University of California
Louis Stokes Alliance for Minority Participation

Berkeley

Davis

Irvine

Los Angeles

Merced

Riverside

San Diego

Santa Barbara

Santa Cruz

IMPACT REPORT

1991-2011 ~ Twenty Years of STEM Success

UC and NSF Going Forward 2011-2016

UNIVERSITY OF CALIFORNIA LSAMP 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
- **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**

Creative research is one of the best ways to prepare students for persistence toward the B.S. degree and success in graduate school. CAMP efforts affirm that aspiring scientists and engineers are best developed by scientists and engineers serving as mentors who exhibit and expect scholarly excellence.

CAMP

UNIVERSITY OF CALIFORNIA
LOUIS STOKES ALLIANCE FOR MINORITY PARTICIPATION

Historical Summary

The University of California Louis Stokes Alliance for Minority Participation (CAMP) has steadfastly focused on recruitment, retention and degree completion for underrepresented minority students in STEM since inception in 1990-91. The University of California has invested a 2:1 ratio of support to NSF funding, representing unparalleled institutionalization.

For 20 years, the program has provided the tools and support for minority students to overcome persistent barriers, particularly for women and first-generation students. CAMP has engendered a welcoming campus climate, a strong sense of community, and shared purpose that encourage and motivate students to advance along the STEM degree pathway.

Over time, CAMP has become the University's premier system-wide program to raise academic performance and full participation in university life for URM students. The program has significantly impacted the culture of the university. Academic socialization together with professionalization is embedded in all student development activities, fostering a sense of belonging to the scientific community and strengthening retention.

Faculty mentored laboratory research has resulted in increased student connectivity to the discipline, subject mastery, and a strong propensity to prepare for graduate school. At least 40% of alumni continue on to graduate school. More than 4,725 students have received research support. More than 500 UC faculty have served as mentors.

CAMP's effectiveness is attributed to sustained commitment from our STEM deans, faculty, and staff, supported by the University's top-level leadership. The Alliance has fostered local, regional, and national synergistic relationships that enable an effective infrastructure within California higher education.

CAMP students are now assistant and associate professors at institutions in California and across the nation. Our community college partnerships for transfer success further expand opportunity for minority students to transition smoothly to the UC. In 2009 621 URM STEM transfers enrolled in UC. Results of our shared work are disseminated to all stakeholders through multimedia formats. The California Alliance has marshaled resources throughout a very large state and a very large university system that values diversity and excellence.

Our efforts demonstrate an investment in the future of our state and the nation. Our results are reflected in STEM innovation and creativity.

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. UC STEM baccalaureate degrees granted to underrepresented students increased by 250% since 1991, including 2,153 B.S. degrees granted in 2012. STEM enrollment has increased by 249% since 1990-91, with 15,003 enrolled in Fall 2012. The effort has been unwavering and demonstrates the effectiveness of one-on-one mentoring in retention efforts. CAMP participants are award-winning researchers and have co-authored published papers in refereed journals while still undergraduates. Student academic performance is a key indicator of retention in STEM majors, and is perhaps most visible in 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. Newly minted Ph.D.s are taking their places as faculty in UC, CSU, and four-year institutions both inside and outside California. Connecting to LSAMP institutions nationwide strengthens impact.

"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.

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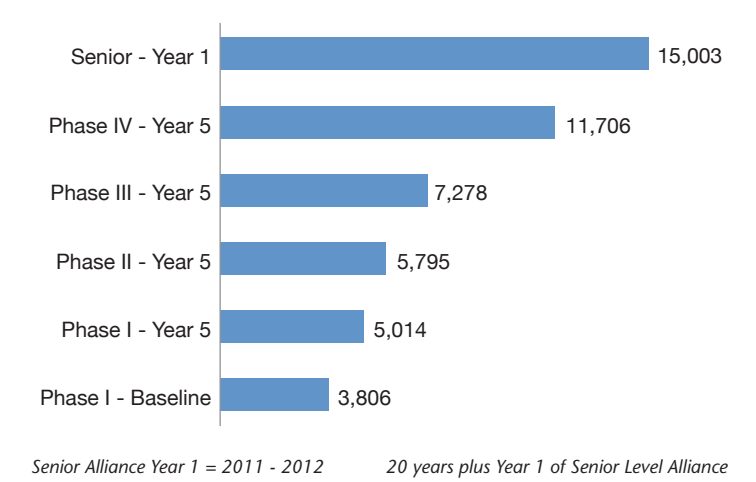
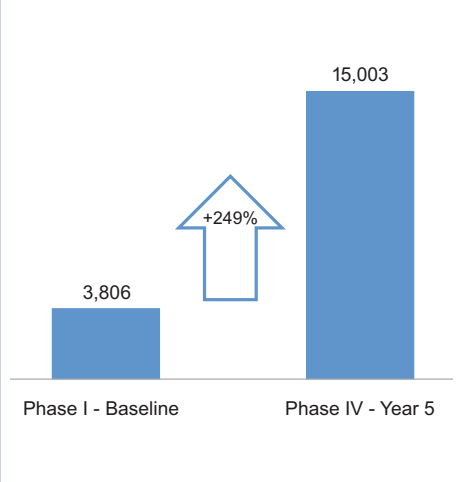
University of California Systemwide Trends in STEM Minority Enrollment and Degrees Granted



Trend in Minority STEM Enrollment

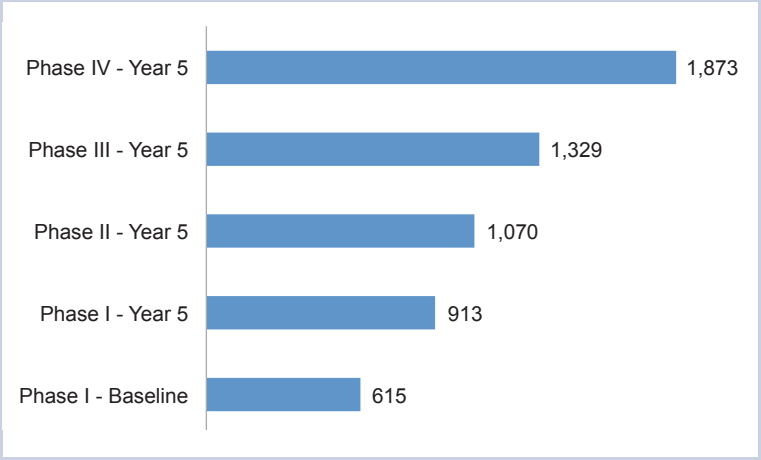


Growth in Minority STEM Enrollment

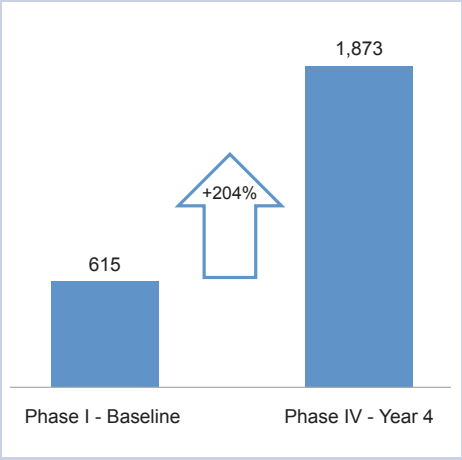
Over 20 years, UC Systemwide URM STEM enrollment has increased by 249% (through Fall 2012) and B.S. degree production for URM STEM majors has increased 250% (through 2011-12).

CAMP Overarching Goal: Significantly increase the number of underrepresented minorities completing baccalaureate and graduate degrees in science, technology, engineering and mathematics (STEM) and to prepare high caliber professionals for STEM careers in academia and in the private sector.

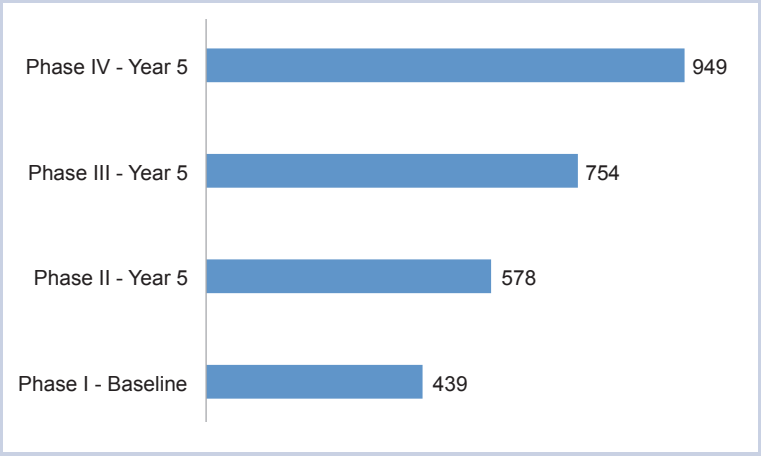
Transformation happens one student at a time as they are exposed to and supported through the realization of a STEM degree.



