

FALL 2012 ISSUE 13

BIONEWS IS PUBLISHED IN THE FALL AND SPRING AND FEATURES THE PEOPLE AND PROGRAMS OF SF STATE'S DEPARTMENT OF BIOLOGY.

A LETTER TO ALUMNI AND FRIENDS FROM

Dr. Michael Goldman

Department Chair



This afternoon I attended the kickoff meeting of a remarkable program called Biology FEST — Faculty Exploration in Scientific Teaching. Nearly a year ago, the Howard Hughes Medical Institute (HHMI) offered us SF State's first opportunity to apply for its prestigious Undergraduate Science Education Award. Professors **Kimberly Tanner** and **Carmen Domingo** proposed a project they knew would be high risk and high payoff. Seeing that Drs. Tanner and Domingo had the support of every Biology faculty member, HHMI placed a bet on us — a \$1.5 million wager, the highest award they made nationwide. If a sweeping revision in biology teaching could happen anywhere, it could happen at SF State. Surely not every day is like this for a department chair, but a celebration for such an impressive achievement, and a look ahead at how my colleagues will lead effective science education into the future is just spine chilling!

I'm certain you'll find more great excitement in this semester's issue of *BioNews* which highlights other achievements of our alumni, students, faculty and staff. It's amazing how we've swept the news lately with the discovery of zombie bees (zombeewatch.org) by **Drs. Hafernik, Smith** and **Zink** and his graduate student **Chris Quock**, the Great Sunflower Project (greatsunflower.org) from **Dr. LeBuhn** and her colleagues, a look at "crisis biology" and the effects of climate change on amphibian fauna from **Dr. Vredenburg** and his colleagues, and **Dr. Sehgal's** careful work on malaria in birds of the Arctic. You'll also read about key contributions in understanding the spectacular flora of California by **Drs. Patterson** and **Parker** and ten alumni who authored the latest edition of the *Jepson Manual*, the industry standard in botanical research. (*See page 5.*) Our Personalized Medicine conference (personalizedmedicine.sfsu.edu), organized by alumni **Ken Kitchner, Dan Maher** and **John Wulf**, has taken on strategic partners in Sweden and Denmark as well as in South San Francisco, the birthplace of biotechnology.

We're pleased to welcome SF State's new President, Les Wong, and CSU's new Chancellor, Tim White, who will help us navigate the difficult waters ahead. We continue to do great science, extraordinary teaching and attentive service to our community. But you know that we depend on your support now more than we ever have before. Your unrestricted gift, large or small, to the Department of Biology gives nearly two thousand undergraduate and graduate majors the chance to make a positive impact on the future of California and the world.



DEPARTMENT OF BIOLOGY

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PHILANTHROPY AT WORK:

Charitable support provides the extra funding needed to give current and future students the resources and tools they need to be successful. Your generosity helped make the following 2012 Biology scholarship recipients' dreams of a higher education come true:

- Samaher Abuzahriyeh (see right)
- Tracy Audisio
- Rodrigo Estrada (see right)
- Michael Hague
- Lenka Maliskova
- Katherine McLean
- Christina Pasparakis
- Daniella Reagan
- Wendy Sun
- Erika Walther (see right)
- Mitchell Zekhtser

Please consider making a gift of support today.

Visit: http://biology.sfsu.edu and click on "Make a Difference" or use the enclosed envelope to make a donation.

Thank You!

Advancing Global Health and the Biosphere

Educating Generations of Scientists, Health Professionals, Teachers and Citizens

MEET THREE 2012 BIOLOGY SCHOLARSHIP RECIPIENTS

SAMAHER ABUZAHRIYEH is a an undergraduate Cell and Molecular Biology major with a goal of becoming a scientist dedicated to treating and curing disease. Her motivation comes from her personal experience with Muscular Dystrophy. Samaher will use the **John Hensill Scholarship** to purchase books and supplies.



"In ten years, you might see my name in the newspapers as the person who cured her own disease. I am that committed to my career. I chose to attend SF State because it is an amazing place that values education and its Biology Department is incredible."

RODRIGO ESTRADA is an undergraduate Physiology major in his senior year with a goal of becoming a physician and scientific researcher. Rodrigo will use the *Felipe-Andres Ramirez-Weber Scholarship* to help pay for books, tuition, housing and transportation.



