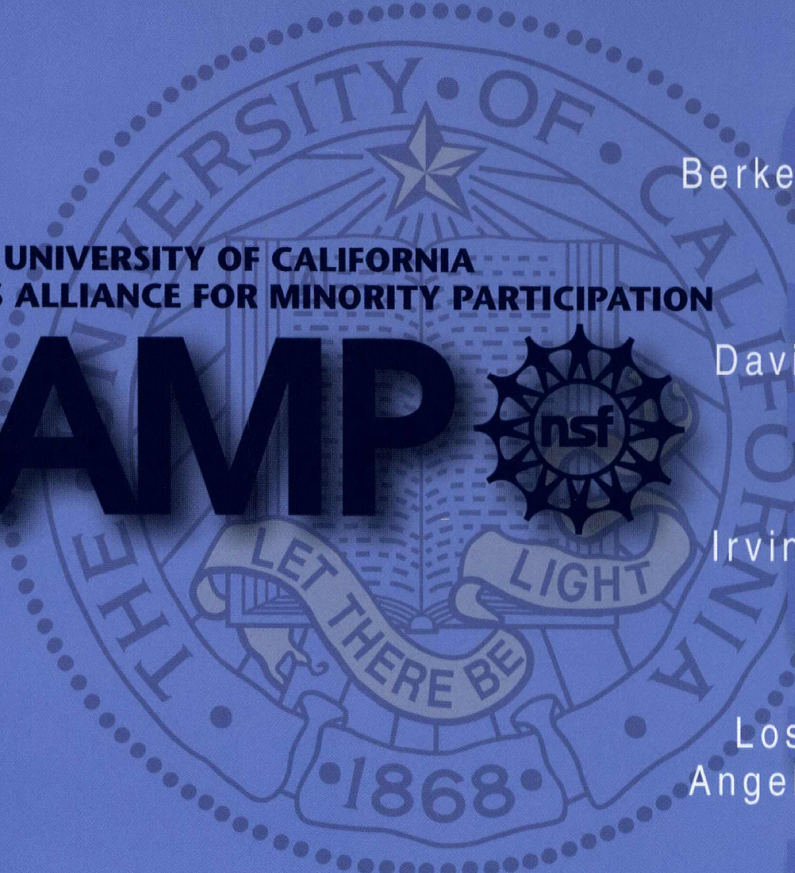


UNIVERSITY OF CALIFORNIA
LOUIS STOKES ALLIANCE FOR MINORITY PARTICIPATION

 **CAMP**



Berkeley

Davis

Irvine

Los Angeles

Merced

Riverside

San Diego

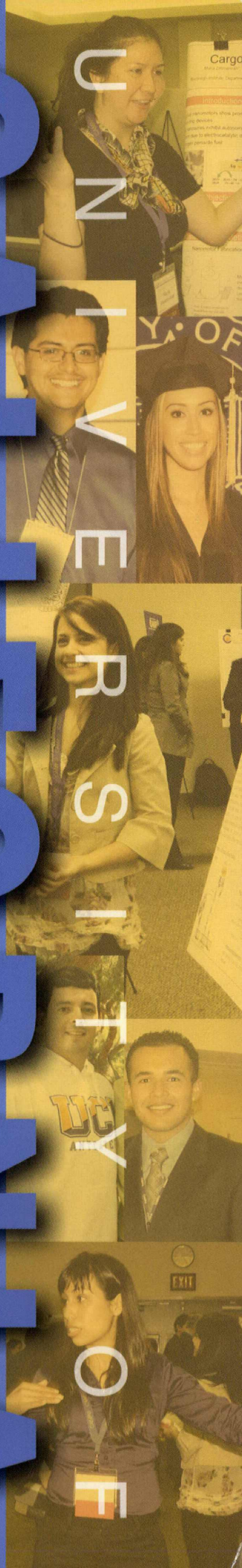
Santa Barbara

Santa Cruz

2010 SYMPOSIUM PROCEEDINGS & PROFILES

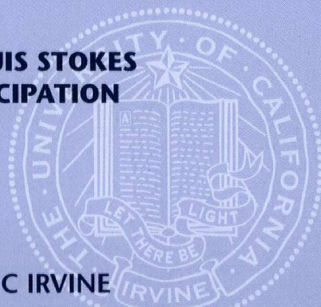
UNIVERSITY OF CALIFORNIA
LOUIS STOKES ALLIANCE FOR MINORITY PARTICIPATION
1990-91 - 2010-11
Twenty Year Anniversary

C
N
A
V
I
T
E
F
O
R
N
I
A



**UNIVERSITY OF CALIFORNIA LOUIS STOKES
ALLIANCE FOR MINORITY PARTICIPATION**

UC CAMPUS SITE DIRECTORY
UNIVERSITY OF CALIFORNIA
Mark G. Yudof, President



UC BERKELEY

CARLOS FERNANDEZ-PELLO, PH.D.
FACULTY DIRECTOR
Department of Mechanical Engineering
and Associate Dean, Graduate Division
grdean.support@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

GAIL MARTINEZ, PH.D.
CAMP COORDINATOR
Assistant Vice Provost,
Undergraduate Studies, Offices
of the Chancellor and Provost
UC Davis, CA 95616-5294
Phone: 530-752-9710
Fax: 530-752-6359
gamartinez@ucdavis.edu

UC LOS ANGELES

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

RICHARD L. WEISS, PH.D.
FACULTY CO-DIRECTOR
Department of Chemistry
& Biochemistry
weiss@chem.ucla.edu

CAMP COORDINATOR
3077A Young Hall
UCLA Box 951569
Los Angeles, CA 90095-1569
Phone: 310-206-4600
Fax: 310-267-2219

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 RIVERSIDE

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

CHRISTOPHER OLIVERA, PH.D.
CAMP COORDINATOR
Academic Advising Center
College of Natural and
Agricultural Sciences
UC Riverside
900 University Ave.
Riverside, CA 92521-0210
Phone: 951-827-5326
Fax: 951-827-4543
christopher.olivera@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

CAMP STATEWIDE

University of California, Irvine
Lead campus and
administrative center,
California LSAMP

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

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

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

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

ADRIANNA SAAVEDRA
Program Specialist
949-824-2053
saavedr@uci.edu

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

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



UNIVERSITY OF CALIFORNIA
CAMP
LOUIS STOKES ALLIANCE
FOR MINORITY PARTICIPATION

CAMP Statewide Office
Center For Educational Partnerships
491 Social Science Tower
University of California, Irvine 92697
949-824-2053 • 949-824-3048 (fax)
camp@uci.edu
www.california-lsamp.uci.edu

This publication is based upon work supported by the
National Science Foundation under Grant
#0603239. Any opinions, findings, and conclusions
or recommendations expressed herein are those of
the CAMP leadership and participants and do not
necessarily reflect the views of NSF/HRD.

www.california-lsamp.uci.edu



UNIVERSITY OF CALIFORNIA
LOUIS STOKES ALLIANCE FOR MINORITY PARTICIPATION

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

2010 STATEWIDE SYMPOSIUM PROCEEDINGS & PROFILES



GREETINGS

We are pleased to present the annual publication of highlights and profiles from our UC Statewide Symposium. By participating in this event, the premier CAMP activity, students test their understanding and move forward in subject mastery. Every great goal is achieved by taking small steps each day. We hope that our UC students' steps to experience research lead to greater appreciation for the wonders of science and engineering. 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. Enjoy the profiles!

—Marjorie DeMartino, M.F.A.,
Symposium Chair,
California LSAMP Co-Project Director

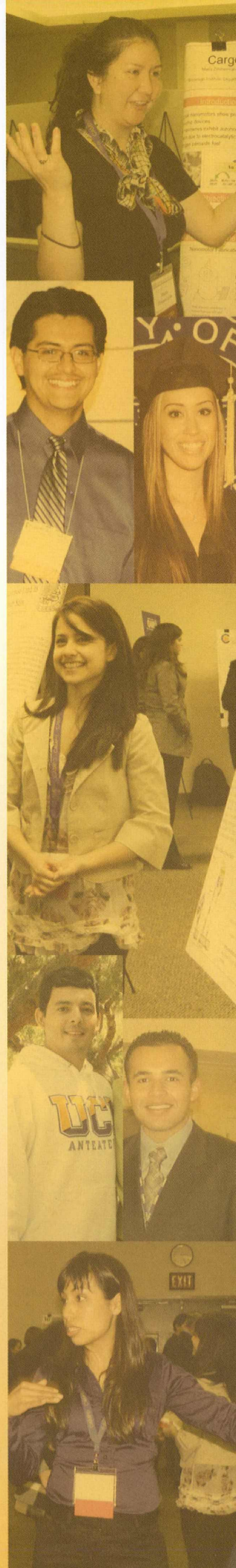
—Derek Dunn-Rankin, Ph.D.,
Professor and Chair, Mechanical &
Aerospace Engineering,
California LSAMP Co-Project Director

CONTENTS

- 4 General Information About CAMP
- 7 Undergraduate Presenters
- 8 Award Winning Research
- 15 Honorable Mention Awards
- 15 Symposium Judges
- 16 Bridge to the Doctorate
- 18 Alumni Updates
- 28 Student Spotlights
- 34 Campus Highlights
- 42 Accolades
- 44 Conference Success
- 47 Alumni/Graduate Symposium Panel

"I loved having the opportunity to present and the ability to receive feedback from the faculty."

—Symposium Presenter



GENERAL INFORMATION

Summary

The University of California Louis Stokes Alliance for Minority Participation Phase IV (2006-2011), 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 support as well as collaborative relationships and student services distinguish 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 support continuation to graduate studies, particularly for the Ph.D.. 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.

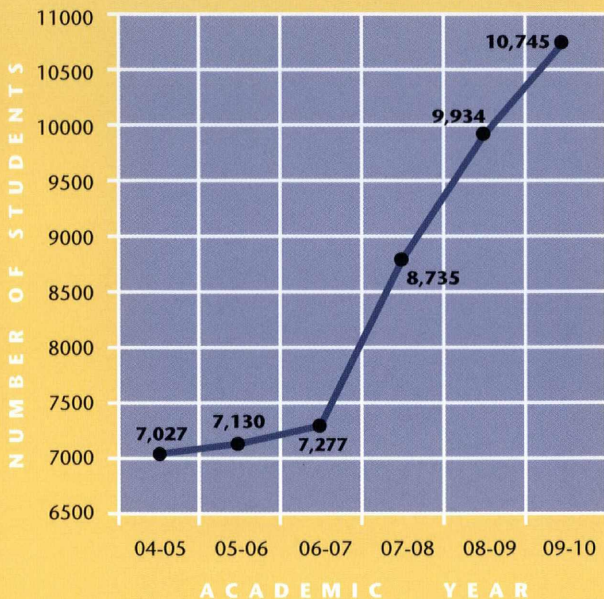
Program Impact

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 178% since 1991, including 1,708 degrees granted in 2010. STEM enrollment has increased by 182% since 1990-91. 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. 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. Connecting to LSAMP institutions nationwide strengthens impact.

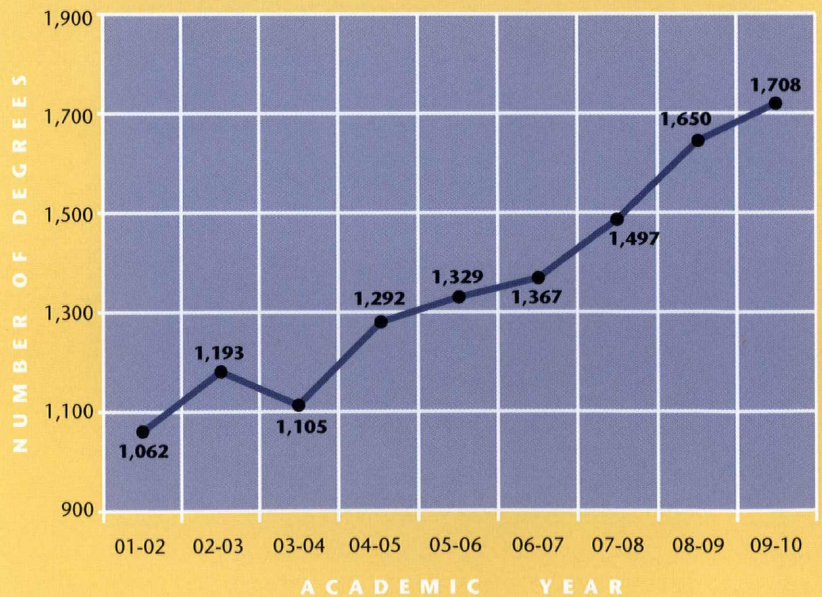
“CAMP faculty and staff are committed to fostering academic excellence. Together we seek to educate the whole person, and through research experiences and other professional development, nurture our students to give them a competitive edge.”

—Michael V. Drake, M.D., Chancellor, CAMP Statewide P.I.

6 Year Trend in STEM Minority Enrollment



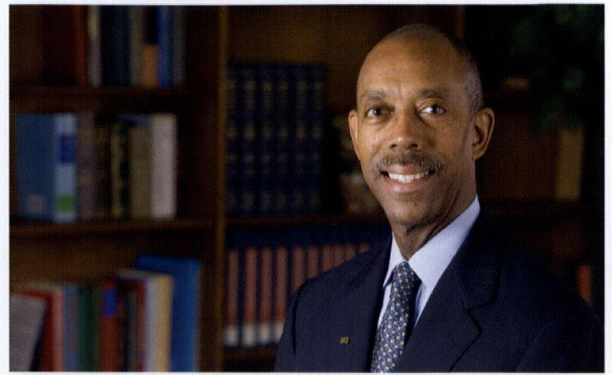
9 Year Trend in STEM Minority BS Degrees



UC Minority STEM enrollment is up 182% from 1990-91. Minority STEM B.S. Degrees granted are up 178% in 2010.

SYSTEMWIDE CORE PRINCIPLES & ACTIVITIES

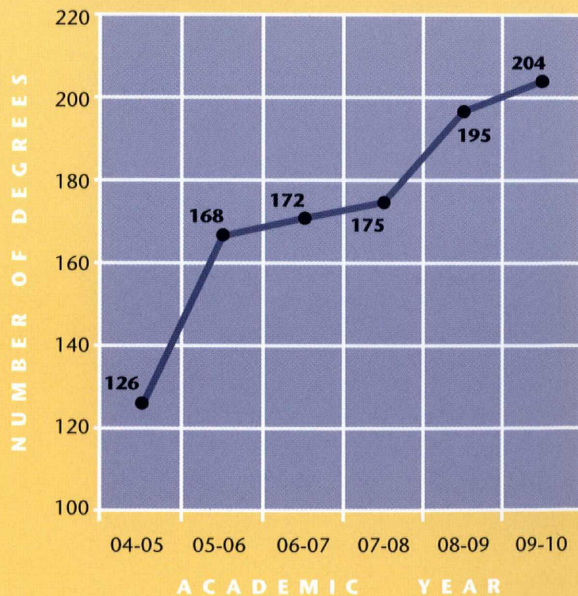
- **Power of Mentoring:** involvement in faculty mentored research and internships
- **Power of Performance:** presenting research at campus, statewide, and national venues; developing communication skills
- **Sphere of Influence:** fostering a sense of shared purpose and identity through study groups 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**



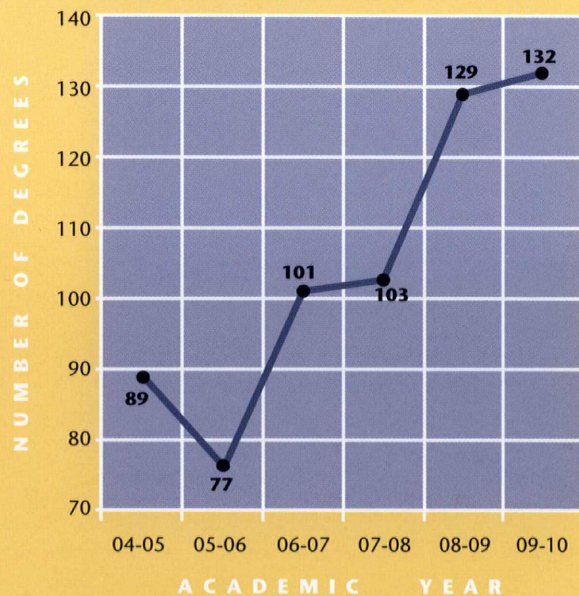
Michael V. Drake, M.D., Chancellor, CAMP Statewide P.I.



6 Year Trend in STEM Minority MS Degrees



6 Year Trend in STEM Minority PhD Degrees



UC Minority STEM M.S. Degrees granted are up 129% in 2010. Minority STEM PhD Degrees are up 74% in 2010.

ALL DATA IS UC SYSTEMWIDE.

SYMPOSIUM WELCOME

On behalf of UCI's Center for Educational Partnerships, I am proud to welcome you to the 17th annual CAMP symposium. CAMP has played and continues to play a critical role in the work of the Center. The mission of the Center for Educational Partnerships is to assist the University of California to achieve its goal of academic excellence through diversity.

To achieve this goal, CFEP develops and implements a wide range of programming for students, parents and teachers, all aimed at the common goal of increasing the academic preparation and success of first generation and underrepresented students.

In this impressive portfolio of program, CAMP has played a fundamental role in shaping our campus commitment to programs focused on educational equity and access. It has also set the bar for other programs in a range of disciplines that have followed in its wake.

CAMP represents the best of what such programming can be—

- It is relentlessly student centered;
- It maintains the highest level of quality programming, year after year;
- It deeply engages faculty—without whom, none of this would be possible. On behalf of all of us at CAMP, I'd like to acknowledge and thank the faculty who give their time and themselves for the benefit of all of us, not just the students;
- CAMP remains focused on impact and results;
- It consistently benefits from incredibly hardworking and dedicated staff;
- And last but not least, CAMP continues to innovate.