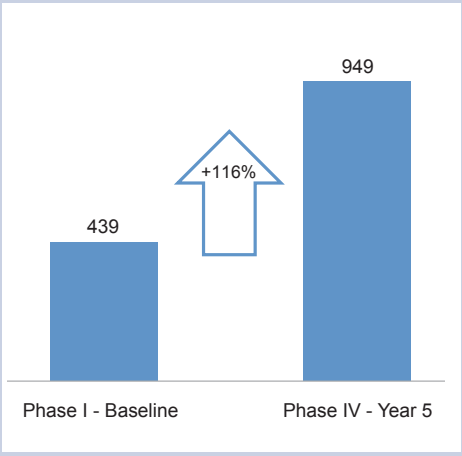
Cumulative Trend in Minority B.S. Degrees



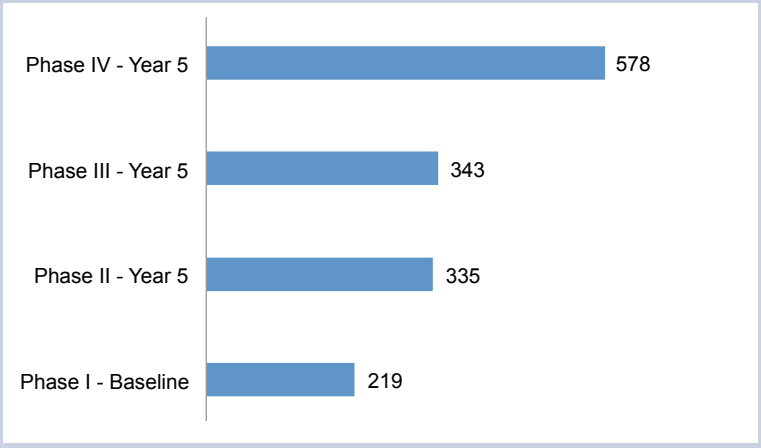
Growth in Minority B.S. Degrees



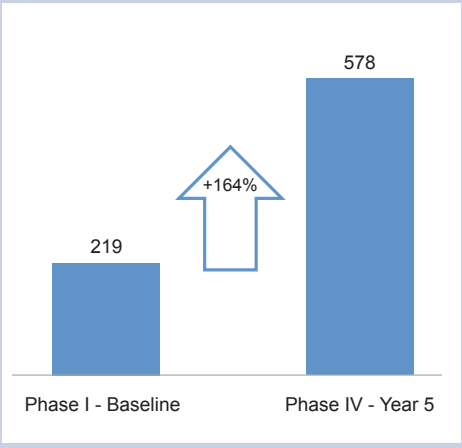
Cumulative Trend in Minority M.S Degrees



Growth in Minority M.S Degrees



Cumulative Trend in Minority Ph.D. Degrees

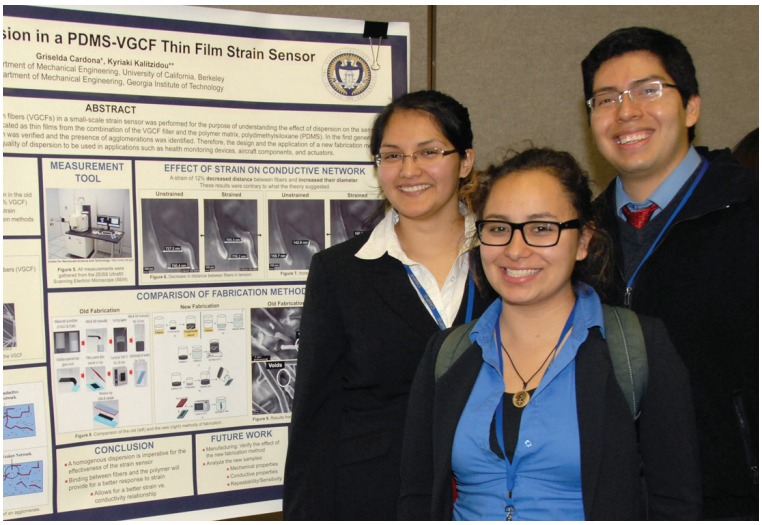


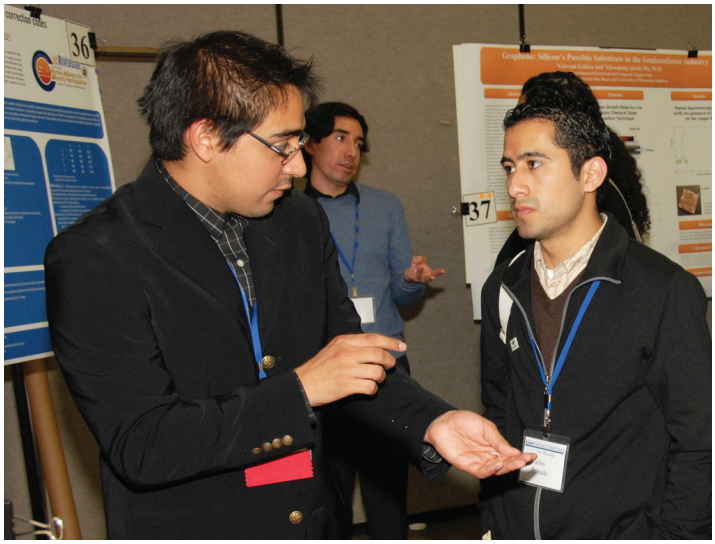
Growth in Minority Ph.D. Degrees

NOTE: For all charts, Phase I Baseline Year: 1990-91; Phase IV Year 5: 2010-11.

CAMP PRACTICES AND ACTIVITIES YIELD RESULTS

Best Practices Have Proven Impact

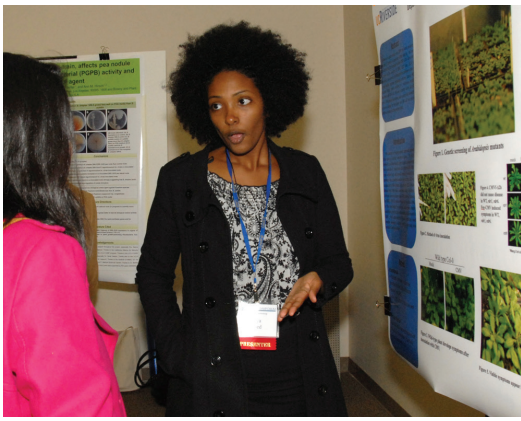


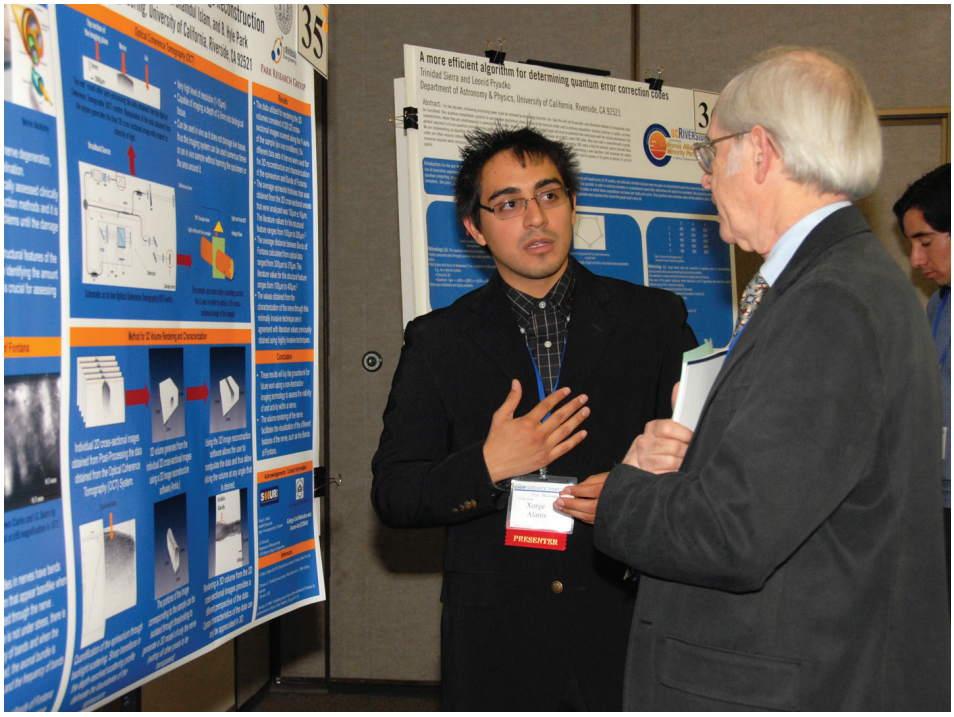


- **Summer Bridge programs** for entering freshmen
- **Orientation and smooth transition** for Community College transfers
- **Welcoming campus environment** and shared sense of purpose
- **Development of written and oral** communication skills
- **Persistence in STEM majors** through academic, social and professional activities and interaction with the scientific community
- **Support for engaging** in laboratory research fellowships
- **Opportunities for summer internships** and research
- **Professional development** through leadership in campus activities, workshops and panels, and in student chapters of science and engineering organizations
- **Faculty mentoring** / social and professional settings
- **Peer Counseling** / Peer tutorials and study break dinners!
- **Preparation of a scientific poster** or oral presentation based on lab research and co-authorship of paper or abstract
- **Student tracking** through the B.S. degree and graduate school
- **Graduate school preparation**, GRE, personal statement, interview skills
- **UC Systemwide** undergraduate and graduate networking
- **Statewide research symposium**, encouraging first-time presenters
- **Documentation of program** through publications and newsletters
- **Statewide networking** for all participants

CAMP supports undergraduate research experiences that build discipline-based knowledge, laboratory skills, and technical writing proficiency, all of which prepare students for graduate school.

What is transformative about CAMP is the creation and maintenance of a robust network of scholarship and achievement among the underrepresented STEM majors across the most significant public university system in the country.





UC Partners Maintain Records of Activities, Honors, and Progress Toward the Baccalaureate and Graduate Degrees

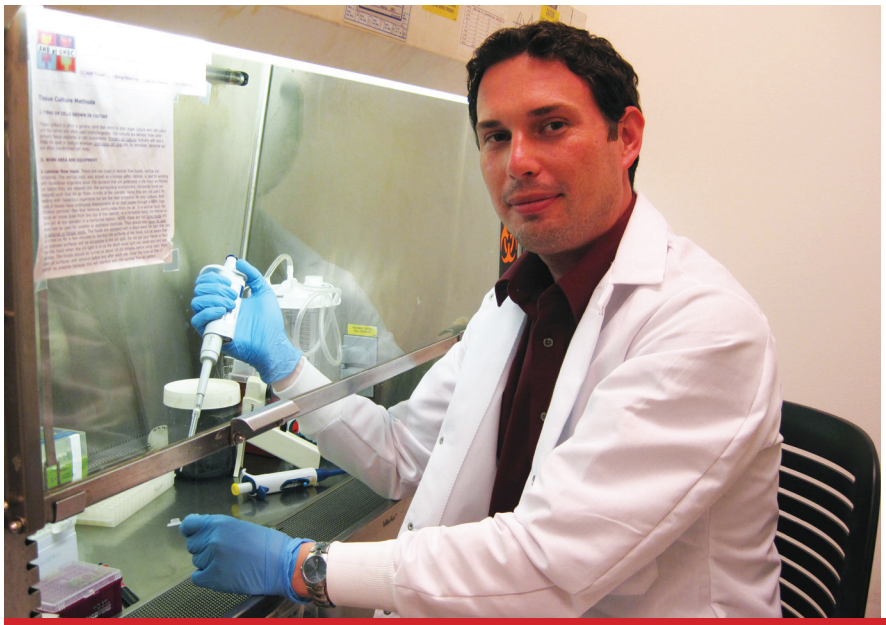
Hundreds of students have similar records of achievement at sister campuses. Following is a random sampling of student accomplishments at UC San Diego.