"SF State is one of the few schools that offers many great academic programs and opportunities such as the Educational Opportunity Program, Summer Science Institute and Minorities Access to Research Careers which allowed me to participate in researching male infertility using the model organism C. elegans in Dr. Diana Chu's on-campus laboratory. My project involves studying histone variants and their function in fertility."

ERIKA WALTHER is graduate Conservation Biology major whose goal is to work for a science-based organization with a focus on applied research that addresses wildlife conservation challenges. Erika will use the **Arthur Nelson Scholarship** for travel and lodging while collecting data in the field for her master's project which investigates the seasonal prevalence and diversity of avian malaria and related parasites in California songbirds.



"When I began thinking about going to graduate school several mentors recommended SF State due to its strong Biology Department. I took two upper division biology courses through the College of Extended Learning, and found the classes and the professors to be excellent. That experience, combined with an in-person meeting with the professor whose lab I ultimately joined, really solidified my desire to study here."

Gloria Nusse

A Passion for Art and Anatomy



G loria Nusse is a SF State Alumna, Biology Lecturer and a talented and nationally known Forensic Artist who has worked for Yosemite National Park, the Smithsonian and many coroners, sheriffs and police departments across the state. Articles featuring her work have been published in local and national media including The New York Times.

Gloria earned a BFA (with an emphasis on human anatomy) from Wichita State University and her M.A. in Anthropology from SF State. "I was a returning older student," she recalls, "but always felt very welcomed and at home at SF State. I took anatomy while I was a graduate student, and Biology Professor Stan Williams suggested that I teach a lab. I just fell in love with teaching." According to reviews on www.ratemyprofessors.com Gloria is an "awesome lab instructor" and "she knows what she's talking about and has a passion for it." In addition to teaching a Human Anatomy lecture and several labs, she works with students on independent study projects related to hearts, hands, paws, eyes and surgery skills. (She's hoping to facilitate a few bone studies in the future.) A couple of her students presented last year at the American Association of Anatomist's meeting in San Diego.

Gloria is best known for her work with police investigators helping to identify the Jane and Joe Does whose remains lay, unclaimed, in coroner's offices. She does this through a process known as facial reconstruction which begins by making a mold and casting of the skull. Based on the victim's presumed gender and ethnicity, she glues 18-22 pieces of plastic called "tissue markers" onto the cast which anchor strips of clay to build the face.



Photo by Michael Maloney

Each face takes 40-50 hours to complete. "You really have to understand the anatomy," said Gloria. "That's the key to this work: knowing how to read the skull...For law enforcement, I have made 20 facial reconstructions and 11 have led to an identification."

"The statement I hear most frequently from students in the Human Anatomy course is that it changed their lives. It certainly did mine. I can really see the structures on the skeleton and how subtle differences translate into the soft tissue. If I had not had the

opportunity to dissect and lead so many students through dissection, I am sure I would not have this "inside" knowledge!" **To learn more about Gloria and her work, visit: http://biology.sfsu.edu/people/gloria-nusse**



Editor's Note

In the Spring issue we featured a profile on **Dr.** Sarah Cohen and her work



on an invasive marine sea squirt, *Didemnum vexillum*, which was taking over the underwater habitat near Sitka, Alaska and threatening Alaska's fisheries. After the issue was published, Dr. Cohen learned that the Alaskan legislature voted to spend \$500K on eradicating the sea squirt from the Sitka harbor.

ATTENTION ZOMBEE HUNTERS!

The Biology Department and Center for Computing for Life Sciences launched a new citizen science website: https://

www.zombeewatch.org/ as a follow-up to the discovery that the Zombie Fly, *Apocephalus borealis*, is parasitizing honey bees in California and possibly other areas of North America. Your help is needed to learn how far the parasite has spread, and how many honeybee hives might be affected. Visit Zombee-Watch for tutorials on how to become a Zombee Hunter.

