

Bios

California State University, Northridge

The Biology Department Newsletter Spring 2004

Editor: Paul Wilson Publisher: Jim Dole

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Biology Dept., see www.csun.edu/biology.

California State University
Northridge

Publications by Biology Faculty and their Students

Since the last *Bios*, the work of many students and faculty has seen the printed page*.

A paper based on the master's thesis of **Hannah Stewart** was recently published in *Ecology*: "The effects of water flow on photosynthesis and morphology of marine macroalgae," coauthored with Dr. **Robert Carpenter**. Hannah is now working on a Ph.D. at UC Berkeley.

Two works on floral evolution are published. "A multivariate search for pollination syndromes among penstemons," by Drs. **Paul Wilson**, Maria Clara Castellanos, **Jim Hogue**, J. D. Thomson, and W. S. Armbruster, was in *Oikos*. "Pollen transfer by hummingbirds and bumblebees, and the divergence of pollination modes in *Penstemon*," by Castellanos, Wilson, and Thomson, was in *Evolution*. A drawing from the second paper was used as cover art.

Student **Raymond Hernandez** and Dr. **Robert Espinoza** have published, "Description of the female of the enigmatic lizard, *Liolaemus heliodermis*." Ray also has published a note entitled "Geographic distribution. *Oxybelis aeneus*." Both are in *Herpetological Review*.

Drs. **Steve Dudgeon** and Peter Petraitis (U Penn) have two new papers out. "Do alternative stable states exist in the Gulf of Maine rocky intertidal zone? A comment" is in *Ecology*. And "Detection of

alternative stable states in marine communities" is in *Journal of Experimental Marine Biology and Ecology*.

Two papers from Dr. **Steve Oppenheimer**'s lab have recently appeared in *Acta Histochemica*. "The charged milieu: a major player in fertilization reactions" is by Dr. Oppenheimer and his students **Marcela Maldonado**, **Gayani Weerasinghe**, **Fabienne Ambroise**, **Edward Yamoah**, **Monica Londono**, **Juan Carlos Pelayo**, and **Melina Grigorian**. "Carbohydrate involvement in cellular interactions in sea urchin gastrulation" is by Dr. Oppenheimer and his students and assistants **Maria Khurrum**, **Astrid Hernandez** (a K-12 teacher), **Melika Eskalaei**, **Oliver Badali** and part-time instructor Dr. **Cathy Coyle-Thompson**.

A paper authored by Dr. **Paula Schiffman** and former grad student **Sarah Kimball** (now in a doctoral program at UCI) appeared in *Conservation Biology*. The paper's title is "Differing effects of cattle grazing on native and alien plants."

Dr. **Rheem Medh** is co-author on a paper entitled "Gene expression profile of human CEM lymphoid cells sensitive and resistant to glucocorticoid-evoked apoptosis" published in *Genomics*. Co-authors, from the University of Texas Medical Branch and the University of Houston include M. Scott Webb, Aaron Miller, Betty Johnson, Yuriy Fofanov, Tonbin Li, Thomas Wood, Bruce Luxon and E. Brad Thompson. As part of the series entitled "Genetically modified animals in endocrinology," Dr. Medh has also published a compilation of publications on "Knockout mouse models for bone studies" in *Endocrine Reviews*.

Research Presented at National and International Meetings

Marine biology at CSUN was well-represented at the 83rd annual meeting of the Western Society of Naturalists held in Long Beach in November. Graduate student presentations included talks given by **Casey Terhorst**, **Laurie Requa**, **John Froeschke**, **Geoff Horst**, **Graham Ferrier**, and **Jacqueline Padilla-Gamino**, and posters presented by **Kathy Morrow**, **Robin Elahi**, and undergraduate RISE student **Cassie Walsh**. Nine presentations by CSUN students at one meeting is impressive!

Drs. **Steve Oppenheimer** and **Lisa Banner**, Dr. Oppenheimer's students **Maria Khurrum**, **Oliver Badali**, **Tharenee Sakhakorn**, **Lital Kirszenbaum**, **David Khatibi**, **Arash Razi**, **Eileen Heinrich**, and **Azalia Contreras**, and local teacher **Greg Zem**, presented a poster at the American Society for Cell Biology meetings. The group's poster was titled "Tumorigenicity and derivatized bead binding of human colon cell lines."

