faculty mentor Professor Fraydoun Rezakhanlou.

Chavez was a transfer student to Berkeley in 2007. She earned an Associate of Arts Degree in Mathematics with Honors and also a degree in Liberal Arts at the College of Alameda. Reflecting on what prepared her for the rigors of an undergraduate major in mathematics, she says, “My transition from a junior college to Berkeley was challenging. However, CAMP and New Experiences for Research and Diversity in Science (NERDS) program helped me to network with mathematicians and scientists in industry and academia.”

Chavez was drawn to mathematics at an early age. She had seen the movie Alien, and the leading female character made a lasting impression:

“I was impressed with the command of the female leading character and the power of mathematics could have over the big machines. I realized that if a woman was knowledgeable in mathematics, she could achieve great things.”

Applied Mathematics is particularly intriguing to her because “it encompasses many broad subfields of mathematics, from combinatorics to differential equations.” She adds, “it expands interdisciplinary applications such as the theory of probability, PDEs and Genetics where work is being done to develop new drugs and therapies that will benefit mankind.”

Chavez is an NSF-CAMP Scholar (2008-2010); she won Berkeley Celebrates Students continues on page 59

P aloma Lopez will graduate from UCSC in 2012, and along her path to the B.S. degree she has taken full advantage of all the opportunities presented to her. Among these are various programs at the community college which shaped her goals for transfer. Lopez attended Chaffey College (Dean’s Honors) and Pasadena City College (MESA Outstanding Achievement and Intern, Bridges to the Future Program). Lopez describes herself as a “hunter for knowledge,” and her activities affirm this bold statement. Prior to transfer, she interned at the Partnership of Research and Education in Materials Program at California State University Los Angeles – Caltech, in a biochemistry lab where she conducted plant RNA extraction. She gained further experience working in a team as an ecological research volunteer, and helped coordi-
nate Girls Science Day at Pasadena City College.

At UC Santa Cruz, Lopez is a research assistant in the IMSD/MARC program, investigating marine ecosystems in the intertidal zone. She has gained field experience in difficult environmental conditions, including working in Montana on various topics related to glacial ecosystems.

While attending the 2010 SACNAS Conference she met Dr. John Priscu, Professor of Biology in the Department of Land Resources & Environmental Sciences at the University of Montana (The “Harvard of the West”). Priscu studies microbial biogeochemistry in aquatic systems emphasizing the roles of nitrogen and phosphorus in microbial growth. He also has interest in life associated with Antarctic ice and its relationship to global change and astrobiology. Priscu, an alumnus of UC Davis, invited Lopez to work with him in Fall 2011. She will go to Antarctica on a special independent study agreement.

**Q&A With Paloma Lopez**

**What triggered your interest in science?**

Even though I did not have a role model specifically in sciences, my parents always encouraged me to follow my dreams, and I always had a fascination for nature and the way it works. When I started college, I already knew I wanted to study Biology because I wanted to go to remote places and discover new things.

**How did you get started in research?**

I had my first experience in a real lab through the PREM program (Partnership for Research and Education in Materials) internship. It is a partnership at CSU Los Angeles. I was introduced to the world of research and I knew that that was the path I needed to follow to achieve my dreams.

**What inspired you to get involved in ecological research?**

I have been concerned with anthropogenic environmental pollution, moreover, my Biology and Chemistry courses made me realize that there is so much we can do to prevent and repair human impact on the environment, and that was what inspired me to become more active as an environmentalist.

**Have you decided on a career goal?**

I would love to work doing research that can be used for a good human or environmental cause.

**Do you have plans for graduate education?**

I definitely want to get a Ph.D.

**What excites you most about the prospect of going to Antarctica?**

There are two things that I am most excited about: The first is the chance to work with extremophiles which I believe are redefining our understanding of what “life” means. The second thing is of course to experience such an extreme, beautiful environment in the Antarctic.
ARIEL ANDERS AND DARREL DEO

UC Santa Cruz Computer Engineering Honors Students Looking to Graduate June 2012

Ariel Anders and Darrel Deo are Computer Engineering majors who anticipate completing the B.S. degree in June 2012. They are Honors students who pursue research experiences in robotics and are building resumes that predict exciting futures in their chosen careers. Both Anders and Deo are members of Tau Beta Pi, the Engineering Honor Society. They are engaged, accomplished, and experienced undergraduate researchers at UC Santa Cruz who have presented at the CAMP Statewide Undergraduate Research Symposium. Each has accumulated honors at several high profile national conferences. While having varied interests, Anders and Deo share a common passion for their major and for participating fully in the broader community of computer engineers. Each is destined to make a difference.

Anders is a recipient of the UC Regents Scholarship and holds a 4.0 gpa. She received a two-year NIH funded fellowship through Minority Access to Research Careers (MARC) and a Summer Undergraduate Research Fellowship in Information Technology (SURF-IT). She continued summer 2010 research at the Bionics lab through summer 2011 as a MARC fellow. Anders shares her perspective on the research experience.