As we approach the 20th anniversary of CAMP's inception, we can begin to see what changes the program has gone through and what changes it has wrought.

It is not an overstatement to say that CAMP has helped to change the culture of the university. Undergraduate research opportunities have become a hallmark of what UCI and



other campuses see as part of their mandate.

The original CAMP proposal was written by UCI faculty in 1991. At that point, the stated goal was to help more underrepresented STEM students complete their baccalaureate degree.

As you will see later this afternoon in the graduate student and professional panel, we have set our sights, and more importantly, our student's sights much higher—CAMP has been the route for students to prepare for and succeed in graduate school, the professions, and the professoriate. With each five-year cycle, the emphasis on research and advanced study has increased.

Because of that evolution, we are beginning to reap rewards far beyond increasing the number of graduates—we are beginning to see our former CAMP undergraduates complete graduate school, enter the professoriate and begin to transform institutions of higher learning and the society of which they are a part. Thank you for being a part of that change and I hope you enjoy the symposium.

—Stephanie Reyes-Tuccio, Ph.D.

STATEWIDE SYMPOSIUM FEBRUARY 27, 2010 UCI STUDENT CENTER

Features:

- Undergraduate Presenters from 8 UC campuses
- Faculty Feedback on Posters
- UC-Wide Networking
- BD/Graduate & Alumni Panel
- Graduate School Coaching
- UCI Campus Tour
- Special Merit in Research Awards
- Keynote by Chancellor
- Special Recognition/Honorable Mention
- Student Centered
- Community College Opportunity
- Peer-to-Peer Support

THE CAMP SYMPOSIUM AIMS TO:

- **Support** undergraduate research with a faculty member;
- **Encourage** first-time presenters;
- **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.

UNDERGRADUATE PRESENTERS

Poster Presentations

PHYSICAL SCIENCES/ENGINEERING

- #1 **Tairi Delgado**, UC Davis
- #2 **Amanda Gonzales**, UC Davis
- #3 **Xioranny Linares**, UC Berkeley
- #4 **Andrew Mairena**, UC Berkeley
- #5 **Christian Contreras**, UC Riverside
- #6 **George Knight**, UC Riverside
- #7 **Caleb Sotelo**, UC San Diego
- #8 **Maria Zimmerman**, UC San Diego
- #9 **Joshua Ramos**, UC San Diego
- #10 **Adan Amarillas**, UC Irvine
- #11 **Martin Tajiboy**, UC Irvine
- #12 **Natalie Poot**, UC Irvine
- #13 **Maria Arenas**, UC Santa Barbara
- #14 **Brian McVerry**, UC Santa Barbara
- #15 **Samarkand Estee**, UC Santa Cruz
- #16 **Lauren Quiroz**, UC Los Angeles
- #17 **Ryan Quiroz**, UC Los Angeles
- #18 **Kliulai Chow-Yee**, UC Berkeley
- #19 **Diana Olvera**, UC Berkeley
- #20 **Mayra Jimenez**, UC Davis
- #21 **Sara Magallon**, UC Davis
- #22 **Christian Mercado**, UC Davis
- #23 **Andrew Bowen**, UC Irvine
- #24 **Guillermo Gomez**, UC Irvine
- #25 **Ashley Woods**, UC Irvine
- #26 **Maria Gaeta**, UC San Diego
- #27 **Mike Garcia**, UC San Diego
- #28 **Amir Gonzalez**, UC San Diego
- #29 **Miguel Rodriguez**, UC Berkeley
- #30 **Eliana Trujillo**, UC Berkeley
- #31 **Justine Velasco**, UC Berkeley
- #32 **Roxana Pomposo**, UC Davis
- #33 **Marcos Torres**, UC Davis
- #34 **Arthur Anderson**, UC San Diego
- #35 **Daniel Arias**, UC San Diego
- #36 **David Lluncor**, UC San Diego
- #37 **Andres Munoz**, UC Santa Barbara
- #38 **Joshua Murillo**, UC Santa Barbara
- #39 **Manuel Olmedo**, UC Santa Barbara
- #40 **Christie Villanueva**, UC Santa Barbara
- #41 **Asis Lopez**, UC Santa Cruz
- #42 **Angel Resendez**, UC Santa Cruz
- #43 **Christopher Robles**, UC Santa Cruz
- #44 **Paulina Rodriguez**, UC Santa Cruz
- #45 **Eva Gabriela Baylon**, UC San Diego

- #46 **Sapphire Lopez**, UC Irvine
- #47 **Francis Rodriguez**, UC Irvine
- #48 **Oluwafemi Okusanya**, UC Riverside
- #49 **Martha Sosa**, UC Riverside
- #50 **Christopher Webb**, UC Riverside
- #51 **Robert Mazzola**, UC Davis

BIOLOGICAL/LIFE SCIENCES

- #1 **Jose Salomon Sanches**, UC Berkeley
- #2 **Karla Ruiz**, UC Davis
- #3 **Samuel Agbonkpolo**, UC Irvine
- #4 **Abraham Arrizon**, UC Irvine
- #5 **Karen Barba**, UC Irvine
- #6 **Beheya Ahmed**, UC Riverside
- #7 **Mackenzie Alvarez**, UC Riverside
- #8 **Tokunbo Ayeni**, UC Riverside
- #9 **Kameron Black**, UC Riverside
- #10 **Wisler Charles**, UC San Diego
- #11 **Citlalic Chavira**, UC San Diego
- #12 **Michelle Petitfils**, UC Santa Barbara
- #13 **Rosie Quiroz**, UC Santa Barbara
- #14 **Patrick Dugan**, UC Santa Cruz
- #15 **Jaime Hernandez**, UC Santa Cruz
- #16 **Claudia Lavarreda-Pearce**, UC Santa Cruz
- #17 **Paola Lepe**, UC Los Angeles
- #18 **Matthew Pimentel**, UC Los Angeles
- #19 **Rodolfo Gordillo**, UC Irvine
- #20 **Samantha Harden**, UC Irvine
- #21 **Alexis Sandoval**, UC Irvine
- #22 **Magdalene Moy**, UC Riverside
- #23 **Ayodeji Okusanya**, UC Riverside
- #24 **Himelda Rivera**, UC Riverside
- #25 **Gilberto Cardenas**, UC Irvine
- #26 **Michael Cervantes**, UC Riverside
- #27 **Wynter Hernandez**, UC Riverside
- #28 **Amelia Lipscomb**, UC Riverside
- #29 **Martina Mikail**, UC Riverside
- #30 **Jessica Craft**, UC San Diego
- #31 **Jonathan Okerblom**, UC San Diego
- #32 **Sandra Orueta**, UC San Diego
- #33 **Alexis Pammit**, UC San Diego
- #34 **Melissa Sandoval**, UC San Diego
- #35 **Bahawa Nimaga**, UC San Diego

AWARD WINNING POSTER PRESENTATIONS

Biological/Life Sciences

A NOVEL SYNTHESIS OF CANNABINOIDS ALLOWING CUSTOMIZATION OF THE SIDE CHAIN

Mackenzie Alvarez, Senior, Biological Sciences, Professor Michael J. Marsella, Department of Chemistry, University of California, Riverside

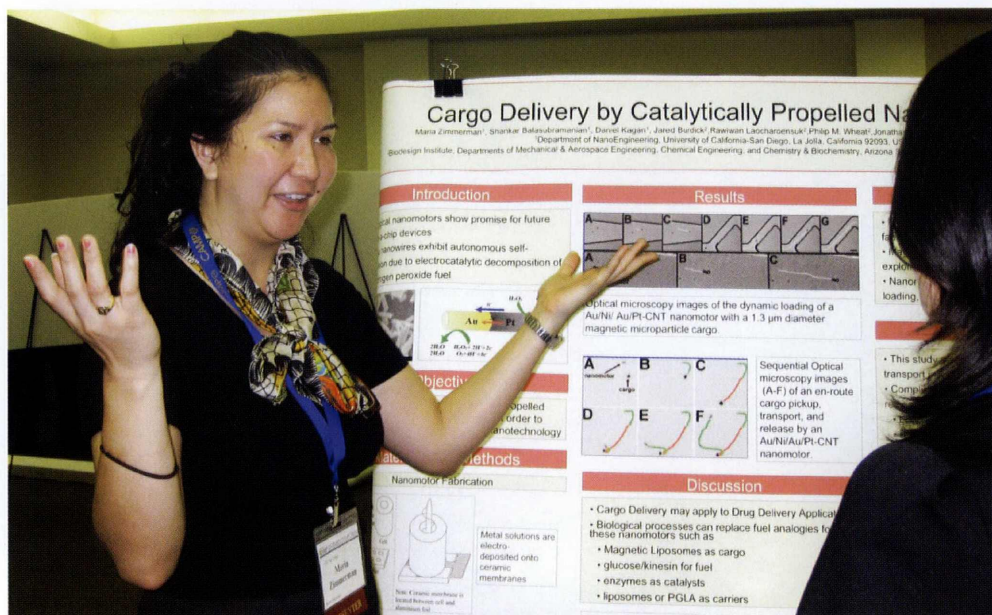
The alkyl side chain of cannabinoids is known to be crucial to the potency and effect of bioactive cannabinoids such as THC. Structure activity relationship experiments have been performed, but due to the difficulty of effectively modifying the side chain, very few of these studies have been performed and the results are often contradictory. Here we report a novel synthesis of cannabinoids in which the side chain is added at a later step in the reaction. The advantage of this approach is that starting materials are readily available, or can be easily synthesized. The synthetic methodology applies to both THC (a psychoactive cannabinoid) as well as CBC, a cannabinoid with activity against MRSA (Methicillin-resistant *Staphylococcus aureus*).

PHENOLOGY OF MILKWEED AND MONARCH BUTTERFLIES WITH CLIMATE VARIATION

Jessica Craft, 5th Year Senior Ecology, Behavior and Evolution, Professor Elsa Cleland, Hannah Cha, Christopher Kopp, Division of Biological Sciences, University of California, San Diego

Our current climate system is undergoing a dynamic change resulting in temperature shifts in many ecosystems, which may shift the timing of development for plants and animals. For the Monarch butterfly (*Danaus plexippus*), milkweed (various *Asclepias* spp.) is an essential larval food source and a constraining factor to habitat range. To test whether both the Monarchs and milkweeds will respond similarly to future warming, two generations of Monarchs were reared at five temperatures along with milkweed plants. Measurements of the pupal stage indicated a decrease in the length of life stages as temperature increased. However, the larval stage did not result in the same trend, possibly due to low sample sizes. Because of the shortened life cycle, as climate change occurs and temperatures rise, Monarch butterfly generations are likely to cycle faster, which could affect butterfly and milkweed interactions. Temperature increase also resulted in a highly non-linear increase in reproductive rate, but not a corresponding increase in survival to adulthood. Caterpillar feeding trials were also constructed with results indicating that overall larger caterpillars consume larger amounts of leaf matter. At the middle temperature treatment, caterpillars had low milkweed consumption, which could be explained

by the caterpillars entering the last instar, during which feeding rates decline. No overall trend between temperature and herbivory could be quantified, but the results appeared non-linear. As temperature increases, higher egg production and larval consumption rates could cause herbivory to outpace milkweed growth. The highly non-linear responses of both plants and herbivores suggest that this important ecological interaction could be uncoupled with future climate change.



“Student made a concerted effort to explain a very complicated project.”

—Judge’s feedback, 2010 Statewide Symposium

SPlicing FACTOR SFRS1 RECOGNIZES INTRONLESS RNA TRANSCRIPTS

Patrick Dugan, Senior, Molecular, Cell and Developmental Biology, Department of Molecular, Cell and Developmental Biology, Faculty mentor: Dr. Jeremy Sanford, University of California, Santa Cruz

The RNA binding protein SFRS1 is involved in both constitutive and alternative pre-mRNA splicing. SFRS1 moves rapidly between the nucleus and cytoplasmic fractions of mammalian cells and has been shown to function in both mRNA export from the nucleus and translation in the cytoplasm. Recently, the Sanford Lab identified more than 23,000 binding sites for SFRS1 using a genome-wide approach known as cross-linking immunoprecipitation and high-throughput sequencing (CLIP-seq). Whereas a majority of the SFRS1 binding sites are measured in exonic sequences from protein coding genes, two unexpected classes of putative RNA targets included transcripts from intronless genes and those derived from unannotated regions of the human genome. The goal of this project is to test the hypothesis that SFRS1 regulates the post-transcriptional expression of intronless mRNAs. To test this hypothesis we transfected human embryonic kidney cells with a control plasmid or a plasmid driving over expression of SFRS1. The steady state levels of intronless transcripts will then be determined using Real Time - Polymerase Chain Reaction (RT-PCR). Changes in amplification (abundance) of transcripts between control and SFRS1 over expressing cells suggests that SFRS1 may have a positive or negative effect on the stability of the target transcript(s). Future experiments will be designed to test the requirements for specific binding sites identified within intronless mRNAs on the observed effect mediated by SFRS1. Additionally, to monitor the effect of SFRS1 on nuclear export, we will also assay the nuclear-cytoplasmic distribution of intronless mRNAs isolated from fractionated cells. Taken together our research has the potential to expand the known role of SFRS1 in the biogenesis and processing of RNA transcripts derived from single exon genes.



Plan to Attend our
CAMP

**20th Anniversary Celebration
and Statewide Symposium,
February 26, 2011**

UC Irvine Student Center

20 Years of Student Support
**in Partnership with the
National Science Foundation**

ABI4: A TIGHTLY CONTROLLED REGULATOR OF PLANT STRESS RESPONSE

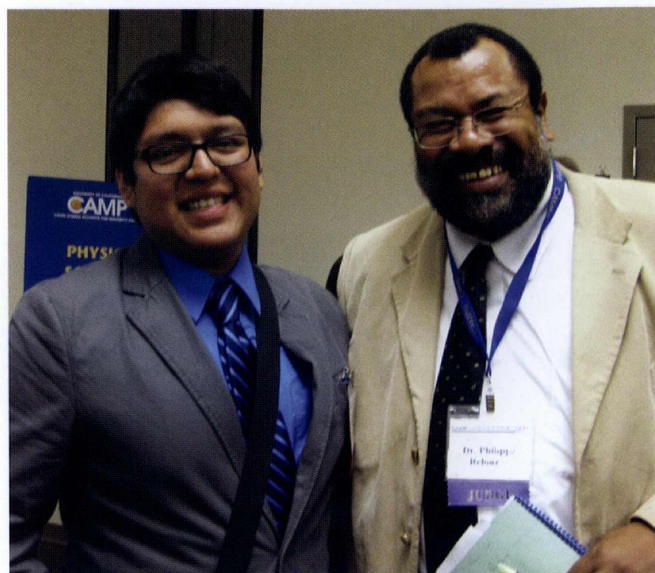
Michelle Petitfils, Junior, Biochemistry, Professor Ruth Finkelstein, Department of Molecular, Cellular and Developmental Biology, Wendy Reeves, Tim Lynch, University of California, Santa Barbara

Global climate change and an increasing population are causing high demands on agriculture. One way to meet these demands is to make crops more tolerant to stresses such as drought and salinity. To do this effectively, it is important to understand how plants respond to stress hormones such as abscisic acid (ABA). In this project we are trying to understand the regulatory network of a gene involved in ABA response called ABA-insensitive(ABI)4. In order to understand how ABI4 activity is regulated, we measured transcript and protein accumulation in transgenic plants producing ABI4-GUS (B-glucuronidase) fusion proteins. We did a Northern Blot to find the amount of ABI4-GUS RNA transcript produced. We used a fluorometer to measure the amount of ABI4-GUS activity, which reflects ABI4-GUS protein levels. To assay protein stability, we used cycloheximide to inhibit new protein synthesis and measured how much ABI4-GUS protein remained in the plants' cells. We found that ABI4 is highly regulated post-transcriptionally, that full length ABI4 has a half-life of about 5 hrs, and that many different parts of ABI4 are unstable. More work needs to be done looking at how and when the plant destroys ABI4, and why certain parts of ABI4 are more unstable than others.

MACROPHAGES PROMOTE STRESS-ENHANCED BREAST CANCER METASTASIS

Matthew A. Pimentel, Junior, Microbiology, Immunology & Molecular Genetics, Lily Wu, Department of Molecular and Medical Pharmacology, University of California, Los Angeles

Macrophage infiltration has been associated with poor prognosis in solid cancers by promoting angiogenesis and suppressing anti-tumor immune responses. Using a mouse model of breast cancer, we have shown that chronic stress increases infiltration of macrophages in the primary tumor as well as in distant tissues by activating the sympathetic nervous system (SNS). SNS signaling also causes increased metastasis to distant tissues. Recent studies have shown that colony stimulating factor-1 (CSF-1) deficient mice display reduced macrophage infiltration and decreased metastasis in mouse models of cancer. We have shown that CSF-1 levels are increased in primary tumors of stressed mice and may play a role in enhancing metastasis in our model. In order to investigate a direct link between macrophages infiltration and stress-enhanced metastasis, we blocked CSF-1 signaling using a selective small molecule inhibitor of CSF-1 receptor (CSF1R) in stressed vs. control tumor-bearing mice. We used bioluminescent optical imaging to track tumor growth over time and to quantify levels of metastasis in distant tissues. There was a 22-fold increase in metastasis ($p=0.05$) in stressed mice compared with controls, which was significantly reduced by 4.9-fold with GW2580 treatment. Flow cytometric analysis of primary tumors showed that GW2580 reduced macrophage infiltration by 2.6 fold ($p<.001$). Our results suggest that macrophage infiltration mediates a causal effect of stress on breast cancer metastasis. Future studies are aimed at elucidating the signaling pathways required for macrophages to induce primary tumor cell dissemination, and to investigate therapeutic strategies for blocking neural regulation of macrophage-tumor interactions.