Dr. **Randy Cohen**'s lab was represented at the Entomological Society of America meetings. **Robert Nohavandi** gave a talk, "The regulation of nutrient self-selection by the cockroach *Rhynparobia madera*: taste versus neurotransmitter levels." **Sandor Lin** (teacher in Dr. Steve Oppenheimer's ITQ program) and Robert presented a poster, "What looks good on the menu? Nutrient choices governed by physiological needs."

Dr. Cohen's lab was also represented at the Society for Neuroscience meeting. Three presentations were given: • "Char-

* Readers will find full citations & often PDFs at www.csun.edu/biology/faculty.

acterization of the neuroprotective effects of nicotine in the spastic *Han-Wistar* rat" by **Erin Mettlen**. • "Cannabinoid neuroprotection in the spastic *Han-Wistar* rat mediated by altered Cb1 receptor expression" by **April Ochoa and Jorge Iniguez**. • "The role of nitric oxide in intracellular mechanisms of epileptogenesis" by **Don Reeder, Thiago Halmer, and Vernita Davis**.

In January, **Diana Andres** and **Kamelia Fallahpour** accompanied Dr. **Robert Espinoza** to the meeting of the Society for Integrative and Comparative Biology. Kammy gave a talk, "Female breeding coloration as a signal for mate selection: Not such a bright idea after all?" Dr. Espinoza spoke on "Why herbivory shouldn't evolve in reptiles and a hypothesis for why it does."

At the American Society for Microbiology, Southern California Branch meeting graduate student **Raquel Martinez** presented a poster, "Trouble-shooting molecular analysis of microbial populations from total soil DNA."

Six Genetic Counseling students and Drs. **Stan and Aïda Metzenberg** attended the National Society of Genetic Counselors' meeting in Charlotte, NC, escaping before a hurricane arrived. Alumna **Cheryl Cina** ('03), a former student of Dr. S. Metzenberg, presented her thesis research on "Genetic counselors' attitudes and opinions toward carrier testing," which she also presented at a meeting of the American Society of Human Genetics. Another alumna and advisee of Dr. A. Metzenberg, **Kristen Borsack** ('03), presented her thesis research, "The influence of risk level and maternal factors on utilization of prenatal diagnosis in patients at increased risk for Down syndrome." The latter meeting was attended by sixteen Genetic Counseling students and three Biology students.

Biology Alumni Group Offers Career Advice

A newly formed Biology Alumni Chapter, composed entirely of Cal State Northridge Biology graduates, has organized an evening of career mentoring for current Biology students. On Thursday, March 4, the group is bringing together a group of current professionals in a wide range of biology-related careers to offer advice and mentoring to students.

According to Susan Crowther, President of the Alumni Chapter and biology instructor at College of the Canyons, mentors representing medicine, dentistry, biotechnology, park service, teaching, the pharmaceutical industry and forensics will be among those represented. The plan is for current students to pair with different professionals for small-group discussions about the job market, career trends, resume tips, new research in the field, salary scales, and what classes best prepare graduates for success in each field. Attendees will also have an opportunity to ask these successful graduates what they know now that they wish they had known before.

The event is scheduled from 6 to 8:30 PM in the CSUN University Club. All Biology students are encouraged to attend. There is no cost to students and free food and drinks will be provided. Come, enjoy the food, but most importantly find out from successful professionals how biology relates to your career goals. The University Club is located on Dearborn Street, just west of Zelzah Avenue and Monterey Hall in the memorial orange grove.

Questions about the event or about the Biology Alumni Chapter should be directed to Ms. Crowther at susan.crowther@canyons.edu.

Izzo, Jacqueline Padilla (who won 1st place for her talk, "Thermal acclimation of algae from different bio-geographic regions"), **Diego Sustaita**, and **Jennifer Weist**.

Posters were presented by **Diana Andres, Annette Angus, Marisa Briones, Christopher Carey, Robin Elahi, Melina Grigorian, Betsy Jordan, Ahoora Payam, Matt Salomon, Bryan Swig**, jointly by **Mark Harris and Gabriele Meyer**, and jointly by **Raquel Martinez and Stephanie Gipson**.