Deo graduated from Mount Eden High School in Hayward, California, and enrolled at UCSC in 2008. He carries a 3.8 gpa, and has engaged in research activities since 2009. Deo is listed as co-author of “Portable Nanoparticle Quantization using a Resizable Nanopore Instrument, the IZON qNano,” presented at the 32nd Annual International IEEE EMBS Conference in 2010. He presented at the national SACNAS Conference in 2010.

Deo’s honors include membership in Tau Beta Pi, The Engineering Honor Society; the MARC program (two year fellowship, 2010-2012); and Golden Key International Honor Society. He became of member of CAMP in 2010 and received support for the CAMP Summer Research Experience in Summer 2010.

He conducted research at the Massachusetts Institute of Technology in summer 2011, through the MIT Summer Research Program. Briefly, the MSRP promotes the value of graduate education; improves the research enterprise through increased diversity; and prepares and recruits the

“I can help people through robotics, and show that good does exist in our world and that we all can be a part of it.”

—Darrel Deo
best and brightest for graduate education at MIT. Students who participate are better prepared and motivated to pursue advanced degrees.

During the MSRP experience Deo received supervision by an MIT faculty member and postdoctoral fellow; counseling on academic careers; constructive feedback on the need for further undergraduate courses and acquisition of additional laboratory skills; and exposure to state of the art research laboratories. He also received support for travel, a stipend, and housing. He presented a poster at the end of the program.

Q&A With Darrel Deo

What is your long-term career goal?

I would like to run my own robotics laboratory as a career aspiration. I have always wanted to help those less fortunate, such as people with mental and/or physical disabilities, and hope to utilize robotics to help them live regular lives.

How did you decide to declare a major in computer engineering, and what drew you to robotics?

Technology holds a lot of power and I was fascinated in how it has so deeply impacted the everyday lives of people. I became infatuated with the theories of engineering and decided that Robotics can be used to eventually help people. I’m interested in the autonomous and control theory aspect of robotics and how we can create machines to think and do on their own.

What do you enjoy most about conducting research?

What I enjoy most is exploring new theories and ideas in the hopes of finding something new. It is a different type of thrill to impose your own theories and ideas and testing them in hopes of learning more about a project. I like that research allows me to use skills both learned in classes as well as those taught by my PI and mentors, it allows me to grasp a better understanding of concepts in my field of focus.

What is your faculty mentor relationship like?

My PI looks out for me; he wants to help me reach the academic goals that I wish to achieve. He is always offering insights as to which classes to take and when as well as what I need to do to get into a good graduate school. My mentor is a researcher in our lab who as already graduated; he offers me advice and guidance on a daily basis. He has really helped me find my love for research and always has time to listen.

Do you have any plans for graduate education?

Darrel Deo continues on page 58
Lucia Diaz “absolutely loves” UC Irvine, but there was a time not long ago when she didn’t know it existed. In July 2009, Professor Cesar Sereses, UCI School of Social Science, and Santana Ruiz, Associate Director, UCI Center for Educational Partnerships, visited Imperial Valley College where Diaz was enrolled. Sereses and Ruiz shared information on the Summer Scholars Transfer Institute, a one week intensive experience on the Irvine campus for prospective transfer students. Before that, she hadn’t planned to transfer, but that single week changed her motivation and her future direction.

Diaz is from Mexicali, Mexico, one of five daughters of parents who worked in the fields. She was a top student, always the best in class. After junior high school, she wanted to attend a certain prestigious high school, but her mother said no. She wanted Diaz to attend a new technical trade school which emphasized vocational education. Diaz wanted no part of it. When the time came for taking the entrance exam, Diaz told her mother that she would fail it. But her mother offered a disagreeable alternative. Soon Diaz found herself in the elite The Hispanic Scholarship Fund, the National Basketball Association (NBA), and Bacardi Gold partnered to provide financial assistance to 12 outstanding Latino students. All scholars traveled to Miami in June 2011 to visit the Bacardi headquarters and the Miami Heat Arena to interact with chief executive officers from both companies. Lucia Diaz represented the Los Angeles market; she received $10,000 in Fall 2011.

ANDREA HERNANDEZ WINS AWARD AT MGE/ARIZONA

Andrea Hernandez is entering her fourth year as a civil engineering major at UC Irvine. In February 2011, she presented her research, “Energy Conservation within a Household,” at the MGE@MSA conference at Arizona State University (ASU), Tempe, AZ. Her research was conducted under the supervision of Dr. David Kirkby, UCI Department of Physics and Astronomy. She received the first place award for undergraduate presentations. To prepare for this experience, Hernandez was one of 28 CAMP Summer Scholars engaged in research activities. She presented her project findings at a symposium held at Donald Bren Hall on the Irvine campus in Fall 2010. Her professional development activities include attending national conferences: AAAS, SACNAS, and MAES. She is a member of Sigma Lambda Gamma, Inc., and enjoys tutoring in math and physics. Hernandez plans to specialize in hydrology and would like to work for a pipe networking company.

