

# B I O N E W S

A TWICE-YEARLY PUBLICATION FOR SF STATE'S DEPARTMENT OF BIOLOGY ALUMNI, FACULTY, STAFF, LECTURERS, DONORS.

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## *The Best of Times, the Worst of Times*

I find myself again with just a few lines to tell you about the bewildering mix of events—from the great to the downright disastrous—here in Hensill Hall. **Dr. John Hafernik** organized a stunningly successful meeting of the regional American Association for the Advancement of Science in August, bringing hundreds of scientists from the across the west to our campus. Sweeping honors at the meeting was ecology graduate student **Genevieve Walden**. Our students won five out of seven prestigious scholarships from the Achievement Rewards for College Scientists Foundation. We're proud of **Dr. Frank Bayliss** who was honored this fall at the White House for his work mentoring future scientists. Our Personalized Medicine 3.0 (<http://personalizedmedicine.sfsu.edu>) is tentatively scheduled for May 25, and will focus on the rapidly-growing field of targeted, individualized cancer therapies.

We are deeply saddened by the passing of Professor Emeritus **Jack Tomlinson** who served the Department from 1957-1988. We also mourn the loss of student **Bill Balkwell** who worked on the Manhattan Project in the 1940s and came to the Department after retiring to learn about the biology of cancer, **Eustacio Torres, Jr.** (B.S. Physiology 1997) who was designated "All American" in wrestling while at SF State, and Veteran Affairs Medical Center's Chief of Pathology **Dr. Tien-Sze Benedict Yen** who mentored many of our Biomedical Laboratory Science graduate students.

I see our former students making a definitive impact on our State and Nation's economy and science (see page 4), and I can't understand the deep cuts in funding we've had to endure. Our faculty budget has slipped from 55 to 40 faculty over the last two years, while our student numbers have risen from 1400 to 1700 (see page 6). Yet, we know we're fueling the very engines of economic recovery while advancing the health of our population and the sustainability of our biosphere. We truly appreciate donors like Emerita UCSF Professor **Carlyn Halde** whose charitable gifts enable us to provide our students with excellence in teaching and research. I hope that whenever your own situation permits, you will make even the smallest unrestricted contribution to SF State's Department of Biology. The only stimulus package I can offer you is the deepest gratitude of our faculty, staff and 1700 students — and a very nice tax deduction.



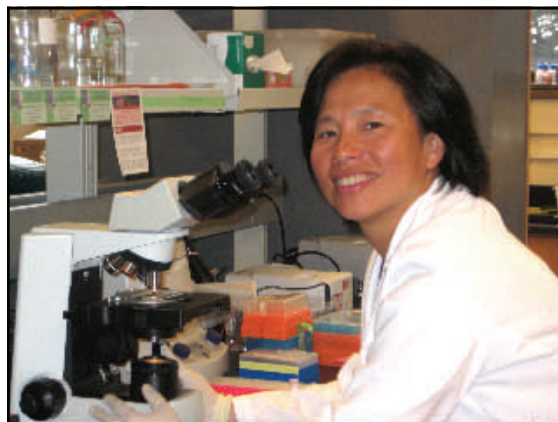
*Mike Goldman*

## NEW GRADUATE DEGREE OFFERS DIVERSE CAREER OPTIONS

**T**HE BIOLOGY DEPARTMENT now offers an innovative graduate degree option known as the Professional Science Master's (PSM) program. The PSM is designed to allow students to pursue advanced training in science, technology, engineering and mathematics while simultaneously developing workplace skills that are highly valued by the life sciences workforce community.

The PSM program, which obtained final academic approval from the California State University Office of the Chancellor in July 2009, was three years in program development. Begun in 2006, the CSU PSM Initiative first completed an initial feasibility study which included a statewide and local industry-needs assessment, and a statewide student-interest survey. The positive outcome of the feasibility study resulted in a three-year award of \$1,365 million from the Alfred P. Sloan Foundation to help advance PSM programs on 14 CSU campuses (including SF State) — making the CSU the largest statewide higher education system to launch PSM degree programs on multiple campuses.

