

California Louis Stokes  
Alliance for Minority Participation  
in Science, Engineering and Mathematics

# CAMP



## 2007 STATEWIDE SYMPOSIUM PROCEEDINGS & PROFILES

Davis

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Diego

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Los  
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# UNIVERSITY OF CALIFORNIA

UNIVERSITY OF CALIFORNIA





**CALIFORNIA LOUIS STOKES ALLIANCE  
FOR MINORITY PARTICIPATION IN SCIENCE,  
ENGINEERING AND MATHEMATICS**

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Dean, Donald Bren School of Information  
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Co-Principal Investigator

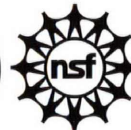
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LSAMP Director

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or recommendations expressed herein are those of  
the CAMP leadership and participants and do not  
necessarily reflect the views of NSF.

**SAVE THE DATE**

Next Symposium: **February 22 - 24, 2008**  
Student Presentations: Saturday, February 23, 2008  
Arnold & Mabel Beckman Center of the National  
Academies of Sciences and Engineering,  
adjacent to University of California, Irvine.



# CAMP

*"It was a great  
symposium!"*

—Melanie Zauscher,  
UC San Diego, Bridge to  
the Doctorate (BD) Fellow,  
Mechanical Engineering

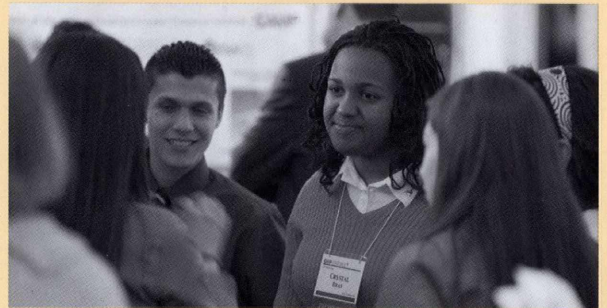
## 2007 STATEWIDE SYMPOSIUM PROCEEDINGS & PROFILES

University of California, Irvine  
Arnold and Mabel Beckman Center of the  
National Academies of Sciences and Engineering

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The CAMP Statewide Undergraduate Research Symposium is a student development opportunity supported by the National Science Foundation and the University of California.





# CAMP General Information

UNIVERSITY OF CALIFORNIA LOUIS STOKES ALLIANCE FOR MINORITY

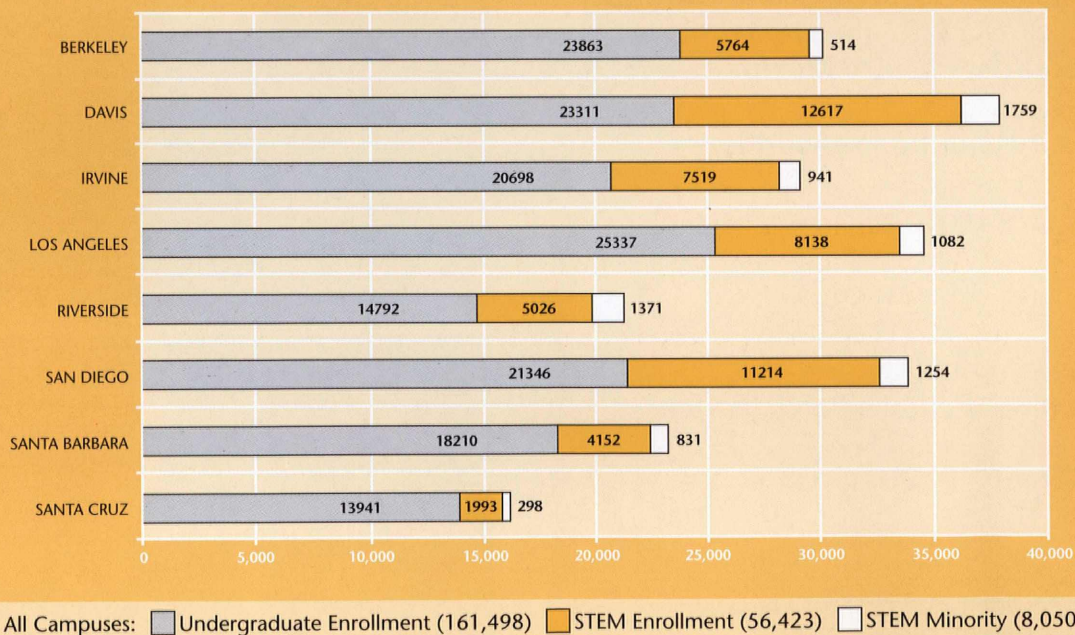
## Summary

The California Alliance, administered at UC Irvine, has entered "Phase IV," a fourth five-year cycle, 2006-2011, funded by the National Science Foundation. The primary goal is to significantly increase the number of B.S. degrees granted to underrepresented minority students in STEM (science, technology, engineering mathematics) majors at the University of California. Offered at eight general UC campuses and outreach to the newest campus at Merced, CAMP has created a system-wide network of faculty, program staff, and students working toward common goals, including completion of the B.S. degree and preparation for and transition to graduate school or the scientific workplace. This effort has contributed to a total of 15,017 B.S. degrees awarded to underrepresented minorities by UC since 1990. In addition to faculty mentored research experiences, principal activities include peer mentoring and tutoring, collaborative learning, presenting at scientific conferences, science writing and co-authorship, technology proficiency, and preparation for graduate school. CAMP is one of 37 national alliances named for former Ohio Congressman Louis Stokes, education advocate. Our goals are important for California and the nation.

*"I was very impressed with the quality of the posters and the detail in which the student investigators were able to explain the meanings of their images and graphs. It is good to see California LSAMP reach the goal of providing experiences in the sciences to students with such strong academic talent and diverse backgrounds."*

—Dr. Ben Norman,  
UC Davis, School of Veterinary  
Medicine, Poster Judge

## UNIVERSITY OF CALIFORNIA SYSTEMWIDE STEM AND NON-STEM ENROLLMENT FALL 2006





## Program Impact

For more than 15 years, the California Alliance for Minority Participation in Science, Engineering, and Mathematics has consistently pursued a comprehensive approach to encourage underrepresented students to complete the B.S. degree and prepare for graduate education. The effort has been unwavering. Our faculty mentors are committed to undergraduate development. CAMP participants are award-winning researchers and have co-authored published papers in refereed journals while still undergraduates. Student academic performance is a top indicator of retention in STEM majors, and is perhaps most visible in research presentations. University of California students consistently earn recognition at national scientific meetings. We expect to continue impacting degrees granted systemwide and admission to competitive graduate programs. UC STEM baccalaureate degrees granted to underrepresented students have increased by 135% since 1991 and STEM enrollment by 103%. The graduate school culture has made significant increases in students completing master's and doctorate degrees as well. At a minimum, through self report (often via email), 35% of program participants have gone on to graduate or professional schools. Further efforts to track students are pursued through the Senior Exit Survey. For Phase IV, the University of California is fully committed to sustaining the numbers of underrepresented students earning baccalaureate degrees; involving even more of our faculty in mentored research experiences; and increasing the percentage of our students enrolling in graduate and professional schools. Our Bridge to the Doctorate supplemental activity continues, with a new cohort at UC Riverside, commencing Fall 2007, for a total of 58 graduate students receiving support.

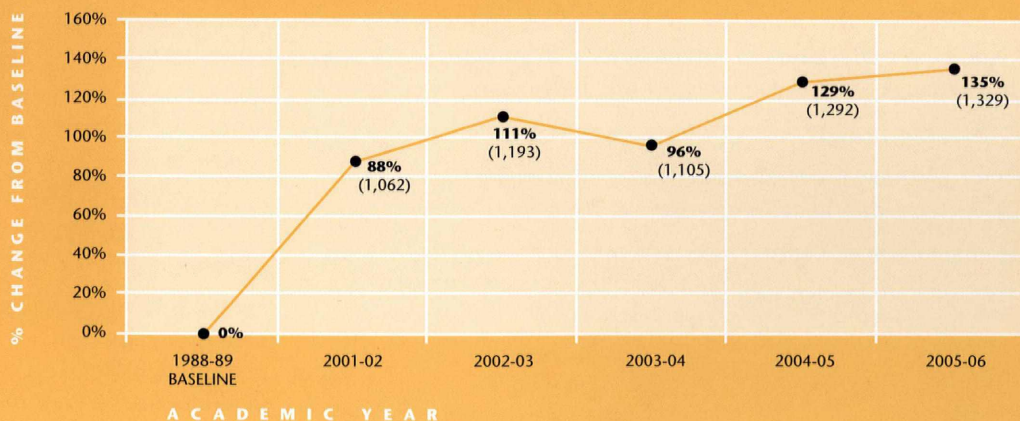
*“CAMP has provided me with help and guidance. It's the number one reason for my educational and career success.”*

—Jonathan Ortiz, Sophomore,  
Mechanical & Aerospace  
Engineering, UC Irvine

*“This [symposium] experience was incredible. I wasn't expecting to have this much fun and to meet such great people. I'm so glad I went because this really makes me want to go on and do so much more.”*

—Michelle Palacios, UCLA,  
Biological Sciences Presenter,  
Special Merit in Research Awardee

### UNIVERSITY OF CALIFORNIA SYSTEMWIDE 5-YEAR TREND IN % CHANGE STEM MINORITY B.S. DEGREES GRANTED



NOTE: numbers in parentheses indicate number of B.S. degrees granted



# CAMP General Information

UNIVERSITY OF CALIFORNIA LOUIS STOKES ALLIANCE FOR MINORITY

## Message from CAMP Statewide

Congratulations to all the presenters at our annual CAMP Statewide Undergraduate Research Symposium. Ninety presenters were scheduled in oral or poster sessions, and sixteen students received Special Merit in Research Awards. These were presented by our head judge, Professor Michael Marsella, UC Riverside CAMP Director. Additionally, special recognition was given to two posters in the areas of environmental and ecosystem science, toxicology, pathology, veterinary public health and infectious disease control. The awards, sponsored by the UC Davis School of Veterinary Medicine, were presented by Dr. Ben Norman.

The symposium afforded students the occasion to share their scholarly work and grow in confidence in their own abilities to communicate effectively to faculty and peers. For first-time presenters, the symposium is a gateway to other venues of scientific discourse. From the many conversations throughout the symposium, it is clear that students are moving forward in subject mastery and gaining a deeper understanding of their chosen majors. This is the true test of understanding something—to explain and teach it to others. From this glimpse into student capabilities, it is clear that the University is preparing students for exciting and meaningful roles in the 21st Century. Importantly, it gives our faculty reason to continue to mentor aspiring students in the science, technology, engineering, and mathematics fields because the greatest reward is seeing students succeed.

Thanks to the faculty and professional staff, especially our UC program coordinators, who contributed much to the symposium's success. We have seen students advance from this statewide event to achieve recognition at national professional meetings, building their credentials for graduate school or the professional workplace. CAMP participants bring distinction not only to themselves but to their faculty mentors and the program staff that urge them on to growth opportunities.

We were very pleased to have students from UC Merced, and hope to see more of them next year. From our interactions with students, it was clear that the exchange of ideas, experiences, and perspectives was rich and rewarding.