UC Irvine Undergrads
Narciso Marmolejo, who hails from Chula Vista, in southern San Diego, plans to complete a B.S. in Aerospace Engineering in Spring 2013. His long-term goals include a Ph.D. which he sees as “a tool to meet my career goals.”

And Marmolejo has one clearly ambitious career goal: “to make energy and transportation as accessible, reliable, clean, and enjoyable as possible.”

If he can do that “via Tesla (electric vehicle company), or joining ITER, an international research coalition on fusion, or anything else that I cannot fathom today, then those roads are welcome.”

He has developed a strong philosophy about the field of engineering, as follows:

“Engineering allows for the creation of something never before conceived; it allows for things to work not only efficiently, but elegantly; engineering is a succinct expression of itself, encapsulated in the things one designs: as such, it is a rewarding experience.” He adds, “it is even more rewarding if it works!”

He credits his parents as the source of inspiration. He says, “My mother and father inspire me the most: not only are they diligent and resourceful, but they also know how to enjoy everything they do.”

Marmolejo takes a break from the rigorous engineering curriculum by playing sports and simply catching up on sleep. He makes good use of his course schedule, which he says serves as his “coordinate system,” which means he refers to his schedule to see if there’s room for any extracurricular activities that come up during the quarter.

Marmolejo was attracted to engineering in high school, when he was exposed to “calculus, physics, and the Discovery Channel.” Simply put, he enjoys the balance that engineering maintains between the abstract and the concrete – the application of concepts.

His advice to new engineering majors?

“Learn everything you’re supposed to learn in the time you’re supposed to learn it.”

He is a member of SHPE (Society of Hispanic Professional Engineers) and AIAA (American Institute of Aeronautics and Astronautics).
DOMINGA SANCHEZ, FUTURE STRUCTURAL ENGINEER, CLASS OF 2012

Dominga Sanchez expects to complete the B.S. degree in Structural Engineering in Fall 2012. A recipient of the Chancellor’s Research Scholarship in 2010, she takes pride in her ability to work effectively within a team as well as independently. For example, during her internship under Professor Oscar Romo, she participated in an environmental project in Tijuana, Mexico in which she conducted site visits an assisted in monitoring the construction process of a retaining wall. In 2009-10, she served as project leader for a design and analysis project for the Seismic Design conference competition for the Earthquake Engineering Research Institute. They won first place. Among her ongoing commitments is serving as a field research assistant for the Tijuana River National Estuarine Research Reserve in collaboration with NOAA, collecting data by measuring sediment changes.

Sanchez continues involvement in the myLab Program Internship project at Calit2 (California Institute for Telecommunications and Information Technology). In this multidisciplinary team activity, she works with youth to introduce them to the engineering field and the college experience. She also participates in Early Academic Outreach Program at UCSD in which she supervises, trains and coordinates activities for a group of student tutors and mentors.

She has received the Computer Science, Engineering & Mathematics Scholarship. Her professional memberships include the Society of Civil and Structural Engineers; Earthquake Engineering Research Institute, and she is an engaged CAMP participant.

SOFIA JIMENEZ, COGNITIVE SCIENCE, CLASS OF 2012

Cognitive Science major Sofia Jimenez expects to graduate in June 2012. Her special area of interest is in human cognition and she is pursuing minors in biology and in education studies. After graduation, she plans to teach English in Latin America, “hopefully Chile.” Jimenez loves teaching. Eventually she wants to enter a Ph.D. program. Her long term career goal is to become a professor or an Education/Cognitive Science researcher, and possibly work in the field of education policy.

Of the key role that cognitive science plays in today’s world Jimenez says, “I think the most important thing is to learn how learning works and how our brains process and manage information.”

She has served as a teaching assistant in two courses, Cognitive Science I and Cognitive Science 156, Language Development. Her research experience includes VETSA, Vietnam Era Twin Study of Aging.

Jimenez values community service. Her view is that “service is vital, not only for the community but also for your self-worth.” She endevors to show students how much they owe to society and how they can do “just a little” to benefit the less fortunate.

She is engaged in Project Nicaragua, a non-profit student-run organization committed to improving health care in Nicaragua—considered the second poorest country in the western hemisphere. Their fundraisers provide medical supplies and water filters.

Jimenez has consistently received Provost Honors. She has received the Genentech Scholar and Amgen Scholar awards, both of which are very selective. Her strong personal statement and recommendations also garnered her the Turkish Coalition of America Grant, which supported her study abroad in Istanbul. She participated in the UCSC Global Seminars, a five-week program taught by UCSD faculty. Students enroll in the Early Academic Outreach Program at UCSD in which she supervises, trains and coordinates activities for a group of student tutors and mentors.

