

# BioNews

## Spring 2017 Issue 22

Partial image of Malcom X mural

painted by Kamau Ayubbo and Eric Norberg in 1996 and featured on front of SF State Cesar Chavez Student Center.



**Dr. Laura Burrus**  
Cancer Biology, Cell  
Signaling, Biochemistry of  
Wnt Lipid Modifications



**Dr. Mark Chan**  
Organelle Size Control in  
Budding Yeast, Fluorescence  
Microscopy, Computational  
Imaging Analysis



**Dr. Diana Chu**  
Epigenetics, Chromatin, Gene  
Expression, Chromosome  
Dynamics, Male Fertility



**Dr. Robyn Crook**  
Neurobiology, Sensory  
Neuroscience,  
Pain Physiology,  
Nervous System Evolution



**Dr. Sally Pasion**  
DNA Replication & Repair,  
Telomere Biology,  
Cell Cycle Regulation



**Dr. Pleuni Pennings**  
Drug Resistance, HIV,  
Population Genetics,  
Mathematical Modeling,  
Computer Simulations



**Dr. Blake Riggs**  
Membrane Organization &  
Inheritance, Generation of  
Cell Diversity, Cytoplasmic  
Reorganization during Mitosis



**Dr. Andrea Swei**  
Disease Ecology,  
Disturbance Ecology,  
Microbiome Profiling,  
Transcriptomics

### Educating Generations of Scientists, Health Professionals, Teachers and Citizens

#### DEPARTMENT OF BIOLOGY

SF State University

1600 Holloway Avenue

San Francisco, CA 94132

email: [biology@sfsu.edu](mailto:biology@sfsu.edu)

<http://biology.sfsu.edu>

Facebook:

SFSU Biology Department

BioNews Editor:

Colleen Francis

Email: [silver@sfsu.edu](mailto:silver@sfsu.edu)

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### Dr. Katharyn Boyer

Wetland & Coastal Ecology  
& Restoration, Community  
Ecology, Biodiversity &  
Ecosystem Functioning,  
Nutrient Dynamics



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Molecular Mechanisms of  
Cell-Cell & Cell-Environment  
Communications in Plant  
Development,  
Vitamin B6 Signaling,  
Plant Stress Physiology



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### Dr. Jonathon Stillman

Environmental Physiology,  
Marine Biology,  
Responses to Climate Change



### Dr. Kimberly Tanner

Biology Education Research,  
Science Teaching Methods for  
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## Biology Team's Findings Contribute to Changes in BART Seats



(L-R) Darleen Franklin, Dr. Brinda Govindan, Allen Caden, Jennifer MacFarlane, Jacky Lo, Dr. Lily Chen, Kimberly Tsui

In 2011, the *Bay Citizen* newspaper teamed up with Biology Instructional Services Facility Supervisor and alumna **Darleen Franklin** (BS Microbiology 2016; MS Microbiology 2014) who swabbed a random wool-covered Bay Area Rapid Transit (BART) seat and headrest to learn if any microorganisms were hiding in them. Darleen found *Staphylococcus aureus*, a Gram-positive commensal skin flora bacterium, in the seat sampling. She also found bacterial growth even after wiping the seat with an alcohol wipe.

Darleen's findings contributed to BART's decision in 2012 to begin replacing the old seats with easy-to-wipe vinyl seats, and all cloth-covered seats were replaced by January 2015. That year Drs. Lily Chen and Brinda Govindan and alumna Kimberly Tsui (BS Microbiology 2007) joined Darleen to form the SF

Bay Area Transportation Microbial Study (BATMS) team. Biology's molecular biologists Drs. Frank Cipriano and Colin Leasure also contributed to the study. In an April 2016 study, the team found the *S. aureus* strain to be neither Methicillin-resistant *S. aureus* (MRSA) or Vancomycin-resistant *S. aureus* (VRSA). Also, there was no presence of fungi or fecal bacteria in this sampling.

The study has been adapted for the Medical Microbiology and General Microbiology teaching labs to give students an opportunity to engage in authentic research. Undergraduate student Jacky Lo, alumni Jennifer MacFarlane (BS Microbiology 2016) and Allen Caden (BS Microbiology 2016) tested BART seat handles and hand straps last February during a major public event (Super Bowl 50) and found that the bacterial population was more diverse in the evening samples than in the morning. Also, the most abundant bacteria belonged to the Gram-positive cocci genera.

Darleen believes that "it's important to know more about the bacteria in our public environments to help us in understanding the microbes that live in/on us. Hopefully while monitoring the transit system for our citizens, this study can also serve as a catalyst to engage students in their own community." This summer Darleen and Kimberly will share their 2016 findings at the American Society of Microbiology Conference in New Orleans.

