

Berkeley

Riverside

Santa
Barbara

Irvine

San
Diego

Los Angeles

Davis

Santa
Cruz

CALIFORNIA



*Alliance FOR Minority
Participation*

in Science, Engineering, and Mathematics

**CAMP STATEWIDE
UNDERGRADUATE RESEARCH
SYMPOSIUM
PROCEEDINGS**

April 23-25, 1999 • La Casa de Maria, Santa Barbara, CA

UNIVERSITY OF CALIFORNIA CAMP REGIONAL DIRECTORY

BERKELEY

ROBERT M. BERDAHL
CHANCELLOR

P. BUFORD PRICE, PH.D.
REGIONAL DIRECTOR
Dean, College of Letters &
Science
University of California
Berkeley, CA 94720
510-642-5872
Fax: 510-642-7578
buford_price@ls.berkeley.edu

COLETTE PATT, PH.D.
COORDINATOR, Director
Student Diversity Programs
College of Letters & Science
510-642-0794
Fax: 510-642-7578
colette_patt@ls.berkeley.edu

DAVIS

LARRY N. VANDERHOEF
CHANCELLOR

JAMES SHACKELFORD, PH.D.
REGIONAL DIRECTOR
Associate Dean
College of Engineering
University of California
Davis, CA 95616-5294
530-752-0556
Fax: 530-752-2123
jshackelford@ucdavis.edu

RYAN D. MITCHELL, PH.D.
COORDINATOR
College of Engineering
530-752-1650
Fax: 530-752-2123
rdmitchell@ucdavis.edu

IRVINE

RALPH J. CICERONE
CHANCELLOR

JUAN FRANCISCO LARA,
PH.D., REGIONAL DIRECTOR
Assistant Vice Chancellor
Enrollment Services
University of California
Irvine, CA 92697-2510
949-824-6362/5410
Fax: 949-824-1371
jflara@uci.edu

KIKA FRIEND
COORDINATOR
409 Steinhaus Hall
949-824-2363
Fax: 949-824-2634
kfriender@uci.edu

LOS ANGELES

ALBERT CARNESALE
CHANCELLOR

MIGUEL GARCIA-GARIBAY,
PH.D., REGIONAL DIRECTOR
Department of Chemistry &
Biochemistry
University of California
Los Angeles, CA 90095-1569
310-825-3159
Fax: 310-825-0767
mgg@chem.ucla.edu

SCOTT HEIMLICH
COORDINATOR
CARE Center
310-206-2182
Fax: 310-267-2219
heimlich@biology.ucla.edu

RIVERSIDE

RAYMOND L. ORBACH
CHANCELLOR

CARLTON BOVELL, PH.D.
REGIONAL DIRECTOR
Department of Biology
University of California
Riverside, CA 92521
909-787-5928
Fax: 909-787-4286
bovell@ucr1.ucr.edu

TERESA COFIELD
COORDINATOR
The Learning Center
909-787-3721
Fax: 909-787-4543
teresa.cofield@ucr.edu

SANTA BARBARA

HENRY T. YANG
CHANCELLOR

KENNETH C. MILLETT, PH.D.
REGIONAL DIRECTOR
Department of Mathematics
University of California
Santa Barbara, CA 93106
805-893-3894
Fax: 805-893-2385
millett@math.ucsb.edu

XOCHITL CASTAÑEDA
COORDINATOR
Special Programs Office
College of Letters & Science
805-893-8801
Fax: 805-893-7654
xcastaneda@descartes.ucsb.edu

SANTA CRUZ

M.R.C. GREENWOOD
CHANCELLOR

A. RUSSELL FLEGAL, PH.D.
REGIONAL DIRECTOR
Division of Natural Sciences
University of California
Santa Cruz, CA 95064
831-459-2093
Fax: 831-459-2935
flegal@earthsci.ucsc.edu

MARLENE ROBINSON
COORDINATOR
Division of Natural Sciences
831-459-2931
Fax: 831-459-4161
mrobinson@natsci.ucsc.edu

SAN DIEGO

ROBERT C. DYNES
CHANCELLOR

MELVIN H. GREEN, PH.D.
REGIONAL DIRECTOR
Department of Biology
University of California
La Jolla, CA 92093-0074
619-534-0485
Fax: 619-534-8895
mgreen@ucsd.edu

SARAH RICHARDS-GROSS
COORDINATOR
Academic Enrichment Programs
619-534-8839
Fax: 619-534-8895
srichard@ucsd.edu

STATEWIDE OFFICE, UCI

NICOLAOS ALEXOPOULOS
Dean, School of Engineering
Principal Investigator

FREDERIC Y. M. WAN
Vice Chancellor
Co-Principal Investigator

MANUEL N. GÓMEZ
Vice Chancellor
Executive Director

MARJORIE DEMARTINO
Associate Executive Director

NANCY MINEAR
Evaluator

LLYN SMITH
Administrative Analyst

NOEMÍ PEÑA
Administrative Assistant

STATEWIDE ADVISORY BOARD

FRANCISCO J. AYALA
Bren Professor, Ecology &
Evolutionary Biology, UC Irvine

RICHARD COLLIVER
Executive Vice President
Honda Automobile Sales
Torrance, California

DENNIS GALLIGANI
Associate Vice President
Student Academic Services
UC Office of the President

ELMA GONZALEZ
Professor of Biology, UCLA

GUS GUICHARD
Vice Chancellor, Human
Resource Division, Chancellor's
Office, California Community
Colleges

SUSAN HACKWOOD
Executive Director, California
Council on Science & Technol-
ogy; Professor, UC Riverside

THOMAS HUNTER
Vice President, California
Laboratory, Sandia National
Laboratories

ROBERT KLEIST
President, Printronix, Inc.

DARRELL LYNN
Community Relations, Toshiba
America Electronics Compon-
ents, Inc., Irvine, California

MARTHA MECARTNEY
Associate Dean, Graduate
Studies; Professor, Engineering,
UC Irvine

ALFRED PAIZ
Manager, Air Force Laboratory
Programs, NASA Jet Propulsion
Laboratory (JPL), Pasadena,
California

FRANK ROBLES
Compliance, Affirmative Action
& Diversity Program, Lawrence
Livermore National Laboratory,
Livermore, California

MICHAEL SAMPOGNA
Director, Graduate Student
Relations, IBM Corporation
San Jose, California

ABAD SANDOVAL
University Programs, Los
Alamos National Laboratory
Los Alamos, New Mexico

The California Alliance for Minority Participation in Science, Engineering and Mathematics is supported in part through a cooperative agreement between the University of California, Irvine, and the National Science Foundation. Through Congressional Action, the national AMP program has been renamed The Louis Stokes Alliances for Minority Participation. CAMP is among 27 national alliances and is proud to be one of the six "Grand AMPs."



QUARTERLY

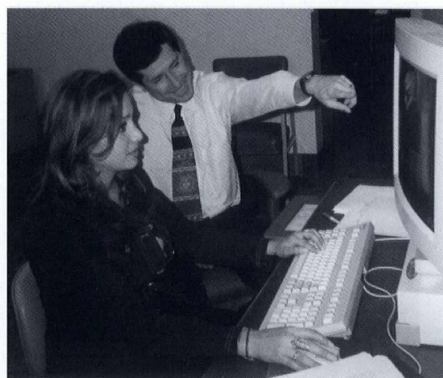
THE UNIVERSITY OF CALIFORNIA JOURNAL FOR THE CALIFORNIA ALLIANCE FOR MINORITY PARTICIPATION
IN SCIENCE, ENGINEERING AND MATHEMATICS WINTER 2001 • VOLUME 9 • NUMBER 2

CONTENTS

- 3** GUEST EDITORIAL
Culture and the Need for Definition in Ordinary Discourse
By John de Pillis
- 6** OPINION
CAMP: The Foundation of Our Success
By Aaron Soto
- 10** FROG DEFECTS TROUBLE RESEARCHERS
Multiple Probable Causes Spur Research
- 14** UNDERGRADUATES GAIN EDGE PRESENTING
Professional Conferences Enhance Skills and Confidence
- 16** UC DAVIS COVER STORY
Interview with Chancellor Larry Vanderhoef
By Marjorie DeMartino
- 22** CAMP/MESA TRANSFER DAY
UC Davis Community College Outreach
By Ryan D. Mitchell



page 10

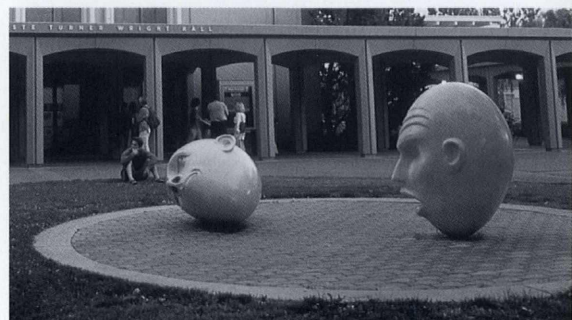


page 8

- 24** NEW INITIATIVES LOOK TO CAMP
UC LEADS and SAGE Scholars Select CAMP Participants
- 28** CEA-CREST: ANTICIPATION!
First Ph.D. on the Horizon as Program Enters Third Year
By Robert Nakamura
- 31** NIH CAREER FAIR
Directors Bring Student Opportunities to West Coast

COLUMNS & DEPARTMENTS

- 2 UC NEWS
2 FROM THE EDITOR
5 LETTERS
7 FACULTY PROFILE
8 STUDENTS IN
THE SPOTLIGHT
32 PARTING SHOTS
33 STATEWIDE
ADVISORY BOARD



page 16

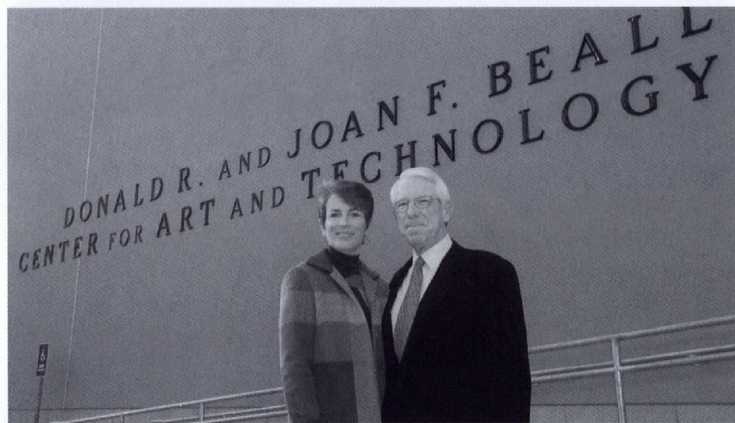
UC NEWS

University of California 2000 Nobel laureates

UC Professors **Alan Heeger**, **Herbert Kroemer** and **Daniel McFadden** were awarded Nobel prizes, bringing the number of UC Nobel laureates to 43. Heeger, UC Santa Barbara professor of physics and materials, shares the award in chemistry; Kroemer, professor of electrical and computer engineering, also at Santa Barbara, shares the prize for physics; and McFadden, Berkeley professor of economics and director of the Econometrics Laboratory, shares the prize in economics.

UC Davis program in Optical Science and Engineering

Responding to the growing national demand for engineers educated in optical science and engineering, **UC Davis College of Engineering, Department of Applied Science** offered a new baccalaureate degree program, Optical Science and Engineering, for the first time in fall quarter. Optical systems play a central role in nearly all aspects of modern life including health care and the life sciences, remote optical sensing, lighting, cameras, space, and national defense. The new major is one of 10 ABET-accredited engineering majors, the largest number in the UC system. Details are available at www.engr.ucdavis.edu/~das



COURTESY SCHOOL OF THE ARTS

Joan and Donald Beall, at the UCI Center that carries their name. In addition to the Rockwell gift of \$1.5 million donated as a tribute to the Bealls, the couple is personally donating \$1 million.

UCI Center for Art and Technology opens

UC Irvine's Beall Center for Art and Technology opened in the fall. The 3,300 square-foot gallery and research center is dedicated to furthering the relationship between digital technologies and the arts and promoting the development of new art forms, combining digital technologies, and engineering and computer science. A third objective is to build public and scholarly awareness and understanding of these innovative collaborations. The facility, built from a \$1.5 million gift from Rockwell Corp. as a tribute to former Rockwell CEO Donald Beall upon his retirement, will enable experts in different professions to collaborate on experimental multimedia art projects. Said to blur the line between art and technology, the center is the vision of Jill Beck, Dean, UCI Claire Trevor School of the Arts. Conexant has also contributed \$200,000 to the center, and \$50,000 towards a technology terrace to be designed by nationally recognized artist and architect, Maya Lin.

FROM THE EDITOR

Happy New Year, 2001.

This issue offers a look at programming and progress throughout the University of California as it relates to undergraduate



development. The upcoming CAMP Statewide Undergraduate Research Symposium hosted by UC Davis offers an opportunity to interview Davis Chancellor Larry Vanderhoef. He

came from a blue collar background and played pool to earn money in college. He was the first ever on both sides of his family to make it to the university. It's the story of American achievement that Vanderhoef advanced to the helm of the University of California, Davis.

Recently, in an interview, Madeline Albright said, "I came here as a refugee and ended up Secretary of State." Vanderhoef mirrors that spirit and drive when he speaks about his roots in the Midwest and his becoming Chancellor.

Our contributors include Professor John de Pillis, whose interests span the arts and culture, as well as flying his private plane. He considers the need for definition in our guest editorial. In his spare time, de Pillis illustrates and writes for several newsletters.

UCI alum Aaron Soto provides our opinion piece, the first from a UC graduate. Soto describes his professional development through mentored research and credits CAMP with supporting his enrollment at Irvine. He is one of many alumni out in the world, taking time to keep in touch with his alma mater.

We are pleased to give a snapshot of two new systemwide programs that prepare students for graduate school and for the professional workplace: UC LEADS and SAGE Scholars, with profiles of students who were recruited via CAMP. These, as well as the CAMP participants "in the spotlight," are our focus and our purpose.

Magjani DeMartino

Culture and the Need for Definition in Ordinary Discourse

Words As Legitimate Vessels Of Meaning

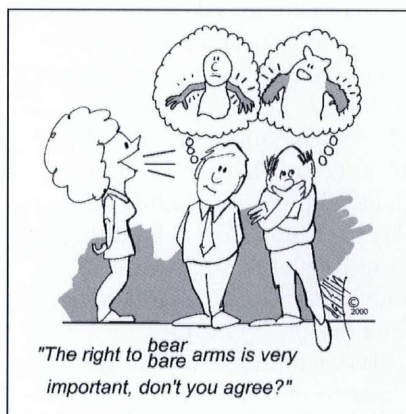
BY JOHN de PILLIS, PH.D.
CAMP Regional Director
University of California, Riverside

WORDS: EMPTY SYLLABLES OR VESSELS OF MEANING?

We are all participants in the never-ending, national workshop on "Culture and Multi-Culturalism." Listen to the media, your neighbors, or politicians. Sooner or later, you will hear discussions of minorities in society, the need for fair play, and the responsibilities of schools, parents, and students, etc.

This invokes memories of another workshop that took place recently. The participants were fifteen California educators and the topic was, "Promoting critical thinking in the classroom." Critical thinking, the educators agreed, was an important intellectual skill.

After many discussions, someone



suggested that we define "critical thinking," which was, after all, our central topic.

Imagine my surprise when the fifteen educators produced fifteen

essentially different definitions! The list included (a) success in completing assigned work, (b) ability to initiate extra-curricula activity, (c) success in group activity, (d) achieving a high level of enthusiasm, and (e) earning good grades.