San Diego Undergrads continues on page 59
Michael Daniel, Junior, Molecular, Cell and Developmental Biology

Michael Daniel is an Honors student with membership in Alpha Lambda Delta and Phi Eta Sigma Honor Society, and acceptance into the National Society of Collegiate Scholars. Additionally, he is a member of Golden Key Honor Society and Phi Sigma Pi Honor Fraternity. Awards and other honors include the Hispanic Scholarship Fund/U.S. Bank Scholarship, UCLA PEERS Scholar, Amgen Scholars Program, and MARC Scholar. Daniel expects to graduate in June 2012, and plans to apply to MD/Ph.D. programs at UCLA, UCSF, and Harvard. His career goal is to become a physician scientist.

Daniel learned molecular biology techniques common in most research projects through the Biomedical Sciences Enrichment Program at UCLA in 2009. Having special interest in cancer biology and stem cell biology, he is a student researcher in the lab of Dr. Luisa Iruela-Arispe, studying the potential autocrine signaling function of Vascular Endothelial Growth Factor (VEGF), and the cell autonomous features of this signaling.

“Research as an undergraduate has influenced my direction in life. Without it, I do not know in what direction I would have gone!”

Daniel was a summer intern in the NIH Summer Internship Program at Bethesda, Maryland, in the lab of Dr. Li Yang. He conducted such activities as cell culturing, RNA extraction, cDNA synthesis, gel electrophoresis, genomic sequencing, Lowry Protein Assays, and laser capture microdissection. In 2009-10, he worked under Dr. Harumi Kasamatsu studying the function of Vp1, the structural protein of SV40.

“Research as an undergraduate has influenced my direction in life,” Daniel says, “and has offered me a path that I had not considered in the past.” He adds, “Without it, I do not know in what direction I would have gone!”

He won Honorable Mention at the 2011 CAMP Statewide Undergraduate Research Symposium for his project, “VEGF Internal Localization During Autocrine Signaling.”

Daniel is from Anaheim, CA, where he attended the Oxford Academy.

Roky Coria, Senior, Biology

UCLA’s Roky Coria expects to graduate in Winter quarter 2012. He has a minor in conservation biology and has conducted research in pollination ecology and leaf traits. Coria, from Los Angeles, plans on pursuing a doctorate in plant sciences and hopes to one day become a university faculty member. He would also like to be engaged in science education policy in the future.

Coria says he has to “thank PBS programs such as Nature and NOVA for sparking his interest in science,” and that many people have inspired him to pursue research, including “great professors and graduate student mentors, especially in the Sork lab.”

Under Dr. Victoria Sork, Professor and Dean, Division of Life Sciences,
Coria conducted research examining variation in leaf traits across the geographic distribution of *Quercus lobbata*. He presented this project at the 2011 CAMP Statewide Undergraduate Research Symposium, receiving the Special Merit in Research Award. He presented Pollination Ecology of Fragmented Populations of *Acacia*

“Conducting research has definitely enriched my undergraduate studies because it has given me insight into the actual methods and cutting edge knowledge of my field.”

Clara’s Kimberly Frutoz plans to complete a B.S. degree in Physiological Science in Winter quarter 2012. She was a transfer student from Orange Coast College, Costa Mesa, CA.

Frutoz is applying to MD/Ph.D. programs for Fall 2012. She is an undergraduate researcher in the Bennett Novitch Lab, department of Neurobiology, and has a passion for improving quality of life.

“I wanted to understand how science could be used to help people on a larger scale in order to treat and improve quality of life,” she says.

She presented “Characterizing RP58 in Neural Progenitor Cells of the Developing Spinal Cord” at the 2011 CAMP Statewide Undergraduate Research Symposium, receiving Special Merit in Research for her outstanding work. Undergraduate research has added significantly to her university experience.

“Research has given me a much greater insight in to how to think critically and successfully problem solve,” she says. Research has also brought her into the “exciting process of generating new knowledge for the scientific community.”

Frutoz has received a UCLA/CARE Scholars Scholarship. She is a member of Chicanos Community Medicine and the American Medical Student Association, a national organization committed to representing the concerns of physicians-in-training.

Volunteer work includes participating in the Good Samaritan Medical and Dental Mission and coordinating events such as health fairs and mobile clinics. Her hometown is Del Rio, Texas.

“I wanted to understand how science could be used to help people on a larger scale in order to treat and improve quality of life.”
Introducing UC Santa Cruz CAMP Faculty Director

Dr. Theodore “Ted” Holman, Professor of Chemistry and Biochemistry, UCSC

“I have spent my life not only pursuing a career in Chemistry but also trying understand the world around me through others eyes. I worked on my grandmother’s farm in Watsonville picking berries with my four brothers every summer until I was 18, I was an exchange student in Spain for a year as an undergraduate at UCSD, and I went to graduate school in the Midwest. And I must say that the Midwest was a bigger a culture shock than going to Spain.

“Along the way, I realized that my career in science was a gift and that I had achieved what many people just dream of, a job I love. Part of that love is for the thrill of discovery and part is for helping people appreciate science. Many times in my career I had professors that only cared about the science and not enough about the teaching. So for me, mentoring undergraduates in research is a perfect way to wed these two joys. They help me achieve wonderful results and I help them appreciate the wonder of discovery.

