



BioNews

Issue 5

Fall 2008

News from San Francisco State University's Department of Biology

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Read BioNews

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www.sfsu.edu/~biology

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A WORD FROM THE CHAIR

Dear Alumni and Friends:

Once again we topped off last year with a post-commencement bash, this time with an inspiring presentation from Lasker Prize-winning UCSF scientist Dr. Elizabeth H. Blackburn, whose seminal work on telomeres and telomerases has broad applications in our understanding of cancer and aging. More than 1300 people cheered our graduates. Don't miss the photos (page 5), and some of the statistics, in this issue of BioNews!

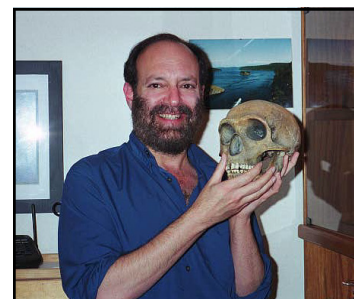
Our Personalized Medicine conference was immensely successful (photos on page 4), and half way through the day we knew there would have to be a Personalized Medicine 2.0. Mary Fermi, Ken Hitchner and Dan Maher have been joined by other alumni organizers Jeremy Ahouse, Julio Gagne, John Wulf and Karl Giljum. I hope you will keep 4 June 2009 open on your calendars.

We're pleased that our former chair, Dr. John E. Hafernik has been named President of the California Academy of Sciences. The Academy is now in its stunning new building in Golden Gate Park, and I'm hoping that the interaction between scientists there and on our campus will grow even more vibrant. Academy curators are appointed as Biology Research Faculty, and regularly work with our students in Academy laboratories.

You no doubt are aware of CSU's difficult budget situation. We face the possibility of a 10% reduction in Biology course offerings this year and next, but we're doing our best to accommodate our students where we can. Despite these difficult circumstances, I'm very excited about what our students, faculty and staff have been accomplishing. In addition to racking up several departmental scholarship awards (Hensill, Nelson and Kuby), our students are strong contenders for several prestigious college-wide scholarships including ARCS, Maxwell, Rosenblatt and Fong scholarships. We're nearing our goal on establishing a Ramirez-Weber (FARW) scholarship, and plan to select first awardees for both the FARW and Kauer Scholarships this Spring. Assistant Professor Vance Vredenburg, who joined the Department just last year, has been a regular on CNN, PBS, and National Geographic. He was also featured in an Animal Planet documentary "The Vanishing Frog." Associate Professor Gretchen LeBuhn's Great Sunflower Project has made no less than forty thousand people into citizen-scientists, and Assistant Professor Kimberly Tanner, whose work will soon appear in Science, has made us a center for biology education research.

Warmest regards,

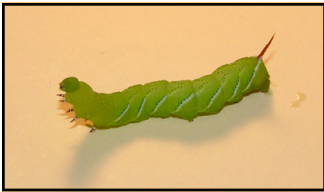
Mike Goldman



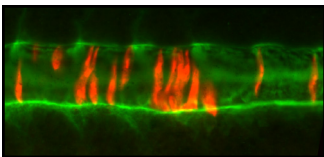
Advancing Global Health and the Biosphere
Educating Future Generations of
Scientists, Health Professionals, Teachers and Citizens



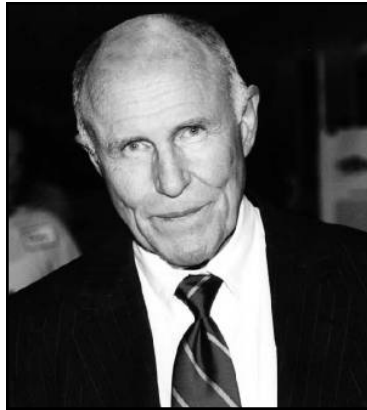
**"Fiery-Breasted
Bush-Shrike"**
by
Dr. Ravinder Sehgal



"Manduca sexta larva"
(tobacco hornworm)
by Hani El Shawa



**"Vertebrate embryo
mesodermal cells"**
by Bonnie Afonin



IN MEMORY

Paul Richard Barnes

1936-2008

An Exceptional Member of the SF State Community

Paul Barnes, retired SF State Biology Professor, died of lung cancer at the age of 72 on June 6, 2008.

An alumnus of SF State (Biology, B.A. 1960; M.A. 1963), Dr. Barnes received his Ph.D. in biochemistry in 1969 from the University of Kansas in Lawrence. He joined the Biology faculty in 1975, and taught Human Physiology, Endocrinology and the Physiology of Aging until he retired in 2006. "Paul loved teaching, and took great pride in the success of his students," recalls Dr. Dan Buttlare, a friend since 1966, and former College of Science and Engineering Associate Dean (1997-2001).