This represents a fantastic body of work in progress, promising many future publications that *Bios* will report on.

Students Receive Research Grants, Fellowships

Student Projects Grants from the University Corporation have been awarded to the following Biology students to cover expenses incurred by their research projects: **Stevie Adams** \$690, **Reem Agel** \$2,000, **Diana Andres** \$1,270, **Kylla Benes** \$1,383, **Robin Elahi** \$1,100, **Jorge Iniguez** \$1,790, **Amanda Izzo** \$354, **Pavel Lieb**

\$1,500, **Joanne Moriarty** \$4,000, **Robert Nohavandi** \$737, **Jacqueline Padilla** \$450, and **Laurie Requa** \$1,385. The students are extremely grateful for this backing.

Eighteen students received grants to support their thesis via the graduate office: **Michael Brewer** \$700, **Christopher Carey** \$400, **Graham Ferrier** \$700, **John Froeschke** \$700, **Melina Grigorian** \$500, **Mark Harris** \$500, **Geoffrey Horst** \$600, **Amanda Izzo** \$700, **Rebecca Kordas** \$500, **Pavel Lieb** \$400, **Ronaldo Maldonado** \$400, **Erin Mettlen** \$500, **Robert Nohavandi** \$600, **Jacqueline Padilla** \$700, **Ahoora**

Bio Students Put on Show at Research Symposium

Biology students presented in force at CSUN's annual Student Research and Creative Works Symposium.

Oral presentations were given by **Michael Brewer, Kamelia Fallahpour** (who won 2nd place speaking on "Female breeding coloration as a signal for mate selection in lizards: Not such a bright idea after all?"), **Graham Ferrier, John Froeschke, Jorge Iniguez, Amanda**

Payam \$500, **Laurie Requa** \$700,
Sally Smith \$700, **Lily Anne Yumi
Welty** \$300. Good karma for the
Provost and Associate VP of grad
studies!

Graham Ferrier received a grant
from the PADI Foundation. **Amanda
Izzo** received a grant from the
Orthopterists' Society. **Kamelia Fal-
lahpour** received money from the
Society for Integrative and Compara-
tive Biology.

And the best money, that which can
be used to pay rent, has gone to
Kamelia Fallahpour, **Jennifer Weist**,
and **Diana Andres**, who each got
Graduate Equity Fellowships (\$2000
each), and to **Raymond Hernandez**
who has entered the Bridges to the
Doctorate program.

F a c u l t y S p e a k E x t r a m u r a l l y

Last October, Dr. **Randy Cohen**
gave an invited seminar, "Life
among the ruins: Adaptive mecha-
nisms during neurodegeneration," to
the Neuroscience Program at Bowling
Green State University.

In November, Dr. **David Gray** gave
an invited seminar entitled, "Song,
sex, and species: Acoustic communica-
tion and evolution in crickets," at the
University of Toronto at Mississauga.

In the last month, Dr. **Paula Schiff-
man** gave presentations about her
research to two local environmental
organizations: the Santa Susana Moun-
tains Parks Association and California
Native Plant Society, Los Angeles/
Santa Monica Mountains Chapter. Ear-
lier, Dr. Schiffman was an invited
speaker at a Cal Tech symposium on
the theme: "A sustainable future?
Environmental patterns and the Los
Angeles past."

Recently, Dr. **Robert Espinoza**
spoke to the Minnesota Herpetological
Society on, "The evolution of her-
bivory in reptiles and herpetofauna of

Anticipated Fall Courses

Conservation Biology

Dr. **Paula Schiffman** will teach a new course, Conservation Biology (BIOL 533+592C), an advanced course that addresses the application of ecology and evolution to real biological problems. Dr. Schiffman says, "The course should be of interest to many students, particularly those in the Environmental Biology and Marine Biology B.S. options, and interested graduate students are also encouraged to enroll." Topics covered will include endangered species, issues of small population size, habitat fragmentation, invasive organisms, genetically engineered organisms, ecological restoration, habitat reserve design, and global change.

Evening, Saturday classes

Comparative Anatomy (BIOL 311+L) will be offered M and W **evenings**, 6 to 10 p.m. "The class looks at the inner workings of vertebrate systems," says instructor Dr. **Fritz Hertel**, "from the point of view of how form and function evolve." It fulfills the systematics and comparative biology requirement for the BA.

