

Bios

The Department of Biology Newsletter
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Editor: Paul Wilson

For back issues and more information about the Department: www.csun.edu/biology

Take Summer Classes Fall Offerings Grim

We recently sat down with the Chair of Biology, Dr. **Randy Cohen**, to get some information about next year:

Bios: How is the financial crisis going to affect students?

Cohen: We don't know. We have been told to plan for a \$600,000 cut to the department for next year, and that would be devastating, but it's anyone's guess whether this cut will actually happen.

Bios: What would a \$600,000 cut mean?

Cohen: Massive lay-offs of instructors and staff, and a large reduction in our operating budget, but I don't know how that would play out. The thing to understand is that upper-division lab and field classes cost lots of money, and basically we can't cut any more classes that make money. We're going to have to trim back on the classes we are most proud of, and unfortunately those are also ones that majors need to graduate.

Bios: What's a student to do?

Cohen: Summer school. Summer classes cost the students more, and this coming summer, I'm told the state won't pay for student enrollment, which means we are in effect running a private college inside of public facilities. If what I'm told turns out to be true, we'll be offering a wide range of classes during the summer. Students who get the requirements for the Biology major out of the way during summer will be in much better shape than students who wait until the academic year.

Bios: What requirements are we talking about?

Cohen: It depends on your stage and option, but consider a B.A. senior planning on graduating in May 2011: take

your last upper division core class, and get moving on the ecology and the systematics requirements, and on the lab and field requirements.

Bios: Enrollment of seniors hasn't gone down, has it?

Cohen: Nope. The university has been constraining entry of freshmen, so you'd think we would just teach fewer freshmen classes, and we've already started that this year, but canceling more sections of 100-level classes isn't going to save \$150,000.

Bios: What about the other \$450,000?

Cohen: Lots of ideas: (1) Have graduate students teach labs usually taught by instructors, which would mean labs like Embryology may be just canned lessons based on prepared slides with no live material and little explanation; (2) lay-off or reduce the hours of staff, which means the doors to facilities would be locked half the time, broken equipment would stay broken, and a lot less stuff like culture media and specimens wouldn't get put out for instructors; (3) fewer advisement hours; (4) cut field trips; (5) make travel to conferences by students and faculty entirely out-of-pocket; (6) stop bringing guest lecturers on campus.

Bios: And *Bios*?

Cohen: Oh, stuff like *Bios* is probably more or less toast even under the not-nearly-so-bad scenario. This will probably be the last paper issue. Future *Bios* editions will be electronic, and it seems likely that the faculty will be too harried doing the work of people who have been laid-off to put together much more than a list of recent publications.☛

...say you've been receiving *Bios* in the mail. Now the paper version is an endangered species. To be alerted to new electronic issuance, email biology@csun.edu with SUBSCRIBE TO BIOS in the subject line...

Plan for Catalina Fall 2010

The Catalina Semester is scheduled for fall 2010. It will consist of three classes, Invertebrate Zoology, Marine

Phycology, and Ecology of Marine Fishes, plus an directed research project. Students live and study at the biological station on Santa Catalina Island. If you're interested in spending the whole of next fall out on the Island, email mark.steele@csun.edu☛

Science Tutoring Center

This year we have a tutoring center. Some of the nicest and smartest of all the grad students are in Live Oak 1327 to help you disentangle the curriculum by providing one-on-one help. Topics cover Math, all the 100-level Biology, Chemistry, and Physics courses, the upper-division Biology core, as well as Human Physiology. Hours of particular specialists are posted on the door. And it's free (well, sort of – you already paid for it in your Campus Quality Fee). Please make good use of this learning resource.☛

Training in Stem-Cell Research

Drs. **Cindy Malone** and **Randy Cohen** have received \$1.6 million to set up an inter-institutional training program through which CSUN students will work in UCLA labs. The mission is to provide training in the skills and qualifications needed to springboard into careers in stem-cell research.

For the next three years, internships are funded for six grad students per cohort and four undergrads per cohort from CSUN.

Students selected for the program will choose from more than 40 labs at UCLA that do stem-cell research, all of them are headed by professors who are world leaders in cell and molecular biology, bioengineering, and molecular medicine. Trainees should expect to spend 40 hours per week as research apprentices.