Read BioNews online at: http://biology.sfsu.edu

WINNERS OF THE 2012 COAST SCHOLARSHIPS



Evyan Borgnis



Hayley Carter



Rachel Dorfman



Karen Kayfetz



Christina Pasparakis

Benson Chow Rita duMais Chris Ikeda Robert Vogt

Dr. William Cochlan

Crafting Competitive Research Proposals



William Cochlan received a Ph.D. in Oceanography from the University of British Columbia in 1990. Before joining the Biology Department in 1998 as a Senior Research Scientist, he was a post-doc at the Scripps Institution of Oceanography (UCSD) and an Assistant Research Professor at the University of Southern California. Currently, he is a Research Professor directing a biological oceanography and marine microbial ecology research laboratory at SF State's Romberg Tiburon Center where he researches ocean acidification and the effects on coastal food-webs, harmful algal blooms and fish-killing algae, and marine algae biofuel optimization. His most recent project focuses on a Seafood Safety training project in the Philippines, Guatemala and Indonesia.

Dr. Cochlan also teaches "Research Skills" (BIOL 344/844) which focuses on topics designed to assist beginning researchers in developing professional and efficient means to conduct their research activities from accessing the scientific literature to preparing effective professional presentations of their research results. Student Christina Pasparakis (*photo left*) described his class as "a great introduction to starting a Master's in Biology."

His class also includes a multi-week section on effective research proposal writing where he concentrates on proposals that are "within reach of graduate students, rather than NSF-type proposals." For the Fall 2011 class, Dr. Cochlan used the CSU's Council on Ocean Affairs, Science and Technology (COAST) Scholarship as an opportunity to compose, review and present critiques, and revise student proposals. "Actual submission to COAST was optional," said Dr. Cochlan, "but strongly encouraged."

"Dr. Cochlan taught us how to properly read a funding announcement, and how to identify and address what the funding agency or group will be looking for when choosing successful applications," said COAST awardee Rachel Dorfman. (*photo left*) "Dr. Cochlan demonstrated how a scientist needs to write clearly to guide a reader instead of loading sentences with jargon to sound intelligent," wrote student Evyan Borgnis. (*photo left*) Rita duMais wrote that the class "gave me the chance to have my COAST proposal reviewed, not only by Dr. Cochlan, but also by my peers. The collaborative advice I received was instrumental in my proposal being awarded."

Nine RTC student proposals were awarded. (See sidebar left.) COAST Director, Dr. Krista Kamer, credits Dr. Cochlan's class with the successful funding of so many SF State students. "We received 93 graduate student applications for support; 26 were from SFSU. We made a total of 30 awards with ten going to SFSU. This level of success is truly amazing. I believe that Bill Cochlan's grant writing class resulted in many of his students submitting applications, and had a great deal to do with SFSU's success. Bill deserves great credit for motivating students to participate and helping them craft highly competitive applications."

To learn more about Dr. Cochlan, visit: http://online.sfsu.edu/cochlan

BIOLOGY FACULTY AND ALUMNI LAUNCH THE NEW EDITION OF CALIFORNIA'S PREMIER PLANT GUIDE

The book that botanists, government planners, gardeners, artists, and weekend hikers depend on to learn more about California's plant life is bigger and better than ever — thanks in part to Biology Professors Robert Patterson and Tom Parker and ten former and current students. (*See sidebar right.*) They provided detailed descriptions of some of the state's native and weedy



plants, puzzled out the relationships between plant families and in some cases even tramped into California's less-traveled corners to uncover new or long-forgotten species —all to update the 2nd edition of the Jepson Manual of Vascular Plants of California.



"SF State's Botany program is small, but high caliber," said Dr. Patterson (photo left) who co-wrote several entries and was an editor for the entire manual. "The program's emphasis on plant systematics (the study of the relationships between plants) made its graduate students a natural choice to

work on the Jepson Manual. Some students did their master's thesis projects on specific groups of plants, and you really take ownership of a group when you take on that kind of project. There's currently a new batch of students working on the flora of North America who are conscientious, field-savvy, diligent, and a tremendous resource."

The group also authored descriptions and identification keys (known as treatments) for each group of plants. "The hardest part was writing an identification key so that people in the field or in a herbarium could actually determine what they were looking at," said Dr. Parker (*photo right*) who, along with former student Mike Vasey, wrote the treatment for the 96 species of manzanitas found in California.



According to Dr. Patterson, the manual's new edition contains a more accurate reflection of plant relationships based in part on a wealth of genetic information that has become available since the first edition. "The new designations may cause some confusion at first, but accurate plant identification and new information on plant distribution around the state are essential to guide responsible land use and conservation." **ROBYN BATTAGLIA** (*M.A. Biology* 1999) co-authored the Leptosiphon treatment and the key for the *L. androsaceus* complex.