—Marjorie DeMartino, M.F.A., Symposium Chair,  
California LSAMP Associate Executive Director

—Juan Francisco Lara, Ph.D., Assistant Vice Chancellor,  
California LSAMP Executive Director

*“I remain impressed with the quality of the presentations, the participant enthusiasm, and the positive scientific interactions that are the fruit of the UC Systemwide CAMP program. I encourage all involved to continue striving for such a high level of excellence in STEM research, and I look forward to next year’s event.”*

—Michael Marsella, Ph.D.,  
Department of Chemistry,  
UC Riverside, CAMP Faculty Director

### 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;
- Foster interest in and access to graduate education, particularly for the Ph.D.;
- Set national standards for undergraduate research, and through the BD activity, facilitate intergenerational mentoring.



## Systemwide Core Principles & Activities

- **Power of Mentoring:** involvement in faculty mentored research and internships
- **Power of Performance:** presenting research at campus, statewide, & national venues; developing communication skills
- **Sphere of Influence:** fostering a sense of shared purpose and identity through study groups and networking
- **“Good” Peer Pressure:** 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
- **Financial Assistance:** stipends to support research
- **Collaboration:** inter-campus, inter-agency, and community
- **Student Tracking:** senior exit survey, statewide database
- **Graduate School Preparation and Enrollment:** GRE Prep, academic/admissions workshops and student panels; Bridge to the Doctorate opportunity for LSAMP graduate fellowships

### WHAT DEFINES A CAMP STUDENT?

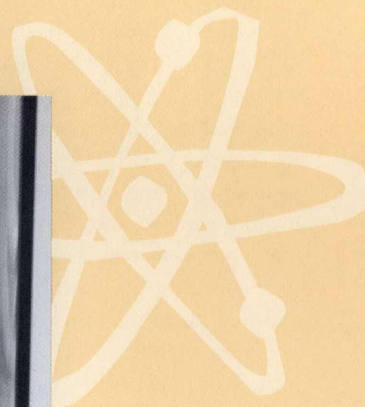
- Participates in CAMP academic & social activities
- NSF-eligible and declared STEM major
- A commitment to STEM degree and career goals
- A sense of identity with others in the STEM community
- Sets educational goals and is highly motivated
- Contributes to a culture of inclusion

*Not yet a CAMP student? Contact your program coordinator, listed on the inside front cover.*

*“I would like to go to graduate school and continue my education in physics. In particular I am interested in the subject of quantum mechanics. As a career I hope to work at the Jet Propulsion Laboratory as a scientist and teach physics part time at a college. I am also considering a career as a professor/ researcher at a four-year university. My first choice for graduate school is UCSB.”*

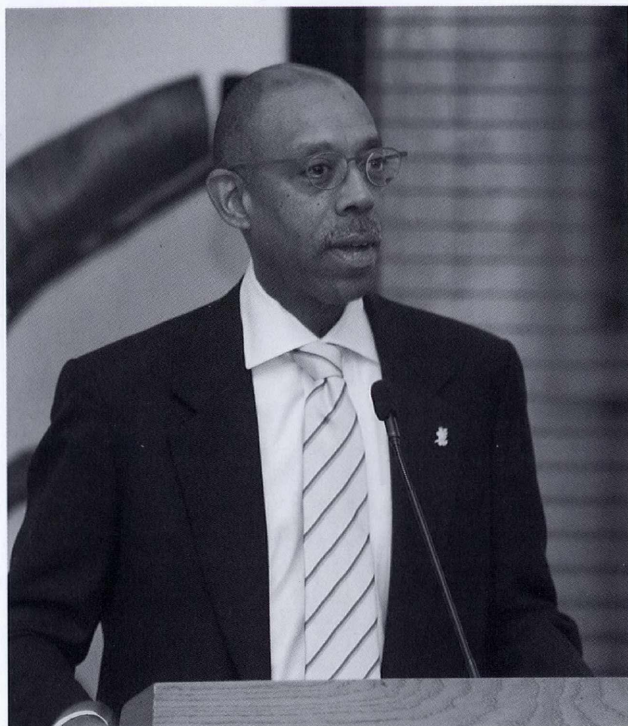
—Luis Martinez,  
2007 Physical Sciences Poster  
Awardee, UC Berkeley  
BS Degree anticipated  
December 2007

*Congratulations to Luis Guerrero, UC San Diego Class of 2007, on admission to the Ph.D. program in Mathematics at UC Santa Barbara. Luis was a 2006 recipient of the CAMP Special Merit in Research Award for “Exploration of Khovanov Homology and Link Cobordisms.”*





## Keynote Address, 2007 CAMP Statewide Symposium



*Michael V. Drake, M.D., Chancellor, UC Irvine  
CAMP Statewide Principal Investigator (P.I.)*

**D**r. Michael Drake addressed his remarks specifically to the students at the symposium awards dinner. He stressed that students must have a passion for their work, first and foremost. He also shared his philosophy for a happy and productive life. Dr. Drake emphasized that among the most important things in both our personal and professional pursuits are to be trustworthy, to have integrity, and to care about others. He urged respect for everyone who comes across our path, regardless of that individual's place in society, and that each of us shows empathy and compassion for our fellow man. He also spoke of engaging fully in life, and having interests and hobbies outside of academia to enrich and inform a balanced life. And he invoked the name of his favorite jazz musician, Miles Davis, to describe how one note can function like a thread, linking a whole set of improvisation—a little like real life when you reach out and taste life in its fullness. In responding to student questions, Dr. Drake gave a detailed scientific explanation of astigmatism, including very visual descriptions of eye curvature, light refraction, and other aspects of how the eye having this condition works.

### **ABOUT MICHAEL V. DRAKE, M.D. CHANCELLOR, UC IRVINE**

Dr. Drake became the fifth chancellor of the University of California, Irvine on July 1, 2005.

Previously, he served as University of California vice president for health affairs, overseeing education and research activities at UC's 15 health sciences schools, including medicine, dentistry, pharmacy, public health, optometry, and veterinary medicine. In that capacity he also oversaw the UC Special Research Programs, including tobacco-related disease research, breast cancer research and HIV/AIDS research; the California/Mexico Health Initiative and the California Health Benefits Review Program.

Prior to his appointment in the Office of Health Affairs, Dr. Drake was Steven P. Shearing Professor of Ophthalmology and the senior associate dean for admissions and extramural academic programs at the UC San Francisco School of Medicine; he also served as a clinician, physician-scientist and teacher.

Dr. Drake has received a number of awards for teaching, public service, mentoring and research, including the UCSF School of Medicine's Clinical Teaching Award and the UCSF Chancellor's Award for Public Service, which he won as a medical student. He was inducted into the Gold Headed Cane Society in 2003. He has written dozens of scholarly articles and chapters, and has co-authored four books.

Dr. Drake is a member of several national scientific and scholarly societies. In 1998, he was elected to the National Academy of Sciences' Institute of Medicine. He is the immediate past national president of the Alpha Omega Alpha Honor Medical Society, and chair-elect of the board of trustees of the Association of Academic Health Centers.

In 2004, he became the fifth recipient of the Herbert W. Nickens Award from the American Association of Medical Colleges, in recognition of his career-long efforts to promote social justice through medical education.



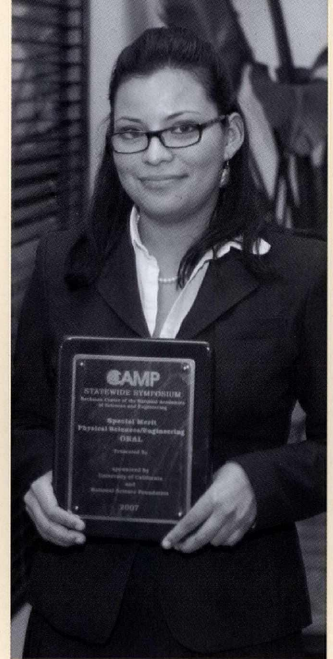
## Symposium Schedule of Events

### FRIDAY, FEBRUARY 23, 2007

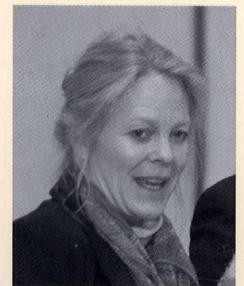
- 5:00-8:30pm **Registration and Check in**  
6:30-7:30pm **Welcome Dinner**, Welcome, Introductions, Announcements  
7:30-8:30pm **Graduate Poster Session**, Bridge to the Doctorate Fellows  
**CAMP Faculty Directors Round Table**

### SATURDAY, FEBRUARY 24, 2007

- 8:00 - 8:30am **Shuttles** to The Beckman Center  
of the National Academies of Sciences and Engineering, Irvine
- 8:30 - 9:00am **Faculty Judges Orientation**  
Head Judge: Dr. Michael Marsella, CAMP Director, UC Riverside
- 9:00am **Symposium Opening**
- 9:30 - 10:30am **Poster Session I; Oral Session I**
- 10:30 - 11:00am **Mid-Morning Break/Networking Opportunity**
- 11:00am - 12:15 **Poster Session II; Oral Session II**
- 12:15 - 1:30pm **Buffet Lunch**
- 1:45 - 3:00pm **Poster Session III; Oral Session III**
- 1:45 - 3:00pm **Graduate School Panel, Bridge to Doctorate Fellows**  
UC San Diego and UC Davis BD Fellows  
Facilitator: Dr. Karen McDonald, Associate Dean for Research and Graduate Studies,  
College of Engineering, CAMP-BD Co-Director, UC Davis
- 3:00 - 3:15pm **Break - Refreshments**
- 3:15 - 4:30pm **Poster Session IV; Oral Session IV**
- 3:15 - 4:30pm **CAMP-UCI Alumni Panel: Transition to the Professional Workplace**  
Facilitator: Kika Friend, M.A.
- 3:15 - 4:30pm **Adventures in Poster Making**, Diana Lizarraga, M.S., UC Berkeley
- 5:45 - 7:30pm **Awards Dinner**  
**Remarks** by UCI Chancellor Michael V. Drake, M.D., CAMP Statewide P.I.  
**Recognition** of the Faculty Judges and Program Coordinators  
**Presentation** of Special Merit in Research Awards



**All students received a business card case to encourage networking at future conferences.**



*“The presentations just keep getting better.”*

—Professor Russel Flegal,  
UCSC CAMP Faculty Director





## 2007 Statewide Symposium Judges and Presiders

**Professor Michael Marsella**, UCR CAMP Director, *Head Judge*

### Physical Sciences/Engineering

#### ORALS

- Dr. Glenn Beltz**, CAMP Director, UCSB, *Moderator*
- Dr. Lilian Davila**, UC President's Postdoctoral Fellow, UCM
- Dr. Gary Ford**, CAMP Director, UCD
- Dr. George Johnson**, CAMP Director, UCB
- Dr. James Shackelford**, CAMP Mentor, UCD

#### POSTERS

- Dr. Ken Millett**, CAMP Mentor, UCSB, *Moderator*
- Dr. Rod Cole**, Faculty Mentor, UCD
- Dr. Arnold Guerra**, CAMP Mentor, UCI
- Dr. Marko Princevac**, Faculty Mentor, UCR
- Dr. Gerardo Aldana**, Faculty Mentor, UCSB
- Dr. Derek Dunn-Rankin**, CAMP Director, UCI
- Dr. Karen McDonald**, CAMP-BD Co-Director, UCD

