2012 Statewide Undergraduate Symposium Proceedings & Profiles
Greetings

We are pleased to present the annual publication of highlights from our UC Statewide Symposium. By participating in this event, the premier systemwide CAMP activity, students test their understanding and move forward in subject mastery. The 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 event is a gateway to other venues of scientific discourse. Student scholarly work is reflected in the abstracts appearing in this publication, and demonstrates a level of achievement that is a model for the nation. We also present exciting profiles of students on UC partner campuses. Additionally, we are very pleased that the California Alliance has been awarded funding by the National Science Foundation to sustain our work with STEM undergraduates. Our proposal for the California LSAMP Senior Level Alliance (2011-2016) supports the formal inclusion of UC Merced, an Hispanic Serving Institution, UC’s youngest campus. Working together we are advancing STEM retention and degree completion as well as entrance into graduate school.

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

THE CAMP SYMPOSIUM AIMS TO:

- **Support** undergraduate research with a faculty member;
- **Encourage** first-time presenters with constructive feedback;
- **Develop** student written and oral communication skills;
- **Provide** a UC systemwide forum for faculty and students to meet and network;
- **Foster** preparation for and access to graduate education;
- **Set** national standards for undergraduate research.

Contents

- 4 General Information
  About CAMP-NSF
- 6 2012 Symposium
  Awardees and Presenters
- 10 Award Winning Research
- 16 Symposium Judges
- 18 Speaker Bios
- 20 UC Riverside
  Bridge to the Doctorate
- 22 Campus Profiles
For 20-plus years, the Louis Stokes California Alliance for Minority Participation has pursued a comprehensive approach to support underrepresented students to complete B.S. degrees in STEM and prepare for graduate education and rewarding STEM careers. UC STEM baccalaureate degrees granted to underrepresented students increased by 204% since 1991, including 1,873 degrees granted in 2011. STEM enrollment has increased by 208% since 1990-91. The effort has been unwavering and demonstrates the effectiveness of one-on-one mentoring in retention efforts. CAMP participants are scholarly researchers and have co-authored published papers in refereed journals as undergraduates. Student academic performance is a key indicator of retention in STEM majors, and is perhaps most visible in high quality research presentations. The graduate school culture has made significant increases in students completing master’s and doctorate degrees, expanded through the NSF Bridge to the Doctorate activity. Connectivity to LSAMP institutions nationwide strengthens impact. 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.

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

**UC SYSTEMWIDE HISTORICAL SUMMARY**

<table>
<thead>
<tr>
<th>Phase</th>
<th>Baseline</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase I - Baseline</td>
<td>3,806</td>
<td></td>
</tr>
<tr>
<td>Phase I - Year 5</td>
<td>5,014</td>
<td>+208%</td>
</tr>
<tr>
<td>Phase II - Year 5</td>
<td>5,795</td>
<td></td>
</tr>
<tr>
<td>Phase III - Year 5</td>
<td>7,278</td>
<td></td>
</tr>
<tr>
<td>Phase IV - Year 5</td>
<td>11,706</td>
<td></td>
</tr>
</tbody>
</table>

**Cumulative Trend in Minority STEM Enrollment**

<table>
<thead>
<tr>
<th>Phase</th>
<th>Baseline</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase I - Baseline</td>
<td>615</td>
<td></td>
</tr>
<tr>
<td>Phase I - Year 5</td>
<td>913</td>
<td>+204%</td>
</tr>
<tr>
<td>Phase II - Year 5</td>
<td>1,070</td>
<td></td>
</tr>
<tr>
<td>Phase III - Year 5</td>
<td>1,329</td>
<td></td>
</tr>
<tr>
<td>Phase IV - Year 5</td>
<td>1,873</td>
<td></td>
</tr>
</tbody>
</table>

**Cumulative Trend in Minority STEM B.S. Degrees**
BEST PRACTICES HAVE PROVEN IMPACT

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

UC GRADUATE DEGREES SUMMARY—STEM MASTER’S AND PH.D. TRENDS

**Cumulative Trend in Minority M.S Degrees**

<table>
<thead>
<tr>
<th>Phase</th>
<th>Year</th>
<th>Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase I</td>
<td>Baseline</td>
<td>439</td>
</tr>
<tr>
<td>Phase II</td>
<td>Year 5</td>
<td>578</td>
</tr>
<tr>
<td>Phase III</td>
<td>Year 5</td>
<td>754</td>
</tr>
<tr>
<td>Phase IV</td>
<td>Year 5</td>
<td>949</td>
</tr>
</tbody>
</table>

**Cumulative Trend in Minority Ph.D. Degrees**

<table>
<thead>
<tr>
<th>Phase</th>
<th>Year</th>
<th>Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase I</td>
<td>Baseline</td>
<td>219</td>
</tr>
<tr>
<td>Phase II</td>
<td>Year 5</td>
<td>335</td>
</tr>
<tr>
<td>Phase III</td>
<td>Year 5</td>
<td>343</td>
</tr>
<tr>
<td>Phase IV</td>
<td>Year 5</td>
<td>578</td>
</tr>
</tbody>
</table>
2012 Symposium Awardees and Presenters

HONORABLE MENTION Awardees

Biological/Life Sciences

Jerad Acosta, UC San Diego
Samson Aghedo, UC Davis
Walter Bogdanoff, UC Santa Cruz
Ippolito Caradonna, UC Santa Cruz
Danny Fernandez, UC Los Angeles
Bridget Guiza, UC San Diego
Jessica Hernandez, UC Berkeley
Rebekah Klint, UC San Diego
Sydney Lopez, UC Davis
Kimberly Prado, UC Davis
Anthony Quintana, UC Santa Barbara
Salvador Ramirez II, UC Riverside
Carlos Rojas Torres, UC Riverside
Richard Sanchez, UC Santa Barbara
Michael Shodiya, UC Berkeley
Natalie Tomaszewski, UC Santa Cruz
Michael Williams, UC San Diego

Physical Sciences/Engineering

Eduardo Aguilar, UC Santa Barbara
Salvador Badillo-Rios, UC Irvine
Francisco Baltazar, UC Davis
Elizabeth Chaddock, UC San Diego
Amelia Herrera, UC Santa Barbara
Barba Magali, UC Berkeley
Camille Martinez, UC Berkeley
Irvin Martinez, UC Santa Barbara
Zuri McClelland, UC Berkeley
Brenda Minjares, UC Santa Cruz
Luis Moreno, UC San Diego
Christian Perez, UC San Diego
Habid Rascon-Ramos, UC Davis
Martin Tajiboy, UC Irvine
Adam Ullah, UC Irvine
Gabriela Vargas, UC Berkeley

SPECIAL MERIT IN RESEARCH Awardees

Biological/Life Sciences

Andrew Bowen, UC Irvine
Maia Kinnebrew, UC Santa Barbara
Jordan Epps, UC Los Angeles
Carlos Peinado, UC San Diego
Carissa Heath, UC Los Angeles
Mina Alfi, UC Riverside

Physical Sciences/Engineering

Diego Silva, UC Davis
Alfredo Perez, UC San Diego
Christina Rodriguez, UC Santa Barbara
Magi Mettry, UC Riverside
Andrea Negrete, UC Berkeley
Kyle Lakatos, UC Santa Cruz

UC SANTA BARBARA: Professor Glenn Beltz, CAMP faculty director, and Drs. Dotti Pak and Julie Standish, supported their dynamic group of presenters. Dr. Kenneth Millett (top center) is a dedicated annual judge.

UC BERKELEY: Diana Lizarraga, along with Chris Noble, prepared the UCB group for their exciting poster presentations.

UC DAVIS: Raynell Hamilton, CAMP Coordinator, brought enthusiastic presenters who garnered a Special Merit Award and numerous Honorable Mentions!
“My colleagues and I are proud to see some top engineering and science undergraduates from UCSB as well as our sister campuses participate in the symposium and receive the recognition they did. Every year that I judge, the caliber of the work gets better. This year, the majority of the work would not have been out of place in any major international research conference. These are promising students who are already participating in research at an earlier time relative to college students at many other institutions, and they are well on their way towards distinguished careers in industry and/or academia.”

—Dr. Glenn Beltz, Associate Dean for Academic Affairs, College of Engineering, UC Santa Barbara

“As impossible as it seems, the quality of the posters and the understanding shown by the students continues to improve; it is a testament to the commitment of the students, their advisors, and the CAMP coordinators to the highest quality science and engineering research experience. We had a record number of judges this year, and a remarkable showing from across the UC system.”

—Dr. Derek Dunn-Rankin, CAMP Statewide Project Co-Director, UCI CAMP Faculty Director; Co-Lead Judge
STATEWIDE RESEARCH SYMPOSIUM
FEBRUARY 11, 2012
UCI STUDENT CENTER

- Welcome by Vice Chancellor Thomas Parham
- Undergraduate Presenters UC systemwide
- Faculty Feedback on Posters
- UC-Wide Networking
- BD/Graduate Panel
- Graduate School Coaching
- UCI Campus Tour
- Special Merit in Research Awards
- Keynote by Dean of Engineering
- Special Recognition/Honorable Mention
- Student Centered
- Peer-to-Peer Support

Stephanie Hai Peneda, UC Irvine
David Harr, UC Riverside
Carissa Heath, UC Los Angeles
Jessica Hernandez, UC Berkeley
Wynter Hernandez, UC Riverside
Natalia Herrera, UC Santa Cruz
Karlon Johnson, UC Santa Barbara
Maia Kinnebrew, UC Santa Barbara
Rebekah Klint, UC San Diego
Frank Leon, UC Santa Cruz
Amelia Lipscomb, UC Riverside
Paloma Lopez, UC Santa Cruz
Sydney Lopez, UC Davis
Roberto Nelson, UC San Diego
Leslie Paredes Chumbirizo, UC Davis

Carlos Peinado, UC San Diego
Kimberly Prado, UC Davis
Salvador Ramirez II, UC Riverside
Crystal Reynaga, UC Santa Cruz
Jessica Rodriguez, UC Los Angeles
Carlos Rojas Torres, UC Riverside
Jean-Christopher Rwigema, UC
  Irvine
Richard Sanchez, UC Santa Barbara
Michael Shodiya, UC Berkeley
Natalie Tomaszewski, UC Santa Cruz
Manuel Torres, UC Riverside
George Vela, UC Irvine
David Villalta, UC San Diego
Michael Williams, UC San Diego

UC MERCED: It was a pleasure to welcome our new UC partner, Merced! Dr. Gerardo Díaz, CAMP faculty director, and Dr. Tony Jimenez, brought a cohort of enthusiastic students as well as several faculty who served as judges.

UCЛА: Professor Tama Hasson and Benjamin Ha enjoyed seeing students present their research in a competitive setting. Angela Gee joins the group. Well done, UCLA!

Physical Sciences & Engineering

Moustapha Adoum, UC San Diego
Matias Altman, UC San Diego
Adan Amarillas, UC Irvine
Everardo Arias, UC Riverside
Salvador Badillo-Rios, UC Irvine
Francisco Baltazar, UC Davis
Magali Barba, UC Berkeley
Devin Carraway, UC Santa Cruz
Elizabeth Chaddock, UC San Diego
Jeanette Cobian, UC San Diego
Jose De La Rosa, UC Davis
Henoc Ejigo, UC Riverside
Autumn Emerson, UC Los Angeles
Alina Escalera, UC Riverside
Aimee Flores, UC Santa Barbara
Angela Frausto, UC Riverside
Xochitl Garcia, UC Berkeley
Selam Hendrix, UC San Diego

“CAMP brings young bright scholars throughout the UC system in a quest to present scientific inquiry. The CAMP symposium is not only about presenting research, it is also about building relationships that will last a lifetime.”

—Tony Jimenez, Ph.D., Graduate Recruitment, Outreach and Retention Coordinator/CAMP Coordinator, UC Merced
Daniel Hernandez, UC Santa Cruz  
Amelia Herrera, UC Santa Barbara  
William Holloway, UC San Diego  
Daniel Jaimes, UC Irvine  
Hakob Karaoglanian, UC Irvine  
Kyle Lakatos, UC Santa Cruz  
Sapphire Lopez, UC Irvine  
Camille Martinez, UC Berkeley  
Irvin Martinez, UC Santa Barbara  
Zuri McClelland, UC Berkeley  
Hector Medina, UC Santa Cruz  
Magi Mettry, UC Riverside  
Brenda Minjares, UC Santa Cruz  
Verenice Mojica, UC Irvine  
Luis Moreno, UC San Diego  
Andrea Negrete, UC Berkeley  
Marcos Nunez, UC Los Angeles  
Cruz Ortiz, UC Santa Cruz  
Alfredo Perez, UC San Diego  
Christian Perez, UC San Diego  
Anthony Quintana, UC Santa Barbara  
Larry Ramirez, UC Riverside  
Habid Rascon-Ramos, UC Davis  
Oscar Rios, UC San Diego  
Christina Rodriguez, UC Santa Barbara  
Rebecca Roycroft, UC Los Angeles  

Dominga Sanchez, UC San Diego  
Raphael Sanchez, UC Riverside  
Diego Silva, UC Davis  
Martin Tajiboy, UC Irvine  

Alfredo Torres, UC Santa Barbara  
Adam Ullah, UC Irvine  
Gabriela Vargas, UC Berkeley  
Monica Wilson, UC Davis

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

UC SANTA CRUZ: The Banana Slug spirit was alive and well at the symposium, with Malika Bell and Yulianna Ortega leading the charge. Faculty Director Ted Holman served as Co-Lead Judge.

UC SAN DIEGO: Dr. Jacqueline Azize-Brewer stands proud with her happy group of undergraduate presenters. Five San Diego faculty came out to serve as judges, including Dr. Carlos Coimbra, a new faculty member in the Jacobs School of Engineering who is mentoring students conducting research.
FIBRIN GLUE NERVE REPAIRS DOES NOT IMPEDE NERVE RECOVERY IN AN ANIMAL MODEL
Andrew Bowen, Biological Sciences, Senior, University of California, Irvine
Chair/Professor Ranjan Gupta, Orthopaedic Surgery

Segmental nerve defect repair remains challenging for surgeons. Fibrin glue can be employed to expedite surgical procedures and keep spatial orientation of the nerve for optimal recovery. However, surgeons hesitate using fibrin glue due to risk of inhibiting regeneration. The purpose of these experiments was to evaluate if fibrin glue is inhibitory to nerve regeneration. A 10mm critical size defect was created in Sprague-Dawley rats with three forms of repair: group I, collagen type-I conduit; group II, collagen type-I conduit filled with fibrin glue; group III, autologous nerve graft. A sciatic functional index (SFI) test evaluated functional motor recovery. Electromyography (EMG), immunohistochemistry (IHC), and histomorphometry including number of myelinated axons and G-ratios analyzed nerve regeneration. Regeneration and remyelination was significantly greatest in the autograft group, reconfirming autograft as the gold standard. At twelve weeks, SFI revealed comparable functional motor recovery between the conduit groups; specifically, SFI indices of the two groups were similar. EMG results of these two groups were essentially indistinguishable. Although ANOVA testing showed disparities between conduit groups in a number of myelinated axons and G-ratios, differences weren’t statistically significant. Furthermore, IHC revealed macrophage levels and scarring in conduit groups nearly identical. The autograft group showed significantly greater recovery with respect with nerve conduit groups. Our data shows fibrin glue doesn’t impede regeneration even with barrier in the fibrin glue-filled conduit. No meaningful functional, electrophysiological, or morphometric differences were observed between conduit groups. The data support’s using fibrin glue without deleterious effects on nerve regeneration and remyelination.