What a waste. It was like a discussion of "culture" with some participants thinking of literature, others linking culture to nationalities, and the rest thinking of yogurt. We had not been talking to each other about the *one* idea of critical thinking — rather, we were talking *at* each other about *many* ideas."

DEFINING CULTURE

We, the participants in the national workshop, "Culture and Multi-Culturalism," are well-served if we define what we mean by "culture." As a starting point, allow me to offer the following:

Definition: Culture is a set of values and beliefs (held by a group) which promote skills and behaviors of that group. Briefly, culture = {values + beliefs ==> skills + behaviors}

Using this definition, we describe the American educational subculture: We value learning. We respect individual excellence. We believe that learning enhances success. These values and beliefs promote skills that include logical reasoning and problem solving. We encourage behavior that promotes

both individual achievement and group cooperation.

WHAT ABOUT OTHER CULTURES?

This definition says that the education subculture encourages education and objective learning. At the same time, not every subculture lauds these values; not all cultures promote the same kind of learning. For example, cultures can either promote or inhibit scientific development.

Consider Thomas Kuhn, in his popular treatise, "The Structure of Scientific Revolutions," (3rd edition), who writes,

"Every civilization of which we have records, has possessed a technology, an art, a religion, a political system, laws and so on. ... But only the civilizations that have descended from Hellenic Greece have possessed more than the most rudimentary science. The bulk of scientific knowledge is a product of Europe in the last four centuries. No other place and time has supported the very special communities from which scientific productivity comes."

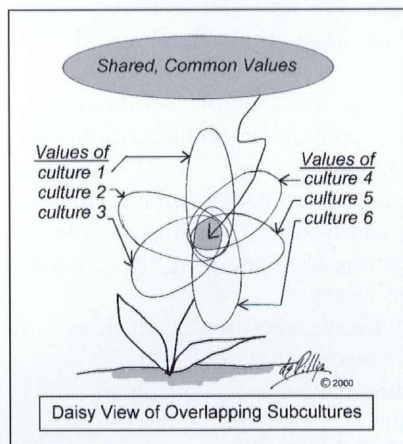
PERCEPTIONS AND CARICATURES AMONG CULTURES

We in the education culture are but one in the amalgam of American cultures. Although we are not the unique or dominant culture in

American society, we often lose sight of this fact. There are, after all, other subcultures, each with their own forces in play.

There is an odd and surrealistic view that some American groups concerning other sub-cultures which are different from ours. There is the inferiority complex view that says anyone else is better than we are. Then, there is the arrogant view which states that cultures different from ours are inferior.

Apart from these extremes, there is the more or less non-judgmental, romantic view. This is evidenced, for example, when we represent other cultures as different, yet amusing. We will teach our children about Hans, the Swiss boy, happily yodeling as we see him dressed in his colorful mountain costume. Or we show how Maria Luisa cooks lasagna in her quaint kitchen located in the Italian countryside.



THE DAISY VIEW OF SUBCULTURES: A REALISTIC VIEW

We now see how a clear definition of culture (values + beliefs -> skills + behaviors) helps us to realistically address the important question of opportunity for minorities or sub-cultures.

A clear definition of culture allows us to recognize that there are very real differences among groups. At the same time, we recognize the more important values and beliefs of sub-cultures that are the same as, or

consistent with, those of the educational culture. These are the very values we are trying to promote, namely, those that encourage excellence, honesty, etc.

A clear definition of culture educates and enlightens. It shows, in bold relief, that “different” does not mean “totally different,” a term which human nature usually impels us to read as “evil” or “frightening.”

THE SHOE ON THE OTHER FOOT: WHAT CAN MINORITY CULTURES DO?

All of the above endorses the quest for better definitions so that members of a dominant culture can better identify and relate to non-dominant cultures. This is particularly important to educators, whose very business is that of preserving and promoting certain cultural values and beliefs.

But what can or should be done in the other direction? What attitudes can be assumed by members of a subculture toward the dominant culture? What advice, if any, is appropriate?

One answer—admittedly, a partial one—comes from my own anecdotal experience as an “almost” first generation American (Italian-born father, first generation Russian mother). In my childhood, I was a member of a non-dominant culture among many subcultures in the city of New York, the classic “melting pot” amalgam of immigrant cultures.

But this was the real world. We never expected harmony among groups to be the norm. We learned that, in America, there may not be perfection, but there was something else—there was almost always a chance to get up at bat and take your swing. (Maybe two swings.)

From this New York melting pot background and experience, came the Three Good Rules:

1. Get as much education as possible. No one can ever take it away from you.
2. Don't expect favors.
3. Life isn't fair.

APPLYING THE THREE GOOD RULES:

My experience with other cultures and subcultures have brought me to a paradoxical point of view with respect to the Three Rules, namely, while I try intently to re-enforce Rule 1, I also attempt to soften the sad reality of Rule 2 and Rule 3.

I exercised this position toward the Three Good Rules as I encountered students in American classrooms, from the elementary school through university level. It was evident in Italy during my two years as Director of the University of California Education Abroad student exchange program. Once in Italy, California students found themselves instant members of a minority subculture. One of my roles as Director was to help them adjust. The Three Good Rules proved useful.

FINALLY:

Yes, we are an amalgam of different cultures with different values and beliefs. But in clearly listing the important and desirable qualities that are shared and consistent with educational growth, we are able to nurture these qualities. So much the better for our education subculture (since we succeed at educating), for the minority students (who learn and become empowered) and for society as a whole.

Clear definitions do matter. If, for example, critical thinking is to be meaningful, then we must be clear as to what it is. (The California workshop mentioned at the beginning of this article included in the definition of “critical thinking,” the ability to fashion clear definitions.)

Clear definitions create the shadows into which we cast ambiguity and misunderstanding.

Clear definitions convert words into vessels of meaning. And meaning provides the sunlight in which we ply our noble trade—education for all who want it.

Letters

GRADUATE STUDENT NEWS

Things here at Cornell are going well and I am truly enjoying my experience. This is the first time that I am relatively far away from my parents, and this semester is a total learning experience for me in many aspects. There are so many interesting classes and activities to take up, that I wish the day had more hours! I finished my master's in applied mathematics at Claremont Graduate University. My plan now at Cornell is to continue my research on the model of two-strain influenza and take any required courses to facilitate my research. I am enrolled in the biometrics department, and my field of interest is nonlinear dynamics and epidemics.

*Miriam Nuno
CAMP Alumna, UC Riverside*

READER RESPONSES

I appreciate receiving your journal, the *CAMP Quarterly*. You do a smashing job!

*Fred Begay
Los Alamos National Laboratory
Co-PI., Arizona State University LSAMP*

The *CAMP Quarterly* is getting better and better. I enjoy reading it.

*Julia C. Wan, Ed.D.
College of Natural Science & Mathematics
California State University, Fullerton*

SUMMER ACADEMIES PREPARE STUDENTS FOR RIGORS OF UC

The CAMP summer research program has given me an opportunity I had never imagined possible. I felt in touch with UCSD for once. [The staff] especially were very helpful in giving research advice and eager to help me, which is something unique in such a large school. . . . I would like to inspire more students to join CAMP because it is truly a unique and wonderful gift.

*Marisa A. Fontanoz
Biochemistry and Cell Biology
UC San Diego
2000 Summer Research Program/McNair*

I wanted to e-mail someone, because, hey, I'm really happy as we 'speak.' I got my score back yesterday on my physics midterm, and found out the class average was a 56.2 with a standard deviation of 23.7. I feel really special because I got a 90. I'm really glad I was involved with the CAMP program. I went through a big transformation over the summer. If it wasn't for CAMP, I would have gone through it during Fall [Quarter] and that would have been reflected in my grades.

*Heather Delaney
Freshman, Physics
UC Irvine*

The summer institute was an unforgettable time. I received many "gifts," learning each day from wonderful teachers, TAs and counselors not only about math and chemistry but also about life. I gained a course credit and knowledge of the campus, but more importantly, I was blessed with strong friendships, people who truly care about my success. I am certain that my fellow CAMP-ers feel the same. I have never met a group of people who more eagerly awaited the start of the academic year. UCR has become our home and CAMP our family.

*Colleen Danielle Bound
Freshman, Biological Sciences
UC Riverside*

CAMP: The Foundation of Our Success

BY AARON M. SOTO

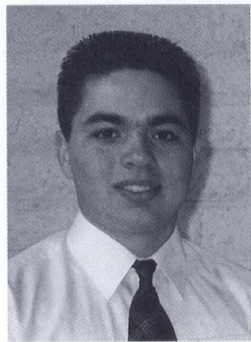
B.S., Information and Computer Science, UCI Class of 2000
Founder and Managing Director, DezTech Internet Services

Every time I stop and think about my great fortunes in life, specifically in my academic career, I cannot appreciate enough what the California Alliance for Minority Participation means to me. I can only wonder where I would be today had I not been found by CAMP while still a high school senior, but I am sure I would not have had the experiences or success achieved through their support.

My higher education plans were to go to a less prestigious university due to financial reasons. Those plans changed the day I received a letter from the CAMP organization at the University of California, Irvine (UCI) signed by Juan Francisco Lara offering me a \$5,000 scholarship and an invitation to the CAMP Summer Science Academy (CSSA). Without hesitation, I took the offer, with more financial support and more *academic* support than I could have ever hoped for.

CAMP's tremendous support helped me through a seemingly impossible freshman year in Information and Computer Science. Between being broken into university-level classes with the CSSA and CAMP's mentoring program, I was able to pull through the critical introductory programming and

mind-puzzling mathematics classes while making the Dean's Honor List twice. By the end of my freshman year, CAMP was *still* just beginning to show me the opportunities available.



After only one year of computer science to my credit, CAMP assisted in placing and funding me in the research laboratories of Drs. Lubomir Bic and Michael Dillencourt. The research I would

conduct that summer was on the MESSENGERS project in the complex area of distributed computing paradigms using autonomous agents existing in a computer network. It was the type of door-opening opportunity that I would have never experienced without someone like Kika Friend and the CAMP office there to help.

My research experience extended the following summer when I conducted research in the area of formal software requirements analysis under the supervision of the current department chair, Dr. Debra Richardson. These experiences gave me a distinct advantage in working with the top professors in the field and presenting at a number of national scientific conferences where I made invaluable contacts. I even shook hands with President Clinton

and met other key people of organizations such as the NSF and the NIH. Conferences I attended included, SACNAS in Houston and Washington D.C., AAAS in Philadelphia and Anaheim, an AMP conference in Las Cruces, a CAMP conference in Santa Barbara, and finally the ICSE conference in Los Angeles. I was awarded a few honors along the way including an Honorable Mention at the AAAS conference in Anaheim.

During the beginning of my junior year in 1998, after completing my second and final research project, I founded a professional Internet consulting company named DezTech Internet Services. More than two years later, I am very happy to report that business is good and I attribute some of this success to the well-rounded experiences and opportunities provided to me by the CAMP program.

In short, I strongly believe that the largest difference that CAMP makes during the academic careers of its students is that it encourages and supports us in being more than just inert students, but rather active members of a university that embarks on many ventures outside the required class work. More important than my success is the success that many others have achieved as the direct result of CAMP's extraordinary sustained support.

FACULTY PROFILE

John de Pillis

UC RIVERSIDE CAMP REGIONAL DIRECTOR

The new CAMP regional director at UCR first trained as a commercial artist, attended engineering school at Stevens Tech, then completed a Ph.D. in mathematics at UC Berkeley. He assumes CAMP leadership upon the retirement of Professor Emeritus Carlton Bovell, who taught at Riverside for more than 40 years. De Pillis attended his first regional directors and coordinators meeting in fall 2000, at UC Santa Cruz.

Professor de Pillis has participated in programs teaching students and teachers in middle and high

schools. He advises local mathematics and science teachers on curriculum standards.

"The learning process is a complex one," de Pillis admits, "and no single approach is effective for all students." However, he adds, "certain elements are positive influences for all students—minority or not." For de Pillis, these include a self-confidence "with cause," i.e., confidence derived from parental support (education is valued by the family), teacher professionalism (well-placed, individual encourage-

ment, knowledge of the material), external recognition of the student's merit and ability, such as awards, corporate programs acknowledging achievements.

He brings a broad perspective to CAMP, not only as a mathematician trained at Berkeley, but as a renaissance man, being a private pilot and an artist as well. De Pillis spent two years in Padua, Italy as Director of UC's Education Abroad Program. While there, he completed a series of pen and ink sketches (see page 32, Parting Shots, "Sketches from Italy").

CURRICULUM VITAE JOHN DE PILLIS Professor, Department of Mathematics/Computer Science University of California, Riverside

EDUCATION

UC Berkeley, Ph.D., Mathematics
Stevens Institute of Technology, Hoboken, NJ, B.S. M.E.

MATHEMATICAL INTERESTS

Algorithm development/acceleration for single/parallel processors and numerical linear algebra.

ACADEMIC/ADMINISTRATIVE HISTORY

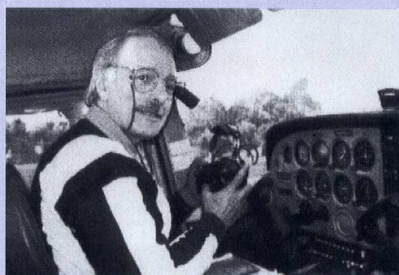
Professor of Computer Science/Mathematics at UCR (seven years)
Brookhaven National Lab Brookhaven
Invited Research Mathematician: Univ. of Karlsruhe W. Germany
Matematico, Firenze, Italia Visiting Professor of Research
San Francisco State, Assistant Professor of Mathematics

AWARDS

Tau Beta Pi Chapter President
Pi Delta Epsilon Chapter President
National Science Foundation Fellow
Italian Research Council (CNR) Florence, Italy, Fellowship Recipient
German Research Council (DFG) Karlsruhe, W. Germany, Fellowship Recipient
U.S. Air Force Research Grant AFOSR 84-0380

CONSULTING

IBM Research Centre, Bergen, Norway (first research scientist at the Centre; algorithm development for parallel processors)
General Dynamics, Pomona, CA, Chief Software Engineer (simulation of computer circuits)



Centro Studi, University of California study center, Italy, director (design/develop stand-alone database)
Project developer, Riverside Unified School District
Advisor, Alvord Unified School District
Consultant, EarthLink on statistical profiling of users and resources

EXTRACURRICULAR

Art Editor, Newsletter, Society of Industrial and Appl. Math. (SIAM)
Art Editor, Mathematics Calendar, Rome Press, Raleigh, NC

Columnist, Press Enterprise Newspaper
Pilot, VFR rated; IFR rated. Single engine aircraft.
AngelFlight member/volunteer pilot, illustrator for newsletter.

SELECTED RESEARCH PUBLICATIONS

J. de Pillis, "Noncommutative Markov processes," Trans. Amer. Math. Soc. Vol. 125, pp.264-279
J. de Pillis, "Linear transformations which preserve hermitian and positive semi-definite operators," Pac. J. Math. Vol. 23, pp.129-137.
J. de Pillis and Gene Golub, "Toward an Effective Two-Parameter SOR Method," Iterative Methods for Large linear Systems, (chapter 7) Academic Press, New York.
J. de Pillis, "A Parallizable SOR-like Method: Systems with Plus-Shaped Spectra," Lin. Algebra. and Appl. Vol. 154-156, pp.551-582
J. de Pillis, "A Parallel Iteration Method and the Convection-Diffusion Equation," SIAM Jl. Matrix Anal. Vol. 13, pp.248-273.