### Biological/Life Sciences

#### ORALS

- Dr. Judith Kjelstrom**, Mentor, UCD, *Moderator*
- Dr. David Parker**, CAMP Mentor, UCR
- Dr. Neal Schiller**, Director, Biomedical Scholars, UCR
- Dr. Richard Weiss**, CAMP Director UCLA

#### POSTERS

- Dr. Russ Flegal**, CAMP Director, UCSC, *Moderator*
- Dr. Caroline Kane**, CAMP Mentor, UCB
- Dr. Angelique Louie**, Faculty Mentor, UCD
- Dr. Ben Norman**, CAMP Mentor, UCD

*"Thank you for the opportunity to participate once again as a judge in the 2007 CAMP Symposium! The symposium was both professional and had a "personal touch."*

—Lilian P. Davila, Ph.D.,  
Computational Materials Science,  
UC President's Post Doctoral Fellow,  
UC Merced

**21 UC faculty and research scientists served as judges.**

*"The CAMP symposium was a wonderful way to display undergraduate research at all levels. It gave me the confidence I needed to continue in undergraduate research."*

—Deborah Ortiz, UC Santa Cruz,  
Physical Sciences, Special Merit in  
Research Awardee

*"I had a wonderful time at the CAMP symposium. Congratulations on a very professional event."*

—Judith Kjelstrom, Ph.D.,  
Director, UC Davis Biomolecular  
Technology Program,  
Symposium Judge







*Dr. Judith Kjelstrom, UC Davis, left, takes advantage of meal time to meet students and give encouragement.*



*Professor Michael Marsella, UCR, discusses aspects of graduate education with CAMP BD Fellow Cecilia Orozco, UC Davis.*

*“As a presenter, what I loved most was that the judges were so encouraging. They listened to my presentation attentively, gave me suggestions to make my presentation better and urged me to continue conducting research.”*

—Nkiruka Ojukwu, UC Irvine, Biological Sciences

*“I found the symposium to be a wonderful learning experience. I enjoyed learning from what other students are doing and sharing my research. I also liked the interaction with the judges and getting feedback.”*

—Hiwot Araya, UC Davis, Biological Sciences, Special Merit in Research Awardee

*“We all worked hard to prepare our presentations and it was nice to meet peers from other UCs and disciplines. The faculty really took the time to enlighten us how to present our research.”*

—Serena Cervantes, UC Riverside, Biological Sciences, Special Merit in Research Awardee



*Professor Derek Dunn-Rankin (above right) and Professor Gerardo Aldan (above center) hear poster presentation. Left, judges enjoy a light moment after some difficult decision-making.*





# 2007

## Undergraduate Symposium Research Presenters and Awardees

### BIOLOGICAL/LIFE SCIENCE

#### ORAL PRESENTERS

##### SPECIAL MERIT IN RESEARCH

**Graciela Barajas**, UC Irvine  
**Serena Cervantes**, UC Riverside  
**Milana PeBenito**, UC Santa Cruz  
**Eric Smoll**, UC San Diego

Graciela Barajas, UC Irvine  
Jason Edward Bernardo, UC Santa Barbara  
Crystal Bray, UC Berkeley  
Serena Cervantes, UC Riverside  
Christian Cortes, UC Santa Barbara  
Mark Gaertner, UC Riverside  
Mikael Guzman, UC Los Angeles  
Dionandre King, UC Davis  
Timothy Machado, UC San Diego  
Tyra McCray, UC Davis  
Aaron Mohammadi, UC San Diego  
Isabel Neacato, UC Los Angeles  
Milana PeBenito, UC Santa Cruz  
Eric Smoll, UC San Diego  
Moriah Velasquez, UC Santa Barbara

### BIOLOGICAL/LIFE SCIENCE

#### POSTER PRESENTERS

##### SPECIAL MERIT IN RESEARCH

**Michelle Palacios**, UC Los Angeles  
**Marcos Pena**, UC Irvine  
**Refugio Roman**, UC Irvine  
**Jesse Vasquez**, UC Santa Barbara

Alana Abriam, UC Los Angeles  
Salomon Abularach, UC Irvine  
Esmeralda Aguayo, UC Merced  
Rilwan Balogun, UC Los Angeles  
Fernando Campos, UC Riverside  
Nkiruka Chuba, UC Santa Cruz  
Thomas Duneheew, UC Los Angeles  
Claudia Gonzalez, UC Irvine  
Maya Henderson, UC Riverside  
Trisha Hermosillo, UC San Diego

Melissa Mejia, UC Irvine  
Maria Meza-Lopez, UC Los Angeles  
Dante Munoz-Castaneda, UC Santa Barbara  
Vy Ngo, UC Santa Cruz  
Roxanna Ochoa, UC Irvine  
Nkiruka Ojukwu, UC Irvine  
Nicholas Olivias, UC Irvine  
Sergio Pacheco, Jr., UC Los Angeles  
Yelessia Palacios, UC Irvine  
Michelle Palacios, UC Los Angeles  
Elizabeth Partida, UC Irvine  
Marcos Pena, UC Irvine  
Alberto Ponce, UC Los Angeles  
Refugio Roman, UC Irvine  
Jose Rosa, UC Davis  
Christine Saseun, UC Irvine  
Adrian Tripp, UC Irvine  
Jesse Vasquez, UC Santa Barbara

### PHYSICAL SCIENCE/ENGINEERING

#### ORAL PRESENTERS

##### SPECIAL MERIT IN RESEARCH

**Morgane Botella**, UC San Diego  
**Felipe Godinez**, UC Riverside  
**Bokuba Nwengela**, UC Davis  
**Indara Suarez**, UC Los Angeles

Bode Adeniyi, UC Irvine  
John Aguilar, UC Irvine  
Morgane Botella, UC San Diego  
Yazmin Cazares, UC Irvine  
Corina De Pablo, UC Irvine  
Angie Garcia, UC Riverside  
John Garcia, UC Santa Barbara  
Flupe Godinez, UC Riverside  
Rodrigo Gonzalez, UC Los Angeles  
Kivash Koko, UC Irvine  
Johathan Moore, UC Riverside  
Christina Neino, UC Irvine  
Bokuba Nwengela, UC Davis  
Alejandra Ortiz, UC Santa Barbara  
Alejandro Sanchez, UC Santa Barbara  
Indara Suarez, UC Los Angeles (see Spotlight, p. 27)  
Raymond Valdes, UC Irvine  
Jose Zavala Mendez, Davis



## PHYSICAL SCIENCE/ENGINEERING POSTER PRESENTERS

### SPECIAL MERIT IN RESEARCH

**Hiwot Araya**, UC Davis

**Luis Martinez**, UC Berkeley

**Deborah Ortiz**, UC Santa Cruz

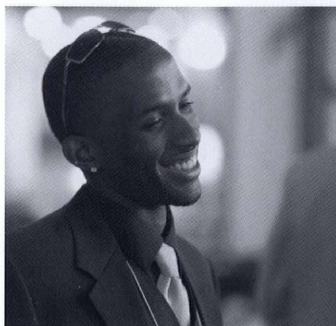
**Dorian Perkins**, UC Riverside

Alfred Anguiana, UC Irvine  
Hiwot Araya, UC Davis  
Omar Cardenas, UC San Diego  
Ernesto Carrillo, UC Santa Barbara  
Albert Contreras, UC Davis  
Anton Escobedo, UC San Diego  
Manuel Galan, UC Santa Barbara  
Jose Miguel Garcia, UC Santa Barbara  
Aurea Gomez, UC Santa Barbara  
Pedro Gomez, UC Berkeley  
Xochiyotl Gutierrez, UC Santa Cruz  
Mercedes Lopez, UC San Diego  
Andrew Marquez, UC Irvine  
Luis Martinez, UC Berkeley  
Jose Martinez, UC Santa Barbara  
Lorena Medina, UC Irvine  
Geovan Mejia Salazar, UC Berkeley  
Victor Muglia-Arias, UC Irvine  
Deborah Ortiz, UC Santa Cruz  
Rosa Padilla, UC Davis  
Dorian Perkins, UC Riverside  
Francisco Ponce, UC Berkeley  
Lydia Pulido, UC Irvine  
Andrew Rodriguez, UC San Diego  
Angel Rosales, UC Santa Barbara  
James Talmich, UC Irvine  
Robert Valtierra, UC San Diego  
Richard Velasco, UC Irvine

## Role of the CAMP Faculty Mentor

- Provide supervision and support for the CAMP undergraduate researcher by introducing him or her to the culture of the laboratory, and assisting him or her to explore and become proficient in research methodologies and in the research tools of the discipline.
- Support the student in transitioning his/her role in the research team, formulating a research question, drafting project goals, and a timeline with specific benchmarks.
- Advise the student in establishing realistic parameters and objectives for their part in a team research or individual project.
- Guide the preparation of a research proposal tailored to the student's particular field of interest and the focus of inquiry.
- Supervise or facilitate undergraduate student research projects in the laboratory and, if appropriate, provide guidance for writing an abstract or preparing a poster or oral presentation; assist in submission of the abstract for presentation at a scientific or professional symposium.
- For a long-term project, where feasible, guide the student in the technical writing process, preparing notes as a writing resource and eventually, if compelling, a polished abstract and manuscript for possible co-authorship and publication.

Today, more CAMP students  
than ever before have their  
sights set on the Ph.D.





# Award Winning Presentations

## Awardee Snapshots

### Michelle Palacios

UCLA Sophomore  
Major: Microbiology, Immunology, and  
Molecular Genetics  
Goal: Graduate school; work for a  
government agency

### Marcos Pena

UC Irvine Senior  
Major: Biomedical Engineering  
Transferred from Ventura Community  
College  
Goal: Graduate school

### Refugio Roman

UC Irvine Sophomore  
Major: Biological Sciences  
Goal: Ph.D., Scientific Research

### Jesse Vasquez

UC Santa Barbara Sophomore  
Major: Biological Sciences  
Goal: Veterinarian

### Milana PeBenito

UC Santa Cruz Junior  
Major: Molecular, Cell & Developmental  
Biology  
Goal: Ph.D., Researcher/University Professor

### Eric Smoll

UC San Diego Senior  
Major: Chemical Physics  
Transferred from Chaffey Community  
College  
Goal: Ph.D. Chemistry, Community College  
Instructor

>>>

*“The CAMP symposium was an incredibly good experience. I met a lot of good people and enjoyed the actual symposium immensely. The preparation was stressful but overall a good experience.”*

—Jose Rosa, UC Davis,  
Biological Sciences Poster Presenter

*“I had a great learning experience attending the CAMP symposium where I had interaction with professors from other UCs and where I learned about interesting research topics from other university students my age.”*

—Ana Luz Acevedo-Cabrera,  
UC Berkeley, Geophysics

**A total of  
18 awards were  
presented—16 in two  
main categories, oral and  
poster presentations,  
and 2 special awards in  
veterinary medicine.**

*“There is nothing better than sharing a learning experience with good company.”*

—Parisse Stuart,  
UC Berkeley,  
Environmental Science





## SPECIAL MERIT IN RESEARCH—SELECTED ABSTRACTS

### Biological Sciences - Oral

#### AN EVALUATION OF THE FOCUSED ASSESSMENT SONOGRAM IN TRAUMA (FAST) SCAN IN PEDIATRIC BLUNT ABDOMINAL TRAUMA

Graciela Barajas, Senior, Biological Sciences, University of California Irvine, J. Christian Fox, Emergency Medicine Department; Jarrod Larson, lab partner.