“The other aspect of mentoring undergraduates is getting to know them personally. They all come from such varied backgrounds. It is enjoyable for me to learn about their his-

Ted Holman continues on page 59
OUTREACH & RECRUITMENT EVENT DRAWS 300

UCI-CAMP Open House 2011

On Saturday, April 9, newly admitted freshmen and their families descended on the UCI campus for the annual CAMP Open House. Prospective students represented a number of California regions from throughout Orange County and greater Los Angeles to the Inland Empire and the Central Valley; from as far south as El Centro and as far north as Sacramento. Professor Derek Dunn-Rankin, Chair Department of Mechanical and Aerospace Engineering, welcomed students and parents to the event, which highlighted undergraduate STEM majors, the UCI science and engineering community, research opportunities, mentoring, and various professional development activities available through CAMP.

The Open House is pivotal for many students visiting campus for the first time in offering a welcoming and inclusive environment for new students, and often confirming their decision to “choose UCI” for their university destination. Twenty-one CAMP Ambassadors were on hand to answer questions and share their perspectives on UCI. Kika Friend, CAMP Program Director, organized the information day that was interactive, enthusiastic, and energizing. She moderated a parent panel, which gave parents of new freshmen insights into the UC experience as well as recommendations to support a successful life-shaping undergraduate experience for their sons and daughters.

The student panel was moderated by CAMP Alumni Dr. Brandon Brown (Ph.D. Immunology, Johns Hopkins University) and Dr. Danny Vera (Ph.D. Mathematics, MIT), along with John Williams (B.S. Biological Science), who works at Gen Probe, a biotech company and global leader in Nucleic Acid Tests. Robin Jeffers, Director, Center for Opportunities and Diversity in Engineering, was co-moderator.

Prospective students received “up close and personal” encouragement to enroll at UCI from current undergraduates who described their research facilitated by CAMP. Gilberto Cardenas, Mathematics major, presented “Predator Evasion in Zebrafish
UCLA Students Attend Emerging Researchers National Conference

The Emerging Researchers National (ERN) Conference in Science, Technology, Engineering and Math (STEM) held in Washington DC February 24-26, 2011 was an opportunity for UCLA undergraduate STEM students to 1) receive valuable mentorship, 2) develop their scientific communication skills and 3) identify as scientists. This year, 600 students, 475 which were undergraduates, from over 170 institutions attended the ERN conference; 14 were UCLA students funded by the California Alliance for Minority Participation (CAMP).

Participation in programs that provide guidance/mentorship is critical for underrepresented/first generation students to navigate their aca-

is Mediated by the Lateral Line System,” and Carine Todmia, Materials Science Engineering, presented “Effect of Initial Microstructure on the Processing of Titanium Using Equal Channel Angular Pressing.” They shared the benefits of working with faculty and conducting research to enrich not only the undergraduate years but to prepare for graduate education and the professional STEM workplace.

A slideshow of the 2010 Summer Science Academy showcased the variety of student development activities that prepare students for success in their first quarter – and advice on what to expect in the fast-paced ten week quarter system.

A Financial Aid Office Q&A workshop and a campus tour rounded out the event, which has consistently attracted top underrepresented minority STEM majors to the campus for 20 years. The CAMP Open House remains a vital piece of the campus’s efforts to build a sense of community among new students and ensure that they make connections with students and faculty prior to their first fall quarter. It is also a key opportunity for newly admitted students to learn about the CAMP Summer Science Academy and consider participating in the “boot camp of the mind,” an intensive three-week immersion in academic and social life at UCI.

UCI-CAMP Undergraduate STEM Ambassadors

Jacqueline Algara, Biological Sciences
Salvador Badillo, Civil Engineering
Victoria Biggs, Environmental Engineering
Gilberto Cardenas, Mathematics
Stephany Chacon, Chemistry
Erick Cruz, Mechanical Engineering
Enrique Guevara, Electrical Engineering
Andrew Inohara, Physics
Jamese Johnson, Public Health Sciences
Tori Monette, Chemical Engineering
Pedro Montenegro, Mechanical Engineering
Carmen Palacios, Chemistry
Dylan Paz, Aerospace Engineering
Mayra Perez, Biological Sciences
Miriam Ramos, Biological Sciences
Alexis Reeves, Biological Sciences
Carina Robles, Biological Sciences
Danny Rodriguez, Aerospace Engineering
Carine Todmia, Material Science Engineering
George Villegas, Mathematics
As I grew up, I acquired several passions: science, teaching, mentoring and traveling. Born and raised in the Bay Area in California, I attended UC Berkeley as a double major in Molecular and Cell Biology (Neurobiology) and Psychology. I went abroad to Denmark for a semester and took a break from science. After realizing how much I missed science, I participated in a summer research program at NYU where I unexpectedly fell in love with two things: neuroscience research and New York City. Thus, I went on to receive my PhD in Neurobiology & Behavior at Columbia University and then completed a teaching post-doc at Columbia. Because of my strong interest in mentoring minority students, I became a Biology Professor at LaGuardia College in Queens, New York. I finally made my way back to the west coast to work at UCLA as an Academic Administrator. Here, I get to combine my passions for science and mentoring. It is wonderful to see students surrounded by a great support network, discover joy in research and grow in confidence, not only in science, but as individuals. For many students, they don’t know that science research is a viable option, but with programs such as CAMP and influential mentors, science as a career path becomes tangible. Through my many experiences and travels, I realized that engaging in something that you are passionate about is crucial. I hope that these students discover their passion and that we can be here to provide the support that they need to pursue their goals.
Carlos Coimbra is Professor, Mechanical Engineering and Applied Mechanics on the faculty at UC San Diego starting Fall 2011, and is an adjunct UC Merced. He serves as co-faculty director for CAMP-NSF and brings to CAMP a wealth of teaching and mentoring experience. Coimbra has a Ph.D. in Mechanical and Aerospace Engineering from UC Irvine, an M.S. from the Technical University of Lisbon, Instituto Superior Tecnico (Portugal), and B.S. from the University of Brasilia (Brazil) Institute of Physics. Coimbra has a special interest in environmental systems and sustainable energy. He describes his research and teaching, as follows:

