



“I am investigating seed bank and dispersal dynamics of the Suisun thistle primarily through the use of seed bank cores (pre- and post-germination) and the deployment of seed traps. The results of this research may aid in understanding what factors are limiting the thistle’s populations and provide useful data that can be used for long-term management of the thistle.”

Graduate Ecology, Evolution & Conservation major **Morgan Stickrod** from Dr. Tom Parker’s Lab studies an endangered tidal marsh species *Cirsium hydrophilum* var. *hydrophilum* (Asteraceae), the “Suisun Thistle” which is endemic and restricted to the Suisun Marsh in Solano County.

“I am testing feathers, blood, and other samples from several California hummingbird species to determine the prevalence and diversity of avian pox in hummingbirds and how this fits into the story of avian pox infection globally.”



Graduate Ecology, Evolution & Conservation Biology major **Hanna Baek** from Dr. Ravinder Sehgal’s Lab



“I am testing several years worth of samples taken from Acorn Woodpeckers to detect possible infection by blood borne pathogens such as *Plasmodium* or avian malaria. My aim is to test for correlations between precipitation and levels of infection, including potential parent-to-offspring transmission.”

Graduate Ecology, Evolution & Conservation Biology major **Wilmer Amaya-Mejia** from Dr. Ravinder Sehgal’s Lab.

“The goal of my research is to estimate the number of males that mate with a female using DNA markers. We have found evidence that female surfperches may benefit from mating with multiple males. The relationship between the number of mates and the number of offsprings within a brood will provide insight into the fitness benefits associated with this unique reproductive strategy.”



Graduate Marine Biology major and alumnus **Michael Izumiyama** (BS Marine Biology 2014) from Dr. Karen Crow’s Lab.

Bio News

Spring 2019 Issue

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NOTABLE ALUMNI



CATHERINE CREECH
(BS Botany 2010; MS Ecology & Systematic Biology 2014)
 is a tenure-track Biology Instructor at Mt Hood Community College.



ANTHONY XAVIER LOPEZ
(BS Cell & Molecular Biology 2010; MS Cell & Molecular Biology 2013)
 is a tenure-track Professor of Biology at Mt. San Antonio College.



JARED GEIBIG
(BS Physiology 2012)
 earned a M.D. from Tufts University's School of Medicine and has begun a 3-year residency in Internal Medicine at the Los Angeles County/University of Southern California Medical Center.



BRIANNA MCCOY
(MS Ecology, Evolution & Conservation Biology 2016)
 is Monterey Bay Aquarium's Senior Coordinator of Volunteer Engagement.

Introducing New Faculty

Dr. Nicole Salazar Velmeshev joined the Biology faculty in September.



Dr. Salazar Velmeshev earned a Ph.D. in Cancer Biology from the University of Miami as an NIH-NRSA Fellow. She was an Adjunct Professor teaching Molecular Genetics at San Jose State University, and a Postdoctoral Research Fellow and NIH-IRACDA Scholar at Stanford University School of Medicine and the Palo Alto Veterans Institute for Research. In 2016, she received the American Association for Cancer Research Minority Scholar in Cancer Research Award.

“My lab studies cancer biology using tools from immuno-oncology which, along with surgery and chemotherapy, has become a keystone of cancer treatment. We're focused on three primary projects: 1) analyzing the relationship of antibody structure with function, 2) identifying tumor and tumor-endothelial-cell markers to assess their interactions and role in cancer cell growth and 3) describing and explaining the role chemokine receptors play in cancer disparities across racially and socioeconomically diverse groups.”

- Dr. Salazar Velmeshev

To learn more about Dr. Salazar Velmeshev's research, visit: <https://faculty.sfsu.edu/~nsave>



Dr. Ivan Anastassov joined the Biology faculty in September.

Dr. Anastassov earned a Ph.D. in Neuroscience at the City University of New York. He was a Postdoctoral Fellow in the Department of Biochemistry and Molecular Biology at Baylor College of Medicine and in the Department of Ophthalmology at UCSF.

In 2014, Dr. Anastassov received the National Eye Institute's National Research Service Award.

Dr. Anastassov researches retinal cell biology and circuit formation in the retinas of mice and skates using a combination of molecular, anatomical and neurophysiological approaches.

