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BioCONNECT

A tiny sea slug grazing on the polyps of some stalked animals related to sea anemones. The genus name is Ectopleura. This was at the Hyde Street Pier in the Invertebrate Biology class.

Photo taken by: Viviana Rios, undergraduate student

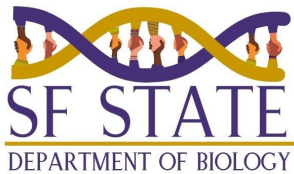
SF State Biology Newsletter Spring 2024



Emily Stenson

We hope you enjoy the latest version of the Biology department BIOCONNECT newsletter.

This issue focuses on alumni and their Biology stories, as well as some department updates!



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Instagram,**



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Letter from the Chair

Dear Alumni, Friends, and Current Students, Staff, and Faculty,

I hope that this magazine finds you safe and supported as we step into 2024 and the Year of the Dragon! Our Fall 2023 semester was a big success despite several challenges (the state budget, the CSU budget, the Faculty Union strike, to name a few). We are proud of all of the support we give our students and feel energized by our mission of education, research, and service here in the Department of Biology. I am filled with gratitude and appreciation for the efforts of all members of our Biology community.

This issue of BioCONNECT is focused on communicating the success of our faculty, students and staff to all of you. While undergraduate numbers are down almost 20% compared to 2019 across the SFSU campus, Biology is going strong and continues to recruit and sustain large numbers of students. We currently have approximately 1,500 biology majors, and over 180 graduate students.

Our biology research labs are a key component to creating an active learning environment that is dynamic, exciting, and impactful. We currently have 38 active research labs where graduate students and undergraduate students participate in scholarly research. Our faculty have published 1,786 peer-reviewed scientific studies and have accumulated over 11,500 scientific citations! With the support of our staff and lecturers it is no surprise that we are so successful at educating and training our students. So please, enjoy BioCONNECT because we want you to know the new and exciting developments in our department.

And, as always, please consider supporting us in our efforts by making unrestricted gifts to the Department of Biology. Please reach out to me for more details. All gifts large and small are most appreciated and allow us to keep supporting our students.

Warmly,

Vance Vredenburg, Chair of Biology vancev@sfsu.edu



Two Henricia sea stars, surrounded by sponge (tan/brown, top) and orange sponge (bottom), collarine algae (pink) other various red and brown algae, and encrusting bryozoan (middle left). Photo taken by Kaz Davila, Research Experience for Undergraduates (REU) intern.

Giving Back to Biology...

Here in the ecologically complex Bay Area, we are preparing the next generation of Biology leaders. Our students and alumni are becoming the life scientists, conservationists, biotechnology and health specialists that we need to close the gap in health disparities, find new solutions to climate change, and make our world more habitable and equitable for all.

CSU campuses such as SF State get far less funding from the state per campus than their UC campus cousins. At the same time, the CSUs proudly train the vast majority of scientists who come from backgrounds that are underrepresented in the sciences. We need your help to continue this hugely important work. Every donation, large and small, helps us meet this mission.

GIVE WHERE THE NEED IS GREATEST 1. UNRESTRICTED GIFT OF ANY AMOUNT

An unrestricted gift gives us the flexibility to deploy your funds to the greatest immediate need, which might be a student scholarship or an emerging research need.

HELP STUDENTS SUCCEED 2. ENDOW A BIOLUMINARY AWARD UP TO \$25,000

BioLuminary awards provide paid research internships to students. Research shows that this type of paid, hands-on learning has an enormous positive impact in helping students graduate on time, preparing them for scientific careers, and closing equity gaps. Contribute any amount to an existing BioLuminary Award, or create your own named award (available at the \$25,000 gift level).

3. SUPPORT STUDENT SCHOLARSHIPS FOR THE DEEP PROGRAM IN THE GALAPAGOS UP TO \$10,000

Our DEEP program fund helps off-set travel and participation costs for students who qualify for the semester-long DEEP research program in the Galapagos Islands.