The Focused Assessment Sonogram in Trauma (FAST) in the evaluation of blunt abdominal trauma is generally accepted as the screening modality of choice in adult populations to evaluate for free fluid (FF). However, there are few studies demonstrating its accuracy in the pediatric population, which is what was assessed in this study. This prospective observational study included a consecutive sample of patients aged 0-17 years, suffering blunt abdominal trauma requiring trauma activation that received either CT scans or underwent laparotomy, at a tertiary care Level I Trauma Center University Hospital. After obtaining assent/consent, the senior emergency medicine resident performed and interpreted the FAST at bedside. Using CT scans as the criterion reference, the FAST results were compared to those of CT using descrip-

tive statistics setting the Confidence Interval at 95%. Of the 118 total participants, none were excluded after initial inclusion. Nine percent had a positive FAST showing FF in the abdominal/pelvic cavity. Of those, 100% had a subsequent positive CT scan. Five subjects went to the operating room within 24 hours of evaluation. Of those, three had a positive FAST, demonstrating the sensitivity of FAST in detecting clinically-significant levels of FF is 60%. Overall, the sensitivity of the FAST to illustrate any amount of FF in the abdominal/pelvic cavity is 40%, with a specificity of 99%, positive predictive value of 89%, and likelihood ratio of 39.2. The results indicate pediatric FAST is very specific, but less sensitive than that reported in the adult literature for all degrees of FF.



Biological Sciences awardees for Special Merit in Research enjoy their recognition.



**Serena Cervantes**

UC Riverside Senior  
Major: Molecular, Cell & Developmental Biology  
Goal: Ph.D., Research Professor

**Graciela Barajas**

UC Irvine Senior  
Major: Biological Sciences  
Transferred from Santiago Canyon College/  
Santa Ana College  
Goal: Physician

**Morgane Botella**

UC San Diego Sophomore  
Major: Computer Science  
Goal: Software Engineer

**Felipe Godinez**

UC Riverside Senior  
Major: Mechanical Engineering  
Transferred from Riverside Community College  
Goal: Ph.D., University Professor

**Bokuba Nwengela**

UC Davis Senior  
Major: Electrical Engineering  
Transferred from American River College  
Goal: Ph.D., Electrical Engineering

**Indara Suarez**

UCLA Senior  
Major: Physics  
Transferred from Pasadena City College  
Goal: Ph.D., Physics, University Professor

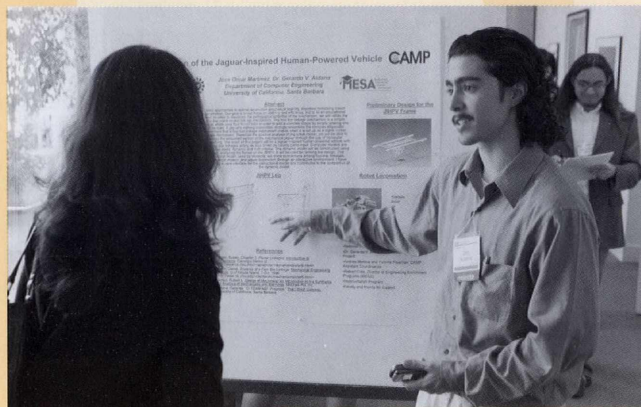
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**In 2006, the University of California awarded 1,329 B.S. degrees in STEM to underrepresented minorities systemwide.**

*“The Statewide Symposium offers CAMP students the possibility of sharing a common language—research. By defending their project in a nurturing, collegial environment, students strengthen their resolve to continue the dream of higher education.”*

—Kika Friend, UC Irvine CAMP Coordinator

**The 2007 symposium set a record for number of presentations, with 90, the most since the first annual event.**



*“The great aspect surrounding the CAMP Symposium is that it provides a welcoming, nurturing, and yet academically fostering environment. The friendships and relationships I made with people from other UC campuses as well as new people I met from UCLA are priceless, and not to mention that the Symposium itself was a lot of fun.”*

—Mikael Guzman-Karlsson, Biological Sciences, UCLA; 2007 Presenter

*“CAMP is an invaluable opportunity to develop one’s academic potential and professional skills.”*

—Valdimir Ochoa, Junior, Biochemistry and Molecular Biology, UC Irvine (transferred from Cerritos College)



## SPECIAL MERIT IN RESEARCH—SELECTED ABSTRACTS

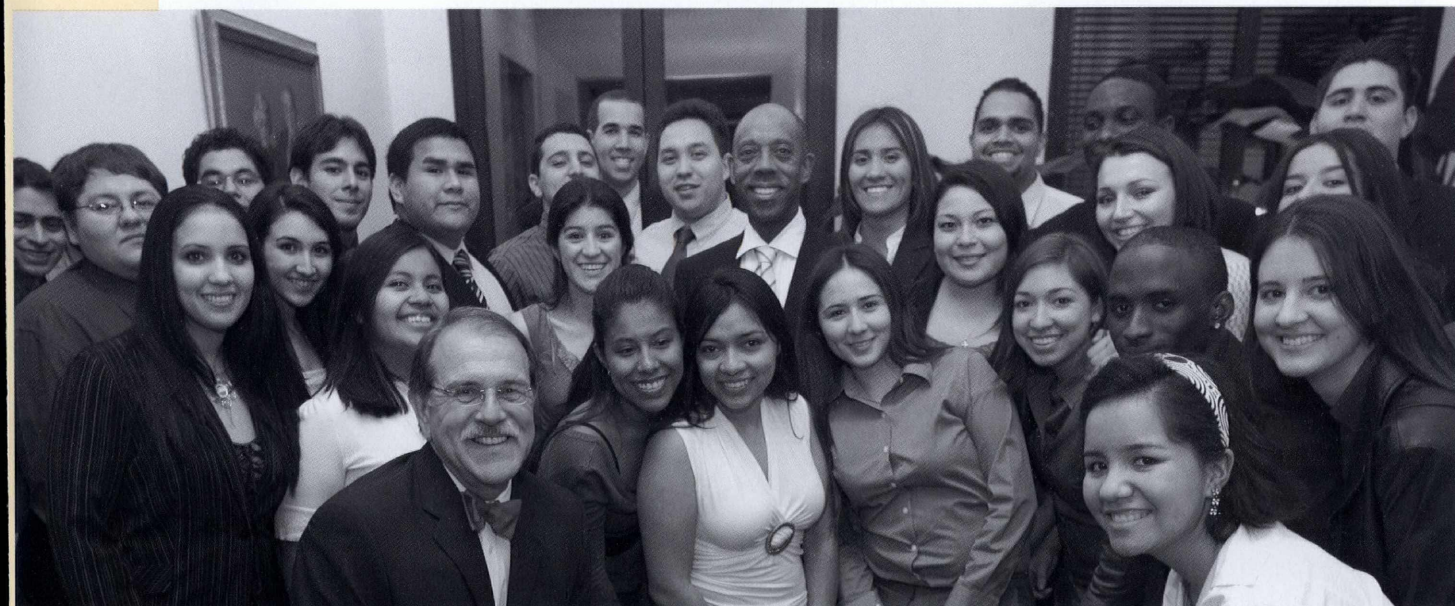
### Biological Sciences - Poster

#### EFFECT OF CHRONIC OPIATE TREATMENT ON AGONIST-INDUCED $\mu$ OPIOID RECEPTOR ( $\mu$ OR) TRAFFICKING IN ENTERIC NEURONS

*Michelle Palacios, Junior, Microbiology, Immunology, and Molecular Genetics, University of California at Los Angeles; Catia Sternini, Ph.D.; Laura Anselmi, Ph.D., Departments of Medicine and Neurobiology, University of California, Los Angeles.*

Patients affected by chronic illnesses, such as cancer, often rely on the analgesic effect of opiates. Prolonged opiate treatment can induce side effects, including tolerance and severe impairment of gastrointestinal motility. Opiates, except morphine, induce acute receptor endocytosis, a mechanism regulating cellular response.  $\mu$  opioid receptor ( $\mu$ OR) is the target of opiate analgesics like morphine and fentanyl. The aim of this project was to determine the effect of chronic treatment with fentanyl (a high efficiency opiate) or morphine (a low efficiency opiate) on agonist-induced  $\mu$ OR trafficking in enteric neurons. Guinea pigs received subcutaneous injections of fentanyl, morphine or saline (control) for 7 days. Specimens of the ileum were collected and exposed to DAMGO, a  $\mu$ OR agonist that induces internalization, or morphine, placed in agonist-free medium, then processed for  $\mu$ OR immunohistochemistry.  $\mu$ OR

immunoreactivity was at the cell surface of unstimulated neurons from each group. DAMGO induced  $\mu$ OR translocation in the cytoplasm in neurons from saline, fentanyl and morphine chronically-treated animals. By contrast, morphine caused  $\mu$ OR internalization in neurons from animals chronically treated with morphine, but not fentanyl or saline. Morphine-induced inhibition of muscle twitch was reduced in chronically morphine-treated animals, indicative of tolerance, but not in chronically fentanyl-treated animals. This study shows that chronic treatment with fentanyl at doses that do not induce tolerance in the gut does not modify the ability of  $\mu$ OR ligands to induce receptor internalization. The ability of morphine to trigger  $\mu$ OR endocytosis in chronically morphine-treated but not fentanyl-treated neurons may reflect intracellular adaptations underlying tolerance.



*Chancellor Michael Drake, center, with UC Irvine CAMP Symposium participants. Dr. Drake is CAMP Statewide P.I. Lower left, front row, Dr. Juan Francisco Lara, CAMP Statewide Executive Director.*



**Luis Martinez**

UC Berkeley Senior  
Major: Physics  
Transferred from East Los Angeles College  
Goal: Ph.D., Physics (see quote, page 5)

**Deborah Ortiz**

UC Santa Cruz Senior  
Major: Chemistry  
Goal: Ph.D., University Professor

**Dorian Perkins**

UC Riverside Senior  
Major: Computer Science  
Goal: Ph.D., Computer Science

**Hiwot Araya**

UC Davis Junior  
Major: Biological Sciences  
Goal: M.D.

**Vet Med Awardees:**

**Rilwan Balogun**

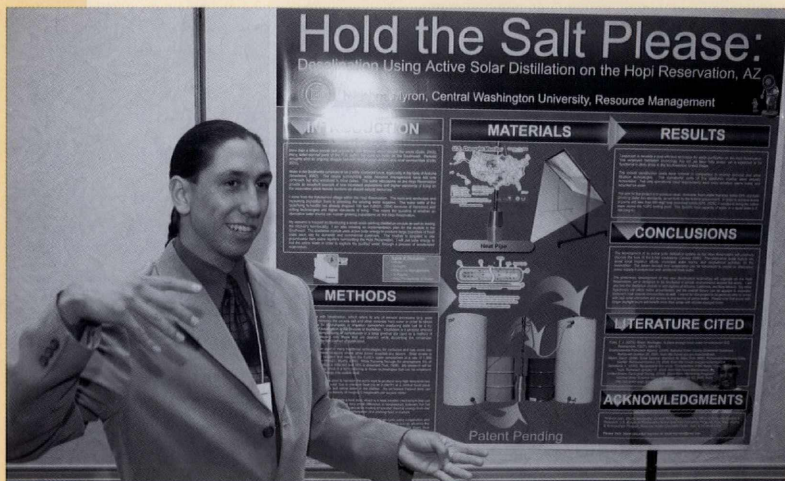
UCLA Senior  
Major: Microbiology,  
Immunology, and Molecular  
Genetics  
Transferred from El Camino  
College  
Goal: MD/Ph.D.