The program, formally affiliated with the Council of Graduate Schools and the National PSM Association, plans to admit its first class of graduate students in Fall 2010. The core curriculum will include two years of interdisciplinary training in science, technology and business, along with research or industry internships that will prepare graduates for diverse professional careers in biomedical and biotechnology industries, business, corporations, government and non-profit organizations. Students enrolled in the PSM in Stem Cell Science will participate in the newly awarded Stem Cell Student Training Program — see page 5.



Lily Chen, Ph.D., Associate Professor and Director of the PSM Program, worked with Bay Area life science industry leaders to develop two new PSM degree concentrations in Biotechnology and Stem Cell Science.

**PSM**  
PROFESSIONAL  
SCIENCE MASTER'S

For more information, visit:

- [www.sfsu.edu/~psm](http://www.sfsu.edu/~psm)
- <http://biology.sfsu.edu/faculty-pages/professional-science-masters>
- Email: [psm@sfsu.edu](mailto:psm@sfsu.edu)

## NEWS BRIEFS

● **BOTANY PROFESSOR FINDS NEW FUNGUS**

**Dr. Dennis Desjardin discovered a 2-inch stinkhorn mushroom, *Phallus drewesii* (right) in the West African island nation, Sao Tome and Principe.**



Photo by Brian Perry

● **PROFESSOR RECEIVES HIGHEST RECOGNITION**

**Dr. Frank Bayliss was awarded the Presidential Award for Excellence in Science, Math and Engineering Mentoring by President Obama.**



**ANNE TODGHAM** joined the faculty in August. Trained as a comparative animal physiologist, she received her Ph.D. from the University of British Columbia in 2005. Her research examines whether organisms have the physiological capacity to tolerate a rapidly changing climate.

Before coming to SF State, she was a postdoctoral researcher at the University of California, Santa Barbara where she investigated the effects of ocean acidification on larval development in the purple sea urchin, *Strongylocentrotus purpuratus*. She also studied the physiological mechanisms that underlie

cold-adaptation in Antarctic fishes.

In Fall, Dr. Todgham co-taught a Human Physiology Lab and Environmental Physiology Seminar. In Spring, she will teach Advanced Topics in Physiology (BIOL 617). Dr. Todgham can be contacted at [todgham@sfsu.edu](mailto:todgham@sfsu.edu)

**BLAKE RIGGS** will join the faculty in January 2010. He received his Ph.D. in Molecular, Cellular and Developmental Biology in 2005 from the University of California, Santa Cruz. Before coming to SF State, he was a post-doctoral researcher at the University of California, Berkeley.

Dr. Blake's research focuses on understanding mechanisms of mitotic spindle assembly and chromosome segregation during cell division.

He is the winner of numerous awards including the Ruth L. Kirchenstein National Institute of General Medicine's National

Research Service Award (2006-2009), Diversity Fellowship for Graduate Research in Genomic Sciences (2003-2005) and a Minority Biomedical Research Support Fellowship from the National Institute of Health (1999-2003).

Dr. Riggs can be contacted at [riggs@sfsu.edu](mailto:riggs@sfsu.edu)

**NEW FACULTY**

*"I am excited to join such a dynamic Biology faculty*



*where I can contribute to mentoring young scientists through both teaching and research."* - Dr. Anne Todgham

*"Understanding the fundamental aspects of*



*genetic inheritance and cell division will provide insight into treatments for the major diseases of our day."*

- Dr. Blake Riggs

**NEWS BRIEFS**

● **AWARD SUPPORTS INNOVATIVE BIOLOGY TEACHING**

**Dr. Kimberly Tanner and Biology alumni Jeff Schinske received a NSF grant to fund professional development opportunities for Bay Area community college biology instructors.**



● **PROFESSOR WILL SERVE AS PLANT SOCIETY PRESIDENT**

**Dr. Tom Parker was selected to be the 2010-2013 President of the California Botanical Society.**



**A SCIENTIST MENTOR: DR. CAROLINE MELOTY-KAPELLA**

I GREW UP as a first generation U.S. citizen. My parents moved to this country in search of a better life, and they instilled in me a strong work ethic and the importance of education.