HOW TO DONATE

All donations are tax-deductible
By mail | Make your check payable to the University Corporation, San Francisco State and mail to:

Office of University Development
San Francisco State University 1600
Holloway Avenue, ADM 153
San Francisco, CA 94132

Please indicate your funding priority on the check! (Biology Unrestricted Gift, BioLuminary Award, DEEP)

Online :

[SF State's online donation portal](#)

If you have any questions or need help, please call 415-338-1042 or email Holly Fincke: hollyfincke@sfsu.edu



REU students (from left to right) Erika Ono-Kerns, Cassie Vaniotis, Elora Chatain (in front) Dorhkas Ramos. Students are on a hike around Long Lake nearby the Sierra Nevada Field Campus. Photo taken by: Jia-Wei Dang, Undergraduate Student.

[Click here to make an online donation today](#)

College of Science and Engineering - Biology

One-time gift

Monthly gift

*Select gift amount:

\$100

\$500

\$1,000

\$2,500

Other Amount

Yes! I want to increase my gift to \$1,028.26 to cover credit card and service fees to make my donation go further.

*Gift Designation:

Use my gift where it is needed most.

Direct my gift to:

Biology Department Fund

Additional gift instructions:

Honor or memorial gift:

Yes, this is an honor or memorial gift.

Student Accomplishments



Undergraduate Student, Naseebh Gill Majoring in Ecology, Evolution, and Conservation in Biology

"I am a Biology major with a concentration in ecology, evolution, and conservation. I am currently applying to veterinary schools and hope to be attending a veterinary school in the Fall of 2024. I am the president of the Pre-Veterinary Society at SFSU and enjoy guiding my pre-vet peers on the journey to higher education. SF State Biology has been supportive in guiding course work and allowing various opportunities to contribute the community through teaching".

The Pre-Veterinary Society at SFSU aims to establish a resourceful environment in which members can discuss veterinary topics, obtain academic advising, learn about the field and the industry, share experiences, and grow as potential veterinary school applicants. This semester, Naseebh is one of the instructors for the intro to veterinary medicine course, which will cover how to apply to vet school, where to gain experience in the field, and bring in important guest speakers from the veterinary field.



Congratulations GOLD Graduates!

Congratulations to students Graduating with the Graduate Opportunities in Learning Data Science (GOLD) program! This is a 12 unit graduate certificate in Data Science where students:

- Learn data science skills needed to analyze exciting biology/chemistry data sets
- Apply those skills in their thesis
- Make connections outside SFSU to support them to get a job in industry or PhD position.

GOLD Graduates:

Kira Miller, Ninette Westendorff, John Gonzales, Kristiene Recto, Marisol Fermin Flores, Gabriela Turcios, Michelle Chong (left to right with yellow caps) and Judy Abuel, Jainam Doshi, Keiko Hokeness, Melika Teimouri (on zoom), Ernani Balingasa, Janeth Ochoa Birrueta, Carlos Esperanza, Caroline Fairloth, Patra Holmes, Clarence Lo, Aileen Lopez, Liz Mathiasen, Bappu Najeeb, Sammy Quach, Alexa Quintera, Jerry Sheng, Tammy Tran, Tanya Velasco, Arianna Velarde (couldn't attend).



Faculty member Cathy Samayoa has become a member of the 2023-2024 cohort for the Advance Scholarship Hub Fellowship!

Title: Finding critical community in SF State ADVANCE

By Cathy Samayoa, PhD

Faculty Accomplishments

As a proud member of the San Francisco State University (SF State) Biology Department, I find immense joy in not only conducting health equity research alongside talented students, but also in contributing to making STEM more equitable. I am thrilled to be part of the 2023-2024 cohort of the ADVANCE Scholarship Hub Fellowship. The [ADVANCE Transforms Scholarship Hub](#) is part of the SF State Transforms initiative funded by the [National Science Foundation](#). This initiative is designed to advance faculty equity in STEM and address faculty gender disparities through systemic approaches and structured meeting spaces for faculty support and engagement.

I was drawn to the SF State ADVANCE initiative as it stemmed from its grounding in research highlighting the impact of racialized and gendered hidden service on the career advancement of women faculty of color ([Domingo et al. 2022](#)). I was also looking for a community committed to dismantling systemic barriers and was excited to learn that ADVANCE is addressing these challenges and advocating for equity. Additionally, I was drawn to ADVANCE for its emphasis on interdisciplinary scholarship that prioritizes equity and the intentional discourse around recognizing the complexity of issues faced by women in STEM. My engagement with ADVANCE represents my dedication to contributing to a transformative initiative that has the potential to reshape the academic landscape for women, particularly those from underrepresented backgrounds like me.