**Elizabeth Partida**

UC Irvine Junior  
Major: Biological Sciences  
Goal: DVM and Masters in  
Public Health

*“I truly enjoyed the CAMP Symposium. It was an outstanding learning and networking experience. I meet students from all over the UC system who were enthusiastic and knowledgeable about the research they were conducting, and faculty and staff who were really interested in seeing each student succeed. The people and positive educational atmosphere were refreshing and inspiring.”*

—Maya Henderson, UC Riverside,  
Biological Sciences Poster Presenter



*“It helps to think of math as a language, having a vocabulary and syntax, and a whole structure of things.”*

—Professor George Johnson, UC Berkeley, CAMP Director

*“CAMP Symposium was a wonderful opportunity to network with other female engineers who are going through similar experiences as I am.”*

—Corina De Pablo, UC Irvine,  
Civil Engineering, Presenter



## SPECIAL MERIT IN RESEARCH—SELECTED ABSTRACTS

### Physical Sciences/Engineering - Oral

#### LASER ASSISTED CRYOSURGERY

*Felipe Godínez, Senior, Mechanical Engineering, Guillermo Aguilar, Ph.D., Mechanical Engineering, University of California, Riverside*

Cryosurgery is an alternative treatment for certain types of cancers, in particular prostate cancer. There are, however, some shortcomings to this method that preclude its widespread use. For instance, in many cases, it is not fully possible to destroy the target tissue (prostate) without causing collateral damage to the urethral and/or rectum wall. To overcome this problem, current cryosurgical procedures rely on warm water flow through the urethral canal to provide the necessary heat to prevent the urethra wall from freezing. However, this method is limited and ineffective. Cryosurgery assisted by laser heating may provide the heat necessary to maintain the wall temperature above the damage threshold for cryoinjury, independent of the application time of the cryogen probe and without limiting so severely the cryoablation of the prostate. In this scenario, this investigation proposes the use of laser irradiation as a

means to protect the urethral wall during cryosurgery. The present investigation determines the propagation of the freezing front within one-dimensional agar gel model. To do this, we measure the temperature of six miniature thermocouples placed at known distances from one another within the agar model, and determine the rate of change of the temperature gradient from the cryoprobe to such locations. Our experiments show that the current experimental setup provides qualitative results as predicted by theory. Future models are under development to model the combined effects of freezing and laser heating in more realistic 2D and 3D geometries. These models will contain prostate cells embedded in collagen matrices similar to the current agar gels, providing us the opportunity to assess the cell viability of combined freezing-laser heating approaches.



*The UC Merced contingency! Our first group of students, one presenter and observers, attended the 2007 Symposium. Welcome UC Merced!*



**CAMP-UC Irvine Alumni panelists gave insights into their professions in special workshop—Transition to the Professional Workplace**

**Nella Barrera**

B.S. Mechanical and Aerospace Engineering, 2005  
Design Engineer, CSD-Parker Aerospace

**Ruben Begino, D.D.S**

B.S., Biological Sciences, 1996  
DDS, UC San Francisco

**Lizbeth Cordova, P.E.**

B.S. Civil Engineering, 2001 and B.S. Environmental Engineering, 2001  
Associate Civil Engineer  
Department of Public Works, Los Angeles County

**Nasbi Guzman**

B.S., Mechanical Engineering and B.S. Aerospace Engineering  
Facility Engineer, ConocoPhillips

**Daniel C. Maldonado, M.D., F.A.A.F.P.**

B.S. Biology, B.A., History, 1994  
M.D., UCLA, Drew School of Medicine, 1999  
Asst. Clinical Professor USC Keck School of Medicine  
Asst. Clinical Professor UC Davis School of Physician Asst.  
Clinical Professor of Inpatient Medicine  
White Memorial Medical Center (WMMC)  
Residence and Chief Resident, WMMC  
Family Practice Residency Program

**Juan Velasquez**

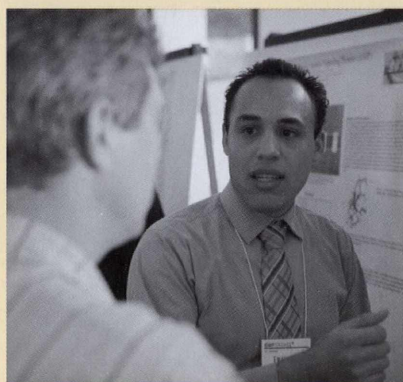
B.S. Electrical Engineering, 1999  
M.S., University of Michigan  
Industrial Engineering Manager, Skyworks Inc.

**Daniel Vera, Ph.D.** (See profile, page 30)

B.S. Mathematics, 2002  
Massachusetts Institute of Technology, Ph.D.,  
Mathematics, 2006  
Analyst, Picoco LLC, Newport Beach, CA

*“My experience at the CAMP Symposium has been one of the greatest experiences in my academic career at UC Davis. Attending the Symposium was the best decision I could have made. My confidence, self esteem, and presentation skills improved as a result of it.”*

—Jose Zavala, UC Davis,  
Physical Sciences Oral Presenter



*“The CAMP Statewide Research Symposium is a great opportunity to network with peers, showcase new and exciting research ideas, and also meet excellent faculty from all the UC campuses. Although I was not expecting an award, I am glad I was able to be recognized for my achievements and represent UC Riverside.”*

—Dorian Perkins, UC Riverside, Physical Sciences/  
Engineering, Special Merit in Research Awardee



## SPECIAL MERIT IN RESEARCH—SELECTED ABSTRACTS

### Physical Sciences/Engineering - Poster

#### CDTE QUANTUM DOT INTERACTIONS WITH YEAST IN THE ABSENCE OF A SPECIFIC BINDING MOLECULE

*Deborah J. Ortiz, Senior, Chemistry, B.S., Department of Chemistry, Dr. Jin Zhang Faculty Member, Abe Wolcott, Graduate Student, Maria Araceli Ortiz, Research Assistant, University of California, Santa Cruz, Department of Molecular Cellular and Developmental Biology. Dr. Grant Hertzog, Assistant Professor.*

**S**emiconductor nanoparticles, known as Quantum Dots (QD's) have been increasingly used for bio-labeling and bioimaging, due to their advantages over fluorescent protein labeling. For biological applications, QD's must be water soluble and buffer stable, resulting in a complicated synthesis. CdTe QD's are advantageous because their emission can be tuned in the near Infrared range, where tissues have the smallest absorption. Silica shells prevent leakage of Cd<sup>2+</sup> ions, thus providing a water soluble polar capping agent. To increase their biocompatibility the silica capped QD's have been coated with poly(ethylene glycol) and thiol terminated molecules. The condi-

tions under which CdTe QD's have been grown has been specified for bioconjugation, however cellular interactions within small organisms such as yeast have yet to be studied. The interactions could entail quenching the QD's, cellular uptake by the yeast cells, cellular death, and cellular distribution through the reproductive process. The outcomes were observed using a fluorescent microscope with emission ranging from 530 to 625 nm.

*Below, UC Berkeley CAMP was well represented, led by Diana Lizarraga, program coordinator, and George Johnson, faculty director.*





## Special Poster Award Presented by UC DAVIS SCHOOL OF VETERINARY MEDICINE

Two posters were selected to receive a special monetary award, certificate, and letter from the Dean, UC Davis School of Veterinary Medicine.

UCLA's Rilwan Balogun receives award from Dr. Ben Norman.



### IMPORTANCE OF AMINO ACIDS E339, D340, AND Q405 OF NP IN INFLUENZA A VIRUS LIFE CYCLE

*Rilwan A. Balogun, Senior, Microbiology, Immunology, and Molecular Genetics, University of California, Los Angeles, Debi. P. Nayak, Ph.D., Department of Microbiology, Immunology, and Molecular Genetics; Subrata Barman, Ph.D.*

Influenza virus infection and release of progeny viruses both occur specifically at the apical plasma membrane in polarized epithelial cells. The nucleoprotein/viral ribonucleoprotein (NP/vRNP) interacts with actin and this may play a critical role in the polarized budding of influenza virus. A/PR8/34 NP amino acids 338-342, and 405 are responsible for its interaction with actin *in vitro* (J. Virol (1999) 73: 2222-2231). Therefore mutations were introduced into these critical amino acids to discern the importance of actin binding on the virus life cycle. Previously, researchers in Nayak's lab were able to show through viral rescue experiments that NP mutants F338A and R342A exhibited growth and plaque morphology similar to WT virus. Analysis of additional NP mutants in WSN and PR8 strains is now in progress. Mutations in the influenza virus nucleopro-

tein were introduced into A/WSN/33 Pol I-II-NP plasmid, using NP primers containing mutations F338A, E339A/D340A, R342A, and Q405A, by site-directed mutagenesis and polymerase chain reaction (PCR) technique. PCR products were digested with DpnI and transformed into competent bacterial cells. Colonies were obtained from the Pol I-II-NP transformations, the DNA plasmids were isolated and they have been sequenced. The sequence data show that the mutations were introduced properly. However, the virus rescue experiments showed that the mutations were lethal. Further study has begun with PCR mutagenesis of the A/PR8/34 Pol I-II-NP DNA, using the newly designed PR8 specific primers containing mutations F338A, E339A/D340A, R342A, and Q405A. The PCR products have recently been sent for sequencing.



## LOCOMOTOR RECOVERY AFTER SPINAL CORD INJURY

*Elizabeth Partida, Junior, Biological Sciences, University of California Irvine, Aileen J. Anderson, Reeve-Irvine Research Center, Physical Medicine & Rehabilitation Department, Manuel D. Galvan, Sabina Luchetti, Anatomy & Neurobiology Department.*

**T**rauma to the spinal cord initiates an inflammatory response that results in secondary injury to the surrounding tissue. The role of the complement system in this inflammatory response is not well understood. Previous studies in our laboratory have demonstrated that complement is activated after SCI. C5b-9, the membrane attack (MAC) is present as early as 24 hours after SCI and at 42 days. To test the hypothesis that complement activation exacerbates SCI, wildtype (WT) and C6 deficient rats (unable to form MAC), received a moderate (200 Kdyne) contusion injury at T9 vertebrae. Locomotor recovery was scored with Basso, Beattie and Bresnahan (BBB) open-field testing throughout the study and by foot fault analysis on a horizontal ladder beam task at the end of the study. C6 deficient rats showed significant improvements in BBB

locomotor functional recovery in comparison with WT PVG rats beginning at day 7 and continuing throughout the duration of the study (repeated measures ANOVA  $p < 0.041$ ). At the end of the study, day 42, C6 deficient rats were consistently stepping with consistent coordination (mean BBB =  $14 \pm 0.72$ ) whereas WT PVG rats exhibited frequent to consistent stepping and no coordination (mean BBB =  $11.5 \pm 0.43$ ). Furthermore C6 deficient rats exhibited significantly fewer errors ( $3.63 \pm 0.53$ ) on ladder beam compared to WT PVG rats ( $5.99 \pm 0.73$ ) at day 42. Histological assessment of spinal cord tissue at day 42 is underway. This study demonstrates that complement activation may impair functional recovery following a moderate contusion injury.