OLIGOMERIZATION AND ITS EFFECT ON THE FUNCTION OF A 7-TRANSMEMBRANE PROTON TRANSPORTING PROTEIN
Maia Kinnebrew, Biology, Sophomore, University of California, Santa Barbara
Professor Songi Han, Department of Chemistry and Biochemistry; Sunyia Hussain

Proteorhodopsin (PR) is a solar powered membrane protein that has significant implications for the study of mammalian membrane proteins, including a medically important class of proteins: the G-protein Coupled Receptors (GPCRs). PR forms oligomers, making protein-protein interactions within the cell membrane, similar to GPCRs. Recent evidence suggests that these different structural forms play a critical role in tuning protein function. Unfortunately, probing oligomeric assemblies is very challenging due to their large size, often transient nature, and lipid environment. Past work in the Han laboratory reveals which PR residues are in close proximity in the hexamer form, and here we focus on revealing the effect of oligomerization on function. We seek to probe changes in PR function as we vary the surfactant environment and the oligomeric state. Using Fast Protein Liquid Chromatography and optical absorption methods, we were able to show that the hexameric state of PR in DDM surfactant has a lower pKa value of an important proton acceptor residue than the monomeric protein. This suggests that the hexamer is more optimized for proton transport. However, recent time-resolved Electron Paramagnetic Resonance and optical absorption experiments show that the hexameric state of PR has much slower photocycle dynamics than the monomeric state. Therefore we find...
that oligomerization profoundly affects function, and to unravel the intricacies of this effect, we will separate and characterize different oligomeric forms of PR in different detergent environments to differentiate between protein-protein and protein-surfactant influences on function.

Images were assessed for the rate of connectivity among somatostatin positive neurons. The analytical stage is still a work in progress; however, the goal is to map out these networks and get a better sense of exactly how autonomic breathing is controlled.

**TEMZOLOMIDE DELAYS TUMOR GROWTH BY DIMINISHING REGULATORY MACROPHAGES IN AN INNOVATIVE, INDUCIBLE, GENETIC MOUSE MODEL OF MELANOMA**

Carlos Peinado, Senior, Biochemistry/Cell Biology
Dr. Susan Kaech and Dr. Bhaskar Srivastava, Department of Immunobiology, Yale University School of Medicine, University of California, San Diego

Current concepts regarding cancer immunoediting suggest that the immune system can inhibit or promote melanomagenesis. For example, the CD4 and cytotoxic CD8 T cell anti-tumor immune response can mediate tumor regression when appropriately activated. On the other hand, suppression of this anti-tumor response by the same cancer cells, regulatory T cells and regulatory macrophages stimulates tumorigenesis. Optimal cancer immunotherapy, therefore, depends on appropriately activating the anti-tumor immune response while inhibiting the pro-tumor response. In fact, new therapeutics against melanoma that promote the anti-tumor response are successful in a subset of patients. Furthermore, most of these patients have previously been treated with traditional chemotherapeutics that may be conditioning this response. One of these chemotherapeutics, temozolomide, delays melanoma growth in our mouse model but does not appear to induce necrosis of transformed melanocytes, implying an immunomodulatory property. Therefore, we investigated this prospect using a new, inducible, genetic mouse model of melanoma. Briefly, our model relies on tumor induction by cre-mediated oncogenic changes in melanocytes that result in constitutive activation of Braf and deletion of Pten leading to increased proliferation and survival. We assessed the effect of temozolomide on the tumor immune response by treating melanoma bearing mice and assessing the immune infiltrate by flow cytometry and immunohistochemical staining of paraffin-embedded tumor sections. Surprisingly, we found a depletion of regulatory macrophages while cytotoxic and regulatory T cell infiltration was unaffected. We propose that temozolomide might act by depleting regulatory macrophages and could be combined with approaches that promote an effective cytotoxic immune response.

**MAPPING THE RESPIRATORY NETWORK OF BRAINBOW MICE**

Jordan Epps, Computational and Systems Biology, Junior, University of California, Los Angeles
Dr. Jack Feldman, Department of Neurobiology, David Sherman, Graduate Mentor

The preBötzinger Complex (preBotC), located in the ventrolateral medulla, is widely accepted to be vital for the propagation of breathing rhythms. These neurons are thought to generate the inspiratory rhythm and are demarcated by the expression of the NK1 receptor, somatostatin, and Dbx1. However it is still unclear exactly how the preBotC neurons connect together as well as how that connectivity produces rhythmic activity. To assess the connectivity of these neurons, injections of the adeno-associated virus were made into the preBotC of Brainbow mice. The virus uses the somatostatin promoter, which is specific to a subset of preBotC neurons, to drive the expression of cre recombinase. When cre is introduced into the Brainbow mouse there is a random recombination event that results in a unique combination of fluorescent proteins expressed in each infected neuron. After six to ten weeks the mice were perfused and the brains were removed for histological analysis. Each brain was cut into two series, one of which was stained for cre recombinase and the other stained for somatostatin. The latter series was imaged with a confocal microscope to attain z-stack images of the preBotC.

“**It is so incredibly rewarding to interact with our CAMP students in the poster sessions and hear about their cutting-edge research experiences on our UC campuses. I see not only future graduate students, but future faculty.”**

—Dr. Martha Mecartney, UCI Professor of Chemical Engineering and Materials Science
THE ROLE OF A LEGUMAIN-LIKE CYSTEINE PROTEASE IN PATHOGENESIS OF TRICHOMONAS VAGINALIS

Carissa Heath, Molecular, Cell, and Developmental Biology, Senior, University of California, Los Angeles
Dr. Patricia Johnson, Microbiology, Immunology and Molecular Genetics; Gil Lustig, Ph.D.

The extracellular protozoan parasite, Trichomonas vaginalis causes the sexually transmitted infection Trichomoniasis, which can cause health problems in both males and females, and is a growing problem worldwide. Since T. vaginalis is obligate extracellular, secreted proteins are predicted to play a role in its pathogenesis, but the secreted proteins have not been fully characterized. A recent mass spectrometry study of the secreted fraction of T. vaginalis identified the presence of an asparaginyl endopeptidase, specifically a legumain-like cysteine protease (Legu-1). Members of this protein family have been shown to play a role in the virulence of other human pathogens, such as blood flukes. A two-pronged approach is being used in the characterization of this protein; in vitro biochemical analysis will be used to determine its enzymatic activity and in vivo assays will be used to determine if the protein has an effect on the parasite's adherence, migration and cytotoxicity towards host vaginal epithelial cells. Towards these goals, we have constructed a recombinant expression plasmid containing Legu-1 and introduced it into bacteria. The protein is produced, but in an insoluble form, requiring a re-evaluation of the bacteria and conditions being used. A recombinant version of the protein introduced into T. vaginalis has been shown to be expressed; however a preliminary secretion assay was not capable of detecting secretion of this protein by Western blot analyses. This goal of these studies is to better understand the role of this protein in parasite-host interactions, which may lead to identification of new targets for drug development.

CIGARETTE SMOKE FROM CONVENTIONAL AND HARM REDUCTION CIGARETTES INHIBITS PROLIFERATION OF NEURAL STEM CELLS

Mina Alfi, Biology, Senior, University of California, Riverside
Sabrina Lin, Ph.D. and Prudence Talbot, Ph.D., Department of Cell biology and Neuroscience, University of California, Riverside

Cigarette smoke, a mixture of over 7,000 chemicals, can affect development of the nervous system prenatally, which can produce cognitive problems in children after birth. The purposes of this study were to determine if chemicals in mainstream (MS) and side-stream (SS) cigarette smoke adversely affect proliferation of neural stem cells, which could explain the effects observed in humans, and to compare the potency of smoke from harm reduction vs. conventional cigarettes. Mouse neural stem cells (mNSC, clone C17.2, generously provided by Dr. Evan Snyder) were incubated in MS (smoke actively inhaled by the smoker) and SS (smoke burning off of the tip of a cigarette) smoke solutions from Marlboro Red, Marlboro Light, and Quest cigarettes. The cells were incubated in different concentrations of smoke solution (range = 0.001, 0.01 and 0.1 puff equivalents) for 48 hours at 37°C, 5% CO2, and 95% relative humidity in a BioStation CT, and images of multiple fields were taken every 4 hours. The time-lapse videos were then analyzed using confluency recipes, a measurement of cell proliferation, created using the CL-Quant software.

The results show inhibition of proliferation for most treatments, with SS smoke being more potent than MS smoke. The results also show that smoke from “harm reduction” cigarettes was (Marlboro light) a more potent inhibitor of proliferation than smoke from a conventional brand (Marlboro red). These data support the idea that cognitive deficiencies that appear after birth in humans could be caused by prenatal cigarette smoke exposure leading to decreased proliferation of NSC.
**Physical Sciences/Engineering**

---

**METAL-MEDIATED MULTIPROTEIN STRUCTURES FOR ESTER HYDROLYSIS**

Alfredo Perez, Junior, Biochemistry/Chemistry, Professor F. Akif Tezcan, Department of Chemistry and Biochemistry; Graduate Student Mentor: Annette Medina-Morales, University of California, San Diego

We have demonstrated that we can control protein self-assembly by using metal coordination chemistry. Our goal is to design a Zinc-binding site that resembles the active site of Carbonic anhydrase II, with esterase activity. The model protein cytochrome cb562 was modified by introducing metal binding histidine residues which allowed the protein to tetramerize in the presence of metal. Further modifications to this model, by using computational interface redesign, gave rise to a stable metal-free tetramer that we can further use as a template for...

---

**FLAME SYNTHESIS OF IRON OXIDE NANOPARTICLES AND DYNAMICS IN A UNIFORM MAGNETIC FIELD**

Diego P. Silva, Mechanical and Aerospace Engineering, Senior, University of California, Davis

Dr. Aamir D. Abid and Dr. Ian Kennedy, Department of Mechanical and Aerospace Engineering

Dynamics of magnetic nanoparticles in a uniform magnetic field is investigated analytically and experimentally. Iron oxide nanoparticles are synthesized in a atmospheric hydrogen-air co-flow diffusion flame. The iron precursor used in the synthesis is iron pentacarbonyl. The setup consists of a coannular tubular burner centered through the middle of a wind tunnel. Particles formed in the flame are exposed to a uniform magnetic field generated by a permanent horseshoe magnet placed axially above the burner. The magnet is designed and built in-house. The magnetic field generated by the magnet is characterized using Vizimag simulation software and simulation results are compared to measurements. The flame is centered within the gap between the poles of the magnet. The laminar air flow in the wind tunnel results in a steady, laminar flame. Particles in a uniform magnetic field form linear chains. In order to study the evolution of chain formation, the position of the magnetic field is varied as a function of the height above the burner. Particles, after they pass through the magnetic field are collected thermophoretically on transmission electron microscopy grids. The morphology of the particles from electron microscopy images are compared to a theoretical model. Our studies (RIDC-1 96C). This tetramer was stabilized by hydrophobic interactions along one interface and a covalent linkage at the second interface. The resulting metal-free tetramer was elastic along one of the interfaces, which made it difficult to control the coordination environment. Adding a second covalent linkage resulted in a more rigid tetramer (RIDC-1 96C 81C). We have been making mutations at the tetrameric interface in order to try to force a coordination environment with three histidines and a water molecule as the ligands. The esterase activities will be measured spectrophotometrically with p-nitrophenyl acetate. Once we achieve esterase activity, we will further characterize the oligomeric structure by using analytical ultracentrifugation, inductively coupled plasma atomic emission spectroscopy and protein crystallography.
SYNTHESIS OF HETEROBIFUNCTIONAL POLYETHYLENE GLYCOL DERIVATIVES FOR THE APPLICATIONS OF NANOMEDICINE

Christina Rodriguez, Chemistry, Senior, University of California Santa Barbara
Professor Craig Hawker, Materials Department; Dr. Nate Lynd

Heterobifunctional polyethylene glycol was synthesized with specific functional groups for convenient attachment to nanoparticles and biologically active molecules. Functionalizing PEG and allowing it to bear different functional groups, enables the use of nanoparticles as drug delivery carriers, imaging agents for diagnostics, and specific targeting systems. Present studies suggest that PEG facilitates in the hydrophilicity of biomaterial substrates and subsequently aids in attaining a receptive immune system response. PEGylation of biomaterial substrates also decreases their immunogenicity and enzyme degradation. An important characteristic of PEGylation is the selection of the functional groups on PEG since these are used to attach the PEG to biologically active molecules, such as peptides or proteins. The present study is aimed at synthesizing PEG derivatives in the most efficient and effective manner, while still maintaining the stability of the attached functional groups. We chose to create a heterobifunctional PEG derivative carrying a thiol group on one end and an active ester on the other end. The synthesis of this PEG derivative was verified by 1H NMR and involved the evolution of synthetic methods to determine the appropriate synthetic steps to maximize yield and functional group compatibility. To create the most useful PEG derivatives we will design methods of preparation that provide a simple route for the synthesis of heterobifunctional PEGs. This study will provide useful information regarding PEGylation and its potential uses in nanomedicine.

MOLECULAR RECOGNITION AND CATALYSIS IN AQUEOUS SOLUTION:

Magi Mettry, Chemistry, Senior, University of California, Riverside
Richard Hooley, Ph.D, Assistant Professor, Department of Chemistry, University of California, Riverside

In fall quarter 2011, I have continued my Research with Reactions of unfunctionalized alkanes with strong oxidants typically give mixtures of products including both internal and terminal substitution. The research I am working on is the central theme of catalysis by bio-molecules is the presence of a selective active site, which both binds substrate and activates it for reaction. Enzymes for example are able to selectively oxidize bonds based on their proximity to the active site during the synthesis of cholesterol from Lanosterol. To increase selectivity and reaction rate, bio-molecules often position a reactive functional group towards the center of this active site. My research is to mimic the enzyme in a way but on smaller organic molecule. The research is targeted towards the synthesis of metal coordinated cavitands, which bind neutral species in their cavities and orient a functional group towards the bound substrate. Positioning Lewis acidic metals or reactive organic functionalities such as amines or acids in the vicinity of substrate should allow promotion of a variety of different reactions. These species can therefore act as enzyme mimics, but also have uses for novel material applications such as frameworks with defined pores. The research has been a continuous work for a year. This fall quarter will be the final steps for publication and preparing for the next step in the synthesis. The research paper has been submitted for publication.
22 Grade 4-6 students participated in a design study that investigated the microgenesis of proportionality schemata via engaging in embodied-interaction problem-solving activities. Qualitative data analyses elucidate enduring theoretical and practical questions regarding the cognitive constitution of multiplicative concepts and in particular relations between additive and multiplicative forms of reasoning. We argue that unless multiplicative theorems-in-action are reenacted as iterated-adding, these efficient arithmetic procedures may remain ungrounded in schemata emerging from spatial–temporal interaction and, as such, remain conceptually inflexible, ungenerative. To support the plausibility of this claim, we compare across case studies of students who, asked how additive and multiplicative solution strategies result in the same systemic effect, struggled with varying success to coordinate recursive-iteration “analog” trans locations and number-driven “digital” products.

One route of lead exposure in humans is through a diet of contaminated shellfish, specifically bivalves. Those organisms are exposed to lead from a variety of sources, both natural and anthropogenic that may be distinguished by differences in their isotopic signature. Consequently, measuring the isotopic ratio of lead in bivalves provides information on the sources of lead in those organisms. This is being done with various end-members (e.g., sediment, phytoplankton, rain water and sea water) collected concurrently with mussels. Mussel samples have been collected and prepared from several sites in Monterey Bay, which previously was found to have the highest levels of lead in bivalves in the National Mussel Watch Program. Preliminary data show that concentrations of lead in rain water range from 40-260 ng/L; and lead concentration in the other environmental matrices and mussels are now being measured for an assessment of the current level of lead contamination of mussels in Monterey Bay. Then the sources of lead in these samples will be characterized by their isotopic signatures. As soon as the analyses are completed I plan to do a time series of mussels collected from Monterey Bay, over the past 20 years to determine whether effort to remediate the lead contamination problem has been successful.


