

Santa Clara BioNews

Fall 2006 volume 2, issue 1

Santa Clara University Department of Biology

WHAT'S INSIDE...

FACULTY SPOTLIGHT
ALUMNI PROFILE
INTERNSHIP OPPORTUNITIES
COURSE SCHEDULE

UPCOMING EVENTS

Let Your Life Speak Science Vocation Symposium

Do you ever wonder what you are going to do with your Biology major? The Science Vocation Symposium allows you to interact with alumni and others with backgrounds in the natural or social sciences, who are passionate about their work in a variety of career fields. In this 2-unit Career Center course you will Listen to speakers share their personal experiences as they explore their life's calling. Topics addressed include: tips for uncovering your interests and talents, preparing for the workplace, balancing work and relationships, choosing majors, and determining the work you want to do. The symposium allows you to explore your interests, while introducing you to resources to research opportunities that connect your background in the sciences to meaningful work.

Open to sophomores, juniors, and seniors. 2-units. Offered winter quarter, Tuesdays, 6-8 p.m. Register for ASCI 140. Contact Elizabeth Thompson, ethompson@scu.edu 554-2359, for more information.

TriBeta/Club Bio

For more info on upcoming events contact:

Kacey Gilford kgilford@scu.edu or
Audrey Krizek akrizek@scu.edu



Quicksilver Hike

Get
Involved
Today!

TriBeta Induction



THE NEWSLETTER WOULD LIKE YOUR HELP!

If you are interested in writing an article or contributing in some way to the newsletter please send an email to biology@scu.edu we'd love to hear from you!



The Bio News "Staff"

Craig Stephens (Chair, Biology) cstephens@scu.edu
Cena Hoban (Admin Assistant, Biology) choban@scu.edu
Michelle Pesce (SCU Biology '09) mpesce@scu.edu
Andrew Vu (SCU Biology '09) aavu@scu.edu
Ava Schlossmacher (SCU Biology '08) ava_s123456@hotmail.com

FACULTY NEWS

New lecturers for Spring quarter

We have several new lecturers joining the Biology Department for the 2006-07 academic year. Please welcome them to SCU!



Dr. Anja Rossinni will be teaching Bio 21: Physiology in the fall quarter, Bio 3: Fitness Physiology in the winter, and Bio 104: Human Anatomy in the spring quarter. Dr. Rossinni comes to us from the University of Wisconsin – LaCrosse, where she was an Assistant

Professor. She obtained her B.S. degree from Stanford University, and M.S. and Ph.D. degrees in Zoology from the University of Minnesota. Dr. Rossinni's research interests have focused on the physiology of aging and senescence. She has been awarded numerous grants to study the longevity of bats as a model for studying the aging process, and has published several research articles on this fascinating topic!

Dr. Katherine Preston

will be teaching Bio 4: Light and Life in the fall quarter, Bio 22: Evolution and Ecology in the winter, and Bio 173: Evolution in the spring quarter. Dr. Preston comes to us from Stanford University, where she was a lecturer and post-doctoral researcher. She obtained B.A. degrees in Biology and French from Duke University, and a Ph.D. in Plant Sciences from Indiana University. Dr. Preston's research interests have focused on plasticity and evolution of various plant traits, including water balance and wood density. While at Stanford she taught several courses and labs related to ecology and evolution, and even branched out to classes on "Edible Botany" and "The Science of Cooking"!



Dr. Christelle Sabatier will be teaching Bio 18: Exploring Biotechnology in the fall quarter, Bio 25: Investigations in Molecular Biology in the winter, and Bio 122: Neurobiology in the spring. Dr.



Sabatier comes to us from Dominican University, where she was teaching genetics and molecular biology courses after a post-doctoral stint at Stanford. She received a B.A. degree in Molecular and Cellular Biology from the University of California-Berkeley, and a Ph.D. in Cell Biology from the University of California-San Francisco. Dr. Sabatier's research interests are in cellular neurobiology and neural development, and she has authored several articles in high profile journals such as *Cell* and *Neuron*.

FACULTY SPOTLIGHT

By Ava Schlossmacher

Dr. Leilani Miller is a multifaceted woman. Actively involved in teaching, research, University decision-making, and motherhood, she has to carefully balance her time to make room for them all! Here is a look at the many sides of Dr. Miller.