STUDENTS *in*

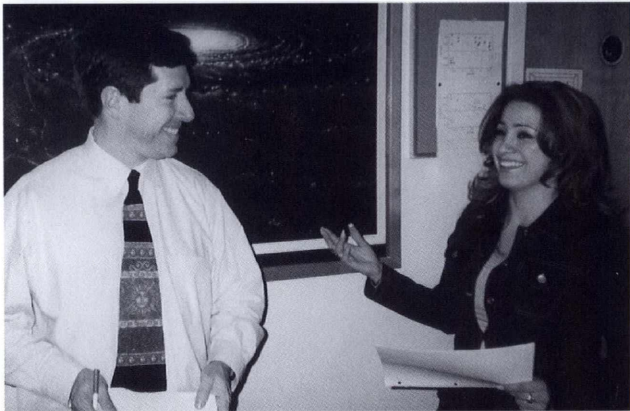
Patricia Bakkers UCLA

Level: *Senior*

Major: *Astrophysics*

Mentor: *Matthew Malkan, Ph.D.,
Department of Astronomy*

Research Project: *Survey of
galaxies at high red shift in the
ultra violet band*



I have been a student at UCLA one year, and it has proven to be challenging yet incredibly rewarding. Having transferred from Antelope Valley College in 1999, I am now a fourth year student on the verge of graduating with a B.S. in astrophysics. My dream is to explore other galaxies, and discover distant solar systems like our own. In recent years, scientists have made many groundbreaking discoveries that make this field all the more exciting to me. What draws me to it most is

the fact that we can actually observe the laws of physics in action throughout the universe. Then, by using astrophysical means, we can prove that the most astounding theories do in fact work.

I am looking forward to one day being a scientist on the forefront of astrophysical research, and the experience that I have gained from participation in a UC San Diego summer research program will

greatly contribute. Being in a laboratory all summer, and then presenting my results at a round table discussion with other students in my major, has been a wonderful experience. We used IPS (interplanetary scintillation) data to try and

depict an accurate three-dimensional representation of the solar wind from the solar surface to the upper atmosphere of the Earth.

My project required that I write a Fortran77 program that read data directly from four ground-based telescopes in Nagoya, Japan, and input the data into a three-dimensional tomography program. Once the data was input, certain parameters needed to be modified, such as temporal and spatial filters. The output of the program was then

matched to *in situ* data from the ACE spacecraft. The *in situ* data is data gathered from the ACE as the solar wind is passing by; they are direct measurements of the density and velocities of the ejected plasma. I was successful in matching the two data sets, which gave me a certain sense of accomplishment that has made me want to pursue research even further. I enjoyed the fact that I could take what I had learned in the classroom and apply it to something practical. I mean, when else is being an astrophysics student going to be practical! This [fall] quarter I have become involved in a project with Dr. Matthew Malkan in the astronomy department here at UCLA. We are conducting a survey of galaxies at high red shift in the Ultra-Violet band to try and determine an upper limit for the ionizing flux leaking from these galaxies.

Throughout my life, there have been many circumstances that could have prevented me from continuing my education. Having a child at a very young age, and raising him independently has been the most challenging, but Michael is my ultimate source of inspiration. It has definitely not been easy being an independent full-time college student and mother, but perseverance is perhaps my best quality. The idea of going to graduate school has become more appealing. I have had wonderful professors whom I admire and respect for their dedication to their work. They are certainly the ones who have helped to inspire me.

the Spotlight

Christopher McCoy UC RIVERSIDE

Level: *Senior*

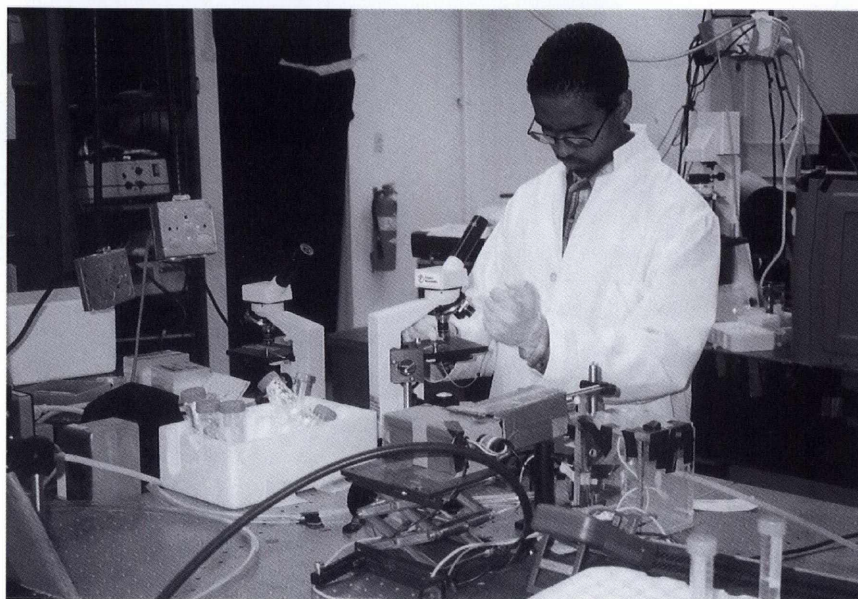
Major: *Biochemistry*

Mentor: *Sheri J. Lillard, Ph.D.,
Department of Chemistry*

Research Project: *Quantitative
analysis of nucleic acid damage
by capillary electrophoresis*

I have been an active CAMP-er since Fall 1997. During my junior year, I discovered that answers could not always be found in a classroom, library, or even in how well I performed on tests: these answers were to be found within myself. I decided to explore and test my own character. Because of family circumstances, I was disqualified for most financial aid, so, enrolled full time, I held not one, not two, but three jobs: manager at a local ice cream shop, researcher in a bioanalytical laboratory for the Chemistry Department, and physics study group leader for the UCR Learning Center.

I was selected to receive a CAMP stipend to fund my research, driven to pursue original research because my curiosity was not satisfied solely in the classroom. Research experience has expanded my horizons; and contributed to my personal growth. I have gained more independence and responsibility, learning from mistakes. I think more intuitively

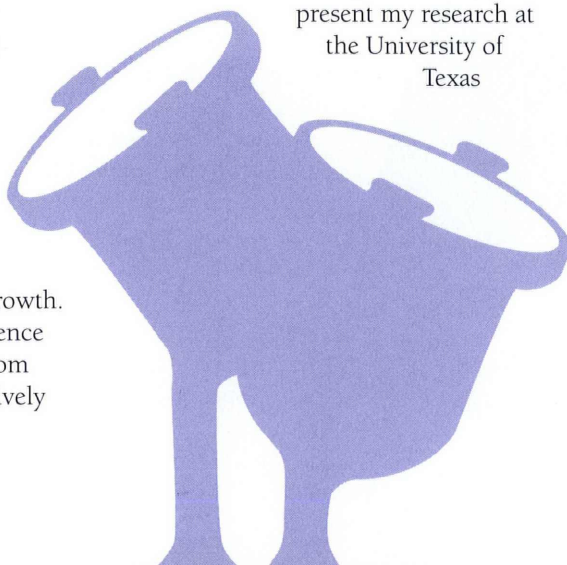


and analytically now. I'm not limited by what's on a course syllabus. Being able to dissect the chemistry of individual cells to predict and analyze certain effects that genotoxins and carcinogens have on the eukaryotic genome has given me the experience of applying my knowledge in science to real world situations.

In Winter 2000, I was selected to present my research at the University of Texas

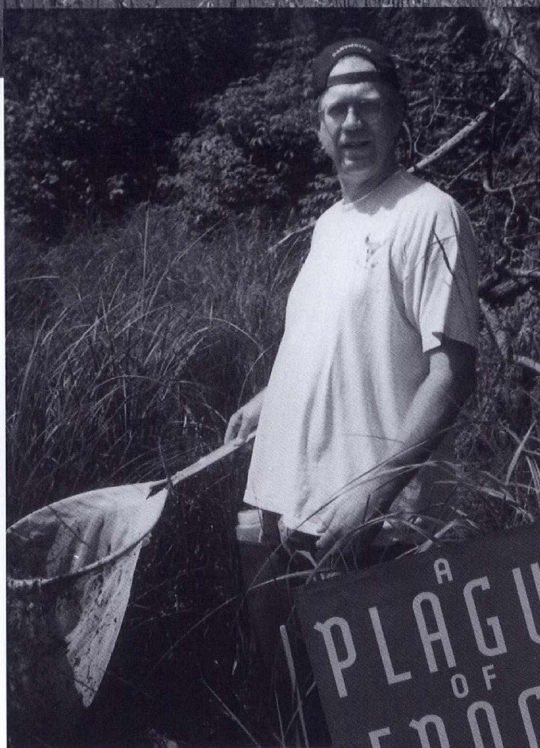
Medical Branch. I had the exciting opportunity of talking to doctors and taking personal tours of facilities such as the human anatomy lab. This supported my interest in medicine and what qualities make a good doctor.

In Spring 2000, I attended my first CAMP statewide undergraduate research symposium. During the awards ceremony I can remember simply appreciating the fact that I was given this wonderful opportunity to share what I have learned. This was my first statewide symposium, so I had no real gauge on how well I had performed. But when it was time for the awards to be announced, I can vividly recall that instant when the judges said, "First place in biological sciences, Christopher E. McCoy." I had brought home the gold for the University of California, Riverside.



The Continuing Mystery of the Deformed Frogs

UC Irvine scientist suspects exposure to retinoids

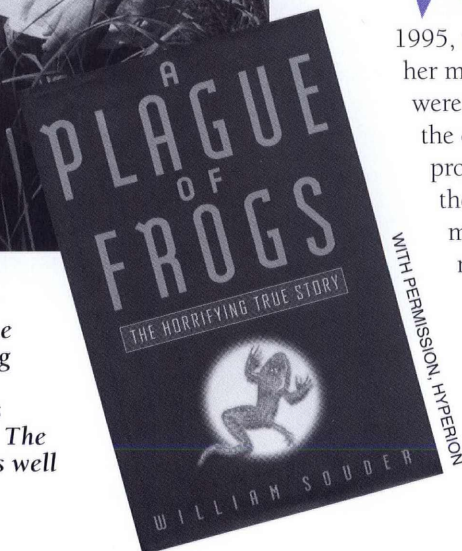


Dr. David M. Gardiner, UCI developmental biologist, in the field. The suspect culprit in the frog deformities is retinoids, hormone-like substances derived from Vitamin A. The work is field-intensive as well as laboratory intensive.

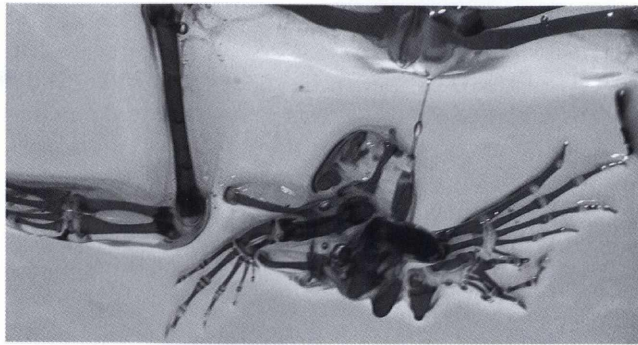
“He ketches a frog one day, and took him home...and learn that frog to jump.”

Mark Twain’s lines from “The Celebrated Jumping Frog of Calaveras County” take on new shades of meaning against recent findings. School children were the catalyst.

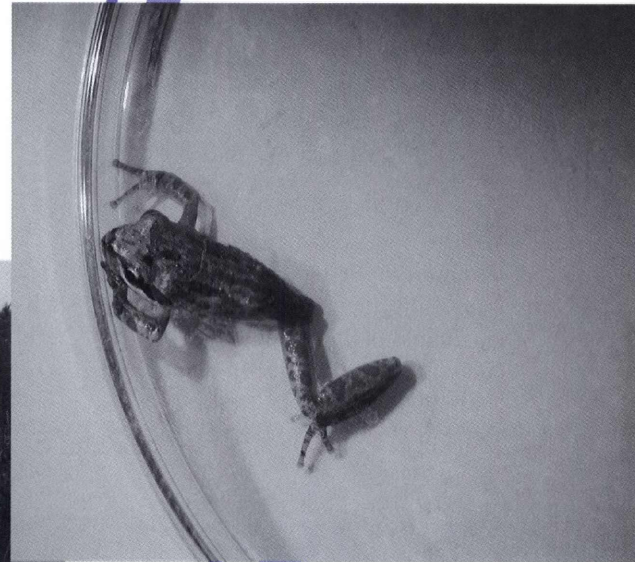
When students on a field trip caught frogs with missing hind legs, they had no idea that their discovery would marshal national attention. It was 1995, near Henderson, Minnesota, when Cindy Reinitz led her middle school group on a nature studies outing. They were visiting part of a farmstead that had been donated to the county for an environmental learning center. The project included a pond, excavated from about ten acres of the farm’s wetland, where the children found frogs with missing or withered limbs. They caught a number of newly metamorphosed Northern leopard frogs, scrambling from the water to find food. The frogs were common. Missing legs, the children decided, were not. They took photographs with the school’s digital camera “for proof” and brought back two specimens as well. Reinitz reported the findings to the Minnesota Pollution Control Agency. The news spread like wildfire, igniting a dialogue on the



This mink frog has a satellite cluster of extra limbs attached by a thin thread of skin. Such frogs have a high mortality rate, dying soon after metamorphosis. Below, middle school teacher Cindy Reinitz, left, gathers frog specimens with Dr. Susan Bryant, at “the pond” near Henderson, Minnesota.

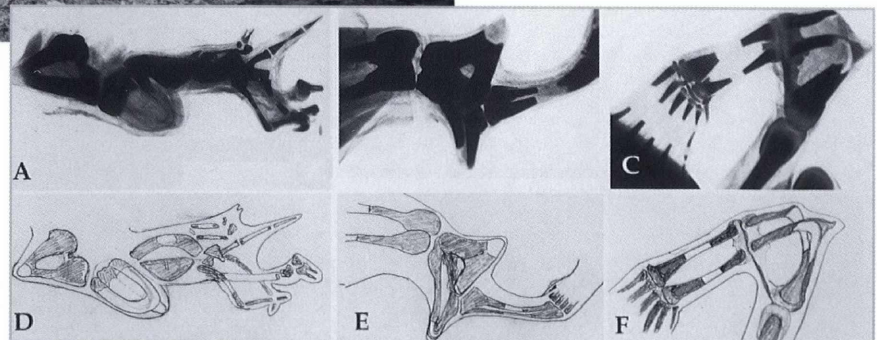


“Lefty,” exhibits most common deformity: a missing limb. The animals are affected during embryonic development.



causes and implications that soon engaged the U.S. Department of the Interior and the EPA.

Among biologists, discussion had primarily concerned the decline in amphibian populations. The new interest, it turned out, showed that frog deformities were not at all a new phenomenon, and had existed before the Industrial Revolution. But primarily extra legs were recorded. Reports on frogs with missing limbs, skin webbings, and incomplete lower jaws were something else, however. Instances of these abnormalities



Above slides illustrate “bony triangles”—David Gardiner’s research on the skeletal structure of frogs. His interest in retinoid exposure is directed to a specific window in limb development. In limbs with “bony triangles,” the long bones of the leg are bent backwards to form a triangle (best seen in figure F). In a normal leg, these bones are straight. Frogs are well worth studying; they have been around since before the dinosaurs.

spread from Washington and California to Texas, throughout the Eastern seaboard, and north to Quebec. The list of probable causes reads like a multiple choice exam: agricultural pesticides, nutritional deficiencies, radiation, disease, high tadpole densities, UV exposure, viruses, metals, parasites, the chemical composition of water, other, or all of the above?