Dr. Barnes held numerous prominent positions including Chair of the Department of Biology in 1982 when he worked to establish the department as both progressive and prestigious. He also served as Dean of Faculty Affairs and Professional Development. "Paul cared about his colleagues," said Dr. Buttlare. "He handled this job with intelligence, charm, wit, fairness and collegiality which characterized his entire career at SFSU."

Dr. Barnes' research focused on space physiology. His work at the NASA-Ames Research Center included testing subjects on a human centrifuge — at the time, one of only a few centrifuges in the world.

"He loved the study of 'extreme' physiology, and was interested in how to keep astronauts well-hydrated and strong during space flight," said Biology professor Jennifer Breckler who collaborated with him on the design of an experiment to test the effects of oral glucose on exercise thermoregulation in men after water immersion. "Paul loved to lecture students about his space research results," said Dr. Breckler. "He would tell students that low gravity causes increases in urinary excretion (diuresis), and a great drop in muscle mass. Between the dehydration and muscle atrophy, astronauts are extremely weak when they return to normal gravity. This is the main reason they are detained for several days before being let out to attend press conferences. They need to regain their strength, so they will look like heroes!"

***"Paul leaves a legacy of
integrity and hard work."***

- Dr. Bernie Goldstein

In 2004, the Kennedy Space Center honored Dr. Barnes for his professional dedication and outstanding achievement in support of the human space flight program. (His work is implemented every time an astronaut goes into space.) He received an Honoree Award, the highest form of recognition bestowed upon an employee by the NASA Space Flight Awareness Program.

To make a donation to the Department of Biology in memory of Professor Barnes, visit www.sfsu.edu/~biology, and click on the "Donate to Biology" link. Please write "In Memory of Paul Barnes" in the "Comments" box. We thank you for your support.



NEW FACULTY MEMBER

José de la Torre Microbiology

José de la Torre joined the Department as Assistant Professor. He comes to SF State from the Department of Civil and Environmental Engineering at the University of Washington. Dr. de la Torre received his Ph.D. in Biochemistry and Molecular Biology from the University of California, San Francisco in 1998. From 2000-2003, he was a Visiting Researcher at the Monterey Bay Aquarium Research Institute.

Dr. de la Torre's research focuses on the physiology, ecology, genomics and evolution of microorganisms playing key roles in the geochemical cycling of Nitrogen. He is interested in a group of organisms known as the Archaea who are important players in ammonia oxidation in marine and terrestrial environments. His research has involved field work on the ocean, in Antarctica, and Yellowstone National Park. Dr. de la Torre looks forward to expanding his efforts to research sites in California.

"I am very excited to be joining the faculty at SFSU, an institution that embodies the qualities of diversity and excellence I so value. I look forward to sharing my love of science and teaching with the students and faculty."

During fall, he taught Microbial Physiology and will teach General Microbiology in the Spring. Dr. de la Torre can be contacted at jdelator@sfsu.edu.

NEW FACULTY MEMBER

Bettina Engelbrecht Plant Physiology Ecology

"I am thrilled to share my love of science and the tropics through teaching."

Bettina Engelbrecht received her Ph.D. in 1998 from the University of Darmstadt in Germany. She comes to SF State from the Smithsonian Tropical Research Institute in Panama, where she has been conducting research for more than ten years. Dr. Engelbrecht joined the faculty as an Assistant Professor. Her research interests are in the mechanisms underlying plant species distribution, community composition and ecosystem function. Her current research focuses on the role of drought in shaping tree distribution patterns and diversity in tropical forests, using a rainfall gradient across the Isthmus of Panama as a model system. A mechanistic understanding of the factors shaping species distributions is critical to project shifts in forest composition, diversity and ecosystem function under past and future global climate change. During the Fall semester, Dr. Engelbrecht taught Plant Physiology Ecology; in Spring she will teach The World of Plants and a graduate seminar in Tropical Ecology. She can be contacted at engel@sfsu.edu.

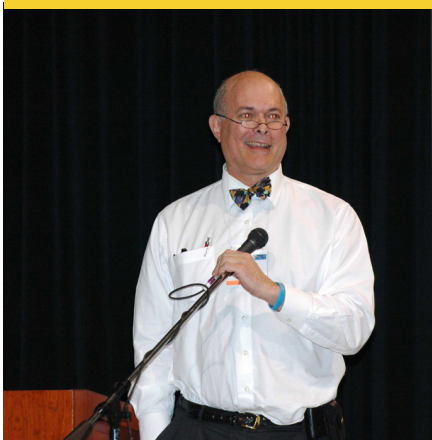


DID YOU KNOW?