*“Currently, I am not quite sure what it is that I would be doing after I graduate. I do know for a fact that I wish to continue with my education. I would like to pursue a degree that will allow me to put into use the skills that I am developing as a scientist, and integrate them into something that would be of benefit to others as well as to myself.*

*At this moment, I am considering pursuing a DVM with a Master’s in Public Health. By pursuing this degree, I know that I will be able to continue my development as a scientist, and most importantly, I will be able to give back to the community.”*

—Elizabeth Partida, UCI Presenter and Special Awardee, UC Davis School of Veterinary Medicine



**UC Davis School of Veterinary Medicine includes public health and environmental science as well as animal health and medicine.**

*UC Irvine’s Elizabeth Partida receives special poster award from Dr. Ben Norman, UC Davis School of Veterinary Medicine.*



## Bridge to the Doctorate, Graduate Fellows Poster Session and Panel

Graduate students from two BD cohorts, UC Davis and UC San Diego participated in the Friday evening poster session, during which the BD Fellows shared their research with undergraduates. They also participated in the BD graduate school panel the following day. The panel was facilitated by Dr. Karen McDonald, Associate Dean, Research and Graduate Studies, UC Davis College of Engineering. The Fellows shared their perspectives on preparation for and success in graduate education, the importance of mentoring, the requisite for passion in your field, and the need to self-advocate and take responsibility for your own success. The Davis Fellows are completing their first year of graduate studies, and the San Diego Fellows, their second year. All are committed to attaining the goal of the Ph.D. In 2008, an “all-sites” BD poster session will feature prominently at the symposium.

### UC DAVIS

**Catherine Cox**, Chemistry

**Moises De La Torre**, Microbiology

**Israel Lopez**, Mechanical & Aerospace Engineering

**Raquel Orozco-Alcaraz**, Chemical Engineering

**Cecilia Osorio**, Plant Biology

**Jorge Robles**, Physics

**Jacqueline Teixeira**, Chemistry

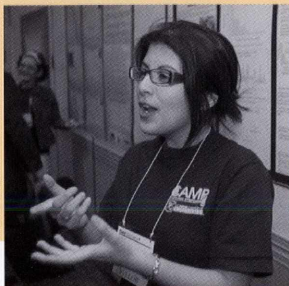
### UC SAN DIEGO

**Cynthia Garza**, Molecular Pathology

**Kristina Pohaku**, Chemistry

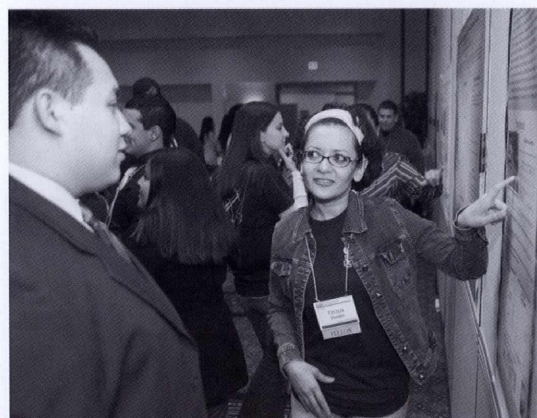
**Manuel Ruidiaz**, Photonics

**Melanie Zauscher**, Mechanical Engineering



*“You make this graduate experience what you want to make it. It’s on your shoulders. As a graduate student, you cannot rank how you’re doing by grades alone. That’s the biggest change from being an undergraduate—managing myself and gauging my success in the discipline.”*

—Jose Romero-Mariona, UCI BD Fellow, Third Year



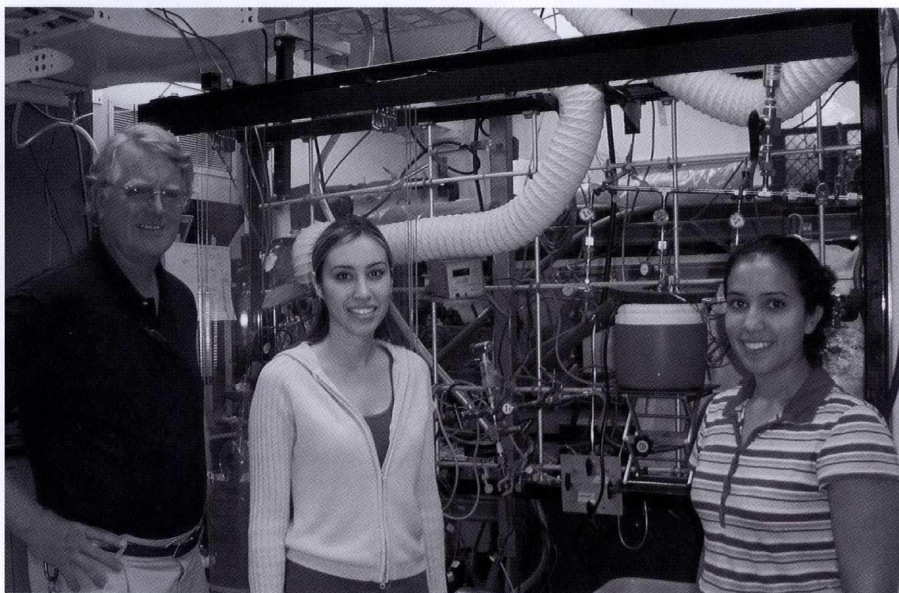
*“Being a TA made me grow. I realize that I have information to pass along to someone else. As a graduate student I have to think independently, to take concepts into the lab. You’re a teacher, lab member, and student—all these things at one time.”*

—Kimberly Romero, UCI BD Fellow, Third Year



## on Graduate School

**CAMP-Bridge to the Doctorate supplemental funds have supported 46 minority graduate students at UCLA, UCI, UCSD, and UCD. A new cohort of 12 is expected at UC Riverside.**



*UC Irvine Bridge to the Doctorate graduate fellow, Melissa Prado, center, (doctoral student in physical chemistry) mentors CAMP-UCI undergraduate Yazmin Cazares, a sophomore chemistry major. The intergenerational relationship between the students is an inspiration. Both are under the mentorship of Professor Kenneth Janda, Chemistry Department. In Spring 2007, Melissa was awarded a Faculty Mentor Fellowship. Yazmin presented her research, Storage of Methane Gas in Propane Hydrate.*

*“In a world of infinite knowledge, if you think of knowledge as content it will bury you. But if you think in terms of process, it’s manageable. The emphasis should be on process.”*

—Professor Derek Dunn-Rankin, UC Irvine BD Director, CAMP-UC Irvine Director



The 2006-08 UC Davis Bridge to the Doctorate (BD) cohort of 12 graduate students is completing their first year of graduate education. The BD fellows, as they’re called, are pursuing a range of majors, from cell biology to electrical engineering to chemistry and physics. The fellows hail from the University of California (Berkeley, Davis, Riverside, and San Diego) and from the California State University (Fresno, Los Angeles, Sacramento and San Francisco). Thus, the BD activity represents statewide synergy between the state’s two Louis Stokes Alliances, facilitating transition to graduate education throughout California. UC Riverside is the site of the 2007-09 cohort, and the faculty are actively recruiting LSAMP students for the available spaces. The BD geographically covers the southernmost and northernmost UC campuses as well as the “Inland Empire.” Other BD sites are UCLA, UC Irvine, and UC San Diego.

*Left, Kika Friend congratulates Graciela Barajas, UC Irvine awardee.*



# CAMP Spotlights, Profiles, News

## UC BERKELEY STUDENTS WELCOME CAMP OPPORTUNITIES

*“CAMP has provided me with an opportunity to pursue graduate study. The importance of this statement is that I thought pursuing graduate study was out of my reach. The revival of the CAMP program on the UC Berkeley campus coincides with the revival of my interests to pursue graduate study. The CAMP research symposium is the initial moment where I said to myself, I want to pursue graduate study.”*

—Jesus Cruz,  
Mechanical Engineering, Senior

*“CAMP has given me the opportunity to pursue my goals and has revved my faith in obtaining the future I set for myself as a scientist.”*

—Alfonso Lopez,  
Biological Science, Sophomore

*“I became part of the CAMP program only at the beginning of this semester and my only regret is not having done it before. The program has provided me with crucial information about graduate school and valuable support to help me succeed in my current classes. It's like a family away from home.”*

—Alma Luna,  
Civil and Environmental Engineering, Junior

*“Pass the Torch [transfer program] and CAMP have been helpful to me because not only have they allowed me to network with students that helped me so much in my math classes but also they have given me great friendships. The support I get from these programs is what keeps me going in pursuing a math major.”*

—Alexis Nunez, Math, Junior

*“Diana Lizarraga (our CAMP program coordinator) showed me another way—that acquiring my goals might take longer but it seems as if there are less obstacles when there is a supportive system like CAMP.”*

—Amelia Ramirez-Correa,  
Mechanical Engineering, Junior

*“CAMP to me means one word: Opportunity.”*

—Pedro Gomez, Mechanical Engineering, Senior

*“CAMP has given me the opportunity to meet students who enjoy the sciences and who I can relate to and turn to for help as well as understanding. CAMP is my family here on campus.”*

—Ana Luz Acevedo-Cabrera, Sophomore, Geophysics, UC Berkeley

Dr. Juan Francisco Lara, CAMP Statewide Executive Director, and Dr. Carolyn Kane (right), Faculty Advisor for CAMP and the Professional Development Programs at UC Berkeley, congratulate CAMP Scholar and Pass the Torch



Transfer student Elena Perez, Class of 2007, B.S. Civil Engineering. Perez is President of the UC Berkeley chapter student organization, Hispanic Engineers and Scientists. She took first place at the 2007 Society of Hispanic Professional Engineers academic decathlon.



**Berkeley CAMP-ers Claudia Estupian (Civil Engineering) and Sara Valdez (Mechanical Engineering) enjoy the festivities at the 2007 CAMP graduation**

**celebration. They are part of the Engineering Team within the CAMP program at Berkeley, and participated in the “speed mentoring” activity during which students participated in discussions on research, leadership, and graduate education.**

UC Berkeley LSAMP students Franklin Dollar (Engineering/Physics) and Victoria Angel (Mathematics), both seniors heading to graduate school, each won the Blue Ribbon for Superior Poster Presentation from Sigma Xi, The Scientific Research Society. The Society is dedicated to the promotion of research and science. The recognition included ribbons and cash. In addition, the UC Berkeley Chapter Sigma Xi, was recognized for their diversity program, energized by student participation and led by the UC Berkeley LSAMP program coordinator Diana Lizarraga, a member of Sigma Xi.





## UNDERGRADUATE SPOTLIGHT ON ANAYO "ANITA" OHIRI, BERKELEY CAMP STUDENT INTERN

*Major:* Biochemistry

*Level:* Second Year

*Career goal:* Research in pharmaceutical chemistry

*High school:* King Drew Magnet High School, Los Angeles

*Enjoys:* General Chemistry

*Favorite class spring semester:* African American Studies

*Most admires:* "My mother, for her strength and her ability to overcome any obstacle."

*On Berkeley:* "Berkeley is very challenging, but the environment is supportive and welcoming."

*Relaxes by:* "Listening to music and doing anything that doesn't involve academics."

*Inspired to pursue a science major by:* Mr. Loehse, 10th grade chemistry teacher

*Best advice for a new freshman:* "Always seek guidance. Never try to get ahead by yourself."