“This year I was impressed by the diversity of student research presented at the CAMP Conferences. I had the pleasure of judging posters in all areas of biology - from Neuroscience to Immunology, Parasitology to Cancer Biology and beyond. It is thrilling to see how much the CAMP students accomplish and to appreciate how much their work has contributed to the advancement of science.”

—Dr. Tama Hasson, Director, Undergraduate Research Center – Sciences, UCLA; Adjunct Associate Professor, Integrative Biology & Physiology Department
2012 Symposium Judges

LEAD JUDGES
Derek Dunn-Rankin, Ph.D., Professor and Chair, Mechanical and Aerospace Engineering, UCI; and Ted Holman, Ph.D., Chemistry & Biochemistry, UCSC

JUDGING CRITERIA
- Research Content: Significance and quality of the project topic and execution
- Research Contribution: Student’s articulated contribution to the work
- Poster Visual Quality: Layout and content, use of graphics and images, appropriate references
- Student Presenter: Demeanor, enthusiasm, engagement, response to questions

Andres Sciolla, M.D., Psychiatry, School of Medicine, UCSD
Gregory Weiss, Ph.D., Chemistry, Molecular Biology and Biochemistry, UCI
Richard Weiss, Ph.D., Chemistry/Biochemistry, UCLA

PHYSICAL SCIENCES/ENGINEERING
Diana Azurdia, Ph.D., Chemistry, UCLA
Glenn Beltz, Ph.D., Mechanical Engineering, Associate Dean, UCSB
Carlos Coimbra, Ph.D., Mechanical Engineering, UCSD
Gerardo Diaz, Ph.D., Mechanical Engineering, UCM
Oscar Dubon, Ph.D., Materials Science & Engineering, UCB
Nathaniel Lynd, Ph.D., Chemistry, UCSB
Michael McKibben, Ph.D., Geology/Earth Sciences, UCR
Martha Mecartney, Ph.D., Chemical Engineering and Materials Science, UCI
Erik Menke, Ph.D., Materials Chemistry, UCM
Ken Millett, Ph.D., Mathematics, UCSD
Truong Nguyen, Ph.D., Electrical and Computer Engineering, UCSD
Hyle Park, Ph.D., Bioengineering, UCR
Victor Rodgers, Ph.D., Materials Science & Engineering, UCR
Kalyanasundaram Seshadri, Ph.D., Mechanical & Aerospace Engineering, UCSD
James Shackelford, Ph.D., Chemical Engineering & Material Science, UCD
Edriss Titi, Ph.D., Mathematics, UCI
Shan-Wen Tsai, Ph.D., Physics, UCR
Stanley Tyler, Ph.D., Chemistry, Math & Sciences, Norco College (formerly UCI)

BIOLOGICAL/LIFE SCIENCES
Lilian Davila, Ph.D., Material Science Engineering, UCM
Richard Cardullo, Ph.D., Biology, Divisional Dean, College of Natural and Agricultural Sciences, UCR
Tama Hasson, Ph.D., Integrative Biology & Physiology, UCLA
Ted Holman, Ph.D., Chemistry & Biochemistry, UCSC
Chee Duncan Liew, Ph.D., Cell Biology & Neuroscience, UCR
Angela Gee, Ph.D., Neuroscience, Los Angeles Trade-Tech College (formerly of CAMP-UCLA)
Stuart Sandin, Ph.D., Marine Biology, Scripps Institution of Oceanography
SELECTED JUDGES COMMENTS

- Excellent delivery & enthusiasm. Student knew material well, understood difficulty of data analysis. Challenging project. Presentation skills national conference quality.
- A real interesting project that was presented with great enthusiasm. It will be interesting to see where it goes in terms of validation and quantitation.
- I would have liked to see some discussion of why this research was important.
- A nice start to a project that includes documentation of the spread of an invasive species that threatens an indigenous species.
- The research is very interesting. Good work. If the presenter can organize the flow of the poster, she would do much better. I know she was very nervous.
- Student worked with no lab mentor. Excellent independence. Excellent delivery, very organized, very mature & enthusiastic.
- Poster was scientifically rich but it did not correspond directly to the title and abstract.
- It’s always good to “chat up” people as they come to your poster, get comfortable, ask them about their field.
- The poster seemed interesting but it was hard to engage the student. Please be more outgoing and engaging!
- You were crisp, maintained good eye contact with your audience and had a pleasant tone of voice that will make you an effective speaker in any field.
- Excellent discussion of goals & procedures. The student has a clear vision of his objectives and their importance.
- Good level of engagement in response to questions.
- A little too much recitation of notes. Look at listener and use feedback to guide discussion.
- Smooth delivery. Emphasize new results, contrast with previous work in the field.
- A Freshman! Has potential to make substantial impact on research.
- National conference quality in student’s contribution to the work and presentation skills.
2012 Symposium Speaker Bios

ERICA L. CORRAL, PH.D.
Welcome Dinner Keynote

Dr. Erica L. Corral began her academic career in August 2008 as Assistant Professor in the Materials Science and Engineering Department at the University of Arizona in Tucson, Arizona. She earned her undergraduate degree at the University of Texas, El Paso. She completed a doctorate in Materials Science at Rice University. The Corral Laboratory engineers high-temperature materials, particularly materials that can be used in extreme environments.

Dr. Coral’s first research area focuses on processing ultra-high temperature ceramic (UHTC) composites and coatings for use as advanced thermal protection systems and to provide oxidation protection of carbon-carbon composites. Another research area focuses on developing “bulk multifunctional high-temperature ceramic nanocomposites reinforced with single-walled carbon nanotubes for enhanced toughness in ceramics that also have tailored electrical and thermal properties.”

Dr. Corral’s postdoctoral research at Sandia National Laboratories focused on investigating the thermomechanical properties of UHTCs, and engineering mechanical and chemical properties of glass-composites for use as reliable seals in solid oxide fuel cells. As a graduate student at Rice University, she was an NSF-Alliance for Graduate Education and the Professoriate (AGERP) Fellow, and pioneered the first SWNT-reinforced silicon nitride nanocomposites with multifunctional properties.

“Be sensitive to your parents’ expectations, especially for continuing on to graduate school, but persist in your academic goals and your research passion.”

THOMAS A. PARHAM, PH.D.
Opening Remarks

Dr. Thomas A. Parham is Vice Chancellor, Student Affairs, as well as an adjunct faculty member at UC Irvine. Previously, he has served as Assistant Vice Chancellor for Counseling and Health Services and Director of the Career and Life Planning Center at UCI. Dr. Parham grew up in Southern California and received his bachelor’s degree in social ecology from UCI. He completed his master’s degree in counseling psychology at Washington University in St. Louis, and received his Ph.D. in counseling psychology at Southern Illinois University at Carbondale.

In addition to authoring six books, over thirty-five journal articles and/or book chapters, he has also produced several videos. In consultations, public addresses and television appearances throughout the United States, Dr. Parham has addressed such issues as cultural competence, youth and violence, coping with stress, and characteristics of exceptional people. Among his awards, Dr. Parham has received the Exemplary Community Service Award from the Orange County, CA Chapter of the N.A.A.C.P.; he was awarded Fellow status in the American Psychological Association’s Society for the Psychological Study of Ethnic Minority Issues; and he was elected to the title of “Distinguished Psychologist” by the Association of Black Psychologists.

“You are the inheritors of a tradition and a legacy. You are now part of that legacy.”
Dr. Gregory Washington is the Dean of The Henry Samueli School of Engineering at the University of California Irvine. Prior to joining UCI in Fall 2011, he was interim dean for the College of Engineering at Ohio State University (OSU). Professor Washington has been involved in multidomain research for the last 20 years. His core area of interest lies in the area of dynamic systems: modeling and control. During this time he has been involved in the following applications: the design and control of mechanically actuated antennas, advanced control of machine tools, the design and control of Hybrid Electric Vehicles, and structural position and vibration control with smart materials. He is internationally known for his research on ultra-lightweight structurally active antenna systems and other structures that involve the use of “smart materials.” He is the author of more than 140 technical publications in journals, edited volumes, and conference proceedings. Professor Washington received an NSF Career Award in 1996, the OSU Harrison Award for Excellence in Engineering Education and Research in 2005, two best paper awards (one with his students), and many other awards. Professor Washington has served on several advisory boards to include the Air Force Scientific Advisory Board and the National Science Foundation Engineering Advisory Board.

Dean Washington presented seven keys to success:
- Grow spiritually
- Define your purpose!
- Understand your ethnicity and the globe around it
- Be resilient and resist fear
- Start a business
- Gain an understanding about money
- Embrace technology.

“...You are not here at the university by accident. You are here because someone paid the price. There is a responsibility and it’s a heavy debt. To whom much is given, much is required. You are not here just for you – it has to be for others.”

Dean Washington began his remarks with three global grand challenges and major forces changing the world: Population growth, Global market economies, and the Telecommunications and aviation revolution. He provided an overview of economic statistics, noting that in 2000 China positioned itself to be a world leader, and that, to illustrate the dynamics of change, more than half of the top ten in-demand jobs in 2010 did not exist in 2004. He said, “We have great opportunities in STEM to compete.”

STEM is lucrative: the top 15 jobs with an undergraduate degree are all STEM-based. By 2013 computers will eclipse humans in computational capacity – but, he said, “We still educate the same way as we did at the founding of the first university in this country, William and Mary.” He added “Tomorrow’s university will change education as we know it – with online learning and distance classrooms such as iProf.” He added, “There is nothing that we cannot do to reach the masses. We can communicate 100 times faster than we did ten years ago.”

Dean Washington impressed upon students, “Life is not guaranteed. It’s a blessing to be here. Over 500 million people in the world died last night.”
Nine Fellows from the newly launched BD cohort at UCR provided insights and inspiration to an undergraduate audience during the graduate workshop at the 2012 CAMP Statewide Research Symposium. Students represent a variety of STEM majors and corresponding research interests, and all have their eye on the prize: The Ph.D. Students were candid about their preparation to pursue the doctorate as well as some of their initial uncertainty; all were confident, however, that they made the right decision at the right time, and credited the leadership of the BD for instilling confidence in the first quarter of graduate studies. Three additional fellows will join the cohort in Fall 2012. Dr. Richard Cardullo and Dr. Christopher Olivera provide key leadership for the UCR-BD, in collaboration with the STEM departments, deans, and department chairs. The panel was facilitated by Dr. Juan Francisco Lara, UCI Assistant Vice Chancellor, Emeritus, and former CAMP Statewide Director who was part of the initial formation of CAMP in 1990-91.

The BD supports LSAMP students exclusively and offers newly-minted B.S. degree recipients an opportunity to pursue graduate education.
UC Riverside Bridge to the Doctorate (BD) Graduate Panelists

- Special Area of Interest: Cannabinoid Synthesis
- Career Goal: University Professor
- Anticipated Ph.D. completion: Spring 2017
- Faculty mentor: Dr. Michael Marsella, Organic Chemistry UCR

Irma Ortiz, Plant Biology Ph.D. student. B.S. Molecular, Cell, and Developmental Biology, UCLA, 2011.
- Currently rotating under Dr. Linda Walling. Studying a tomato leucine aminopeptidase gene that responds to tissue-damaging herbivores
- Career goal: researcher

Jessamine A. Quijano, Microbiology Ph.D. student, B.S. Microbiology, California State Polytechnic University, Pomona 2011.
- Special area of interest: Microbial diseases and their pathogenic process
- Currently rotating in Dr. Caroline Roper’s lab, Department of Plant Pathology and Microbiology
- Investigating a gene that may be a crucial component in biofilm formation within the xylem of sweet corn
- Anticipated post doc institution: USC
- Anticipated Ph.D. completion: Spring 2017

Phillip Soto, Microbiology Ph.D. student, B.S. Microbiology, California State University Los Angeles, 2011.
- Special area of interest: Infectious Diseases
- Currently rotating in a Microbial Ecology lab under Dr. James Borneman
- Career Goal: University Professor
- Anticipated PhD Completion: Spring 2017
- Advisor: Dr. Stephano Vidussi, Mathematics, UCR

- Special Area of Interest: Cannabinoid Synthesis
- Career Goal: University Professor
- Anticipated Ph.D. completion: Spring 2017
- Faculty mentor: Dr. Michael Marsella, Organic Chemistry UCR

BD OVERVIEW

The BD activity seeks to remove minority students’ hesitancy about entering graduate school, and the fear of creating additional financial indebtedness associated with initial graduate education. The BD supports LSAMP students exclusively and offers newly-minted B.S. degree recipients an opportunity to enroll in graduate education without the financial burden of loans, providing stipends for the first two years and cost-of-education funds and support from the STEM departments and other sources for the duration of the doctoral program. Students receive rigorous academic and research training experiences that support completion of the doctorate degree. A welcoming campus environment, tools for success in graduate education, engagement in the scientific community, and nurturing faculty mentors will significantly impact retention and doctoral degree completion.
UC Edison Scholar Wins Award at SACNAS

Anthony Quintana transferred to UC Santa Barbara from Pasadena City College in 2010 and is currently a senior Biochemistry major. As an undergraduate, he has participated in the California Alliance for Minority Participation (CAMP) program and was awarded the UC-Edison Scholarship. During the Summer 2011, he participated in the UCSB CAMP Summer Internship program under the guidance of his faculty mentor Professor Michael Gordon in the Chemical Engineering Department. Quintana’s project focused on the investigation of the fluorescence quenching properties and Raman spectra of graphene. He presented his summer research at the 2011 SACNAS conference in San Jose, CA and was awarded the Special Merit Award in Biochemistry for his poster presentation. In addition, he received Honorable Mention at the 2012 CAMP Statewide Symposium for his research presentation. Quintana plans to graduate in Fall 2012 and pursue a Ph.D. in Chemistry and Biochemistry.

International Research: Chemical Engineering Experiences Research in Chile

Daniel Estrada will complete his B.S. in Chemical Engineering at UCSB in June 2012, and has plans to attend graduate school in Materials Science and Engineering with a focus on energy efficiency and photovoltaics. As a sophomore, Estrada joined CAMP and began his research experience at UCSB in Professor Steve DenBaars laboratory, working on transparent conducting materials for use in light emitting diodes. Estrada received a special merit award in the Physical Sciences division at the 2011 CAMP Symposium for his presentation of “Low temperature aqueous solution growth of epitaxial ZnO films doped with gallium for use as GAN LED current spreading layers.”

After getting a taste of research, Estrada was interested in an international experience, and in Summer 2011, he received a Cooperative International Science and Engineering Internship (CISEI) through the UCSB Materials Research Laboratory, and spent 10 weeks at the University of Chile in Santiago. There he worked in the laboratory of Professor Huberto Palza, investigating the role of copper nanoparticles in polypropylene to create new biocidic materials.

Of his experience living and working abroad, Estrada says, “it shows you your level of adaptability.” He especially appreciated the creativity and resourcefulness of scientists at the University of Chile who do cutting edge research with limited resources, as well as the strong sense of camaraderie and joie de vivre of his Chilean friends and colleagues.

Estrada took the opportunity to travel during his time in South America, visiting the home of Pablo Neruda in Isla Negra, sandboarding in San Pedro Aticama, hiking in Patagonia and touring Easter Island and Macchu Picchu. Overall, he credits his international immersion experience with giving him a new perspective on both research and life.