### DEPARTMENT OF BIOLOGY HAS NEW CHAIR BEGINNING AUGUST 2017

**Dr. Laura Burrus** earned a Ph.D. in Biochemistry from the University of Wisconsin-Madison and was a Post-doc in Developmental Biology at Harvard University before joining the Biology faculty in 1997. Her research is focused on identifying the biochemical and cellular mechanisms underlying Wnt gradient formation in chick embryos. Her work on Wnt signaling is relevant to birth defects and cancer. In a note to Biology faculty and staff after her election, Dr. Burrus wrote, "I see a department that is poised to be a national leader in producing scholarship that is relevant to our communities, engaging diverse students in STEM careers and developing 'best practices' for mentoring students from diverse backgrounds. To continue and enhance this proud tradition, I envision a department in which we grapple with current issues facing our communities (such as climate change and health disparities). I envision a department that actively welcomes all students and enables them to complete their degrees in a timely manner. I envision a department wherein the ethnic and cultural diversity of the faculty and staff reflect the demographics of our student body and surrounding communities. I envision a department in which teaching, mentoring, and scholarship are valued equally." Learn more about Dr. Burrus at: <http://faculty.sfsu.edu/~lburrus/>







**Renate Eberl** (MS Ecology & Systematic Biology 2005) earned a Ph.D. in Ecology from UC Davis in 2012 and is a SF State and Santa Rosa Junior College (SRJC) Biology Lecturer and a NSF Research Opportunity Award Fellow researching sea star wasting disease (SSWD). According to Dr. Eberl, “SSWD has killed off many species of sea stars along our coast and has been described as one of the worst marine epidemics.”



Dr. Eberl (photo left) and SRJC and SF State undergraduate and graduate students from Dr. Sarah Cohen’s (photo right) lab are gathering census data on sea star abundance, disease symptoms and environmental parameters (salinity and water temperature) to get a better understanding of the impact that SSWD has on *Leptasterias*, a small six-rayed sea star (photo right). The researchers also work in a wet lab where they investigate the impact of changed environmental conditions (lower salinity and higher water temperature) on SSWD.

“*Leptasterias* was initially thought to be not affected,” said Dr. Eberl. “Our research findings show that while the onset of SSWD appears to be later than for larger stars many populations of *Leptasterias* are now also impacted. At some sites near the San Francisco Bay where the Cohen lab has monitored for many years, *Leptasterias* are now completely gone, while at other sites especially north of Cape Mendocino there are still populations with lots of stars, but we are finding many that show symptoms of the disease.”

There is no cure or treatment, and not much is known about how transmission occurs, but the team has discovered results that might increase survival at least under aquarium conditions.

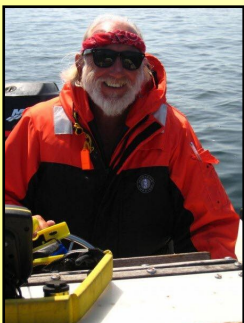
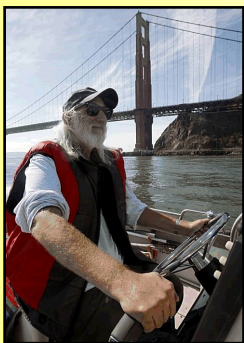
## Alumna Faculty Student Research: SEA STAR WASTING DISEASE



*Leptasterias*  
Photo by  
Ashley Contreras



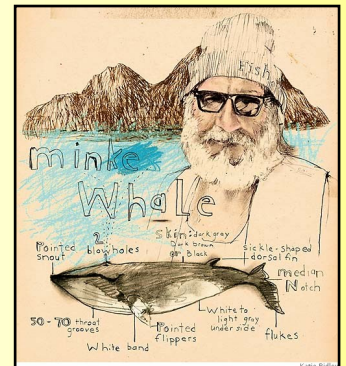
## IN MEMORY



**Dr. Jonathan Stern** passed away on February 16 at the age of 62. Dr. Stern was a Biology alumnus (MA Ecology & Systematic Biology 1991), a SF State Biology Lecturer and a Whitely Scholar at the University of Washington Friday Harbor Laboratories’ Helen R. Whitely Center.