In addition to doing research, the internships will also involve participation in research seminars designed for trainees, workshops of various sorts, an annual stem-cell symposium, and frequent

meetings with a mentor to advance the student's individual career.

The research that the trainees perform will culminate in written and oral senior theses and master's theses.

Completion of the core program of the B.S. or M.S. in biology is a prerequisite for all participants in the program. Additionally, participants must take Cell and Tissue Culture and Lab (offered this summer) earning an "A" grade *before* acceptance into the program.

While a student is a Bridges intern (but not before), the student's CSUN fees will be *paid* for by the Bridges grant, and the student will also receive a *stipend* of \$2500 per month.

To see how to qualify, go to www.csun.edu/biology/stemcell.htm. Students interested in any of the three cohorts (fall 2010, fall 2011 and fall 2012) are invited to apply (and should designate their cohort year). If the website doesn't answer your questions, email cindy.malone@csun.edu.

South Pacific

—Darren Brown

Last year, I was given the opportunity to spend my 2009 spring break at the Richard Gump Station in Moorea with Dr. Peter Edmunds and the Polyp Lab.

In the fall of '08 I was completing an independent study project on *Hydrocoral millepora*. I was comparing photoquadrats taken over the last 17 years, graphing how this hermatypic coral has changed in abundance in the shallow reefs of St. John, U.S. Virgin Islands. Then, Dr. Edmunds asked me if I would be interested in joining his lab in Moorea during spring break. I ecstatically said "Yes," and immediately went to work at obtaining my documentation for travel to French Polynesia.

The coral reefs surrounding Moorea are the subject of a Long Term Ecological Research (LTER) project funded by the National Science Foundation. For an aspiring marine biologist to be given the chance to assist in an LTER project of this magnitude was a dream come true.

The Gump station has state-of-the-art dry and wet lab facilities that can be used to either conduct experiments or to analyze samples of flora and fauna collected from the surrounding reefs. Not only does the island have a diversity of coral reef habitats, but also a portion is enclosed in marine protected areas (MPAs) designed to protect coastal resources. Conveniently, MPAs provide locations for experiments that are free from human interferences.

This was my first opportunity to study in the field and participate in an ongoing scientific project. While in Moorea, I assisted with parts of the main project. And a fair amount of this work was done snorkeling over beautiful coral reefs with a clipboard.

Additionally, I completed another independent research project, on the effects of collecting and manipulating corals for research experiments. My project tested whether a popular coral epoxy affects coral growth. This epoxy is commonly used by scientists to affix coral branches to plastic stands for use in experiments in the lab and field. During the course of my experiment, I learned how to conduct manipulations in a challenging environment and mastered real-world skills such as how to weigh live coral without killing them and using a pulse amplitude modulation (PAM) fluorometer to test the health of the corals.

Beside my own experiment and project chores, I also assisted the graduate students in Dr. Peter Edmunds's lab with their thesis projects. I learned how to take PAM readings on corals that were positioned underwater at various flow rates and learned how to secure cages around pieces of coral attached to the reef to exclude fish predators.

My experience in Moorea gave me new insight into my initial project on *Hydrocoral millepora*, notably by allowing me to see the 3D habitat where my study animal normally lives. While at CSUN, I just had to imagine the reef habitat from the photoquadrats I analyzed. In Moorea, I was able to see the real-life degradation that coral reefs are experiencing.

The on-site lab experience, swimming the reefs, and the overall dynamics of living with my lab mates made this the most productive of spring breaks. Now I am anxiously awaiting a return to the island. My trip to Moorea has shown me the opportunities that are available at CSUN, and the wide range of studies that can be accomplished through hard work and taking an interest in what the pros are up to.☛

print "Hello BIOMATH world!";

Drs. Maria D'Orsogna (Mathematics) and **Stan Metzenberg** (Biology) are looking for students interested in biomathematics and computational modeling on biological problems. This is a rapidly growing field with many opportunities for career development and advanced study. Interested students should email stan.metzenberg@csun.edu.