CHARACTERIZATION OF THE NOVEL REGULATORY SMALL RNA RYFD IN *E. COLI*

Melissa Sandoval, Senior, Biochemistry/Cell Biology, Dr. Gisela Storz, Dr. Lauren Waters, Cell Biology and Metabolism Branch, NICHD, National Institutes of Health, University of California, San Diego

E*scherichia coli* has about eighty novel small RNAs (sRNAs). In bacteria, sRNAs regulate expression of genes involved in many critical functions. Most sRNAs studied so far function by sRNA-RNA base pairing. These studies are relevant to Eukaryotic microRNAs. This study focuses on determining the function of the sRNA RyfD in *E. coli*, previously shown to bind to ribosomes. The *RyfD* gene partly overlaps the downstream gene *clpB*, such that the sRNA has the ribosome binding site (RBS) and first six codons of *clpB*. We hypothesize that the *clpB* RBS and start codon region found in RyfD may be required for binding to ribosomes. Over-expression of RyfD causes growth defects in stationary phase. This phenotype will be used as a tool to investigate the contribution of specific sequences to RyfD function. To test this, we made site-directed mutants of RyfD. We performed growth curve assays measuring OD600 and colony forming units of cells overexpressing the wild-type and mutant RyfD constructs. An effect in phenotype may indicate that the mutated sequence(s) are important for RyfD function and presumably for the binding to ribosomes. Preliminary data shows that the RyfD mutant disrupting the RBS site had no effect, but the control and start codon mutants did have an effect. The interpretation of the results from a mutant introducing a stop codon is unclear. We also measured the expression levels of the RyfD mutants by Northern blot analysis and found that all mutants were expressed at about the same levels as the WT RyfD.



Physical Sciences and Engineering

COST REDUCING TECHNIQUES FOR PROTON EXCHANGE MEMBRANE FUEL CELLS

Christian Contreras, Senior, Biology, Professor and University Scholar Yushan Yan, Chair, Chemical Engineering, University of California, Riverside

Proton exchange membrane fuel cells (PEMFCs) have proven to be an alternative power source with little to no environmental repercussions. Unfortunately PEMFCs are commercially limited by the high cost of the components needed, including the catalyst. After implementing three separate projects, our laboratory developed three techniques to generate a better performing fuel cell. By improving the fabrication techniques for PEMFCs one can improve its performance and decrease its cost. Through the use of an air brush technique, one can reduce the amount of catalyst on the anode. Additionally by supporting platinum on multi-walled carbon nanotubes, and applying the same airbrush technique, one can reduce the amount of catalyst on the cathode. Initial results show that decreasing the amount of catalyst used on the anode by 90 percent produces similar results to a standard anode, while the carbon nanotubes increase the mass activity of the cathode by 800 percent. Combining these two techniques with a pre-treatment of the membrane electrode assembly with an argon feed generates Nafion™ fibers (confirmed via SEM), increasing the performance by 25 percent. Each technique is aimed at improving the performance of a fuel cell and can be used in conjunction with one another. The results of these techniques show that the performance of a PEM fuel cell is increased while the cost of the catalyst required is decreased by 85 percent.

“I definitely feel more motivated to go to graduate school and obtain a Ph.D.”

—Student Observer

“The delivery was great - enthusiastic and energetic about the research.”

“Presenter has the research (higher level learning) bug!”

—Judges’ feedback, 2010 Statewide Symposium

“The opportunity to engage in cutting edge research and then present it to peers and professors opens many doors of networking.

This is a symposium you don’t want to miss next year.”

—Symposium Presenter

THE INFLUENCE OF AN IMPOSED CURRENT ON THE CREEP OF SNAGCU SOLDER INTERCONNECTS

Xioranny Linares, Graduate Student*, Materials Science and Engineering, Chris Kinney, Ph.D. and J.W. Morris, Ph.D., University of California, Berkeley

The work reported here concerns the effect of an imposed current on the creep of SnAgCu 305 (Sn-3Ag-0.5Cu in wt.%) interconnects in a micro-chip. The samples employed were isothermally aged micro-chips from Cisco that contained sixteen ellipsoidal solder joints 400µm in diameter and 400µm in height. Samples were tested with and without an imposed current, and at a variety of temperatures. The tests confirmed that for a certain temperature the creep rate is lower under current than under isothermal conditions considering Joule heating effects. The tests also showed that the increase in creep rate with current is nearly the same over a range of temperatures and variety of starting microstructures. These furthered showed that the Dorn equation provides a useful basis for evaluating the change of creep rate with current.

* Fall 2009 Early B.S. Degree completion, early admission in graduate program



SYNTHESIS AND CHARACTERIZATION OF POLY(ETHYLENE)-GRAFT-POLY (ACRYLIC ACID)

Brian McVerry, Senior, Biochemistry, Professor Guillermo Bazan, Department of Chemistry and Biochemistry, Yanika Schneider, University of California, Santa Barbara

Polyethylene (PE) is one of the most widely produced polymers due to its durability, versatility, and cost effectiveness. However, because it is non-polar, PE cannot be bound, adhered, or coated to polar materials. Our aim for this project is to create a new material that retains the positive aspects of PE, while containing functionality that will allow it to be compatible with polar materials. First, PE macroinitiators were prepared using an -iminocarboxamide Ni(II) catalyst that copolymerized ethylene and norbornen-2-yl-2-bromo-2-methylpropanoate, an initiating monomer or inimer. While the temperature and ethylene pressure were kept constant, the concentration of inimer and duration of the polymerization were varied to produce a library of novel macroinitiators. Next, tert-butyl acrylate was grafted from the macroinitiators using atom transfer radical polymerization. The incorporation of tert-butyl acrylate was confirmed by nuclear magnetic resonance spectroscopy, while the molecular weight distributions was assessed using gel permeation chromatography. Finally, to increase the polarity of the graft copolymers, tert-butyl acrylate functionalities was converted into acrylic acid using both chemical and thermal means. Consequently, we were successful in creating a semi-crystalline, amphiphilic poly-olefin.



“Work on your self-confidence and actively seek out mentors.”

—Judge’s feedback, 2010 Statewide Symposium



SYNTHESIS OF $\text{Ca}_{13}\text{LaAlSb}_{11}$

Roxana Pomposo, Senior, Chemistry, Dr. Susan Kauzlarich, Chemistry, University of California, Davis

The performance of new materials is vital to developing new and efficient alternative energy technology. The study of thermoelectric materials is a leading and very promising field. Thermoelectric devices are composed of n and p-type semiconducting materials, connected in series. If placed in a temperature gradient, the device produces a potential difference, which is usable energy in the form of electricity. The material’s thermoelectric efficiency is measured by its figure of merit (zT), materials with $zT > 1$ are considered good. The compound $\text{Ca}_{13}\text{LaAlSb}_{11}$ is hopefully an n-type complement to the p-type $\text{Yb}_{14}\text{MnSb}_{11}$. The latter material has shown very promising high temperature thermoelectric with zT close to 1 at 1200 K. Having both an n-type and a p-type of the same structure type would help from a device engineering standpoint as both materials would have similar coefficients of thermal expansion. The goal of this project is to successfully synthesize $\text{Ca}_{13}\text{LaAlSb}_{11}$ via a tin flux and to measure the thermoelectric properties to determine if it is n-type.

“The research is very innovative; interesting approach.”

—Judge’s feedback, 2010 Statewide Symposium

“I cannot wait for the next opportunity to present my research and improve on my oral skills. Thank you for the opportunity to present my work in a professional setting.”

—Symposium Presenter

NOVEL METHOD FOR HOMOGENEOUS PRODUCTION OF BIODIESEL

Lauren Quiroz, *Sophomore, Chemical Engineering, Vasilios Manousiouthakis, Department of Chemical and Biomolecular Engineering, University of California, Los Angeles*

Due to escalating environmental concerns, biodiesel has become a more attractive fuel option in today's world. The fact that it is made from renewable resources is beneficial, but the process is highly inefficient and needs to be improved. The primary way of making biodiesel is by transesterification of vegetable oil with an alcohol and catalyst, which creates glycerol and several fatty acid methyl esters (FAME) that constitute the biodiesel. Though simple, the reaction rate is slow, due to the fact that oils and alcohols are not soluble in each other, thus creating a need for catalyst use that in turn causes the unwanted side reaction of saponification. This transesterification reaction takes place in a heterogeneous solution, which makes it impossible to determine the exact kinetics of the reaction, as they are coupled with mass transfer phenomena. However, at a certain percent composition of FAME, both the oil and alcohol become soluble making it possible to create a homogeneous mixture. By performing the reaction in a homogeneous phase rather than using the current heterogeneous method, mass transfer phenomena are eliminated.

This is due to the fact that when conducting the reaction in a FAME phase, mixing occurs at a molecular level, thus providing the premise of an accelerated overall reaction rate, should mass transfer prove to be the rate limiting step. In addition, this new homogeneous reaction method can help identify the intrinsic kinetics for the transesterification reaction.

“An amazing body of work for only 4-5 months of research.”

“Slightly too much text on the poster in long paragraphs.”

“Good speaker and simple, yet effective, poster.”

—Judges' feedback,
2010 Statewide Symposium

AUTOMATED LIBRARY CONSTRUCTION FOR HIGHTHROUGH-PUT DNA SEQUENCING

Christopher Robles, *Junior, BioEngineering, Department of Biomolecular Engineering, Jack Baskin School of Engineering, Faculty mentor: Dr. Nader Pourmand, University of California, Santa Cruz*

Currently the size selection step is the limiting factor for fully automated DNA library preparation for all three next generation sequencing platforms. Size selection currently requires use of gel electrophoresis which is not an automatable step therefore reducing the throughput of next generation sequencing. By finding a way to automate the size selection step, next generation sequencing platforms can be fully automatable which is advantageous by reducing hands on time required for the next generation sequencing platforms. We are working on a method using different binding buffers along with carboxyl terminated superparamagnetic beads in order to size select the DNA fragments which can be done by a robot, therefore automating this process in next generation sequencing platforms. Currently we have found that using a certain buffer composition along with carboxyl terminated superparamagnetic beads can purify DNA by including or excluding certain DNA sizes. Our next step is to work on fine-tuning the buffer to select the right size desired for DNA library preparation. This protocol can then be implemented into our liquid-handling robot allowing fully automated DNA library preparation.



DETERMINATION OF BISPHENOL A BYPRODUCTS IN ADVANCED OXIDATION PROCESS FOR WATER REUSE

Francis Rodriguez, 5th Year Senior, Environmental Engineering, Professor William J. Cooper, Department of Civil and Environmental Engineering, Linda Tseng, University of California, Irvine

Due to its classification as an endocrine disruptor and its abundant occurrence in nature, Bisphenol A (BPA) is a chemical of concern. Conventional wastewater treatment technologies are inefficient in removing emerging contaminants of concern from wastewater, thus alternative options are being explored. Advanced Oxidation Process (AOPs) is one of the options gaining much attention for the treatment of wastewater to drinking water standards for water reuse. Studies report 75% removal of BPA in pure water after treatment of various water purification systems. Disadvantages of AOPs are the multi-million dollar facilities required for successful treatment thus hindering this method of treatment. Nevertheless, the process is fast and efficient, taking advantage of the highly reactive and relatively non-selective hydroxyl radical ($\bullet\text{OH}$) to degrade trace organic pollutants. The reaction degrades the organic pollutant and produces byproducts, which will be identified in this experiment. ^{137}Cs irradiation is used to degrade the organic pollutant, BPA, LC-MS is used to identify the byproducts, and HPLC is used to determine the relationship between irradiation dosage and BPA degradation. 79% of BPA remained after 70 minutes and 1.75 kilogray (kGy) of cesium irradiation. The identified masses of byproducts were 134 and 136 g/mol. It would be of interest to find the toxicity of these byproducts in order to determine whether the byproducts that formed are not more toxic than their parent compound. Field studies can be performed in future studies to monitor the change in concentration of BPA in nature due to the recent public awareness of BPA.



“Your nonverbal communication skills are excellent.”

—Judge’s feedback, 2010 Statewide Symposium

“I feel like this has improved my presentation skills significantly. I am very grateful.”

—Symposium Presenter

CORROSION PROTECTION OF STEEL REBAR IN CONCRETE USING A COMBINATION OF HIGH VOLUME FLY ASH AND FIBER REINFORCEMENT

Eliana Trujillo, Senior, Civil and Environmental Engineering, Dr. Mauricio Mancio, Dr. Claudia Ostertag, University of California, Berkeley

The use of high volumes of fly ash (HVFA) in concrete has recently gained momentum, as it is an efficient resource proven to be durable and a sustainable option for “green” construction. This study explores the impacts of HVFA concrete in combination with fiber reinforcement on the corrosion behavior of embedded rebar. Fly ash added to concrete produces a much enhanced corrosion resisting structure, as it forms an almost impermeable product that will prolong the invasion of chlorides and carbonation to the steel reinforcement, delaying the corrosion process. Because the pH of fly ash is rather low and requires a longer curing period, industry is still reluctant to increase cement replacement by more than about 25% fly ash in fear that costs will increase. In this study levels of 50%, 55%, and 60% cement replacements are studied under different conditions and modifications to further understand the relationship of the “passivity” layer and the new “green” cement chemical composition. Fiber reinforcement has been included in the mix design to compensate for cracks caused by drying shrinkage and further propagation. Size #4 rebar disk specimens were prepared, tested, and compared using plain concrete and HVFA levels of cement replacement with and without fiber reinforcement. During this investigation, changes in the resistance polarization and the corrosion potential of the rebar were monitored to ascertain the degree of effectiveness. These results were then compared to their corresponding X-ray photoelectron spectroscopy (XPS) to check the progress of corrosion product formation on the surface of the steel rebar.

“Excellent grasp of the issues that lie ahead. Best poster of session.”

—Judge’s feedback, 2010 Statewide Symposium

HONORABLE MENTION AWARDS & JUDGES PANEL

Recipients of this **Honorable Mention recognition** received a gold-tone business card case to facilitate networking at other conferences and professional events.

BIOLOGICAL/ LIFE SCIENCES

Karla Ruiz, UC Davis
Abraham Arrizon, UC Irvine
Karen Barba, UC Irvine
Kameron Black, UC Riverside
Wisler Charles, UC San Diego
Samantha Harden, UC Irvine
Himelda Rivera, UC Riverside
Michael Cervantes, UC Riverside
Jonathan Okerblom, UC San Diego
Alexis Pammit, UC San Diego

PHYSICAL SCIENCES/ ENGINEERING

Andrew Mairena, UC Berkeley
Joshua Ramos, UC San Diego
Natalie Poot, UC Irvine
Samarkand Estee, UC Santa Cruz
Ryan Quiroz, UC Los Angeles
Kliulai Chow-Yee, UC Berkeley
Diana Olvera, UC Berkeley
Andrew Bowen, UC Irvine
Guillermo Gomez, UC Irvine
Amir Gonzalez, UC San Diego
Miguel Rodriguez UC Berkeley
Justine Velasco UC Berkeley
Marcos Torres, UC Davis
Arthur Anderson, UC San Diego
Daniel Arias, UC San Diego
David Lluncor, UC San Diego
Manuel Olmedo, UC Santa Barbara
Asis Lopez, UC Santa Cruz
Angel Resendez, UC Santa Cruz
Paulina Rodriguez, UC Santa Cruz
Martha Sosa, UC Riverside

Symposium Judges

CAMP Statewide - Lead Judge

Derek Dunn-Rankin, Ph.D., Professor and Chair, Aerospace and Mechanical Engineering; California LSAMP Co-Project Director

BIOLOGICAL/LIFE SCIENCES

Frances Leslie, Ph.D., Pharmacology, Graduate Dean, UCI

Jennifer B. Martiny, Ph.D., Ecology & Evolutionary Biology, UCI

Lorena Navarro, Ph.D., Microbiology, UCD

Thomas Perring, Ph.D., Entomology, UCR

Stuart Sandin, Ph.D., Marine Ecology, Scripps Institution of Oceanography, UCSD

Andres Sciolla, M.D., Clinical Professor, Psychiatry, UCSD

Hye-Won Shin, Ph.D., Biomedical Engineering, UCI

Virginia Vega, M.D., Surgery, UCSD

Richard Weiss, Ph.D., Chemistry/Biochemistry, UCLA

PHYSICAL SCIENCES/ENGINEERING

Glenn Beltz, Ph.D., Engineering, CAMP Faculty Director, UCSB

Bill Cooper, Ph.D., Engineering, Director, Urban Water Research Center, UCI

Michelle Digman, Ph.D., Biomedical Engineering, UCI

Russell Flegal, Ph.D., Toxicology, UCSC

Carlos Fernandez-Pello, Ph.D., Engineering, CAMP Faculty Director, UCB

Arnold Guerra, Ph.D., Physics, Orange Coast College and UCI

Zack Judson, Ph.D., Mathematics, UCB

John LaRue, Ph.D., Engineering, UCI

Lori Lubin, Ph.D., Physics, CAMP Faculty Director, UCD

Philippe Relouzat, Ph.D., Mathematics, LARC, UCI

Kalyanansundaram Seshadri, Ph.D., Engineering, UCSD

James Shackelford, Ph.D., Engineering, CAMP Faculty Director Emeritus, UCD

“The opportunity to conduct research in a faculty lab offers many rewards. The experience itself develops strong connections with your chosen field.”

—Dr. Derek Dunn-Rankin, Professor and Chair,
Mechanical and Aeronautical Engineering,
CAMP Statewide Co-Project Director

For Alumni and Graduate Student Panel, please refer to inside back cover.