- > SF State's Department of Biology is the largest in the California State University system.
- > 1588 Undergraduate and 154 Graduate students are Biology majors.
- > 45 full time faculty and 37 part time lecturers teach 80 plus courses with multiple sections.
- > In 2007-08, 27 students were awarded scholarships totaling \$60,240.
- > 120 undergraduate degrees were awarded in Fall 2007, and 184 undergraduates degrees in Spring 2008.
- > The Department ranks second among U.S. Universities whose graduates successfully enroll in Ph.D. programs.
- > Biology's many achievements would not be possible without the generous support of our alumni and friends. Your loyalty and commitment are the driving force in our pursuit of excellence. Learn more about department programs, and how you can contribute at www.sfsu.edu/~biology

Top and middle photo: Panelists, Drs. Esteban González Burchard, UCSF, and Paul Billings, CellPoint Diagnostics discussing “Personalized Medicine—Right Treatment, Right Patient: Clinical Perspective.”

Bottom photo: Panelist, Ken Hitchner, Monogram Biosciences, discussing “Personalized Medicine—Opportunities and Challenges.”



Personalized Medicine: Right Treatment, Right Patient

On June 5, 2008, SF State’s Department of Biology hosted a one-day conference featuring a star-studded cast of biotechnology, academic, nonprofit and corporate research leaders developing diagnostic and prognostic tools based on the new understanding of genetic variation. The event was attended by over 100 scientists, health professionals, educators, journalists, alumni and students.

We would like to thank the following alumni for their support and leadership in organizing the first annual Personalized Medicine Conference:

Mary Fermi

Independent Consultant

Ken Hitchner

V. P., Monogram Biosciences

Dan Maher

V.P., BioMarin Pharmaceutical, Inc.

Steve Parker

Owner, Express Employment Professionals

We would also like to thank the following event sponsors:

DNA Gateway International,

Pacific BioDevelopment, LLC

Kenneth and Pamela Fong

of Kenson Ventures

Publicity partners:

BayBio and San Jose BioCenter

A second conference is scheduled for June 4, 2009.



Middle photo: Dr. Susan Baxter, CSU Program for Education and Research in Biotechnology, presents “Biotechnology and Personalized Medicine: Academic Research and Preparing Students for Industry.”

Bottom photo: Dr. James Kovach, Buck Institute for Age Research, presents “The Path Toward Personalized Medicine: Private Research Institute Perspective.”



MEET THE STAFF

Coming 'home' to SF State

Michael Fong joined the department as Operations Manager in 2001 because he wanted to 'come back home' to the school where he graduated. Located in the Biology Stockroom, HH 539, he oversees department facilities, manages the budget, and makes sure that vendors deliver the right product at the right price—no small task for a large department that has to continuously update, replace and acquire new equipment.

Q What did you do before joining the Biology staff?

A After earning a B.S. in Biochemistry, I worked as a research scientist for the NASA Ames Research Center, and participated in three major projects including the Search for Extra Terrestrial Intelligences (SETI). I also worked on the development of gas chromatography columns for detecting the composition of the Martian atmosphere. And, I worked on the development of pyrosensors to detect composition and water in Martian soils. Later, I joined the University of San Francisco's College of Arts and Sciences' staff, and worked as a Laboratory Coordinator for the General Education physics, chemistry and biology labs.

Q What accomplishments in your position are you most proud of?

A Winning two awards: the June 2004 Service and Teamwork Recognition Award given to staff who distinguish themselves in their performance and contributions to the University. I was also awarded the 2004 Don Eden Staff Appreciation

Award for the College of Science and Engineering (COSE) which was established by Chemistry professor Don Eden to show his appreciation for staff members who support faculty research by making significant contributions to the maintenance of COSE facilities.

Q What are your future goals?

A Raising funds for the department. Currently, I co-sponsor (with Kathleen Baker) a student organization, the Biology Fundraising and Social Club. We sell laboratory consumables to students. We also started a café (located in HH 539) and the proceeds support the annual Graduate and Undergraduate Recognition Ceremony. (Photos below)

Q What do you like best about your job?

A There's never a dull moment; everyday is a new challenge. And, working with our amazing students, excellent faculty and hard working staff. Interacting with so many on- and off-campus people has allowed me to form friendships that I cherish and hold close to my heart.

