

BioNews

Spring 2015 Issue 18

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Photo by Steve Hockensmith

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BioNews is published two times a year by SF State's Department of Biology and is mailed to more than 8,000 alumni and friends.

CONTENTS

- 2-3 Thank You 2014 Donors!
- 4 A Novel Approach to Increasing Diversity in Biomedical Research Introducing Dr. Mark Chan
- 5 Notable Alumni
- 6 Meet Two Alumni
- 7 Alumni Notes
- 8 2015 Personalized Medicine Conference

*Advancing
Global Health
and the Biosphere:
Educating
Generations
of Scientists,
Health Professionals,
Teachers and Citizens*

A Letter to Alumni & Friends from Biology Department Chair

The campus has undergone many changes in recent years.

President Les Wong has been with us since 2012. He joined Biology's popular graduation celebration last year as we granted a diploma to his niece, now an honored alumna of the Department of Biology. At this year's event, we celebrate the advancement of more than 400 undergraduates and 60 graduate students, and have asked Mr. Pingdewinde Sam (*BS, Physiology*) and Mr. Aaron Seth Tooley (*MS, Cell & Molecular Biology*) to address the crowd. Changes in the University's official Commencement event have complicated the scheduling of our own on-campus event, so we weren't able to commandeer the Cesar Chavez Student Center for our usual celebration, and we don't yet know what next year will bring.



Mike Goldman

In an effort to keep up with our 2,400 undergraduate majors and 274 graduate students, we welcomed three faculty to campus this year — Drs. Mark Chan (*see page 4*), Pleuni Pennings, and Kevin Simonin — and we've completed the searches for three faculty who will join us next year – Drs. Robyn Crook, Rori Rohlf, and Felipe Zapata. Professor Pennings just shared with me the news that she has a potentially very influential publication on the dynamics of HIV transmission coming out in the *Proceedings of the National Academy of Sciences*.

We're always excited to keep in touch with alumni. In April, we enjoyed a visit from Judith Sernatinger (*MA Cell & Molecular Biology 1987*), who worked with Genentech, Biogen and Stryker (Medical Devices) prior to her current position as Vice President at Alexion. Vince Anicetti, SVP of Global Quality at Coherus Biosciences, has joined our alumni organizing team for the 'Personalized Medicine 8.0: Genetic Screening & Predictive Medicine Conference' (*see page 8*) along with Dan Maher, Ken Hitchner, and John Wulf. We hope you'll be telling us about some of your accomplishments, and your experiences here. After all, we're family in the Department of Biology at SF State.

Dean Sheldon Axler will be stepping down after thirteen years as an extraordinary leader, and will return to his work as Professor of Mathematics. We honor and thank Dean Axler, and welcome Dr. Keith Bowman, who will join us as Dean of the College of Science & Engineering in July.

You no doubt know that the State of California is supporting an ever-decreasing fraction of our expenses, at a time when student demand for biology and other STEM fields is tremendous, and when our State itself needs their skills the most. Please make a donation to the Department of Biology for use where the need is greatest, online or using the enclosed envelope, and include the name of a faculty or staff member (in honor of or in memory of). Your generous donations honor our past, and build the next generation of scientists, teachers, health professionals and informed citizens.



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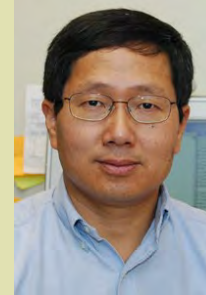
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 for generously supporting
 the Department of Biology's
 long-standing tradition of
 excellence in education.**

**Your gifts
 help to provide
 state-of-the-art facilities
 and innovative
 student-centered programs.**

**Thank you
 for all that you do
 to support
 SF State's
 Department of Biology!**



Biology Instructional Support Services
 Supervisor **Darleen Franklin** received the
 2014 Don Eden Staff Appreciation Award.



Dr. Zheng-Hui He (photo above) and **Dr.
 Weiming Wu** (Chemistry & Biochemistry)
 invented new methods for inhibiting toxic
 algae blooms in freshwater environments.



Graduate Marine Biology major **Adam
 Paganini's** thesis: "Temperature and
 Acidification Variability Reduce
 Physiological Performance in the Intertidal
 Zone Porcelain Crab *Petrolisthes cinctipes*"
 was selected as the *Journal of Experimental
 Biology* "Editor's Choice." His photo of a
 porcelain crab was featured on the cover.