UC Santa Barbara and UC Santa Cruz Present

“We are very excited that this outstanding group of students chose University of California, Santa Barbara for their graduate studies. Their success will increase our institution’s contribution to promoting greater diversity among our nation’s science, engineering and mathematics leaders. We look forward to their contributions to their chosen fields and to UCSB in these next years of study with us.”

—Dr. Glenn Beltz, Associate Dean, College of Engineering, UCSB

University of California, Santa Barbara is one of the nation’s top public research universities and one of only 62 institutions in the American Association of Universities. As it has become more popular for its quality and breadth of academic programs, UCSB has placed a priority on science and engineering education programs, through strategic hiring and support of research that is matched with an extensive program of building new facilities.

Over 25 UCSB faculty have current funding awards and fellowships through the NSF faculty development early CAREER awards, the Arnold and Mabel Beckman Foundation, the

Alfred P. Sloan Foundation and the David and Lucille Packard Foundation. UCSB is among the top 25 NSF funded U.S. universities and its intellectual depth is reflected in the fact that UCSB scientists earned 4 Nobel Prizes, 2 in Chemistry and 2 in Physics, between 1998 and 2004.

In addition, UCSB offers an exceptional research environment, as evidenced both by highly ranked departments and by strong interdisciplinary graduate programs that cross traditional STEM boundaries. Our BD activity is integrated into this exciting research environment, with strong support from leading STEM researchers.

Bridge to the Doctorate at UC Santa Barbara ~ Cohort V ~ 2009-2011



RODRIGO AZEVEDO

- B.S. Chemical Engineering, University of California Irvine, 2009
- Graduate Program: Chemical Engineering, Ph.D.



JOSE GALLEGOS

- B.S. Computer Science and Engineering, University of California Irvine, 2009
- Graduate Program: Computer Science, Ph.D.



SAMEH HELMY

- B.S. Chemistry, California State University Channel Islands, 2010
- Graduate Program: Chemistry and Biochemistry, Ph.D.



JON LO KIM LIN

- B.S. Mathematics, University of California, Berkeley, 2010
- Graduate Program: Mathematics, Ph.D.



STEPHANIE MENDES

- B.S. Chemistry, California State University Chico, 2009
- Graduate Program: Earth Sciences, Ph.D.



LAUREN MILLER

- B.S. Geology, Oklahoma State University, 2009
- Graduate Program: Earth Sciences, Ph.D.



MICHAEL NAVA

- B.S. Mathematics, California State University Channel Islands, 2009
- Graduate Program: Statistics & Applied Probability, Ph.D.



COURTNEY PALMER

- B.S. Electrical Engineering, University of Tulsa, 2009
- Graduate Program: Electrical & Computer Engineering, Ph.D.



KAREN PORTILLO

- B.S. Computer Engineering, California State University San Bernardino, 2010
- Graduate Program: Electrical & Computer Engineering, Ph.D.



DAVID SANDOVAL

- B.S. Chemistry, California State University Fullerton, 2010
- Graduate Program: Chemistry, Ph.D.



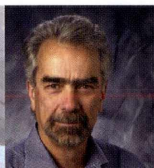
CARLOS TORRES

- B.S. Electrical Engineering, San Jose State University, 2009
- Graduate Program: Electrical & Computer Engineering, Ph.D.



RAYMOND VALDES

- B.S. Aerospace and Mechanical Engineering, University of California Irvine, 2009
- Graduate Program: Mechanical Engineering, Ph.D.



UCSB BD Leadership:

Glenn Beltz, Ph.D., BD Co-Director; Associate Dean, College of Engineering

Bruce Luyendyk, Ph.D., BD Co-Director; Associate Dean, Mathematics, Life and Physical Sciences

M. Ofelia Aguirre, M.S., BD Associate Director; Director, Center for Science and Engineering Partnerships, California Nanosystems Institute

nt Bridge to the Doctorate Fellows

UC Santa Cruz opened in 1965 with 650 students. Forty-five years later, the campus is home to nearly 15,000 undergraduates and 1,500 graduate students. Achievements by UC Santa Cruz faculty and students have earned national and international recognition for the quality of research and teaching. George Blumenthal is UCSC's 10th chancellor. He joined the campus in 1972 as professor of astronomy and astrophysics. In a world of beavers, bears, and bobcats, UCSC is home to

the mighty Banana Slug - which students voted in 1986 to adopt as the official campus mascot. The BD Fellows enjoy a welcoming campus and supportive environment in which to begin their doctoral studies. Strong commitment from the STEM deans and the Graduate Division provides the foundation for the BD design and implementation. The BD Steering Committee includes faculty mentors as well as deans and departments. UC Santa Cruz is proud to host the University of California Alliance's Cohort VI.

“By increasing the success in graduate school of historically underrepresented students, the Bridge to the Doctorate activity will help to create a vibrant intellectual community at UCSC and a campus-wide research environment that welcomes diverse approaches to scientific discovery. Students and faculty will engage in a focused agenda of intensive mentoring and professional development to prepare participants for a highly competitive doctoral environment and ultimately for careers in academia or in the technical workforce.”

—Zia Isola, Ph.D., BD Co-Director; Associate Director of Diversity Programs at the Center for Biomolecular Science and Engineering

Bridge to the Doctorate at UC Santa Cruz ~ Cohort VI ~ 2010-2012



MARIA URIBE

- B.S. Applied Mathematics, UC Berkeley, 2010
- Graduate Program: Astronomy



MICHELLE ARMSTRONG

- B.S. Chemistry, UC Santa Cruz, 2009
- Graduate Program: Chemistry and Biochemistry



BRIAN LEON

- B.S. Chemistry, UC Irvine, 2008
- Graduate Program: Chemistry and Biochemistry



MICHAEL MCTHROW

- B.S. Computer Science, Cal Poly San Luis Obispo, 2009
- Graduate Program: Computer Science



JORDAN RUYBAL

- B.S. Marine Biology, UC Santa Cruz, 2008
- Graduate Program: Ecology and Evolutionary Biology



CHRISTOPHER TONI

- B.S. Applied Mathematics, Northeastern Illinois University, 2010
- Graduate Program: Mathematics



PRESTINA SMITH

- B.S. Biology, Bennett College for Women, 2010
- Graduate Program: Molecular, Cell and Developmental Biology



RUTH PAM TILUS

- B.S. Molecular Biology, Savannah State University, 2010
- Graduate Program: Molecular, Cell and Developmental Biology



JUAN CASTELLON

- B.S. Molecular Biology, San Jose State University, 2008
- Graduate Program: Microbiology and Environmental Toxicology



RICHARD CATHEY

- B.S. Molecular, Cell and Developmental Biology, 2010
- Graduate Program: Microbiology and Environmental Toxicology

Note: Two additional fellows will join the cohort in 2011.



UCSC BD Leadership:

Sue A. Carter, Ph.D., BD Principal Investigator; Associate Professor, Physics

Zia Isola, Ph.D., BD Co-Director; Associate Director of Diversity Programs at the Center for Biomolecular Science and Engineering

Malika Bell, M.S., BD Co-Director; Staff Director/Program Coordinator, CAMP, IMSD, MARC



UCLA Alumna to Complete Ph.D., June 2011

Carolina Reyes, a CAMP participant

during her undergraduate career at UCLA, is completing a Ph.D. in Microbiology and Environmental Toxicology (METX) at UC Santa Cruz.

She expects to finish in June 2011, and is applying for postdoctoral fellowships, including at the University of Bremen, Germany. Her doctorate in METX links human health, microbiology, and the environment. The program

seeks to understand environmental poisons and pathogens that harm humans and other living things. It is a highly collaborative environment, and involves broad principles of toxicity and pathogenicity. For Reyes, the field holds an exciting future in research and teaching.

“My dream job is to become a faculty member at UCLA.”

Reyes recently presented at the SACNAS 2010 National Conference in Anaheim, CA. Her research, *Multiheme Cytochromes and Their Role in Metal Reduction in Shewanella Sp. Str. Ana-3* received honors at the awards ceremony.

Reyes would some day like to return to her alma mater UCLA as a faculty member.

UC San Diego BD Fellow Wins Siebal Scholars Award

Sergio Sandoval, Ph.D. Candidate in Bioengineering, has been selected to receive the prestigious Siebel Scholars Foundation award of \$35,000 to support his final year of doctoral studies. Sandoval is working in the laboratory of Dr. Andrew Kummel at UCSD's Moores Cancer Center. His research over the past five years has dealt with developing devices for detecting breast tumor cells intra-operatively in surgical margins and creating targeted nanoparticles for drug delivery systems. Sergio is currently using two different nanoparticle platforms for drug delivery systems: (1) inorganic SiO₂ hollow nanospheres and (2) bio-degradable PLGA-Lipid hybrid nanoparticles. He has shown that nanoparticles are as cytotoxic as free drug in *in vitro* studies in breast and ovarian cancer cell lines. Currently, he is in the process of refining the targeting capabilities of these nanoparticles in order to specifically target cancer cells and spare toxicity in normal tissue.

Sandoval has a distinguished list of honors and awards, beginning in 1998, when he was valedictorian at Channel Islands High School (Oxnard, CA) and won the Ventura County Hispanic Chamber of Commerce Scholarship as well as the UCI Chancellor's Scholarship. He completed a B.S. in chemical engineering at UCI in 2003. As an undergraduate, he won numerous awards, including: American Chemical

Society Scholarship, Mazda / Hispanic Scholarship Fund Scholarship, Toshiba / CAMP Statewide Scholarship, SHPE / Texaco Scholarship, and UC LEADS Fellowship. As a graduate student, in addition to being a CAMP Bridge to the Doctorate Fellow, he won a Gates Millennium Scholarship, GEM Fellowship, and NCI Research Supplement to Promote Diversity in Health Related Research Fellowship. Additionally, at the 2009 NCI Cancer Health Disparities Summit, 1st Place Poster Winner, Basic Research Division; Poster Award, 4th Annual NCI Alliance for Nanotechnology in Cancer Investigators Meeting (2009); 2010 Seibel Scholars Fellowship; 2010 Finalist, AVS Nanometer-Scale Science and Technology Division (NSTD) Graduate Student Award; Ruth L. Kirschstein National Research Service Awards for Individual Predoctoral Fellowships (2010) (F31) to Promote Diversity in Health-Related Research.

Sandoval expects to complete the Ph.D. in June 2011. He has been a vital member of the BD cohort at San Diego.



UC Davis' Former CAMP-er Now a Faculty Member at Princeton University



Ben Garcia received his B.S. degree from the University of California, Davis and then went on to earn his Ph.D. from the University of Virginia under Donald Hunt in 2005. Dr. Garcia then was a National Institutes of Health (NIH) Postdoctoral Fellow at the Institute for Genomic Biology at the University of Illinois, Urbana-Champaign with Professor Neil Kelleher. Since 2008, he has been an Assistant Professor of Molecular Biology and Chemistry, and a member of the Quantitative and Computational Biology program at Princeton University. His current research interests include developing and applying novel proteomics and genomics technology for studying chromatin signaling networks, and epigenetic reg-

ulation of gene expression patterns. His lab combines analytical chemistry, molecular and cellular biology and genomics approaches towards understanding how histone modifications control gene transcription during both development and cancer progression. He currently teaches biochemistry, proteomic and quantitative biology undergraduate and graduate courses at Princeton. Dr. Garcia has received several awards, including a National Science Foundation Early Faculty Career Award and a 2010 NIH Director's New Innovator Award.

"I owe a lot of thanks to the CAMP program."



UCLA Graduate Pursues Ph.D. in Chemical Engineering

UCLA graduate Jennifer Guerrero received her B.S. in chemical engineering and is now pursuing a Ph.D. in Chemical Engineering at UC Santa Barbara. While at UCLA, Guerrero participated in the Undergraduate Research Center/Center for Academic and Research Excellence pipeline of programs; starting her freshman year in the Biomedical Science Enrichment program (BISEP), followed by CARE Fellows/Scholars, the UC Leadership Excellence through Advanced Degrees (UC LEADS), California Alliance for Minority Participation (CAMP) Program, and finally the Minority Access to Research Careers (MARC) Program.

She presented at the 2008 CAMP Statewide Undergraduate Research Symposium, in a project entitled "Improving the Whole Cell Biocatalytic Properties Through Protein Engineering of LovD." Additionally, she found time to volunteer in the Mentor/Mentee Program and the Society for the Advancement of Chicano and Native American Scientists (SACNAS) Chapter at UCLA.

Guerrero is the recipient of the 2010 Elma Gonzalez Award; a distinction given to one UCLA graduating senior for research excellence, academic achievement, and contributions to the community. Her accomplishments include, but are not limited to being a contributing author in a publication by the Tang group (Biotechnology and Bioengineering Volume 102, Issue 1, pages 20–28, 1 January 2009), presenting her research findings at various national conferences, including the SACNAS National Conference, formation of the SACNAS Chapter at UCLA and serving as chapter president for the 2009/2010 academic year. Under Guerrero's leadership, the UCLA SACNAS Chapter was named

Guerrero is a recipient of the NSF's Pre-Doctoral Scholarship. She wants to mentor minority women scientists.

and career development and recruiting activities. She is also a recipient of the National Science Foundation's (NSF) Pre-Doctoral Scholarship, a distinction that is well-deserved. As Guerrero continues to move forward, she has specific career goals in mind; her dream job would allow her to utilize research to mentor students—specifically minority women scientists.

"2010 Chapter of the Year" by the National Organization for its outreach, academic

UC San Diego Camp Alumni Enroll in Graduate School



CAMP has established a **Graduate School Application Award** (CAMP GSAA) of at least \$100 and a maximum of \$250, depending on resources, to assist CAMP Scholars with the cost of application fees for graduate school. The award is open to students who have been active CAMP participants and who apply to at least three graduate school programs (including M.D./Ph.D.) for Fall 2010, Winter 2011, or Spring 2011.

The 2010 CAMP-GSAA recipients are:

STEPHANIE ALFONSO

- B.S. Biochemistry & Cell Biology, 2010
- Enrolled in Ph.D. program in Neurosciences at UCSD Fall 2010

MELISSA AILLAUD

- B.S. Bioengineering: Pre-Medical, 2010
- Enrolled in Ph.D. program in Materials Science and Engineering at UCSD Fall 2010

DANIEL DADON

- B.S. Molecular Biology, 2009
- Enrolled in Ph.D. program in Biology at MIT Fall 2010.

MIKE GARCIA

- B.S. Mechanical Engineering, 2010
- Enrolled in Ph.D. program in Mechanical Engineering at the University of Pennsylvania Fall 2010.

JOSHUA XAVIER RAMOS

- B.S. Electrical Engineering, 2010
- Enrolled in M.S. program in Electrical and Computer Engineering (emphasis in signals and image processing) at the University of Southern California Fall 2010.

CYNTHIA WOOD

- B.A. Mathematics (Applied), 2010
- Enrolled in Ph.D. program in Computational and Applied Mathematics at Rice University beginning Summer 2010. Wood was recruited by Dr. Richard Tapia, Professor, Computational and Applied Mathematics.

LISANDRO MAYA-RAMOS

- B.S. Human Biology, 2009
- Enrolled in M.D./Ph.D. program at UCSF Fall 2010. Recipient of the \$250,000 Gilliam Fellowship for Advanced Study. (See page 25.)

More Updates:

MELANIE BOCANEGRA

- Ph.D. Biology, Stanford University, June 2009. (B.S. Molecular Biology, 2003)

CARLA CERVANTES

- Ph.D. Chemistry, UCSD, June 2010. (B.S. Biochemistry/Chemistry, 2003, Cum Laude, M.S. Chemistry, UCSD, 2005)

PABLO GARCIA-REYNAGA

- BD Fellow, defended his dissertation Nov. 2010; Ph.D. conferred Dec. 2010. Dr. Garcia-Reynaga will start a postdoc at UC Berkeley.

JOSE OTERO

- Ph.D. Earth Sciences, UCSD, September 2009. (B.S. Physics, 2000)

PAUL SUÁREZ

- M.S., Mechanical Engineering, UCSD, June 2010. (B.S. Bioengineering, 2008)

NATHAN TRUJILLO

- B.S. Chemical Engineering, 2005. Enrolled Ph.D./MBA program at MIT Fall 2006; MIT Class of 2011.



UCSD BD Fellow Roberto Tinoco Completes 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.

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



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.

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.”

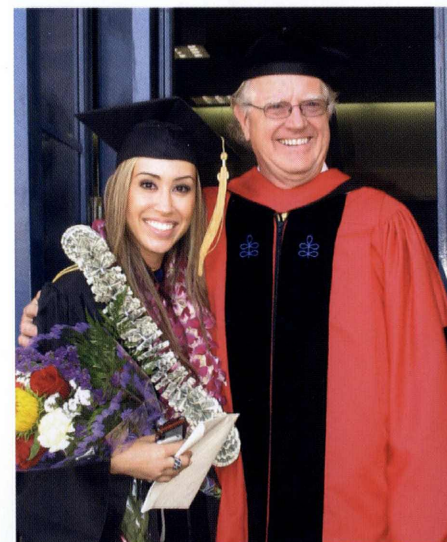
Luis A. Rodriguez, Ph.D., UCI BD Fellow, completed a doctorate in Mechanical Engineering in 2010. Rodriguez earned a B.S. in Mechanical Engineering at UC San Diego (2001), and enrolled in the engineering graduate program in Fall 2004. Professor Athaniosis Sideris served as Ph.D. advisor. Rodriguez defended 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., 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.

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*, Vol. 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



Award of Excellence goes to UC Santa Cruz Biology Alumnus

Dr. Blake Riggs, an alum from CAMP, MARC, IMSD (completed undergraduate and graduate degrees at UCSC in MCD Biology) is now faculty at San Francisco State University. Dr. Riggs was awarded Minority Science Programs' first annual Alumni Award of Excellence.