“The biosphere has lost a great advocate. Dr. Stern was an active scientist engaged in study of marine mammals for most of his life, doing exactly what he’d dreamed from childhood. He obtained a M.A. in our Department working with the Minke whales of Monterey Bay. His work on whales and spatio-temporal scales at Texas A&M University earned him a Ph.D. in 1998. He remained heavily involved in marine mammal research. A profile in the *San Francisco Chronicle* called him ‘the Whalehead.’ We were incredibly fortunate that he came back to us to continue his research and writing, and to serve our students as a deeply beloved lecturer.”  
— Dr. Mike Goldman

“As his office mate we had a lot of laughs together - Jonney was incredibly funny with his sharp wit and one liners for everything. His students loved him, he was very generous with his time and incredibly esteemed in his field. I wish I had gone out on his boat with him to spot the dolphins and whales that he studied. He was often in a lot of pain with issues with this knees, hip and feet but he still managed to keep a smile on his face and make everyone laugh. He had great stories and lived a colorful, adventurous life.”  
— Heather Murdock



Editor’s note: Do you have a memory of Dr. Stern you want to share with other alums? Email [silver@sfsu.edu](mailto:silver@sfsu.edu)  
And, if you wish to make a donation in Dr. Stern’s memory, please use the enclosed envelope or visit: <http://biology.sfsu.edu>  
and click on the “Donate to SFSU Biology” link. Thank you!



# THANK YOU 2016 DONORS!

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## BioNews is now available online!

“Much to my delight I have been receiving *BioNews* through the mail. It’s most invigorating to read about the activities of students and faculty and about research being conducted on various topics. However, would it be possible to receive *BioNews* through email?”

**Klaas Jan Runia,**  
The Netherlands.

*Editor’s note: The answer is ‘yes.’ Visit: [biology.sfsu.edu](http://biology.sfsu.edu) and click on the ‘BioBulletin/BioNews’ link. To request an alert when a new issue has been posted, email [silver@sfsu.edu](mailto:silver@sfsu.edu)*

## A Letter to Alumni and Friends from Dr. Michael Goldman



It is with mixed emotions that I bring to an end my twelve years as Chair of the Department of Biology. I’ve enjoyed so much working with the faculty, students and staff, and with our vibrant community of alumni and friends. It’s hard to imagine a more rewarding and exciting position.

At the start of fall semester, it will be my privilege to turn the reigns over to Professor Laura W. Burrus. (See page 2) Laura is a developmental biologist, a top-notch teacher and researcher, and a strategic thinker who will lead our Department to ever greater levels of achievement.



Sandwiched between two giants of the Department of Biology, I am also happy to have had as my immediate predecessor Professor John E. Hafernik, (photo left) former President of the California Academy of Sciences, who becomes Emeritus Professor & Chair of Biology at the end of this semester, after forty years of amazing service to our Department.

While John may be leaving us, we’ve got two new Assistant Professors joining us this fall – Dr. Alejandro Vélez in Animal Physiology, now at Washington University in St. Louis, and Dr. Jason Cantley in Plant Evolutionary Biology, currently at Bucknell University. We’re excited to bring these two folks to our team.

Our conference, *Personalized Medicine 10.0: Has it changed your life?*, enters its tenth year, and we’re planning a program on June 2 that highlights much of the progress across the field in the past decade. Dan Maher, a retired BioMarin executive and alumnus who started this venture in 2007, and I will be on a podcast at our web site (<http://personalizedmedicine.sfsu.edu>). We’re privileged to continue working with alumni Ken Hitchner and John Wulf, and were recently joined by alumna Allyson Moulton, as well as Michael Behrens and Amanda Todd of the College development team. We are expanding our reach into the biotechnology community and the City of South San Francisco in order to provide more opportunities and experiences for our students. We don’t want you to miss this – you can jump right to our registration page at [bit.ly/SFStatePMC10](http://bit.ly/SFStatePMC10).

We said a fond farewell to alumnus and lecturer Dr. Jonathan Stern, who passed away unexpectedly in February. (See page 3) Jonny, whom I preferred to call “The Whalehead” was a superb teacher and an accomplished marine mammalian biologist who studied with the late Professor Hal Markowitz. While we and the students miss him sorely, the Cetacean world has lost a powerful advocate and a great friend.

Dr. Frank Cipriano retired after seventeen years as Director of our Genomics & Transcriptomics Analysis Core (GTAC) laboratory. His work with students was extraordinary, even legendary, enabling scores of theses and publications.

Members of the Association of Biology Students are organizing our gala departmental 11th Baccalaureate and Masters Recognition Ceremony at the Masonic Center this year. (See page 6)

While I may not be writing these notes anymore, I expect to remain an active member of the Biology and University community for a long time to come. I’ll be looking forward to seeing you!