Plant Morphology (BIOL 403+L) will be offered on **Saturdays**. The course is particularly valuable for those who want to go into (or are already in) high school teaching. The instructor, Dr. **Paul Wilson** says, "We'll survey all the major groups of land plants, and," he winks, "study how they reproduce."

Grad Seminars

"The biology of body size" will be examined in a seminar in morphology (BIOL 615B) to be led by Dr. **Fritz Hertel**.

Dr. **Randy Cohen's** seminar in physiology (BIOL 655E) will delve into "Neurodisorders, neuropathologies and their neurophysiology."

Grad Professional Skills Development

Dr. **Robert Espinoza** plans to offer a class for grad students on professionalism (BIOL 695). "This course is meant to complement proseminar," says Dr. Espinoza. "I'll tell you where to get grant money, how to build a CV, and how to get the most valuable input from your advisor."

South America's southern cone: New discoveries from the Andean peaks to the Patagonian steppe." He is also giving a seminar at Florida International University this month on, "Body size, temperature, and the evolution of herbivory in reptiles."

Beetle, Embryology Books Published

The University of California press has published *Introduction to California Beetles*, by Arthur V. Evans and our own Dr. **James N. Hogue**. This is a beautifully illustrated field guide with chapters on many aspects of the biology of that most diverse of insect orders, as well as treatments of the most common families. Dr. Hogue is already working on his next book.

The 4th edition of *Introduction to Embryonic Development* has been published by Pearson Education. It is authored by our Drs. **Steve Oppenheimer** and **Edward Carroll**, Dean of the College of Science and Mathematics. The two have team taught Embryology (BIOL 441) for the last 5 years, which has led to a reorganization and updating of the book. The book has been adopted worldwide. It stresses clarity, enthusiasm and readability.

Tropical Biology Semester, Costa Rica Spring 2005

Earning a Biology degree at CSUN can involve much more than lectures and labs. A case in point is the Tropical Semester scheduled for Spring 2005. Drs. **Jennifer Matos**, **Fritz Hertel** and **Polly Schiffman** have developed a unified program in the amazing tropical ecosystems of Costa Rica. It combines academics with natural history observations and hands-on research projects. In addition, students are exposed to the food, music, language

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The Students' Forum

The editors of *Bios* invite articles, such as the following two, by students on their biological experiences. Interested students are encouraged to consult with the editors regarding their ideas.

About the student authors: Marisa is a MARC student working with Dr. Aïda Metzenberg. Laurie and Geoff are graduate students working under the direction of Dr. Peter Edmunds.

Summer Nights at Caltech

—Marisa Briones

I have been doing research at CSUN in Dr. **Aïda Metzenberg**'s lab since January 2002. I am a member of the MARC program, which gives minority students who wish to pursue a Ph.D. the opportunity to do research with CSUN faculty. Under Dr. Metzenberg, I was given my own project and began learning the ways of science and research.

One of the requirements of the MARC program is to spend a summer at another university doing research. Immediately, I tried to think of any possible reason to get out of it. I really enjoyed my research at CSUN, and didn't want to go to a strange lab at another school. But according to Dr. Maria Elena Zavala, director of the MARC program, a summer away is a must.

So the application process began. Feeling somewhat inferior to other applicants, I applied to eight summer programs. My first choice was Caltech. And they accepted me! At first I was not really looking forward to ten weeks in a new lab. I was comfortable at CSUN. But when I got there, everything changed, and kept changing.

My mentor for the summer was Dr. Pamela Bjorkman, and I mainly worked with a graduate student in her lab, Devin Tesar. My first day in the lab was overwhelming. At CSUN my lab consisted of seven people, and at Caltech my lab consisted of twenty-one, including Dr. Bjorkman, undergrads, grad students, post docs,

a lab manager, and an administrative assistant. It was a completely different atmosphere at Caltech. Everyone had their own personal lab bench and desk, their own solutions and equipment, and their own computer.

My project involved improving the affinity of an antibody to its receptor by introducing mutations into the receptor. I used a variety of molecular techniques: transformation, site-directed mutagenesis, PCR, and protein purification. I also learned how to use a surface plasmon resonance machine, which is used to measure the interactions of macromolecules in real time. The long-term goal of the project is to use the same antibody-receptor model to improve the efficiency of cancer therapies that use monoclonal antibodies.