The debate is still hotly contested, particularly between two opposing camps: parasite or pesticide? Of course, it's far more complex than that, entailing multiple factors including a vast set of environmental and natural relationships.

For Washington Post reporter William Souder, the assignment became a cause that developed into a moral obligation. The story had taken hold of him; soon he was attending scientific meetings and learning the science in order to write about it. Souder documented the

problem in his book, "A Plague of Frogs: the horrifying true story," (Hyperion Press, New York, copyright 2000). Souder's early investigation was also a catalyst for scientists to meet and compare notes on relevant research. Foremost among these is Dr. David Gardiner, a University of California, Irvine developmental and cell biologist who, together with his wife and colleague, Susan Bryant, has invested years in amphibian limb regeneration research. Their papers have appeared in *Scientific American*, *Science*, *American Zoologist*, *Trends in Genetics*, *Developmental Biology*, and other influential journals.

Gardiner's attention is focused on bioactive retinoids in water, which cause developmental deformities in vertebrate species, including humans. He and others believe that the frog deformities signal other serious environmental problems. He says, "There are 86,000 chemicals out there—

chemicals that we put in the environment. Gardiner's frequent conversations with Souder directly involved him in the investigation. For nearly three years, Souder interviewed scientists, teachers, government officials, and landowners to understand the vast array of issues and implications. During that time, Gardiner and Bryant collaborated with colleague Bruce Blumberg (now also at UCI) at the Salk Institute in La Jolla, with its renowned hormone receptor lab. Gardiner also collaborates with David M. Hoppe of the University of Minnesota. They co-authored "Environmentally Induced Limb Malformations in Mink Frogs (*Rana septentrionalis*)" *Journal of Experimental Zoology*, 284 (1999):207-16.

Gardiner also took the lead in organizing a workshop on "the frog problem" sponsored by NSF. And, in December 2000, Gardiner and Blumberg co-organized a conference addressing the wider considerations

DAVID M. GARDINER

RESEARCH BIOLOGIST

Department of Developmental and Cell Biology and Developmental Biology Center
University of California, Irvine

EDUCATION

Post-doctoral training, UC Davis, 1980-82
Ph.D., Scripps Institution of Oceanography,
UC San Diego, 1976
AB, Honors, Occidental College, 1971

RESEARCH INTERESTS

Molecular basis of pattern formation and growth control during limb development and regeneration; environmentally-induced congenital malformations in amphibians; isolation and characterization of DNA and RNA; cDNA library construction and library screening; microarray analysis of gene expression; analysis of spatial and temporal patterns of gene expression; introduction and expression of transgenes in somatic cells; construction of viral expression vectors and virus-mediated gene transfer; analysis of biological microstructure; cell culture; and microsurgery

CURRENT/RECENT GRANTS

1995-2000, NIH Grant: "Role of HoxA genes in limb regeneration." Co-PI, S. Bryant
1999-2002, EPA Grant: "Frog Deformities: Role of Endocrine Disruptors during Development." Co-PI, B. Blumberg
2000-2005, NIH Grant: "Role and function of signaling molecules in limb regeneration." Co-PI, S. Bryant

SELECTED PUBLICATIONS

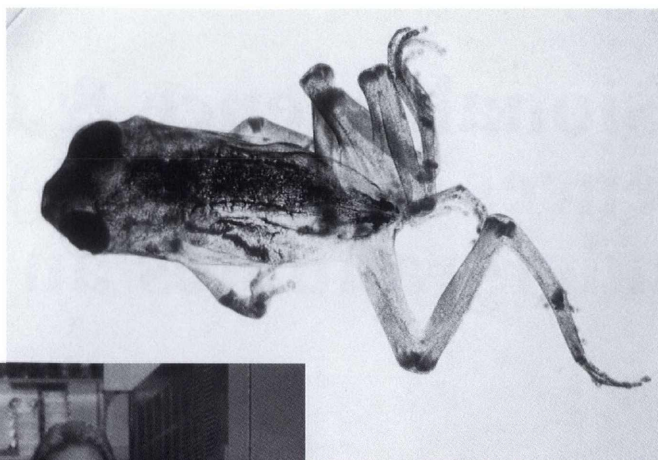
Mullen, L.M., Bryant, S.V., Torok, M.A., Blumberg, B. and Gardiner, D.M. (1996). Nerve Dependency of regeneration: The role of *Distal-less* and FGF signaling in amphibian limb regeneration. *Development* **122**, 3487-3497.
Ohsugi, K., Gardiner, D.M. and Bryant, S.V. (1997). Cell cycle length affects gene expression and pattern formation in limbs. *Dev. Biol.* **189**, 13-21.
Gardiner, D.M. and Hoppe, D.M. (1999). Environmentally-induced limb malformations in mink frogs (*Rana septentrionalis*). *J. Exp. Zool.* **284**, 207-216.
Roy, S., Gardiner, D.M. and Bryant, S.V. (2000). Vaccinia as a tool for functional analysis in regenerating limbs: ectopic expression of *Shh*. *Dev. Biol.* **218**, 199-205.

RECENT PROFESSIONAL ACTIVITIES

1998, Consultant to Secretary Babbitt (US Department of Interior), Secretary Shalala (US Department of Health and Human Services) and Administrator Browner (USEPA) on the environmental and human health risk implications of deformed frogs
1998, Consultant on Deformed Frogs, National Environmental Trust, Washington, DC

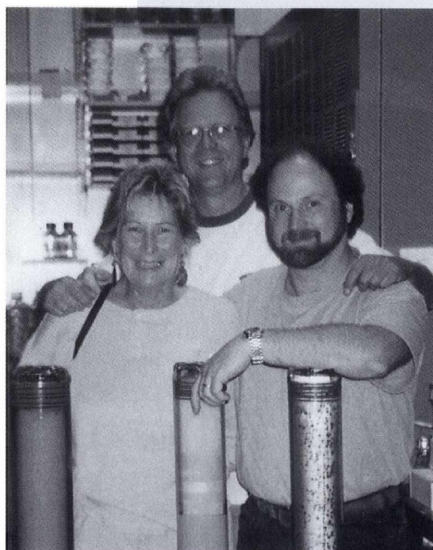
1998, Invited Speaker, Midwest Declining Amphibians Conference, Milwaukee, WI
1998, Speaker, 6th International Limb Meeting, Sun Valley, ID
1998, Participant, NSF Workshop of Amphibian Diseases, San Diego, CA
1998, Invited Speaker, Symposium on Deformed Frogs, Society of Environmental Journalists, Chattanooga, TN
1999, Keynote Speaker, Annual Meeting of American Medical Writers Association, Asilomar, CA
1999, Invited Speaker, "Environmental Hormones: Past, Present and Future." New Orleans,
NIEHS site visit, "Reproductive Toxicology of Endocrine Disruptors." Pullman, WA
2000, Expert Panelist - USEPA/NIEHS workshop on FETAX, Research Triangle Park, NC
2000, Keynote speaker 12th annual symposium on "The Future of Science" - UCI
2000, Co-organizer and speaker, UC Irvine Symposium on Chemicals in the Environment and Human Health
2000, Member Orange County Science and Engineering Fair Board of Directors

Pacific tree frog showing “bony triangle” in right hind leg; result of bending back of limb structure. Aquatic frogs are most affected. Not that he needs reminding of the seriousness of his work, but to keep centered, Gardiner posts notes to himself such as, “Remember the urgency.”



PHOTOS COURTESY OF DAVID M. GARDINER

In the “leg lab” at UC Irvine, from left, Susan Bryant, Dean, UCI School of Biological Sciences, Gardiner, and Bruce Blumberg, Assistant Professor, UCI. Gardiner has several undergraduates in his lab. “Our job at the university,” he says, “is to create the next generation of scientists.”



Far right, “Stumpy,” a tree frog with an abnormal right leg, collected in Southern California. Compare to the animal on the cover of Souder’s book.



of biochemical pathways, Environmental Influences on Human Development. Presenters from across the nation and the world addressed issues involving estrogen signaling, environmental contaminants as embryonic development disruptors, heavy metal exposures, and others. For the scientific community, the intriguing work continues.

In July 2001, Gardiner and Bryant will again be doing field work at the place where it all started—at the farm pond in Henderson, Minnesota. He’ll touch base with Cindy Reinitz and share his latest efforts in K-12 educational outreach, another area he feels strongly about.

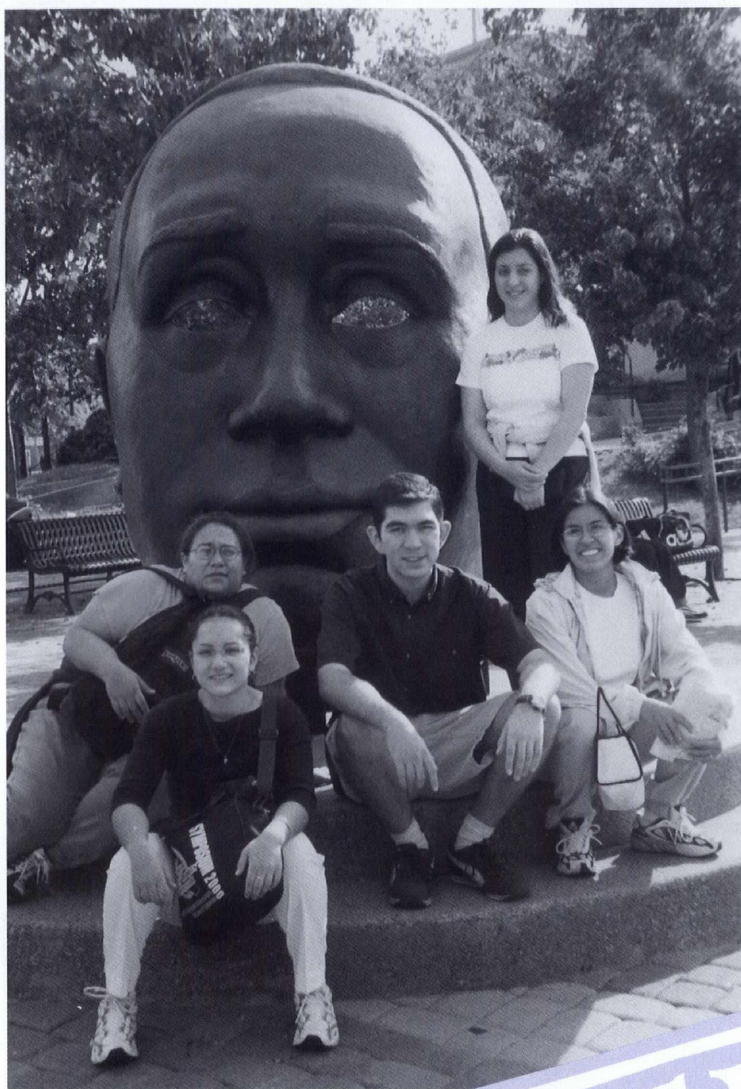
Recently, scientists with the U.S. Geological Survey and U.S. Department of Agriculture

announced that agricultural pesticides are disrupting the nervous systems of frogs in Yosemite National Park.

For the whole story, read *A Plague of Frogs* (see the bibliography, including herpetologist David Hoppe’s work) and these news items: “A Possible Leap Forward on Amphibian Abnormalities,” *The Washington Post*, March 16, 1998, A3; “Bad Days on the Lily Pad,” *Newsweek*, July 13, 1998, p. 67; “Answers Near in Deformed Frog Mystery,” *Los Angeles Times*, April 7, 1998, A24, A; “A Wind-Born Threat to Sierra Frogs,” *Los Angeles Times*, Dec. 8, 2000, A3.

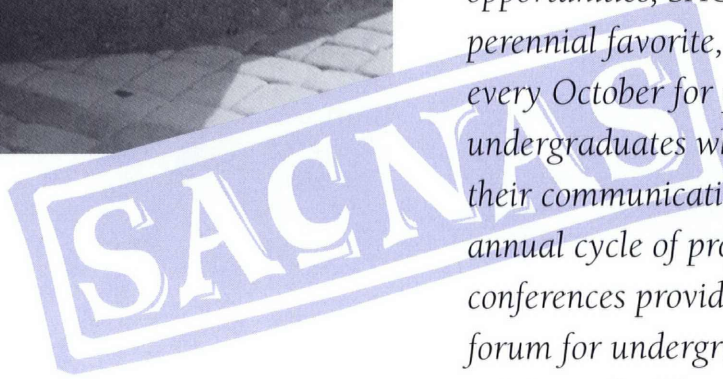
Editor’s note: The “frog problem” is rich and complex. Our purpose here is to cultivate an awareness of the research and direct the reader to the literature for full information. Many universities, agencies, and individuals are engaged in this endeavor, with expansive work regarding the implications for environmental and human health.

Professional science & engineering conferences like SACNAS give undergraduates an edge



UC San Diego presenters pause at this sculpture during SACNAS conference. Opportunities such as this, mixing art and the broader scientific community, expand student horizons.

CAMP has as its cornerstone faculty mentored research, a valuable tool for degree program enrichment and a platform for graduate school. Students at the University learn early about the relevance of professional associations and to speak the language of acronyms. From AAAS and ACS to AISES, MAES, NSBE and SACNAS, undergraduates bring a dynamic and youthful dimension to the traditional scientific conference or symposium. With its student-centered workshops and professional development opportunities, SACNAS is a perennial favorite, a red-letter date every October for presenting undergraduates who want to hone their communication skills. The annual cycle of professional conferences provides a challenging forum for undergraduates who are gaining valuable experience presenting their research in a faculty member's lab.



SACNAS 2000 poster presenters, as reported by the respective CAMP offices systemwide:

UC DAVIS PRESENTER

Tino Sanchez, chemistry

UC SAN DIEGO PRESENTERS

Rosemary Garcia, biology
Carmen Carrillo, biology
Aaron Crouch, physics
Alma King, mechanical engineering
Jose Ramos, mechanical engineering
Rebeca Sandoval, biology
Brian Youngblood, physics
Blanca Zauscher, physics
Luis Rodriguez, mechanical engineering

Tasnimah Allal supported her peers as a conference attendee.

Undergraduate research support and travel to present the research involves collaboration and cost-sharing between CAMP and affiliated programs, such as McNair and MBRS.

UC SANTA CRUZ PRESENTERS

Maria Depaz, chemistry
Joshua Goodley, biology & molecular biology
Beatriz Herrera, biology/
environmental studies
Renee Manrique-Stromberg,
molecular, cellular &
developmental biology
Malika Moutawakkil, chemistry
Deborah Orozco, biology
Karina Rodriguez, chemistry
Nicole Smolensky, biology
Ana Valdes, psychobiology

UC RIVERSIDE PRESENTERS

Alison Castro, mathematics
Kimberly M. Cross, chemical engineering
Marisa Garcia, mechanical engineering
Carlos Hangarter, chemical engineering
Azucena Rodriguez, mechanical engineering
Daniel Smith*, microbiology
Maria Torres, mathematics
Sandra Villa, chemistry
**June 2000 graduate and current AGEP student at UCR*

UC IRVINE PRESENTERS

Gina Betita, biological sciences
Carlos Comparan, aerospace/
mechanical engineering
Elsa Del Rio, biological sciences
Nasbi Guzman, aeronautical engineering
Micaela Martinez, biological sciences
Daniel Priego, biological sciences
Richard Silva, biological sciences
Mariel Solares, biological sciences
John Williams, biological sciences
Jesse Vargas, biological sciences
In addition, Marianela Arias presented at the National Minority Research Symposium held in Washington, D.C.