Background/How she got here

Dr. Miller began her science career as an undergraduate at Stanford University, where she had her first experience in a research lab. She enjoyed working in the lab so much that she dropped her pre-med track and decided to focus on research. This research experience, and an internship in Massachusetts, helped get her into the prestigious Massachusetts Institute of Technology. At MIT, Dr. Miller began working with the nematode worm *C. elegans*, and through her interactions with younger students found that she had a love for teaching as well as research. After receiving her Ph.D., Dr. Miller moved back to California to do post-doctoral research at Stanford Medical School, where she studied cell fate in *C. elegans* lab for three years. While at Stanford Medical School, Dr. Miller got lucky when a position opened up at SCU to teach genetics, her specialty. In 1994, Santa Clara became her new home, a place that she describes as supportive for teaching as well as research.

Teaching and Research

Dr. Miller enjoys the interactive atmosphere that Santa Clara promotes. Here, she is able to have one-on-one contact with her students while exposing them to adventures in the lab. She typically takes on two research assistants in her research lab. Dr. Miller says that the best thing about working in the lab is that students get to take ownership of their projects, especially in project-based classes. This usually gets the students more excited about the project, and they work harder and get more involved. Over the years 26 students have been assistants in her research lab. These students have gone on to Ph.D. programs at Harvard, MIT, and Yale, as well as M.A., M.D., Pharm.D. and D.D.S. degree programs, and all still radiate their love for science.

University Core Curriculum Revision

Dr. Miller is also one of seven SCU faculty chosen to serve on a committee to propose revisions for the 10 year old University Core Curriculum currently in place.

“The new Core is expected have three areas of learning: Knowledge, Habits of Mind, -and Engagement with the World.”

Dr. Miller believes it is important to teach students to interact with the world around them in a knowledgeable and



logical way. A revised Core could provide an “intentional” learning experience instead of a to-do list of classes, a more coherent educational program overall, and a stronger connection to a student’s major. -. Her experience on this committee has given Dr. Miller the opportunity to not only become more familiar with the state of higher education and current research in teaching and learning, but also to interact with SCU student representatives, administrators, and other faculty in order for her to get a better understanding of what is needed and how a revised Core could best serve SCU students and faculty. A new proposal for Curriculum revisions is expected to be unveiled soon.

Motherhood

Motherhood is another important aspect of Dr. Miller’s life. If you have ever had one of her classes, how she feels about her two young boys is apparent from the way she raves about them. Dr. Miller said that she is often asked, especially by female students, how she can effectively have a successful career *and* a family. Her answer was that she makes time and she has help. Her husband and family support her in all aspects of her life. In addition, her children have taught her to be more efficient, organized and flexible, traits that have helped her at home and at work. She emphasized that no one should plan their family, kids or no kids, based on the influences of others. If you want a family, you should have it, and if you don’t, then you should focus on other important things in your life. The take home message is that you can achieve anything in your life, including a successful career and a happy family, if you work through it and decide that it is what you really want. Dr. Miller is a great example of a woman who has gotten what she wants.

I strongly recommend taking a course from Dr. Miller, a great person and an enthusiastic teacher - she may even teach you something you didn’t expect!

ALUMNI PROFILE

Colin Holmes, SCU '97

By Michelle Pesce

Colin Holmes graduated from SCU in 1997 with a BS in Biology and minors in Environmental Studies and History. He currently is pursuing his M.A. at the Heller School of Social Policy and Management at Brandeis University. I had the privilege of corresponding with Colin to inquire about his unique career path after his undergraduate education in Biology.



Colin pictured with Independence Day teachers

How have you applied your Biology undergraduate degree from SCU?

Currently, I am a student in an M.A. program at Brandeis University in Sustainable International Development. Previously with a Rotary Ambassadorial Scholarship, I went to India for a year and a half to study Health Science, see the country, and learn all I could about that amazing place. Now for the second part of my M.A. program, I have received a National Security Education Program (NSEP) David L. Boren Fellowship to return to India for 10 months, to learn Hindi, and complete my practical work with a non-governmental organization (NGO) in Gujarat.

My task here in India with FES (the Foundation for Ecological Security) (www.fes.org.in) is to design a monitoring manual for biophysical and ecological changes that occur in a landscape as a result of watershed interventions. I am interested in participatory watershed management, and methods to monitor biophysical and ecological changes in the landscape that result from watershed projects. Understanding watersheds requires knowledge of ecology, plant physiology, soil science, natural resource management, and hydrology.