Chemistry Major Wins Award at CAMP Statewide Symposium

Christina Rodriguez anticipates completing the B.S. in Chemistry in Fall 2012 and continue on to a Ph.D. in Chemistry. In Summer 2011, she participated in the UCSB CAMP Summer Internship program with Dr. Nathaniel Lynd and Professor Craig Hawker at the Materials...
Research Laboratory. Her research focused on the efficient synthesis of PEG derivatives for use in nanomedicine.

Rodriguez commented, “My experience as a CAMP intern was definitely an eye opener. My mentor and the entire Hawker group were so helpful it made me want to learn as much as I could and provided a great working environment. I learned a lot of new techniques, gained a lot of knowledge and met a lot of new people because of this internship. I loved it so much I continued the CAMP program for the school year and I have recommended the CAMP summer internship to a lot of my friends.”

Rodriguez received the Special Merit Award in the Physical Sciences and Engineering division at the 2012 CAMP Statewide Symposium for her project “Synthesis Of Heterobifunctional Polyethylene Glycol Derivatives For The Applications Of Nanomedicine.” Of her experience at the CAMP Statewide Symposium, she indicated, “Everyone was very welcoming and it was nice to be around students from the other UC campuses that were also interested in research. What I enjoyed most was getting the chance to hear the guest speakers and being around such a diverse group of people who had done research in so many different fields.”

“The LSAMP program at UCSB increases opportunity for underrepresented students from diverse backgrounds to the highest levels of achievement in mathematics, science, and engineering. It has opened doors for students, many of whom never thought they would undertake basic research and/or pursue advanced academic degrees in their fields. This was especially evident at the symposium, where I was delighted to see the accomplishments of our students from a wide spectrum of disciplines.”

—Professor Glenn Beltz, Associate Dean for Academic Affairs, College of Engineering and UCSB CAMP Faculty Director

UCSB Alumni News

UCSB ALUMNUS RECEIVES GRADUATE FELLOWSHIP AT UCLA

Brian McVerry, a 2011 UCSB graduate in Chemical Engineering, received a prestigious graduate fellowship from the Clean Energy for Green Industry IGERT at UCLA. The Clean-Green IGERT is a National Science Foundation funded program to promote interdisciplinary graduate education and training in renewable and sustainable energy technology. As an undergraduate at UCSB, Brian participated in the CAMP program and did research in Professor Guí Bazan’s group on the “Synthesis and Characterization of Poly(Ethylene) –Graft-Poly (Tert-butylacrylate) Materials.” He followed up on this experience with an international internship in Professor E. W. Meijer’s laboratory at Technical University Eindhoven (Netherlands), working on supramolecular polymer chemistry. Brian entered the PhD program in Chemistry and Biochemistry at UCLA in fall 2011, and is investigating new materials for water filtration.

UCSB ALUMNA BROADENS LIFE EXPERIENCES BY COMPETING IN MISS CALIFORNIA PAGEANT

In January 2012, Lisa val Verde, a 2007 Mechanical Engineering graduate of UCSB, represented Brentwood in the Miss California pageant. This was definitely a new experience, given her background in engineering and nanotechnology research! As an undergraduate, val Verde participated in CAMP in 2005, and completed undergraduate research in Professor Deborah Fygensen’s laboratory in the Physics Department. In addition, val Verde received a UCSB CISEI internship to Trinity College Dublin in 2006, spending 10 weeks in Professor Werner Blau’s laboratory in the College of Physics.

Val Verde’s research on carbon nanotube assemblies was recently published in the Journal of Nanotechnology. After graduating from UCSB, val Verde completed a Master’s degree at Duke University, and currently works for Medtronic in Los Angeles, where she is a Global Product Manager.

Lisa val Verde

Brian McVerry
Azucena Robles is an active undergraduate who thrives in challenging environments. In addition to the rigorous engineering curriculum in her major, she conducts research and serves as a team leader for educational outreach activities. She also holds memberships in professional organizations including the Society of Hispanic Professional Engineers, American Society of Mechanical Engineers, and the UC Merced Colony of Theta Tau. She is a Ronald E. McNair Scholar as well as a CAMP participant. In all of her endeavors she draws upon her organizational and team building skills.

Robles attended North High School in Bakersfield, California. Her interest in engineering began in late middle school and early high school. She says, “I was not very sure of what engineers did, but I knew they dealt with a lot of science and math, which are two subjects that I enjoy the most.”

By junior year of high school, she was very sure that she wanted to go to college and pursue some type of science or engineering major. One influential activity was COSMOS (California State Summer School for Mathematics & Science) at UC San Diego. A 2008 COSMOS alumna, she gained some of her first hands-on experience in the lab, field, and programming.

As a UCM undergraduate, Robles is passionate about her campus. She says, “What I love the most about UCM are all the opportunities for students like myself, the doors it opens, and the faculty and staff members that are always eager to help.”

Robles has been conducting research under the guidance of Professor Gerardo Diaz in the sustainable plasma gasification laboratory. She has mastered entry-level skills using the National Instruments LabView program to create data acquisition. She analyzes gas samples acquired from the plasma gasification processing of waste.

Her engineering projects in community service include Team Get S.E.T., designing science activities for the Merced County Office of Education. One of these projects is the “Simple Motor,” in which students use a battery, a magnet, and a copper wire to create a simple motor. She and her team developed a lesson plan appropriate for the fourth grade classroom, demonstrating electricity and magnetism. A portion of the lesson plan was hands-on so that the fourth graders could develop the simple motor for themselves. Robles adds, “This project met the grade level standards for physical science.”

She will participate in the CAMP 2012 summer research program which will support her continued research with Dr. Diaz. She also intends to present at the CAMP Statewide 2013 Undergraduate Research Symposium.

Azucena Robles has high goals for her future. She plans to become a tenured university professor. As for graduate school, one of several places Robles will be considering is UC Berkeley.

“What I love the most about UC Merced are all the opportunities for students like myself, the doors it opens, and the faculty and staff members that are always eager to help.”
ADRIAN GARCIA PURSUES PH.D. AT UC IRVINE

UC Merced Class of 2012 graduate Adrian Garcia completed the B.S. degree in Mechanical Engineering. At UCM, the youngest of the University of California campuses and smallest in student population, Garcia enjoyed the personal attention that faculty and staff are able to provide. Born and raised in Merced, in California’s Central Valley, and having attended Golden Valley High School, Garcia appreciated the advantages of a small campus and the nurturing environment it affords. Among the benefits are opportunities to fully explore—and enhance—one’s chosen major.

Garcia is interested in nanotechnology, energy transfer, and research and development. He took optimal advantage of several research experiences. As an undergraduate research assistant in Dr. Carlos Coimbra’s lab, he contributed to the group’s work on solar forecasting. The project represents a three-campus partnership (Berkeley, Davis, Merced) which collects data from solar irradiance equipment. Garcia created dynamic real-time graphical interfaces of solar irradiance data. The work was presented at the 2010 SACNAS National Conference in Anaheim, CA.

Among his honors, Garcia was selected to participate in UC LEADS, a program of the UC graduate deans offered through the Graduate Division. Participants are provided with professional development and graduate preparation workshops and seminars. The program, a two-year commitment for upper division students, opens doors to research laboratories.

“UC LEADS was an amazing experience that allowed me to explore research environments and learn how to present my research results,” he says.

MARIO CORTES GARCIA, FUTURE PH.D.

Mario Cortes Garcia is majoring in Biological Sciences, with an emphasis in Microbiology and Immunology. He expects to graduate in May 2013, and already has plans for graduate education. Garcia is conducting research in the School of Natural Sciences under Marine Biologist Dr. Monica Medina, Associate Professor, School of Natural Sciences.

“Recently, I was asked by Dr. Medina to join her lab as a having attended Golden Valley High School, Garcia appreciated the advantages of a small campus and the nurturing environment it affords. Among the benefits are opportunities to fully explore—and enhance—one’s chosen major.

Garcia is interested in nanotechnology, energy transfer, and research and development. He took optimal advantage of several research experiences. As an undergraduate research assistant in Dr. Carlos Coimbra’s lab, he contributed to the group’s work on solar forecasting. The project represents a three-campus partnership (Berkeley, Davis, Merced) which collects data from solar irradiance equipment. Garcia created dynamic real-time graphical interfaces of solar irradiance data. The work was presented at the 2010 SACNAS National Conference in Anaheim, CA.

Among his honors, Garcia was selected to participate in UC LEADS, a program of the UC graduate deans offered through the Graduate Division. Participants are provided with professional development and graduate preparation workshops and seminars. The program, a two-year commitment for upper division students, opens doors to research laboratories.

“UC LEADS was an amazing experience that allowed me to explore research environments and learn how to present my research results,” he says.

“Education is what you make of it. And the experience is something that makes UC Merced like no other UC campus.”

Ph.D. student once I finish my undergraduate degree.” He accepted the offer immediately.

Garcia began in Dr. Medina’s lab in 2010, continued throughout his junior year and through Summer 2012. His research addresses a major project in marine ecosystems, “Microbial Community and Coral-Pathogen Interactions.” It has resulted in the opportunity to present at two major conferences: The American Society of Microbiology (ASM) conference in San Francisco as co-author of a poster (June 2012). He is also presenting a poster, “Symbiodinium changes under coral disease events in Montastraea faveolata,” at the Society for the Study of Evolution meeting in Ottawa, Canada (July 2012).

Summer 2012 also afforded a special opportunity to conduct field research in Puerto Morelos, Mexico, on the Yucatan Peninsula, along the Mexican Caribbean. It is the home of the world’s second largest reef and is a protected natural area. The coral is only six feet below the surface, affording ‘up close and personal’ observation for marine biologists.

The research group focuses on the genomics of coral-zooxanthellae symbioses in Caribbean reefs. The Medina lab is also studying calcification mechanisms in corals.

“Being able to be a part of Dr. Medina’s lab is an honor.
Doctoral student Rosa Padilla knows first hand the benefits of creative collaboration and networking, which continues to be an integral part of her personal and professional advancement along the STEM pathway. A CAMP participant at UC Davis, Class of 2008, Padilla was then selected a Bridge to the Doctorate (BD) Fellow at California State University, Los Angeles (CSU-LA), where she completed a master’s degree in mechanical engineering. Collaborations between faculty at CSU-LA and UC Irvine facilitated Padilla’s admission into the Ph.D. program in mechanical engineering.

CREST at CSU-LA is partnering with UCI by covering Padilla’s monthly stipend while UCI’s Department of Mechanical Engineering covers the quarterly fees with a doctoral fellowship. The collaboration will continue, when, over the next few years, Padilla will be mentoring master’s degree students at CSU-LA as well as undergraduate researchers at the Irvine campus.

Padilla learned how to be an independent researcher from her graduate research advisor, Arturo Pacheco-Vega, whose special areas of interest are in the area of thermal and fluids engineering. Dr. Pacheco-Vega held students to high expectations. She says, “The courses he taught were at an advanced level, and while very rigorous and difficult at times, prepared me to pursue the doctorate.”

She also feels indebted to Dr. Carlos Robles, Professor of Biological Sciences (whose focus is on coastal marine populations and effects of climate change) and Dr. Carlos Gutierrez, Professor of Chemistry and CASE/Carnegie U.S. Professor of the Year, for their leadership and guidance during the BD fellowship. Both professors have long and illustrious careers and love teaching the next generation of scientists.

“Every time we had a conversation about research, Dr. Robles encouraged me to be confident,” says Padilla. She adds, “He gave us useful feedback in building our

WHAT INSPIRES ME

“I’m inspired by my personal journey in life. As a kid, I feared “failing” and fitting into the typical stereotype of dropping out of high school or being a teenage mother. Once I went off to college, I met “successful” professional people, so I was inspired to pursue a higher education hoping one day I could also have a professional career. Now, I’m not afraid of failing, instead I am more happy/appreciative in the satisfaction part that grows in me when I learn and understand a physical phenomena. Mainly, I hope that this chain of inspiration continues growing and hope that one day I will be that inspiration to another young girl.”
“I love being a Ph.D. student,” says Padilla. “I am very happy to learn something new every day and explore topics beyond my comfort.” She adds, “As a Ph.D student I have been able to learn about my own personality, that is, how I learn theory, approach problems and build my communication skills.”

Undergraduate research enhanced her foundation for graduate education. Padilla had conducted research (“Investigation of Isovelocity Testing Parameters to Compute Muscle Strength”), and had presented at the 2007 CAMP Statewide Research Symposium. The experience was “a milestone” on her degree pathway. She is thankful for the support from then-CAMP Coordinator Renee Maldonado.

Together with Dr. Dunn-Rankin, Padilla has submitted an abstract, “Extinction limits and structure of counterflow non premixed water laden methane/air flames” to The 34th Symposium (International) on Combustion in Poland. The research is an international collaboration with engineers from Inha University, Korea, and with CSU-LA Professor Trinh Pham.

At UCI, her faculty advisor and mentor gives her plenty of freedom to try out her ideas. She says, “I love working with Dr. Dunn-Rankin. He’s a wonderful advisor and an amazing person. He makes me feel like a colleague, and allows me to express my ideas. He establishes a friendly environment in the lab.” She adds, “I feel appreciated. I’m very lucky.”

Of her experience so far at UC Irvine, Padilla says, “I enjoy meeting people at UCI and faculty. Thus far everyone has been very friendly or approachable. I also enjoy being on a campus that sits close to the beach, where I can enjoy a bike ride and also being close to my family’s home.”

Padilla would like to explore Research & Development (R&D) for a few years and in the future become a professor in a four year research university. Her future job search will be focused in her area of specialization, combustion and aircraft/aerospace research. For a dream job in R&D, she has identified the Glenn Research Center, Combustion Branch, at NASA.

Rosa Padilla at a Glance

**Education:**
- Ph.D. Mechanical Engineering, University of California, Irvine, In Progress
- M.S. Mechanical Engineering, California State University, Los Angeles, 2008
- B.S. Mechanical Engineering, University of California, Davis, 2008

**Current Research:**
- Construction of a counterflow burner to study the combustion of water-laden fuel mixtures in a nonpremixed configuration.

**Previous Projects:**
- Model Construction of an Inverse Heat Conduction Problem in Laser Treatment Applications in the Skin; California State University of Los Angeles, Department of Mechanical Engineering; Advisor: Dr. Arturo Pacheco Vega September 2008-June 2010
- Occupational Biomechanics for the Development of an Ergonomic Trashbin; University of California Davis, Department of Biological Systems Engineering; Professor, Dr. Fadi Fathallah September 2007-June 2008
- Fruit Firmness Measurement and Alternaria Mold Detection by Biosensor; University of California Davis, Department of Biological Systems Engineering; Professor, Dr. David Slaughter June 2008-September 2008
- Lipid Behavior in Cell Membranes; University of California Davis, Department of Chemical Engineering and Material Science; Professor, Dr. Tonya Kuhl and Suzanne Balko September 2007-December 2007

**Conference Paper Presented:**
- “Development of an ergonomic trash bin container for hospital janitorial staff” Presented at the 52nd Annual Human Factors and Ergonomic Society in New York. Designed and developed a new concept on a rotating trash bin container to reduce the risk of back injuries.