Congratulations 2008 Graduates!



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Remarkable Students

Fern Canton and Shannon Messerly Work the BUZZ.

The Great Sunflower Project (GSP), a citizen science endeavor designed to monitor and map bee populations, was launched in Spring 2008 by conservation biologist Dr. Gretchen LeBuhn. The plan is simple: volunteers agree to plant sunflowers (*Helianthus annuus*) which are native to the lower 48 United States, and frequented by many bee species. When the plants flowered, volunteers were asked to observe for 30 minutes the bees that visit their sunflowers, and report the count on standardized data sheets. Currently, 40,000 American and Canadian volunteers ranging from preschoolers to master gardeners from rural to suburban to metropolitan locations participate.

And, all the data coming in,

including the sunflower heads, are managed by two remarkable undergraduate students: Fern Canton and Shannon Messerly who also stuff envelopes, make customized seed packets by the hundreds, and answer emails and phone calls.

"I can't even begin to count how many emails we have responded to," said Shannon, a Child and Adolescent Development major who originally became interested in the project when she saw an ad requesting help with stuffing envelopes. "At least a few thousand in the past six months. And there was a time when we were receiving 20-30 voicemails a day."

When asked who her most memorable participant is, Shannon talks about a young Girl Scout. "She is working on the GSP to earn her

silver award, and has diligently sent in data, pictures, and flower heads. I make sure I write her, by hand, every time she contacts us."

Fern's most memorable participants are from a family who was repeatedly stung by bees whenever they observed their sunflowers, and would have to go to the hospital each time. "They soon learned to put a nickel coin on the area where they got stung, and the swelling would go down faster. Though we told them they did not have to go to such great lengths to get the data, this family was willing to go through so much pain for us. It was great to hear they loved the project, and that it gave them a chance to spend time together."

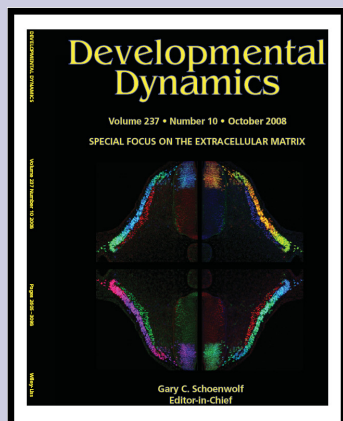
Both women agree that they have learned a lot—from discovering

(continued on page 7)

News Briefs

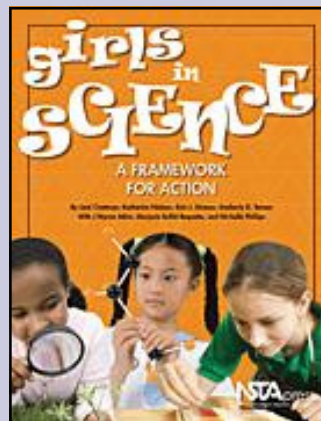
- **Entomology**
Professor elected California Academy of Science President

Dr. John Hafernik oversees the Academy's scientific activities in a new state-of-the-art Golden Gate Park facility.



- **Lab Manager's**
photo on cover of October 2008 "Developmental Dynamics"

Lisa Galli used confocal microscopy to photograph an immunostained transverse section of a HH st 18 chick embryo. Dr. Laura Burrus made the composite image.



- **Biology**
Professor's book promotes equality for young learners

Dr. Kimberly Tanner, authored "Girls in Science: A Framework for Action" which gives 15 objectives for improving the way girls learn science. Available at <http://www.nsta.org>

Remarkable Students

how deep seeds should be planted, to how long they take to germinate, how the environment plays a role in germination, how some seeds have dormancy, why some bees are attracted to sunflowers, and that many animals love to eat the flowers.”

“We learned there were some downsides to working with citizen scientists,” admits Fern. “Some may over/under water the seeds, mistake a wasp for a bee, report on other flowers, or not keep up with reporting the data.”

“We also heard from a lot of impatient seed-missing participants,” remembers Shannon, “who were pretty creative with their demands.”

Shannon is graduating in December and plans to work as an elementary school teacher for a few years while she gains more knowledge of the sciences in order to teach life or earth science at the middle school level. She will use her experience with the GSP when she plans out future grant-funded research focusing on the integration of subjects in elementary education.

“When I started working with the GSP,” said Shannon, “I was just finishing my first grant-writing course, and it has been an eye opener to experience first-hand how the logistics of using a grant play out in real life. I also learned that there is a large



Fern Canton, Dr. Gretchen LeBuhn, and Shannon Messerly

group of people across the country who are “Master Gardeners” and take the title very seriously. It has made me want to become one!”