What is a typical day like for you?

I rise early before the heat and humidity becomes too uncomfortable, get some exercise, study Hindi, and walk to work. Nowadays, someone usually picks me up on the road as I'm walking and drops me off at my office— Indian hospitality is legendary. I'm either working in the office, or I'm on the road, conducting research, giving presentations, meeting with researchers and other NGOs, and working on a Masters' paper for the Heller School of Social Policy and Management at Brandeis University. This requires traveling to many of their offices around India and also meeting with other NGOs to understand the range of watershed management programs, and which are the most successful. I'll be visiting a host of organizations doing watershed work, conducting interviews and seeing for myself what is going on in rural, drought-prone areas of Western India. And at the same time I am studying Hindi as part of the fellowship program that is funding my stay here in India.

How is Biology important to sustainable international development?

Sustainable Development has been broadly defined as "*development that meets the needs of the present without compromising the ability of future generations to meet their own needs.*" Inherent in this widely accepted but quite general definition is the importance of a healthy and thriving natural environment to support human societies. And fundamental to understanding what comprises healthy humans and ecosystems is a solid grasp of biology. While sustainable development should be an aim of all countries, sustainable *international* development implies cooperation, technology and knowledge sharing and economic assistance from wealthier countries to assist developing countries in their efforts to tackle critical obstacles to economically, socially and environmentally sound growth.

Would your work be possible without a science background?

Yes, but my specific work in Watershed Management in India is greatly facilitated by my natural science background. The majority of my fellow classmates and coworkers have social science degrees. Still, technical knowledge is necessary to intervene in a region in order to reduce soil erosion and runoff, to increase soil moisture and biomass growth, and to recharge aquifers. I feel that my Biology degree has enabled me to quickly acquire this technical knowledge in order to effectively conduct my research. There is also growing interest in protecting habitat and preserving biodiversity. My ecology focus at SCU gave me a solid background to understand and begin to address this.

How did you become interested in your research?

Traveling and living in Guatemala and India and carrying out projects that supported community organizations in these countries directed me to the field of International Development. My interests in ecology and addressing environmental issues have led me to watershed management, and a belief that issues of fresh water scarcity and quality are increasingly important to our already over-stressed planet.

“A biology degree provides an excellent foundation for those wishing to work in food science and nutrition, agriculture, and forestry.”

How did you find a graduate program and opportunities that allowed you to combine your interests?

I read a very popular book for career seekers called "What Color is Your Parachute?" The exercises in this book were particularly helpful to evaluate my interests and abilities, and match them with a field of work. I finally settled on international development. I searched the internet and sources such as the Peterson's Guide, and short-listed schools that would allow for a focus on environmental issues, project management, and South Asia. While applying for to a handful of schools, I took a 20 day course in Development Project Management at the Monterey Institute of International Studies. I loved it and became more confident of my decision. After visiting four universities, I chose the Heller School at Brandeis University because of the format of study. Overall, things have worked out very well. I'm learning more about NGO management, natural resource and watershed management, improving my language skills, and building on my focus of environmental issues in South Asia.

What are some “non-traditional” applications of a Biology degree?

Nearly 9 years ago, I stood before a group of incoming SCU Biology students in a Daly Science lecture hall for a Q&A session. Beside me were a few fellow seniors who were planning on medical school or further graduate work. I was there because I represented the other type of graduating senior - the undecided kind. I wasn't exactly sure what I wanted to do, but medical school, immediate entrance into a graduate school, or cleaning glassware for

a biotech company didn't interest me at all. I knew I had learned a great deal as a Biology student, but I wasn't sure how I was going to apply that knowledge. I simply was not aware of my options. I have since come to realize that my degree positioned me well for a range of fields that I had not even considered, including:

- 1) Public Health (environmental health, community health, nutrition, international health, epidemiology, demography)
- 2) International Development (with a concentration in health/environment)
- 3) Education – (biology, ecology, physics, chemistry, general science) at the middle school and secondary levels

These are three fields I have dabbled since graduating from SCU. On and off for three years, I worked as a substitute teacher from kindergarten up to 12th grade. California schools are in desperate need of science teachers, and while teaching 7th and 8th grade science (ecology, physics and ocean science), I had several job offers. I take comfort knowing that if I ever want to return to teaching, there is a demand for the knowledge I acquired from the Biology program at SCU.