CAMP students are taking their places in academia; they are among the new generation of scientists and engineers in the professoriate.

UC Irvine Alumni Updates

Class of 2010 Enrolled in Graduate School, Fall 2010:

- Malerie Ayala**, B.S. Chemistry, M.S.-Ph.D. program at California State University, Los Angeles
- Monica Castaneda**, B.S. Electrical Engineering, Ph.D. program at Northwestern University
- Nery Chapeton**, B.S. Computer Science and Engineering, Ph.D. program at University of Nebraska
- Julie Cojulan**, B.S. Aerospace Engineering, Ph.D. program at University of Southern California
- Ruby Ana Fernandez**, B.S. Chemistry and Biology, Ph.D. program at University of Illinois at Chicago
- Richard Komai**, B.S. Materials Science and Engineering, Ph.D. program at Northwestern University
- Andrew Marquez**, B.S. Materials Science, Ph.D. program at UC San Diego
- Andre Paredes**, B.S. Biomedical Engineering, Ph.D. program at University of Illinois at Chicago
- Francis Rodriguez**, B.S. Environmental Engineering, M.S.

program at University of Colorado, Boulder

Lizeth Ruvacalba, B.S. Chemistry, M.S.-Ph.D. program at California State University, Los Angeles

Helen Sanchez, B.S. Chemical Engineering, M.S.-Ph.D. program at California State University, Los Angeles

Class of 2009 Currently Enrolled/Continuing in Graduate School:

- Josue Alfaro**, B.S. Physics, Ph.D. program at Dartmouth University
- Aaron Botello**, B.S. Computer Science, M.S. program at University of Southern California
- Jorge De Paz**, B.S. Computer Science and Engineering, M.S.-Ph.D. program at UC Irvine
- Arias Devin**, B.S. Public Health Science, M.S. program at California State University, San Bernardino
- Maria Garcia**, B.S. Environmental Science, M.S. program at Oregon State University
- Denise Leal**, B.S. Electrical Engineering, Ph.D. program at UC Santa Barbara

- Christina Neino**, B.S. Pharmacy, M.S. program at Western University
- Jonathan Ortiz**, B.S. Aerospace Engineering, M.S.-Ph.D. program at University of Southern California

Alumni in the Professoriate

- Dr. Ruben Alarcon**, Assistant Professor, Biology, California State University, Channel Islands
- Dr. Nzola Demagalhaes**, Assistant Professor, Biomedical Sciences, Rochester University
- Dr. Peter Velazquez**, Assistant Professor, School of Medicine, University of Notre Dame

In Other News

- Brian Leon**, B.S. Chemistry 2008, is a BD Fellow at UC Santa Cruz
- Dr. Brandon Brown** (UCI Class of 2004) completed the Ph.D. in Immunology December 2010, Johns Hopkins University
- Dr. Luciano Matzkin** (UCI Class of 1996, Ph.D. SUNY) is a research scientist at the Department of Ecology, Behavior and Evolution, UC San Diego; he gave a seminar in 2009-10 for UCI CAMP students in Eco/Evo.
- Rodrigo Azevedo, Jose Gallegos** and **Raymond Valdes** are BD Fellows at UCSB. Refer to page 16.

UC Riverside Biology Major is a BD Fellow at Delaware State University

Tori Alexandra Owens, graduated from UC Riverside with a B.S. in Biology in 2009. She was admitted at Delaware State University for a two year M.S. Biological Sciences Program and received full funding through the Bridge to the Doctorate activity of LSAMP. She is now in her second year of the program.

Owens presented her research at the 2009 CAMP Statewide Undergraduate Research Symposium.

She says, "When I finished up my first year of graduate study I found that I had grown and learned quite a bit. I have started my thesis research in cancer biology—quite exciting! and excelled in all of my courses. I have been applying to M.D./PhD programs."

Owens says, "Every year the Central Philadelphia LSAMP BD hosts a symposium for the students at participating schools to present their research in an open forum, be judged, and get information on graduate school opportunities." She took first place, including a \$500 award, in the graduate oral category.

Owens expresses her appreciation to UCR faculty mentors in a recent email: "Thanks for your time and for all that you have done for me to be where I am today."

She adds, "I am a living breathing example of what the LSAMP program is capable of providing! Funded education opportunities for minorities in the STEM fields!"



Tori Alexandra Owens, BD Fellow, Delaware State

Abstract:

Use of Fluorescent Probe BCECF to discover the pH of Sea Urchin Egg Jelly

Tori Owens and Richard Cardullo, Department of Biology, University of California, Riverside

Upon female spawning of the Echinoderm species/*Strongylocentrotus purpuratus* into sea water (pH 8), the egg jelly coat that surrounds the / unfertilized sea urchin egg experiences swelling upon contact with sea water, forming a three dimensional network of interrelated fibers extending nearly 50 <http://www3.interscience.wiley.com/giflibrary/12/mu.gifm> from the egg surface/. BCECF PM (/2',7'-Bis-(2-Carboxyethyl)-5-(And-6)-carboxyfluorescein) /is a fluorescent probe which is used for tagging of the outer cell membrane of cells (which in this case, is sea urchin egg jelly). BCECF fluoresces or emits a wavelength of approximately 535nm when excited at wavelengths of 439nm and 490nm. The proportion of the 490nm to 439nm ratio is directly proportional to the pH of the membrane being tested. With different conditions being employed ranging from a control group of eggs

in pH 8 artificial sea water (ASW), stripped egg jelly in pH 8 ASW and dry eggs (not collected in ASW) with no BCECF PM/to all of those conditions with the probe administered to the samples, I will test the pH of the egg jelly of the purple sea urchins. Natural sea water is at a pH of approximately 8. In, later extended research, plans are to see the affects of rising pH of sea water on sea urchin egg fertilization and how the egg jelly is affected. If the egg jelly is degraded, the egg will become very easily penetrable by sperm and there could be potential over production of sea urchins. Yet if the egg jelly is affected in the opposite direction, then fertilization could become much more difficult and thus there would be less production of the purple sea urchin *Strongylocentrotus purpuratus*.

UC Irvine Computer Science Alumni Make Their Mark in Corporate World

DezTech Consulting LLC was founded by Aaron Soto and Andrés Nava in the summer before their Junior year at UC Irvine way back in 1998, which is a long time ago in “web time.” The two UC Irvine CAMP products spent their initial years of their Information and Computer Science program at UCI conducting research under the invaluable input of Kika Friend with prestigious members of UCI’s ICS Department, including Dr. Debra Richardson, former dean of the Donald Bren School of Information and Computer Science. Aaron and Andrés spent their final two years juggling the demanding requirements of UCI’s program as well as a growing list of clients with their own growing demands. Both founders made the Dean’s List several times during their time at UCI and in June of 2000 got their degrees on-time and within budget, just like the projects they were developing for their clients. In fact, DezTech’s first client, BridgeGate LLC, is still a current client 12 years later! Today, DezTech focuses on building effective websites with some aspect of advanced, custom functionality.

Aaron Soto attributes the pair’s success with DezTech to having received an absolutely excellent educational foundation of how to develop good software, the experience gained from working with a number of clients in varying industries, and finally, to our own commitment to each client to offer prompt, courteous service to meet their needs.



Aaron Soto

“It’s all about using today’s web technologies as an effective tool to maximize the potential benefits available to you and doing so with friendly and professional service.”



Brian McCurtis

UCI Alum Brian McCurtis, PMP, completed a B.S. in Information and Computer Science in 2000. He subsequently conducted independent research at Carnegie Mellon’s Software Engineering Institute in 2001. Since then, McCurtis has pursued a successful career in project management, from his first job at Deloitte Consulting as a system analyst to his current position with Nokia, where he is a manager in software configuration. With Nokia, he has traveled the world. His first experience abroad was in Helsinki, Finland, where he was project manager for the Nokia Siemens Networks. Then he was assigned to Latin America, to the “My Nokia” program, based in Sao Paulo, Brazil. He was responsible for a program that also included a project area in Argentina, Chile, Venezuela, and Mexico. Currently he works out of Miami. McCurtis is the blog author of Stakeholder Guide, “A practical guide for IT project stakeholder managers.”

“I have lived in Brazil and Eastern Europe and have traveled to other places for work. They are quite different, however, I am more fond of Brazil. In fact, I am learning Portuguese so I can communicate better with my team members and friends there. I will say the Brazilians embrace life in a unique way and I enjoy working in Sao Paulo, Manaus and other cities.”

\$250K Gilliam Fellowship Awarded to UC San Diego's Lisandro Maya-Ramos

Lisandro Maya-Ramos is enrolled in the MD/Ph.D. at UC San Francisco, beginning doctoral studies Fall 2010. He transferred from San Diego City College to UC San Diego. Maya-Ramos exemplifies NSF-CAMP's overarching goals for student attainment and serves as an inspirational role model not only for his alma mater UCSD but also for the entire CAMP program UC-wide.



UC San Diego CAMPer and McNair Alumnus, Lisandro Maya-Ramos

has been awarded the prestigious Gilliam Fellowship for Advanced Study by the Howard Hughes Medical Institute (HHMI). Lisandro was eligible to apply for this award because as a Hughes Scholar he was nominated and accepted to participate in the Exceptional Research Opportunities Program of the HHMI. As part of this program, he conducted research last summer at Weill Cornell Medical College under Dr. Shahin Rafii. The title of his project was, "Expansion and Maintenance of Human Hematopoietic Stem Cells."

Gilliam fellows attend the university of their choice and work alongside

distinguished scientists. Chosen for their academic excellence and scientific potential, they will become the leaders of the new generation of biomedical researchers. The fellowships honor the legacy of the late James H. Gilliam Jr., a trustee of the HHMI who devoted his life to fostering excellence and diversity in education and science.

Maya-Ramos, who completed a B.S. in Human Biology in 2009, grew up in Tijuana. In Summer 2008, he volunteered for Project Nicaragua, a non-profit organization at UCSD and UCLA. Maya-Ramos spent three weeks in Managua, Nicaragua, distributing medical supplies and helping with consultations. He also traveled with volunteer doctors to rural clinics, bringing health care to the underserved.

This fellowship provides full support for up to five years of study towards the Ph.D. It is believed that Lisandro Maya-Ramos is the first UCSD student to receive this award.

LISANDRO MAYA-RAMOS PROFESSIONAL ACTIVITIES

- CAMP Scholar 2006-2009
- McNair Scholar 2006-2007
- IMSD Scholar
- Transferred from San Diego City College
- Research mentors at UCSD: Drs. Andres Sciolla and Francisco Villarreal
- Research mentor at Cornell: Dr. Raffi
- Presented at SACNAS 2007 and 2008
- Presented at CAMP Statewide Symposium 2008
- Volunteered for events targeting potential transfers to UCSD

UC San Diego BD Fellow Conducting Research in Nanochemistry



Kristina Pohaku Mitchell

Kristina Pohaku Mitchell, UC San Diego BD Fellow, is currently conducting research in the area of nanochemistry in the William Troglor Laboratory. She is a Socrates Fellow, working on Nanoparticles in the Classroom, which involves developing methods to make multifunctional nanoparticles for potential imaging and drug delivery applications.

Mitchell was first introduced to chemistry and research while in high school. It was these initial experiences that led her to pursue a B.S. and M.S. in chemistry. She is the first in her family to complete undergraduate and graduate education, and through the Socrates program hopes to provide the same opportunity to others. Mitchell is a fellow of the California Alliance's BD Cohort III.

ADVENTURE IN INDIA

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



practice. She plans to gain more “on the ground” experience in summer 2011, when she will return to India with the Blum Center group.

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. The hardships of “doing without” never seemed to detract from her full participation in the experience, the research, and the greater goals to better the human condition. She would like to be a pioneer in environmental preservation and to reinvent natural resource management with a focus on sustainability.

Nothing lends the color of an experience quite like a journal. In her blog, Lisa has shared her goals and ideas on how to meet them. Some of her thoughts are shared here, to bring light to the benefit of experiencing life on the other side of the globe. She has generously provided some of her insights for us to enjoy and to remind us as to what is indeed possible with conviction, motivation, and action.

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

FROM THE FIELD

Letter from Mumbai to Diana Lizarraga,
UC Berkeley CAMP Coordinator

Hello Di,

I'm working on a water/sanitation project in India. I'm part of a student group from Berkeley (called Haath Mein Sehat) and we coordinate a college volunteer program that works in different slum communities to run hygiene education/water quality testing. We're also doing some research of our own, and I'm just LOVING India! It's such an amazing country! Mumbai is an incredibly diverse city! You can follow my blog if you'd like to... www.risatravels.blogspot.com

As for housing, there is no standard across all Indian homes. There is a huge variety of housing styles/size/etc. but 51% of Mumbaikers live in informal housing settlements. The communities we've visited have homes made of sheet metal, brick, concrete mixtures, and other stuff. Then, there are beautiful beachside resorts in other parts of India (Goa, for example).

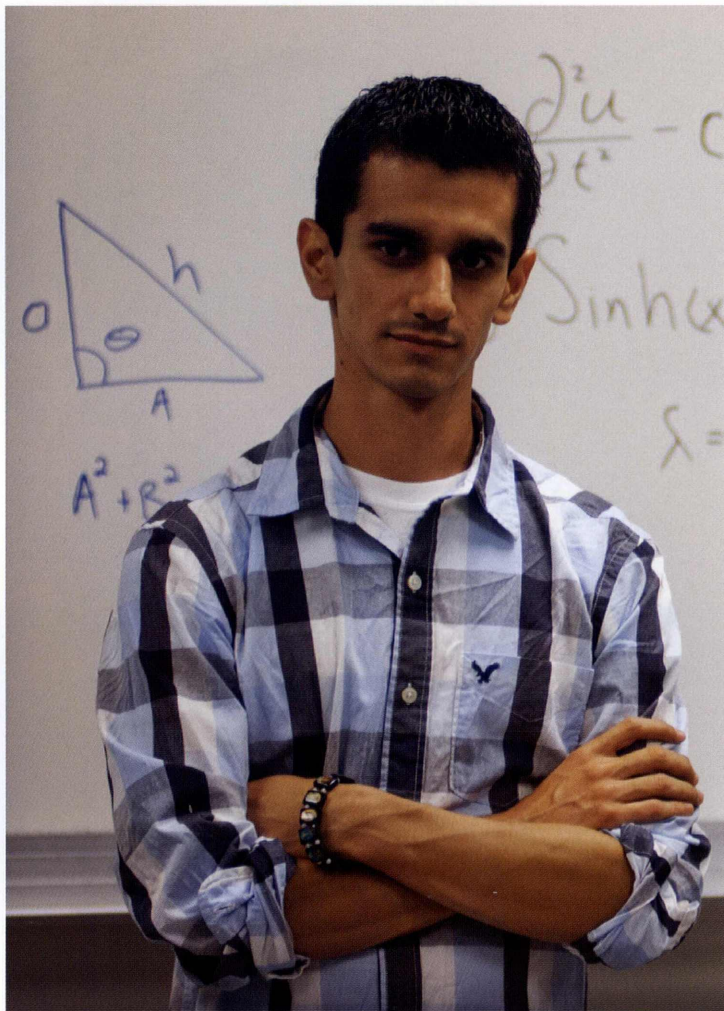
--Lisa



"Traveling and learning about the world and its people has always fascinated me. The more I learn about different economic, political, and social systems, the more I realize how interdependent we are on one another—from commerce to policy and other relations as well." —Lisa Veliz

Lisa Veliz continues on page 41

UC Irvine's Arturo Vargas: Math Major has Goal of Ph.D.



UCI Mathematics major Arturo Vargas, a junior, transferred from Fullerton College in 2009-10. He is a transfer student that has quickly become a role model and mentor for other prospective transfers, and part of a growing community of STEM majors who transfer to UCI.

Vargas was selected to receive the prestigious UC-Edison Transfer Scholarship. Summer 2010 presented him with an opportunity to conduct research at Arizona State University. In October 2010, he was duly awarded a Best Poster Award at SACNAS for his work.

Vargas participated in the Mathematical Institute of Theoretical Biology (MTBI), which provides students with an opportunity to study applied mathematics and to do their own research. Students learn various forms of mathematics such as differential equations, dynamical systems, mathematical modeling, and probability. They also learn how to use matlab, mathematica, and maple, and, working in teams, write a paper on a self-selected topic.

His research was made possible by ASU Professor of Biology Carlos Castillo-Chavez, Executive Director, Mathematical, Computational and Modeling Sciences Center (MCMSC). Mentors included Dr. Leon Arriola (Mathematics), Dr. Michael Golinski (Biology), and Benjamin Morin, a graduate student. The team included students from Minnesota and Mexico. They studied the spread of forest fires.

Vargas says, "Dr. Golinski made sure that we were capturing the properties of fires correctly."

He adds, "Dr. Arriola's expertise is in Sensitivity Analysis. We incorporated sensitivity analysis in our paper to show how our system reacts to changes in parameters."

ASU Graduate Student Benjamin Morin made sure the math was correct. "He helped us derive equations and made sure our programming was perfect," says Vargas.

In addition to preparing for a future career that includes a Ph.D., Vargas is a CAMP tutor in Linear Algebra and Elementary Differential Equations, among other courses. He was among the students on hand to welcome a new cohort of UC-Edison Scholars at a Meet-n-Greet held October 13, 2010 at the Henry Samueli School of Engineering. He works hard to balance the demands of being a mathematics major and keeps fit by eating right and exercising – which help in maintaining a positive attitude during the long hours required to solve a proof.

"To have the words Edison Scholar follow my name is truly one of the most encouraging things. As a student here at UCI I am constantly surrounded by some of the brightest people. And sometimes it can be quite easy to feel discouraged. It is times like those that the words Edison Scholar have so much meaning for me."