Shortly after ADVANCE in the Fall of 2023, my eagerness to understand the impact of current academic structures on career development and my determination to find ways to mitigate these challenges were met with invaluable insights. Facilitated by Professors Diane Harris and Laura Mamo, our monthly ADVANCE scholars' hub meetings have been instrumental in my career development. During our monthly meeting, we spend time engaging with our own goals, providing critical advice to each other, and fostering a sense of community amongst the cohort. Throughout the fall sessions, we delved into exploring our values within academia and identifying challenges that could benefit from systemic transformation. I have learned so much from my cohort about navigating career challenges and opportunities. In this brief period, I've been able to apply newfound knowledge about structural transformation for equity in my service to the department and university.

Overall, my involvement with the SF State ADVANCE program has been a wonderful welcome to the university and a transformative experience. ADVANCE is shaping not only my career, but also the landscape of inclusivity in our academic community. As we continue to break barriers and challenge the status quo, I look forward to witnessing the transformative impact our collaborative efforts will continue to have on the future of science and academia.



Staff member Kimberly Tsui has been promoted to the position of Undergraduate Lab Manager!

Faculty Accomplishments

Congratulations to the SFSU greenhouse on their successful plant sale!

“Hello Fellow Biology Gators, I am beyond thrilled to have been promoted into the position of Undergraduate Lab Manager and to utilize many of the skills honed while working in the BIS Facility for the past 16 years. This change was an opportunity to continue on my journey, in a different yet similar capacity, with our inspiring undergraduate students, graduate students, research students, faculty and staff in the Biology Department, my second home.



As the Undergraduate Lab Manager, I rely on the experience gained while working in the Biology Department, but also to branch out and rely on my previous work experience to provide comprehensive technical and instructional support to about 375 majors and 600 non-majors each semester with experiments that include cell and molecular biology, evolution and ecology, botany, entomology, and marine biology.

Any change is daunting, especially a career change of this magnitude, but I am very lucky to be surrounded by the unwavering support of my ever expanding network of colleagues.

I am deeply grateful for the trust and confidence placed upon me”.



Bomarea cf. multiflora Photo taken by: Elliot Levin

“SFSU Greenhouse and the Friends of the Greenhouse Halloween Plant Sale was a good day to show some visibility on campus! Overall, very successful with a strong morning rush, we sold 505 individual! We will look forward to spring for our next sale. As always, we never stop propagating”! – Elliot Levin, SFSU Greenhouse Coordinator

Congratulations to faculty member Jonathan Stillman on publishing a new article:

Genome assemblies of two species of porcelain crab, *Petrolisthes cinctipes* and *Petrolisthes manimaculis* (Anomura: Pocellanidae)
Pascal Angst, Eric Dexter, Jonathan H Stillman

Citation: Angst P, Dexter E and Stillman JH (2024). Genome assemblies of two species of porcelain crab, *Petrolisthes cinctipes* and *Petrolisthes manimaculis* (Anomura: Porcellanidae). *G3 Genes|Genomes|Genetics*, Volume 14, Issue 2, February 2024, jkad281, <https://doi.org/10.1093/g3journal/jkad281>

Summary:

Crabs are a large subtaxon of the Arthropoda, the most diverse and species-rich group of animals, including species that are commercially important and species that are model organisms for understanding responses to environmental change, including climate change. Despite their importance and diversity, there are few available genome sequences for crabs, and questions about the role of genome variation in driving physiological and morphological adaptation cannot be answered with available genomic resources. Physiologically and ecologically diverse Anomuran porcelain crabs have been a Stillman Laboratory model for investigating questions about physiological responses to

Faculty Accomplishments

drivers such as heat waves and ocean acidification, and thus generating genomic sequences of these crabs is of great utility. In this paper, we presented the first two genome assemblies of Anomuran porcelain crabs, *Petrolisthes cinctipes* and *Petrolisthes manimaculis* that live in different vertical positions in the marine intertidal zone of the environmental California coast. We generated whole genome sequences using next-generation High Fidelity Pacific Biosciences sequencing and combined those data with previously existing gene expression sequence data generated in earlier Stillman Laboratory studies. The genomes we generated had high-quality annotations of the ~40 thousand protein-coding genes in the crab species. These two high-quality genome assemblies allow future studies to examine the role of environmental regulation of gene expression in the two focal species to better understand physiological response to climate change, and provide the foundation for studies in fine-scale genome evolution and diversification of crabs.