“One of the main goals of my research group is to explore the intersection between experimental, theoretical, and fieldwork methods to both evaluate and develop new technologies to harvest solar power in its diverse forms.”

Coimbra’s group has developed a network of solar observatories distributed throughout the University of California campuses which are testbeds for instrument and model development (sol.ucmerced.edu). The data is used to forecast simulations with time horizons. He is currently developing a photovoltaic-to-multistage-compressed air system, and has grants from the California Energy Commission and CITRIS (Center for Information Technology Research in the Interest of Society, formed in 2001).

Coimbra shares his teaching philosophy: “I am an experimentalist/theoretician fluid dynamicist by training. I am passionate about teaching both lecture and lab courses on different topics of fluid mechanics and heat and mass transfer. I am currently teaching a lecture-lab class in aerodynamics using our instructional wind tunnel at UC Merced, and I cannot overestimate the impact of creative laboratory experiments on the student learning experience.

He has a vested interest in STEM diversity issues, and has been engaged since the beginning of his career in efforts to diversify the student body. He has previously served as chair of admissions for the undergraduate council at UCM.

“Involve undergaduate students in my projects has been a critical element to the success of my overall research program. Undergraduates bring enthusiasm, fresh approaches, and unique “care-free” attitude to problem solving that often leads to innovation. For the faculty mentor, there is little that is more rewarding than seeing the development of an undergraduate student into a competent researcher. I am of the opinion that most research groups could benefit from having a large contingent of engaged undergraduate students.”

Coimbra has numerous publications in viscous flows and heat and mass transfer. Recent publications include:


UC Irvine Chancellor Michael V. Drake, CAMP Statewide P.I., (center right) welcomed the newest UC-Edison Scholars, new transfer students, to the University in a special reception that included dignitaries from Edison International.

SUSTAINED PARTNERSHIP WITH EDISON INTERNATIONAL

UC-Edison Scholars, New Transfer Students to UC

The University of California, California Community Colleges, and Edison International formed a business/education alliance in response to the 1997 Memorandum of Understanding between the University of California and the California Community Colleges. The goal was to focus on specific strategies to enhance transfer success and increase student transfers. Activities were coordinated with CAMP. During the first five years, 100 community college students received $1.5 million in scholarships to pursue STEM majors at five UC campuses. During the second five years of the program, funding was provided for 107 transfers. The financial support combined with academic and social aspects provide a catalyst for transfer students to achieve their dreams of a UC bachelor’s degree. The program continues with increasing numbers of transfer students enrolling in STEM majors at UC campuses. A reception welcoming new scholars was held May 2011 at UCI.

UC Santa Barbara hosted UCI’s CAMP program director Kika Friend May 20, 2011 for a special UC-Edison Scholars seminar on applying to graduate school and obtaining funding. The scholars are new community college transfers to UCSB. Pictured from left to right: Julie Standish and Dotti Pak (UCSB CAMP Co-Coordinators), Israel Tellez, Anthony Quintana, Emmanuel Terrazas, Brianna Jones, Skye Harris, Kika Friend, Shayneanne Ramos, Claudia, Elias Flores, Cham Yam, and Brian Ly. The title of the seminar was “Is Graduate School for You? If so, here are the Nuts and Bolts!”
Reinventing California: A Community College Research Symposium

C2U (Community College to University) has been working to connect San Diego community college students to UCSD for about five years. The UCSD CAMP program is an integrative component in CC2U, and also provides mentoring opportunities for STEM majors and prospective transfers. For the January 2011 event Reinventing California, A Community College Research Symposium, community college students came to UCSD for a full day of motivational activities and information.