“The goal of my research program is to understand how neuronal cell diversity within sensory tissues contributes to circuit formation and allows sensory systems to process complex stimuli. One such sensory tissue is the retina, which lines the back of the eye and is responsible for light detection. Each image received by the retina is a combination of many features like outline, contrast, color, motion and direction, to name a few. There is a lot of visual information to process at any given moment, so vertebrate retinas handle this complicated task by assigning a dedicated track to each visual feature. These tracks are known as ‘parallel pathways’ and neuronal cell type diversity plays a crucial role in making this ‘divide and conquer’ process possible. Each different cell type is somehow attuned to handle a select feature of an image. But how this cell diversity comes to be in the retinas of different vertebrate species is still largely unknown.”

- Dr. Anastassov

To learn more about Dr. Anastassov's research visit: <http://biology.sfsu.edu/people/ivan-anastassov>



PINGDEWINDE SAM
(BS Physiology 2015)
is pursuing a Ph.D. in Cellular Molecular Physiology from Johns Hopkins University School of Medicine and has been accepted into Hopkins' Master of Applied Science in Global/Public Health program.

TRACY WADSWORTH
(BS Physiology 2010;
MS Physiology & Behavioral Biology 2012)
earned a M.D. from the American University of the Caribbean School of Medicine and is an Anatomical and Clinical Pathology resident at the University of Illinois, Chicago. She co-authored “Ecdysis Behaviors and Circadian Rhythm of Ecdysis in the Stick Insect, *Carausius morosus*” published in the *Journal of Insect Physiology*. While at SF State, Tracy was a graduate teaching assistant for Biochemistry labs, and a Lecturer for Biochemistry and Human Physiology (2010- 2014). She also worked as an autopsy intern with Kenneth Holmes, Coroner of Marin County (2008-2011), who inspired her to become a forensic pathologist.



DISTINGUISHED FACULTY

Last Spring, Drs. Tom Parker and Kimberly Tanner received ‘Distinguished Faculty Awards’ from the SF State Academic Senate in recognition of their excellence in teaching, service and professional achievement.



**Professor
Thomas Parker**
**Excellence in
Professional
Achievement
Award**

Dr. Tom Parker has spent more than 40 years studying plants from California to Africa and has authored and co-authored over 100 papers since arriving at SF State in 1980. His research focuses on the ecology and evolution of the 105 species and subspecies of shrubs and trees that make up the Manzanita family — with 95 species found mostly in California. In 2015, he co-authored *A Field Guide to Manzanitas: California, North America and Mexico*.

Dr. Parker also studies the influence of seed size on the density of seeds in long-term persistent seed banks, the ecological significance of leaf morphology and the effect of climate change on tidal wetlands in the San Francisco Bay-Delta estuary and coastal scrub environments.

Dr. Parker’s work has gained international recognition, and earned him distinction as a Fellow of the California Academy of Sciences. To learn more about his research, visit: <http://biology.sfsu.edu/people/v-thomas>



**Professor
Kimberly Tanner**
**Excellence in
Teaching
Award**

Dr. Kimberly Tanner co-founded the Science Education Partnership and Assessment Laboratory (SEPAL) in 2004. She studies how students learn science to develop methods for improving how science is taught and to create novel assessment tools.

Dr. Tanner has received awards for teaching excellence from the Society for College Science Teachers and the American Society for Cell Biology. She has served as a mentor at the National Academy of Sciences Scientific Teaching Institutes and is a member of the Steering Committee for the National Academies Scientific Teaching Academy. She co-authored the 2011 AAAS Vision & Change Report, and was an Editor for *Cell Biology Education-Life Sciences Education*.

“We train scientists to be outstanding researchers and then we parachute them into classrooms with no training in how to effectively communicate their expertise to others. As one consequence, the majority of students who are initially enthusiastic about science leave the field with disproportionate losses for women, students of color, and first-generation college-going students. Yet, we have extensive research literature from science education and psychology that if science faculty used more interactive teaching methods, we could both improve learning and prevent this loss of talent.”

- Dr. Kimberly Tanner

SEPAL has grown into a vibrant community of scientists offering undergraduate and graduate courses and providing multiple opportunities through partnerships with K-12 schools for students and scientists to collaborate with K-college educators. To learn more about SEPAL, visit: <http://www.sfsusepal.org/>



In last Spring's issue, we asked if you were ready to support students. I am writing to let you know that your generosity helped launch our **BioLuminaries Program** and provided financial support to three SF State students (see below). On behalf of the Biology Department, I would like to say thank you.