Petrolisthes cinctipes (a) and *Petrolisthes manimaculis* (b). Identifying marks on *P. cinctipes* include red antennae, red spots on claws, and red mouthparts. Identifying marks on *P. manimaculis* include lines of blue spots on claws, blue mouthparts, and red spots on base of gray antennae. *P. cinctipes* photograph by Adam Paganini and *P. manimaculis* photograph by Steven Sharnoff; both used with permissions.

Congratulations to faculty member Ivan Anastassov on publishing a new article:

Ultrastructural Characteristics and Synaptic Connectivity of Photoreceptors in the Simplex Retina of Little Skate (*Leucoraja erinacea*)

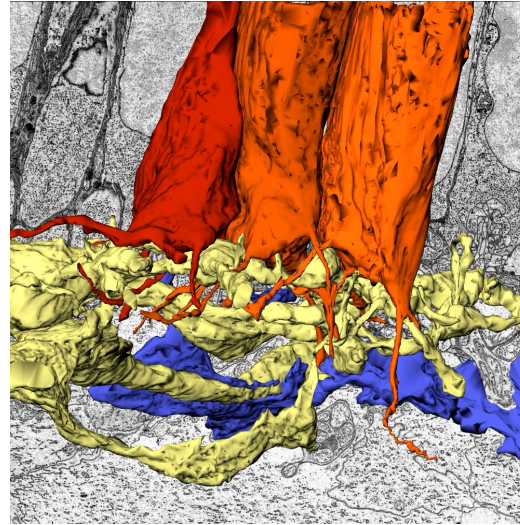
Laura Magaña -Hernández , Abhiniti S Wagh, Jessamyn G Fathi, Julio E Robles, Beatriz Rubio, Yaqoub Yusuf , Erin E Rose, Daniel E Brown, Priscilla E Perry, Elizabeth Hamada, Ivan A Anastassov

Citation: Laura Magaña -Hernández, Abhiniti S. Wagh, Jessamyn G. Fathi, Julio E. Robles, Beatriz Rubio, Yaqoub Yusuf, Erin E. Rose, Daniel E. Brown, Priscilla E. Perry, Elizabeth Hamada and Ivan A. Anastassov. Ultrastructural Characteristics and Synaptic Connectivity of Photoreceptors in the Simplex Retina of Little Skate (*Leucoraja erinacea*). eNeuro 12 October 2023, 10 (10) ENEURO.0226-23.2023; DOI: <https://doi.org/10.1523/ENEURO.0226-23.2023>

Summary:

Vision in vertebrate animals is mediated by a light sensitive piece of nervous tissue in the eye, called a retina. Within the retina, light-sensitive neurons, called rod and cone photoreceptors, are responsible for detecting light of different colors and brightness levels. Rods and cones convert light waves to electrical impulses, which is a modality interpretable by the nervous system. The vast majority of vertebrates have rod and cone photoreceptors in different ratios in their retinas, and the task of vision in dim and bright light is delegated to different photoreceptor types. Intriguingly, the retina of a cartilaginous fish called Little Skate bucks that trend and has only one type of rod-like photoreceptor. Amazingly, skate photoreceptors are able to perform both rod and cone functions seamlessly, something that is very rare in the animal kingdom. In this study, student researchers in the Anastassov lab analyzed vast amounts of serial electron microscopy imaging data from the retina of the skate in order to create 3D reconstructions of skate photoreceptors and their connecting cellular partners. We find that skate rod photoreceptors exhibit characteristics that are either common to rods and cones in other vertebrates, or are completely unique to skate photoreceptors. These findings have the potential to reveal novel organizational principles in the vertebrate retina.