**Teaching Experience:**
- Fluids Laboratory ME 303, Graduate Teaching Assistant; California State University, Los Angeles 1/09-3/09

**Mentoring:**
- Daniel Jaimes, Senior, Mechanical Engineering, UCI; Characterization of Non-Premixed methane Flames with Water Vapor Addition in a Counterflow Configuration, Dunn-Rankin Laboratory

**Technical Skills:**
- MATLAB, COMSOL, GAMBIT and FLUENT, Autodesk Inventor, Mathcad, LaTeX
Richard Remigio, UCI Class of 2005, is an environmental engineer with the U.S. Environmental Protection Agency (EPA), living in Washington, DC. He implements water quality protection policy, particularly areas related to pathogens in the water – and is a committed conservationist. “I enjoy it thoroughly,” he says.

His path to the EPA began while still an undergraduate at UC Irvine, as a double major in Earth and Environmental Science and Applied Ecology. Then he applied to a master’s program at Stanford. He credits three influential individuals for his preparation for graduate school at Stanford University: Professor Stan Grant, who had “good big ideas well worth studying, and Professor Dele Ogunseitan, a “Renaissance Man.”

At UCI he participated in the CAMP Summer Science Academy and was the CAMP Mentor Coordinator. He conducted research on water quality with Dr. Dele Ogunseitan, Professor and Chair, Department of Population Health and Disease Prevention, Program in Public Health; and Stanley Grant, Professor, Departments of Chemical Engineering and Materials Science (primary) and Civil and Environmental Engineering.

Remigio says, “Both of my advisors are brilliant. They paved the way for my interest in environmental studies.” Additionally, he credits Kika Friend, the “conductor,” of CAMP-UCI, who had made sure that the application and polished personal statement were submitted on time.

Stanford was an “exciting, enriching and excellent experience,” he says he saw it as a place where “brilliant, passionate people of the world come together,” and also where he learned to persevere.

In 2007, when Remigio was completing the master’s in environmental engineering and science, he attended a job fair and, by chance, spoke to a convincing recruiter for the EPA. At the time, Remigio was considering either the private sector or academia. Instead he learned about the opportunity to work in an area where he could see the larger scale, the big system, and “make change happen.”

He took the offer, and began with the EPA’s San Francisco-Region 9 office, in the National Pollutant Discharge Elimination System (NPDES) Permits Office. While there, he worked extensively on wastewater pollution and infrastructure issues affecting Guam and other coastal dischargers. In 2010 he received the EPA National Honor Award for work related to the Everglades.

Currently under the Office of Wastewater Management, Remigio works on water quality-based discharge control and management national policy issues through the NPDES program. Topics include developing and implementing revised recreation ambient water quality criteria, nutrient guidance for dischargers, and other water quality-based permitting challenges from stakeholders. While on detail to the Standards and Health Protection Division, he also worked on national water quality standards issues and conducted research in support of the revised recreation criteria.

But there is more to life than work. Remigio was involved in “Surf For Life,” a fundraising activity in Costa Rica for impoverished coastal communities. He also keeps physically fit as a triathlete. He runs and trains with a D.C. swim team and a bicycle club. In 2011, he competed in a San Francisco triathlon, placing second in his age group. He has also participated in several triathlons in Washington, D.C.

“What drives my motivation to succeed are my friends from CAMP and in the agency. They make me want to step up.”
UC-Edison Scholars 2011-2013: Exciting Futures Await UC Irvine Transfer Students

Karen Santoyo, Salvador Denis and Adam Ullah are among the 10 new UC Edison Scholars to be selected for the prestigious program, a partnership between UC Irvine and Edison International established in 2000. The two-year scholarship supports completion of baccalaureate degrees in STEM and opens doors of opportunity for research and professional development. Scholars must complete 10 hours of community service as part of their commitment to their educational goals. The following profiles exemplify the newest cohort of UC-Edison Scholars.

PUBLIC HEALTH SCIENCE MAJOR INCLUDES LEADERSHIP, SERVICE IN STEPS TOWARD CAREER

Karen Santoyo: Future Biomedical Researcher and Pediatrician

UCI Public Health Science major Karen Santoyo transferred from Cerritos College in Fall 2011. She is a future biomedical researcher and pediatrician who plans to combine leadership skills and service to her professional calling. Santoyo was selected to be a UC-Edison Scholar, a two-year scholarship award, based on her academic and leadership achievements in community college. From high school through community college and transferring to UCI, Santoyo sees each step as an increase in knowledge and doors to opportunity.

Before Santoyo transferred to UCI, she received several prestigious awards: AAUW Outstanding Transferring Woman Student, Certificate of Special Congressional Recognition, and California Legislature Assembly Certificate of Recognition.

“I’ll admit I’m a bit competitive,” she admits, “But the only person you should compete with is yourself.”

Currently serving as a pre-health advisor, Santoyo is active in Chicanos for Community Medicine and the Latino Medical Student Association. She works at the UC Irvine Blood Donor Center, located in the UCI Student Center. Her duties include presenting to clubs and classes, and recruiting for donors. She participates in the “Grandparent” program at Long Beach Memorial Hospital, providing companionship and emotional support for

Karen Santoyo continues on page 49

“The only person you should compete with is yourself.”
UCI Senior Salvador Deniz, Jr. anticipates completing his B.S. degree in Developmental and Cell Biology June 2013. He plans on entering graduate school in Fall 2014, at a school with a strong stem cell focus.

A transfer from Long Beach City College, Deniz had earned a place on the dean’s list with honors as a double major in biological science and physical science. He participated in the Bridges to the Baccalaureate program at California State University Long Beach, and was a full-time researcher in Summer 2009. Deniz studied sulfate-reducing bacteria at the Huntington Beach Wetlands under Associate Professor Jesse Dillon, whose focus is on microbial ecology. Deniz developed and presented his poster at the Bridges to the Baccalaureate Symposium (2009).

Deniz “greatly thanks” Professor Dillon “because he gave me the first opportunity to work in a lab and recommended me to present at the Annual Biomedical Research Conference for Minority Students (ABRCMS).” Attending the conference and conducting research “ended any doubts I had in becoming a scientist and gave me the motivation needed to prepare me for UCI,” Deniz adds.

The experience contributed to a strong foundation for conducting research during summer 2010 at Virginia Tech, where he engaged in a 10-week REU (Research Experiences for Undergraduates), Microbiology in the Post Genome Era. The experience had life-enhancing impact and proved a milestone for Deniz’s career goals. The program focuses on a wide range of microbiological phenomena, and integrates the application of state-of-the-art genome-based technologies for fundamental and applied research projects in microbiology. The REU is funded by the National Science Foundation and the Fralin Life Science Institute of Virginia Tech. While at Virginia Tech, Deniz helped develop a methodology for studying plant pathogen evolution.

Upon enrolling at UCI in fall 2011, Deniz had already spent the summer working at Center for Complex Biological Systems and volunteering in a lab of the Developmental and Cell Biology Department. Deniz presented at the CAMP-UCI Undergraduate Symposium in September 2011 and at SACNAS in October 2011, winning best poster for his research “Heart defects in a mouse model of Cornelia de Lange Syndrome.”

With his steady achievements at Long Beach City College to California State University Long Beach to UC Irvine, Deniz has established impressive credentials advancing along the academic pathway to a future position in academia. Additionally, he is civic-minded, serving as SACNAS UCI Student Chapter Vice President and active member of the Central American Student Association.

Q&A with Salvador Deniz, Jr.

What does it mean to you to be a UC-Edison Scholar?

As an Edison Scholar, I mentor students and currently mentor two minority students in biology. Working with the freshmen has been a priceless experience because in them I can clearly witness many of the distractions that affected my studies and allows me to help.

Have you set a long-term career goal?

As a scientist, my career goal is to one day run my own research lab and research topics that interest me -- regenerative therapy and epigenetics. I also want to become an influential leader in the Latino community by promoting higher education and science.

Do you have a dream job in mind?

My dream job consist of becoming a biology professor running my own lab, mentoring students, and working to promote a better understanding of the wonderful world, as explained using the tools of science, to the underrepresented community in order to encourage young minds to consider higher education and that becoming a scientist is an attainable career option.

What do you like best about UCI?

The best thing about UCI is the people I’ve met. I have a great Latina graduate student mentor Rosaysela Santos, who was also a transfer student, and close to attaining her Ph.D. Rosie has encouraged me extensively and has taught me great techniques -- the most valuable being learning to think like a scientist. I have met other great individuals by joining the Latino Fraternity Sigma Delta Alpha because of everyone’s focus on promoting higher education to the underrepresented community. Serving as the Academic Chair of the Fraternity, allows me to investigate struggles that affect minority students within the organization.

“One of the most important goals of mine is to work with minority students and promote science, and being an Edison Scholar provides me with this great opportunity.”
UC EDISON SCHOLAR BUILDS RESEARCH CREDENTIALS

Mechanical Engineering Major Adam Ullah Awarded Summer Internship at University of Arizona, Corral Lab

UCI’s Adam Ullah conducted research at the University of Arizona, Tucson, under the mentorship of Professor Erica Corral, a materials science engineer. Ullah met Dr. Corral when she gave a seminar at UCI in February 2012. Her visit was well timed with the CAMP Statewide Undergraduate Research Symposium, enabling her to share her educational and career pathway with attendees during the symposium’s welcome dinner. She revealed that she had also received LSAMP support to conduct research as an undergraduate at the University of Texas, El Paso, an experience which guided her career trajectory.

Ullah presented his research to Dr. Corral during the physical sciences and engineering poster session, resulting in an invitation to work in her lab at the University of Arizona. The Corral lab focuses on engineering high temperature materials, particularly thermal spacecraft shields.

The ten-week summer internship included housing and a $5,000 stipend. Ullah was given a single project to work on, with the goal to have a publication by the end of summer 2012.

The resulting poster will be presented at two major materials science conferences, the Materials Science and Technology Conference and Exhibition in Pittsburgh, October 2012, and another in Florida, January 2012.

Arriving at this point in his education is something for which Ullah is grateful. “Each achievement is a milestone that spurs me on.”

The engineering major had fostered an interest in STEM during high school, when he participated in a robotics competition as well as a bridge construction competition through MESA. He then established a record of research as a community college student at East Los Angeles College (ELAC) where he was also a member of MESA.

“I joined MESA and it opened my eyes. It impressed upon me the importance of networking and broadening your skill set.” He studied for three years at ELAC and took advantage of tutoring and research. “I got tutoring, then I gave tutoring,” he says, noting the importance of giving back.

Among activities was the ELAC Green Sustainability Leadership Conference, which he participated in twice and then became a student speaker the third time.

“You’re 4.0 cannot exist alone. You have to complement it with relevant experience.”

When he saw a brochure promoting the Undergraduate Research Scholars summer program at the UCLA Center of Embedded Networked Sensing, he applied without hesitation. Working under a faculty member, he did a field study on high energy consumption in public spaces, such as the Santa Monica Pier.

“At UCLA I realized what I was capable of,” he says. “The experience was invaluable.”

The next summer he applied to the Minority Undergraduate Research Fellowship program at CalTech, where he worked with “bulk metallic glass matrix composites.” The work resulted in a co-authored paper.
UCI CAMP ALUMNA FOLLOWS PASSION FOR TEACHING AND RESEARCH

Dr. Nzola De Magalhaes: Assistant Professor, Biomedical Engineering

UCI alumna Nzola De Magalhaes enjoys a long history with the University of California, Irvine, first having completed a B.S. Cum Laude in Biological Sciences in 1999 then completing a B.S. in Chemistry and a B.A. in Women's Studies in 2000. She went on to earn a master’s in Biomedical Engineering in 2004 and a Ph.D. in Biomedical Engineering in 2008. Focus, determination, and hard work were part of her daily routine. De Magalhaes took every opportunity to advance her education and research endeavors, fulfilling her academic dreams at her campus of choice. Today she has joined the professoriate, sharing her passion for research and teaching on the East Coast.

De Magalhaes, who speaks her native Portuguese as well as French, Spanish, and Japanese, is Assistant Professor of Biomedical Engineering at the Rochester Institute of Technology (RIT), Rochester, New York, a position she has held since 2010. She still employs skills she early acquired as an undergraduate, serving as CAMP mentor and tutor.

Previously she was a postdoctoral fellow at the Moores Cancer Center at UC San Diego. Her research at the center focused on in-vivo studies of tumor migration and metastasis, working under the supervision of Dr. Dwayne Stupack, School of Medicine, Tumor Growth, Invasion and Metastasis, and Dr. John Lowengrub, Chair of the Mathematics Department at UC Irvine whose special interest is in mathematical/computer modeling of tissue and tumors. Dr. Lowengrub served as her Ph.D. advisor, along with Dr. Vittorio Cristini, formerly of UCI and currently on the faculty at the University of New Mexico School of Medicine, Department of Pathology.

De Magalhaes has several current research interests, including “developing multicolor 3D imaging models from in-vivo 3D tumor spheroid based animal models for volumetric analysis of tumor progression and tumor response to chemo and laser therapies.” She utilizes computational modeling with 3D imaging “to simulate the simultaneous interactions of molecules, cells and the resulting biophysical changes to tumor mass.” To support this particular focus, De Magalhaes completed certification in laser/electro-optics technology from Irvine Valley College, Irvine, California. Every step along her educational pathway has strengthened her skills and expertise in the classroom as well as the lab.

At RIT, De Magalhaes teaches Introduction to Biomaterials Science and Cell and Molecular Biology for Engineers, among others. She has been an invited speaker at the Cairo University, lecturing on Environmental and Biological Applications of Lasers. She spoke at a seminar at Merck Research Laboratories in Boston, presenting “Development of a Brain Tumor Model for Investigating the Effects of Photodynamic on Angiogenesis and Tumor Invasion.” She has also presented at the International Society for Optical Engineering Photonics West in San Jose.

In addition to her research and teaching responsibilities, De Magalhaes serves as a manuscript reviewer for the Journal of Cytotechnology and editorial member of the Journal of Chemical Engineering & Process Technology. She has served as a judge for the national SACNAS conference. Her professional memberships include Sigma Xi, The Scientific Research Society, and National Society of Black Physicians, among several others.

UCI STUDENT WINS AT ARIZONA MGE CONFERENCE

Verenice Mojica wins award for poster presentation

Verenice Mojica, UCI Junior majoring in Mechanical Engineering, won a first place award at the Tenth Annual Arizona MGE@MSA/WAESO Student Research Conference held February 2012 at Arizona State University. The award included a $300 stipend. Her poster presentation, “Combinatorial Games: The Game of Chomp,” was supervised by faculty mentor Professor Sarah Eichhorn, UCI Department of Mathematics. Mojica was a 2011 CAMP Summer Research Scholar, and has presented at SACNAS and CAMP Statewide.

“Chomp” is a two-player game played on a board consisting of divisors of a chosen integer. It is an ongoing research project. (Note: MGS@MSA More Graduate Education at Mountain States Alliance; WAESO Western Alliance to Expand Student Opportunities, Louis Stokes Alliances for Minority Participation.)
Serena S. Cervantes, Class of 2007, is pursuing a Ph.D. in Cell, Molecular and Developmental Biology at UC Riverside (UCR). Her B.S. degree from UCR is in the same field. Cervantes had distinguished her academic record with numerous leadership activities and honors, and has served in the Graduate Student Mentoring Program for nearly three years.