Hared Ochoa
- B.S Mechanical Engineering, Expected June 2011
- McNair Scholar 2009-2010
- Ph.D Program in Mechanical Engineering at UCLA, Fall 2011

Maria Borja
- Transferred to UCSD from Long Beach City College
- B.S Mechanical Engineering, Expected June 2011
- McNair Scholar 2008-2009
- Ph.D Program in Engineering Sciences (Mechanical Engineering) UCSD, Fall 2011

Jonathan Okerblom
- Transferred to UCSD from Allan Hancock College
- B.S Physiology & Neuroscience, Expected September 2011
- IMSD Scholar
- CAMP Symposium 2010 Honorable Mention in the Biological/Life Sciences category
- Ph.D Program in Biomedical Sciences at UCSD, Fall 2011

Angela Brooks
- B.S. Biology: Bioinformatics, June 2005
- Ph.D. Molecular and Cell Biology with Designated Emphasis in Computational and Genomic Biology, UC Berkeley, May 2011
- UC LEADS 2002-2004; 2005-07, Chancellor's Fellowship for Graduate Study
- 2007-2010, National Science Foundation Graduate Research Fellowship
- Fall 2011: Postdoctoral Fellow with Matthew Meyerson at the Broad Institute/Dana Farber Cancer Institute



UC San Diego BD Fellow, Sergio Sandoval, Ph.D. Candidate, Bioengineering

Joshua Munoz
- Transferred to UCSD from San Diego Mesa College
- B.S Mechanical Engineering, Expected June 2011
- McNair Scholar 2008-2009
- Ph.D Program in Mechanical Engineering at Virginia Tech, Fall 2011

Eva Gabriela Baylon
- Transferred to UCSD from San Diego City College
- B.S Mechanical Engineering, September 2010, Honor: Cum Laude
- McNair Scholar 2008-2009
- SACNAS 2009 Award Winner in the Engineering category
- M.S/Ph.D Program at Stanford

in Mechanical Engineering, Fall 2011
- Awarded 2011 NSF Graduate Research Fellowship

Christopher Theissen
- B.S Physics with Specialization in Astrophysics, June 2010
- B.A. Mathematics/Applied Science, June 2010
- Ph.D Program in Astronomy at Boston University, Fall 2011

Demetrius DiMucci
- Transferred to UCSD from Palomar College
- B.S Molecular Biology, expected June 2011
- IMSD Scholar
- CAMP SRP 2010
- SACNAS 2010 Award Winner
- Ph.D Program at Sloan Kettering Institute in Biomedical Sciences, Summer 2011

Wisler Charles
- Transferred to UCSD from Grossmont Community College
- B.S Biochemistry & Cell Biology, December 2010
- IMSD Scholar
- CAMP Symposium 2010 Honorable Mention in the Biological/Life Sciences category
- Ph.D Program in Immunology at Cornell University, Fall 2011

Carolina Margarito
- B.S Structural Engineering, September 2009
- CAMP SRP 2009
- M.S Program in Earthquake Engineering at UCLA. Fall 2011

Jessica Craft
- Transferred to UCSD from Palomar College
- B.S. Ecology, Behavior and Evolution, June 2010
- Ph.D. program in Environmental Science, Policy and Management at UC Berkeley, Fall 2011
- Funding for grad school: UC Berkeley Chancellor's Fellowship
- CAMP SRP 2010
- CAMP Symposium 2010 Award Winner in the Biological/Life Sciences
- CAMP Representative in Washington, DC, July 2010

Espoir Kyubwa
- B.S. Bioengineering: Pre-Medical, June 2009, Honor: Cum Laude
- Amgen SRP 2007
- M.S. program in Bioengineering at UCSD in Fall 2009;
- M.D./Ph.D. program at UCSD, Fall 2010

Fabiola Munoz
- B.S. Structural Engineering, June 2009
- M.S. Structural Engineering, UCSD, December 2010

Marcelino Ascensio
- B.S. Structural Engineering, September 2008
- M.S. Program in Civil Engineering with an Emphasis in Structural Engineering at Cal Poly Pomona, Fall 2011

Mayra Vega
- Transferred to UCSD from Contra Costa College
- B.S. Environmental Engineering, Expected, Summer 2011
- M.S. Program in Mechanical Engineering at UC Davis, Fall 2011
- CAMP SRP 2010
- Gordon Scholar (UCSD's School of Engineering)

Jorge Perez
- Transferred to UCSD from Cerritos College
- B.S. Earth Sciences, Expected, June 2011
- M.S. program in Earth Sciences at Scripps Institution of Oceanography (SIO) Fall 2011

Maryan Rizk
- B.S. Biochemistry and Cell Biology, Expected June 2012
- BS/MS program in Biological Sciences at UCSD, Winter 2012
- McNair Scholar 2009-2010

Cristiane Jimenez
- Transferred to UCSD from San Diego Mesa College
- B.S. Ecology, Behavior and Evolution, Expected June 2012
- BS/MS program at UCSD under the guidance of Professor Stuart Sandin, Fall 2011

Omo Igbinedion
- B.S. General Biology, June 2010
- M.S. program in Microbiology and Immunology at the University of Southern California (USC) Fall 2011
- Genentech SRP 2008; SACNAS Award Winner, 2008

Glorianna Caves
- B.S. Biochemistry and Cell Biology, Expected, June 2011
- M.S. program in Forensic Science at George Washington University. Fall 2011

Steven Cardenas
- Transferred to UCSD from Pasadena City College
- B.S. Biochemistry and Cell Biology, Expected, June 2011
- Ph.D. program in Biosciences at UC Irvine, Fall 2011
- IMSD Scholar

Carla Cervantes
- B.S. Biochemistry/Chemistry, June 2003, Honor: Cum Laude
- McNair Scholar 2000-2001
- M.S. Chemistry, UCSD, June 2005
- Ph.D. Chemistry, UCSD. June 2010
- McNair Scholar 2001-2002
- Award Winner in the Biological/Life Sciences at CAMP Symposium 2003

Isoken Airen
- B.S. Chemical Engineering, September 2004
- Ph.D. Chemical Engineering, Stanford, June 2011
- UC LEADS 2002-2004

CAMP PARTNERS IMPACT TRANSFER SUCCESS

Reinventing California: Community College Engagement Equals Transfer Success

CC2U (Community College to University) has been working to connect San Diego community college students to UCSD for about five years. The UCSD CAMP program has been 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."

> *"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."*
>
> —Dr. David Artis

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

Mendocino College
Yuba College
Folsom Lake College
Lake Tahoe Community College
American River College
Sacramento City College
Cosumnes River College
Napa Valley College
Los Medanos College
Diablo Valley College
College of Marin
Contra Costa College
Berkeley City College
Laney College
College of Alameda
City College of San Francisco
Merritt College
Skyline College
College of San Mateo
Chabot College
Cañada College
Ohlone College
Foothill College
Mission College
DeAnza College
West Valley College
Santa Rosa Junior College
Solano Community College
San Joaquin Delta College
Columbia College
Los Positas College
Modesto Junior College
San Jose City College
Merced College
Evergreen Valley College
Cabrillo College
Gavilan College
Hartnell College
Monterey Peninsula College
Fresno City College
Reedley College
West Hills College Lemoore
College of the Sequoias
West Hills College Coalinga
Porterville College
Cerro Coso Community College
Bakersfield College
Cuesta College
Taft College
Allan Hancock College
Santa Barbara City College
Barstow College
Chaffey College
Victor Valley College
San Bernardino Valley College
Crafton Hills College
Riverside Community College
Mt. San Jacinto College
Copper Mountain College
College of the Desert
Palo Verde College
Los Angeles City College
Los Angeles Valley College
Los Angeles Pierce College
Moorpark College
Ventura College
Santa Monica College
Oxnard College
West Los Angeles College
Los Angeles Trade-Tech College
Los Angeles Southwest College
El Camino College
Compton College
Los Angeles Harbor College
Long Beach City College
Golden West College
Coastline Community College
Orange Coast College
Antelope Valley College
College of the Canyons
Los Angeles Mission College
Glendale Community College
Pasadena City College
Mt. San Antonio College
Citrus College
Rio Hondo College
East Los Angeles College
Cerritos College
Fullerton College
Cypress College
Santiago Canyon College
Saddleback College
Irvine Valley College
Santa Ana College
MiraCosta College
Palomar College
San Diego Miramar College
SAN DIEGO MESA COLLEGE
Grossmont College
San Diego City College
Cuyamaca College
Southwestern College
Imperial Valley College

UC PARTNERS HOLD REGIONAL OUTREACH

UC Davis Campus Collaboration Yields STEM Transfer Day

On November 5, 2010, UC Davis welcomed 76 potential STEM transfers to the campus for a day of motivational presentations and interaction with undergraduates. The students represented 13 California Community Colleges, including Contra Costa College which has an NSF Center for Excellence program. Davis expanded outreach beyond the immediate region of the campus. New colleges invited to participate in 2010 include Gavilan College in Gilroy, Hartnell College in Salinas, Los Medranos College, Pittsburgh, and Napa Valley College, Napa.

Transfer Day is supported by a faculty member's NSF CAREER grant, and staffing support is a campus collaboration spearheaded by the Undergraduate Research Center, Office of the Provost.

Participants got a taste of university level work and the challenge of selecting their STEM major. In the career workshops, faculty shared their perspectives in the various science and engineering fields. The resource fair activity featured student organizations, including the Society for the Advancement of Chicanos and Native Americans in Science, SACNAS chapter, and CALESS (Chicano and Latino Engineers and Scientists Society). Students enjoyed hands-on activities in tours and demonstrations offered by various research units, including the Center for Biophotonics, Science and Technology. CAMP students shared their experience as transfer students to UC Davis, and provided community college partners with a sense of the research opportunities awaiting them when they enroll on campus. The community college students were primed for a smooth transition to the university. Their now familiar faces are anticipated on campus within the next year or two.

CAMP students shared their experiences as transfer students and prospective California Community College students were primed for a smooth transition to the university.

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.

CORPORATE SUPPORT FOR NEW STEM TRANSFERS

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!"