Caltech exposed me to many new things. I saw my labmates writing research proposals and reading grant proposals. Lab meetings were a time to collaborate and learn from peers, to move forward on one's own project. There were so many things about graduate school that I learned—what life is like for a Ph.D. student at an institution like Caltech.

My research dictated my work schedule. After working all day long, I would have to go back at 3 a.m. to score an experiment. At first it seemed awful, but when the sequence results confirmed that the experiment worked, it was so exciting that I realized the insanity was worth it.

CSUN and the MARC program introduced me to science and let me join the scientific community by doing research. At CSUN I thought I had learned tons about being a scientist, but after going to Caltech I realize I had only begun to scratch the surface. Research is more than just the lab. It's a lifestyle, and Caltech exposed me to it. It took me the full ten weeks to finally understand why a summer away is a must; I had to grow as a future scientist and experience life away from CSUN. I want to thank Dr. Metzenberg for introducing me to research and Dr. Zavala for allowing me

to see what the future can hold. Now I really do know what I want to be when I grow up—a scientist.

Two Students, a PI, and a Tropical Island

—Laurie Allen-Requa & Geoff Horst

This year Dr. **Peter Edmunds** is on sabbatical, and as his trusty graduate students, we were needed to help conquer the South Seas for marine research. In November, the three of us traveled to the tropical island of Moorea, French Polynesia, a few miles northwest of Tahiti, and about 1000 miles south of the equator. Crystal blue waters teeming with life surround this majestic island, with lush forested mountains at the interior. Our home for four weeks was the Richard B. Gump Marine Station, operated by UC Berkeley. The lab is a great place to be a grad student because it is cheap, is situated a short boat ride from pristine reefs, and is a good spot to hobnob with other scientists.

As coral researchers, we spent a lot of time in the water, learning the coral species and setting up experiments on the patch and barrier reefs of the island. The reefs in Moorea are different from many of the other reefs we have studied because of the healthy and diverse community of corals. For much of Dr. Edmunds' research we dove on the outer reefs surrounding the island where flamboyantly colored corals blanket the sea floor, schools of fish dart between coral heads, and reef sharks circle above. On these dives we assisted Dr. Edmunds in recording the condition of the ecological community. We also spent numerous afternoons diving and snorkeling within the island's shallow lagoon to collect corals for Dr. Edmunds' lab experiments on the early-stages of coral development and physiology.

Both of us had several of our own experiments running simultaneously during the course of our stay. Laurie studied juvenile corals and how their growth is affected by shading from macroalgae. She set up a

manipulative experiment in the back reef, so she spent her days maintaining the project by snorkeling and diving. Geoff did laboratory experiments on the effects of climate change on coral growth. He was constantly shuffling coral specimens back and forth from the lab to the reef.

While the science was consuming, we were still able to explore the island a bit. The community has a rich heritage and many of the locals spend their free time on the water. The superstars in French Polynesia are not football players; they are traditional dancers and outrigger-canoe paddlers, many of whom travel and compete internationally. The people were fantastic, the environment was awesome, and the lab was great. Moorea was an amazing place, and we both want to return to do more research on its beautiful reefs.

Marine Biologists at Large in Caribbean

Dr. Robert Carpenter and Peter Edmunds have been earning lots of frequent flyer miles while doing research on the effects of population recovery of the sea urchin *Diadema* throughout the Caribbean.

With funding from the National Geographic Society, the pair made trips to the islands of Barbados and Grenada in summer 2003, and in January 2004 the dynamic duo, plus grad student **Kathleen Morrow**, traveled to Turneffe Atoll (Belize) and Port Antonio (Jamaica) to collect data on how the urchins are facilitating the survival and abundance of juvenile corals.

Trips for spring break and early summer are planned to Bonaire (Netherlands Antilles), St. Croix (U.S. Virgin Islands), and Guadeloupe (Lesser Antilles).

The round-the-Caribbean adventure is intended to show, at a regional scale, how the reef environment changes back and forth from macroalgal dominance to coral dominance under the influence of the action of the herbivorous urchins.

—Tropical, con't from page 3—

and geography of Central America.