Drs. Kimberly Tanner (photo above) and
Shannon Seidel's article "What if Students
 Revolt? Considering Student Resistance:
 Origins, Options and Opportunities for
 Investigation" published in *Cell Biology
 Education — Life Sciences Education* made
 the *Faculty Focus* publication's "Best of" list
 that celebrates teaching and learning.



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A Novel Approach to Increasing Diversity in Biomedical Research



A team of SF State and UCSF professors are addressing the national need for a more diverse pool of researchers. The team is being led by **Drs. Leticia Márquez-Magaña** (top photo left) and **Carmen Domingo** (bottom photo left) and include SF State professors: Drs. Avi Ben-Zeev (Psychology), Teaster Baird Jr. and Alegra Eroy-Reveles (Chemistry/Biochemistry), Tendai Chitewere (Geography), Cynthia Gomez (Health Equity Institute), Eric Hsu (Mathematics) and Kimberly Tanner (Biology).



Funded by a 5-year \$17 million grant from the National Institutes of Health, the team developed the 'Building Infrastructure Leading to Diversity' (BUILD) project to enhance diversity of the biomedical research workforce by transforming the teaching and research environment at SF State into a safe space where students and faculty can represent different backgrounds and perspectives. In partnership with UCSF, students and faculty will receive training and mentoring to make significant contributions to biomedical research by asking questions that are relevant to local communities.

"I am thrilled to be a part of this new student training program as it will provide students with a unique opportunity to work with leading scientists both on our campus and at UCSF," said Dr. Domingo. In addition to networking opportunities with SF State and UCSF scientists and visiting researchers, BUILD scholars will be provided peer mentoring. And, they will work together in groups to gain skills in interdisciplinary, community-based science.

BUILD students will also participate in two-year research projects (supported by a monthly stipend) that are of interest to them and relevant to local communities. "We have developed a program where our BUILD scholars will have an opportunity to identify personally with the research agenda," said Dr. Domingo, "and take pride in their unique assets to help us solve pressing biomedical problems."

Faculty who work with BUILD students will receive professional development training to better signal safety in their classes and research labs. In addition, new case-based teaching modules that address the needs of diverse communities will be created. For example, an inorganic chemistry class could focus on the problem of an environmental toxin that may persist in low income communities, and give students an understanding of how to develop effective solutions for its elimination.

According to Dr. Márquez-Magaña, who has transitioned into research that links basic science to community health, "We need diversity because we need multiple perspectives in science to address persistent biomedical problems that affect health in poor and ethnic minority communities, and we need the trust of these communities." To learn more about BUILD and/or to apply to the program, visit: <http://sfbuild.sfsu.edu>

Introducing....

Dr. Mark Chan joined the Department in January as an Assistant Professor in Cell and Molecular Biology. He received his Ph.D. in Chemistry from Stanford University in 2008.

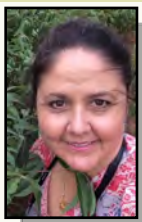
Dr. Chan's research focuses on organelles which are specialized subunits within a cell that have specific functions. "I use live fluorescence microscopy, digital image analysis and computational modeling to learn how organelle size is sensed and controlled by the cell." He studies budding yeast vacuoles which are degradative organelles that break down damaged cellular components, and recycle the degradation products (amino, nucleic and fatty acids) for re-use by the cell. Vacuoles also help maintain cell pH and osmotic balance.

"Changes in organelle size can indicate defects in the organelle and cellular function. This principle is the basis for diagnosing many diseases including cancer. Understanding how cells sense and control organelle size can improve diagnostics and potentially provide novel targets for therapies."

To learn more about Dr. Chan visit: <http://biology.sfsu.edu/people/mark-chan>



"I came to SF State to be a part of a vibrant scientific community that excels in research and education."

**LAURA BOYKIN**

(MS Ecology & Systematic Biology 1998) is a 2015 TED Fellow and a Chemistry and Biochemistry Research Fellow at the University of Western Australia.