DR. CHARLES BELL (M.A. Ecology and

Systematic Biology 1998) worked on

entries for the Adoxaceae family of

viburnums and elderberries and the

(M.S. Ecology and Systematic Biology

2007) co-authored the treatment for

(M.A. Ecology and Systematic Biology

1995) was the Project Manager for the

Second Edition. She also contributed

three taxonomic treatments in the

(*M.S.* Ecology and Systematic Biology 2005) co-authored the treatment for

Phacelia (also called 'scorpionweed'),

a genus of <u>+</u> 175 species in the

(M.A. Systematic Biology 1985)

wrote the section on 42 species and subspecies of "liveforevers."

(B.S. Botany 1998 & M.A. Ecology and

treatment for three genera of the flax

Systematic Biology 2002) wrote the

family: Linum, Hesperolinon and

SCOTT SIMONO (B.S. Botany 2005)

provided entries for the buttercup,

buckwheat, palm and grass families.

Ecology and Systematic Biology 2001) co-authored the treatment for the genus

Polemonium (Polemoniaceae).

DR. MICHAEL VASEY

Manzanitas.

DR. RUTH TIMME (B.S. Botany 1999 & M.A.

(M.A. Ecology and Systematic Biology 1991)

co-wrote the treatment for 96 species of

and their relatives.

LAURA GARRISON

DR. STACI MARKOS

sunflower family.

DR. DEBRA HANSEN

Boraginaceae.

STEPHEN MCCABE

DR. JOSHUA MCDILL

Sclerolinon.

Phacelia.

Caprifoliaceae family of honeysuckles





















Dr. Robert Bowman 1925-2006

An Alumnus **Remembers**

Dr. Bowman created biology for me! This man brought the discipline, passion, and clarity of comparative anatomy to the highest level imaginable! I did not always agree with his conclusions, yet he was always conversant, and willing to accept other points of view. I credit Dr. Bowman frequently, and used many of his comments/notes in my Ph.D. thesis. I know that I have been grounded on a firm foundation in science based on the tremendous instruction of Dr. Bowman. I am so proud to be an SF State alumnus due primarily to the biology teachers.

- Luman R. Wing, Ph.D. (see photo right)

Alumni News

JULIE MILLER (M.S. Ecology and Systematic Biology 2010) is pursuing a Ph.D. in Animal Behavior at Cornell University. Her master's thesis "Parental Care Trade-Offs and the Role of Filial Cannibalism in the Maritime Earwig, Anisolabis maritime" was published in Animal Behavior.

earned a Ph.D. in Neurobiology from the University of Alabama at Birmingham in 2009, and is currently a postdoctoral fellow at the

University of California, San Francisco Psychiatry Department.

RENO REYES (M.S. Cell and Molecular Biology 2005)



DARIA (DASHA) RONGES (B.S. Physiology 2008) was the lead author of "Membrane Composition and Gene Expression during the First Day of Thermal Acclimation in the Porcelain Crab, Petrolisthes cinctipes" published in the Journal of Experimental Biology. She is currently enrolled in Tufts University's School of Dental Medicine.



ARTHUR SALMON (B.A. General Biology 2002; M.S. Physiology and Behavioral Biology 2006) is a Lab Manager at Amyris Biotechnologies— a synthetic biology company that does metabolic engineering in yeast to produce a wide range of commodity chemicals including cosmetic oils, flavors and fragrances, lubricants and second generation biofuels.

NICHOLAS SILVA (BS Physiology 2011; MS Physiology 2012) is in the Ph.D. program in Neuroscience at the University of Michigan, Ann Arbor.



ARIANNA TAMVACAKIS (M.S. Physiology and Behavioral Biology 2009) is a Ph.D. candidate at Georgia State University and co-author of "Toward Locating the Source of Serotonergic Axons in the Tail Nerve of Aplysia" published in Invert Neurosci.



LUMAN WING (B.A. Cell and Molecular Biology 1980) received a Ph.D. in Biochemistry from the University of Aberdeen (Scotland). He is an Executive Consultant for regulatory/scientific affairs at Beckloff Associates.