"We will immerse ourselves in the tropics and the semester will be a truly memorable experience," says Dr. Schiffman. "It will be an opportunity of a lifetime for any student interested in environmental biology!"

"Conservation of nature is a high

national priority in Costa Rica, and so the rainforests and other ecosystems that the class will visit are large and relatively pristine," says Dr. Hertel. "This means that we will study the kinds of spectacular plants and animals that most people only see on TV and in magazines—including exotic birds and mammals, colorful frogs, deadly snakes, cryptic insects and the fan-

The Great Edmunds Sabbatical: An Editorial

Like stages in the life cycle of an organism, sabbaticals are a vital element of a professor's academic career. You wouldn't want to have a prof who at age 50 was still doing the same things and thinking the same thoughts of decades earlier. If we may correct the joke of students in the halls, a sabbatical is *not* a vacation. It's a time to integrate into one's work additional comprehension, to put a ribbon on projects that have been on the back burner, to gather together one's focus for the work of the coming years, and to do things that cannot be done when one is tied down on campus.

As alluded to in the previous two articles, Dr. **Peter Edmunds** is on sabbatical this year, and we shall illustrate our point by describing further his activities. Dr. Edmunds took a substantial cut in pay so that he could be on sabbatical for the full year. (Most sabbaticals are for one semester.) This has allowed him to visit his field sites in all seasons, something that is impossible when classes fill up one's calendar.

But sabbaticals also may benefit students directly. Dr. Edmunds' graduate students are traveling with him to research sites in Moorea and in the Caribbean. They help him on his long-term projects, learning about that research and the methods used. More importantly for them, he works with them on their thesis projects, mentioned in the article by **Laurie Allen-Requa** and **Geoff Horst**.

Dr. Edmunds' newest student **Robin Elahi** will meet up with the professor at the Discovery Bay Marine Lab in Jamaica. Robin will be spending ten weeks as a teaching assistant in the East/West program. After discharging his TA responsibilities, Robin will be left with an unrivaled opportunity to initiate his graduate research in a facility that has been at the center of coral biology for more than 30 years.

The whole Edmunds lab recently completed its 17th year of monitoring study sites on the coral reefs of the Virgin Islands National Park, and after eight years of grant proposals, Edmunds was awarded a substantial grant from the National Science Foundation for five more years of research under a program called Long Term Research in Environmental Biology. This grant was only awarded after the project had been developed for many years using small grants, CSUN support, student volunteers, and Dr. Edmunds' own bank account (a "Mastercard" grant).

Dr. Edmunds is also building up to another grant proposal, this one for work on Moorea. Together with other investigators from CSUN and UC Santa Barbara, the team has requested more than four million dollars to initiate a multi-decadal analysis of the reefs of that Polynesian island. If funded, this could provide opportunities for faculty and graduate student research for many years, as well as contributing substantially to the reputation for excellence in marine biology at CSUN.

Finally, there is a more panoramic value beyond getting projects done and getting funding for new work. We trust that Dr. Edmunds will return next year with an updated and rejuvenated expertise in his field of study. As a result, next year will be a great time to take his specialty courses, Physiological Ecology and Invertebrate Zoology.

tastic complexity of forest plants that support this diversity of highly specialized tropical animals."

"Students enrolled in the program will do observational studies and manipulative experiments involving these species," says Dr. Matos. "In fact, it's likely that some of our Tropical Semester students will be so inspired by the experience that they'll later decide to expand their studies into honors or M.S. theses, and some may even result in student publications."

The program involves a fully integrated set of four courses: Biology of Tropical Vertebrates (5 units), Tropical Botany (5 units), Tropical Ecology and Conservation (5 units) and Seminar on Topics in Tropical Biology (3 units). These courses may be used to fulfill the comparative biology and environmental biology requirements of the Biology B.A., or the zoology, botany and ecology requirements of the Environmental B.S. option. The prerequisites are Biol 106/106L, 107/107L and 322. Grad students will take a parallel set of courses, graded separately so that they don't compete with undergraduates who have less field experience.

The first five weeks of the Tropical Semester will be spent at CSUN with lectures and laboratory activities for each course covering background information, reading and discussing relevant literature, learning field sampling methodologies and experimental design.