“Serena Cervantes Publications

Research papers:


Review:


Abstracts:


“It is important to figure out what is good enough and what needs to be perfect.”
activating specific genes can allow different types to form blew my mind.”
Her interests are now in cell cycle progression of the human malaria parasite.
“...My research focuses primarily on elucidating histone protein turnover, and secondarily on antimalarial drug discovery.”
She received a UCR Dissertation Year Program Fellowship in 2011. She also won the NIH Ruth L. Kirschstein National Research Service Awards for Individual Predoctoral Fellows (F31) 2011-2012, and Honorable Mention from the Ford Fellowship Foundation.
Cervantes is first and second author on several publications, including in BCM Cell Biology, and has presented at professional conferences including at the Molecular Parasitology Meeting in Woods Hole, MA (2009) and the ASMS Conference on Mass Spectrometry, Salt Lake City, UT (2010).
She says, “Since becoming a graduate student I have tried to be a positive role model for underrepresented students. As a teenager I was part of a program called Inland Empire Future Leaders, lead by Dr. Thomas Rivera from Cal State San Bernardino. I went back as a Career Guest Speaker several times to promote the STEM fields.”
On finding balance in her academic and personal life, Cervantes says, “It is very difficult to balance the demands of being a graduate student because there are many obligations. For example, family and relationships, service in committees, being a teaching assistant, and research.” She adds, “It is important to figure out what is good enough and what needs to be perfect.”
Teaching and research are “equally important,” she believes. Her long term career and dream job is to become a professor at a research university in California.
Inspiration comes from many places: “My family and friends inspire me because they believe in me at times when I do not believe in myself.” Cervantes explains, “Going to conferences and speaking with other scientists inspires me to think differently by giving me a different perspective on my research.” Additionally, her students inspire her to become a better instructor.
Cervantes presented “The role of autophagy in the human malaria parasite life cycle” at the Gordon Research Conference and Seminar in Ventura, CA in March 2012.

“Going to conferences and speaking with other scientists inspires me to think differently by giving me a different perspective on my research.”

MAGI METTRY: UC RIVERSIDE ALUM APPL YING FOR MASTERS DEGREE

Magi Mettry

Magi Mettry completed a B.S. in Chemistry in June 2012. Her goals hone in on a career in science and medicine. She keeps her eyes on “a challenging, rewarding and responsible position where experience and professional skills may be fully and effectively utilized.”
Mettry’s time in undergraduate education was used to the fullest. In Fall 2010 she transferred from Los Angeles Valley College, where she developed leadership skills through involvement in a vibrant campus life. She served as the public relations commissioner as well as the ethnic and culture commissioner.
“As a community college student, I became part of the student body government and the Honor Society Club.” She was also a team finalist in speech and debate.
Becoming an alumna of the University of California, Riverside signifies a major benchmark in a dedicated pursuit of science education. Mettry came to the U.S. from Egypt at the age of 15 with dreams of becoming an organic chemist.
As a new transfer student at UC Riverside she maintained a busy schedule on and off campus. She worked in the general chemistry stockroom and tutored in math and science at Granada Hills Charter High School (2008-10) and Canyon Spring High School (2010-12). Being multilingual, she was able to work as a translator for English language learners, drawing upon her own experience as an English language learner.

“NSF-CAMP gave me the opportunity I needed to continue my research.”
MINA ALFI: UCR BIOLOGIST PRESENTED AT WORLD STEM CELL SUMMIT

Mina Alfi, Class of 2012, completed a B.S. degree in Biology. He enjoyed a vibrant and life-shaping undergraduate education – with numerous quarters on the Dean's Honors List. In addition to academics and research, he was an ambassador for the campus. He was the one to see if you needed to check out a laptop at the Highlander Union Building. His duties included assisting visitors to UCR and supporting the Heat Music Festival.

His diverse experiences included conducting research during his junior and senior years in Dr. Prudence Talbot’s lab. (His photo appears on the staff page at “Talbot Central,” UCR website.) The lab studies reproduction and development using mammalian systems and stem cells.

Alfi was assigned to a project to analyze the effect of cigarette smoke on human cells. He also studied the effects of cigarette smoke on female reproductive system and on growth and vascular development. The analysis activities included using sophisticated video bioinformatics techniques.

“Research is a critical and fundamental part of my undergraduate career that will always help me in the future.” He adds, “Doing research in Dr. Talbot’s lab at UCR has helped me become a more well rounded student and has helped prepare me for my future endeavors.”

Alfi presented at the World Stem Cell Summit in Pasadena, December 2011. His poster summarized video bioinformatics techniques used to analyze high definition videos of cell functions.

At the 2012 CAMP Statewide Undergraduate Research Symposium, Alfi won Special Merit in Research for his original work using conventional and harm reduction cigarettes on mouse neural stem cells.

Community service is another priority. Alfi volunteers at St. George Coptic Orthodox Church in Bellflower, Ca, providing tutoring, academic counseling, and various workshops for youth. He emphasizes time management, stress reduction, and test taking skills. He is a member of the UCR Coptic Club, which serves the homeless and elderly in downtown Riverside, including providing food.

Future plans include medical school and eventually “opening a student run health clinic that travels to third world countries to provide medical services for the less fortunate.”

Alfi is from Alta Loma, CA, where he graduated with honors from Alta Loma High School.
UC San Diego

UCSD ALUMNA PURSUES DOCTORATE
Melissa Sandoval Enters Ph.D. Program at UC San Francisco

UCSD alumna Melissa Sandoval, Class of 2010, is a recipient of the Eunice Kennedy Shriver National Institute of Child Health and Human Development Best Poster Award. This honor, presented in 2011 at the NIH Spring Research Festival poster competition in Bethesda, MD, enhances her already impressive list of accolades garnered throughout her academic path.

In Fall 2012, Sandoval enrolls in UC San Francisco’s Biomedical Science Program, building on the foundation she established early in her educational career. She has received a National Science Foundation Graduate Research Fellowship to support her Ph.D. Being admitted to UCSF resulted from diligence, discipline, and determination -- beginning on Day One of her community college experience at San Diego Mesa College.

As a community college student on the Dean’s List, Sandoval dove into research and presented at ABRCMS. She distinguished her record with numerous scholarships, including the Mesa College Academic Achievement and Leadership Scholarship, Association for Women in Science tuition scholarship, and the Mesa College President’s Recognition of Achievement award. She was also honored for leadership and academic excellence by several local and national organizations and governmental agencies, including selection for the NIH Bridges to the Baccalaureate program. She discovered her passion for research during Summer 2005, when she was an intern at the San Diego State Research Foundation, Center for Behavioral Epidemiology and Community Health. Each new endeavor brought her closer to realizing her dream.

Upon transferring to UC San Diego, Sandoval was a CAMP scholar who took advantage of every opportunity. She participated in the University of Utah Summer Research Opportunity Program, presented at SACNAS, and engaged in K-12 outreach activities and events, including serving as a mentor for Expand Your Horizons Conference at the University of San Diego. She has a sustained interest in mentoring and tutoring young students, especially college-bound students from disadvantaged backgrounds.

Well-honed time management skills enable Sandoval to maintain both high academic standing and a variety of service to the community.

As an NIH postbac fellow in Bethesda, MD, she conducted research in the Cell Biology and Metabolism program under Dr. Gisela Storz.

Sandoval is listed as co-author on papers appearing in Journal of Bacteriology (2011), Pathology - Research and Practice (2009), and Journal of Neuroscience Research (2008).

Sandoval is a member of the American Society for Microbiology. She is the first in her family to achieve a college degree. Her career goal is to enter academia and become a university professor.

“I am inspired by lots of people and events, all of which have led to my motivation to pursue a career in science. However, my first inspiration comes my family who inspire me because they have worked so hard to survive in this country … it is my dream to honor them by being the first in my family to achieve a college degree as well as the first to pursue a doctorate degree. My mentors have also inspired me to ‘pay it forward’ and so I became very passionate about mentoring others. I am inspired by the science because it is challenging and yet very rewarding.”

—Melissa Sandoval
Wisler Charles, UC San Diego Class of 2010, began doctoral studies in immunology and infectious diseases in July 2011 at Cornell University. Charles has received an NSF Fellowship to support his degree. Charles chose Cornell because he felt it would be a great way to expand his network.

He explains, “I felt that Cornell would give me the credentials that would increase the likelihood of me returning as a professor to one of the University of California schools. Hopefully UCSD.” Charles feels it is important to step out of one’s comfort zone and experience something new. He adds, “Cornell also makes it easy to set up collaborations.” He hopes to “bridge the fields of Immunology and nano-biotechnology.”

He built a strong foundation for the Ph.D. one step at a time, giving each phase of his education laser-like focus. To call his background unconventional is an understatement. From his military experience in the U.S. Marine Corps to his associate degree earned at Grossmont College to UC San Diego, Charles focused on his educational and career goals with steadfastness and discipline. Additionally, he completed certification as a clinical laboratory technician at Camp Pendleton Naval Hospital. Additionally, he took advantage of many educational opportunities in the service, building his resume with certifications in areas such as logistics and embarkation and material readiness.

While in the U.S. Marine Corps, his duties included data and document management for support equipment for aircraft maintenance. His four years in the service provided technology skills in data management and assessment that directly applied to his coursework at Grossmont College, where he received an Associate of Science degree in 2008. The community college experience provided a new platform for his pursuit of science and leadership development. Charles was vice president of the Student Veterans organization, and received recognition as a “Grossmont College Student of Note” in 2008. He transferred to UC San Diego and completed a B.S. in Biochemistry & Cell Biology in 2010, and in 2011 was admitted to Cornell University for doctoral studies.

At UCSD, Charles delved into research in the Department of Surgery, where he was a Research Associate II, working with Dr. Virginia Vega, Assistant Adjunct Professor, Department of Surgery, and Dr. Antonio De Maio, Professor and Vice-Chair of Research for the Department of Surgery, UCSD School of Medicine. Charles embraced the research experience, working on a series of projects at the School of Medicine. He embarked on a rigorous research and presentation schedule.


Research and academic pursuits are not the only things that matter to Charles. His concern for the success and achievement of others receives special attention. He participates in outreach activities to inspire young students and spark their interest in science. In May 2011, the Urban League of San Diego County recognized Charles for his work mentoring and guiding underprivileged youth.

At Cornell, Charles is enrolled in the Biological and Biomedical Sciences graduate program, Department of Microbiology and Immunology. He is pursuing a doctorate in Immunology & Infectious Diseases. He hopes to pursue a future in both academic and private enterprise.

Wisler Charles continues next page
Q&A with Wisler Charles

What do you remember most about your undergraduate experience at UCSD?

Of course it would be the time I spent in the lab, but not only for the research, it was the time I spent talking and hanging out with my awesome lab mates and mentor (Dr. Virginia Vega). I especially miss the “Study Break Dinners” that Jacque (Azize-Brewer) has every quarter. They were great times for unwinding and hanging out with fellow CAMPers who were also half dead from exams.

Who or what inspired you to continue on for the doctorate?

I have always known I wanted to have a career in science. I have been taking things apart “piece by piece” since I was four years old. Getting a Ph.D. seems to be the next step towards my dreams of being a scientist. I was just lucky to have people like Jacque and Antonio De Maio to help facilitate my growth through this process.

What is your long-term goal after the Ph.D.?

I hope to be working at an awesome institution as a professor and at the same time have my own company. My hope is to fund my own research and mentoring program independently from any other institution, so that I may teach science the way I feel it should be taught, apprenticeship style. This way I can reach out to the students before they lose interest in science.

How do you relax—how do you balance the rigors of research and study with your personal life?

When I get a moment I’ll usually crash on the couch and read Japanese comics (Naruto and Bleach). Doing this usually helps me deflate and reset from these really stress filled hectic days.

Have you a main faculty advisor at this point?

I have not chosen a lab yet, but my faculty advisor is Dr. Theodore Clark. I’m leaning towards going into his lab because of the freedom he gives me to think outside the box.

What research are you currently conducting or plan to conduct in near future?

Currently in Dr. Clark’s lab, I’ve been working with tetrahymena thermophila and a novel stage/compressor micro-slide system for microscopy in collaboration with a lab from Vanderbilt University. We are hoping to be able to visualize mitochondrial extrusion and a number of other membrane processes real-time. In my next rotation I will be working on 3D imaging of

Wisler Charles continues on page 50

UC SAN DIEGO ALUMNUS COMPLETES PH.D. AT STANFORD

Dr. Erik Corona: Road to higher education started without a high school diploma

UCSD alumnus Erik Corona (Class of 2007) has completed the Ph.D. in Biomedical Informatics at Stanford University. He defended his dissertation, “Effects of Natural Selection on the Genetic-Basis of Human Disease,” April 11, 2012. An NSF Graduate Research Fellowship and a National Library of Medicine Training Grant supported his studies.

Dr. Atul J. Butte served as Corona’s advisor. Committee members were Carlos D. Bustamante, Euan Ashley, and Serafim Batzoglou.

Corona focused on analyzing the genetic basis of human disease in the context of evolution. He enjoys “creating, manipulating, and using large publicly available data sets to address complex questions.”

Indeed Corona’s own quest for the Ph.D. was an answer to a complex question! His is a story of persistence, hard work, and self-determination. A high school drop out, Corona reexamined his life goals, enrolled in community college, successfully transferred to the University of California, and subsequently was invited to apply to one of the top private institutions in the country. Enrolling at Stanford was a dream come true. Initially, however, he was “a little intimidated” but “embraced all of the work necessary to succeed.” He says, “I channeled any fear or nervousness into energy for my research.”

In 2011, Corona completed a project at the Stanford University School of Medicine to systematically search for signs of selection within various pathogens.

He served as a teaching assistant for Translational Bioinformatics and for Representations and Algorithms for Computational Molecular Biology.

Prior to his experience at Stanford, Corona was a community college student at Southwestern College, and an engaged undergraduate at UC San Diego. He pursued research and presented at the UCSD CAMP Statewide Undergraduate Research Symposium and at SACNAS, Tampa Florida. It was this national conference experience that opened doors of possibility.

“SACNAS played a pivotal role to why I ended up in Stanford. While presenting a poster at the national SACNAS conference I met Russ B. Altman, the Director of the
Biomedical Informatics Program at Stanford University,” Corona says. “I was applying to graduate schools at the time and Dr. Altman strongly encouraged me to apply to Stanford, going so far as to waive the application fee.”

Corona is interested in outreach and service. He says, “I have a strong interest in guiding disadvantaged undergraduate students and future undergraduate students in their path towards eventually becoming a scientist no matter where they currently are in life.” He is not shy about telling youth of his challenging road to higher education. “I like to let them know that to this day I have no high school diploma.”

In Spring 2012 Corona accepted a job offer to be Director of Data Science Research for Global Computing Enterprises. He has since relocated to Reston, VA, the company headquarters.

“I was attracted to this particular opportunity for a few reasons,” he explains. “I would still get to conduct research and use all of the ‘big data’ skills I have learned while at Stanford.” He adds, “I am also looking forward to taking on a leadership role.”

Corona's personal commitment to a career pathway paved with the pursuit of excellence inspires even the least likely students to reach higher and try harder.

**Erik Corona, PH.D. Reflections**

**Experience as a CAMP student:**

CAMP was instrumental in preparing me and giving me the skills necessary to successfully complete my Ph.D. program at Stanford University. I started off as a high school drop out who transferred to UCSD from Southwestern Community College. More than half the nearly 30 members of my extended family have been to prison, but not a single one had ever graduated a four-year University. As a result, nobody was available to give me any advice about attending a four-year university and I felt very out of place. With this sort of background, I arrived at UCSD having absolutely no idea what I was doing. Fortunately, the CAMP program was set up specifically to assist students like me. Through CAMP, I received opportunities that have directly led to my Ph.D. in Biomedical Informatics. With the guidance of Drs. Park Trefts and Jacqueline Azize-Brewer, I was able to participate in CAMP’s Summer Research Program. This program introduced me to Professor Eleazar Eskin who gave me an opportunity to complete my own research project which resulted in a first author publication. In addition, under the guidance of CAMP, I presented a poster at the [National] SACNAS conference in Florida where I met the Director of the Biomedical Informatics Program at Stanford. I would like to emphasize that the success I have enjoyed is not solely attributable my hard work, but also the hard work of Drs. Trefts and Azize-Brewer, as well as all of the people who make programs like CAMP possible. I can genuinely say that CAMP has completely altered my life for the better and I will always feel indebted to this great program.