—Arturo Vargas, UC-Edison Scholar



Students at Arizona State University's Mathematical Institute for Theoretical Biology, Summer 2010. Vargas (wearing 'element' t-shirt) met students from throughout the U.S. and Mexico. He and five others worked on a team project, "A New Perspective on Modeling Forest Fires," below.

Abstract:

A New Perspective on Modeling Forest Fires

Jose Leonel Larios-Ferrer, Justin Peterson, Arturo Vargas, Leon Arriola, Michael Glinski, and Benjamin Morin

Universidad Autonoma del Estado de Hidalgo, Northwestern College, University of California, Irvine, University of Wisconsin Whitewater, and Arizona State University

In this study, we use numerical simulations to heuristically explore the spread of forest fires. Our numerical studies are based on a "bottom-up" framework in which we start with a model with no spatial information on how forest vegetation is distributed (the Mean Field model (MF)). The MF is then replaced by a more detailed model which explores the effects of local, spatial interactions between vegetation and fire (the Pair-Approximation model (PA)). In this detailed study, the MF model serves as our "null" model because of its disconnection from actual biological processes (i.e. the absence of spatial interactions between vegetation and fire and how it affects fire spread). The most developed model in our framework is a Cellular Automata (CA) model. The stochastic and spatially explicit features of the CA model make it ideal for exploring the effects of distance and random behavior on the spread of fire. With the CA model, we gain insight that is directly applicable to actual forest fire management. For each model,

we compare and contrast the dynamics of fire spread using a single and two layered (connected) lattice to measure the effect of including differential behavior of fire between the understory and canopy. From each of the models we observe thresholds (when available) for the stability of the fire-free equilibrium (FFE). We also utilize sensitivity analysis to determine the relationships between parameters in the MF and PA model and the basic ignition number, a measure for the average number of new trees that should catch on fire when a single source of fire is introduced into a forest. Results indicate that for all three models, the rate of fire spread (α), the rate at which an occupied burning state returns to a non-burning occupied state (β), and the rate at which a burning occupied state becomes an empty site (χ) determines the stability or instability of a forest fire. In the case of the two-layered lattice versions of the models, we find that fire controls are best focused on the understory level.

Q&A with UCI's ARTURO VARGAS

When do you anticipate completing your B.S.?

I should be completing my B.S. in Spring 2012.

What is your educational goal?

My goal is to earn a Ph.D. in Applied Mathematics, more specifically Dynamical Systems.

Do you have a graduate school in mind?

A few of my top schools are Rice, Stanford, Claremont Graduate University.

What does it mean to you to be an Edison Scholar?

Being an Edison Scholar is quite an honor. Having this support really encourages me and motivates me because I am no longer studying simply for myself, I am studying for those who thought it would be a good idea to invest in me.

Tell us about your "smart grant."

The smart grant is a federally funded scholarship awarded to students in STEM fields. The recipient must be a third or fourth year.

What or who inspires you?

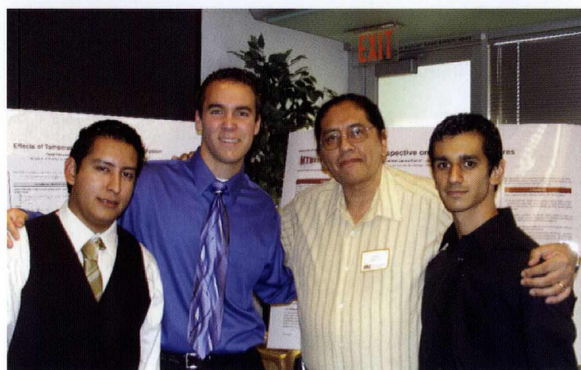
Ordinary people who work very very hard inspire me. While I was at community college I met many older students who went to work for over 10 hours a day, then went to school at night because they knew that education would help them get to where they want to be. Some how "I'm tired" did not apply to them. And what ever higher power is governing us. The power that made the stars sparkle and my mind wonder at the sight of them.

Where did you go to high school?

I attended Fullerton Union High School in Fullerton, CA.

How do you relax?

I relax by watching movies, going to the beach and simply having a good time. Balancing my life is kind of tough at times but I always try to do my homework ahead of time - as a math major I never know how long a proof with take to figure out. By eating well, and exercising, I find it's easy to do everything I need to do.



Arturo Vargas, far right, with Professor Carlos Castillo Chavez, Executive Director, MCMSC. Also pictured, from left, are undergraduates in the research group, Jose Larios-Ferrer and Justin Peterson. At right, Arturo with two members of the summer mathematical institute, enjoying a meet-and-greet.

ARTURO VARGAS CV

Education

- Fullerton College 2007-2009
B.S. in Mathematics in progress,
University of California – Irvine,
2009- present

Tutoring:

- Fall '09 quarter: CAMP/UCI Tutor for Math 2J– Infinite Series and Basic Linear Algebra
- Winter '10 quarter: CAMP/UCI Tutor for Math 2J– Infinite Series and Basic Linear Algebra; Math 3A– Intro to Linear Algebra
- Spring '10 quarter: CAMP/UCI Tutor for Math 2J– Infinite Series and Basic Linear Algebra; Math 3A– Intro to Linear Algebra; Math 3D– Elementary Differential Equations

Research Experience

- ASU MTBI Program Summer 2010

Publication, Non-Peer Reviewed

- J. Larios, J. Peterson, A. Vargas, L. Arriola, M. Golinsky, B. Morin, "A New Perspective on Modeling Forest Fires", Article #: MTBI-07-02M MTBI/SUMS Technical reports, <http://mtbi.asu.edu/research/archive/2010>, 2010.

Awards and Scholarships

- 2009/2010 Fullerton College/UCI Edison Scholar
- 2009/2010 UCI Smart Grant Award
- 2010 SACNAS Poster Award



SUMMER ABROAD

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

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 Chabinye 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 plans to present at the 2011 CAMP Statewide Symposium, Irvine, CA.



Andres Munoz at the Leibniz Institute for New Materials, Saarbruecken, Germany. At left, a weekend in Paris afforded a beautiful view of the Eiffel Tower. See Q&A with Andres Munoz, next page.

Abstract:

Improving Microscale Order in Convective Assisted 2D Particle Arrays

Andres Munoz, Mechanical Engineering, UCSB
Leibniz Institute for New Materials, Saarbruecken, Germany

Convective assisted depositions of 2- and 3-dimensional arrays of micro- and nano-particles have been a topic of research for a significant amount of time. There has been a need to create consistent, closed-packed, ordered 2D particle arrays for current and future cutting edge applications. These applications vary from optical filters and anti-refractive surface coatings to data storage and micro-electronics. The overall project consisted of improving the micro-scale order of such 2D polystyrene latex submicro-, nano-particle arrays on wetting silica substrates. The project was divided into two parts. The first part focused on the prevention of cracking in sub-micrometer (1 & 0.5 μm) 2D particle arrays. Significant cracking appears upon drying of the films when the capillary forces overcome the repulsion forces between the particles. When the film is wet, there is a predefined distance between the particles; this distance is defined by the electric constant, E_0 , in the suspension which can be related and quantified/tracked through the pH. The capillary forces depend on the surface tension of the liquid which in turn depends on the contact angle. Two approaches were found to be successful, changing the electric constant, E_0 , and depositing at

different temperatures, improving the order significantly when 1.0 and 0.5 micrometer particles were used. The optimum 2D arrays resulted from depositions near room temperature for pH values between 4.3 and 5.0. Adding the salts had the negative effect of solidifying and disrupting the ordered structure on the film. The other part of the project consisted in predicting the right deposition parameters for nano particle arrays based on deposition parameters using the 1 & 0.5 micro-particles. Quantitative analysis of particle speeds and wedge shapes depending on pH values, deposition temperature, and particle speeds were performed. Wedge shapes were fitted with a second order polynomial and found to be dependent on deposition temperature and pH value. Particle speeds were found to be dependent on temperature, slightly dependent on particle size and inversely proportional to the wedge shape. All these parameters were related to the localization energy, overall potential energy and kT energy of the particles. The ratio of these energies would help predict whether there would be order/disorder in the depositions. Depositions of nanometer particles are to be performed to prove or disprove the predictions.

Q&A with UCSB's Andres Munoz

Where will you apply to grad school? What are your top choices?

I'd like to live in California, so I think I will focus in applying to schools in the state. I will apply to Santa Clara University, University of Southern California, UCLA, Cal Poly San Luis Obispo and a couple other CSU's. I may also apply to other state universities outside California that have strong programs in Mechanical Design. Santa Clara University is by far my top choice.

What does research mean to you, in terms of your future plans?

Doing undergrad research has given me a good taste of what the world of research is all about. Not only have I learned about research, but working with my lab mentors and advisers has given me another great perspective of the world. Talking to them I realized I have a lot yet to learn and that there are so many opportunities out there, and although I'm not sure whether I'm going for a Ph.D. at this point in life, I know I need to further my education. That's why I'm going for the M.S. I'd like to go to industry. I want to try both worlds, see which one provides more appealing opportunities.

How did your international experience change you?

When I came back I realized I was not the same person. Being exposed to people with many different perspectives and backgrounds made me think beyond and I realized many things about life in general that otherwise wouldn't have been possible. My confidence increased, I'm more motivated to do my best, and I'm more open minded.

What was your relationship like with your mentor Dr. Tobias Kraus?

Dr. Tobias Kraus is one of the best, young group leaders. He was very supportive and motivating. Besides lab work, the group had several outings for dinner or to visit some cool places, which increased the social interactions. Personally, he gave me great advice in pursuing my desires whether it be in the research world or industry.

What is your career goal? Where do you see yourself in 10 years?

My desire for making/building/designing everyday life objects/products attracted me to mechanical engineering, as

Q&A with Andres Munoz continues on page 47

UC Riverside Biologist Sees Future in Molecular Pathology



MAGDALENE MOY, SENIOR, BIOLOGY

- Academic Interests: Pathogenic modes of infection for medical advancements
- Activities: Biology research intern, UCR CAMP president, Sustainable UCR
- Honors: Dr. Mastin's scholarship, Soroptimist Scholarship
- Educational and Career Goals: enter Ph.D. program in pathology
- Long Term: Remain in the research sector addressing human medical issues
- Pathway to Research: Began laboratory experience as a freshman. Moy shares her growth and development in her own words—

“My interest in research began in my AP Biology class while watching the Johns Hopkins Holiday Lecture Series.

After watching the series we began performing experiments to supplement the material. I had never learned in a hands-on manner before and being able to mimic vital experimental procedures fascinated me. By the time I began college I knew that I wanted to be a researcher; I wanted to help discover new vaccines for serious medical ailments. I began working in a research lab under Professor Nunney the winter quarter of my first year. By that summer I was given my own project to design and execute. Professor Nunney has always supported my future endeavors and when I told him I was interested in molecular pathology he helped me alter my project to get more experience in that field. I plan on entering a pathology Ph.D. program next fall. I've considered the possibility of entering academia as well as working for an agency such as the Center for Disease Control. However, my real goal is to remain in the research sector and any occupation that allows me to further my interest in human pathology is a possibility.”

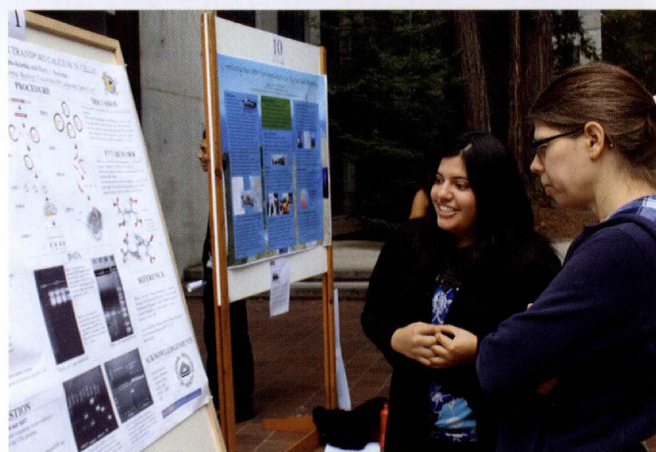
UC Santa Cruz Students Celebrate Commencement with STEM Diversity Graduation



UC Santa Cruz held a special STEM Diversity Graduation, above, co-sponsored by CAMP. Dr. Frank Talamantes, University of Texas El Paso, gave the keynote address. Talamantes was formerly on the faculty at UCSC, and was a strong supporter of minority programs. Of the 36 students graduating 19 were CAMPers. The event was planned mostly by the students. Program staff, including CAMP Coordinator Malika Bell, made stoles for everyone. At the celebratory dinner, students invited their families and faculty mentors, and thanked those who helped them. The students gave roses to their research mentors.

“Our diversity programs are successful when each of our students can feel that they belong in the STEM research community and that with this feeling sprouts the confidence to achieve greatness.”

—Malika Bell, CAMP Coordinator and Program Director for MARC, IMSD, and UC LEADS



Above, UC Santa Cruz held a combined Undergraduate Summer Poster Symposium on August 20th, 2010 in the Engineering Courtyard. All the summer diversity programs joined forces: CAMP, MARC, IMSD, UC LEADS and SURF-IT. CAMP was a major sponsor of this event. The symposium enjoyed a big turn out of faculty, students and staff. Veronica Haro-Acosta (who has participated in CAMP, IMSD and MARC) presenting to Professor Melissa Jurica from the MCD Biology Department.

UC Santa Barbara CAMP 2010 Summer Interns Delve into Research

GABRIELA BERNAL

- Chemical Engineering, University of California, Santa Barbara
 - Mentor: Nancy Eisenmenger, Neil Treat
 - Faculty Mentor: Professor Michael Chabinyc, Material Department
- Electrode Deposition on Thiolene Based Stamps for Soft Contact Lamination in Organic Photovoltaic Devices*

RUBEN DIAZ

- Mechanical Engineering, University of California, Santa Barbara
 - Mentor: Hans Mayer
 - Faculty Mentor: Professor Rouslan Krechetnikov, Mechanical Engineering Department
- Investigation of Surfactant-Laden Pendant Drops in Electric Fields*

GONZALO ESPARZA

- Chemical Engineering, University of California, Santa Barbara
 - Mentor: Travis Koh
 - Faculty Mentor: Professor Michael Gordon, Chemical Engineering Department
- Characterization of Palladium/Silica Nanoparticles for Catalytic use in the Hydrogenation of Acetylene*

DANIEL ESTRADA

- Chemistry, University of California, Santa Barbara
 - Mentor: Dr. Jake Richardson
 - Faculty Mentor: Professor Steve DenBaars, Materials Research Laboratory
- Lateral Epitaxial Growth of ZnO in Aqueous Conditions at 90c for Current Spreading Layers in LEDs*

DARLENE GOMEZ

- Hydrologic Sciences, University of California, Santa Barbara
 - Mentor: Alisa Hove
 - Faculty Mentor: Professor Susan Mazer, Department of Ecology, Evolution, and Marine Biology
- Pollen Limitation and the Evolution of Self Pollination in Clarkia xantiana ssp xantiana*



UCSB summer interns represent an array of STEM majors: chemical and mechanical engineering, microbiology, biochemistry, chemistry, biopsychology, hydrologic sciences, and geological sciences.

LIZBETH MARTINEZ

- Microbiology, University of California, Santa Barbara
 - Mentor: Rahau Shirazi
 - Faculty Mentor: Professor Cyrus R. Safinya, Material Research Laboratory
- Characterization of New Degradable Cationic Lipid-DNA Complexes Using Ethidium Bromide Displacement and Cytotoxicity Assays*

VERONICA MUNOZ

- Biopsychology, University of California, Santa Barbara
 - Mentor: Dr. Eileen Hamilton
 - Faculty Mentor: Professor Eduardo Orias, Department of Molecular, Cellular and Developmental Biology
- Discovering Chromosome Breakage Sites on the Left Arm of Micronuclear Chromosome 4 in Tetrahymena Thermophila*

RICHARD SANCHEZ

- Biochemistry, University of California, Santa Barbara
- Mentor: Dr. Eileen Hamilton,

- Faculty Mentor: Professor Eduardo Orias, Department of Molecular, Cellular and Developmental Biology
- Finding and Deleting Mapping Chromosome Breakage Sites on Chromosome 1 of Tetrahymena Thermophila*

MARIA C. TRUJILLO

- Chemical Engineering, University of California, Santa Barbara
 - Mentor: Dr. Jason Spruell
 - Faculty Mentor: Professor Craig Hawker, Materials Department
- Self Assembling of PI-b-PS Copolymer Nanoparticles Into Spheres and Nanodiscs*

CHRISTIE VILLANUEVA

- Geological Sciences, University of California, Santa Barbara
 - Mentor: Monica Heintz
 - Faculty Mentor: Professor David L. Valentine, Department of Earth Science and Marine Science Institute
- Determining Effects of the BP Deepwater Horizon Oil Spill Through Hydrocarbon Consumption*

CALIFORNIA REPRESENTATIVES SHINE

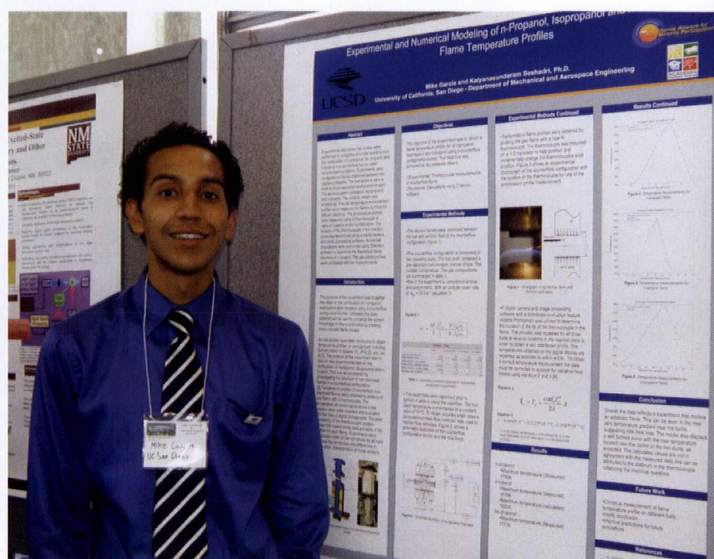
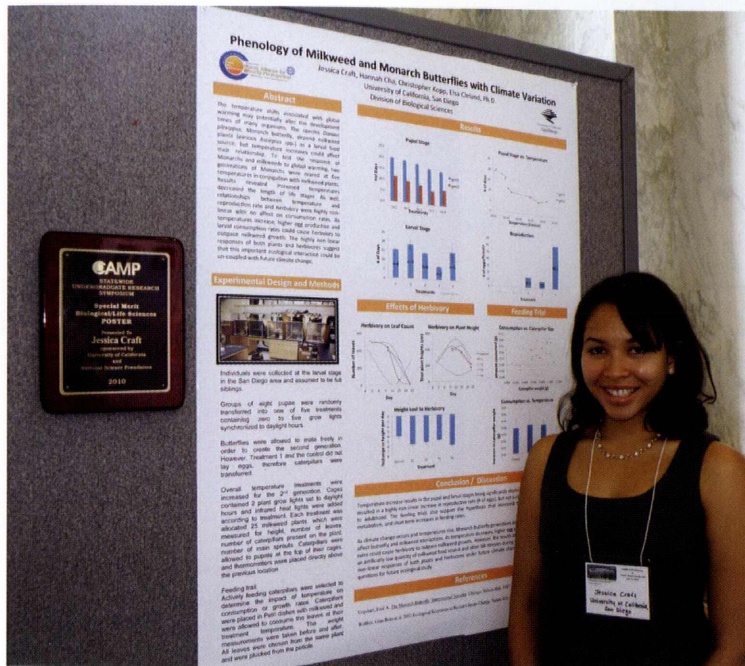
UC San Diego Team Represents CAMP at Washington, D.C. Poster Session

Students and Leadership Participate in Special JAM, July 2010

Congressman Eddie Bernice Johnson hosts session



Dr. Jacqueline Azize-Brewer and Dr. David Artis, UCSD CAMP, represented the University of California LSAMP leadership at the national poster session. Jessica Craft, 2010 graduate in Biological Sciences, and Mike Garcia, first year Ph.D. student in Mechanical Engineering, University of Pennsylvania, presented research posters at the special poster session in Washington, D.C., on Capitol Hill.