LSAMP BD Impacts Ph.D. Achievement

CYNTHIA PERRY, PH.D., PABLO GARCIA-REYNAGA, PH.D., JAMES MARSHEL, PH.D., ALICIA GAMEZ, PH.D., ROBERTO TINACO, PH.D., ANTHONY N. FARINA, PH.D., ESMERALDA RUIZ, PH.D., MANUEL RUIDIAZ, PH.D., AND KRISTINA POHAKU MITCHELL, PH.D.

Bridge to the Doctorate Cohort III Sees Nine UC San Diego Students Complete Ph.D. in 2010-11

CYNTHIA PERRY, PH.D.

LSAMP-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, Ndl1, 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.

PABLO GARCIA-REYNAGA, 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. 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.

JAMES MARSHEL, PH.D.

UC San Diego LSAMP-BD Fellow James H. Marshel completed the Ph.D. in Neurosciences, August 2011. Marshel's doctoral committee included Ed Callaway (advisor), Terry Sejnowski, Massimo Scanziani, Jeff Isaacson, and Mark Ellisman. Marshel will conduct postdoctoral research in neural circuits.

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

In 2005, Marshel completed degrees in Molecular and Cell Biology and Psychology at UC Berkeley.

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.

ROBERTO TINOCO, PH.D.

Roberto Tinoco, Ph.D. Biology, defended his dissertation in July 2010. The Ph.D. was conferred September 2010. He is the first member of the Bridge to the Doctorate cohort at UCSD to complete the Ph.D. The title of his dissertation is "Cell-intrinsic Transforming Growth Factor-beta Signaling Mediates Virus-specific CD8+ T cell Deletion and Lymphocytic Choriomeningitis Virus Persistence in vivo." Tinoco's advisor was Professor Elina Zuniga in the Department of Biological Sciences. He has a postdoctoral fellowship at the Burnham Medical Research Institute in La Jolla, CA. Dr. Tinoco is an alum of UC Irvine, where he earned a B.S. in Neurobiology in 2005.

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, com-

pleting 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, 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. "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."

ESMERALDA RUIZ, PH.D.

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 Molelcular 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 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.

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.

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 speakers 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. 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.

JORGE ROBLES, PH.D.

UC Davis BD Fellow Completes Ph.D. in Physics

BD Fellow Jorge Robles completed his thesis, "Z boson measurement in the dimuon channel in PbPb collisions with the CMS experiment" in Fall 2011. Robles conducted his research at CERN, the European Organization for Nuclear Research, which has the world's largest and most complex scientific instruments used to study the basic constituents of matter.

His graduate committee consisted of Dr. Manuel Calderon De La Barca Sanchez (chair of committee), Professor Nuclear Physics, Group on Relativistic Heavy-Ion Collisions; Dr. Daniel Cebra (experimental nuclear physics); and Dr. Peter Jacobs (Energy Efficiency Center).

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.

WENDELL-LAMAR BLACKWELL, PH.D., JOSE ROMERO-MARIONA, PH.D., LUIS A. RODRIGUEZ, PH.D., KIMBERLY ROMERO ROSALES, PH.D., AND MELISSA R. PRADO, PH.D.

UC Irvine BD Fellows Realize Goal: Completion of the Ph.D.!

Dr. Lamar Blackwell, newly minted Ph.D., celebrates the doctoral hooding ceremony with Dr. Bill Cooper, UCI School of Engineering and Director of the Urban Water Research Institute.

Discipline, determination, talent, and strong work ethic distinguish UC BD Fellows completing the Ph.D. in STEM fields.

WENDELL-LAMAR BLACKWELL, PH.D.

BD Fellow Lamar Blackwell defended his doctoral dissertation in May 2011, completing the Ph.D. in Cell and Developmental Biology. His UCI graduate advisor was Dr. Lee Bardwell. Blackwell's dissertation focused on the role that Mitogen-Activated Protein Kinases (MAPK) play in translating extracellular signals into specific changes in intracellular physiology.

Blackwell won fellowships from the National Science Foundation and the Howard Hughes Medical Institute.

He is a postdoctoral scientist at Cedars-Sinai Medical Center, Los Angeles, CA. He is very interested in the interface of biology, education and public engagement, and in introducing graduate research into K-12 classrooms.

Blackwell was an active and engaged graduate student. As a BD Fellow, he participated in professional development and social activities, and became a regular participant on the graduate student panel at the CAMP Statewide Undergraduate Research Symposium.

Blackwell is an alumnus of UC Riverside, having completed a B.S. degree in biochemistry in 1999. He pursued postbaccalaureate coursework at CSU Fullerton in cell and developmental biology. He participated in California LSAMP's BD Cohort II.

MELISSA R. PRADO, PH.D.

Melissa R. Prado, UCI Bridge to the Doctorate Fellow, completed the Ph.D. in Physical Chemistry June 2010. She earned a B.S. in Chemistry from UC Irvine, 2004, and was admitted to the doctoral program in chemistry. Prado's advisor, Dr. Kenneth Janda, Professor of Chemistry and Dean, School of Physical Sciences, officiated at the hooding ceremony.

Prado was first author on a paper with Dr. Janda and colleagues in the Janda Group, entitled, "Gas Clathrate Hydrates Experiment for High School Projects and Undergraduate Laboratories," Journal of Chemical Education, Vo. 84, No. 11 November 2007.

Dr. Prado is currently working at UCLA in the Environment, Health, and Safety department, where she is a Laboratory Safety Coordinator.

Dr. Melissa Prado with her advisor Dr. Kenneth Janda, Interim Dean of Physical Sciences, UC Irvine

LUIS A. RODRIGUEZ, PH.D.

Luis A. Rodriguez, Ph.D., UCI BD Fellow, completed a doctorate in Mechanical Engineering in 2010. Rodriguez earned a B.S. in Mechanical Engineering at UC San Diego (2001), and enrolled in the engineering graduate program in Fall 2004. Professor Athaniosis Sideris served as Ph.D. advisor. Rodriguez defended his dissertation, "Adaptive Discretization and Sequential Linear Quadratic Strategies in Optimal Control," on August 31, 2010. He will be profiled in a future issue of the Proceedings & Profiles.

KIMBERLY ROMERO ROSALES, PH.D.

Kimberly Romero Rosales, Ph.D., UCI BD Fellow, completed the doctorate in Developmental and Cell Biology, August 2010. Romero's advisor was Dr. Aimee Edinger, and Romero completed all of her graduate work in Edinger's lab in the Department of Developmental and Cell Biology. The title of Romero's dissertation, "Nutrient Transporter Regulation: A Means to Starve Cancer Cells to Death." She is currently working for the UCI Minority Science Program in the School of Biological Sciences, and is considering options for a postdoctoral fellowship.

JOSE ROMERO-MARIONA, PH.D.

Jose Romero-Mariona, Ph.D., UCI BD Fellow, received the doctoral hood in ceremonies on the Irvine campus, June 2010. Dr. Romero-Mariona is a computer scientist who established academic excellence as a UCI undergraduate and then as a Bridge to the Doctorate Fellow. He has presented his research in cyber security all over the world, including the UK and Asia. Dr. Romero Mariona sends his good wishes to all CAMP-ers and new BD Fellows. He sums up his new career in the following:

"My current position is as a research and development scientist for the Space and Naval Warfare Systems Command (SPAWAR) Pacific based in San Diego. SPAWAR is the premier research laboratory for the U.S. Navy. In addition, SPAWAR is the Navy's technical authority and acquisition command for C4ISR (Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance) and space systems. Within the organization, I look at the future of cybersecurity by researching into upcoming technologies as well as their impact in defending our country."

Dr. Jose Romero-Mariona, center, celebrates completion of his Ph.D. with his graduate advisor, Dr. Debra Richardson, left, and Dr. David Redmiles, Professor and Chair, Department of Informatics, Donald Bren School of Information and Computer Science.

Women in Science

MELANIE D. ZAUSCHER, PH.D. CANDIDATE, AND KIMBERLY ROMERO ROSALES, PH.D.

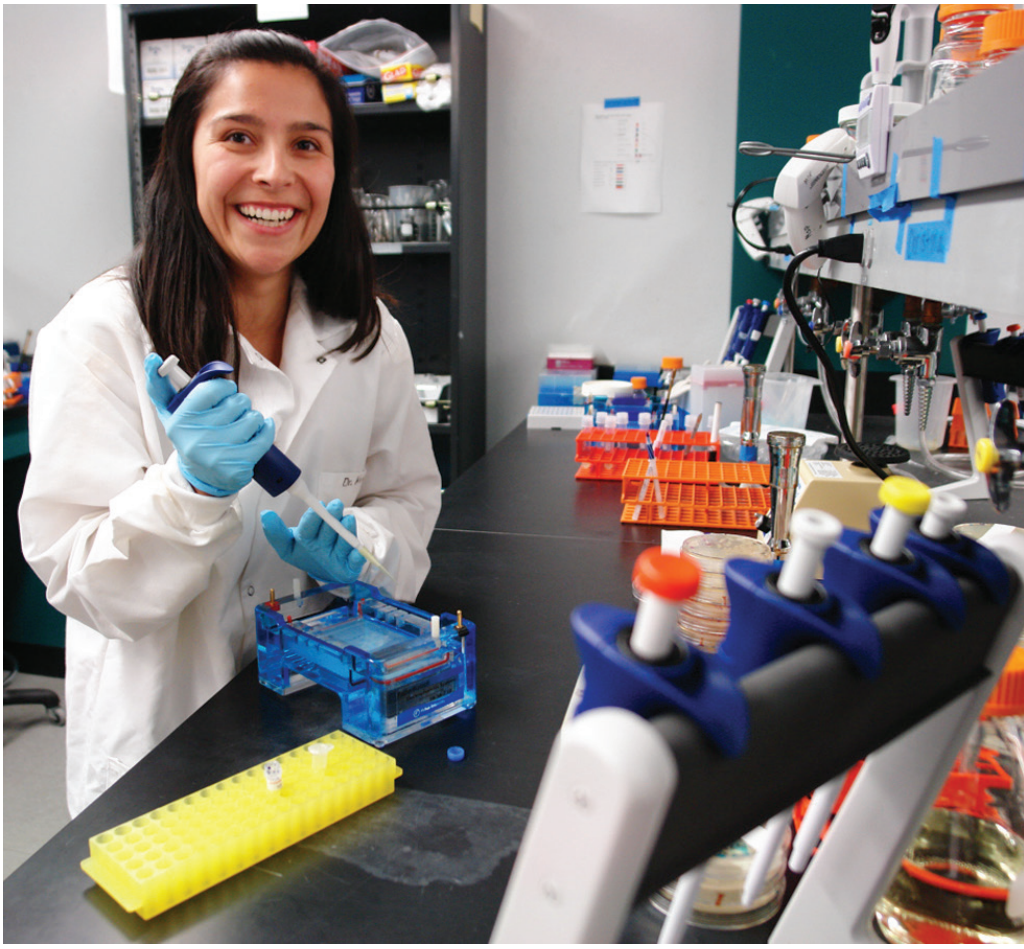
UC Bridge to the Doctorate: Outstanding Women in STEM