“I can genuinely say that CAMP has completely altered my life for the better.”

**Admission into Stanford University:**

“After being accepted into Stanford, I was initially a little intimidated. There were so many brilliant researchers and I knew I had to contribute to all of the amazing work produced in this institution. Most people must feel this way, but given my background, I felt a more nervous than most. I still remember a particular speech given by a professor who spoke at the SACNAS conference. I do not recall his name, but his words have been repeated in my mind throughout my entire Ph.D. career. He said: There are many people who say they want to become a scientist. However, not all of these people want to do the work that is necessary to become a scientist. I kept these words in mind and embraced all of the work necessary to succeed. I was successful in channeling any fear/nervousness into energy for my research and for coming up with novel ways of exploring the genetic basis of human disease. All of this was aided by the creative atmosphere in the Butte Lab at Stanford, where people are not afraid to ask big and revolutionary questions. One of the most important lessons I’m taking from Stanford is to lose the fear to ask big questions, channel the fear of failure into increased effort, and to opt for revolutionary ideas as opposed to incremental adjustments to current concepts and research.

“One of the most important lessons I’m taking from Stanford is to lose the fear to ask big questions.”
Michelle Cruz
Senior, Animal Science

- Mentor: Professor Roberto Sainz, Department of Animal Science
- Research Title: Livestock production to the year 2050
- Dream Job: My dream job would be a combination of working with people and animals to improve the overall well being of both humans and animals.

Michelle Cruz has researched the effects of Chinese herbs as supplements for cattle. Additionally, she had broad experience with cattle, which she managed through herding, weighing, and monitoring health – essentials in their proper care. She has also worked at the UC Davis Equestrian Center doing a variety of tasks including administering medication and treatment to horses and monitoring their health and safety. Cruz is active in the UCD SACNAS chapter, and has coordinated workshops on graduate school. She volunteered for “Vetmerge” in Derramadero, Mexico. Duties included medical attention for large and small animals, and organizing a temporary clinic for small animals. She also served as a translator for the lead veterinarian. She plans on attending graduate school.

Destiny Garcia
Senior, Biomedical Engineering

- Mentor: Professor Delmar Larsen, Department of Chemistry
- Research Title: Ab Initio/Quantum Calculations to Verify Excited State Electron Calculations
- Dream Job: I want to one day be a professor at a top institution doing research and development for medical devices.

Garcia serves as a calculus tutor in the Student Academic Success Center, helping students to master the fundamentals of calculus. She conducts research at the Center for Biophotonics where she applies computer programming and analytical skills. She is an actively engaged student, participating in SHPE and MAES. She won the Lockheed Martin Undergraduate Scholarship, the Jane C Elliot Memorial Scholarship, and the UC Davis Trio Scholars grant, among others. She has participated in the Trio Scholars Program since 2009. Garcia plans to enroll in graduate education, and one day teach and conduct research at a top university.
RODOLFO IVAN HERNANDEZ
CLASS OF 2012, B.S., BIOTECHNOLOGY

- Mentor: Professor Siobhon Brady, UCD Genome Center, Department of Plant Biology
- Research Title: Identification of Loci Regulating Root Architecture in Tomato
- Dream Job: Challenging career in academia.

Hernandez has researched the regulation of root architecture in tomatoes. He has gained valuable experience in both field work (planting, growing, and tending tomatoes) and lab work (DNA/RNA isolation, PCR, RNA Seq analysis). Working in Professor Brady’s lab has allowed Hernandez to combine both his computer and lab skills to yield results in this project. He plans to attend graduate school and specialize in the Bioinformatics field.

FRANCISCO SARABIA
SENIOR, CHEMISTRY

- Mentor: Professor Louise Berben, Department of Chemistry
- Research Title: Toward Activation and Reduction of CO₂ Using Redox Active Complexes
- Dream Job: Contribute to my community through research and/or teaching.

Sarabia is a chemistry major with an emphasis in pharmaceuticals. He participates in Mentorship for Undergraduate Research Participants in the Physical and Mathematical Sciences (MURPPS) and has presented his research at the 2011 CAMP Statewide Undergraduate Research Symposium. Sarabia is part of the ‘Team Toney Research Group’, where he continues work with enzyme kinetics. He plans to pursue a Ph.D. and contribute to the scientific community.

MONICA WILSON
CLASS OF 2012, B.S., MECHANICAL AND AERONAUTICAL ENGINEERING

- Mentor: Professor Martinus M. Sarigul-Klijn, Department of Mechanical and Aerospace Engineering
- Research Title: Effects of Wall Thickness on Frequencies of Flat Plates and Cylindrical Shells
- Dream Job: Research professor.

Wilson serves as a student assistant in the Atmospheric Boundary Layer Wind Tunnel at UC Davis. She also was a research assistant at the Advanced Composite Research, Engineering and Science Laboratory on campus, working on a mathematical model for the preliminary design of a composite wing spar for a UAV. She is co-president of the Black Engineers Association and is a member of NSBE and SACNAS. Wilson plans to earn a Ph.D. in Aerospace structural development and analysis.

TOMAS TESFASILASSIE
SENIOR, BIOLOGICAL SCIENCE

- Mentor: Professor Bruce Lyeth, UC Davis Center for Neuroscience
- Research Title: Regulation of oxygen radical formation as a treatment for cell death in a rodent model of pediatric traumatic brain injury
- Dream Job: Career in academic medicine.

Tesfasilassie presented his research at the Center for Biophotonics Science and Technology Annual Meeting in 2009. He is a Gates Millennium Scholar, a UC LEADS scholar, and a member of the Minority Association of Premedical Students. The Gates Millennium Scholarship provides a potential of 10 years support, including through graduate education. He serves as an ambassador for the program.

Tomas Tesfasilassie

Rodolfo Ivan Hernandez

Monica Wilson

Francisco Sarabia

Monica Wilson

Tomas Tesfasilassie
Graduating Senior Paloma Lopez journeyed to Antarctica in Fall 2011 at the invitation of Dr. John Priscu, Professor of Biology at Montana State University, Bozeman. Lopez had met Dr. Priscu at the 2010 SACNAS conference where shared her interest in environmental science and her desire “to travel to remote places and discover new things.”

At that time, Fall 2010, Priscu was organizing a team for a limnological field season in McMurdo Valley and offered the opportunity to join the effort. Lopez didn’t hesitate to accept, but first needed to get a taste for the work by conducting research in Montana the summer before the expedition. She was a MARC fellow, participating in Dr. Priscu’s research group focused on a project, “Characterization of a novel red-pigmented bacterium isolated from a large hailstone.”

Lopez has a very pragmatic approach to research. “The
only way to know if you are right for research and vice versa is by getting involved in it,” she says.

She supported an array of experimentation in biogeochemistry, collecting data in the McMurdo Dry Valleys, “a mosaic of glaciers, exposed soils, ephemeral streams, and perennially ice-covered lakes.”

The project buoyed her long-nurtured interest in conservation efforts to prevent and repair human impact on the environment. It also provided the chance to work with ‘extremophiles,’ which she believes are “redefining our understanding of what life means.” She adds, “I have always had a fascination for nature and the way it works.”

Working with the research team, enjoying the dramatic environment, and living in a tent during fieldwork were among the memorable highlights.

Lopez embodies the excellence of California’s higher education pipeline. She was a community college transfer student from Pasadena City College where she participated in the Bridges to the Future Program. She had also conducted research at CSU Los Angeles through the community college-California State University collaboration as well as a Caltech collaboration over three summers. She was well prepared for UC Santa Cruz upon transfer, and quickly became a MARC/IMSD and CAMP student. Coursework in environmental geology, ecology, biochemistry and evolution supported her contributions to the several research projects in which she has been engaged.

Lopez plans to pursue graduate education. She is finding her place among the new generation of role models in scientific research.

Q&A with Paloma Lopez

What surprised you about working in Antarctica?

What surprised me the most was the scenery. Even though it was a lot of hard work, just to look around for a second while getting work done made everything worth it.

What kind of gear were you provided?

A big parka! It was called Extreme Cold Weather (ECW) gear, bunny boots included.

What kind of temperatures did you work in?

The temperature outside was between -20 and 8 Celsius, depending on the weather.

What do you remember most vividly about the experience?

The hikes around the Dry Valleys and the great moments spent with my teammates.

How were the living facilities?

It was a little difficult to get used to the living facilities in McMurdo station because you were placed in a tiny room with two other people. This situation was difficult because I had never shared a room before and it was hard to find some privacy. However, when we were in the field in the Dry Valleys, we each had a tent, and that was great!

Did you learn any new techniques or research methods?

I learned many different research techniques like collection of water samples, filtration of water to be tested for different chemical and biological parameters, and to carry on experiments with radioactive isotopes, to employ different instruments to measure water conditions including density, conductivity, and temperature.

What was your role in the team?

My role was the same as everybody’s: we all learned to do all the experiments that needed to be done and we would divide the work and rotate duties for the next experiment.

How will the long-term profile of the MCM ecosystem be used?

The long term research in the McMurdo Dry Valleys will be used to understand the relationship between biodiversity and ecosystem function, which could be then projected in other ecosystems for different purposes like conservation, restoration, etc.
Chemistry major Daisy Robinson is on track to complete the B.S. degree in June 2013. She began as a research assistant in January 2012 in Professor Scott Oliver’s lab. A transfer student from Orange Coast College, Robinson quickly adapted to the Santa Cruz campus and became involved in the Penhellenic Council, furthering her leadership abilities as the organization’s treasurer.

Robinson is right at home working alongside graduate students in the Oliver lab, contributing to the project on desulfurization of fuels using mesoporous sorbents. She continued this project during summer 2012, with support from IMSD.

“Working alongside graduate students has pushed me to be more creative, hardworking, and to raise my standards when it comes to the level of work I expect from myself.” She adds, “Working in Dr. Oliver’s lab has definitely made me realize that I want to pursue a career in research.”

The lab addresses her personal interests in finding alternative and cleaner fuels. She explains, “I knew I liked chemistry, but actually working in the lab trying to develop new solutions to problems – rather than follow a given procedure – has given me a passion for this field.”

Awards include Microsoft Scholar and Google Scholar. He is a member of the Golden Key Honor Society and webmaster for the student chapter National Society of Black Engineers. In summer 2010, he was a Google Fuse participant, experiencing an all expenses paid summer program at Google Seattle. During the three-day intensive program, he learned to program android phones and “received tons of free swag, including a $5,000 scholarship.”

A graduate of Alameda High School, Carraway sees his future career “doing work that has me combine my two passions: music and programming.”

UC SANTA CRUZ’S DEVIN CARRAWAY INTERNS AT MICROSOFT

Computer Science major Devin Carraway plans to graduate in December 2012. He has enjoyed internships at Microsoft applying his skills in systems programming. He is considering graduate school in the future.

“I’ve been a computer nerd since as far back as I can remember. I’ve always had a passion for computing.”

Throughout the academic year Carraway was research assistant in the Baskin School of Engineering, working with Professor Marilyn Walker in the Natural Language and Dialogue Systems Lab. (Walker won Best Paper Award at the ACL workshop on Sentiment and Subjectivity in 2011, and gave the keynote address at the Dynamic Adaptation in Dialogue - International Conference on Discourse and Dialogue, Tokyo, SIGDIAL, 2010.)

“People who are truly passionate about what they do inspire me,” Carraway says.

Working with Professor Walker has shaped and influenced his goals. In fact, he says one of the best things about UCSC is “the ability of students to get highly involved with faculty and their research.”

He also has a passion for helping others succeed, tutoring for courses such as JAVA I & II, computer architecture, and introduction to data structures. What he liked most is “helping students pass their classes!”

Carraway also engaged in high school volunteerism, sharing his knowledge by serving as a judge for the MESA Day robotics competition.

He has a summer 2012 internship at Microsoft in Redmond, Washington, continuing work from summer 2011 on “X++ to .NET interoperability.”

UCSC’S CHEMISTRY MAJOR DAISY ROBINSON EMBRACES RESEARCH
working in the lab trying to develop new solutions to problems – rather than follow a given procedure – has given me a passion for this field.”

The decision to major in chemistry came after involvement in an environmental awareness organization during community college. The opportunity to research alternative fuels and to contribute to a more sustainable future was very appealing. After her first chemistry class she was convinced. Now her dream career is centered on researching cleaner, more efficient fuels.

Originally from Los Angeles County, Robinson appreciates the slower pace of life in Santa Cruz. “After class,” she says, “it is wonderful to be able to walk among the redwoods. It helps alleviate the stress that comes with the heavy course load that STEM fields require.”

For inspiration, she turns to her dad: “He taught my sister and me to be strong independent women who break every stereotype of what a ‘Hispanic woman’ should be … and that there’s no such thing as dreaming ‘too big’.”

Her advice to new transfer students is to “Hit the ground running,” acknowledging that “two years at a UC go by fast.” She stresses that transfers “should not let up on studying because the quarter system doesn’t allow for it.”

Robinson is a proud alumna of Woodrow Wilson Classical High School in Long Beach, California. She plans on starting a Ph.D. program in Fall 2013 at UCI or UCLA.

UCSC GRAD ENROLLS AT CALTECH

UCSC 2012 graduate Kyle Lakatos, B.S. Chemistry, enjoyed an intensive – and enriching – research experience in several labs at his alma mater. His research was supported by a Minority Access to Research Careers (MARC) Fellowship. As a 2011 AMGEN Scholar, he also experienced research at the University of Washington, Totah Research Group, Department of Medicinal Chemistry. These experiences provided a strong foundation for graduate studies.

“Being a part of the various groups I have learned a lot about the variety of culture involved in a research group.”

Importantly, he says, “I developed my scientific curiosity.”

Lakatos is enrolling at CalTech in Biochemistry and Molecular Biophysics, Fall 2012. His undergraduate concentration in biochemistry with focus in physical biochemistry enhance his graduate work. Spending time at another top institution also added to his credentials.

“Going to UW [University of Washington] was one of the best experiences I could have asked for,” Lakatos says.

He met other “passionate peers” who “revamped” his motivation to conduct research.

Previously, in summer following his sophomore year, Lakatos took part in the Summer Research Institute, where he spent eight weeks learning and utilizing different techniques in biomedical sciences, including genomic sequencing and transformation.

In addition to the being an AMGEN Scholar, his accolades include Special Merit in Research at the 2012 CAMP

Statewide Undergraduate Research Symposium, Friends of the Long Marine Lab Fellowship, and Best Presentation at the UCSC Undergraduate Research Symposium.

In his junior and senior year, Lakatos joined the Flegal Research Group, and did field work along the California Central Coast. His contribution consisted of preparing equipment and collecting sediment samples. The work involved tracking sources of cadmium and lead in the local mussel population. He says, “A lot of planning was done deciding where and what time of the day to collect.”

Reaching out to others was also a priority. Lakatos gave back to the campus by serving as a co-leader and peer mentor for ACE, the Academic Excellence Program. He was also a teaching assistant for introductory chemistry and supported the program’s goal of increasing diversity students in STEM.

What key added value derived from his undergraduate experience? “The most important thing I have gained from UCSC is the sense of community.”

In the future, he hopes to be teaching at a Ph.D. granting institution on his way to tenure. He wants to work with various levels of students in both the classroom and the lab. He says, “I look forward to conducting research mixing biology and biochemistry with environmental issues such as climate change and alternative sources of energy.”