UC LOS ANGELES PRESENTERS

Laty Cahoon, microbiology &
molecular genetics
Sarah Dolan, biochemistry
Sonia Escobar, biology
Maria Mouchess, molecular, cell, and
developmental biology
Karla Munoz, molecular, cell, and
developmental biology
Luis Ontiveros, biology
Christopher Ortiz, physiological
science
Yesenia Rios, physiological science
Jaclyn Roberts, physiological science
Desiree Salazar, neuroscience
Annemarie Selaya, ecology, behavior
and evolution
Joe Sepulveda, microbiology &
molecular genetics
Lydia Trevino, mechanical
engineering

The UCLA CARE/CAMP students were granted SACNAS travel awards.

UC SAN DIEGO AWARDEES

Brian Youngblood, physics; completed summer 2000 program at MIT. McNair participant, 1998-1999. Research title: *Computational Model of Floation Coil Motion in the Levitated Dipole Experiment*. Co-authors: Jay Kesner, Plasma Science and Fusion Center, MIT, and Darren Garnier, Columbia University.

Alma King, engineering, with Dr. David Benson. McNair participant, 1999-2000. Research title: *Numerical Approach to the Cold Isostatic Pressing of Titanium Powder*. Co-author: David Benson, Department of Mechanical and Aerospace Engineering, UC San Diego.



UC San Diego students traveling to SACNAS, from left, Aaron Crouch, Alma King, Blanca Zauscher, Teresa Sandoval, and Brian Youngblood. King and Youngblood were award recipients.

CAMP QUARTERLY INTERVIEW
WITH

LARRY VANDERHOEF

Chancellor, UC Davis

By Marjorie DeMartino



A campus community evolves as all living things evolve. The University of California, Davis, in every sense a vibrant, growing community, owns a pedigree to match. Larry Vanderhoef, Chancellor of seven years, leads the way. A Midwest transplant, he is 100% Californian. Born in Perham, Minnesota and raised in South Milwaukee, Wisconsin, Vanderhoef completed a Ph.D. in plant biochemistry and physiology at Purdue University. After going through the faculty ranks at the University of Illinois and a short stint as provost at the University of Maryland, he made the life-changing decision in 1984 to “go West,” to UC’s most science-heavy campus.

He wanted to become part of a public research university that held high aspirations, where faculty and students could feel that they were Number One. He recognized the University of California as that place. And he didn't just adapt to Northern California, he helped create a dynamic environment that impacts the wider world. Vanderhoef holds deep convictions about UC's role as a Land Grant institution and keeps these basic principles in the forefront of his scope and authority. Economist, humanist, visionary. Touchstones of his career at Davis. With the campus's reputation recognized by membership in the American Association of Universities, Vanderhoef continues to lead Davis to new heights. His goal for the 21st century is to bring "super star excellence" to the arts, the humanities and the social sciences, as well as science, math-

Embedded in these goals and priorities is the Chancellor's personal commitment to diversity. His definition is broad, to match his agenda, and includes a desire for UC Davis students to experience diversity not just in skin color, but in values, principles, religion, language. He himself is a first generation college student.

ematics and technology. He intends to take every aspect of the campus to its potential—and then keep pushing the envelope. The arts, he believes, should attain the level of achievement enjoyed by the sciences. The Center for the Arts, currently under construction, and the Center for the Visual Arts, in the planning process, will bring high profile advancements for the arts and humanities. At the same time, a strong connection to the surrounding community is vitally important and anticipated to grow dramatically through the Center for the Arts. Our interview took place in his sunlight filled office, upon his return from a hearing in Sacramento. He's attuned to what's going on in the region, the state, and the nation, and it becomes apparent almost immediately that everything matters, everything is taken into consideration.

Q&A Q&A

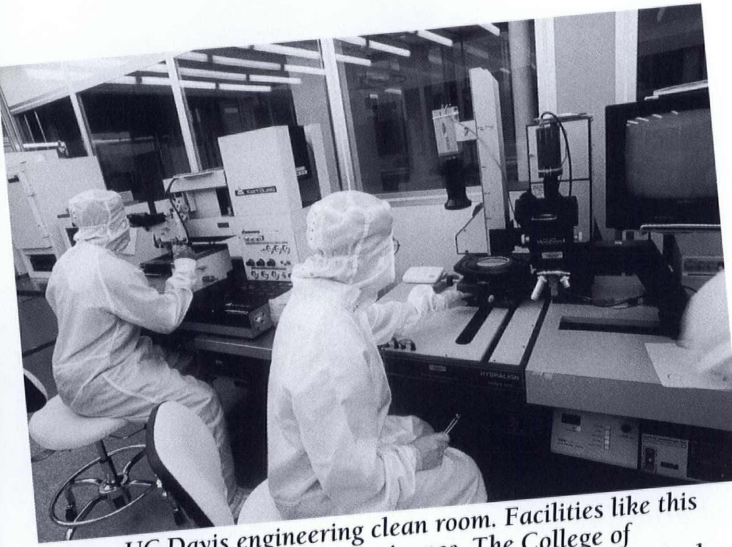
Please tell us about your background and your initial college experience.
My father had gone to school through the ninth grade, and my mother, who came from a family of nine, through eighth grade. There was nobody in my entire family or in my neighborhood who ever went to the university. So I was thrilled to arrive at that point but I

was sorely unprepared—I had no clue. A high school teacher got me there in the first place; then it was tough sledding. At the end of my first year, I was on strict probation but making a lot of money because university students didn't know how to play pool, and I knew very well how to play pool from the neighborhood I grew up in. Academically, I

did poorly, and actually got rescued a couple of times during my undergraduate years. Once, my lecturer in chemistry got me back on track. Then by dumb luck I found myself in the laboratory of a young professor who was at the forefront of his



Founded in 1905, UC Davis encompasses 5,200 acres, the largest of the nine UC campuses. Aerial views show the development today (above) and how it was in the early years (right). The Aggie band helps spread the exuberant spirit that Davis is known for: 20,000 undergraduates can't be wrong!



UC Davis engineering clean room. Facilities like this ensure the school's prominence. The College of Engineering establishes new majors to reflect critical technology needs.

discipline. I ended up in a very good position.

How would you characterize your early years in academia?

They were centered in a tight Midwestern circle. I did my undergraduate degree in Wisconsin and my Ph.D. in Indiana—Purdue, then went back to Madison for a postdoc. My first teaching position was at the University of Illinois in the honors biology program, with only 25 students. You not only delivered the lectures, but covered the discussion sections and the laboratories, so you knew the students, their families and their friends very well. It was probably the nicest teaching experience of my career—just short of heaven. I became professor and chair very quickly. I was the first one in the University of Illinois School of Life Sciences to become professor in just seven years. Everything was wonderful, with one exception—it was so far from anything. Two hours to Chicago, three to Saint Louis. We were totally dependent on what the university offered.

When did you decide to make a change?

I had been going to the East Coast a lot because I was involved with NIH and NSF. I very much enjoyed the Washington, D.C. area,

and there was so much more variation in what was available. So that's where we went, to the University of Maryland. However, in the East it was ingrained in the students and the faculty that the most prestigious universities were the private universities.

People grew up hoping to go to the Harvards, the

Yales, the Princetons. Everybody in the public institutions seemed to assume that they were second best. It was four years into that stretch that I had an offer in California. Even though it was hard at the time to uproot my wife and family, we made the move to Davis. I wanted to be part of a public institution that held high aspirations. I believe it was the best decision we made, and I think my wife would agree now.

UC is a Land Grant University. Is this significant today and where does Davis fit in this tradition?

Even within the University of California, Davis is a leader. In many ways we still have some of that original culture as it has survived through agriculture—Davis more than anyone else. The first principle of a land grant institution is get education to the people; and we've been hugely successful in that regard. The second

priority is that we should attend to society's needs. In 1862, when the Land Grants were established, a major concern was how to feed ourselves as a nation. Virtually everyone in the country at that time had, at least second hand, experienced famine. People knew what happened in Ireland and in France. Everybody was fearful. Agriculture was a major emphasis, a major concern. Through the years, UC Davis has had a major impact on the development of agriculture and it bolsters the economy. Dick [UC President Richard Atkinson], when he was chancellor at San Diego, was similarly thinking about society's needs when he sought ways to stimulate the economy when federal money pulled out of the San Diego area. UC Connect came out of that.

Is there renewed attention to these principles?

Until recently, we were not paying the same attention to these major needs as we once did. The concerns of society change over time. We're not worried about famine anymore, and furthermore we are not worried about generating wealth. What we are concerned about are things like K-12

UC Davis is a leader in genetic engineering, making breakthroughs in agricultural science. Faculty in the School of Biological Sciences explore new frontiers through a broad research agenda.



education, environmental degradation, regional development. Some of the language of the California Master Plan implied that teacher training should be centered at CSU. No one questioned that. The plan was written in 1958-60, and we had a wonderful K-12 system at that time.

Does UC have a new found commitment to K-12 teacher development?

That's not something that we previously had been interested in and not all of our campuses have teacher credential programs. A lot of the CSU campuses were more broadly based and had teacher programs. When the Master Plan was implemented, CSU took the lead in teacher training. One CSU campus, Sacramento State, has more faculty devoted to K-12 education than the entire UC system. We should have awakened earlier to the fact that UC had to jump into the arena. We've seen some very interesting things come out of Prop 209, like our K-12 outreach programs.

Davis is distinguished for its annual forums for community college presidents and chancellors. How extensive is the feeder system to the campus?

We have transfer agreements with 58 community colleges, which is more than anybody else [in UC]. This ties to our Land Grant principle of getting education to the people. We don't have the greatest number of transfer students, however—UCLA does. We have established transfer agreements, however, which is why UC's Tidal Wave II plan to guarantee admission won't greatly impact this campus; the only real difference it will make is that we will notify admitted students earlier.

California has grown dramatically. What contributions to the economic health of the

region, agriculture notwithstanding, has Davis made?

Until not that long ago, UC Davis contributions were predominantly in agriculture. That was still the case when I came here in 1984. People still associate us with our major strengths of 30 years ago but we offer so much more that it's quite a different circumstance now. We have an explosion of computing and biotechnology and this huge migration out of Silicon Valley. Davis is a major contributor to the region's workforce. For example, at Genentech, which was started by a couple of professors from Stanford and San Francisco, Davis graduates dominate the company's employees. Again, this has more to do with the fact that we produce a lot of biologists. We produce more Ph.D.s in biology than any other university in the country. In computing, it's more a matter of proximity because there is no reason to believe that our engineers in this general area are more capable than those at Stanford and Berkeley. It has more to do with something that is unique to Davis, and that is internships. Annually, more than 6,000 undergraduates engage in business and technology internships in the Sacramento area.

How have internships influenced or impacted the local workforce?

Essentially, through internships, companies do extended interviews with potential employees, particularly in the computing industry around Sacramento. It's very easy for our undergraduates to slide right into employment after they graduate. Now it has become

troublesome because they [corporate sponsors] persuade students into employment before they graduate. It's also hard to get students interested in graduate school in engineering and computing.

Under your leadership, the campus has grown in huge ways, pushing new frontiers, for example, in genetic engineering and in the buildup of the campus. The new Life Sciences Addition and the new Engineering 3 building come to mind. Are there others on the horizon?

We're planning a new building—the Genomics Building. The single largest laboratory that produces the mouse genome is The Jackson Laboratories in Bar Harbor, Maine.

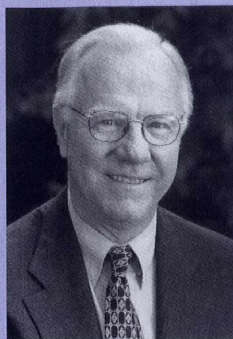


Chancellor Vanderhoef, second from left, joins in the groundbreaking for the Center for the Arts, which will strengthen ties between campus and community.

It's the internationally recognized center for mouse genome bioinformatics and famous for its computer databases. They decided that they need a lab out here. They're calling it "The Jacks West." This will represent the merger of computing technology with biological research. As you might know, the mouse and human genomes are very similar. The DNA sequence sculpture in the

LARRY N. VANDERHOEF

Chancellor, UC Davis



EDUCATION

Ph.D., (Plant Biochemistry and Physiology), Purdue University
M.S., (Plant Physiology), University of Wisconsin, Milwaukee
B.S., (Biology and Chemistry Education), University of Wisconsin, Milwaukee

PROFESSIONAL POSITIONS

Chancellor, University of California, Davis, 1994-present
Governing Body, UC Davis Medical Center, 1984-94
Executive Vice Chancellor and Provost, UC Davis, 1984-94
Visiting Lecturer, National Taiwan University, 1984
Provost, Division of Agricultural and Life Sciences, University of Maryland, College Park, 1980-84
Professor, Department of Botany, University of Maryland, College Park, 1980-84
Visiting Investigator, Department of Botany, Edinburgh University, Scotland (with Dr. A. Trewavas), 1978
Carnegie Institute of Washington Visiting Investigator, Department of Plant Biology, Stanford University, 1976-77
Executive Officer of Biology Programs, School of Life Sciences, University of Illinois, Urbana, 1974-77
Assistant Professor (1970-74), Associate Professor (1974-77), and Professor and Head (1977-80), Department of Plant Biology, University of Illinois, Urbana, 1970-80

SELECTED INVITED LECTURES AND PRESENTATIONS

Keynote, Western Regional Research Center Symposium and Exposition, Albany, CA. "Millennium III. A Major Role for Agricultural Research." 2000
Keynote, UC Business Officers Institute, Oakland, CA. "University Administration—A Chancellor's Perspective." 1999
Panelist, Council for the Advancement and Support of Education (CASE) Conference, Reno, NV. "When Does the Public Have a Right to Know?" 1997
Keynote, Western Interstate Commission for Higher Education (WICHE) and California Citizens Commission for Higher Education western policy forum "Endangered Access: Financing and Delivering Higher Education in Growth States with Limited Resources," Huntington Beach, CA., 1997
Future of the Professoriate, Academic Council of the NASULGC, Summer Meeting, Chatham, Massachusetts, 1993

FELLOWSHIPS

Eisenhower Fellowship, Visiting Scholar, Republic of China, 1987
Carnegie Research Fellowship, 1977
National Research Council Postdoctoral Fellowship, University of Wisconsin, Madison, 1969-70
David Ross Fellowship, Purdue University, 1966-68

PROFESSIONAL SOCIETIES

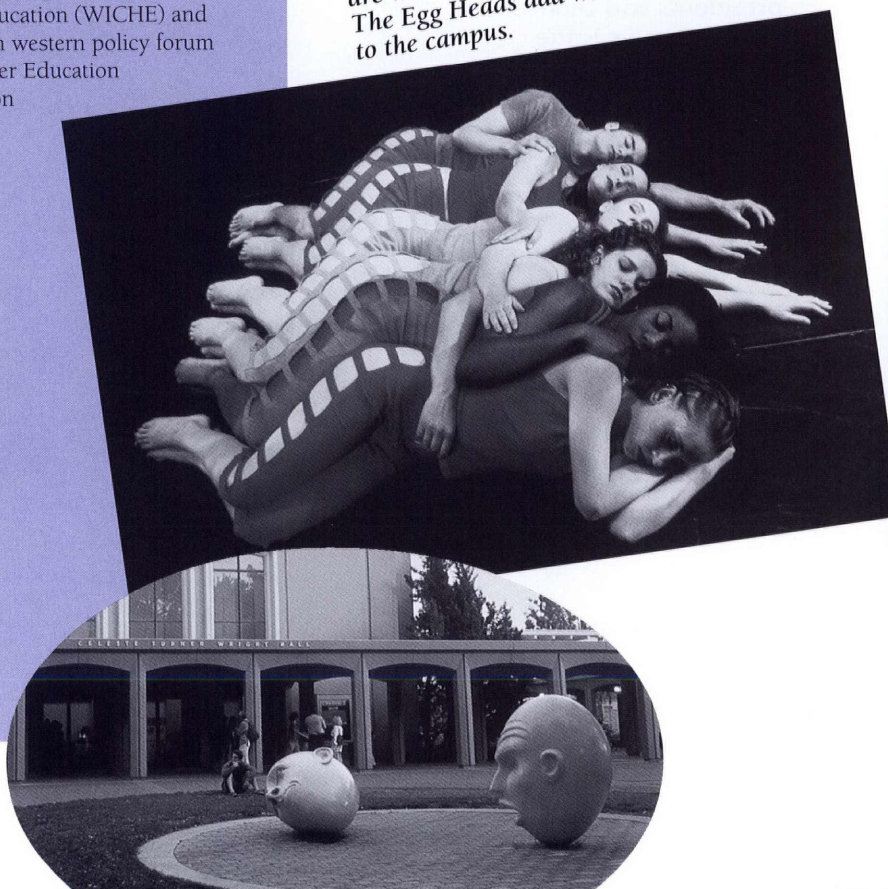
American Association for the Advancement of Science
American Society of Plant Physiologists
National Association of State Universities and Land Grant Colleges (NASULGC)
Kellogg Commission
Association of American Universities

Biological Sciences Addition beautifully symbolizes our new strengths in these areas.