Faculty Accomplishments



This image shows 3D reconstructions of skate photoreceptors (shades of orange) - the light sensitive cells in the visual system - and some of their selected postsynaptic partners (yellow and purple). Skate photoreceptors are of only one kind, called rods, while the majority of other vertebrates have both rods and cones. Interestingly, rods and cones have distinctly different functions, but our study shows that skate rods have structural elements that normally belong to cones. For example, see the thin extensions of the orange cells in the 3D reconstructions - those are typical hallmarks of cones, but not rods, and allow for extended communication between cells.

Previous classical studies have shown that skate rods have the amazing ability to adopt a cone-like function and we believe that the hybrid rod-cone anatomy we have observed for these cells is an important mediator of this process.



This is a side view of the skate eye, which is covered with a finger-like structure, performing the same function as our pupil, and protected by sharp spikes visible all over the surface of the animal. Skates are close relatives to sharks and rays.

Faculty Accomplishments

Congratulations to faculty member Karen Crow on publishing a new article:

Are vertebrates constrained to two sets of paired appendages? The morphology, development, and evolution of pre-pelvic claspers in the Holocephali.

Riley C. Jones, Kayla Hall, Karen Crow

Citation: Jones, R. C., Hall, K., & Crow, K. D. (2023). Are vertebrates constrained to two sets of paired appendages? The morphology, development, and evolution of pre-pelvic claspers in the Holocephali. *Journal of Morphology*, 284, e21632. <https://doi.org/10.1002/jmor.21632>

Summary:

Holocephalans (close relatives of sharks and rays) exhibit auxiliary appendages called pre-pelvic claspers (PPCs, orange) that are located above the pelvic fins, closer to the head, while pelvic claspers are pelvic fin modifications located towards the tail. While both pre-pelvic and pelvic claspers are used for reproduction, articulation points of the PPCs have not previously been imaged or evaluated in a comparative context, therefore, it is possible that they represent modified pelvic fin structures if they articulate with existing pelvic fin bones (green). Alternatively, they could represent the only example of an independent third set of paired appendages in an extant vertebrate group, if they articulate independently from any pelvic fin bones, which would challenge the current paradigm that extant jawed vertebrates are constrained to two sets of paired appendages. Two extinct groups, including Placoderms and Acanthodians, exhibit more than two sets of paired appendages, suggesting this may be an ancestral trait. We evaluated PPC developmental growth rates, morphology, and articulation points in spotted ratfish (*Hydrolagus Colliei*, Holocephali). We also compared variation in PPC morphology among representatives of the three extant holocephalan families. Both, the pre-pelvic and pelvic claspers exhibit a dramatic surge in growth at sexual maturity, and then level off, suggesting synchronous development via shared hormonal regulation that corresponds to a period of “puberty” in males. While mature females are larger than males, pelvic fin growth and development is faster in males, suggesting a selective advantage to larger fins with faster development. Finally, microcomputed tomography scans revealed that PPCs are not modified propterygia, nor do they articulate with the propterygium. They articulate with the anterior pre-pelvic process on the pelvic girdle, indicating that while they are associated with the pelvic girdle, they may indeed represent a third, independent set of paired appendages in extant holocephalans.

Are you wondering “What are pre-pelvic claspers?”

They have hooks that help males grab on to females during mating

Check out this video on YouTube by scanning the QR code to the right:



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morphology
ISSN 0362-2525



WILEY

Editor: J. Matthias Starck

New Faculty Member: Robert Boria



“All of my grandparents were born in Puerto Rico and moved to New York City during early adulthood. I was born and raised in NYC, where I attended public schools for primary and secondary education. I also attended public, Hispanic Serving Institutions (HSI) for my undergraduate, masters, and doctoral programs (City College of New York [CCNY] and University of California- Merced). These institutions have played a major role in my development as a scientist and educator. I always liked science but never considered research as a career path (I was never introduced to the different career paths a scientist could follow) until I started undergrad. During one of my introductory Biology courses, my teaching assistant told me I should get involved with a lab, because regardless of what I wanted to do in life a letter of recommendation from a faculty member would be valuable. I really enjoyed my ecology and evolution class, so I approached my professor about joining their lab and I’ve been doing research ever since. I knew the first time I caught my first mouse in the Costa Rican mountains that I had found what I loved doing.