I graduated with a B.A. in Biology from Pitzer College in 2001, then chose to pursue my master's at SF State because of the dynamic and collaborative learning environment and the numerous and exciting research opportunities. The RISE program (<http://www.sfsu.edu/~seo/>) helped me with the training, education and mentorship I needed to pursue my goal of becoming a scientist. While working in Dr. Carmen Domingo's lab (see page 5), I studied the cell behaviors involved in muscle formation by observing the rotation process of transplanted fluorescently-labeled somite cells during somitogenesis in *Xenopus laevis* using confocal microscopy, and co-authored my first scientific paper. I was also selected as the first Genentech Scholar which gave me the opportunity to pursue my educational goals, gain exposure to the biotechnology industry through internships, and develop relationships with excellent mentors.

I received my master's degree in Cell and Molecular Biology in 2003, then joined the UC Davis Cell and Developmental Biology graduate group where I studied the role of an extracellular matrix protein, tenascin-W during osteogenesis in chicken embryos. I was first author on two scientific papers which included a cover photo on the June 2006 issue of *Development Dynamics*. I earned my Ph.D. in Cell and Developmental Biology with an emphasis in Biotechnology and Translational Research in 2007.

One of the challenges I encountered as a graduate student was obtaining funding to pursue my research. To continue my graduate work, I became a TA, coordinated the undergraduate summer research program, applied for fellowships and scholarships, and joined a biotechnology program which allowed



**“Having mentors who believe in you and your dream is essential.”**

me to interact with different scientists and interns at a biotechnology company. I had the honor to be selected as an inaugural fellow for the Howard Hughes Medical Institute's Integrating Medicine into Basic Science. This astonishing program provided opportunities to experience the treatment of patients with cardiovascular diseases through clinical experiences, courses and interactions with medical students and physicians.

In June 2008, I joined Genentech. As a Clinical Regulatory Affairs employee, I assist in coordinating and overseeing the process of obtaining approval from

various worldwide regulatory agencies for late stage product development. I enjoy working in a collaborative team environment, exercising my scientific and clinical knowledge, working with cutting-edge technology and policy-defined laws to deliver the next generation of breakthrough medicines to patients.

My story is just one example of how the dream of earning a Ph.D. can become a reality. It takes determination, passion for innovation, hard work, and caring mentors. So many minority students do not see a career in science as a true possibility because they so infrequently see science faculty members with their own background. Thus, having mentors who believe in you and your dream is essential. In 2008, I joined the NIH-funded Spectrum program offered by SEPAL in SF State's Department of Biology which brings together faculty, students, alumni in doctoral and biotechnology positions and women scientists who share their scientific knowledge and current research with middle and high school students. This program gives me the opportunity to be a mentor, and give back to the community who did so much to help me achieve my goals.

**Editor's Note:**

**To learn more about mentoring, visit:**  
<http://sepal.sfsu.edu/programs-spectrum.html>

**SERVING THE BIOLOGY COMMUNITY**



**“There’s a lot of promise in understanding how stem cells give rise to the various cell types found in the adult body. In particular, these cells can potentially be used to cure life-threatening diseases such as spinal cord injuries, Parkinson’s and neurodegenerative diseases.”**  
**- Dr. Carmen Domingo**

**CARMEN DOMINGO** serves the Biology community in many ways. She is a teacher, researcher, mentor, Associate Chair and Director of Biology’s newest graduate program for stem cell researcher training.

Dr. Domingo received her Ph.D. in Molecular and Cell Biology from UC Berkeley in 1995, and joined the Biology faculty in 1997. Her research interest is in the cellular and molecular pathways that underlie pattern formation in the vertebrate embryo. “I am interested in how cells begin to acquire

specific cell fates early in development,” she explained.

As Associate Chair of Undergraduate Affairs, Dr. Domingo supervises all activities associated with Biology’s undergraduate program ranging from curriculum development, course scheduling, hiring lecturers and staff, and working with student organizations.

She is also a mentor focused on increasing the participation of under-represented groups in science. She works with the Society for the Advancement of Chicanos, Native American Indians

in Science, and Bay Area K-12 schools through the “Expanding Your Horizons” and SPECTRUM programs which are designed to encourage girls and minorities to consider careers in science.

Dr. Domingo is especially excited about her newest position as the Stem Cell Training Program (see *below*) Director. She hopes to attract a diverse group of students to ensure that the future stem cell workforce reflects the diversity of California’s population.