There are several major construction projects under way, one being the celebrated Center for the Arts. How do you see this bringing campus and community together—it's both visible and accessible—and how do these complement future directions?

We have come a long way in the sciences. We're the most science heavy campus in the university. Now our arts and humanities as well as social sciences need the same support. It's important to make a major statement for the arts. The Center for the Arts is the way. We've had some startling things happen in the arts, including our dramatically successful Art in Public Places program. The Arneson Egghead Series is another addition since I came here. I want every part of the campus to be as good as its potential. It is almost an instinctual feeling that we have to grow in the

Visual delights: Student performances are well executed and well received. The Egg Heads add wit and wisdom to the campus.



arts. What can we do? It's the faculty who produce the courses and attract the students. We can help by making additional faculty available.

And the community connection?

The community piece relates to the fact that we have a different population here than even just 20 years ago. People are hungry for the arts, and it has become increasingly difficult to go to San Francisco. Only one venue of some size exists in the area, which is completely inadequate for today's population in the metropolitan area. I had announced at my inauguration in 1994 that I was going to do this project, and Jack Peltason in his kindly way told me not to promise anything until I knew for sure I could deliver. In my case, if I say I'm going to do something, it puts the needed pressure on me.

Anything else on the drawing board?

The next project is the Center for the Visual Arts—on another side of the quad in front the Center for the Arts. This is an acre and a half, a central area that includes these two major centers, a hotel/conference center, and the fourth side, already occupied by the Alumni Visitors Center. The growth and the activity stemming from the Center for the Arts is going to be dramatic.

What is your top priority for the campus?

To bring excellence to all the disciplines across the board. Every part of the campus should be as good as its potential. I truly feel that no matter where you are on campus, you are limited if in fact the whole campus doesn't have high quality. The strengths on one end of the spectrum must bolster and stimulate the other end of the spectrum.

How have the achievements in research impacted the campus reputation?

It's primarily due to the quality of the research that we are already in the American Association of Universities—AAU. There is no higher honor. The University of California has six campuses in the association. The criteria for admission are unusually tough, examining both quality and productivity. People were worried that too many UC campuses would be in AAU, so we had to be more than good. We had to be super star excellent. Three of us were admitted at the same time—Davis, Santa Barbara and Irvine. It's not recognized by many people, but the AAU is the Nobel prize for research university quality.

Distance learning is a hot topic these days. What is your stance on the university's role in web applications?

I don't think UC needs to make distance learning a top priority. One thing we can do, though, is share our expertise. For example, we have Telemedicine through the UC Davis School of Medicine. It allows patients to have a specialist, for example, in Sacramento, take care of pre-natal visits, saving the patient a 45-mile drive. Something like Tele-medicine is more likely to be our role.

Will you share your goals for a newly minted UC Davis graduate?

In addition to the obvious, the best education possible, there are other important things that the traditional student should have experienced by the time they graduate. Tolerance for diversity is one. Not just skin color and ethnicity—but values, principles, religion and language. We have Principles of Community that describe how we'd like students to behave. A second is engagement outside the classroom—through an internship or service to others. Students need to learn a sense of obligation, to socially feel obligated to do public service. These things prepare you for life in this shrinking world.

Do you have a message for new faculty?

I'd tell them, you have to reach a certain level of accomplishment, much more so even during the first years. But outside the scholarship and the classroom, there's engagement that is important. Get involved in the running of the campus. Be a campus citizen. Start by doing the fundamentals well, and then become more engaged than your usual world of research and teaching.

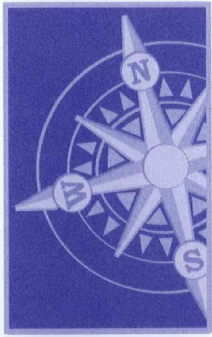
How do you balance the chancellorship with life's daily demands and your personal well being?

It was soon apparent when I became chancellor that we had to set rules with regard to how many events I could cover. David Gardner lectured me on that. He said you have to have rules. My first is that I will do only two nights in a row. If I responded to all of the invitations, I could spend 16 hours a day, seven days a week just doing events. Second, I want one weekend day free. Sometimes, though, it's just not possible. It's hard to say no to all the good causes. But in spite of all the urges you may have, you have to force yourself to take time off. There's a certain aggression that builds in a job like this. Playing squash is a great release. Doing that regularly, it seldom happens that I get short tempered.

As you go about building and perfecting the campus, what shines as your most important contribution?

The pursuit of excellence on every part of the campus, so all the disciplines enjoy support and superior quality.

Acknowledgements: Cindy Contreras, the Chancellor's executive assistant, facilitated this interview. Thanks and appreciation also go to Debra Aldridge, senior photographer, Illustration Services; Adriana Perez, senior designer; and Barbara Anderson, senior editor, UC Davis Editorial/Design.



UC DAVIS
COMMUNITY COLLEGE
OUTREACH

CAMP-MESA Math,
Science, and Engineering

TRANSFER DAY

By Ryan D. Mitchell

In a dynamic collaboration that has become a tradition, the UC Davis CAMP program hosted more than 85 community college MESA students, representing more than eleven community colleges, for a one day conference focused on undergraduate academic and research opportunities for science, engineering, and mathematics majors.

Dr. James Shackelford, Regional Director for the CAMP program at UC Davis, and Gary Tudor, Director of Undergraduate Admissions and Outreach Services welcomed students November 17, 2000 to the annual Math, Science, and Engineering Day. Tudor's office provided funding and organizational support for the event. CAMP affiliated program coordinators for BUSP, MURALS, MURPPS, and MORE (undergraduate research programs at UC Davis) also made important contributions to delivering a vital experience.

In addition, the MESA program

officers at UC Davis were equally involved in supporting this extraordinary event. The room in Engineering II was filled with participants, including MESA advisors from each of the participating campuses. Nearly twenty additional staff and faculty from the UC Davis campus filled the space to capacity. In fact, Lucy Casale, Assistant Director of the MESA California Community College Program, advised us that, because of the growing popularity of this event, we may need to consider finding a new venue in the future.

Several faculty discussed various aspects of their disciplines: Dr.

Gergely Zimanyi, Professor of Physics; Dr. Judith Kjelstrom, Associate Director of Biotechnology Program; and Dr. Billy Sanders, Assistant Dean of Engineering.

Highlights included tours of important UC Davis research facilities. The Molecular Structure Facility is used by multiple research groups on campus for synthesizing small DNA fragments, DNA sequencing, peptide synthesis, mass spectroscopy, as well as other applications.

The Center for Image Processing and Integrated Computing (CIPIC) with its virtual workbench serves as an excellent teaching and research facility for graduate students and faculty. CIPIC is also a great learning environment for one of our CAMP students, Olufemi Oloyede, a senior transfer student (American River College) majoring in computer science engineering. Olufemi is fortunate to have as his mentor the Center's Co-Director, Dr. Bernd Hamann, Professor of Computer Science.

The Crocker Nuclear Lab on campus provided an exciting opportunity for engineering and physics students to get "inside" of a proton generating cyclotron facility

that UC Davis is using to full advantage. Current research topics include particle analysis of air pollutants for the National Park Service, ocular cancer therapy, testing of industrial satellites for the effects of solar radiation damage, etc.

Other tours included the Flow Cytometry lab in the Life Sciences Addition and neurobiology labs engaged in some interesting brain research. These and other facilities enthusiastically engaged our community college visitors, hopefully enticing them to consider UC Davis in their transfer plans.

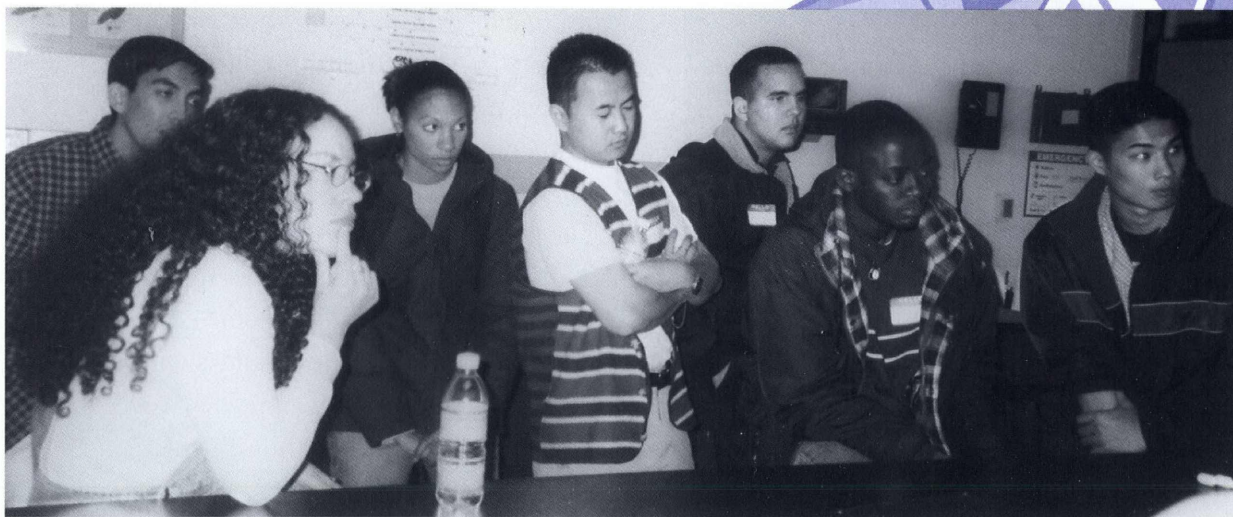
The day ended with transfer student panelists sharing their experiences as transfer students to Davis. Teresa White (computer engineering), Ian Henry (computer science) and Missy Soto (biology), all transfers from Solano Community College, have been CAMP participants at UC Davis during the time they've spent in various research programs on campus. Finally, Renee

Melton energized the audience with her stories of her overly busy schedule and experiences conducting forensics research for Sacramento County.

Just as these four students made the transition to UC Davis, we are confident that we'll be seeing many of our visitors in the near future on a more regular basis!

PARTICIPATING COMMUNITY COLLEGES:

- Solano Community College
- American River College
- Sacramento City College
- Cosumnes River College
- Mendocino Community College
- Chabot Community College
- College of the Sequoias
- Yolo Community College
- Woodland Community College
- Skyline Community College
- San Joaquin Delta



Community college students at CAMP-MESA Transfer Day gather around for a discussion on the properties of materials. Not shown is Mike Meier, academic administrator in the Chemical Engineering and materials Science Department at UC Davis, leading the discussion. The event is an annual tradition and an effective tool in motivating transfer students.

UC LEADS:

Leadership Excellence though Advanced Degrees

The University of California systemwide program, UC LEADS, aims to encourage educationally or economically disadvantaged undergraduates to pursue doctoral degrees in science, engineering, and mathematics. Each year, approximately 42,000 students graduate from the University's nine campuses, including nearly 10 percent of the nation's Ph.D.s. The University recognizes its responsibility to educate future leaders that are representative of California's ever-

changing population, and UC LEADS is one important strategy in fulfilling this role.

The program provides LEADS Scholars—many of whom are drawn from the CAMP program—with academic and practical experience and training over a full two-year timeframe that maximizes their potential for admission into UC doctoral programs. The program, designed and led by the graduate deans, includes involvement in scientific and professional organizations, preparation for taking the GRE exam and completion of graduate school applications, and research experience.

The first cohort of LEADS Scholars began in Summer 2000, enrolling in research internship programs on their home campuses. During Summer 2001, the Scholars will

participate in a research internship with faculty at another UC campus. A second cohort of 75 undergraduates will join the program, bringing the number of Scholars to a steady-state 150. The Scholars will meet March 9-11, 2001, at UC Davis for their first annual symposium. CAMP students are invited to attend. The Quarterly presents an in-depth profile of a student at Riverside, identified for participation in UC LEADS through CAMP. Chemical engineering major Kimberly Cross was selected to represent the program. She is talented, focused, and determined to become a force in technological advances in polymer chemistry.

UC LEADS SCHOLARS AT RIVERSIDE

Jason Bowen
Physics
Kimberly Cross*
Chemical Engineering
Paul DiLorenzo
Computer Science
Rafael Lopez*
Computer Engineering
Elmer Thomas*
Computer Science
Victor Vargas*
Biochemistry
Sandra Villa*
Chemistry
Brigette Watkins
Neuroscience

*CAMP program participant

Kimberly Cross: First Person

My advancement in physical science and engineering originated from two major factors in my home environment. Living in an impoverished neighborhood of Oakland, California, as I used public transportation to and from school, I was constantly harassed by drug dealers. It was heartbreaking to see the same



young men I had attended elementary school with spend their day loitering on the street corner, as I worked diligently to

better my life. Secondly, my interest in science was peaked by another factor in my neighborhood. There was a park, an area that had previously housed a battery factory. For more than ten years we did not know that we were being exposed to toxic acids from old batteries buried underground. The park was finally closed when acid began to seep up through the sidewalk.

This made me want to gain knowledge about how batteries worked. For a science fair I constructed a battery made from citrus acid from an orange, and another one from a potato. I won the science fair of the Oakland Dioceses for junior high school students, and was presented a scholarship to attend a Catholic high school sponsored by the Dioceses of Oakland. I took full advantage of this great opportunity. I especially enjoyed mathematics and science courses.

On completion of my senior year of high school, I applied for a summer internship at the Lawrence Livermore National Laboratory and received a fellowship to conduct

research for two summers. I was the first student from my high school to be granted a research fellowship as an incoming freshman. The premise of my research was to determine if thermal infrared cameras could be used to detect body temperature measurements. For instance, when people travel through the airport after departing tropical islands or third world countries, it is necessary to detect if they are infected with any viruses. Body temperature is the first thing that changes. My research concluded that thermal infrared cameras could be used to detect body temperature measurements by taking readings at the angular artery and the carotid artery.

The following summer I conducted research in polarized light propagation. The goal was to determine if the degree of polarized light could be measured after laser light propagated through water mediums.

New scientific work is being conducted to determine if polarized light can be used as a source for imaging. New imaging techniques can lead to more efficient and better cancer diagnostics. This imaging will provide a noninvasive and non-ionizing means for detecting tumors in the body. I would like to continue in-depth research with lasers.