**LAURA BOYKIN** (MS Ecology & Systematic Biology 1998) has been named a Senior TED Fellow — one of only 10 worldwide for this year. The Fellowship enables her to raise awareness of food security issues in sub-Saharan Africa and highlight how genomics and supercomputing are aiding research solutions for small land holder farmers.



### JENNIFER DUNNE

(MA Ecology & Systematic Biology 1994) is Professor and the Vice President for Science at the Santa Fe Institute (New Mexico). She was elected a Fellow of the Ecological Society of America for ‘deep and central contributions to the theory of food web analyses, including extension to paleo food webs.’



**ERIC GASMIN** (BA Biology 2016) is a Physical Therapy Aide at West Portal Physical Therapy in San Francisco.



### BRITTA DENISE HARDESTY

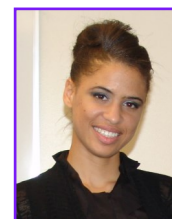
(Ecology & Systematic Biology 1999) is a Principle Research Scientist with Oceans and Atmosphere at the Commonwealth Scientific and Industrial Research Organization in Australia. (<https://www.csiro.au/en/Research/OandA/Areas/Marine-resources-and-industries/Marine-debris>) She is the lead author of “Estimating Quantities and Sources of Marine Debris at a Continental Scale” published in *Frontiers in Ecology and the Environment*.



**DOUGLAS HUSBANDS** (BS Physiology 1983) is a Doctor of Chiropractic, a Certified Clinical Nutritionist, and will soon complete requirements for an Institute for Functional Medicine Certified Practitioner. He has been in clinical practice for over 26 years, most recently practicing in San Carlos, California since 2006. As an expert in Functional Medicine, he has helped many people improve, recover and regain their health from chronic conditions such as Gastroesophageal Reflux Disease, inflammatory bowel disorders, autoimmune thyroid disease and chronic fatigue syndromes. To learn more about Dr. Husbands, visit: [www.HolisticHealthBayArea.com](http://www.HolisticHealthBayArea.com)



**TYRA MCCRAY** (MS Cell & Molecular Biology 2010) earned a Ph.D. from the University of Tennessee, Knoxville’s Genome Science & Technology program.



### JACKIE SHAY

(MS Ecology, Evolution and Conservation Biology 2016) is a Ph.D. candidate at UC Merced. She is the lead author of “Biodiversity and Phylogeny of *Marasmius* (Agaricales, Basidiomycota) from Madagascar” published in *Phytotaxa*, 292(2): 101-149.2017



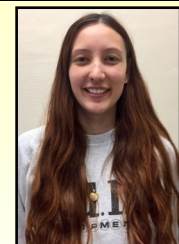
**GENESIS VASCONEZ** (BS Physiology 2016) was admitted to the UCSF Masters Entry Program in Nursing.



## New Student Club Hosts the 2017 Biology Baccalaureate and Masters Recognition Ceremony

Graduate student **Kadie-Ann Williams** (photo left) and undergraduate **Samantha Brophy** (photo right) wanted to create a student club that was inclusive to all biology students, so in 2016 they co-founded Biology’s newest student club, the

Association of Biology Students (ABS), which currently has 160 members. “The club’s aim is to bridge the gaps between undergraduate and graduate students, faculty and staff,” said club President, Kadie-Ann. Since then, ABS members have participated in last Fall’s graduate student orientation and in the Biology Department’s Spring Retreat where club members facilitated a poster presentation/reception. They have also hosted outreach events including ‘Taco Tuesday’ and offered a Fall 2016 Biology Student Research and Travel Grant Scholarship. And, this year ABS organized Biology’s 11th annual graduation ceremony.



Learn more about ABS at: <https://orgsync.com/142548/chapter> or email: [absclub@mail.sfsu.edu](mailto:absclub@mail.sfsu.edu)

“Dr. Janis Kuby had a profound affect on my life and certain future choices. She instilled in me a love of immunology, which never wavered, and she gave me personal time that helped me learn what medical research was all about. It became my choice of profession. She was a huge factor in my decision to pursue a doctorate in Cancer Immunology from the Graduate School of Biomedical Sciences at the University of Texas, Houston, affiliated with the M.D. Anderson Cancer Center. I was awarded my doctorate in just over four years, thanks to previous research experience in a lab at UCSF. I then went on to do my postdoctoral research at UCSF. This research, too, was partly due to Dr. Kuby’s influence.”

“I was devastated when Dr. Kuby died of breast cancer. At that time I was doing my postdoctoral fellowship at UCSF in breast cancer research. I attended a memorial for her at SFSU, and felt my heart break. The world indeed lost a great Researcher, Teacher, Author and a completely beautiful person.”