Jessica Craft, left, and Mike Garcia presented research posters on Capitol Hill. Drs. Jacqueline Azize-Brewer and David Artis are shown with presenters, below.

On Thursday, July 22, 2010, there was a principal investigator/project directors' meeting of the Louis Stokes Alliance for Minority Participation (LSAMP) at the Washington Hilton Hotel in Washington, DC. A special feature was the afternoon poster session of exemplary research at the Rayburn Building on Capitol Hill. More than 26 of the 42 LSAMP Alliances from across the nation participated.

During the morning session, there was some discussion about the Comprehensive Broadening Participation Strategy that has been proposed by the National Science Foundation for modifying and combining the Historically Black College and University Undergraduate Program (HBCU-UP), The Tribal College Undergraduate Program (TCUP) and the LSAMP program. Dr. Clarence Lee, Executive Director of the Washington Baltimore Hampton Roads (WBHR)-LSAMP welcomed more than 75 faculty and students to the meeting. Dr. Arlene Maclin served as the moderator for the morning session. Dr. Maclin briefly summarized activities that had occurred since the Joint Annual Meeting in June 2010.

Dr. Antonio Garcia, Arizona State University, discussed the national LSAMP meetings held during the 1990 and early 2000s; they served as a unifying force among both students and project directors. Others including Dr. Herb Schroeder, University of Alaska, Dr. Juanita Barrena, California State University, Sacramento and Dr. Steven Cox, Drexel University, also made similar comments and called for the need for a national forum for the LSAMP program.

More than 50 students prepared posters to showcase their research to members of Congress and their staff. Congresswoman Eddie Bernice Johnson from the Thirtieth District of Texas served as the hostess.

During the poster session from 4:00-6:00 pm in the Rayburn Building, a number of visitors came to talk with the students presenting their posters. Notable among them

included Congressman Ruben Hinojosa from the Fifteenth District of Texas and chair of the Higher Education Committee in the House, staff member Eric Hammond, legislative assistant to Congresswoman Johnson and grandson of former Congressman Louis Stokes, for whom the LSAMP program is named. Other staffers from Congressman Sheila Jackson Lee's staff in Texas as well as congressional staffers from the states of Massachusetts, Missouri, New York and others states visited the students during the poster sessions. The students were also able to share and discuss their research results with other students from other LSAMP Alliances during the poster session.



UC Irvine Announces CAMP Summer Scholars

During Summer 2010, 28 undergraduates conducted research under faculty mentors. The students presented their research findings at a symposium held at Donald Bren Hall on the Irvine campus. The symposium was the highlight of the summer scholars program, during which students had opportunities for professional development and faculty networking. Dr. Donald Blake, Chair and Professor, Chemistry (area of specialization atmospheric chemistry), gave the opening remarks. Dr.

John LaRue, Associate Dean, Engineering, and Professor of Mechanical and Aerospace Engineering gave the closing remarks. Both have mentored many students over the years, and have encouraged hundreds of students to achieve their goals and continue on to graduate education. Ms. Kika Friend, who has shaped the CAMP program's many features, and perennially leads groups of students to national scientific conferences, facilitated the symposium. The presenters include:

GEORGE VELA, Biological Sciences

■ Mentor: Naomi Morrisette,
Molecular Biology & Biochemistry
*Expression and purification of a
hypothetical p450 protein in toxiplasma
gondii*

YIMY VILLA, Biological Sciences

■ Mentor: Anthony Long, Ecology &
Evolutionary Biology
*The age-specific toxicity effect of
chemotherapy drugs on fertility in
female drosophila melanogaster*

MIGUEL SANCHEZ, Chemical
Engineering

■ Mentor: Marian Waterman,
Microbiology & Molecular Genetics
*A small molecule drug screen for
inhibition of the wnt/b-catenin signaling
pathway in human embryonic kidney
cells*

JASON DEL RIO, Biological Sciences

■ Mentor: Steven Gross,
Developmental & Cell Biology
*Halo protein: A mechanism of lipid
droplet specific transport*

OLUCHI OKAFOR, Biomedical
Engineering

■ Mentor: Abraham Lee, Biomedical
Engineering
*Using lateral cavity acoustic transducers
(LCATs) for sorting cells and particles*

VICTORIA BIGGS, Environmental
Engineering

■ Mentor: Derek Dunn-Rankin,
Aerospace & Mechanical
Engineering
*Converting a digital camera into a
temperature measuring device*

A. MELISSA BENITEZ, Earth &
Environmental Sciences/Public
Health Science

■ Mentor: Sanjay Shukla, Agricultural
& Biological Engineering, University
of Florida

*Quantifying evapotranspiration (ET) for
wetlands in South Florida ranchlands*

KARINA REYES, Electrical
Engineering

■ Mentor: Jacob Brouwer, Advanced
Power & Energy Program
*Modeling and simulation of the UCI
campus electric system*

JORGE BUSTAMANTE JR.,
Mechanical Engineering

■ Mentor: Catherine Loudon, Ecology
& Evolutionary Biology
*Bending structures of acheta domesticus
flagellum*

JUSTINE GONZALEZ, Biological
Sciences

■ Mentor: Michael Rose, Ecology &
Evolutionary Biology
*Protocol testing – developing tools for
better and faster science*

ANTHONY TAMAYO, Electrical
Engineering

■ Mentor: Simon Penny, Electrical
Engineering & Computer Science
*Voice synthesis machine addressing non-
semantic vocal sounds*

GUILLERMO GOMEZ, Mechanical
Engineering

■ Mentor: Vincent McDonell,
Advanced Power & Energy Program
*Spectroscopical analysis of water-in-oil
emulsions*

CARINE TODMIA, Materials Science
Engineering

■ Mentor: Farghalli Mohamed,
Chemical Engineering & Materials
Science

*Effect of initial microstructure on the
processing of titanium using equal
channel angular pressing*

JUANA CORADO, Biological Sciences

■ Mentor: Peter Baker, Chemistry &
Biochemistry, University of Notre
Dame

*Peptide-dependence of MHC backbone
dynamics*

NICOLE MOSHER, Biological Sciences

■ Mentor: Jay Vadgama, Cancer
Research, Charles Drew University
*HER2-HER3 dimerization and
trastuzumab resistance on HER2
overexpressing breast cancer cells*

ANDREA HERNANDEZ, Civil
Engineering

■ Mentor: David Kirkby, Physics &
Astronomy
Energy conservation within a household

LUIS CRUZ, Civil Engineering

■ Mentor: Ayman Mosallam, Civil &
Environmental Engineering
*Material durability of wood frame under
a seismic event*

ABEL MORELOS, Biological Sciences

■ Mentor: Michael Rose, Ecology &
Evolutionary Biology
*Evolutionary dynamics of small vs large
sized populations*

EDWARD GANDARA, Civil Engineering

■ Mentor: Ayman Mosallam, Civil & Environmental Engineering

Light wood frame shear walls testing based on Curee protocols

HILDA ORTIZ, Public Health Sciences

■ Mentor: Frances Leslie, Pharmacology

Neuron activation in response to self-administration of the tobacco smoke constituents nicotine and norharmane

STEPHANY CHACON, Chemistry

■ Mentor: Steven Allison, Ecology & Evolutionary Biology

Producer and cheater competition/ laboratory evolution experiment of pseudomonas fluorescens

RICHARD GONZALEZ, Civil Engineering

■ Mentor: Ayman Mosallam, Civil & Environmental Engineering

Maximum strength of wood shear walls under monotonic testing

VALERIE NEINO, Ecology & Evolutionary Biology

■ Mentor: Steven Allison, Ecology & Evolutionary Biology

Temperature response of microbial enzymatic activity in seawater

JESS HINTON, Biological Sciences

■ Mentor: Hartmut Luecke, Molecular Biology & Biochemistry

Human annexin A2 as a model for structure-based drug design

DELSY MARTINEZ, Chemistry/ Biological Sciences

■ Mentor: Sheryl Tsai, Molecular Biology & Biochemistry

Conformation of the polyketide synthase aspergillus parasiticus product template domain mechanism

JOSHUA ALMODOVAR, Biological Sciences

■ Mentor: Magdalene Seiler, Anatomy & Neurobiology

Retinal restoration in degenerate rats using Human Embryonic Stem Cells

ELOISA HERNANDEZ, Mechanical Engineering

■ Mentor: Scott Samuelson, Mechanical & Aerospace Engineering

Hydrogen infrastructure: systematic planning to optimize hydrogen station deployment for fuel cell vehicles in California

TONY EGUAVOEN, Electrical Engineering

■ Mentor: Derek Dunn-Rankin, Aerospace & Mechanical Engineering

Digital camera calibration and algorithm development for minimally invasive temperature measurements

APRIL SANDOVAL, Biological Sciences

■ Mentor: Michael Rose, Ecology & Evolutionary Biology

Evolution of birth: exploring using experimental evolution

UC-Edison Scholars at UC Irvine



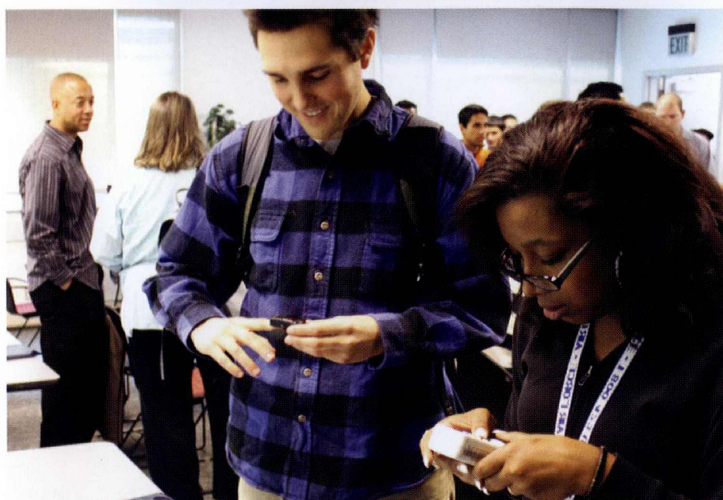
UCI's Kika Friend, front row center, and Leonora Williams (fourth from right) hosted the UC-Edison Scholars Orientation for these new STEM transfers last fall. The students won the prestigious UC-Edison Transfer Scholarship through a competitive process. All transferred from California Community Colleges within the Southern California Edison service districts. Recipients are able to take the scholarship to other UCs participating in the cost-share effort. To date, more than 120 STEM transfer students have been supported with the scholarships, which are up to \$7,500 per year for two years, subject to student financial assistance eligibility.

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.

UC Davis Hosts NSF Director Arden Bement



CAMP Scholars at UC Davis participated in a mini poster session during NSF Director Arden Bement's visit to the campus on March 5, 2010. Clockwise to the left of the Director is Patricio Piedra, Ruben Martinez, Ryan Doctor, Angela Echeverria, Sara Magallon, Eric Villalon (currently enrolled in grad school at University of Missouri, Columbia), Roxana Pomposo, Marcos Torres. Each of these students presented the work that they conducted in Summer 2009 under CAMP sponsorship. Director Bement graciously spent considerable time with each student.

From Lisa's Blog:

Glimpses of my experience in India include:

1. always having enough time for a glass of chai
2. tough Indian grandmas on the train who know how to give a good shove
3. scrubbing off the blue dye left by my thrice-washed kurta
4. getting extremely excited when the water turns on...so i can do dishes
5. getting mixed up about whose limbs are whose in the massive dogpile of exhaustion that creeps into our bed/workspace at 2:30 in the morning, when we've realized that we have to be collecting water samples in Behram by 6 a.m. ..ahh how i love life!

MONDAY, MAY 31, 2010

bucket showers and street chai

The art of bucket showers is beautifully simple.

Step 1: Fill bucket

Step 2: Use pitcher to wet hair thoroughly

Step 3: Lather (shampoo/conditioner/soap)

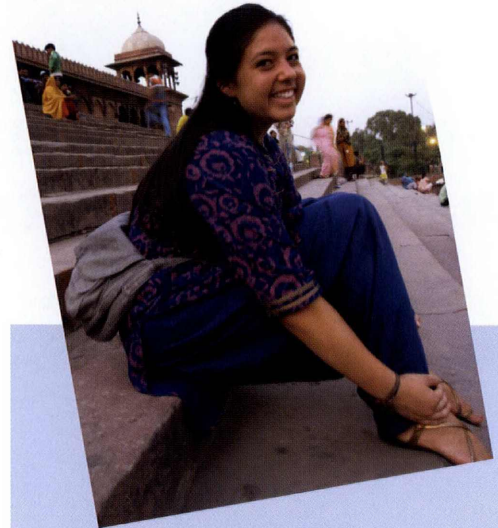
Step 4: Rinse

Step 5: Repeat steps

3&4 as necessary

I can use a minimal amount of water and still get clean:) And if you know me, you know I love to save as much water as I can.

This morning, I went with Eddie (fellow HMSer) to get some breakfast, and could not have been more satisfied. Chai and a newspaper for Rs.8 total! The chai is delicious. House of curries is put to shame!



LISA VELIZ: *Interests and Career Goals*

I am particularly interested in the status of sanitation worldwide, especially in rapidly developing nations. With roughly two billion people lacking access to improved sanitation facilities, and urban populations growing at a rate that outpaces infrastructure, I want to learn about the potential of creating and implementing a low-cost, resource-minimal, implementable solution to prevent detrimental health effects of poor urban sanitation. While in India, I was disheartened to see latrines and toilet blocks unused because they are too dirty, and in the U.S., I am disappointed to see costly, purified water wasted to transport

human excrement when there are more resource-efficient solutions already available. Nevertheless, I am inspired and opportunistic about finding region-specific solutions to these sanitation issues that are both practical and applicable. I understand that there is no generic solution, considering the inherent variety of financing schemes, social and cultural barriers, and externalities of each option; however, I would like to examine and promote the best ones for a particular context."

"I am inspired and opportunistic about finding region-specific solutions to these sanitation issues that are both practical and applicable.

I understand there is no generic solution...."

—Lisa Veliz

Berkeley's Diana Lizarraga Wins 2010 Chancellor's Outstanding Staff Award



Diana Lizarraga with her Mother celebrate at award ceremony.

CAMP Coordinator Diana Lizarraga was selected to receive the 2010 Chancellor's Outstanding Award in Spring 2010. She was honored for her outstanding work in diversity issues and for her ability to bring together faculty, students and staff for a common purpose: student achievement. Lizarraga leads several student-centered initiatives besides CAMP. She is director of Cal NERDS (New Experiences in Research and Diversity in Science), UC LEADS, Pass the Torch, a community college outreach effort, and is active in American Indian outreach as well as the overarching programming in the Professional Development Programs, the umbrella under which undergraduate diversity programs are housed. Lizarraga efficiently and effectively pursues resources to support summer and academic year research, graduate school coaching, professional scientific society membership and travel to STEM conferences, and

is a master organizer of large events. These include the Northern California Forum for Diversity in Graduate Education (2008) and the Native American Graduate Horizons Conference (2009). The Professional Development Program newsletter stated that "Teamwork, project management and strong collaboration with diverse groups of students, staff, faculty, and community and professional organizations was required to bring these events successfully to Berkeley." Lizarraga has prepared students for poster presentations at dozens of conferences including SACNAS, Sigma Xi, ABRCMS, and others. She was a former CAMP student at UC Davis, where conducting research opened the path to a graduate degree and to a career in student services. Lizarraga's master's degree in Human Resources and Organizational Development is from the University of San Francisco.