I presented my research results at three conferences. Attending the SACNAS national conference was a great experience. I received a lot of insightful information about admission to graduate school, and had the opportunity to network with admission directors for graduate programs I am interested in. The message that stands out in my mind was my conversation with an NSF director who said, 'When the time comes, it will be my personal duty to get the sufficient funds for you to attend the graduate program of your choice.'

I want to be a mentor to help lead students in the right direction. From my experience, I feel it is my duty to encourage, inform, and inspire other educationally disadvantaged junior and senior high school students. I can help open the doors of opportunity to give other students fellowships to pursue science.

UC LEADS SCHOLAR PROFILE

KIMBERLY CROSS

UC Riverside

Level: *Junior*

Major: *Chemical engineering*

Educational Goal: *Ph.D.*

Career Goal: *Make new technological advances in polymer chemistry*

UC LEADS Mentor: *Dr. Michael Marcella*

RESEARCH EXPERIENCE:

- UCR Polymer Chemistry
- Lawrence Livermore National Laboratory Medical Technology Program:
 - 1999 summer internship: "Use of Polarized Light Propagation in Turbid Water." Mentors: Duncan J. Maitland Ph.D., Vanitha Sankaran Ph.D.
 - 1998 summer internship: "Thermospectrometry for Body Temperature Measurement." Mentors: James Trebes Ph.D., Duncan J. Maitland, Ph.D.

AFFILIATIONS:

- CAMP, California Alliance for Minority Participation, 1998-present
- UC LEADS, Leadership Excellence Through Advanced Degrees
- National Society of Black Engineers, vice president, UCR Student Chapter
- California Scholastic Federation, lifetime member
- MESA Pre-College, 1994-98

SCIENTIFIC CONFERENCES:

- CAMP Statewide Undergraduate Research Symposium: Santa Barbara, CA, April 1999 and San Diego, CA, April 2000;
- Louisiana LSAMP Conference, 1998;
- SACNAS National Conference, 2000

AWARDS & HONORS:

- Dean's Honors List, 2000
- UC Riverside NCAA Intercollegiate Athletic Scholarship, basketball;
- NOBCCHE National Science Quiz Bowl Competition, 1997
- Celebration of Excellence Award, Links, Inc., 1998
- *Summa Cum Laude*, Moreau Catholic High School, 1998

Teresa Cofield, UC Riverside CAMP Coordinator and liaison with affiliated undergraduate initiatives such as UC LEADS and AGEP, facilitated this feature.

SAGE Scholars:

Student Achievement Guided by Experience

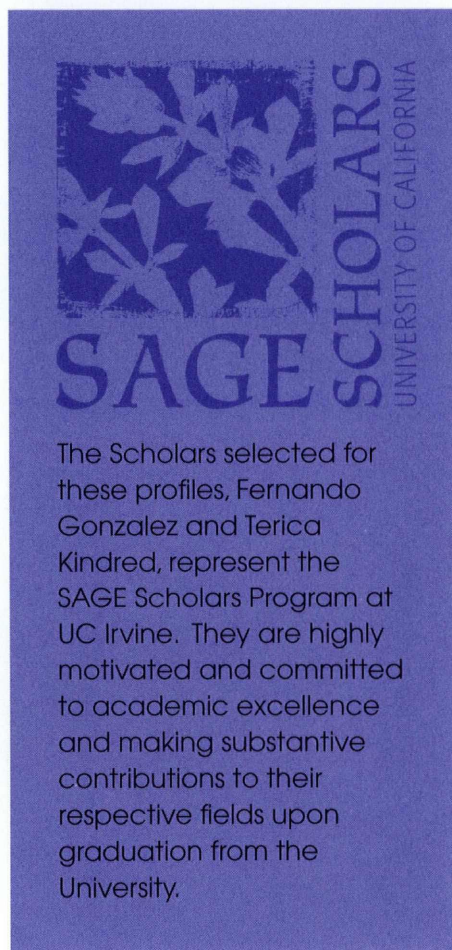
*Developing technological, scientific and
business leadership for the 21st century*

*Created by the University of California Office of the President, the SAGE
Scholars Program supports students from economically disadvantaged*

*backgrounds as well as the University's goal
to increase diversity. With pilots at Irvine
and Berkeley, the program will expand to all
UC campuses within five years. It is open to
full-time freshmen and transfer students of
all majors. Through the SAGE Scholars
Program, companies offer paid multi-year
internships to talented and highly motivated
UC students related to their field of study.
Through these internships, sponsors provide
real world business experience and focused
mentoring. In addition, SAGE Scholars
participate in coursework specially designed
to enhance their business and leadership
skills. This unique partnership provides UC
students with an unparalleled opportunity to
engage in a robust plan where they can gain
the business and leadership skills they need
to thrive in their careers. Participating
companies cover educational expenses. A
partial list of current sponsors at UC Irvine,
for example, includes Broadcom Corporation,
Conexant Systems, Merrill Lynch, Orange
County Teachers' Federal Credit Union,*

*Texas Instruments, UNISYS and Western Digital Corporation. In addition,
thanks to the support of various corporate sponsors, including Verizon Wireless,
a number of Scholars participate in paid internships at nonprofit organizations
such as the Childrens' Hospital of Orange County. The program has a total of
20 students at Irvine and approximately 10 students at Berkeley.*

www.ucop.edu/sagescholars

The logo for the SAGE Scholars Program at the University of California. It features a blue square background. At the top, there is a stylized floral or leaf pattern. Below this, the word "SAGE" is written in large, bold, white capital letters. To the right of "SAGE", the word "SCHOLARS" is written vertically in white capital letters. At the bottom right of the square, the words "UNIVERSITY OF CALIFORNIA" are written vertically in smaller white capital letters.

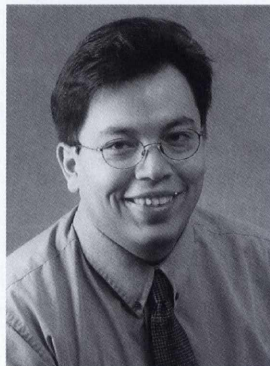
The Scholars selected for these profiles, Fernando Gonzalez and Terica Kindred, represent the SAGE Scholars Program at UC Irvine. They are highly motivated and committed to academic excellence and making substantive contributions to their respective fields upon graduation from the University.

Fernando Gonzalez: First Person

When I transferred from El Camino Community College to UC Irvine, I never imagined the variety of opportunities that this campus offers to students: the quality of the electrical engineering program, the professors teaching and doing research at different laboratories and centers on campus, the proximity of high tech companies and industry experience through internships.

I did not want just a job; I wanted a challenge and to develop the critical thinking skills needed to solve problems related to engineering and the designing of microelectronic devices. Fortunately, I found the right company at Conexant Systems, Inc., working in the Personal Imager Department as the product/test engineer. This is perfect for me because it enables me to see the different stages a device has to go through, starting with design, characterization, testing, production and finally marketing.

If I had to choose one word to describe how to be successful in a company it would be teamwork. Through teamwork, our goals are met more easily and the product becomes more robust because all the engineers' ideas are combined and checked each time a change on the device is made. The program has helped me to accelerate the rate of success that an engineer [starting out] would expect.



"This [SAGE Scholars] opportunity is priceless."

SAGE SCHOLAR PROFILE

Fernando Gonzalez

Education: B.S. Electrical Engineering, June 2001

Affiliations: CAMP, CODE (Center for Opportunities and Diversity in Engineering), SAGE Scholars Program, and member, Society of Hispanic Professional Engineers and Mexican American Engineers and Scientists

Background: Coursework in probability, solid state devices, optoelectronics, applied math

Academic Service: Tutor for physics undergraduates at Cal State Dominguez Hills

SAGE Internship: Conexant Systems, Inc., Newport Beach

Undergraduate Research: UCI Center for Integrated Nanosystems Solutions

Awards & Honors: Mazda Hispanic Scholarship, Xerox Minority Scholarship, Honorable Mention for Best Poster, Hewlett Packard.

SAGE SCHOLAR PROFILE

Terica Kindred

Education: B.S. Computer Science, June 2003

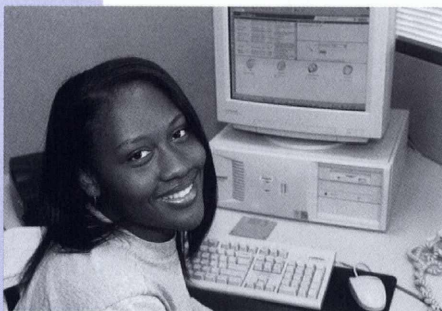
Affiliations: CAMP, National Society of Black Engineers, CODE (Center for Opportunities and Diversity in Engineering), SAGE Scholars Program

Background: Programming languages, Software applications, and operating systems

Academic Service: Contributions to student engineering organizations

SAGE Internship: Conexant Systems, Inc., Newport Beach

Awards & Honors: Magic Johnson Scholarship, Bausch & Lomb Science Award, Presidential Scholar, Bank of America Achievement in Math and Science Award



"This program has changed my life. . . academically, financially, and by improving my professional skills."

Terica Kindred: First Person

I am not only a part of but an ambassador of the [SAGE Scholars] Program. By participating in workshops, conferences, and a summer internship, I have grown as a person and a student. As a whole, the program has changed my life

in many aspects—academically, financially, and by improving my professional skills. By working in “corporate America” I get to see first-hand how businesses are run. The internship [at Conexant] has become my bridge between academia and the professional world. Before my internship I wasn't quite sure if I wanted to pursue a career in computer science, but by the end of the summer I was totally sure that computer science was the major for me. Now that I know [this], I can spend the next three years at Conexant and decide which career path within computer science I would like to go into. The internship has given me tools and knowledge and has helped in building the confidence I need to succeed in my major and at my company [Conexant]. This self

confidence helps me every day in my computer science classes.

I've had the opportunity to speak at the CEO Roundtable and the Orange County Business Leadership conference. Sharing this experience helps me realize how much it has changed my life. The mere act of speaking in front of large groups of people helps me grow as a speaker, and public speaking is a great necessity in the professional world.

The Center for Environmental Analysis (CEA-CREST) at California State University, Los Angeles celebrates the start of our 3rd year with news that our first doctorate is on the horizon. Cory Garza is completing the last chapters of his Ph.D. dissertation at UC Santa Barbara, and the anticipation is palpable among all participants. Garza's field is marine biology. The Fall Social in October brought together students, faculty, staff and administrators from across the campus, along with partners from government agencies and local community colleges.

Program Director, Dr. Carlos Robles shared accomplishments of continuing CEA-CREST students that duly impressed the group, and student reports highlighted the

Continues on page 30

CEA-CREST: Anticipation

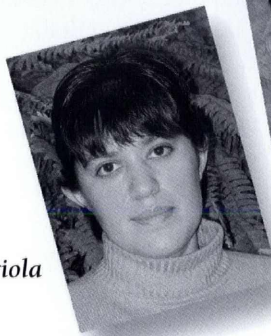
**First Ph.D. candidate completing
final chapters of dissertation**

By Dr. Robert R. Nakamura

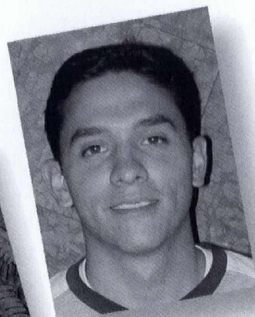
GRADUATE STUDENT PROFILES

PATRICIA ARRIOLA

- **Educational Background:** B.A., Mathematics California State University, Los Angeles
- **Advisor:** Robert Desharnais, Ph.D.
- **Research interest:** My major goal is to be an outstanding scientist that will produce new knowledge and have the tools to apply to the environmental sciences. By becoming a theoretical biologist/ecological modeler, I am going to be able to apply my interest in both mathematics and biology. My thesis objective is to develop and test a mathematical model of spatially mediated dynamics in intertidal populations. I plan to pursue a doctoral degree.



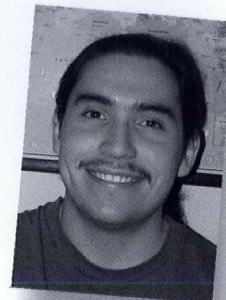
Patricia Arriola



Gary Desselle

GARY DESSELLE

- **Educational Background:** B.S., Environmental Science New Mexico State University
- **Advisor:** Barry Hibbs, Ph.D.
- **Research interest:** My project will evaluate sources and fates of nitrogen and phosphorous in the San Diego Creek Watershed in Orange County, California. The main threats to the watershed are urban and agricultural runoff, and seepage of nutrient-laden groundwater into drainage ditches that are routed into Upper Newport Bay. Nitrate and phosphorous in Upper Newport Bay cause algal blooms, which lead to eutrophication and damage to the habitats in the bay. I will be focusing on current and historic sources of these nutrients as well as on the influence of groundwater seepage to the watershed's hydrologic and nutrient budgets.



Marcos Luna



NEW CEA-CREST FACULTY MENTOR: KRISHNA LYNNE FOSTER

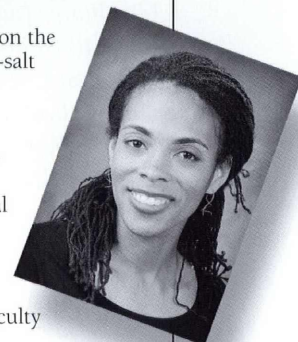
Assistant Professor of Chemistry
Department of Chemistry and Biochemistry
California State University, Los Angeles

Ph.D., Physical Chemistry, University of
Colorado, Boulder, 1998

Dissertation Title: Laboratory Studies on
the Interaction of Hydrogen Halides with
Ice Films

B.S., Chemistry, Spelman College, *magna
cum laude*, 1992

Postdoctoral Researcher, UC Irvine, Fall
1998 to Fall 2000; with Dr. Barbara
Finlayson-Pitts. Conducted
laboratory and field studies on the
release of halogens from sea-salt
aerosol and ice exposed to
reactive gases using atmo-
spheric pressure chemical
ionization – mass spectrom-
etry (APCI-MS), FTIR
spectroscopy, and differential
optical absorption.



Selected Honors & Fellowships:

Camille and Henry Dreyfus Faculty
Start-up Grant (July 2000)

Packard Scholars Program for Chemistry,
Physics and Math Fellowship (1992-97)

Minority Arts and Science Program
Outstanding Teacher's Award (1995 and
1996)

NASA Specialized Center of Research and
Training in Exobiology Undergraduate
Fellowship (1992)

MARCOS LUNA

- **Educational Background:** M.A., Geography
California State University, Los Angeles
- **Advisor:** Ali Modarres, Ph.D.
- **Research interest:** I am interested in the social and physical dynamics of urban environmental hazards, especially with regard to risk and equity analysis. I have been studying the relationship between suspended particulate concentrations and traffic volume along a residential street in eastern Los Angeles. That particulate concentrations vary with traffic volume is not surprising, but it does raise interesting questions about air pollution exposure, especially with the rising concern over environmental justice. Changes in industrial technology and regulation, and unprecedented economic growth have shifted the primary sources of air pollution from industrial to primarily vehicle-generated. The implications of vehicle use and its localized impact on public health along heavy traffic corridors have been taken up more aggressively in Europe and Japan and there is a lot of room for similar studies in the U.S. I plan to go on to a doctoral program in geography, with particular emphasis on the socio-environmental context.