**Cheryl Ravenwolf (nee Schimenti)**

*BS Cell & Molecular Biology 1985*

Grant Eisen worked in various UCSF labs until 1988 when he moved to Nevada County where he has worked as a registered environmental health specialist for the local county government.

“I may have been one of Dr. Janis Kuby’s first students — back in 1978. I was her student before she was married; when she was Dr. Mower! The highest tribute I can pay Dr. Kuby is that when she taught it was always like a loving parent teaching their own child. She was brilliant, sensitive, a great communicator and had a beautiful spirit. She made immunology challenging yet fun. She also didn’t hold back her opinion when students did not make enough effort to meet her class standards. She was honest — with praise or with disappointment. We knew she wanted us to tap our potential and excel in her class.”

“I feel very fortunate to have attended SF State at that time. I had the honor of being a student of Drs. Morelli, Yonenaka, Catena and many others. They were a wonderful collection of faculty. They all were so

dedicated and provided many opportunities for my education and professional future. Also, they were down to earth good people. I’m sure SF State still enjoys the same quality faculty. Thank you for this opportunity to reflect on my wonderful experience at SFSU.”

**Grant Eisen**

*BA Microbiology 1978; MA Microbiology 1986*

“The Fall 2016 issue of BioNews reminded me of a few of my professors: John Hafernik and the late Janis Kuby.”

“I am a Registered Environmental Health Specialist (REHS). This credential is issued by the California Department of Public Health and requires a bachelor’s degree with required science units, completing 18 months of training and passing the REHS state exam. Two days before taking the this exam I was on the 5th floor of the SFSU library studying for it when the Loma Prieta earthquake hit in 1989. After graduation, I worked at a dairy and food micro lab for six months before I started what is now my 28-year-old career in environmental health. My first 19 years were the most exciting as I inspected restaurants and investigated complaints and outbreaks.”

“Some of my favorite SF State classes included parasitology taught by Dr. Claude Alexander where I improved my skills in systematics and studied vector control. In Dr. Janis Kuby’s cell and molecular biology lab we generated bacterial growth curves that enhanced my understanding of time and temperature as it related to foodborne bacteria. I was also introduced to sterile techniques and to operating an autoclave which came in handy for preventing blood-borne pathogens in tattoo parlors. The marine biology courses familiarized me with my way around a tide pool as I collected mussels to be analyzed for shellfish toxins. I also utilized my skills in microscopy as I examined ocean waters to identify toxic plankton that could contaminate shellfish. Zoology was instrumental in my understanding of venomous animals sold in pet shops and in basic entomology that has proven to be valuable in my current work in mosquito and vector control.”

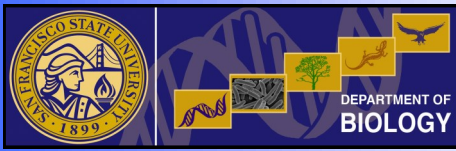
**Nader Shatara** BS Cell & Molecular Biology and Marine Biology 1987



## Memories of Dr. Janis Kuby







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and let us know about your  
academic, professional,  
scientific accomplishments.*

## COMPUTER COURSES DESIGNED FOR BIOLOGY MAJORS

by Roxanne Matilde

PINC (Promoting Inclusivity In Computing) is a unique educational opportunity designed to lower the barriers that biology students experience in learning computer science skills. No prior computer science experience is needed to join. Students can participate in PINC via admission into an emphasis program or by enrolling in PINC courses.

The PINC emphasis program consists of 15 units of computer science coursework taken over two years. These courses cover key computing topics such as data structures, web and database development, and algorithms. The emphasis program culminates in a two-semester research project and an 'Emphasis In Computer Science' on a student's diploma. Biology undergraduates and graduates are also encouraged to join the PINC program if they are interested in any of PINC's three foundational courses: Computing for Biologists (CSC306), Data Structures and Algorithms (CSC220), and Web and Database Development for Biologists (CSC307).

In Fall 2016, the first PINC introductory course, Computing for Biologists, was offered. This course, designed and taught by Dr. Ilmi Yoon of the Computer Science Department, introduces biologists to computational problem solving and logic. Students made several mobile applications in App Inventor and successfully transitioned to learning programming in Java. Students also received additional support through weekly meetings with graduate student mentors from the Computer Science Department. The 'Computing for Biologist' course is offered every semester and open to all Biology majors.

Biology professors Carmen Domingo and Pleuni Pennings are on the PINC program board.

For more information about PINC, visit: <http://pincsfsu.com>



Students discuss problem-solving strategies for their project.



Professor Ilmi Yoon (left) provides feedback to a student.