**NATASHA CHANDIRAMANI**

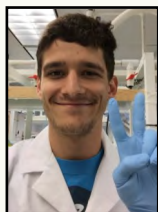
(BS Cell & Molecular Biology 2007) is a Ph.D. candidate at Albert Einstein College of Medicine, and the recipient of the 2015 American Association for Cancer Research Women in Cancer Research Scholar Award. She co-authored "Comparative Analysis of GATA3 Mutation Profiles between Asian and Western Patients with Breast Cancer: Is There Really a Difference?" published in *Cancer*.

**CHRISTIANA CONSER**

(MS Ecology & Systematic Biology 2005) is a Ph.D. candidate at UC Davis, a member and secretary of the California Invasive Plants Advisory Committee and manages the PlantRight program for the non-profit "Sustainable Conservation."

**RACHEL DINER (DORFMAN)**

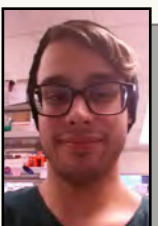
(MS Marine Biology 2013) is a Ph.D. candidate at UC San Diego/ Scripps Institute of Oceanography.



PETER DRELL (BS Marine Biology & Limnology 2014) presented his research on the interactions of the invasive marine invertebrate *Didemnum vexillum* with herring reproduction at the meetings of the American Fisheries Society (Alaskan Chapter) and the Western Society of Naturalists. Volunteers from SF State, UC Berkeley, San Francisco and Marin high schools participated in the research project funded by a grant from the National Fish and Wildlife Foundation.



JOHN DOUDNA (MS Ecology & Systematic Biology 2008) earned a Ph.D. in Ecology, Evolution and Organismal Biology, and is a Postdoc in the Entomology Department at Iowa State University.

**ANTHONY ERITANO**

(MS Cell & Molecular Biology 2014) was accepted into the joint Ph.D. program between Kobe University (Japan) and the Riken Center for Developmental Biology.

**SARAH HENDRICKS**

(MS Conservation Biology 2009) is a Ph.D. candidate in Genomics at the University of Idaho.



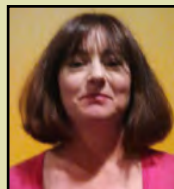
KENICHI IWASAKI (BS Cell & Molecular Biology 2009) was awarded a Rackham Pre-Doctoral Fellowship at the University of Michigan.



ELVIN LAURON (MS Cell & Molecular Biology 2014) co-authored "Transcriptome Sequencing and Analysis of *Plasmodium gallinaceum* Reveals Polymorphisms and Selection on the Apical Membrane Antigen-1" published in *Malaria Journal* and "Coevolutionary Patterns and Diversification of Avian Malaria Parasites in African Sunbirds (Family Nectariniidae) published in *Parasitology*.

**MISHA LEONG**

(MS Ecology & Systematic Biology 2008) earned a Ph.D. at UC Berkeley and is a Postdoc at the California Academy of Sciences.

**JACQUELINE LEVY**

(MA Ecology & Systematic Biology 2002) is a Biology teacher at Sonoma Valley High School.



CANDACE LOW (MA Conservation Biology 2001) earned a Ph.D. in Ecology, Evolution and Marine Biology from UC Santa Barbara. She was a National Science Foundation Postdoctoral Fellow, and is now a SF State Lecturer teaching Biometry, Animal Diversity and Entomology.

**PEDRO MORGADO**

(MS Conservation Biology 2008) earned a Ph.D. in Molecular Biology and Biochemistry at UC Irvine and is a Postdoc at Stanford.

**JEFF RUTTER**

(MS Ecology & Systematic Biology 2010) is a Ph.D. candidate in Quantitative Ecology and Resource Management at the University of Washington.



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NOTABLE ALUMNI

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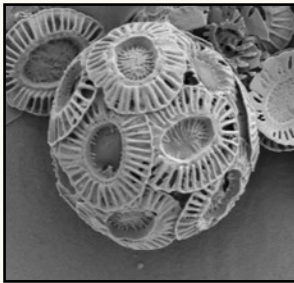


Roy Bartal

MS Marine Biology 2014

Roy Bartal’s thesis research shows that Coccolithophores — microscopic marine algae that produce coccoliths (calcareous plates) — can mitigate turbulent stress caused by waves in the ocean. His research was published in *Limnology and Oceanography*.