This fund awards both first-year and returning students as well as graduate students with the opportunity to engage in the excitement of doing hands-on scientific research. This is an essential milestone for their future academic and professional careers. Students are awarded up to \$5,000 each for this incredible opportunity.

DID YOU KNOW? By helping fund summer research experiences for students from underserved or low-income backgrounds, you will be reducing the deficit of STEM graduates while transforming the life of a deserving student.

Despite California's economic wealth, state funding to the CSU system has dropped dramatically in the last 20 years – from about 70% to 40%. Cost of attendance at SF State ranges between \$17,000 - \$28,000 per year. The average SF State student is over \$20,000 in debt by the time they graduate. About thirty percent of SF State students must choose between meals and required material for classes. Two-thirds of students on campus are unable to afford textbooks.

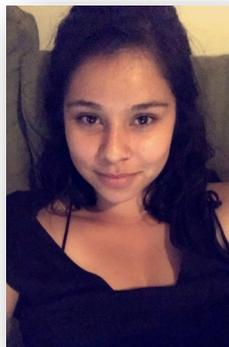
JOIN US! This year we would like to fund five BioLuminaries but we can't do it without your help. As a donor, you will receive a photo and a written note from a BioLuminary to help you track the difference your donation makes. We will also continue to feature BioLuminaries in future issues of *BioNews* as well as provide opportunities for you to meet them in person. To donate to the program, please visit biology.sfsu.edu, click on the "Donate to Biology" link and type **BioLuminary Program** in the comments box. For more information about the program, please feel free to contact me at lburrus@sfsu.edu. Thank you once again for your support. - **Dr. Laura Burrus, Chair, Department of Biology**



"Receiving the BioLuminary award is a tremendous honor. The award allowed me to explore new research questions on amphibian chytridiomycosis in Javan frog populations. My thesis involves looking into whether Javan frog populations are affected by a pathogen that causes extinctions worldwide and was first reported in West Java, Indonesia in 2008. Last summer, I went back to Indonesia and collected isolates of the strain we identified in Java so we can study its possible effects on North American amphibians. In the future, I hope to be able to inform policy on the trade of amphibians so that we can mitigate possible disease risk"

Graduate Ecology, Evolutionary and Conservation Biology major **Hasan Sulaeman** is a researcher in Dr. Vance Vredenburg's Lab.

"The BioLuminary award helped me tremendously because I was able to dedicate my summer to research and gain the experience I need for graduate school. I had the time to learn from my fellow scientists by practicing my science communication, coding, and networking skills. I have a much better grasp of computing and am able to apply it to my research in a more creative sense."



Undergraduate Cell & Molecular Biology major **Francisca Catalan** is a researcher in Dr. Rori Rohlf's Lab.

*"The BioLuminary award gave me the resources and time to focus researching the role of serotonin in the hypersensitivity to pain sensations in hornworm (*Manduca sexta*) larvae. This experience has increased my skills as a scientist, and made me competitive to further continue my research in a Ph.D. program."*



Graduate Physiology & Behavioral Biology major **Tonatiuh Garcia** is a researcher in Dr. Megumi Fuse's Lab.

Alumni Letters

We want to hear
from our alumni!
Let us know about
your academic/
scientific/
professional
achievements,
and/or
share a memory of
your time at SF State.

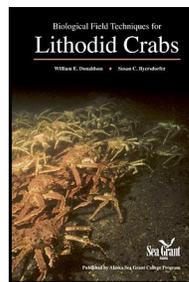
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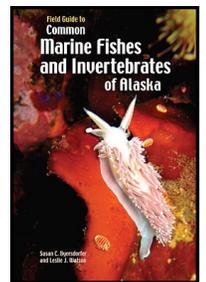
Susie Byersdorfer (MS Biology 1979)

“I chose teaching as a career and my first job was with the Peace Corps in Sierra Leone, West Africa. Upon returning to the Bay Area, I worked as a lab manager at Dominican College in San Rafael. Learning that a part-time teaching position was about to open but required a Master’s degree, I immediately enrolled in San Francisco State University’s (SFSU) Master’s in Biology program with an emphasis in marine biology. I chose the anatomy and histology of the shore crab, *Hemigrapsus oregonensis*, for my research project and did project research at Dominican College under the supervision of Sister Aquinas Nimitz, daughter of Admiral Nimitz, Dr. Robert Berrand, and Dr. Thomas Niesen at SFSU. After graduation I taught at Dominican College as a part-time instructor from 1976-1987.”