Later, I served as an "Environmental Health Specialist" (read Health Inspector) for the Merced County Health Department. I was only eligible for this job because of my B.S. in Biology. While working for the Health Department I found there were many positions open to those with science backgrounds. Environmental Health is a field with sufficient demand for new professionals -especially in smaller cities around California that have a difficult time attracting graduates from the larger metro areas.

Do you have any advice to those undergraduate Biology students who are undecided on their future?

I believe the greatest lessons that I carried with me from the Biology program at SCU were how to **think critically and logically, and how to buckle down and work hard.**

These types of skills are of great value no matter what kind of job or field one pursues after graduation. My advice to those interested in the so-called 'non-traditional' paths upon graduation with a B.S. in Biology would be:

“Have confidence in what you have learned, think hard about what your talents are, what your goals are, what your passions are, open your eyes wide to the possibilities around you. Don't be afraid



to experiment with different opportunities to discover what really lights your fire!”

Internship Opportunities



Applied Biosystems – Celera

By Andrew Vu

Applied Biosystems - Celera is a biotech company in the bay area specializing in basic research, commercial research (pharmaceutical and biotechnology) and standardized testing (human forensic and paternity identity testing and quality and safety testing in food and the environment). Applied Biosystems - Celera currently has several paid student internships in toxicology and environmental/chemical management and compliance. For more information, please contact Kristine Baker, Manager of Global Chemical Compliance and Risk Management, at 650-554-2230. <http://www.celera.com/>

NASA Ames Research Center Education Associates Program

Moffett Field, CA 94035 Telephone: 650-604-6543

Web Site: <http://edassoc.arc.nasa.gov>

Lab Assistant in the Exobiology Branch

We are seeking an individual to support our studies of biogeochemical cycling and microbial ecology (see <http://microbes.arc.nasa.gov/>). The successful candidate will be expected to perform a variety of tasks in our laboratory at Ames Research Center and in greenhouses located on the roof of our building. The successful applicant will:

- 1) Maintain microbial mats in greenhouses. This will include routine pump maintenance and monitoring and some new construction of flow boxes.
- 2) Help maintain the laboratory in a clean, organized, and safe condition
- 3) Perform routine laboratory analyses of water samples using a variety of analytical instrumentation (spectrophotometer, ion chromatography, nutrient auto analyzer). The analyses will include cation and anion nutrient concentration measurements, and pigment concentration measurements
- 4) Maintain a well organized laboratory notebook detailing daily activities

The successful candidate will gain experience working in a research laboratory. We use a variety of state of the art analyses and techniques, and will be happy to teach these techniques to the successful applicant. We are hopeful that, in addition to helping us with our more mundane tasks, the successful candidate will develop an independent research project complementary to our research interests.

Employer Description: The Ames Education Associates Program is a unique experiential learning program that provides university students and faculty the opportunity to "experience NASA." As an Educational Associate, you will

have the opportunity to participate in a project related to one or more of NASA's missions:

- * Space Shuttle and International Space Station
- * Looking at the Earth
- * Exploring our Solar System
- * Space Science & Technology
- * Deep Space Missions
- * Research Aircraft

Qualifications: Minimum: B.A. /B.S. The successful candidate should be interested in a career in the biological and/or physical sciences. We are hopeful that we can find someone interested in biology and/or chemistry but with practical construction and plumbing skills that will be useful in the greenhouses. Extensive prior experience with laboratory techniques is not necessary, but a general familiarity with them would be an advantage. Compensation: Paid. Time Commitment: 16 hours per week Length of Internship: 12 months

Take a look at some former students who co-authored papers

Dave McMillan*('01) D. M., S. L. Fearnley, N. E. Rank and E. P. Dahlhoff. 2005. [Natural temperature variation affects larval survival, development, and Hsp70 expression in a leaf beetle.](#) *Functional Ecology* 19:844-852.

J.S. Edgerly, A. **Archana Tadimalla ('03)** and E.P. Dahlhoff. 2005. [Adaptation to thermal stress in lichen-eating webspinners \(Embioptera\): habitat choice, domicile construction and the potential role of heat shock proteins.](#) *Functional Ecology* 19:255-262.