MELANIE D. ZAUSCHER

Melanie D. Zauscher is a doctoral candidate in Mechanical Engineering at the University of California, San Diego (UCSD), anticipating the Ph.D. June 2012. She investigates environmental, health, and climatic effects of particulate matter, and has developed a method for determining composition of ultrafine aerosol particles. She is the founder and co-president of Biofuels Action and Awareness Network at UCSD, through which she created the Greenline Biodiesel Shuttle project. While at the Center for Energy Research (2005-2007) her work focused on comparing the combustion of biodiesel to petrodiesel. She has conducted research at INSTAAR, University of Colorado, Boulder, measuring stable isotopes of greenhouse gases and studied marine chemistry at the Scripps Institution of Oceanography, La Jolla, CA, where she quantified isotopic composition of nitrous oxide. She was awarded an NSF-

In recognition of her green energy work, Zauscher received the UCSD 2009 Graduate Student Sustainability Award.

Bridge to the Doctorate Fellowship in 2005. She helped design and install a biodiesel processor in Bogota, Columbia, and taught locals how to make biodiesel. In recognition of her green energy work, Zauscher received the UCSD 2009 Graduate Student Sustainability Award. She is a member of Phi Beta Kappa Society and has received a NASA Fellowship as well as awards from the Ronald E. McNair Postbaccalaureate Achievement Program and SACNAS best poster. She is first author on four refereed journal articles and has given numerous scholarly presentations, most recently at the American Geophysical Union Fall Meeting, San Francisco, and at the 29th Annual Conference of the American Association for Aerosol Research, Portland, both in 2010. Her paper, "Approach for measuring the chemistry of individual particles in the size range important for cloud formation," recently appeared in the *Journal of Analytical Chemistry*, 2011, 83 (6), 2271-2278.



Dr. Romero's work as an undergraduate research mentor has inspired and motivated students to pursue graduate education.

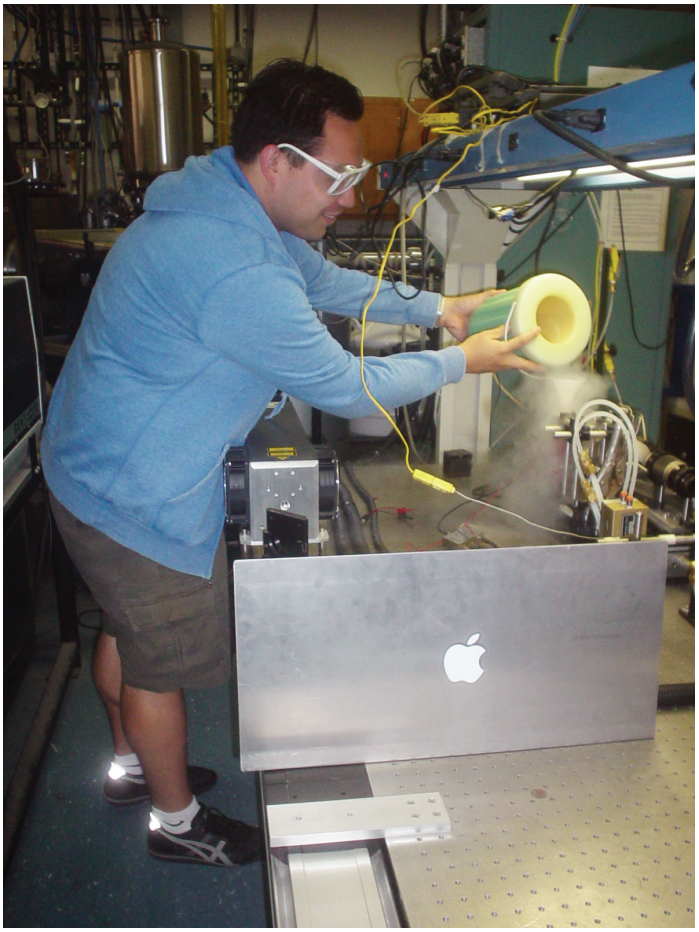
KIMBERLY ROMERO ROSALES, PH.D.

Kimberly Romero Rosales completed the Ph.D. in Biological Sciences at the University of California, Irvine, August 2010. She was an NSF Bridge to the Doctorate Fellow (2004-2006), completing her graduate work in the lab of Dr. Aimee Edinger. Her dissertation was titled "Nutrient Transporter Regulation: A Means to Starve Cancer Cells to Death." She has served as an undergraduate research mentor and teaching assistant for Biodiversity and Conservation at UCI and for Genetics at the Howard Hughes Medical Institute, Teaching Fellows Program, UCI. Dr. Rosales presented at the Keystone Symposium on Cell Death and Cellular Senescence (2008). Honors include the Dr. William F. Holcomb Fellowship, UC Irvine School of Biological Sciences and the NIH Ruth L. Kirschstein Minority Predoctoral Fellowship. Her work as an undergraduate research mentor has inspired and motivated students to pursue graduate education. Dr. Rosales earned a B.S. in Biological Sciences from UC Irvine, where she conducted research in the laboratory of Dr. Bruce Blumberg, Department of Developmental and Cell Biology. Additionally, she conducted research in genetics at the University of Utah through the Summer Research Opportunities Program. Dr. Rosales is pursuing her career goal as a research scientist. She is currently a research specialist for the Minority Science Programs in the laboratory of Dr. Luis Mota-Bravo, UCI School of Biological Sciences. She is author of seven refereed journal papers, with four as first author, including a recently submitted paper, "Pharmacologic down-regulation of nutrient transporter proteins selectively kills anabolic cells *in vitro* and *in vivo*." In 2009, another paper for which she was first author, "Rab7 Activation by Growth Factor Withdrawal Contributes to the Induction of Apoptosis," was e-published ahead of print in Mol Biol Cell (April 22, 2009).

BD Fellows Pursue Ph.D.

RAYMOND VALDES AND STEPHANIE MENDES

Teaching and Research Promise Rewarding Careers in the Professoriate for BDs



"The BD really is the perfect opportunity for aspiring first generation minority researchers. . . . The BD really is the perfect opportunity for aspiring first generation minority researchers."

RAYMOND VALEDZ

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 and continues his engagement at UCSB. He has served on the graduate student panel at the CAMP Statewide Undergraduate Research Conference, and shares his graduate student experience thus far.

Below, Valdes gives his perspective on several areas, including the first year in graduate school, the impact of being part of the BD cohort, some initial challenges he encountered as a graduate student, and the professional (and moral) support he receives from his faculty mentor.

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. It has helped me process my experiences and keep me happy as I tread down a new path. The BD really is the perfect opportunity for aspiring first generation minority researchers.

STEPHANIE MENDES

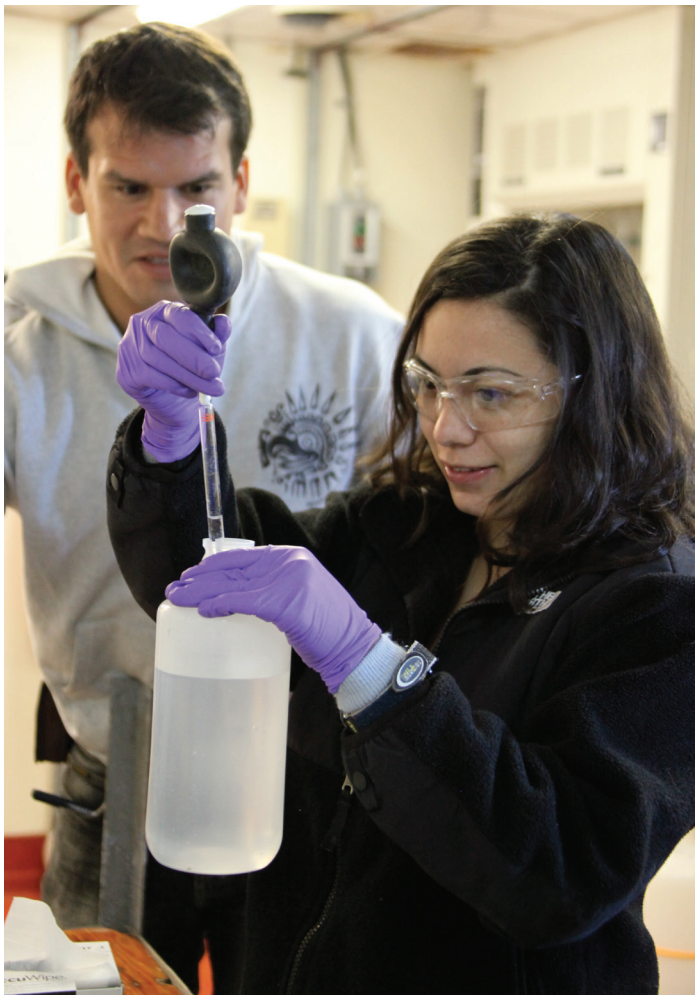
Stephanie Mendes is entering her third year of doctoral studies at UC Santa Barbara. Her research, focused on a range of Earth Science and Marine Geochemistry topics, includes such areas as monitoring water temperature in hydrothermal systems and microbial consumption of natural gases.

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.

ADVENTURE IN INDIA

UC Berkeley's Lisa Veliz: Engineer on a Worldwide Mission

"It is my goal to reinvent natural resource management."

Lisa Veliz reached a life-changing decision at the tender age of 12: She was going to save the environment. It goes to show how much influence one impactful experience can have on a young life. A one-week outdoor education program inspired her and set the direction for her college and career goals. In Summer 2010, Lisa received support from the Blum Center for Developing Economies, a new foundation on the UC Berkeley campus that allows students to participate in international work through studying global poverty.