My past and present research focuses on studying population histories through time. We can uncover how different populations with similar genetic reservoirs respond differently to the same environmental stressor (climate). Determining how the distribution of intraspecific diversity of North American taxa was directly influenced by climate and landscape changes may illuminate broad-scale patterns of species’ responses to other climatic events, or more generally, to barriers impeding or constraining gene flow. I utilize an interdisciplinary approach – three different data types and/or tools (next generation sequencing; GIS; bioinformatics) – to understand how historical events have shaped the current distribution of genetic diversity within a widespread species in North America and the impacts on future genetic diversity.

My long-term career goal is to improve the quality of science education for students from underrepresented groups. As a member of an underrepresented minority growing up in New York City, I acquired firsthand experience of not only the deficiencies but also the potential of STEM training in the public-school system. As a first-generation college student, I was unaware of the range of careers in science and research. These experiences have motivated me to share my passion for research with inner-city, low-income students. Students from these areas typically do not experience many outdoor activities involving nature and/or research, but from my experience, students need to be involved in research for them to consider it as a viable career path. I can accomplish my goal by becoming a professor at a research institution, heavily involving these undergraduate students, and also working with the community colleges to improve the number of minority students in science research. At SFSU, I believe I will be able to transfer the many skills and the passion for research I have acquired to the next generation of great scientists”.

Jesse Espinoza, Class of 2023



"I have been extremely fortunate to conduct my graduate studies at San Francisco State University. The myriad of opportunities, resources, and helpful staff enabled me to grow as a scientist and learner. The encouragement from my advisor Dr. Sarah Cohen to enroll in the GOLD program led me to the world of data science.

I quickly grew to enjoy data science and received an opportunity from COAST to further my coding skills through an internship with NOAA. Through the excellent mentorship I received from these opportunities, I was able to efficiently conduct an in-depth analysis on my own data. With my growing experience in data analytics, I recently accepted a position as a research associate with Eagle Rock Analytics".

Alumni: Where are they now?

Rachel Diner, Class of 2013



"I am an Assistant Professor at the University of Memphis in the Department of Biological Sciences, a position which I started in August 2023.

Beyond being a professor, I am a mother of 3 young children and I enjoy yoga, fishing, spending time outdoors, and traveling with my family. And drinking staggering amounts of coffee.

My research investigates how marine and freshwater microbes are impacted by environmental change, and how they influence host, ecosystem, and human health. I received my B.S. in Biology from the University of Georgia, followed by a J.D. from the University of San Diego School of Law, where I studied coastal environmental law and policy.

I went on to earn my MS in Marine Biology at San Francisco State University's Romberg Tiburon Center (not the EOS) and my Ph.D. from UCSD's Scripps Institution of Oceanography. After completing a joint postdoc with the J. Craig Venter Institute and the Southern California Coastal Water Research Project, I began researching oyster microbiomes at UCSD as an SD IRACDA and NSF Postdoctoral Research Fellow. My time at SF State, which was primarily spent at the Romberg Tiburon Center, was instrumental to me being in the position I am today. In addition to being part of an inclusive and collegial academic environment, there were opportunities to develop and present research, attend conferences, and publish papers with leading researchers in my field. The time I spent gazing out at the ocean from the RTC dock or driving through the Tiburon woods to get to work were memories I will cherish forever. I am still friends and professional colleagues with many of the people I did my MS with, and I am so grateful for that experience".

Alum Chris Tromborg

Alumni: where are they now?

"It would be difficult to overestimate the positive impact that my academic and scientific experience at San Francisco State University had in realizing my life as a successful Psychobiologist. This institution, and the support and mentorship that its staff and faculty provided for me, enabled me to realize a productive career in science and education, one that might not have been attained in the absence of a transformative experience at SF State.

Throughout the 1970's, I attempted to support myself as a professional percussionist. During this period, I was experiencing severe vision loss from increasingly severe juvenile glaucoma, a development that would ultimately influence my decision to leave the music field and to focus on my education.

In 1969, I began my unorthodox academic journey at Skyline Community College. This process began tentatively, as at that time, before the Americans With Disabilities Act, there were very few accommodations available to disabled students likely to promote successful completion of college level course work. After two years of attending classes, largely unsuccessfully, I had completed only 11 units of course work.