The study was conducted at the Romberg Tiburon Center in the laboratories of Drs. Ed Carpenter and William Cochlan with the assistance of Bingyan Shi, an undergraduate student from Cornell University.



Although Coccolithophores have been studied extensively, the selective advantage of the coccoliths they produce have yet to be understood. Roy wanted to learn about the role of coccoliths and the advantages they might give *Emiliana huxleyi* (photo above by R. Bartal). This phytoplankton species forms vast blooms, and is the most abundant coccolithophore in the world’s ocean. *E. huxleyi* is a major contributor to the sequestration of atmospheric carbon dioxide into carbonate sediments and potentially plays an important role in determining how climate change may affect the world’s oceans.

Researchers examined a calcifying strain of *E. huxleyi* and its genetically identical twin which lost its capacity to calcify. The cells were subjected to various stressors encountered in the ocean including agitation and nitrogen limitation. Under standard laboratory conditions, the noncalcifiers outcompeted the calcifiers in growth, but exposure to a combination of environmental stressors including moderate turbulence showed that calcifying strains better mitigated stress, reduced cell lysis (breakdown) and supported a greater cell concentration.



John Kipping

**BA Ecology 1969;
MA Biosystematics 1971**

**Instructor
River Guide
Arborist
Ship Captain**

What were your research interests when you attended SF State?

I attended a graduate seminar on pollination ecology, and was so overwhelmed by the specialization and co-evolution of the plant/animal relationship that I decided to investigate the pollination of native orchid species. I had already found populations of coralroot and calypso orchids on Mount Tamalpais, and used my connections with the California Academy of Sciences’ Botany Department to learn other locations. I eventually studied nine species scattered around the Feather River, Nevada County, Sagehen Creek Biological Field Station north of Truckee and Leonardi Springs in the Rubicon River watershed. My research gave me an excuse to hang out in these remote areas for two years. It was wonderful just to sit quietly and observe nature — especially since I was working two jobs to sustain myself while attending graduate school.

Which professional achievements are you most proud of?

After graduating, I continued my work as Education Director at Strybing Arboretum, and as an instructor with the UC Extension Natural Environment Program in Berkeley, Davis, Santa Cruz and Los Angeles. I became a river guide in Alaska, British Columbia, Idaho, Oregon, and New Zealand and led many nature tours in the Galapagos, Baja, and Alaska. I ran my own tree service as a climber/arborist for thirty years. I am a licensed captain on a small cruise ship (the Delphinus) in Alaska. Now I am retired except for four months each year on the Delphinus in Canada and southeast Alaska.

What do you remember about your time at SF State?

Giving my thesis presentation with helicopters buzzing the campus during SF State President S.I. Hayakawa's little war. Meeting fellow biology major and my wife Kathy Kipping. Memories of Drs. Larry Swan, Bob Hall and Jim Mackey are high on my list along with the crazy plant material and marine algae instructor, George Oberlander.

Alex Kwok

(BS Clinical Science 1986)

After having reviewed the Fall issue of BioNews, I have learned about the recent passing of **Dr. Remo Morelli** who was my immunology professor. He was an amazing person, a fantastic scientist, professor and person. If you mentioned my name to him I'm sure he would either laugh in your face or give you a puzzled look. I wasn't the brightest penny in his class, but he did inspire me to want to know and learn more. I respected him and admired him for his knowledge, wisdom and enthusiasm. He helped me gain useful knowledge regarding the body's response to invading organisms. I will forever miss **Dr. Hal Markowitz** who inspired me to learn more about Zoology and have a deeper respect for the environment and endangered species. I admired him for his knowledge about marine mammals as well as primates. I will miss **Dr. Claude Alexander**, my microbiology instructor. I remember he had a very good sense of humor, had compassion for his students and encouraged them to learn. Many people idolize singers, actors, and athletes because of their accomplishments but I idolize my past professors because of what they accomplished in life, their knowledge and wisdom, how they contributed for the better of society and science, and how they inspired others to learn more about science.