## SPOTLIGHT ON JO-ANN HEICK, PROGRAM COORDINATOR CAMP-UC RIVERSIDE

Joining the CAMP effort in August 2006, Jo-Ann Heick draws upon her considerable program experience and her personal educational pathways in her work with undergraduates at Riverside. She oversees all aspects of the program, serving approximately 100 students, from marketing and campus relations to recruitment and student development.

She is an experienced liaison, facilitator and motivator, not only for CAMP students, but for her peers in affiliated programs, STEM faculty, community agencies and organizations, as well as an inspiration for parents of college students. CAMP is the beneficiary of Jo-Ann's skills honed by leading the MARC program (Minority Access to Research Careers) for five years (2001-06), skills which include organizing symposia, training student office assistants, and mentoring student leaders. Prior to that, Jo-Ann was an education

counselor at the Community College of the air Force. She also is adept at student tracking and data reporting, an essential aspect of every successful academic initiative.

She sees preparation for graduate school and the GRE as a vitally important component of her work, for which she collaborates with the Graduate Division. Jo-Ann has received the United States Air Force Training Ribbon (2003) and the National Defense Medal (2004).

Her expertise in academic counseling is a bonus, and is illustrated by her publications, including Ferraro, F.R., Heick, J., & Gondhovd, H. (2004).



*Ability differences in a variant of the spot-the-word test in young adults.* Psychology & Education. Presented papers include Marino, J., Ferraro, F.R., Bren A., & Heick, J. (2006). *Reading rate and word unitization.* 47th Annual Meeting of the Psychonomic Society, Houston, TX, Abstracts of the 47th Annual Meeting of the Psychonomic Society, 11, 56 {Abstract}.

Jo-Ann has an M.S. in Administration, Health Services, 2001, Central Michigan University, a B.S. in Psychology, 1999, University of North Dakota. Her educational achievement began with an AA in Liberal Studies, earned at the College of the Sequoias, Visalia, California.



## IRVINE CAMP ALUMNA EARNS MASTER'S DEGREE:

"This is Stephanie Jones-Wood (you knew me as Stephanie Jones). I graduated from UCI in 2002, as a biology major. I had been "fishing" for some information for my husband, and came across CAMP and McNair and then I saw your face and had to email you. I have completed a Masters in Public Health, and am currently working for the Centers for Disease Control and Prevention. I am on a field assignment and living in Houston, TX."





# More Spotlights, Profiles, News...

## CAROLINE KANE, PH.D., BIOCHEMIST AND PROFESSOR, UNIVERSITY OF CALIFORNIA, BERKELEY, RECEIVES CHANCELLOR'S AWARD

Caroline Kane received the 2007 Chancellor's Award for Advancing Institutional Excellence. She is a nationally-known biochemist who is currently studying gene expression, transcription elongation, and genome replication. Her work is helping lead the big wave of bioscience, biotech and genomic breakthroughs expected at UC Berkeley in the next decade. Kane's academics are impeccable and impressive. She received a B.S. in Zoology at Ohio University and an M.S. in Genetics at North Carolina State, and a Ph.D. at Berkeley. With more than 30 years of laboratory and classroom teaching, research, and mentoring, Kane is responsible for launching the careers of many Cal graduate students. She has authored hundreds of presentations, papers, and lectures, and is in demand as an ad hoc scientific reviewer for numerous organizations and journals.



Kane's interests extend beyond her own lab and classroom. She is heavily involved in spring yield activities, CalSO, and the MESA, EAOP and UCLEADS programs. In 1999 she co-founded the Biology Transfer Consortium to encourage community college students pursuing science. She has worked tirelessly throughout her career to increase to increase diversity in higher education, and she leads the fight against gender and ethnicity stereotyping at all levels. In 1991, she helped petition the Howard Hughes Medical Institute for funds to start the Biology Scholars Program, which helps severely disadvantaged students achieve educational parity in the rigorous biology major. She is the founding member of the Coalition for Excellence and Diversity in Math, Science and Engineering, which recently won the Presidential

Award. She has written extensively on affirmative action, standardized testing and the reasons women leave science. She has served on or chaired committees on and off campus including the Academic Senate Committee on Student Diversity and Academic Development, the Graduate Affirmative Action Advisory Committee, and the NIH Advisory Council for Research on Minority Health. Dr. Kane also serves as CAMP faculty advisor.

### Personal Statement

I am extremely humbled to have been selected for this award. Helping other people is what we all SHOULD enjoy doing, and I do enjoy helping others move as successfully as possible in their efforts. Most of what I do is so very small that receiving this award has me reflecting on those whose impacts have been so very significant.

When I arrived at Cal as an incoming graduate student, I was immediately taken by the diverse nature of the student body and the diverse opinions voiced on campus on many issues. It seemed that students and faculty in particular felt comfortable voicing opinions and in sharing those opinions, even in disagreement, with each other. That is also the nature of science; disagreement and discussion about alternative interpretations of the way the world works helps us inch closer and closer to the explanation for the things we see and experience in the world around us.

I also was delighted in the energy and enthusiasm of the undergraduates for whom I was a TA. They loved to challenge ideas, in science and outside of science, and the stimulation in working with them was a real battery charger. In graduate school, you need your batteries charged on a daily basis to enable you to work through the tough times. In addition to having my batteries charged, I enjoyed the process of education and watching the students come to understanding and develop the ability to piece together seemingly disconnected pieces of information...a necessity in any critical thinking.

—From The Berkeleyan, UC Berkeley News Service

*"The vibrancy of Cal made me feel especially fortunate to return here for my professional career, and I have not been disappointed."*



## UCLA PHYSICS MAJOR INDARA SUAREZ INVESTIGATES EXCITING PHYSICS IN GERMANY

*My experience at UCLA has been amazing. I have met people here that made a huge difference in my life. At UCLA, my professors, counselors, and advisor have all encouraged me to reach as high as my imagination will take me and have aided me in the process by teaching skills to succeed.*

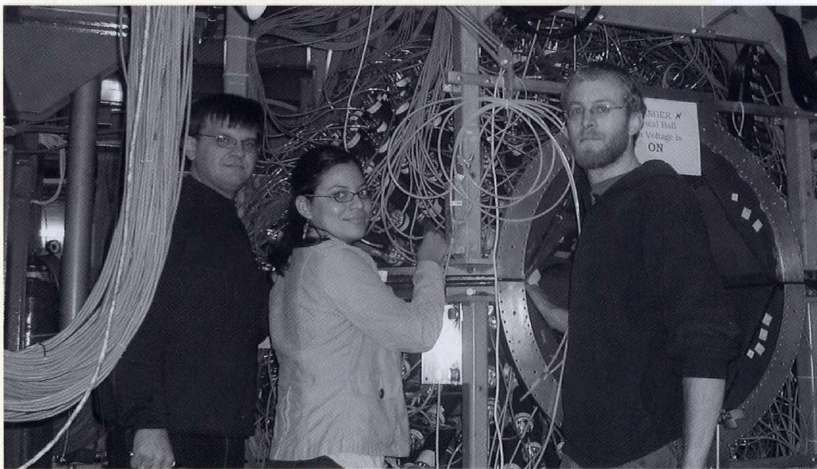
**I** am from Guanajuato, Mexico. Ever since I was small my family migrated from place to place, finally settling in border towns. We moved to the United States when I was 11. I began school in Los Angeles knowing no English but since I understood numbers, my love for mathematics grew.

“When I graduated from high school, college was not in my plans. I wanted to work to help out my family. But my parents told me I had to go to school so I enrolled at Pasadena City College. I took a physics class that gave me a new perspective in life and got me excited about learning. Physics gave me the necessary skills to observe, analyze, and evaluate life, so I decided to continue my education in physics. I also got involved with several science programs. I transferred to UCLA

in Winter 2005. I chose UCLA because it seemed like a place where I could grow. I would like to become a professor and have my own lab. I would also like to be involved in educational outreach.

“I believe that people around the world share the same struggles that I have faced just as many people around the world share my desire to explain the natural phenomena. I have always thought of myself as an internationalist so working with an international collaboration such as the Crystal Ball Collaboration is ideal for me. The CB Collaboration has expanded my knowledge of both science and world cultures.”

(Suarez won Special Merit in Research at the 2007 Symposium)



*Indara Suarez in Mainz, Germany working on the calibration of the Crystal Ball Detector MAMI (Mainz Microtron). Indara's group is also using the upgrade MAMli-C beam of 1.5GeV to produce the  $\eta'$  meson. The study of the  $\eta'$  meson will advance the study of charge conjugation parity (CP) violation, the reason for the dominance of matter over anti-matter in the universe.*





# More Spotlights, Profiles, News...

## UCLA CAMP Alums Continuing or Enrolling in Graduate School, Fall 2007

### **Shereese Alexander**

Ph.D. Microbiology program at NYU (Oral presenter 2004)

### **Charisse Crenshaw**

Ph.D. Molecular and Cell Biology program at Harvard (Poster presenter 2001)

### **Tracie Delgado**

Ph.D. Microbiology program at University of Washington (Poster presenter 2004)

### **Johnny Garcia**

M.D. at Yale School of Medicine (Poster presenter 2005)

### **Sonya Lopez**

Ph.D. Civil and Environmental Engineering, UCLA

### **Julie Magallanes**

Ph.D. Cell and Molecular Biology program at University of Pennsylvania School of Medicine

### **Edwin Paz**

Ph.D. program in Cancer Biology at University of Arizona (Poster presenter 2004)

### **Jose Rodriguez**

Ph.D. Molecular Biology program at UCLA (Poster presenter 2005)

### **Annemarie Selaya**

MD/Ph.D. program at UC San Diego (Oral presenter 2000)

### **Peter Malati**

Ph.D. Materials Science program at UCLA (Oral presenter 2003; graduate research will be the same project presented at CAMP Statewide Symposium as a new transfer student)

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**UCLA CAMP students Mikael Guzman, Jason Lin, Daniel Krauth, and Lorilee Tallorin won Best Poster awards for Biology/Neurobiology at the 2006 SACNAS Conference in Tampa, FL.**

## UCLA'S VELVETH KLEE RELISHES THE INTERNATIONAL RESEARCH EXPERIENCE IN THAILAND

**I**n 2006, I experienced many 'firsts' as a new transfer student to UCLA. I was finishing my first year as a Physics major at UCLA, I completed my first full year of research in a lab, and for the first time, I travelled outside of the United States. Near the end of my junior year, I applied and was accepted to a Research Experience for Undergraduates (REU) Program held by the University of Arizona in Bangkok, Thailand and sponsored by the National Science Foundation.

"As a transfer student in the sciences, I found it very difficult to study abroad without jeopardizing a summer of research. My solution came during a meeting with my CAMP Coordinator who suggested looking for research opportunities abroad through a variety of programs. Through the international REU Program, I was placed for the summer,



*"Although each graduate student at KMUTT is assigned his or her own project, at many times it feels as if you're working on your project as part of a team. The kindness and generosity of Thai people is quickly evident, even in the academic community. The common room for the graduates of Dr. Preecha, the principal investigator of my project, was a place where everyone discussed problems with their research and worked together towards a solution. On this day, Tip, one of the graduate students I worked with, along with Lindsay, my roommate, were working on our final presentations for the summer."*

—Velveth Klee, UCLA REU Participant



*Above all, my summer spent conducting research in Thailand not only made me aware of how lucky I am to be a researcher in the UC system, but also assured me that through research and higher education I really can accomplish many of my goals.*



***"This picture is of our daily dinner outings. In Thailand, it's common to eat out every day! Here you see me (w/ the square glasses), my roommate, Lindsay, from the University of Rochester, two of the graduate students I worked with, two international students at KMUTT from Burma and Vietnam, and other graduate students from the department. Yok, one of the graduate students I worked with, is eating ice cream served on a hotdog bun... delicious!"***

along with three other students and four teachers from throughout the U.S., at King Mongkutt's University of Technology, Thonburi (KMUTT) in Bangkok.