In 1972, I left Skyline College to attend a program of instruction at The California Orientation Center for the Blind, in Albany, California. There, I learned the Braille System, cane mobility, and other skills for successfully negotiating a life without vision. I also discovered that virtually nobody considered science as a reasonable academic pursuit for students with visual impairments.

In 1973, I returned to Skyline Community College and then later attended The college of San Mateo. During this period, I sampled many academic majors, including Electronics and Broadcasting, but found myself migrating toward the scientific fields that had always most interested me; Wildlife Conservation, Animal Behavior, and especially Captivity and Behavior this time, with appropriate accommodations, I was able to embark on an academic pathway involving the completion of the undergraduate work that would prepare me for a life as a visually impaired Psychobiologist.

In 1979, I transferred to SF State in order to study with Psychobiologist Dr. Hal Markowitz. Dr. Markowitz was arguably the founder of the modern approach to captivity termed Behavioral Enrichment through Environmental Engineering.

Over the course of several years, and with the support of advisors Stuart Mackay, Robert Bowman, Jennifer Breckler, Hal Markowitz, mentor Crellin Pauling, and many others, all of whom demonstrated confidence in my competence, I was able to complete a B.A. in Ecology and Systematic Biology and a B.S. in Zoology. In 1983, graduate work continued with Dr. Markowitz focusing on an exploration of the effects of acoustic enrichment on the behavior of Cotton-Top Tamarins at The Newly designed Primate Discovery Center of the San Francisco Zoo and a baseline study of the behavioral repertoire of White-Sided Dolphins in an unenriched aquarium at the California Academy of Sciences. During this period, the Chair of the Biology Department, Crellin Pauling, actually provided me with



graduate office space in the former 6th floor photography lab of Hensill Hall, which was no longer in use, in order for me to create a special setting for the adaptive equipment and resources that were required to afford a visually impaired student the extra time necessary to complete assignments.

During my time at SF State, the inclusive nature of the Department of Biology was repeatedly demonstrated when my visual status was never considered to be an impediment to success or a barrier to participation in any aspect of STEM education or research. Ultimately, in 1993, the university, and its Department of Biology, clearly demonstrated its commitment to students with unusual backgrounds by awarding me an M.A. in Behavior and Physiology.

Alum Chris Tromborg: Continued

In 1988, with the preparation afforded me by SF State, I was accepted into the Psychology program at The University of California, Davis, there to continue research into captivity and behavior. My doctoral research focused on the impact of traditional conditions of captivity on the development and expression of anti-predator behavior in California Ground squirrels, and on the influence of anthropogenic noise on their behavior. Research on the growing problem of anthropogenic noise in artificial environments would later be extended to other laboratory and zoo animals. In 1999, I was awarded a doctorate in Psychology from U.C. Davis.

In the late 1990s, while completing this degree, I was also a lecturer at SF State, teaching Introduction to Human Biology, The Darwinian Revolution, and Communication Between Humans and Other Animals. Simultaneously, I was also a lecturer at C.S.U. Hayward, C.S.U. Sacramento, Sacramento City College, and The University of California, Davis. I became extremely practiced in navigating my surroundings and in teaching the diversity of students likely to be found at various C.S.U. campuses.

In 2002, I became a full-time faculty member in the Department of Psychology at Sacramento City College, serving as the department's psychobiologist. At S.C.C., I was primarily interested in course development. Over the next few years, I developed courses in Cognition, Animal Behavior, and Psychopharmacology Outside of the classroom, I became increasingly involved in wildlife conservation, becoming an active member of The Mountain Lion Foundation and The Feline Conservation Foundation. Ultimately, I would serve on the Boards of Director of both organizations, positions which I still hold. It is fair to say that the inclusive, supportive, yet rigorous academic environment that the Biology Department at SF State provided me with made this active career possible. I can only hope that this example of success enhances the reputation of the Biology Department of San Francisco State University as much as my time within the Biology Department has enhanced my life.

I have recently retired from full time teaching in order to devote more time to conservation issues in view of the deteriorating state of the biosphere and the impact that this is having on biodiversity. The development of These values, wherein conservation and biodiversity are emphasized, was also a product of my education at SF State. Although retired, I intend to continue to work on conservation issues, and to teach a few sections of Psychobiology and Animal Behavior and Cognition, emphasizing the commonality of all life. Of course, I also intend to return to the Jazz percussion that I abandoned so many years ago.