She completed a B.S. degree in Civil & Environmental Engineering in December 2010, and has applied to several master's programs in sustainable development, with an emphasis on blending science with policy and development practice.

"I understand the importance of collaboration and sustained efforts across a wide spectrum of people and disciplines to achieve such progress."

Lisa says, "Until now, not much has changed about the ambition of my lifelong goals, but my outlook and approach have since been reasonably refined. As much as I would like to be the primary pioneer in environmental preservation around the world, I understand the importance of collaboration and sustained efforts across a wide spectrum of people and disciplines to achieve such progress."

She adds, "it is my personal goal to contribute to the larger effort of collaborating with other international entities, both public and private, to reinvent natural resource management with a focus on sustainability and equality."

Lisa documented her experience in her blog, www.risa-travels.blogspot.com, complete with colorful and candid observations of the culture and the country. In her blog, Lisa shared her goals and ideas on how to meet them. She reminds us what is indeed possible with conviction, motivation, and action.

RESEARCH EXPERIENCE IN GERMANY

UC Santa Cruz Electrical Engineering Alum Ruben Chavez has Life-Changing Experience

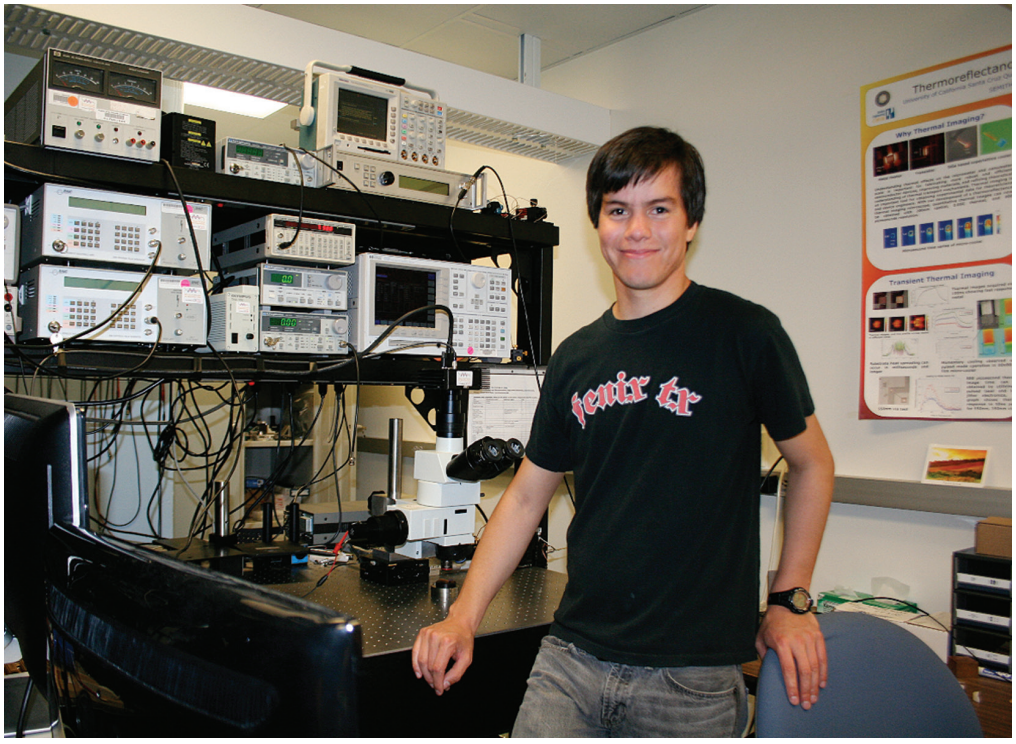
Ruben Chavez, Class of 2011, completed a B.S. in Electrical Engineering and has plans for a bright and rewarding future. Chavez transferred from Cuyamaca College, El Cajon, CA, with an enrollment of more than 9,000 students. Cuyamaca is one of the fastest growing community colleges in the nation, anticipating 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.

"I had the opportunity to work with a multi-disciplinary team of engineers. 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."



GERMAN SUMMER ABROAD

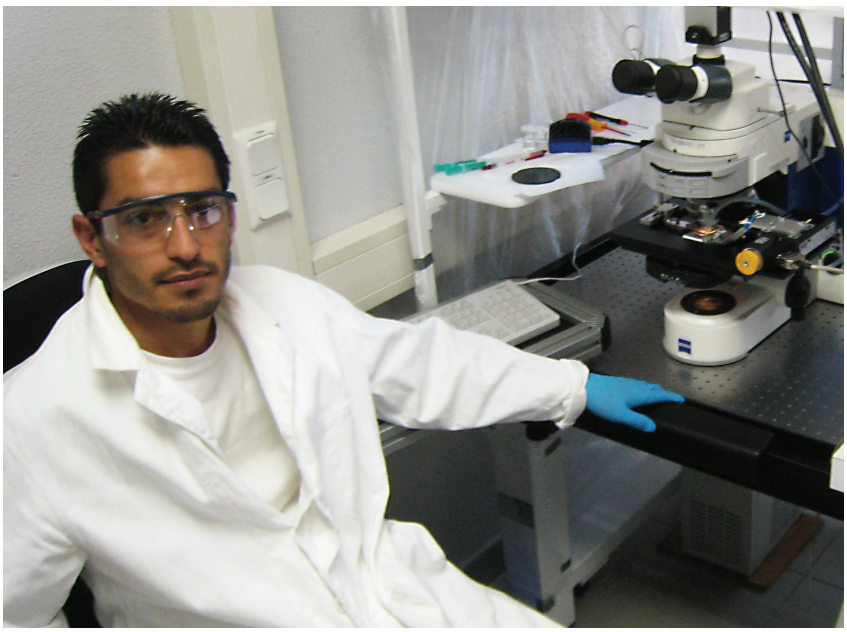
UC Santa Barbara's Andres Munoz: Mechanical Engineering Major Experiences International Research

UCSB's Andres Munoz was among 14 students who were selected Summer 2010 to participate in the Cooperative International Science and Engineering Internships (CISEI) program. CISEI is a collaborative undergraduate intern exchange program between UC Santa Barbara's International Center for Materials Research and partner institutes abroad. Students participate in mentored research internships in the broad field of interdisciplinary materials science at locations around the world, including Ireland, Chile, China, Germany, Netherlands, and England.

At the Leibniz Institute for New Materials, Saarbruecken, Germany, Munoz was mentored by Professor Tobias Kraus in his work on convective assisted depositions of two-dimensional arrays of micro- and nano-particles. During his stay, Munoz took several trips around Europe including a visit to Paris and the Eiffel tower.

One trip in particular was to visit his friend Dirk Balkenende in Eindhoven. Both met the previous summer at UCSB. Munoz was participating in the summer CAMP program and Balkenende was visiting from the Eindhoven University of Technology, Netherland and participating in CISEI. The unique experience of meeting and interacting with international students inspired and motivated Munoz to apply to the CISEI program. Munoz plans to present his work at the 2010 Society of Hispanic Professional Engineers in Cincinnati, OH and the 2011 CAMP Statewide Conference, Irvine, CA.

A CAMP research intern during the summer and school-year 2009-2010, Munoz worked under the mentorship of UCSB Professor Michael Chabinyc in the Materials Department on coating processes for organic solar cells. He has had several opportunities to present the research at national and statewide conference, thus building his presentation and communication skills. Munoz plans to complete a B.S. in Mechanical Engineering in Spring 2011 and continue to graduate school.



Meeting and interacting with international students inspired and motivated Munoz to apply to the CISEI program. He presented his work at the 2010 Society of Hispanic Professional Engineers in Cincinnati, OH and presented at the 2011 CAMP Statewide Symposium, Irvine, CA.

THREE MONTH SOJOURN IN ARGENTINA

UC Irvine's Julie Cojulun: Alum Treks to Glaciers, Tropical Forests, Waterfalls

UCI's Julie Cojulun, Class of 2010, will complete a B.S. in Aerospace Engineering having achieved a remarkable record of activities, honors and awards along the way. Surely one of the major highlights was her experience at the University of Buenos Aires in Summer 2009.

Cojulun was among 20 students who had been selected by Dr. Randy Duran, P.I. for the new LSAMP International REU (Research Experiences for Undergraduates) program at the University of Florida, which offered research opportunities in exciting locations around the world, including South America. In Buenos Aires, Professor Damian Scherlis mentored Cojulun in her work on energy calculations and molecular dynamics simulations. During her stay, she took several treks around the country to see the natural wonders like the glaciers near the southern tip of Argentina. Upon completion of her project, she presented at the International Workshop on Nanomaterials and Functional Materials held at the University of Campinas, Brazil, in August 2009. Subsequently, she presented at SACNAS 2009 in Dallas, winning Best Poster, and she has plans for the AAAS 2010 Annual Meeting in San Diego.

A CAMP Summer Scholar in 2008, Cojulun worked with Dr. Derek Dunn-Rankin and a team of graduate students in the Department of Mechanical and Aerospace Engineering on an air preheater for a turbine burner. She had several opportunities to present the project at national conferences, building her strengths and skills which supported her successful application for the International REU.

Aspiring astronaut Julie Cojulun, center, flanked by Veronica Sanchez, graduate student, and Dr. Damian Scherlis, Director, Laboratory for Quantum and Classical Simulation in Condensed Matter at Molecular Scale.

"I always wanted to travel. It opened my mind, and I want to return one day."

"My ultimate dream is to be an astronaut. I plan to get a master's in aerospace engineering and find my way into NASA.... I like to picture myself doing a spacewalk to fix a satellite. I would like to be among the first astronauts to return to the moon."

Other professional development activities combine to enhance her resume. Cojulun is a member of the Engineering Student Council, SHPE, SACNAS, and MAES. Her awards include the Hispanic Scholarship Fund/Mazda Foundation Scholarship, the Raytheon Engineering Scholarship, and the George Smith Jr. Scholarship. Cojulun says, "CAMP opened up all these doors— to scholarships and research and travel to conferences." She is applying to no less than 10 graduate programs, and expresses gratitude to her major advisor Dr. Derek Dunn-Rankin and to Kika Friend.

INTERDISCIPLINARY RESEARCH IN MEXICO

UC Irvine's Gilberto Cardenas: Applied Math Major Acquires Life Lessons

One of the first things you notice in a conversation with **Gilberto Cardenas** is his skill at describing his long and winding road to UC Irvine. His path to becoming an applied mathematics major has many twists and turns. His persistence and focus on the prize, a bachelor's degree from the University of California, Irvine, encompass not only his personal goals but also his desire to make a difference. Along the way, he acquired useful life lessons.