“In 1989 I was offered a job with the Alaska Department of Fish and Game. Over my twenty years with the department I spent many months at sea doing research and photographing all that I saw which was often challenging and extremely dangerous in a moving boat.”



“I had the privilege of working with many wonderful crab biologists, but as they begin to retire so goes a lot of institutional information. Field guides were needed for the new wave of research biologists who come to Alaska without any knowledge of field techniques or the ability to properly recognize and identify common fish and invertebrates that they encounter. Hopefully, the two guides I co-wrote and published - *Lithodid Crabs* and *Common Marine Fishes and Invertebrates of Alaska* - will be useful to fellow biologists for many years to come.”



Jake Barrett (BA Biology 2015)

“After several years of trial and tribulation, my hard work has finally paid off, and I have begun my journey in medicine at Boston University’s School of Medicine. Along the way, I have learned a lot about my family, myself, and my aspirations.”

“I had some bad years when my parents were battling their opiate addictions. As a sophomore starting out as a premed in SFSU’s Biology Department there were moments when I felt that it would be impossible to get into medical school, but I was wrong. SFSU is where I learned my foundations. Drs. Cochlan, Caporale, Weinstein, and Miller-Sims are the people that got me to where I am today. Dr. Cochlan’s lab was integral in establishing a proper framework for critical thinking that has been pivotal to my scholastic endeavors and in my daily life. Another valuable skill I learned at SFSU was the ability to take conceptual science and turn it into something physical and real; something palpable that is better understood and learned. During this time I volunteered for HealthRight 360, a free clinic in San Francisco, where I worked as a GED tutor for a reintegration program for addicts and convicts and tutored English to elementary students at Cleveland Elementary School. I also volunteered at Alta Bates Hospital (Berkeley) and Alta Bates Summit Medical Center (Oakland).”

“I had to fight back to clean up my GPA for medical school applications. I attended Boston University and earned a Masters of Medical Science which is a Specialized Master’s Program designed for premeds to improve their applications for medical school (like the post bacc program that SFSU hosts). I also volunteered at the Boston University Medical Center.”

“Today, I’m on my way to studying medicine with the goal of focusing on addiction medicine and fighting the opioid epidemic.”



In Memory

Submitted by John Stubbs

James T. Duncan

15 April 1932 – 27 July 2018

Professor **James Duncan** taught courses in Embryology, Developmental Biology, and Introduction to Biology Lab at SF State University from 1962-1991.

Dr. Duncan received his Ph.D. from Stanford University in 1960 where he worked with Professors M.C. Niu and V.C. Twitty on the differentiation of aquatic salamander gastrula ectoderm in tissue culture.

At SF State, Dr. Duncan and his graduate students established successful embryonic tissue differentiation into beating heart cells in hanging drop cultures. His lectures in Embryology were works of beauty with Jim drawing exquisite several-colored chalk drawings of various stages of embryonic development on the blackboards. His passion for introducing students to the wonders of embryonic development was an inspiration to both students and those colleagues who attended his lectures.

He was also a master craftsman in the construction of paper 3-dimensional geometric polyhedral expansion mobiles, woodworking and furniture making, and producing wonderful wines, aptly labeled “Red Newt Cellars.”

In 1991 Dr. Duncan retired to Ashland, Oregon where he was very active in the Native Plant Society of Oregon, compiling a collection of over 3,300 specimens which has been donated to the herbarium of Southern Oregon University. He was an avid gardener, creating a beautiful native plant landscape with his wife of 38 years, Elaine Plaisance, at their home in Ashland. He also played the violin in an Ashland small string ensemble.

James Duncan was truly a man for all seasons.

*Editor’s note: Donations in Professor Duncan’s memory can be made online at biology.sfsu.edu. Click on “Donate to Biology” and write “**James T. Duncan Memorial Scholarship in Biology**” in the comments box. Thank you.*

Did you have Professor Duncan as an instructor or mentor? Share your memories with other alumni by emailing silver@sfsu.edu

MARCIA RAUTENSTRAUGH (BS Botany 1986) died April 27, 2018. She was an avid environmental activist and worked on many wetlands and habitat protection projects including the Suisun Bay restoration and the Eel River recovery.