Dr. Domingo can be contacted at [cdomingo@sfsu.edu](mailto:cdomingo@sfsu.edu)

**SF STATE UNIVERSITY ON THE LEADING EDGE OF STEM CELL RESEARCH WITH CIRM BRIDGES PROGRAM**

**T**HIS FALL, ten master’s students began a two-year program designed to prepare them for careers in stem cell biology and regenerative medicine. Along with intensive training in project management, communication and scientific research, these students will receive professional mentoring and participate in 12-18 month

internships working with stem cell researchers at UC Berkeley, UC San Francisco, and the Buck Institute of Regenerative Medicine. Upon completion of the CIRM Bridges program, they will have the knowledge and experience to work with both federally and non-federally registered stem cell lines.

Participants will graduate with either a Master’s in Biology with a concentration in Cell and Molecular Biology or a Professional Science Master’s degree (see page 2).

**For more information, visit:**  
<http://biology.sfsu.edu/faculty-pages/cirm-bridges-stem-cell-research-awards>

**ALUMNI NEWS**

**Did You Know**

**15 SF State Biology Graduates Work Towards their Ph.D.s...**

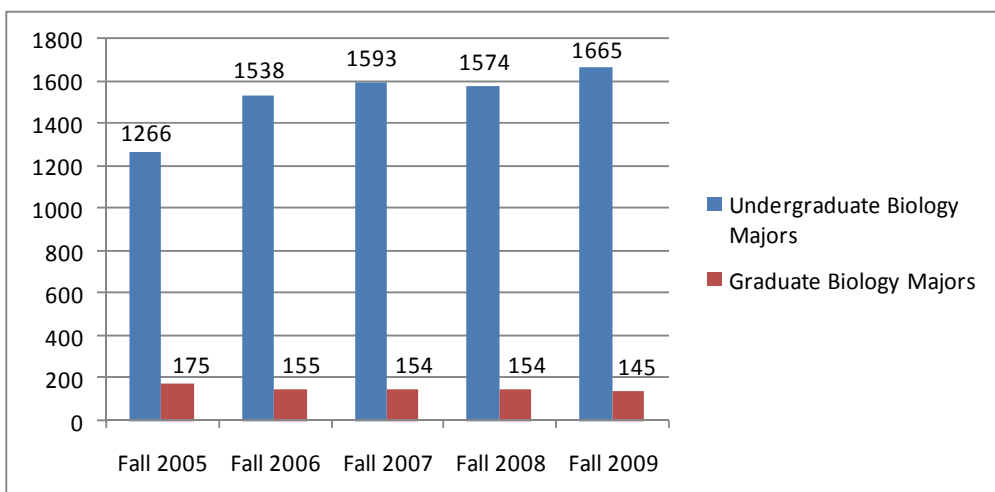
**John Doudna** (MS Ecology and Systematic Biology '08) Ph.D. in Ecology, Iowa State University. **Hani El Shawa** (MS Physiology '07) Ph.D. in Neuroscience, UC Riverside. **Aiza Go** (MS Cell and Molecular Biology '09) Ph.D. in Cell and Developmental Biology, UC Davis. **Debra Hansen** (M.S. Ecology and Systematic Biology '05) Ph.D. in Botany, University of Texas. **Amy Honan** (MS Ecology and Systematic Biology '07) Ph.D. in Ecology, University of Washington. **Kenichi Iwasaki** (BS Cell and Molecular Biology '09) Ph.D. in Neuroscience, University of Michigan. **Mathew Keirle** (MS Ecology and Systematic Biology '03) Ph.D. in Evolutionary Biology, University of Chicago. **Jennifer Krauel** (MS Ecology and Systematic Biology '09) Ph.D. in Ecology, Evolution and Behavior, University of Tennessee. **Jennifer Kerekes** (MS Ecology and Systematic Biology '07) Ph.D. in Evolutionary Biology, UC Berkeley. **Lydia Li** (MS Cell and Molecular Biology '09) Ph.D. in Cell and Molecular Biology, Johns Hopkins University. **Summer Lindzey** (MS Ecology and Systematic Biology '09) Ph.D. in Entomology, University of Idaho. **Joshua McDill** (MA Ecology and Systematic Biology '02) Ph.D. in Botany, University of Texas. **Bernadette Nera** (BS Cell and Molecular Biology '09) Ph.D. in Cell and Developmental Biology, UC Davis. **Arianna Tamvacakis** (MS Physiology and Behavioral Biology '08) PhD in Biology, Georgia State University. **Andrew Wilson** (MS Ecology and Systematic Biology '04) Ph.D. in Evolutionary Biology, Clark University.