"Life is the best educational tool you can have," Cardenas states. "You learn so much from real-life experiences."

Experiences like being an Army attack helicopter mechanic.

Experiences like trying to take college courses at night during a war.

Experiences like producing artistic photographs, a hobby that began as a young teenager with a disposable camera and has become a passion and a vital research tool documenting people, places, and things.

"I joined the military right after high school," he explains, because (cupping his hands) "my world was so small. During my service on bases in Germany, I earned my AA degree."

Cardenas was an attack helicopter crew chief, performing inspections and troubleshooting. He also worked long days on aircraft, yet plugged away taking evening courses, one course at a time.

He says, "As strange as it seems today, I use those mechanic skills in my research and in my photographic pursuits."

Taking all the right courses, however didn't automatically lead to admission to a four-year institution. Returning home to California he met with some disappointment.

"Many of the units didn't transfer, so I started over at Orange Coast College and, after another four years, finally transferred to UCI."

For the final push to the bachelor's, he enrolled at UCI — but he hadn't always had UCI in mind — he had been admitted to UCLA and UC Berkeley, and Berkeley was looking pretty attractive because his sister had graduated from Cal. (She is now pursuing a master's in Barcelona, Spain.) But the deciding factor was the opportunity to conduct summer research before transferring through Bridges to the Baccalaureate program. Interestingly, he was offered a chance to participate in a laboratory in Ecology and Evolutionary Biology, under the mentorship of Dr. Matthew McHenry, P.I. The project focused on blind cave fish. Before long, it was not only the exposure to a new way to use math, it was also the people and the financial support that cemented his decision to choose UCI.

Cardenas received a UC-Edison Scholarship, a transfer student scholarship made available through an established partnership between UCI, Edison International and CAMP Statewide. He found the campus itself very beautiful and the academics excellent. "And," he admits, "the people are not what I had expected. They're friendly and approachable! Not the bookworms I had imagined."

Getting started in the research laboratory also exceeded his expectations. His mentor showed him the tool room, with everything needed to build a laboratory setup. "There were chisels, saws, and everything else you'd find in a workshop." His background as a mechanic came into good use. He started by designing a plan and showing it to Dr. McHenry. Cardenas says, "Dr. McHenry motivated me to improve on my design and continue with my experiments. He didn't hold my hand, he was a resource."

Cardenas dove into the experiments and discovered that observing the predator-prey interactions "was not just about data analysis." He saw it was turning real life situations into equations that mathematicians work on. He also employed his love of fine art photography throughout the process. His photographs have appeared in *Scribendi Magazine*, Albuquerque, NM, and at the Frank M. Doyle Arts Pavilion, Costa Mesa, CA. He is currently awaiting word on a cover photograph in a journal.

The effort culminated in an exciting project to present at the Astyanax International Meeting in San Luis Potosi, Mexico, a meeting unusual in that it focused solely on one type of fish, the blind cave fish. Biologists from all over the world discussed their findings, and Cardenas met scientists from France, England, and Croatia, among others.

He was also able to make a unique contribution to the dialogue. A lot of the cave fish were going extinct. There were thousands of caves in the area. He asked the locals, and learned that a mining company had been using dynamite, and that the vibrations were causing cracks in the caves making the water seep out. "I gave that information to the international scientists."

Inspiration and support has also come from Kika Friend, CAMP Program Coordinator for UCI (and recipient of the SACNAS Professional Mentor Award in 2005).

"I was very fortunate to get into the CAMP program," he says, "Kika has constantly pushed me to broaden my networks."

Cardenas was on a roll. He attended the Sackler Colloquium In The Light of Evolution III: Two Centuries of Darwin. He then presented at the West Coast Biological Sciences Undergraduate Research Conference, Point Loma College, San Diego. Additionally, in March 2009 he was an invited speaker at the Western Regional Honors Council Conference in Spokane, WA.

Summer 2009 presented the opportunity to participate in the CAMP Summer Science Academy, ten weeks of academics, professional development workshops, and laboratory research, as well as action plans to prepare for graduate school.

Cardenas completed a B.S. degree in Applied Mathematics in June 2010, and continues on towards a master's and eventually a Ph.D. For now, he has set his sights on the interdisciplinary master's in art, computer science and engineering. In addition to the blind cave fish project, he has been working on another mathematical modeling project with zebra fish, which he presented at SACNAS 2009. It's taken ten years to arrive at this point, where Cardenas sees his future in science and math beckoning clearly on the path ahead. But it is a road well traveled with life lessons well taken.

Like he says, "If you have an idea, there's a good possibility you can make it true."

UC Irvine CAMP Alumni Event Celebrates 20 Years of Graduating Classes

An Alumni Meet-and-Greet reception was held September 27, 2012 at the UCI Student Center, welcoming alumni back to campus. The event was coordinated by CAMP Statewide and UCI-CAMP, answering a challenge put forward by the CAMP Statewide Advisory Board at its February 2012 meeting. The reception was the first formal alumni gathering for UCI-CAMP over its more than 20-year span, and served as a model for partner UCs.

Dr. Derek Dunn-Rankin, Chair of Mechanical and Aerospace Engineering and CAMP Statewide Co-Director, was emcee for the evening. He shared his thoughts on the long-term impact of student participation in CAMP activities, especially research, and the collective achievements of all those present.

"Besides being just a lot of fun," Dunn-Rankin says, "gatherings of multiple academic generations of this kind are extremely valuable in showing the importance of sustained commitment to excellence that NSF has afforded CAMP." He adds, "Connecting recent graduates with those having longer experience helps everyone recognize the depth and breadth of the CAMP scholar network."

Jason Tompkins, Class of 2000, Economics, Program Advisor for the Executive and Health Care Executive MBA Programs at UCI; and Dr. Hector Lastra, Class of 1999, Biological Sciences, a Pediatrician at HealthCare Partners in Huntington Park, East Los Angeles.

Dr. Daniel Vera (UCI Class of 2002) and Dr. Philippe Relouzat, who judged CAMP research posters for many years. Both are Mathematicians!

Smiles all around for these Alumni who exchanged current contact information and recent accomplishments.

Dr. Derek Dunn-Rankin, Professor and Chair, Mechanical and Aerospace Engineering, shares a moment with Jezabel Rios (Class of 2005, Mechanical Engineering), who is a structural dynamics engineer for Boeing. Rios had conducted undergraduate research under Dr. Dunn-Rankin.

Above, Jennifer Gan, M.B.A., CAMP Statewide program specialist; Leonora Peña, CAMP-UCI program specialist; and Viviana Ramos, Center for Educational Partnerships, enjoyed conversations at the reunion. Leonora Peña and Viviana Ramos are CAMP Alumni.

Dr. Brandon Brown, recently hired at UCI as a lecturer in Health Sciences/Public Health, catches up with an old friend.

Dr. Don Blake, Professor of Chemistry (Analytical, Atmospheric and Environmental), was the keynote speaker, giving his remarks as a "proud mentor" and sharing the academic benchmarks of female students, particularly CAMP students, who have gone on to careers in science, medicine, and law. Dr. Blake said that the students shared a common attribute: a great work ethic. They inspired him to continue mentoring undergraduates from the CAMP program, citing their motivation, dedication, and will to sacrifice in order to succeed.

"I love this program," Dr. Blake said. "I have had wonderful students over the years and they have made me extremely proud. Their experiences growing up forged them into caring, hard working, determined, and focused individuals." He emphasized, "The CAMP program provided a platform from which these students were able to spread their wings and fly."

Dr. Blake is the lead scientist at the Rowland/Blake Lab, where they study atmospheric contaminants (greenhouse gases) around the world, including over Antarctica, and over Beijing during the 2008 Olympics. He has taken several students in the NASA research plane to collect air samples.

Additionally, **Dr. Kenneth Janda**, Dean, UCI School of Physical Sciences, welcomed the alumni and related some of his mentoring experiences. Dr. Janda supports CAMP program goals for undergraduate achievement in many capacities, including before and during his role as Dean. He has served as a judge at the CAMP Statewide Undergraduate Research Symposium and consistently participates in CAMP-UCI activities and events.

Dr. Don Blake shares his experiences supporting CAMP students in his lab, and, citing the impressive accomplishments of his mentees, explained why he is a "very proud advisor," as shown on his slide, above.

"Undergraduate research helped to jump-start my career, and I am delighted to provide the same opportunity to UC Irvine students. I am particularly proud of my most recent CAMP student, Joel Rivera, with whom I just

A happy trio pauses for a photo at the popular UCI emblem.

Sisters Nzuji and Nzola De Magalhaes enjoy visiting with Marjorie DeMartino, Co-Project Director CAMP Statewide.

published the first paper in my career with only an undergraduate student as a co-author. Joel is now a graduate student at UCSD."

Representing the CAMP Statewide Advisory Board was **Aaron Soto**, a UCI alumnus and Huntington Beach IT business owner, DezTech Consulting LLC, since 1998. Soto presented the idea to bring alumni together to leverage the program efforts for today's CAMP students. He spoke about the need to connect alumni with current students, especially through e-mentoring.

UCI-CAMP Director **Kika Friend** introduced **Jose Varias**, representing UCI alumnus **Jose Valle** (Class of 2000, Civil Engineering), who donated $10,000 to support CAMP at UC Irvine. The generous donation will fund additional summer researchers. Kika Friend also shared her thoughts and experiences mentoring students over many years and expressed appreciation to the alumni for being part of the CAMP family and enriching the program's success story.

The event had three main goals: to engage alumni in mentoring and e-mentoring activities, to encourage alumni to participate in career panels and seminars or workshops, and to foster internship and career opportunities for current STEM majors and new graduates.

Special guests included **Dr. Ron Stern**, former Dean, School of Physical Sciences, and **Sharon Stern**, senior lecturer, College of Health Sciences, who mentored numerous students over the years; **Dr. Juan Francisco Lara**, Assistant Vice Chancellor Emeritus and current Statewide Advisory Board member, who

Dean Kenneth Janda, a regular speaker at CAMP-UCI events, spoke candidly about the value of friendships and staying in touch with your peers before and after graduate school.