New Deal on Research Credits

Starting in the fall, undergrads may sign up for 3 units of BIOL 495 Directed Research. For the foreseeable future, we will not be offering BIOL 499 Independent Studies, which previously was taken for a variable number of units. This is mainly an administrative change – 3 units of either could and can be used as part of most selective programs (though not Option IV of the B.S.). And, the new title looks good on a transcript. Beginning grad students will take BIOL 696 rather than BIOL 699. Finishing grad students will continue to take BIOL 698. If you're confused, you're not alone, but no-worries, your professor will sign you up for the appropriate class. The main change is that enrollment will almost always be for 3 units.☛

Biology of Cancer

In the fall, Dr. **Steve Oppenheimer** is planning a revision of his text that accompanies BIOL 285 Biology of Cancer. The course is used toward the

Lifelong Learning requirement of general education. There are many guest speakers who are famous cancer experts. Students who wish to help Oppenheimer revise the text should contact him soon.☛

Study Conservation

Are you interested in how green issues such as climate change mesh with biology? Do you need a field studies course? Do you need an Ecology/Environmental Biology course? If you answered “yes” to any of these questions, then Dr. **Paula Schiffman’s** Conservation Biology course (Bio 533/592C) is just the fall course for you! Highlights will include one weekend field trip, some intriguing virtual field activities (computer simulations), and presentations by several guest speakers from off campus (scientists actually doing conservation work). The class will meet Tuesday and Thursday afternoons.☛

For Grad Students

There will be no grad statistics classes in the fall, but in the spring both Biometry and Bioinformatics shall be taught. In the fall, we would recommend filling up on grad seminars, but the seminar schedule is up in the air given the budget scramble. We think that the following will be offered. Dr. **Dave Gray** is to teach a seminar on speciation on Wednesday nights. Also on Wednesday nights Dr. **Ray Hong** will lead a seminar on evo-devo in the metazoa. And there will be a seminar on Friday mornings taught by Dr. **Sean Murray**; the first part of the course is to focus on bacterial lipidomics, and the second part of the semester shall be used to discuss a book on the history of microbiology.☛

Professional Service

Alex Li (advisor in Biology and student in Education) and **Holly Hawk** (grad student in our department) will be serving on the Student Allocation

Committee.

Drs. **Paul Wilson** and **Dave Gray** served on (different) NSF panels last semester.

Dr. **Mark Steele** has been elected as a College of Science and Mathematics representative to the Academic Senate.☛

Zavala AAAS Fellow

Dr. **MariaElena Zavala** has been elected a fellow of the American Association for the Advancement of Science, one of only two in our Department.☛

Dr. Oppenheimer goes to D.C.

BEING THE BRIEFEST OF SUMMARIES OF THE MOST IMPORTANT EVENTS AND A RECORD OF HIS INPUT*

— Steve Oppenheimer

1. *Meeting on the future of STEM Mentoring.* I pushed for every elementary school teacher getting a quality research experience with a dedicated scientist mentor who cares. I pushed for a required mentoring component in all grants awarded by the federal government, mentoring training for grad students and postdocs, and consideration of quality mentoring in university personnel decisions, with special focus on the underrepresented. This is a national security issue.
2. *Working meeting with members of the National Science Board.* When NSF’s director Dr. Bement was working with my table of five award winners, I suggested that all NSF RUI grants be reviewed by top researchers at RUI institutions rather than being reviewed mostly by scientists from research institutions. I said NIH MORE does it

* As mentioned in the last *Bios*, Dr. O won a presidential award for mentoring in science. Here are his napkin notes from the week he spent in Washington associated with receipt of the award. Please join *Bios* in savoring the moment. Also the County Board of Supervisors issued a commendation to Dr. O for his award.

right. He said, “Steve, that’s a great idea.” Dr. Bement is meticulous; he must have taken three pages of notes from the meeting with our table alone.