While he has moved on, Lakatos asserts that he “thoroughly enjoyed his time” at Santa Cruz and the many people he met along his degree pathway.
UCLA CHEMICAL ENGINEER REGAN PATTERSON TAKES THE INTERNATIONAL STAGE IN GENEVA

Regan Patterson is a UCLA junior majoring in Chemical Engineering with an interest in international environmental policy. She is an active member of CAMP and SACNAS and is currently a MARC (Minority Access to Research Careers) trainee researching in the laboratory of Dr. Yifang Zhu. Her project integrates her engineering foundation with her environmental interest. Patterson simulates and assesses the deposition fraction of ultrafine particles in the lung airways of school-age children, 5 to 18 years old.

Patterson was encouraged to study abroad to widen her perspective and gain worldly experience. In summer of 2011, Patterson traveled to Geneva, Switzerland, with UCLA’s Global Change and Environmental Governance Program. She researched environmental policy by engaging in discussions with UN diplomats. Bringing her unique perspective, Patterson is bridging the gap between STEM fields and environmental policy.

Her heightened interest in traveling and international cultures is leading her abroad again in summer 2012, when she will be researching in China. She will work alongside her PI, Dr. Yifang Zhu, to conduct air pollution measurements in Beijing. This research is conducted as part of the Joint Research Institute between Peking University and UCLA.

Patterson continues to reach out both globally and locally. She is currently the President of National Society of Black Engineers at UCLA and an active member of the American Institute of Chemical Engineers, Society of Women Engineers and Center for Excellence in Engineering and Diversity. Regan Patterson clearly will not be confined to the US. She aims high to be a skilled engineer who can impact environmental policy worldwide.

Regan Patterson, First Person

Can you briefly describe your research/travel study?

The program showed how environmental governance works in practice, analyzed global economic structuring and resulting environmental impacts, and allowed me to engage in discussions with policy makers and diplomats in international institutions, such as the United Nations, UNEP (United Nations Environment Programme), and the WHO (World Health Organization).

What impact did your experience abroad have on your perspective and future goals?

This travel study increased my interest in traveling and immersing myself in other cultures. It also solidified my desire to engage in international environmental policy. Engaging in discussions with diplomats sparked a desire to be a player on the international stage.

Do you have plans to pursue graduate studies, and do you have a career goal in mind?

I would like to pursue a Ph.D. in Environmental Engineering to gain expertise in environment and in training that doctorate level provides. The technical knowledge will prepare me for my career goal of engaging in environmental policy.

“Travel study solidified my desire to engage in international environmental policy... and be a player on the international stage.”
Matthew Pimentel recently graduated from UCLA in Fall 2011 with a degree in Microbiology, Immunology and Molecular Genetics and a minor in Biomedical Research. Along his path, Pimentel engaged in extensive research, and has sought out unique opportunities to pursue research from different angles. He participated in several research programs at UCLA including MARC, CAMP, SACNAS and ABRCMS and interned at a biotechnology company in the California Bay Area. Currently, Pimentel resides in Melbourne, Australia, where he is a research assistant at the Monash Institute of Pharmaceutical Sciences (MIPS) of Monash University.

Pimentel explains that his research group at UCLA had international collaborators in Australia. His lab gave him the opportunity to travel there in December 2010 to bring back valuable research skills. His positive trip inspired him to return to Australia after graduation to continue research on breast cancer.

Carissa Heath, UCLA Class of 2012, plans to become a professor of molecular biology. She completed a B.S. degree in Molecular, Cellular and Developmental Biology, and is enrolling in the Ph.D. program in Interdepartmental Biological Sciences at Northwestern University, Fall 2012.

“The opportunity to do research as an undergraduate helped me decide to pursue a Ph.D., and has greatly prepared me for graduate school,” she says.

Heath was an undergraduate research assistant in the lab of Dr. Patricia Johnson. Among her accomplishments, she created two expression vectors, and “stably transfected parasite cell lines.”

She won Special Merit in Research at the 2012 CAMP Statewide Undergraduate Research Symposium for her work with Dr. Johnson (see page 12).

She also presented at the Bruin Day Undergraduate Research Fair and Science Poster Day at UCLA.

Her inspiration for her undergraduate major came from her high school biology teacher. “I had an excellent biology teacher in high school,” she says, “and while taking her classes I realized that I enjoyed studying science.”

In addition to academics and research, Heath was on the NCAA Women’s Rowing team, Varsity 4 Boat.

A graduate of Gilroy High School, Heath was an Advanced Placement Scholar with Distinction and a National Hispanic Recognition Program Scholar, both in 2008.

In the future, she hopes to lead a cellular biology lab that researches an aspect of the cellular basis of disease.
Mario Cortes Garcia continued from page 25

I don't think I could have met a better group of people to mentor me through my research and school.”

Actively engaged in campus leadership, Garcia serves as vice president of the SACNAS UCM student chapter he helped to establish. The chapter supports the goals of the national organization to foster success in the sciences for Chicano/Latinos and Native Americans.

Garcia is also involved in Merced Project 10%, a student group dedicated to outreach at local at-risk middle schools. He works as a student assistant in the UCM Chancellor’s Office and also serves as assistant program coordinator for

Adrian Garcia continued from page 25

With research and presentation skills bolstered with a strong work ethic, Garcia rigorously prepared for advanced study. Admission to the Ph.D. program in Mechanical Engineering at UCI represents a significant step toward his goals. His special area of interest is in “characterization/synthesis of nanomaterials.” He adds, “Graphene will most likely be my material of focus.”

Garcia is no stranger to UC Irvine. In Summer 2011 he worked with Professor Derek Dunn-Rankin’s Laser, Flames & Aerosol Research Group, thanks to an exciting collaboration between engineering professors on both campuses. Garcia was responsible for researching fuel spray characteristics of fuel injector from a 49cc Honda Ruckus. Applied technical skills include high speed Phantom V4.3CMOS camera and high-pressure flammable gas use.

The resulting technical report on the proper use of an allied vision GC1380CH CCD camera was presented in poster format at the Society of Hispanic Professional Engineers Conference.

Following his summer research, during his senior year, he continued on in the ANDES Lab (Adaptive Networked Distributive Embedded Systems) at UCM as a research assistant, under the supervision of Professor Alberto Cerpa.

Garcia was responsible for writing input/output code “to communicate with low power wireless sensor modules.”

The ANDES research group conducts research in areas of computer networking and distributed systems with focus on wireless sensor networks. For his part, Garcia programmed “TinyOS modules with nesC” for use in a solar dome project – all of which helped prepare him for entry into doctoral studies.

“This was a valuable experience which allowed me to realize just how much depth a single subject may have,” Garcia says of his involvement in ANDES.

As for his future career, he says, “My dream job would be to go into academia and eventually start/control my own company.”

In addition to academics and research, Garcia shares his passion for higher education and engineering with the next generation of college students. He has volunteered at the National Teen Leadership Program, “an amazing three-day summer program for high-school students.”

Extracurricular activities include competitive athletics. He founded the UCM Men’s and Women’s Varsity National Athletics for Intercollegiate Athletics (NAIA) cross country teams, with the inaugural season in Fall 2011. He served as president, captain, manager and coach!

Garcia has applied for the National Science Foundation Graduate Research Fellowship Program.

“Adrian was the most focused and enthusiastic summer student we have had in a long time. Besides his great work ethic, he helped us understand how to grab images from the digital camera planned for an experiment that will fly on the international space station.”

—Professor Derek Dunn-Rankin, Chair, UCI Department of Mechanical and Aerospace Engineering; CAMP Statewide Project Co-Director
needy pediatric patients. All of her academic and extracurricular activities contribute to her passion for doing good, and doing it well.

Santoyo attended Woodrow Wilson High School in Long Beach, CA, her home town, graduating with a 4.1 gpa. She enrolled at Cerritos College, where she served as a senator in the Associated Students of Cerritos College as well as the health and safety committee commissioner. She also made a bold step when she co-founded the Global Medical Brigades, not typically available for community college students. In summer 2010, she and 15 chapter members worked to raise the funds to participate in a one week clinic in Honduras. The medical team provided health services to more than 1,000 patients.

“We went to a mountain village. The water supply was brown. I had never seen water like that, but that’s what they had to drink.”

A visit to an orphanage was “unforgettable,” says Santoyo, recalling how happy the children were to see them. Reflecting on how appreciative the villages were and their daily challenges, she says, “Here we complain about what we have to do without, but we don’t know what real poverty is.”

In Summer 2011, she attended the Summer Medical and Dental Education Program at the Yale University School of Medicine. It was an intensive six-week program that further added to her career goals.

With acquired time management skills, Santoyo balances a demanding schedule of academics, service, and professional development activities that include The UCI School of Medicine’s Future Health Professionals program. In this activity, she mentors a student at Anaheim High School. Together they worked on a project and produced a poster, “Congenital Heart Disease.”

A bright future awaits. She confidently states, “When I graduate I will be equipped not only with the scientific knowledge it takes to succeed in graduate school but also with leadership skills and cultural sensitivity.”

Karen Santoyo continued from page 29

Karen Santoyo

Q&A with Karen Santoyo

What do you love most about your major in public health science?

What I love the most is the curriculum and the opportunities that come with the teachings. Through my major I have the advantage of balancing my knowledge with biological, physical, and social science. This provides me with a broad understanding of healthcare and the issues that are important.

How did you hear about the summer program at Yale?

I learned about the Yale Summer PreMed Program by being curious. I always find ways to be productive, and one day while I was waiting for my organic chemistry class to begin I noticed a flyer announcing a program called SMDEP. I was accepted into UCLA, Yale, and Washington University as one of the few community college students out of 100 for each school.

What do you remember most about the field experience in Honduras?

The moments that are still vividly painted in my memory are all the children smiling and running up to hug us at the orphanage we visited. It made me realize how lucky we are to even be able to have food, clothes, a place to live, and good health compared to the citizens of these rural communities.

Do you have plans to explore research?

I’ve applied to CAMP-UCI Summer Research Scholars, and hope to develop laboratory research skills through this opportunity. This is something that was unavailable to me as a community college student but something I hope to change now that I’ve made the transition to the UC.

What is your long term educational and career goal?

I plan to attend medical school and pursue an MD/Ph.D. or MD/MBA and to become a pediatrician. In the future I’d like to be a medical director. My goal is to dedicate some of my time in serving communities who have more difficulty accessing quality healthcare here in the U.S. and also in other countries.
Adam Ullah continued from page 31


Ullah transferred to UCI in Fall 2012. When walking the campus, acquainting himself with everything, he saw the ‘CAMP-MESA’ sign at the Rockwell Engineering Center and went in and introduced himself. That bit of initiative engaged him with CAMP and led to the

“Your 4.0 cannot exist alone. You have to complement it with relevant experience.”

UC-Edison Scholarship opportunity. He applied and won the scholarship effective winter quarter 2012. The two-year award provides $7,500 per year for two years.

Of UCI, he says, “I’m just so happy to be here in this environment.”

He has a “20-year plan,” after graduation in 2014. He plans on perhaps five years in industry, focusing on aerospace and energy product development and R&D. He wants to complete a master’s in engineering management or an MBA and eventually he sees a Ph.D. in his future.

Some day, perhaps 20 years from now, he would like to return to ELAC and teach. “I would like to eventually return to my roots and give back.”

Matthew Pimentel continued from page 47

is a melting pot of cultures and I have interacted with individuals from around the world and am learning different ways to do science.”

Q&A with Matthew Pimentel

What impact has research had on your undergraduate education?

Research provided a hands-on experience of what I was learning in the classroom. Research allowed me to connect with my studies on a deeper level.

What is your current research project?

Our group recently showed that chronic stress significantly increased breast cancer metastasis. My research project at MIPS involves understanding the effects of stress on sites of breast cancer metastasis such as the lung and lymph node.

What impact is your international experience having on your future goals?

Melbourne is an awesome city and is a hub for top immunology research and I am planning to stay here to do a PhD (starting in January 2013) before returning to the US as a post-doc.

Have you decided on a career goal?

Ultimately, my goal is to conduct translational research with a focus on immunology.

What do you enjoy most about research?

Research is exciting because you get to explore questions that have never been answered and contribute to a world of knowledge that can have significant benefits to medicine, health, and the environment. I also love the challenge.

How has CAMP and other research programs helped you advance in your field?

CAMP has given me the opportunity to speak about my research and provided a network of support that I can tap into for collaborations, discussions and guidance.

What are you enjoying most about being abroad?

The food! Australia has great places to eat and explore. Also, living alone in an unfamiliar place with unfamiliar people is a great challenge and has taught me to be really independent.

Matthew Pimentel clearly has plans for a bright and rewarding future, but it appears that he will not be returning to the US anytime soon!
In Summer 2011, UCLA successfully launched three new programs to reach out to local California Community Colleges in Science, Technology, Engineering and Mathematics (STEM) fields. The common goal of all three programs is to bring awareness to students about STEM research, motivate and prepare students to pursue STEM degrees at UCLA and engage in research-based careers.

With the integral support of CAMP, UCLA’s Center for Community College Partnerships (CCCP), Undergraduate Research Center (URC) – Sciences and the Academic Advancement Program (AAP) collaboratively reached out to over 75 STEM community college students across the greater Los Angeles area.

The CCCP hosted its first STEM Summer Intensive Transfer Experience in 2011 organized by Asena Filihia and directed by Alfred Herrera. Students resided on campus for five days and attended science seminars, lectures and panels with CAMPers. They also participated in workshops on applying to UCLA and campus resources including financial aid.

Additionally, URC-Sciences launched the Bridges Summer Undergraduate Research Program (BriSURP) administered by Dr. Angela Gee and directed by Dr. Dwayne Simmons, faculty in Integrative Biology and Physiological Sciences. Funded by the National Institutes of Health, BriSURP had an inaugural group of eight students selected to engage in biomedical research full-time in UCLA laboratories. Participants experienced life as a science graduate student for eight weeks, attended research seminars, participated in professional development workshops and presented their data. They networked with students and scientists in academia, industry and government jobs.

BriSURPers are now an integral part of CAMP. They attended the CAMP Symposium and the Society for the Advancement of Chicano and Native Americans in Science (SACNAS) National Conference. Two Bridges Alumni/CAMPers, Jacqueline Graniel and Mark-Anthony Johnson, received recognition at the SACNAS Conference for presenting their summer research! The program exposed them to career opportunities they had not considered before. The students now aim to incorporate research into their graduate degrees. One participant commented, “I really want a research oriented career. It has really opened my eyes to my love for research.”

To complete the pipeline to UCLA, the Academic Advancement Program under the direction of Dr. Alice Ho launched its first Transfer Summer Program (TSP) in the sciences. An inaugural class of 17 students engaged in an intensive six-week program prior to the start of fall quarter. The goal of the program is to acclimate STEM transfers to their new role as UCLA science students. Students were provided with college survival skills and participated in a stem cell course, student research forum and writing seminar.

In addition to the three summer programs, outreach to Community College students continues throughout the year, including peer mentoring and tutorial sessions for CAMPers in transfer level science courses.

These new efforts engage prospective transfer students early in their academic careers and provide continued support. Together, they build a sense of community and offer opportunities to engage in science research and pursue research-based degrees and careers.

This article provided by Dr. Angela Gee, Professor of Biology, LA Trade-Tech College and former CAMP coordinator at UCLA.
The University of California
Louis Stokes Alliance for Minority Participation and
The National Science Foundation:
Moving Forward to Advance
STEM Education Through the Ph.D.
Senior Alliance 2011 - 2016