*We asked 2008/2009 graduates to tell us what their most valuable learning experience was — below is some of what we learned.*

- **Dissecting cadavers** (a memorable experience for many)
- **Learning lab techniques, and using lab equipment**
- **Working with live organisms**
- **Designing and implementing a research project**
- **Going on field trips**
- **Reading and writing scientific papers**
- **Working with groups**
- **Giving presentations**
- **Meeting people who are working in the field and conducting their own research.**

*What was your most valuable learning experience? Let us know by emailing [silver@sfsu.edu](mailto:silver@sfsu.edu)*

**Biology by the Numbers**



Graph created by Kathleen Baker, Fall 2009

## PHOTOGRAPHER RECORDS DEPARTMENT LIFE

**J**USTIN CHAN can often be seen photographing Department events such as the 2007 re-opening of Hensill Hall (top right) after being retrofitted, and the opening celebration of the new Greenhouse (below left).

Justin, who earned his BS in Dietetics from SF State in 2001, joined the Biology staff as an Instructional Support Technician in 2007. During his first year, he photographed the first Biology Baccalaureate and Masters Recognition Ceremony (right). "I was thankful to be working with the commencement committee," recalled Justin. "The team really put out their best effort to accomplish

this event. And, seeing the happiness and joy on the graduates, their family and friends' faces was unforgettable."

*"I think we pass through the experiences of life too fast. When I photograph an event, I can freeze that moment. I can go back to see the details, and enjoy the moment once again."*

In July 2009, Biology's giant corpse plant (*Amorphophallus titanum*) (bottom right) bloomed, and Justin photographed the rare event. "The plant had an odor,

and it is not the most beautiful flower on earth," said Justin, "but it is unique. It is just like every one of us. We are not perfect, but we are unique."

Justin can be contacted at [uchan@sfsu.edu](mailto:uchan@sfsu.edu)



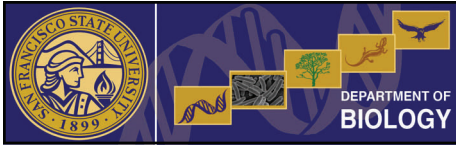
## PRESENTING OUR NEWEST ADDITION



**Biology's new Greenhouse** spans the length of the basin behind Thornton and Hensill Halls. The 12-room 9,600 sq. ft. building houses a living plant teaching collection which includes 20 fern, 10 conifer and 150 flowering plant families including the giant corpse

plant (photo above) which bloomed last July. (To view SF State photography student Dalton Blanco's time lapse video of the flowering, visit: <http://www.youtube.com/watch?v=tyw8gdzP9Hg>)

Researchers have been anticipating using the Greenhouse since the building began in 2008. Currently, seven funded projects focusing on drought stress biology, plant molecular genetics, photobiology, rain forest conservation, native California plants, conservation biology, plant biotechnology and pollination are underway .



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**A UNIVERSITY EDUCATION IS AN INVESTMENT**  
The Department of Biology depends on the generosity of donors. We'd like to extend our heartfelt thanks to the businesses and organizations below for supporting Biology's programs during 2009.

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MASTER'S RECOGNITION  
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- Fisher Scientific
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- Office of Student Programs & Leadership Development Associated Students
- VWR

**GREENHOUSE SPONSOR**

- Friends of the Greenhouse

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The impact of philanthropy on SF State's Biology programs makes a difference. Your charitable gifts ensure our continued history of providing students with excellence in teaching and research. And, they are tax-deductible. To learn how you can help, visit <http://biology.sfsu.edu> and click on the "Make a Difference" link. Thank you.

**ADVANCING GLOBAL HEALTH AND THE BIOSPHERE:**  
*Educating Future Generations of Scientists, Health Professionals, Teachers, Citizens*