3. *Meeting with White House Office of Science and Technology Policy.* My suggestions on teacher research and a mentoring component in all federal grants was received with great interest.
 4. *Meeting with President Obama.* Some quick give and take, then a good Obama speech on science education and mentoring.
 5. *Meeting with President’s Council of Advisors on Science and Technology.* I pushed for revamping elementary teacher education so the U.S. goes to number 1 or 2, rather than 25th in achievement of students compared to those of other nations. In nations with top student achievement, teachers have more respect than doctors and are paid accordingly. The reputation of the teaching profession in the U.S. must be lifted. This meeting included at least one Nobel laureate. These folks are serious about improving U.S. science and math education!
 6. *Meeting with the Secretary of Education and elementary school teachers.* I got a standing ovation from about 200 when I proposed research experiences from dedicated scientists who care, for all elementary school teachers. The Secretary of Education is a live-wire who looks like he’s 18 years old. The Obama Administration rocks.
Right now fear of math and science, as well as lack of understanding of how science works, is embedded in so many U.S. elementary school teachers – no wonder the U.S. does so poorly in student achievement.☛
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New Publications

Dr. **Sean Murray** and former undergrad **Manvel Kondradzhyan** are authors on a paper in *BMC Microbiology*: “msbB deletion confers acute sensitivity to CO₂ in *Salmonella enterica* serovar *Typhimurium* that can be suppressed by a loss-of-function mutation in *zwf*.” That

says it all.

Dr. **Jim Hogue** has three entries in the second edition of the *Encyclopedia of Insects*: “Cultural Entomology,” “Insects in Folklore and Superstition,” “Insects Effects on Human History.” The award-winning first edition has been widely acclaimed as the most comprehensive single volume on insects.

Familial Cancer has published “Evolving perspectives on genetic discrimination in health insurance among health care providers” by **Carin R. Huizenga**, Katrina Lowstuter, Kimberly C. Banks, Veronica I. Lagos, **Virginia O. Vandergon**, and Jeffrey N. Weitzel. The paper is based on the thesis work of Huizenga done when she was a student of Dr. Vandergon.

Dr. **Aida Metzberg** and former students **Ricardo Rosales**, **Mohammad Khaleghi**, and **Karoline Rostamiani**, along with three colleagues from Germany are authors on, “Novel mutations of the DKC1 gene in individuals affected with dyskeratosis congenita” in *Blood Cells, Molecules and Diseases*.☛

Ichs in Moorea

In January, part of the Steele lab traveled to Moorea to conduct research and teach as part of the *Three Seas Marine Biology Program*. Dr. **Mark Steele**, Dr. **Clare Wormald**, and graduate student **Heidi Block** taught a class on “Biology and Ecology of Fishes.” Block received a teaching fellowship, which covers room and board, lab fees, travel, and pays her for three months while she conducts research for her thesis project in Moorea.☛

Talks

Dr. **Jim Hogue** has given seven presentations over the last year to various community groups: “Biology at CSUN” to the local Rotary Club; “Beetles and other six-leggers” a workshop for Topanga Canyon docents; “Mammals of the San Gabriel Mountains” to the Los

Angeles area community college science instructors; “Insects in the garden” for a local high school horticulture class; and “Recognition of local insect life,” “Insect life in running waters,” and “Riparian ecosystems” as Sierra Club Nature Knowledge Workshops in the San Bernardino Mountains.

Dr. **Paul Wilson** gave a talk to the U.S. Fish and Wildlife regional office on comparing rare and common species. Also, with a colleague from UC Berkeley, Wilson presented an overview of moss floristics for a group known as the Northern California Botanists.

Dr. **Robert Espinoza** was an invited colloquium speaker last term at the University of Idaho.☛

Conferences

Dr. **Jim Hogue** attended the biennial field meeting of the North American Dipterists Society. While in Del Norte County, he collected many insects and plants to add to our collections.

The CSUN Biology department was well-represented at the 90th annual Western Society of Naturalists meeting with over 20 of our marine biology students attending. The titles of presentations are too abundant to list. However, Dr. **Robert Carpenter** was president of the society this year, and gave a memorable address at the concluding banquet. From the Carpenter lab, graduate student **Maggie Johnson** presented. Dr. **Pete Edmunds** presented his research on coral *Symbiodinium*, and presentations were given from his lab by grad students **Nicholas Colvard**, **Caitlin Cameron**, **Lianne Jacobson**, and **Aaron Dufault**, as well as undergrads **Darren Brown** and **Cynthia Ross**. Dr. **Mark Steele** presented his research on temperate fishes, alongside presentations by his graduate students **Jenna Krug** and **Jennifer Granneman**. Dr. **Larry Allen** presented his research on fish spawning. Grad students presenting from his lab were **Natalie Takeshita-Martinez** and **Katie Gherard**. Dr. **Steve Dudgeon** presented his research on hydrozoan

colony form. His grad students **Carly Ryan** and **Lareen Smith** each gave presentations as well.