John Kipping (see page 6)

(BA Ecology 1969; MA Biosystematics 1971)

I was distressed to read of the passing of **Dr. Bob Sweeney**. SOB or "Sweet Old Bob" as he was affectionately known to many of his students was a very important person in my life as a student in biological science in the 60s and 70s. I took his courses on plant ecology and taxonomy. His field courses were just grand, and encouraged me to enter graduate school. I worked for SOB as a graduate assistant for the plant taxonomy lab then he became the head person on my thesis committee along with Drs. Gustafson and Nelson. I remember that he grew up along the Klamath River near Happy Camp in a burg known as Horse Creek. Dr. Sweeney was proud of his Native American ancestry and of being of Yurok lineage. He was always supportive of his students and helped me achieve a long career in the life sciences as a field naturalist and later as an arborist. I am so pleased that he almost achieved ten decades.



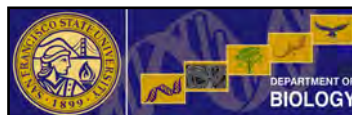
Gabriel Peckham (MS Biomedical Laboratory Science 2000)

I was so sorry to hear of the passing of three outstanding faculty all in one year. **Dr. Bigler** accepted me into the Biomedical Laboratory Science program despite my unconventional background after he called to assess my understanding of biology. He was on my MS committee, and returned the first draft of my thesis without reading it because the margins weren't correct. Although he expected a high standard, he was generous with his time and was very approachable. **Dr. Morelli** was always cheerful and had a gift for explaining medical microbiology. He told many interesting, often firsthand, stories about the diseases we were studying. **Dr. Tobler** was an outstanding lecturer and truly inspiring human being. I found her positive energy contagious. I also met my wife in her hematology class. Thank you for all the great memories and the best science education I could have asked for!



Yvonne Wong (BS Microbiology 1997)

I am so sad to hear about the passing of **Dr. Anthony Catena**. He was my adviser when I decided to change my major to Microbiology. I was very fortunate to have him also as a professor. He was so knowledgeable that it made learning fun. What I learned most from Dr. Catena is how microbiology affects our daily lives and how medicine changes as bacteria mutate. I enjoyed going to his class everyday. He will be greatly missed. I also miss **Dr. Remo Morelli**. He was so animated whenever he lectured. I had him for Medical Microbiology. To this day, I still have the class textbook on my book shelf. I use it as a reference whenever I want to read about microbes. Sometimes, I read the text book to my kids. Both of these professors were just great. Without their letters of recommendation, I would not have been able to go on to professional school.



We want to hear from Alumni!

Let us know about your academic and professional achievements.

Or, share your memory of a Biology professor, lecturer or staff .

Email: silver@sfsu.edu.



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ALUMNI NOTES

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2015 Personalized Medicine Conference 8.0 “Genetic Screening & Predictive Medicine” <http://personalizedmedicine.sfsu.edu>

Since 2008, the Department of Biology has hosted a one-day conference on personalized medicine. This approach to healthcare focuses on genetic variation which enables researchers to learn which groups of patients are more prone to developing certain diseases, and helps both physicians recommend lifestyle changes and treatments that could delay disease onset or reduce its impact, and the pharmaceutical industry to develop more effective diagnostic tests and treatments.

Department Chair, Dr. Michael Goldman, began the conferences because he believes that public understanding of this revolutionary approach to healthcare is key if science and society are to work together. The conferences have attracted speakers and participants from the biotech industry, healthcare systems, universities and colleges worldwide. Past conference themes have included: “Personalized Medicine — It Will Change Your Life” (2008), “Bioinformatics: Mining the Data” (2009), “Targeting Cancer” (2010), “Pharmacogenomics & Consumer Genetic Testing” (2011), “The Role of Epigenetics” (2012), “Next Generation Sequencing for Targeted Therapeutics” (2013) and “The Microbiome in Health & Disease” (2014).

Since its beginning, Biology alumni have been pivotal conference organizers. This year’s alumni organizers from BioMarin Pharmaceutical, Inc. are: **Ken Hitchner**, Vice President of Project Management; **Dan Maher** (BA Biology 1979) Senior Vice President of Product Development; and **Amy Waterhouse** (BS Physiology 1987) Senior Advisor, Regulatory Affairs.

The 2015 Personalized Medicine Conference 8.0 “Genetic Screening & Predictive Medicine” will be held on May 28 at the South San Francisco Conference Center. *Editor’s Note: The Department thanks BioMarin Pharmaceutical Inc., Genentech and Gilead Sciences Inc. who continue to be major conference sponsors.*



Photos by Justin Chan