I firmly believe that navigating this life journey would not have been possible without the commitment to diversity, both student diversity and biodiversity, demonstrated by the staff and faculty of the Department of Biology of San Francisco State University, my alma mater”.

Alumni: Where are they now?



Chris Tromborg with Chantrea, an eight week old clouded leopard female kitten (Neofelis nebulosa).

Alum Rick Gilbert

"In my mid-20s, with mediocre grades and no science background, I decided to go to med school. I had a B.A. in psych from San Francisco State, and after several semesters in junior college, I came back to San Francisco State as a biology major. Something had changed since my undergrad days - mainly I had a huge passion and vision for my new goal: med school. Even without a science background, I figured if I studied hard, I could do this.

For several years at SF State in biology, I had a rollicking good time. To my surprise, I could do this science stuff. Studying hard was the key. I remember some classes with great fondness: Zoology with John Hensill; microbiology; genetics (the structure of DNA had only been worked out 10 years earlier - very exciting); organic chem - loved learning about how the formula for the benzene ring was worked out and learning about the Krebs cycle (I got the top grade); cell physiology (who could forget the 'semipermeable membrane'?) - my semester project was the effect of LSD on slime mold.

The key to my success, in addition to studying like crazy, was a faculty beyond compare. The professors inspired me. John Hensill was amazing. I can't remember the names of the others - but their influence on my life was huge.

So what happened next? At 29 even with good MCAT scores, and good science grade point, I didn't get into med school. I was accepted for a masters program in Biology at San Francisco State, but my heart wasn't in it. I dropped out. About a year later, I got into a psych masters program. With my science background, I could deal with the biological psych stuff that came my way. After getting my masters, I entered a humanistic psychology PhD program. I taught psych for several years at Bay Area schools, including SF State.

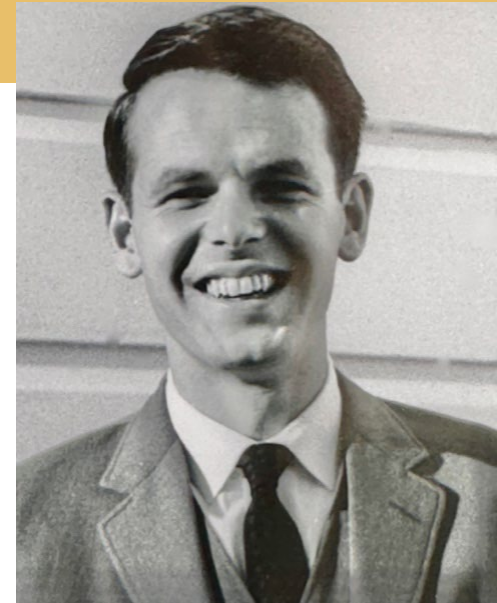
I left psychology in 1980 to get a job in industry at Hewlett Packard in Palo Alto. But, I was never cut out for a career in corporate, I have huge authority problems. So, in 1985 I started my own company, PowerSpeaking, Inc. It all started in a spare bedroom with a telephone and a Rolodex. Today, it is a world-wide business with 30 trainers and revenue around \$6 million.

With our headquarters in Redwood City, a huge part of our business was with tech companies and engineers and scientists. Our competitors were mostly started by salesman types. As I developed the company it became clear that my science background gave us a huge advantage in the marketplace. In addition to the class *PowerSpeaking*, we developed *HighTechSpeaking*, for at scientists and engineers.

Alumni: Where are they now?

Our major client was Genentech. (Yes, let's talk about Watson and Crick.) On a personal level, it was a thrill to realize that I didn't feel intimidated by these high-powered PhDs who came through our workshops. I had a strong science background (I ended up one class shy of a second BA in biology). I could talk to them about the benzene ring, slim mold, and semipermeable membranes with confidence. I owe it all the SF State and that wonderful biology department in the late 1960s.

So, hooray for you. Thanks for what you are doing. Sorry for being so long winded, but when you asked for my biology story, the flood gates opened".



Rick at 27 years old, applying for medical school.



Rick today, at 83 years old.