Copious work done by CSUN students and faculty was presented at the meeting of the Society for Integrative and Comparative Biology. **Navasha Singh** was an author on a talk, “Effect of chronic food restriction on gut morphology and digestive enzymes in nestling House Sparrows.” **Christopher Bowman-Prideaux** spoke on “Intersite variation in the endangered plant *Astragalus brauntonii*.” **Nicholas Colvard** on “The physiological response of tropical reef corals to light reflected from the benthos.” **Ann Dorsey** on “Rarity as a life-history correlate in *Dudleya*.” **Wyndee Haley** on “Hummingbird choices at artificial flowers made to resemble bird- versus bee-pollinated flowers.” **Jocelyn Holt** on “Population density effects on pollinator service of the endangered plant *Lyonia Pentachaeta*” **Carly Ryan** on “Measuring the heritability of plasticity in a colonial model hydroid, *Hydractinia symbiolongicarpus*.” And **Lena Coleman** showed her movie, “Moss floristics in Sequoia National Park.”

The Cohen lab was well represented at the Society for Neuroscience meeting held in Chicago. Grad students **Michael Kaufman** and **Charles Abbott** presented a poster, “Histological evaluation of a novel neurogenic agent in the spastic Han-Wistar, a rat model of ataxic neurodegeneration.” **Toni Uhlendorf** (Biology’s vivarium technician) and grad student **Brooke van Kummer** presented a poster, “Neuroprotective effects of moderate aerobic exercise on the spastic Han-Wistar rat: Mechanism of action.” Grad student **Jackie Waier** presented “Regulation of feeding in cockroach nymphs *Rhyparobia maderae* by the neurotransmitter dopamine.” And graduate students **Sanda Oo** and **Naghum Alfulaj** presented “Oxidative stress as a causative factor of neurodegeneration in the spastic Han-Wistar rat, a model of ataxia.”

The 22nd Annual CSU Biotechnology Symposium (CSUPERB) featured an astounding number of

presentations from our department. The titles are far too many and technical for the shallow editor of *Bios* to repeat, but here is a list of who presented. From Michael Summers' lab: **Valentina Korchagina, Sassan Tamaddoni, Wilber Escorcía, Leticia Ruby Carrillo,** and **Tina Ip.** From Dr. Sean Murray's lab: **Alexandra Forest** (the Nagel Award Finalist), **Anabel Herrera,** and **Sofia Radillo.** From the lab of Dr. Rheem Medh: **Rosa Ojeda, Rebeka Hovanessian, Jessica Beach,** and **Eli Holland.** From the lab of Dr. Gini Vandergon: **Christian Rodriguez, Erik Akopian,** and **Ekaterina Kovacheva.** Dr. **Cindy Malone** was also in attendance. Dr. **Aida Metzenberg** was not present, but her student **Ishita Shah** presented. Collectively, that's a ton of science!

Brian Itoni presented at the annual meeting of the American Society for Cell Biology. His poster, "Quantitative evaluation of characterized alpha and beta glycosidase effects on sea urchin cellular interactions" was co-authored by Dr. **Steve Oppenheimer, Haik Ghazarian** (now in City of Hope Ph.D. program), Dr. **Stan Metzenberg,** Dr. **Ed Carroll** and **Virginia Hutchins-Carroll.**

Funding for many of the above student presentations was provided in part by the department of Biology, by the office of Graduate Studies, Research and International Projects, and by Associated Students.♣

K-12

Noyce Scholars

The Noyce Scholars program will recruit qualified science and math majors who are interested in pursuing teaching credentials in math or science at the end of the semester. This award offers students up to \$10,000 a year. There will be announcements, but if you are red hot, email virginia.vandergon@csun.edu.

San Fernando Valley Science Project and Teacher Retention Initiative

Once again the SFVSP will run Saturday workshops each month for 4th-8th grade science teachers. There will be instruction on the state's science standards, and an ocean field trip is planned. Also, we will be hosting content-specific workshops throughout the spring. For more information, see www.csun.edu/science/csp.