In addition to CAMP leadership, a key organizer was Dr. Alyson Lighthart, formerly at San Diego City College, now at Portland Community College, Cascade Campus. Lighthart noted, “We advertised heavily, particularly to STEM majors, in community colleges across San Diego County.”

About 150 potential transfers met with the UCSD transfer center staff, CAMP participants, and Howard Hughes Scholars Program representatives. Dr. Jacqueline Azize-Brewer, CAMP Coordinator, provided assistance with registration and orientation, and Dr. David Artis, Director, UCSD CAMP Program, gave welcoming remarks.

Dr. Artis explains, “When we were coming up with a theme, we decided on ‘Reinventing California’ because it is forward looking and open to all. We all have a stake in reinventing California and any contribution, whether in arts, sciences, economics, etc., helps in the overall effort.” In his remarks, Dr. Artis noted that, conceptually, reinventing California is something that happens fairly often and results in a vision that makes the most of Californians’ energy and draws new energy to the state. He added, “California is no longer the mission state. It’s not the Gold Rush state. It’s not the Beach Boys state or the dot.com state. What it will be next is largely up to you.”

The keynote address was by Dr. Shelley Halpain, UCSD Professor of Neurobiology. Dr. Halpain, who received her Ph.D. in Neuroscience from the Rockefeller University, discussed brain development and her research concerning the molecular basis for neural development. Her laboratory uses advanced light microscopy and quantitative cellular imaging methods to investigate neurite outgrowth and synapse formation.

After her talk she participated in the round table discussions. Topics varied from commuting and housing to research experiences to issues for students with children. Round table moderators were primarily themselves transfer students who shared their personal experiences. The Dean for Undergraduate Research, financial aid counselors, faculty, and a professional engineer also served as moderators. CAMPers Mirielle Kamariza, Kameron Black, Carlos Peinado, Helio FH Gomez, and Mayra Vega led discussions during the round table sessions.

The San Diego Mesa College Honors Student Club provided lunch, in proximity to the Academic Enrichment Programs building that houses CAMP, so that students would know to find it when they enroll at UCSD. The transfer student panel following lunch was a highlight. Campus tours included a visit to the Natural Science Building, a biology lab, biomedical library, and other science and bioengineering labs.

UCSD Chancellor Mary Anne Fox gave closing remarks. The overarching purpose of the symposium was to familiarize community college students with the amazing opportunities available to them at university and in science research.

See related news-in-brief, UCSD’s Open Doors, page 51, a student-initiated community college mentoring program.
The California Community Colleges by Region
USCD’s Dr. Cynthia Perry
continued from page 21

The student-faculty mentor relationship

“I learned during my undergraduate research experience that it was important to find someone that works with your work style and is accessible to you as a student. I have been lucky to have mentors that believed in my abilities and let me make enough of my own mistakes to learn from but were still there when I needed advice and guidance.”

Area of Specialization

“Molecular Pathology is a small program in the UCSD School of Medicine that focuses on the molecular basis of human disease. It has since merged with the Biomedical Sciences program. I joined the program because one of its focus areas included cardiovascular diseases, a field which I knew I wanted to work in.”

Service

“In addition to doing outreach such as the CAMP symposium, I mentor for a young Latinas organization called Hermanitas [an outreach program of MANA de San Diego] and also regularly mentored undergraduates in my lab. As a minority female scientist, I feel a personal obligation to give back because I have been given so many opportunities to help me get to where I am today.”

Current and future plans

“I plan to join the lab of Neil Chi at UCSD for a postdoctoral position where I hope to increase my exposure to new research models and get more experience in teaching. I remain committed to research in the field of cardiovascular disease, development and therapeutics. My career goals are to stay involved in research with a strong focus on teaching and mentoring undergraduates. It is important to me to pull others up behind me as I advance in my career.”

“It is important to me to pull others up as I advance in my career.”

Q&A with UCSC’s Ruben Chavez
continued from page 29

switched to Electrical Engineering because I was seeking more of the intensive math that previously had intimidated me.

Please describe your tutoring experience.

Tutoring at UCSC is very rewarding because I once was a troubled student who had to drop classes, and fortunately I had people around me that made a huge difference in the long run. Knowing that I can now lend a hand to someone who is having a difficulty in his/her classes or that I show them something that they will remember beyond their classes, and if that makes even a very small difference, I find that rewarding.

How has CAMP helped you to advance in your field?

The CAMP program was another door that opened opportunities that I would not have imagined: Research Opportunities. The CAMP program gave the push I needed to enter the world of research and now, thanks to genuine interest, hard work and my PI, Prof. Shakouri, I have the opportunity to return to Germany for the summer, doing full time paid research to later start graduate studies at the University of Duisburg-Essen.

Berkeley Celebrates Outstanding Students
continued from page 41

Special Merit in Research at the 2011 CAMP Statewide Undergraduate Research Symposium.

Of her student development experiences, she says, “CAMP and NERDS have given me the opportunity to conduct graduate level research, collaborate in study groups, research conferences, and mentoring along with other underrepresented students in mathematics.”