IN MEMORY

DR. CLAUDE ALEXANDER

Extraordinary Teacher, Mentor and Friend 1924-2012

Claude Gordon Alexander (known as "Alex") passed away on March 17, 2012 at the age of 87 from congestive heart failure.

Dr. Alexander earned his Bachelor's and Master's degrees in Zoology at Oregon State University, and a Ph.D. in Parasitology from the University of California, Los Angeles.

In 1955, Dr. Alexander joined SF State's Department of Biology. Biology Professor Bob Patterson remembers that Alex at 6'6" was the "tallest professor at the time I arrived on the faculty, and he always stood out in a crowd. I recall also that he sometimes wore kilts to work, instead of pants. He looked very Scottish."

Alex conducted research on the physiology and intestinal parasites of sharks, skates and rays, and the effects of water pollution on the parasites of freshwater fish along the Pacific Coast from Canada through Baja California.

Dr. Alexander's great love was teaching and mentoring several generations of Biology students. He always thought of his students as colleagues, and never held formal 'office hours' instead the doors to his office and lab were always open, even on many nights and weekends, to accommodate his working students' difficult schedules.

According to his wife Betsy, "Alex was up for almost any sport." He participated in the weekly faculty/staff vs. student pickup basketball games, and played golf, handball and racquetball with his students. Until the last two years of his life, Alex ran or walked several miles a day, and completed several Bay to Breakers, 10Ks, half marathons and one marathon.

Alex retired from SF State in 1987 after 32 years of service, and pursued his long-deferred interest in the arts by enrolling in creative writing, art history and painting classes at Cañada College.

Editor's note: Dr. Alexander's family request that donations in his memory be sent to the Department of Biology. Please write "Alex" on the donation envelope (see insert) or in the comment line of your online gift at: http://biology.sfsu.edu (click on the "Make a Difference" link.) Gifts to this fund will help the Department continue to deliver excellent and innovative education amid continuing budget challenges. Thank you!

Remembering Alex

"It was while taking Alex's parasitology class that I got to know him and he me. He offered me a job through his research grant to wash glassware and put together solutions for his research and the physiology labs. Then, he gave me the opportunity to teach a physiology lab-my first teaching experience. All the "stuff" I learned in his physiology class and lab I put to good use when I later taught Human Anatomy and Physiology at public high schools in Hawaii, Washington and for the Elk Grove (California) School District. I not only used his lecturer material, but most of his labs as well, and a few of his jokes. I am forever thankful to him for starting me on my teaching career. He gave me the confidence to get up in front of a group of strangers and teach. Alex was my teacher, then my mentor, and later my lifelong friend."

- Gaetano (Tom) Vasta (B.A. Biology 1964)

Tom (photo right) has received numerous awards for outstanding teaching from Sacramento State College, and the American Association of University Women. He served as Chair of the Health



Committee for the State of California's Curriculum Commission, and Vice Chair of the Science and Foreign Language Committees. Currently, Tom is an Educational Technology Coordinator for the Kalaheo Elementary School, serves on the board of the Kauai Historical Society, and volunteers at the National Tropical Botanical Gardens and the YMCA of Kauai.

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Professor's Discovery is a 2012 Top Ten New Species



For three years in a row Dr. Dennis Desjardin's new discoveries have made the Top Ten New Species List published by the International Institute for Species Exploration (http://species.asu.edu/index) with Phallus drewesii in 2010 and

Mycena luxaeterna in 2011. His newest discovery a mushroom named after SpongeBob Squarepants, Spongiforma squarepantsii — has now made the 2012 list. The mushroom is found under dipterocarp trees in Borneo, and looks more like a sponge than a stereotypical mushroom. Its fruiting body can be squeezed, and bounce back to its normal size and shape.

Dr. Desjardin's research focuses on discovering and documenting the diversity of fleshy fungi from under -explored tropical habitats worldwide. He currently has projects in West Africa, Brazil, Federated States of Micronesia, Indonesia, Malaysia, Thailand, the Hawaiian Island and California.



10 20 30 40 50 60 70

Spongiforma squarepantsii Photo by Dr. Tom Bruns 2012 Top Ten New Species



Phallus drewesii Photo by Dr. Brian Perry 2010 Top Ten New Species

Mycena luxaeterna Photos by Dr. Cassius Stevani 2011 Top Ten New Species