Kika Friend (green jacket), CAMP Coordinator and Program Director, welcomes CAMP-UCI Alumni. Left to right: Aaron Botello, M.S. degree Information and Computer Science USC); Mariana Arcila, current master's student in Psychology USC; Albert Cervantes, M.S. Information and Computer Science, California State University Los Angeles; Aaron Soto, President, DEZ Tech; Kika Friend; and Steve Toscano, Google Engineer.

The UCI items in the opportunity drawing, such as this tray, were well received.

Erik Castro (Class of 1999, B.S., Information and Computer Science) teaches mathematics and serves as Geometry Lead teacher at West Covina High School, "Home of Scholars and Champions."

"As someone that benefitted tremendously from the CAMP program through the mentorship of my peer predecessors and then mentoring those that followed me, it was an amazing experience to gather so many great success stories and appreciate the strands of mentoring lineage throughout the room made possible by the CAMP program."

—Aaron M. Soto, CAMP alumnus, Partner, DezTech Consulting LLC

Dr. Stephanie Reyes-Tuccio, Director, Center for Educational Partnerships, showed her enthusiastic support for the program by greeting many of the alumni who attended.

contributed significantly to the initial CAMP proposal to the National Science Foundation and served CAMP in various capacities; **Dr. Arnold Guerra**, UCI Alumnus and Professor of Physics at Orange Coast College; **Dr. Stephanie Reyes-Tuccio**, Director, UCI Center for Educational Partnerships (home of CAMP Statewide office), who leads an array of early academic outreach programs supporting underrepresented minorities in the college pathway; and **Dr. Philippe Relouzat**, mathematics mentor and instructor for the CAMP Summer Science Academy as well as judge for the annual CAMP Statewide Undergraduate Research Symposium.

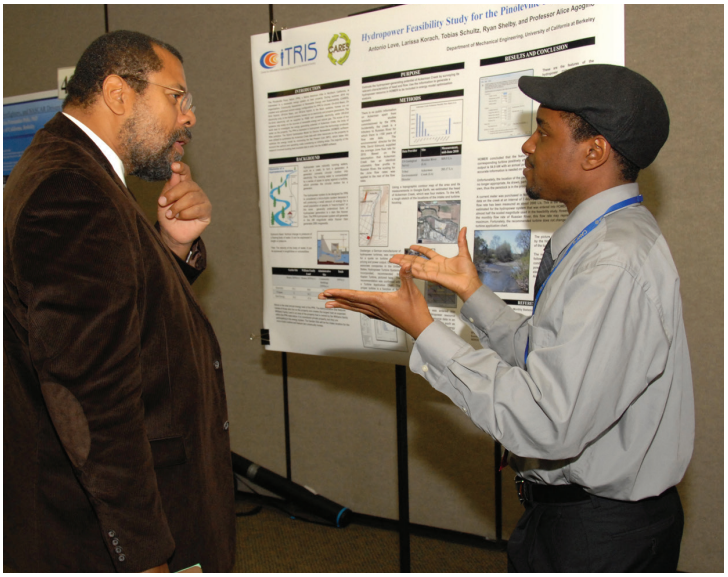
Also attending were **Dr. Jose Romero-Mariona**, UCI Bridge to the Doctorate Fellow (UCI Ph.D. Information and Computer Science 2010) who conducts research in the area of cybersecurity at the U.S. Navy SPAWAR (Space and Naval Warfare Systems Command) in San Diego, and **Dr. Daniel Vera** (MIT Ph.D. Mathematics; UCI Class of 2002 Magna Cum Laude), analyst for Picoco LLC, Newport Beach; and **Dr. Brandon Brown** (Ph.D. Johns Hopkins University International Health, UCI Class of 2004), who recently joined the faculty in health sciences at UCI. Also participating were **Julie Marquez, M.D.** (Class of 1998), an emergency medicine physician at Kaiser Permanente in Bellflower CA, **Hector Lastra, M.D.** (Class of 1999), a pediatrician in Huntington Park, and **Jose Mayorga, M.D.** (Class of 1999), a family medicine physician in Costa Mesa, CA. Dr. Mayorga is the Medical Director at Share Our Selves (SOS), a non-profit organization founded to provide for the most serious concerns of the poor. Dr. Mayorga has a passion for helping those in need with the highest quality in health care. He finds time to mentor high school, pre-med, and medical students interested in the health care field.

Approximately 60 alumni enjoyed the fellowship, catching up on each other's careers, interests and family life. Outreach to alumni was made through Facebook and other social media as well as personal contact. Although many alumni are living and working throughout the State of California and the nation, more than 300 alumni "Liked" the Meet-and-Greet concept on Facebook! Nearly all who attended signed up for one of the proposed future activities, particularly mentoring and giving back by sharing their academic and career experiences and expertise.

Dr. Juan Francisco Lara, CAMP Statewide Advisory Board, served as the first executive director for the initial proposal funded by the National Science Foundation.

Professor Ronald Stern, Mathematics, former Dean, School of Physical Sciences, and Sharon Stern, UCI Program in Public health senior lecturer and researcher. Both are long-time mentors.

Alumni forever!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UNIVERSITY OF CALIFORNIA

UC CAMPUS SITE DIRECTORY

UC BERKELEY

CARLOS FERNANDEZ-PELLO, PH.D.
FACULTY DIRECTOR
Department of Mechanical Engineering and Associate Dean, Graduate Division
ferpello@newton.berkeley.edu

DIANA LIZARRAGA, M.A.
CAMP COORDINATOR
Professional Development Programs
230 B Stephens Hall
Phone: 510 643-8978
Fax: 510 642-0199
ladiana@berkeley.edu

UC DAVIS

LORI M. LUBIN, PH.D.
FACULTY DIRECTOR
Department of Physics
lmlubin@ucdavis.edu

RAYNELL HAMILTON, M.A.
CAMP COORDINATOR
Office of the Vice Provost
Undergraduate Studies
UC Davis, CA 95616-5294
Phone: 530-754-9020
Fax: 530-752-6359
rthamilton@ucdavis.edu

UC LOS ANGELES

TAMA HASSON, PH.D.
FACULTY DIRECTOR
Adjunct Associate Professor, Integrative Biology & Physiology Department
Director, Undergraduate Research Center - Sciences
tama@lifesci.ucla.edu

DIANA AZURDIA, PH.D.
CAMP COORDINATOR
Undergraduate Research Center - Sciences
2121 Life Science Bldg.
Los Angeles, CA 90095-1606
Phone: (310) 206-2660
Email: dazurdia@college.ucla.edu

UC SANTA CRUZ

THEODORE HOLMAN, PH.D.
FACULTY DIRECTOR
Department of Chemistry and Biochemistry
tholman@chemistry.ucsc.edu

MALIKA BELL, M.S.
CAMP COORDINATOR
Minority Science Programs
Phone: 831-459-3761
Fax: 831-459-2884
malika@biology.ucsc.edu

UC IRVINE

DEREK DUNN-RANKIN, PH.D.
FACULTY DIRECTOR
Department of Mechanical & Aerospace Engineering
ddunnran@uci.edu

KIKA FRIEND, M.A.
CAMP COORDINATOR
Rockwell Engineering Center
Phone: 949-824-2363
Fax: 949-824-2634
kika@uci.edu

UC MERCED

GERARDO C. DIAZ, PH.D.
FACULTY DIRECTOR
Associate Professor, School of Engineering
Phone: 209-228-7858
gdiaz@ucmerced.edu

TONY JIMENEZ, PH.D.
CAMP COORDINATOR
Graduate Recruitment, Outreach, and Retention Coordinator
Graduate Division
(209) 228-4140
Fax (209) 228-6906
ojimenez3@ucmerced.edu

UC RIVERSIDE

RICHARD CARDULLO, PH.D.
FACULTY DIRECTOR
Life Sciences Divisional Dean
Professor of Biology
richard.cardullo@ucr.edu

MARIA FRANCO-AGUILAR
CAMP COORDINATOR
Graduate Division
Director, Academic Preparation and Outreach
900 University Avenue
Riverside, CA 92521
Phone: 951-827-3680
Fax: 951-827-2238
Email: maria.franco@ucr.edu

UC SANTA BARBARA

GLENN E. BELTZ, PH.D.
FACULTY DIRECTOR
Associate Dean for Academic Affairs, College of Engineering
beltz@engineering.ucsb.edu

DOROTHY PAK, PH.D.
CAMP CO-COORDINATOR
Material Research Laboratory
Phone: 805-893-5314
Fax: 805-893-5027
pak@mrl.ucsb.edu

JULIE STANDISH, PH.D.
CAMP CO-COORDINATOR
Material Research Laboratory
Phone: 805-893-5314
Fax: 805-893-5027
standish@mrl.ucsb.edu

UC SAN DIEGO

DAVID M. ARTIS, PH.D.
PROGRAM DIRECTOR
Academic Enrichment Programs
Student Center Bldg. B
dartis@ucsd.edu

JACQUELINE AZIZE-BREWER, PH.D.
CAMP COORDINATOR
Phone: 858-534-8839
Fax: 858-534-8895
jazize@ucsd.edu

www.california-lsamp.uci.edu

CALIFORNIA LSAMP

University of California, Irvine
Lead Campus and
Administrative Center

MICHAEL V. DRAKE, M.D., *Chancellor*
Principal Investigator

DEREK DUNN-RANKIN, PH.D.
Professor and Chair,
Mechanical and Aerospace Engineering
Co-Director

MARJORIE DEMARTINO, M.F.A.
Co-Director
Proceedings & Profiles Editor
949-824-4813
dmartino@uci.edu

SILVIA SWIGERT, M.S.
California LSAMP External Evaluator
Director, Research and Evaluation,
Center For Educational Partnerships
949-824-0201
sswigert@uci.edu

AMANDA VALBUENA, M.S.
Evaluation
avalbuen@uci.edu

JENNIFER GAN, M.B.A.
Program Specialist
949-824-6806
jgan@uci.edu

MIKE JENKINS
Technical Support
949-824-3780
mjenkins@uci.edu

LAURA LE
Contract/Grants Analyst
949-824-1258
laural@uci.edu

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UNIVERSITY OF CALIFORNIA
CAMP
LOUIS STOKES ALLIANCE FOR MINORITY PARTICIPATION

CAMP Statewide Office
491 Social Science Tower
University of California, Irvine 92697
949-824-6806 • 949-824-3048 (fax)

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