IMELDA NAVA

- **Educational Background:** B.S., Biology
California State University, Los Angeles
- **Advisor:** Elizabeth Torres, Ph.D.
- **Research interest:** The objective of my research is to determine whether there is gene flow occurring between the northern and southern populations of a nearshore fish species *Porichthys notatus*. Subpopulations display either bioluminescent counter shading or no bioluminescence. Mitochondrial gene sequences will be used to reconstruct a phylogenetic hypothesis for *P. notatus* from multiple localities throughout its range. The geographic locality and luminescent phenotype will be traced onto the DNA based phylogeny. The extent of gene flow throughout the range of *P. notatus* will be assessed. My future plans include attaining a Ph.D. in molecular evolution or ecology. I hope to interest more minority students in the sciences by being involved at the community level.



Imelda Nava

effectiveness of the program. Joining CEA-CREST was Dr. Krishna Foster. Formerly a postdoctoral researcher at UC Irvine, she is now a new assistant professor of chemistry. In addition, eight new undergraduate and graduate students from California, Alaska, New Mexico and Wisconsin were welcomed into this expanding program.

Graduate student Patricia Arriola talked about her summer at Princeton University where she worked with renowned mathematical ecologist Simon Levin. Soon they will be co-authors of a research paper. The previous year at Cornell University, Patricia attended the Mathematical and Theoretical Biology Institute.

Dominic Valdez, a graduate of UC Irvine, was a research intern for the Smithsonian Tropical Research Institute (see Spring 2000 Quarterly, "Focused, Interdisciplinary Research for CAMP

Alum). He scuba dived in Panama to collect marine specimens for DNA sequencing.

Imelda Nava described her first year as a new Ph.D. student at UCLA. She follows in the footsteps of CEA-CREST alumna C.J. Fotheringham, already at UCLA and the recipient of a prestigious NSF graduate fellowship.

The new CEA-CREST students also have their own stories. For instance, Channa Gilan came to California from Green Bay, Wisconsin and is Oneida/Chippewa. She is the first member of her family to attend graduate school. Her work with the Oneida tribe's cultural wellness center and community organic farm inspired her. Said Channa: "Health and wellness issues for people are viewed as beginning with the earth and water."

In May 2001, CEA-CREST will host a joint science symposium

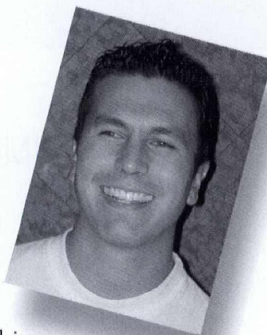
with the Southern California Academy of Sciences. The conference will feature sessions on environmental chemistry and self-organizing environmental processes.

Funded by the National Science Foundation for \$4.9 million as a Center of Research Excellence in Science and Technology, CEA-CREST offers exciting opportunities for focused and interdisciplinary research in the environmental sciences. A major goal of the program is to increase the number of underrepresented minorities with Ph.D. degrees. Because its students can earn master's degrees, the CEA-CREST program at Cal State Los Angeles is an important step toward fulfilling this aim.

DOMINIC GABRIEL VALDEZ UCI 1997 graduate, CAMP participant

Speaking on the CAMP-CEA-CREST Connection

Mosaics of experiences and influences have shaped my dream of becoming an ecologist. One of the largest influences came from the guidance and support of the CAMP program. CAMP offered essential resources that contributed to my present success in the sciences and in life. The most valuable tools instilled in me through CAMP were a positive attitude, belief in my abilities to succeed, and the world of networking amongst colleagues, professors, and researching scientists. Through the CAMP network, I have acquired fellowships to research in the Amazon rain forest and in Patagonia, but most of all I have acquired life lasting friendships. CAMP introduced me to CEA-CREST, Center for Environmental Analysis, at California State University, Los Angeles, where I am obtaining my master's degree in marine molecular ecology. This move has allowed me to increase my expertise in the sciences and become a stronger applicant for future doctoral programs. I am presently applying to doctoral programs at various University of California institutions in the environmental sciences. Following graduate studies, I intend to become a research professor and lecturer at the university level. I would like to utilize my knowledge and talents acquired to educate aspiring students and help influence environmental policy and conservation both in the U.S. and internationally. My opportunities are endless with the experience and support that CAMP and CEA-CREST have given me.



CEA-CREST FINANCIAL SUPPORT:

- Undergraduate Research Assistantships, \$9,725 per year
- Graduate Fellowships, \$16,800 per year
- Out-of-State Tuition Grants
- Travel and lab supplies
- Research experience for prospective students

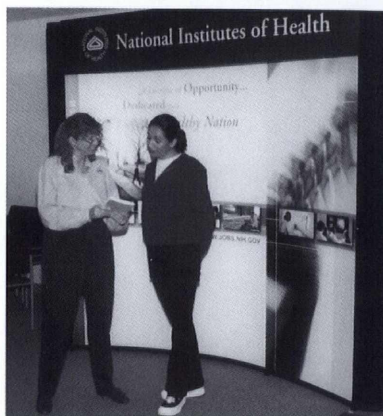
APPLICANT QUALIFICATIONS:

- Must be U.S. citizen or permanent resident
- Student must be accepted to Cal State L.A. with a minimum 3.0 gpa
- Currently, CEA-CREST accepts students year-round

LEARN MORE:

email
ceacrest@calstatela.edu
 or visit
<http://cea-crest.calstatela.edu>

National Institutes of Health Career Fair



CAMP-UC Irvine hosts first Western regional activity

The University of California, Irvine, CAMP program hosted an historic first career fair with the National Institutes of Health. More than 125 students attended the sessions, held November 13 and 14, 2000 on campus. Emerging from a conversation at SACNAS, CAMP coordinator Kika Friend invited representatives from the National Institutes of Health, National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS) to UCI. It was the first such regional career activity in the west sponsored by NIH as part of its corporate recruitment approach.

“NIH offers a rich environment for students at the University of California, and other schools in Southern California who are interested in employment opportunities or careers in support of biomedical research,” said Christine M. Steyer, Chief, Human Resources Management Branch of NIAMS.

The purpose was to recruit UCI students expected to graduate Fall 2000, Winter 2001 or June 2001. NIH directors also met with undergraduates interested in summer research opportunities.

Dr. Clifton Poodry opened the event, emphasizing the array of training and career options within NIH. Poodry is Director, Division of Minority Opportunities in Research,

National Institute of General Medical Sciences, at NIH. He affirmed that “NIH is dedicated to a workforce and environment that reflects and values the nation’s diversity.” In 1995, Poodry shared Native American ‘sweat house values’ with CAMP students.

Students, including guests from CAMP-UC San Diego, learned of opportunities in administration and management; information technology; biomedical research support, patient care, scientific research,

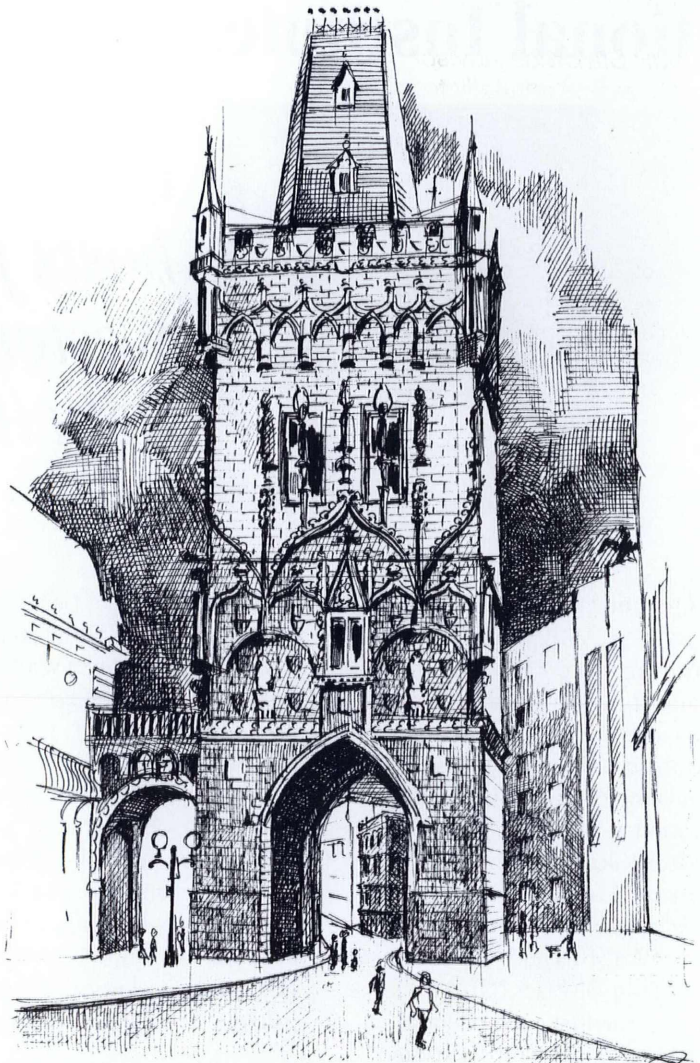
student internships, and administrative assistance and technical support. Following a general exhibit in the UCI Career Center’s Kaplan Conference Room, training and job information and interviews were held in concurrent sessions, one related to science-based positions and another to administrative. Faculty from the SMET disciplines, including deans of the schools of biological sciences, engineering, physical sciences, computer science, and undergraduate education were well represented.

Participating NIH Directors

Dr. Cliff Poodry, National Institute of General Medical Sciences
Christine Steyer, Personnel Officer, National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS)
Scott Sigley, Human Resources, NIAMS
Dan Dupuis, Personnel Officer, National Cancer Institute (NCI)
Claudia Palumbo, Human Resources, NCI
Barry Rubinstein, Personnel Officer, National Heart, Lung and Blood Institute (NHLBI)
Carroll Hansen, Administrative Officer, Intramural Research, NHLBI
Helene Noble, Office of Human Resource Management, NIH
Yvette Sandoval, Postbaccalaureate Student, NIAMS (from San Diego State University)
Dr. Roland Garcia, Office of Equal Opportunity, NIH
Lyn Eyre, Administrative Officer, Intramural Research, NIAMS
Lavern James, Office of Research Services, Engineering Division, NIH
Sheryl Wheeler, Human Resources, Office of Research Services, NIH
Mary Glynn, Personnel Officer, National Human Genome Research Institute

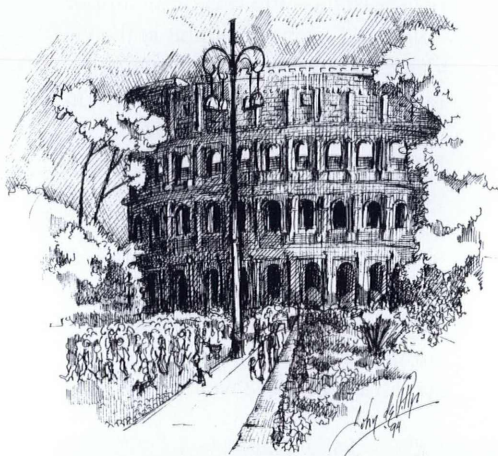


Cortona, Italy

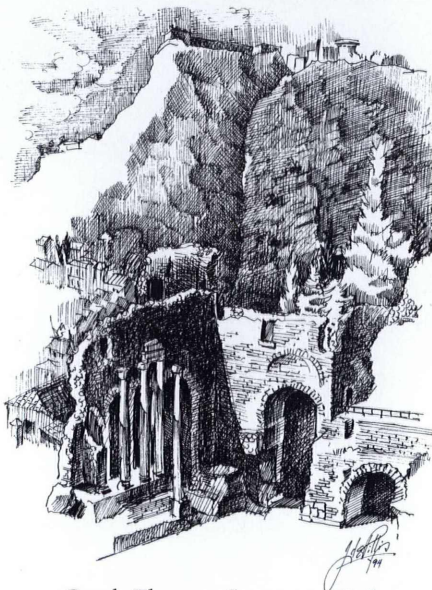


Powder Tower, Prague

*John de Pillis
1991*



Coliseum, Rome, Italy



Greek Theater, Syracuse, Sicily
5th c B.C., near Roman Amphitheater ~200A.D.



Padova Ducks

John de Pillis, UC Riverside CAMP regional director, produced these sketches during his two-year tenure as director of the UC Study Abroad Program in Padua, Italy. He is Professor of Mathematics Emeritus.

CAMP STATEWIDE ADVISORY BOARD

The CAMP Statewide Advisory Board is composed of leaders in higher education and in business. The board meets annually to review and advise CAMP leadership on programmatic issues and policies. Individual members serve as spokespersons to heighten understanding and visibility for the general public. Members assist in expanding professional development opportunities for participating undergraduates majoring in science, mathematics, engineering and technology.

Dr. Nicolaos Alexopoulos, Co-Chair
Dean, School of Engineering
University of California, Irvine
CAMP Statewide P.I.

Dr. Manuel N. Gómez, Co-Chair
Vice Chancellor, Student Affairs
University of California, Irvine
CAMP Statewide Executive Director

Dr. Francisco Ayala
Bren Professor
Ecology & Evolutionary Biology
University of California, Irvine

Dr. Dennis Galligani
Associate Vice President
Student Academic Services
UC Office of the President
Oakland, CA

Dr. Elma Gonzalez
Professor, Biology
University of California, Los Angeles

Mr. Gus Guichard
Vice Chancellor, Human Resource
Division
California Community Colleges
Sacramento, CA

Dr. Susan Hackwood
Professor Electrical Engineering
University of California, Riverside
Chair, California Council on Science &
Technology

Mr. Darrell D. Lynn
Community Relations Planning
Toshiba America Electronics
Components, Inc.
Irvine, CA

Mr. Robert Kleist
President and CEO
Printronix, Inc.
Irvine, CA

Dr. Martha Mecartney
Associate Professor
Chemistry/Biochemistry Engineering
University of California, Irvine

Mr. Alfred Paiz
Manager
Air Force Laboratory Programs
NASA Jet Propulsion Laboratory
Pasadena, CA

Mr. Frank Robles
Group Leader
Compliance Affirmative Action &
Diversity Program
Lawrence Livermore National Laboratory
Livermore, CA

Dr. Michael Sampogna
Director, Graduate Student Relations
IBM
San Jose, CA

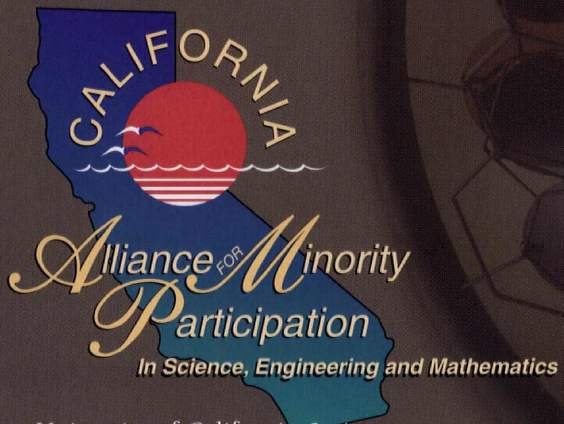
Dr. Kenneth E. Washington
Director, Distributed Information Systems
Sandia National Laboratories
Livermore, CA

Save the Date!

Register Now. Plan to join us—
April 6-8, 2001, University of California, Davis

2001 CAMP STATEWIDE UNDERGRADUATE RESEARCH SYMPOSIUM

Students, contact your local UC CAMP office
for details. (See Directory, inside front cover or
phone Cassandra Fong, 530-752-8648.)



University of California, Irvine
CAMP Statewide: 600 Administration
Irvine, CA 92697-1023
949/824-6578 • Fax 949/824-3048

PRESORTED STD
U.S. POSTAGE
PAID
SANTA ANA, CA
PERMIT NO. 1106