In Memory

Professor and alumnus **Bernard Goldstein (B.S. Biology 1962 ; M.A. Biology 1964)** passed away on April 27, 2018 at the age of 82.

Dr. Goldstein was an expert in the field of reproductive and evolutionary biology. He joined SF State’s Biology faculty in 1968, and became a pioneering professor when he developed his ground-breaking course ‘Human Sexuality’ in 1970 to challenge myths and provide sound basic information from a scientific, biological perspective.

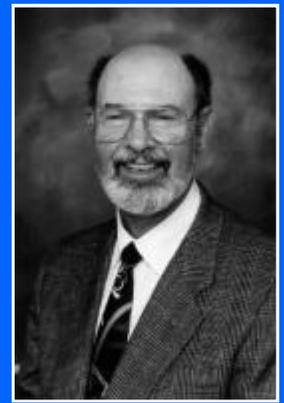
In a 1999 interview, Dr. Goldstein said that in his course he wanted “to talk about human sexuality for what it really is. Not just the biological foundations of it, but the feelings that people have which are equally important—the connection between the emotions and the cognitive ability to evaluate erotic stimuli.” He later co-founded SF State’s Human Sexuality Studies Program.

Dr. Goldstein’s accolades were many. He was named Outstanding Educator of America in 1972 and 1975. He was SF State’s 1986 Alumnus of the Year. In 1991, Dr. Goldstein was appointed to a Faculty Trustee position on the CSU Board of Trustees and named Trustee of the Year in 1996. He served as the Provost and Vice President for Academic Affairs at Sonoma State University. And, in 2003, Dr. Bernstein received the President’s Medal for Outstanding Service to the CSU.

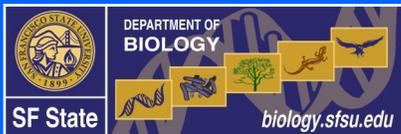
According to Dr. Michael Goldman, colleagues who knew Bernie were convinced Bernie knew everyone. Dr. Goldman recalls, “We were in Rome once, in St. Peter’s Square, and I said, “Bernie, I bet you don’t know the Pope.” He pointed to the balcony and said “Watch.” Moments later, Bernie and the Pontiff were there waving. I said to a passerby, “Do you know who that is up there?” “Well,” he said, “I don’t know who the guy with the beanie is, but that’s Bernie Goldstein up there!”

According to Department Chair, Dr. Laura Burrus, “Many former students cite Dr. Goldstein as one of their favorite professors. His beloved Human Sexuality course still survives today, and engages hundreds of students every semester.”

Editor’s note: Do you have a memory of Dr. Goldstein to share? Email: silver@sfsu.edu



*“Be willing to work at a relationship. People worry too much...Relax, have fun and be able to laugh at yourself.”
-Dr. Bernie Goldstein*



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Esteban Burchard

BS
Cell & Molecular Biology
1990

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Health Care Professionals,
Teachers
and
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BIOLOGY ALUMNUS INDUCTED INTO SF STATE’S ALUMNI HALL OF FAME

Esteban Burchard was inducted into SF State’s Alumni Hall of Fame in November 2018 in recognition of his career focused on the health of populations that have often been overlooked.

Dr. Burchard received his M.D. degree from Stanford University School of Medicine in 1995, and completed clinical training in Internal Medicine at Harvard’s Brigham and Women’s Hospital. While at Harvard, he identified a gene associated with asthma severity which helped to explain racial/ethnic differences in asthma prevalence, morbidity and mortality. This discovery linking genetics and racial/ethnic differences in asthma spurred the birth of the nation’s largest study of minority children and asthma and is directed by Dr. Burchard. He also directs UCSF’s Asthma Collaboratory, a large inter-disciplinary research program focused on minority children and gene-environment interactions of asthma.

Dr. Burchard is a professor and physician-scientist at the University of California, San Francisco. He serves on the National Advisory Council for the Robert Wood Johnson sponsored Harold Amos Medical Faculty Development Program and the Stanford Medicine Alumni Association Board of Governors. He served as an advisor to the Director for the National Institutes of Health as part of President Obama’s Precision Medicine Initiative called ‘All of Us.’

In August 2018, Dr. Burchard received a Lifetime Achievement award from the National Medical Foundation, the nation’s largest and oldest Black Medical Association. In September, he was awarded a grant from the National Institutes of Health to create the nation’s largest cohort of minority children to illuminate the early-life origins of asthma and other respiratory conditions.