Chavez has participated in conferences such as the California Forum for Diversity in Graduate Education, Sacramento; Infinite Possibilities, Los Angeles; and Annual “Math Fest” Conference, Portland, OR. She also attended the Annual Joint Mathematics Meeting, San Francisco, where she heard doctoral students discuss topics such as convergence methods and applications of Markov processes. Other stimulating sessions further enhanced her interest in probability theory.

Future plans include the Ph.D. in Mathematics, with an eye toward joining the professoriate. She has received an NIH Pre-Doctoral Fellowship (2011-2013) through the MBRS-RISE Program.

Q&A with UCSC’s Darrel Deo
continued from page 44

I hope to attend a renowned institution, either MIT or Stanford, in the next two years and work towards a doctorate. I chose these two schools because of the research that they conduct as well as their resources. It is a necessary step in my goal to one day run a lab of my own. I want to teach and conduct research.

Who or what inspires you?

My inspiration comes in many forms, from my family and upbringing to the people that surround us. My family has always suffered financially and as a result I was brought up with the bare necessities. I have witnessed too many of my peers growing up and following the wrong path so I promised not to stray from mine. I work as hard as I do to show them that even when you don’t have anything, you can always shape your own future and do right.
UCI’s Lucia Diaz continued from page 45

group with top scores, and praises her mom for having such a ‘practical idea.’ Soon she was programming and repairing computers.

Today, a parent’s decision for her daughter to pursue technical training is bearing fruit beyond their imaginations. Diaz has amassed awards and honors that would be the envy of any undergraduate. She says, “My mom was able to envision that technology was the key to the future.”

Her path to such prestigious awards as the Google Scholar and a Hispanic Scholarship Fund/NBA scholar is a story of inspiration. Diaz had earned a certificate in computer technology and went to work. She realized that speaking English would be a valuable tool for her future, and enrolled at Imperial Valley College, Imperial, CA. There, a staff member recognized her potential and encouraged her to pursue the Associate of Arts (AA) degree. While pursuing an AA in Mathematics (completed June 2010), one of her professors noticed the high test scores — consistently 100%. She was offered a job as a computer technician with the Imperial Valley College Information technology department. Several faculty and staff members encouraged her to apply to a four-year university.

Subsequently Diaz was admitted to UCLA with a “full ride,” but she wasn’t drawn to the Los Angeles area. She also considered San Diego State University.

“Then Dr. Sereseres appeared,” she says, “Because of him, I’m here at UCI.” During that week-long institute, she “fell in love” with UCI and applied for admission for Fall 2010.

By January 2011, Diaz was conducting research with Professor Martha Mecartney, Chemical Engineering & Materials Science, working to model the behavior of ceramics. Dr. Mecartney needed someone who knew C++ and Python languages — which happen to be Diaz’s favorite software.

Networking is a key ingredient to Diaz’s evolving success as a transfer student. Networking and initiative. “Google is my best friend,” Diaz says. She surfed the web for scholarships and diligently applied, with impressive results: University of California Regent’s Scholar ($40,000); The Henry Samueli School of Engineering Scholar ($13,500); UC-Edison Scholar ($15,000); American Association of University Women, Laguna Beach Scholar ($2,000); Hispanic College Fund Google Scholar ($10,000); Hispanic Scholarship Fund/National Basketball Association-Bacardi Gold Scholar ($10,000).

Diaz accepts the scholarships with humility and grace — and she strives to give back: she mentors CAMP students, repairs donated computer equipment for Family Project, Mexicali, Baja Mexico, volunteers in MAES (Mexican American Engineers and Scientists), coordinating the 2011 Science Extravaganza, and volunteered as a coach and referee for the 2010 FIRST Lego League Challenge, held at the Mirage Jewish Community Center of Orange County.

She says, “I want to inspire kids to join STEM fields in the future.”

Her passion involves supporting youngsters to acquire technology skills. She collects computer parts and pieces and builds computers for disadvantaged youth in her parents’ neighborhood. She explains, “I get a monitor from one person, a computer from another, bits and pieces here and there, so I recycle, reuse.”

Lucia Diaz leads by example: dedication, perseverance, and the pursuit of excellence. She is one of UCI’s rising scholars destined for STEM leadership.

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in a package of two courses for a total of eight UCSD units. The courses are taught in English, and provide excellent opportunities for one-on-one interaction with the faculty. Jimenez enjoyed World History in Turkey. Jimenez was recognized with Honorable Mention at the 2011 CAMP Statewide Undergraduate Research Symposium.

UCSC’s Ted Holman continued from page 50

tory and what lead them down this path that I too have walked. This is especially true of my students with more challenging backgrounds, such as the many who are the first person in their family to go to college. I try my best to help them not only with the science but also with the mental challenges of college.

“This is not to say that I am always successful. My lab and my research is not for everyone, but as long as the student wants to do science and is willing to work hard, I consider it my challenge to help them find a lab that does work for them.

“Research can really change the lives of these young students and it is a joy to help them achieve their goals.”

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