40th Earth Day

Drs. **Gini Vandergon, Mike Franklin,** and faculty from the other sciences will be organizing an Earth Day program for local middle school and high school students in April.♣

Grants

Dr. **Mary-Pat Stein** has received an NIH SCORE grant in the amount of \$430,500 for the project entitled "Recruitment and fusion of ER vesicles to the *Legionella*-containing vacuole."

Dr. **Ray Hong** also was awarded a SCORE grant of \$412,500 for three years to support "Molecular characterization of insect pheromone chemosensory mutants in nematodes." If you're interested in doing research with Hong, contact him.

Dr. **Mark Steele** was awarded a \$423,988 contract from the California Coastal Commission to evaluate the reproductive output, growth, and feeding of coastal marine fishes on the 170 acre Wheeler North Artificial Reef off San Clemente. He also received a \$10,900 supplement to his previous contract from the Coastal Commission. This research will assess whether Southern California Edison is meeting its mitigation requirements for impacts of the San Onofre Nuclear Generating Station to coastal ecosystems.

Eight students were awarded grants from the University Corporation: **Naghum Alfulaj** \$2,670 for "Oxidative Stress in the hippocampus of the spastic Han-Wistar rat, a model of ataxia." **Sam Amirshahi** \$3,981 for "A yeast two-hybrid approach to determine if *Legionella pneumophila* effector proteins

alter host cell vesicle formation." **Tina Rosa Askari** \$1,893 for "Alternative molecules for studying adhesive interactions in cancer cells." **Gregory Avellis** \$1,500 for "The effects of competition and habitat in Tyrant Flycatchers." **Nicholas Colvard** \$1,990 for "An analysis of the genetic composition of *Symbiodinium* from *Montipora stellata* coral fragments." **Joshua Kaiser** \$1,971 for "Identifying *L. pneumophila* effector proteins using protein-protein interactions." **Kavitha Thyagarajan** \$1,753 for "Identification of *Legionella pneumophila* effector proteins that interact with human endocytic Rabs." **Jaelyn Waier** \$2,758 for "The Possible role of the neurotransmitter dopamine in the feeding behavior of cockroach nymphs." Congratulations!

The following grad students received Thesis Improvement Grants: **Sam Amirshahi, Tina Askari, Heidi Block, Caitlin Cameron, Aaron Dufault, Stephen Etter, Jennifer Granneman, Brian Itoni, Lianne Jacobson, Ekaterina Kovacheva, John Charles Lacson, Denita Weeks,** and **Beck Wehrle.** Man, our students are good at writing proposals!

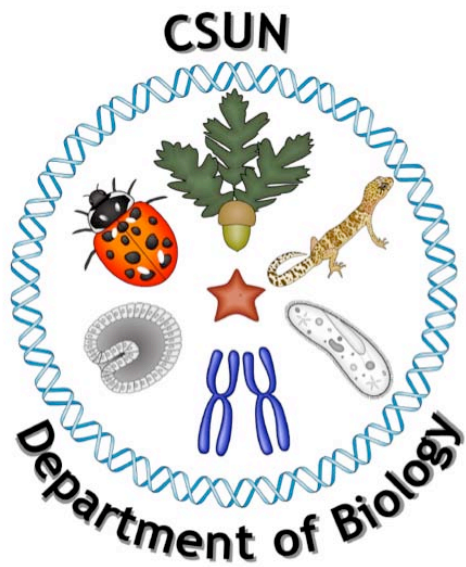
Denita Weeks got a Sigma Xi grant of \$1000 to help fund "Fundamental niche modeling and implications of global climate change for the world's southernmost gecko." **Beck Wehrle** was awarded \$1000 in research support by the Society for Integrative and Comparative Biology to help with "Acquisition of fiber-fermenting microbes in green iguanas." Also, Weeks and Wehrle received CSU graduate equity fellowships of \$2000 each last fall.♣

Early News on Ph.D. Apps

Jenieke Allen and **Brian Itoni** have been admitted to Ph.D. programs at UC Riverside, but they have interviews elsewhere, so we'll see.♣

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