"Working alongside a graduate student in the Department of Materials Science, I studied the effects of corrosion on stainless steel, a significant problem in Thailand. The responsibility given to me, as a visiting research student, showed me the great respect and admiration the Thai people have for our educational opportunities and resources in the U.S. Their different

approach to science and research is quite impressive and something I tried to absorb to benefit my skills and knowledge. The REU program, as well as my new Thai friends, made sure to expose us to the culture, language, and country through weekend trips all over the country.

"From visits to the beaches, mountains, temples, and markets I learned about the Thai way of living and how different their lives are from mine. This opportunity introduced me to the international science community and to the true significance of research in our world today."



# More Spotlights, Profiles, News...

## UC IRVINE CAMP ALUM EARNS PH.D. AT MIT

**Daniel Vera earns doctorate in Mathematics, with special focus in String Theory—at just 21**

At the 2002 CAMP Statewide Symposium, Daniel Vera received a special award for mentoring, the James Del Castillo Memorial Award. Dr. Castillo had mentored many undergraduates during his time at UCI, where he earned a Ph.D. in Mathematics. He had contributed much to the UCI Summer Science Academy for entering STEM freshmen, and made important contributions to CAMP, to teaching, and to the culture of success for under-represented students.

Daniel Vera had received the mentoring award as a seventeen-year-old graduating senior—the youngest CAMP mentor in the program’s history. Vera had transferred from Orange Coast College in 2000, and quickly made a name for himself. He had been home schooled, and enrolled in college courses early. He was set to complete his B.S. degree in 2002 (Magna Cum Laude), and was admitted to MIT to the doctorate program in mathematics. To the chagrin of some colleagues, he



finished the Ph.D. before he learned to drive, but make no mistake, he is in the driver’s seat today. Vera is now an analyst for Picoco LLC, Newport Beach, CA. He will volunteer teach at CAMP-UCI 2007 (see page 32) Summer Science Academy.

*“Research as an undergrad will uniquely assist you for the research required when you are in graduate school.”*

### Q & A with Dr. Daniel Vera

#### What is your best advice for a newly admitted student (from California) going to MIT?

There are three things I can offer as advice.

The first is to know that no matter how well you have done in your undergraduate career, you are not completely prepared for MIT. That does not mean you will not excel in your graduate studies as much as you did in your undergraduate studies. In fact, the appropriate amount of dedication will take you beyond past success. Being newly admitted to MIT means you are the absolute best your undergraduate institution has to offer. You and your peers at MIT will be the best in the world. It is a different environment and is one of the most meritocratic institutions in existence. You clearly have the intellectual capacity for success, or you would not have been admitted. What will separate you is the emotional fortitude and discipline to keep going until you reach your goals. To paraphrase Winston Churchill, never give up.

The second point is not to be overwhelmed. Everyone else feels they are over their head as much as you do. Let each situation flow through you and tackle it one day at a time. It’s always better to suffer in a group. Today, I only speak to one or two friends from undergraduate school, but I still keep in touch with almost all of my friends from MIT. There is a unique bond that forms with indi-


viduals that make it to the heights of academic success M.I.T. can provide. The friends you make will be your family while you are there. The friends you make that are your peers will teach you as much as your professors will teach you. Make sure to play as hard as you work when you can, otherwise you will go crazy, and try to maintain balance as much as possible with non-academic activities such as sports or other hobbies.

Finally, and probably most importantly, it’s all about “layers”. You don’t need “thick” clothing, just a lot of clothing. Wear layers. Being a dude from California, when I arrived (in August of 2002) I thought “the weather is just like home, I don’t know what people are talking about.” Then November came and the world as I knew it ended...it gets COLD.

#### What was the most memorable moment or moments in your education at MIT?

The two most memorable moments for me were when I passed my qualifying exam “quals” and when I was first referred to as “Dr. Vera” after successful defense of my thesis. The math department has oral qualifying exams in three subject areas that are picked by the student and his advisor, one major and two minor subjects (my major was topology, and my minors were model theory, a





branch of logic, and commutative algebra, the precursor to algebraic geometry). The test was the most stressful point of my academic career. A good friend of mine who taught me a lot of topology, Dr. Viorel Costeanu, helped me prepare for the examination. After a two hour test “facing the firing squad”, it seemed like an eternity had past. I was told to step outside. Three minutes later, my three examiners came out, smiled and said “congratulations” as my advisor shook my hand.

The second moment is immediately after I defended. My thesis defense was not nearly as stressful as my quals, but it took a great deal more preparation. After finishing, my advisor Lars Hesselholt, and thesis committee members, Haynes Miller, and Mark Behrens congratulated me. My parents were there to see the defense and see their son finish successfully so that made it all the more special. I immediately called my grandmother to let her know. It was great.

### Whom do you credit for completing your doctorate? (besides yourself!)

God, without a doubt, pulled me through. Then, I credit my family that gave me the emotional support. And of course, my advisor and mathematical father, Dr. Lars Hesselholt, my mathematical uncle, Dr. Haynes Miller, and my mathematical older brothers, Dr. Mark Behrens, and Dr. Viorel Costeanu.

There were so many others that contributed to my success, I actually only had a small role. I also have to give a special thanks to Dr. Tomasz Mrowka, my first professor at MIT that helped me through the initial shock, and Dean Isaac Colbert.

### What does the future hold?

I currently work as an analyst for an investment management firm in Newport Beach. The Managing Principal received his Ph.D. from MIT. My job consists of security analysis (I mostly analyze equities, but the firm manages a significant amount of capital across every asset class), development and implementation of proprietary routines and models to select and analyze stocks, industry and company specific research, and portfolio monitoring. I love what I do and look forward to continuing my growth in this exciting career. I also have plans to write some essays and books together with a friend, David Hallowell (a Fulbright Fellow, fellow UCI alum, and newly admitted graduate student to Boston College's Philosophy program), on Viktor Frankl's logotherapy, existentialism, and related philosophical subjects. One essay is scheduled to be published in an anthology this year.

## CV

### CAMP-UCI ALUM Daniel J. Vera, Ph.D.

#### MASSACHUSETTS INSTITUTE OF TECHNOLOGY:

- Research: Algebraic Topology, Algebraic K-theory, Parametrized Homotopy Theory; Topological Hochschild Homology of Twisted Group Algebras; Ph.D. Thesis
- Research Assistant, MIT, Spring 2006
- Visiting Researcher, Nagoya University, Japan, Spring 2005
- Organizer, Graduate Student Topology Seminar, MIT, 2003-04
- Co-Editor, MIT Undergraduate Mathematics Research Journal, 2003-04.
- Norman B. Leventhal Presidential Graduate Fellow, MIT, 2002

#### Undergraduate Retrospective, 2000-2002

#### HONORS:

- James Del Castillo Memorial Award for Mentoring
- Roanld E. McNair Scholar
- California Alliance For Minority Participation (CAMP) Summer Research Scholar
- Golden Key Honor Society Member
- Outstanding Senior of the Year, Mathematics
- Sydney Golub Scholarship Recipient
- Harburger Scholarship Recipient
- University California Irvine Leaders Scholarship
- Alpha Gamma Sigma, Phi Beta Kappa
- Orange Coast College Honors Program

#### TUTORING/MENTORING:

- CAMP-UCI Mathematics Tutor
- Teacher's Assistant, Summer Program
- Grader, Mathematics Department
- Teacher's Assistant for Elementary Analysis
- Upper division Statistics and Probability, upper division Real Analysis and Topology, upper division Complex Analysis, Abstract Algebra I & II, upper and lower division Linear Algebra, lower division Calculus series, Ordinary Differential Equations, Intro to Abstract Math, PreCalculus, Beginning Statistics, College Algebra, Intermediate Algebra, Beginning Algebra, Trigonometry



# More Spotlights, Profiles, News...

## UC IRVINE SUMMER SCIENCE ACADEMY

UC Irvine has celebrated its 15th annual CAMP Summer Science Academy for 45 newly enrolled freshmen in declared STEM majors. The Academy prepares students for the transition from high school to UCI, and the fast-paced ten-week quarter system. The program emphasizes the development of critical thinking and concentrates on courses that are critical for the student's academic career, including chemistry and physics. Students enroll in university level courses and receive UCI academic credit. Academic support is provided through

workshops on study strategies, time management, computer tools, note-taking and exam preparation; study groups coordinated by mentors, and individual counseling. LSAMP participants receive financial support to cover tuition, fees and room and board. The Academy introduces students to future opportunities in laboratory research and significantly improves retention in math, science, and engineering majors. Kika Friend has coordinated this activity for more than a decade. Consistency of leadership is a signature asset at UCI.



2006 Academy participants. Standing far right, Jose Romero-Mariona, BD Fellow, Academy Director.

*CAMP Alum writes via email: "Kika Friend and CAMP have nurtured my academic growth since before my first day of college and even now in graduate school. The program provided a framework of students, teachers, mentors, and most importantly companions who encouraged me to reach for my dreams and my potential. From my experiences as a CAMP Summer Science Academy (CSSA) student, a mentor, tutor, CAMP-McNair scholar, then as CSSA director, I feel I have gained and helped others gain through superior mentorship, motivation, and support at times when it was needed most. I am eternally grateful for my involvement. Today, I am enjoying my time here at Johns Hopkins. The thing I like best is that there are experts here on every possible issue on public health, so it was not difficult to find my niche. My particular PhD program includes students from around the world as it is the best program in international health, so studying here has become a rich cultural experience."*

—Brandon Brown, MPH (UCI Class of 2005), Johns Hopkins School of Public Health  
Doctoral Student in International Health Disease Prevention and Control Program



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# Arnold Beckman's Seven Rules For Success

- 1** Maintain absolute integrity at all times.
- 2** Always do your best; never do anything half-heartedly. (Either get into it, or get out of it.)
- 3** Never do anything to harm others.
- 4** Never do anything for which you'll be ashamed later. (This is an important one!)
- 5** Always strive for excellence—there's no substitute for it.
- 6** Practice moderation in all things—including moderation. (There's nothing wrong with a little excess once in a while.)
- 7** Don't take yourself too seriously.

—“Rules that Govern My Life,” by Dr. Arnold O. Beckman

Arnold O. Beckman was the leader in establishing the modern instrumentation industry. With the innovative measuring and monitoring tools created by his firm, including the groundbreaking pH meter and the first commercial spectrophotometer with full ultraviolet capability, scientists and engineers shaped the world of our everyday life. From space exploration to the unraveling of the secrets of DNA, Dr. Beckman delivered the tools that have helped us to see our place in the universe. He established the Shockley Semiconductor Laboratories, an important milestone in the history of the chips that drive everything from computers to coffeemakers. Arnold O. Beckman died in 2004 at the age of 104. He lived an extraordinary life. The Arnold and Mabel Beckman Center of the National Academies of Science and Engineering is an outstanding venue for the CAMP Statewide Research Symposium, where students can walk in the same space as the giants of scientific discovery.

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