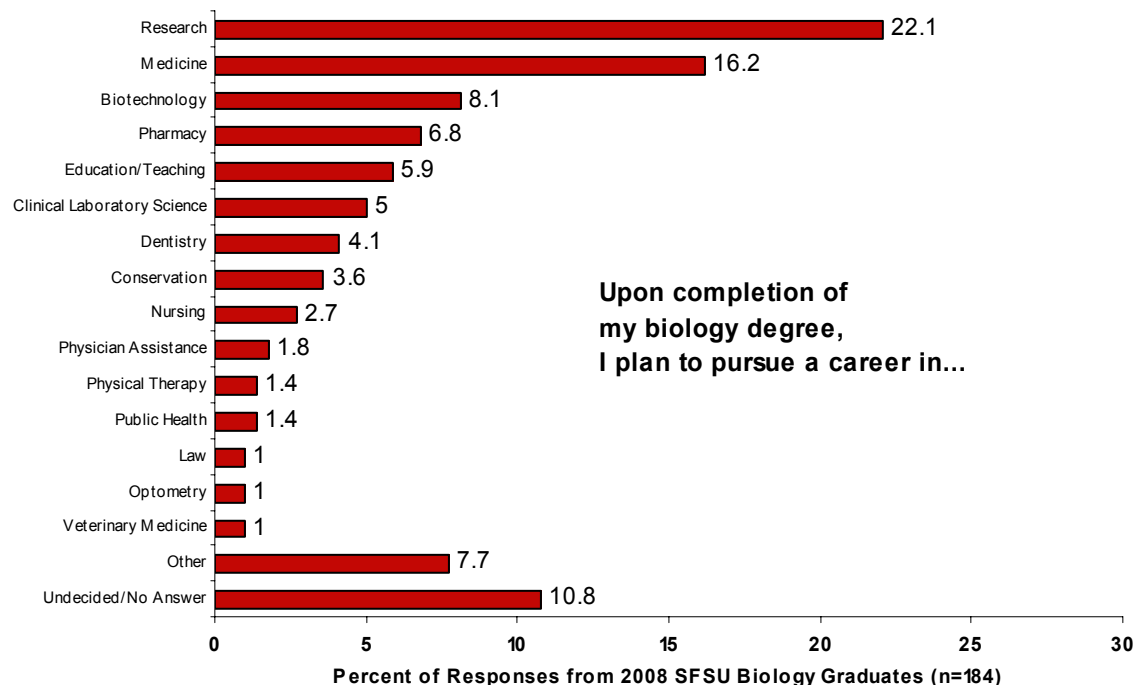
Fern, a microbiology major, plans to graduate in Spring 2010, and work in a laboratory as a research assistant. When asked how she will use this experience in the future, Fern replied “I learned to appreciate the proper practice of gathering data, and I will take this experience into my work field, and become a better scientist. I also appreciate the importance of gardening, and will use this experience for the day I decide to make my own beautiful garden.”

Learn more about the Great Sunflower Project at:

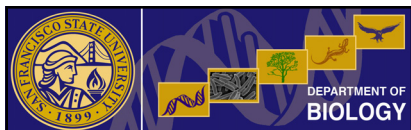
<http://www.greatsunflower.org>

What are the career goals for SF State's 2007/2008 Biology graduates?

We asked alumni what they were going to do after graduation. Here's the breakdown of 184 respondents:



Upon completion of my biology degree, I plan to pursue a career in...



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BioNews is a twice-yearly publication for Alumni, Faculty, Staff, Students and Friends of SF State's Department of Biology

Drop us a line! We know that you are community focused on making a difference in the world, and we encourage your correspondence. We want to hear about your achievements, read your letters to the Editor, see your photos (please provide captions), cartoons, crossword puzzles, science-related book recommendations—even memories of attending SF State's Department of Biology in years past. We also welcome articles (between 50-600 words) that cover Department people, programs, and research. Email silver@sfsu.edu or mail your news to: Colleen Francis, Editor, BioNews, Department of Biology/SFSU, 1600 Holloway Avenue, San Francisco, CA 94132. **Either way, we want to hear from you!**

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The Alumni Collection



Now you can have your cup of java and support Biology, too! Durable 12 oz ceramic mug with generous handle, black matte finish and department logo available in white or gold.

Available from the Biology Stockroom

\$10 (To order by mail, include \$5 for shipping.)

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 Biology Fundraising and Social Club (BFSC).**