Ángel L. Islas, **Allison M. Faucett ('05)**. 2005. Title: Reiterative template switching: The effect of single-strand homopolymeric DNA on non-template-directed nucleotide addition by DNA polymerase. *Biochemical and Biophysical Research Communications*.

Wagmaister, J.A., G.R. Miley, ***Corey Morris, ('03)** J.G. Gleason, L.M. Miller, K. Kornfeld, and D.M. Eisenmann (2006). "Identification of cis-regulatory elements from the *C. elegans* Hox gene *lin-39* required for embryonic expression and for regulation by the transcription factors LIN-1, LIN-31 and LIN-39." (in press, *Developmental Biology*).

Biology Courses for Winter Quarter 2007

Non Majors Courses

Bio 3 Fitness Physiology L+L Rossinni TR 9:55-11:40 DALY 206
Bio 3 LABS TUES OR THURSDAY 2:15-5:00 ALMSC 125
Bio 6 The Oceans L+L Dahlhoff TR 11:50- 1:35 DALY 203
Bio 6 LABS TUES OR THURSDAY 2:15-5:00 ALMSC 310
Bio 19 Biology for Teachers L +L Eisinger MWF 10:30-11:35 DALY 202
Bio 19 LABS TUES OR THURSDAY 2:15-5:00 ALMSC 127
Bio 28 Human Sexuality Jackler T 6-9pm ALMSC 120

Biology intro series

Bio 22 Intro to Evo & Eco MWF 9:15-10:20 Edgerly-Rooks ALMSC120
Bio 22 Intro to Evo & Eco MWF 11:45-12:50 Edgerly-Rooks ALMSC120
Bio 22 Intro to Evo & Eco TR 9:55-11:40 Preston ALMSC120
Bio 22 Intro to Evo & Eco TR 11:50-1:35 Preston ALMSC120
Bio 25 Invest in Evo & Eco L+L MWF 10:30-11:35 Miller ALMSC120
Bio 25 Invest in Evo & Eco L+L MWF 1- 2:05 Sabatier ALMSC120
Bio 25 LABS WEDS 2:15-5:00 Wong ALMSC 260,262
Bio 25 LABS TUES & THURS 8:30-11:30 Wong ALMSC 260,262
Bio 25 LABS TUES & THURS 1:45-4:45 Wong ALMSC 260,262

Upper Division Courses

Bio 112 Pathogenic Micro L+L Murray 8-9:45 ALMSC 120
Bio 112 LABS TUES & THURSDAY 9:55 -11:40 ALMSC 361
Bio 112 LABS TUES & THURSDAY 11:50-1:35 ALMSC 361
Bio 124 Human Physiology L+L Tauck 9:55-11:40 DALY 201
Bio 124 LABS TUES OR THURSDAY 2:15-5:00 ALMSC 359
Bio 127 Drugs & Toxins Courtney TR 6-7:45pm ALMSC 220
Bio 156 General Ecology Matzek 1-2:05 DALY 202
Bio 160 Biostatistics L+L Marvier MWF 9:15-10:20 DALY 202
Bio 160 LAB WED 2:15-5:00 ALMSC 256
Bio 174 Cell Biology L+L Grainger MWF 10:30-11:35 DALY 201
Bio 174 LABS WEDS OR THURSDAY 2:15-5:00 ALMSC 302
Bio 176 Biotech Lab L+L Choy TR 11:50-1:35 DALY 317
Bio 176 LAB TUES & THURS 2:15-5:00 ALMSC 301

Spring 2007 Tentative Courses

Bio 2 Human Health/Disease
Bio 23 Investigation in Evo Eco L+L
Bio 100 Hot Topics 2007
Bio 104 Human Anatomy L+L
Bio 115 Human Reproduction & Development
Bio 122 Neurobiology L+L
Bio 131 Agroecology L+L
Bio 133 California Plant Comm. L+L
Bio 165 Animal Behavior L+L
Bio 171 Ethical Issues in Biotech & Genetics
Bio 173 Evolution L+L
Bio 175 Molecular Biology L+L
Bio 178 Bioinformatics
Bio 189 Topics in Cell & Molecular Biology



WHY GENETIC RESEARCH SCIENTISTS SHOULDN'T BE NIGHTCLUB SINGERS...