Biologist Dr. Tama Hasson is new CAMP Director for UCLA

Since joining the faculty at UCLA in 2005, Dr. Tama Hasson has taken the lead in supporting undergraduates to engage in research opportunities. Dr. Hasson was previously assistant director, cell and molecular biology, at UC San Diego (1998-2005), and a postdoctoral fellow at Yale (1991-98). She earned the Ph.D. at Princeton University. Dr. Hasson has dedicated her professional career to supporting others to enter and complete doctoral degrees, and shares her perspective in the following personal statement:



Tama Hasson is adjunct associate professor, Integrative Biology & Physiology Department, and Director, Undergraduate Research Center - Sciences.

"The impact of an independent research experience on a STEM undergraduate career is extraordinary! Not only do students get real-world experience for embarking on a career

in science, but they also have the ability to apply their class work to the bench. Usually student's grades improve as a result of their improved understanding. It is my mandate to provide opportunities and support for STEM students interested in independent research on the UCLA campus. I take a personal interest in my CAMP students, working with them to find faculty mentors who will support and nurture them, helping them put together their materials to apply for summer programs, and working with them as they make important choices towards a career. I teach them about time management and study skills; we talk about prioritizing research and school and achieving a balance. For many CAMP students, I personally read their research papers every quarter and track their progress in the lab. I focus on clarity as they share their research, and when they are ready, give them opportunities to present their work at conferences both on-campus and off. It is also part of my responsibility to teach the CAMP students about ethics and integrity in science. It is my greatest joy to watch a student I met on their first day at UCLA move through our pipeline of research opportunities (BISEP, CARE Research Programs, MARC, UC LEADS, MSD Scholars), and ultimately choose to enter a PhD program in a STEM field."

UCLA Professor Richard Weiss Receives Diversity Award

Dr. Weiss “has nearly singlehandedly changed the face of the future academy. Hundreds of underrepresented minority students have benefited from Dr. Weiss’ programs, gaining the skills, desire and confidence necessary to apply, enter, and excel in graduate school.”

Dr. **Richard L. Weiss**, long-time director of the CAMP program at UCLA, has been awarded the UCLA Academic Senate’s Diversity, Equity, and Inclusion Award, given for “contributions ‘beyond the call of duty’ in furthering a diverse, impartial, and inclusive academic environment at UCLA.” Awarded in May 2010, Weiss was one of two awardees chosen from 41 faculty and student nominees. Dr. Weiss was nominated by Dr. Paul Barber (Associate Professor, Ecology and Evolutionary Biology) and Dr. Tama Hasson (Director, Undergraduate Research Center - Sciences / Center for Academic and Research Excellence). In their statement they shared how Dr. Weiss “has nearly singlehandedly changed the face of the future academy.



Hundreds of underrepresented minority students have benefited from Dr. Weiss’ programs, gaining the skills, desire and confidence necessary to apply, enter, and excel in graduate school.”

A professor of chemistry and biochemistry, Weiss was indispensable to the 1991 establishment of the Center for Academic and Research Excellence (CARE), which offers research opportunities and support to underrepresented students in the sciences. Among his many accomplishments at UCLA, he has served as the director of the Initiative for Minority Student Development since 1996, helped create the UCLA Bridges to the Baccalaureate program in 1993, and serves as the director of the UC Leadership Excellence through Advanced Degrees (UC LEADS) program. These programs integrate with UCLA’s CAMP program to provide resources to hundreds of underrepresented science students each year. We applaud Dr. Weiss for this significant award!

Remember When... CAMP Statewide Honored Richard Weiss with American Eagle Leadership Award

At our 2006 CAMP Statewide Undergraduate Research Symposium, Professor Richard Weiss was honored for his leadership and commitment to undergraduate education. He was instrumental in implementing the Bridge to the Doctorate Cohort I at UCLA, and



had supported many students through to the Ph.D. Weiss earned a B.S. degree in Chemistry at Stanford, where he was a National Merit Scholar. He completed a Ph.D. in Biochemistry at the University of Washington, and began his academic career at the University of Michigan, where he was a postdoctoral fellow in genetics. Weiss joined the faculty at UCLA in 1974, and became Professor in 1985. He annually judges as the CAMP Statewide Symposium, providing students with feedback and encouragement to pursue a career in research.

A Record 33 UC Santa Cruz CAMP-ers Attend SACNAS National Conference

UC Santa Cruz brought a record number of CAMPers to the 2010 SACNAS National Conference in Anaheim, CA. From the combined diversity programs, program leaders brought 48 students and 33 were CAMPers!

Poster award winners, from left: Carla Del Los Santos (IMSD and CAMP), Donez Horton-Bailey (CAMP and UC LEADS) and Desiree Tax (IMSD and CAMP). On far right is UCSC CAMP Alum Natalie Garcia, currently a graduate student at the University of Washington.



UC Santa Barbara and UC San Diego CAMP Congratulate SACNAS Presenters



UCSB: Ruben Diaz, Gabriela Bernal and Daniel Estrada.

GABRIELA BERNAL

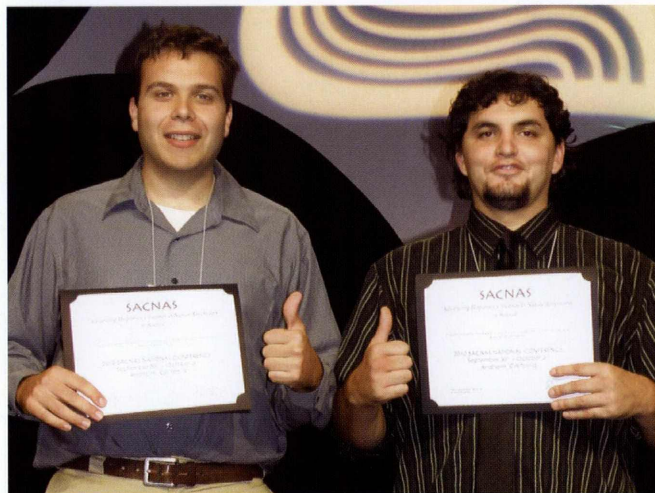
■ Mentors: Nancy Eisenmenger, Professor Michael Chabinye
Electrode Deposition on Thiolene Based Stamps for Soft Contact Lamination in Organic Photovoltaic Devices

RUBEN DIAZ

■ Mentors: Hans Mayer, Professor Rouslan Krechetnikov
Investigation of Surfactant-Laden Pendant Drops in Electric Fields—Poster Award in Engineering

DANIEL ESTRADA

■ Mentors: Dr. Jake Richardson, Professor Steve DenBaars
Lateral Epitaxial Growth of ZnO in Aqueous Conditions at 90°C for Current Spreading Layers in LEDs



UCSD Awardees, Demetrius DiMucci and Jonathan Okerblom. DiMucci also presented at ABRCMS 2010.

DEMETRIUS DIMUCCI - PHARMACOLOGY

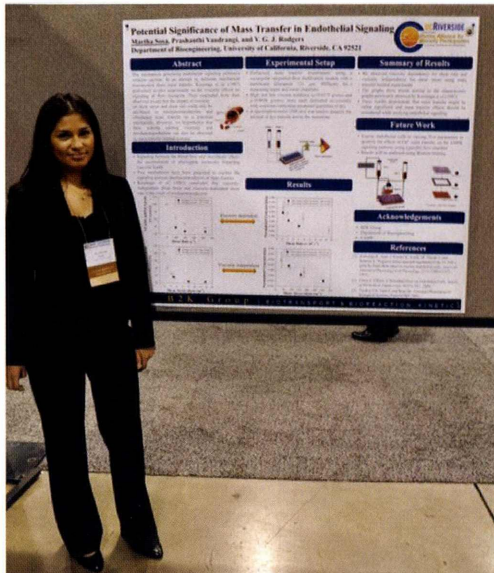
■ Mentors: Andrea Wilderman, Paul Insel
G Protein Coupled Receptors in Murine Lymphoma Cells as Possible Pharmacological Treatments

JONATHAN OKERBLUM - MOLECULAR & CELLULAR BIOLOGY

■ Mentors: David Cauvi, Nelson Arispe, Antonio De Maio
The Translocation of HSP70 Into Artificial Lipid Bilayers is Dependent on the Presence of Phosphatidylserine

UC Riverside Senior Envisions Future in Biotechnology

Martha Sosa, Senior, has high expectations for her future career in engineering. Her hard work has paid off with three significant awards in 2010 alone, including an Engineering Poster Award at SACNAS 2010 in Anaheim for "Validating Mass Transfer-Limited Systems for Studying Endothelial Signaling Pathways." Sosa's mentors are Dr. Prashanthi Vandrangi and Victor G.J. Rogers. She had previously presented at the 2010 CAMP Statewide Undergraduate Research Symposium. Her research was entitled, "On the Effects of Mass Transfer on Vascular Homeostasis."



Q&A with UCR's Martha Sosa

How supportive are your mentors?

I am very fortunate to have Dr. Rodgers and Prashanthi Vandrangi as my mentors. Dr. Rodgers guided me through learning key aspects of research without spoon feeding it to me. He has high expectations which encourage me to always present my best work. ... Prashanthi Vandrangi is my graduate student mentor who I credit for my success. She has been very patient with me in learning the background behind the research, improving my technical writing skills, and always inspiring me to give it my all.

Sosa Q&A continues on next page

MARTHA SOSA, SENIOR, UC RIVERSIDE B.S. BIOENGINEERING, EXPECTED JUNE 2011

RESEARCH HIGHLIGHTS

Publication

- M. Sosa, P Vandrangi, and VGJ Rodgers, 'Importance of Mass Transfer at the Endothelium', UCR Undergraduate Research Journal, May 2010.
- P Vandrangi, M Sosa, JYJ Shyy, and VGJ Rodgers, 'Revisiting the Criterion for Assuming Mechanotransduction Dominance in Endothelial Flow-Dependent Signaling', Submitted to Cardiovascular Engineering and Technology, In Review.

Poster Presentations/Awards

- Best Poster Presentation in Engineering Field, 2010 SACNAS National Conference
- 1st Place Best Presentation at Institute of Electronic Engineers 2010 Student Symposium, UCR
- Awarded Special Recognition at the 2010 CAMP Statewide Symposium, UCI
- Presented at 18th Annual SCCUR (Southern California Conference for Undergraduate Research), hosted at Pepperdine, Malibu, November 20, 2010

Oral Presentations

- Summer RISE Program 2010
- Research Symposium STEM Institute Hosted at UCR for Transfer Students from Riverside Community College 2010
- Undergraduate Research Symposium at UCR 2010

EXPERIENCE

- B2K Research Group – UC Riverside, Bioengineering Department
- Undergraduate research assistant
- Computational and in-vitro experimental studies in cardiovascular hemodynamics
- UCLA - Neurospora Genetics & Genome Summer Research Institute
- Research Laboratory Assistant
- Authored an individual research proposal on Neurospora and developed a research paper on results
- USC Hospital - Los Angeles, CA
- Physician's Assistant Helper in Emergency Room

LEADERSHIP EXPERIENCE

- Vice President of Biomedical Engineering Society Chapter at UCR
- Treasurer of Society of Woman Engineer Chapter at UCR
- Finance Officer for Society for Advancement of Chicanos and Native Americans in Science (SACNAS)

What are your plans for graduate education?

I will be applying to graduate school next year because I plan to obtain an internship at a Biotech company such as Medtronic that can lead to a full time position. I want to learn how industry works to help me decide what kind of graduate program I would like to pursue.

Do you currently have any institutions in mind?

I don't any particular schools in mind but I would like to stay in California.

Where do you see yourself in 10 years?

I see myself as a leader or executive leader in a biotech company. Additionally, I see myself giving outreach presentations at local universities on how to be successful.

Who inspires you?

I have been inspired most recently by Prashanthi because she has a strong work ethic to do the thing she loves, which is research.

What do you do when you're not studying?

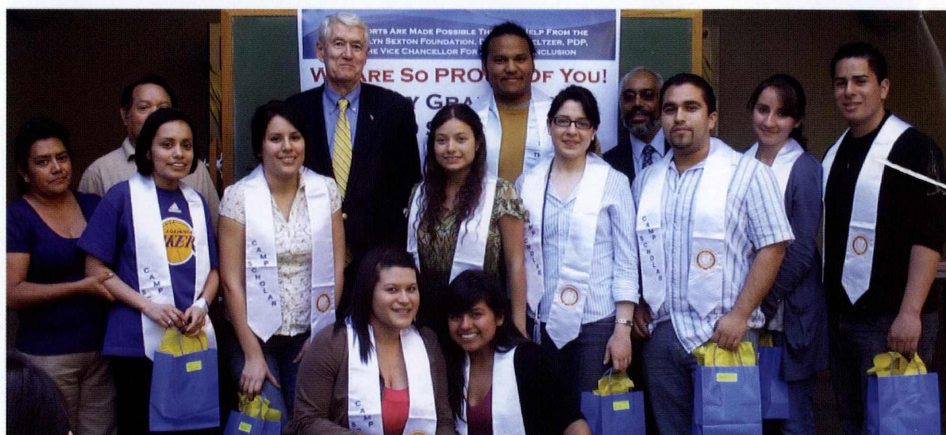
As an engineering student there is very little free time but when there is I try my best to visit my family and have dinner together. And I really love to dance, salsa dancing in particular.

Is there anyone you'd like to acknowledge for supporting your path to the B.S. degree?

I thank my father who will do anything to make sure I have food and school supplies!

NERDS! New Experiences for Research and Diversity in Science—UC Berkeley

Cal NERDS offers a full slate of student development activities during the academic year and summer. Summer offers visiting scholars, research experiences, leadership institute, graduate coaching including a graduate education plan, GRE prep, including GRE practice exams, PowerPoint workshop, mentoring lunch with high school NERDS, NERDS Olympics, poster and oral presentation preparation and practice, writing workshops to draft and polish the scientific abstract, and all day research symposium. The focus throughout is on team work, and students elect a team captain to model leadership. Each team also completes an outreach project. Cal NERDS is offered in collaboration with CAMP, and was created and developed by CAMP Coordinator Diana Lizarraga, UC Berkeley Professional Development Programs.



NERDS graduation ceremony, above right, with Chancellor Robert Birgeneau. Below, NERDS undergraduate researchers summer 2010.

Q&A with UCSB's Andres Munoz, continues from page 33

well as my interests in the renewable energy technologies. I have a great internship at UCSB working with photovoltaic devices for this same reason. Before transferring to UCSB I didn't realize what "research" really meant, till I actually did it. This made me realize that there are many things out there that I don't know about, and most times, these bring new opportunities that I'd like to take as they come. After the M.S., I will pursue a Ph.D. or industry, based on the opportunities available. Aside from my engineering interests, I'd like to help young people in my community to pursue higher education, especially in the STEM fields.

How do you balance your academic and personal life?

I have always prioritized school before my social life. Though, when it comes to something very important, serious, or unexpected, my family and friends come first. I consider myself a really friendly and social person, so I try to

spend my free time talking to people face to face, rather than being alone in front of a computer or TV.

Who or what inspires you?

God, my family (especially my dad), my research mentors and advisors, some professors and staff members - a lot of them from community college - my close friends and others who look up to me.

What advice would you give to an undergraduate who has not experienced being part of a research team?

Don't be afraid to try it out! It's scary at first, but you soon realize that it's nothing that you cannot do after some training. You will learn a lot from it, from your mentors and advisers, and from the program staff. You will learn a different perspective of the world. You will learn a lot about yourself! And it's pretty FUN!

Graduate and Professional Alumni on CAMP Statewide Symposium Panel

■ **Lamar Blackwell**, B.S. Biochemistry, Cal State Fullerton; Ph.D. Candidate, Biology, Fifth Year BD Fellow; Ph.D. anticipated January 2011, UC Irvine. Blackwell has served on the graduate panel throughout his doctoral program.

■ **Alex Cortez**, B.S., Chemistry, UC Irvine; Ph.D. Organic Chemistry, Boston College (2007). Current Position: Research Investigator, Novartis, La Jolla, CA. Dr. Cortez works on the discovery and development of small molecule immune potentiators

■ **Cecilia Osorio**, B.S. Plant Biology, UC Riverside; Fourth Year BD Fellow, Plant Biology (cell development and genetics) UC Davis

■ **Roberto Tinoco**, B.S. Neurobiology, UC Irvine; Ph.D. Biological Sciences, Immunology, Fifth Year B.D. Fellow, UC San Diego; Ph.D. September 2010 (See update page 20.)

■ **Raymond Valdes**, B.S. Aerospace and Mechanical Engineering, UC Irvine; First Year B.D. Fellow, Ph.D. program in Mechanical Engineering, UC Santa Barbara

■ **Jesse Vargas**, B.S. Chemistry and B.S. Biological Sciences, UC Irvine; M.S. Molecular, Cellular and Systemic Physiology, Southern Illinois University (BD Fellow at SIU); Third Year Doctoral Student, Ph.D. program in Molecular Biology, UC San Diego

FACILITATOR: Juan Francisco Lara, Ph.D., Assistant Vice Chancellor Emeritus, UCI

*BD Fellows are members of a highly select cohort of National Science Foundation LSAMP Bridge to the Doctorate graduate students who share a goal of pursuing the Ph.D. UC currently has six cohorts: UC Los Angeles, UC Irvine, UC San Diego, UC Davis, UC Santa Barbara, and Santa Cruz. Students receive direct BD support for two years, and departmental/program and/or external fellowship support throughout their graduate program.



*Celebrating Our 20th Anniversary
& Partnership with the
National Science Foundation,
Supporting Students in STEM*

UNIVERSITY OF CALIFORNIA LSAMP