Then, during weeks 6-10, the class will travel to Costa Rica and will visit a diversity of biomes including a seasonally dry forest at Parque Nacional Santa Rosa, a magnificent cloud forest at Reserva Monteverde, an Atlantic lowland rainforest at Estacion Biologica La Selva, and a high elevation subtropical forest plus the northern-most example of paramo near Cerro de la Muerte. Because several days will be spent at each location, students will have ample time to observe and identify organisms, devise research projects, and gather field data.

The final weeks of the semester (11-15) will be spent back on campus analyzing

REMINDERS FROM THE ADVISEMENT CENTER

Advisement Center Hours

Students are invited to stop by the Biology Advisement center to have academic questions answered. The advisors are Drs. **John Kontogiannis** and **Joyce Maxwell**, and graduate students **Diana Andres**, **Kammy Fallahpour**, **Laura Gomez**, **Jennifer Weist**, and **Lily Welty**. The Advisement Center, Science 2133, is open 30 hours per week with times posted on the door.

Plan to graduate in 2005?

Undergraduates expecting to graduate spring or summer 2005 must file Graduation Evaluation and Graduation Application forms no later than May 7. Students may have the forms completed at the Biology Advisement Center.

Upper-division writing exam a must for graduation!

Students expecting to graduate must pass the Upper Division Writing Proficiency Exam no later than the semester in which they have completed 90 units. Students planning to graduate in spring

data, doing literature research, writing papers on field experiments, and presenting final projects.

If you are interested in an unforgettable experience, contact Dr. Hertel (677-3353), Matos (677-2158) or Schiffman (677-3350). The instructors' email addresses are: paula.schiffman@csun.edu, fritz.hertel@csun.edu, jennifer.matos@csun.edu. Applications must be received by August 15, 2004.

Faculty Invite Students To Work in Their Labs

Stevie Adams in Dr. Larry Allen's lab is looking for volunteers to help in the field May 5-12. If you'd like to gain intertidal experience, please contact her via email at stevie.adams.691@csun.edu.

Dr. Cheryl Hogue is looking for a stu-

2004 must pass the exam no later than April 24. For more information call the Testing Office at 677-3303.

Accessing advisement info

An Advisement Handbook provides invaluable information on Biology requirements and course equivalencies. The free handbook can be obtained in the Advisement Center or at www.csun.edu/biology.

Career Information Available

Career sheets are available in the Advisement Center. The sheets describe career opportunities associated with each option in the Biology major.

B.S. options allow concentration

The B.S. options are more specialized than the B.A. You still learn the core, but then take a series of related courses as seniors. This prepares you for graduate school and doing work as biologists. If you're in the B.A. but don't know why, ask! The Advisement Center has the answer.

dent to assist with a study on the effects of parasitism on mate choice in fish. Interested students can reach her at 677-3349 or via email at cheryl.hogue@csun.edu.

Feel free to drop down to Dr. **Steve Oppenheimer**'s basement lab in Science Building 2, Room 2005, if you are interested in participating in his research on cell interactions in development and cancer. Dr. Oppenheimer, an elected Fellow of the American Association for the Advancement of Science (AAAS) and a Trustee's Outstanding Professor of the CSU system, welcomes all interested students to check out his lab. Hundreds of CSUN students have already co-authored publications, helping them gain admission to programs at Harvard, Stanford, Berkeley, Johns Hopkins, and the like.

Microbiology Student Association Activities

The Microbiology Student Association (MSA) welcomes everyone back to a new semester. In fall 2003, Dr. Neal Schiller of UC Riverside spoke to the group on "Mechanisms of antibiotic resistance in *Helicobacter pylori*." The T-shirt, lab coat sale this semester is turning out to be a great success, thanks to the work of certain young microbiologists. We are planning a guest speaker and a winery tour as spring events. Keep on the lookout for details, or contact **Raquel Martinez** (president), **Annette Angus** (VP), **Ahoora Payam** (treasurer), or **Cherise Charleswell** (secretary).

Studying to Teach Science

Last fall semester, the ITEP (Integrated Teacher Education Program) students in Dr. **Virginia Vandergon**'s BIOL 102 course invited 7th graders onto campus for the Tomorrow's Scientist Club. This is an after-school science program in which the participants are bused to campus for eight weeks from four local middle schools in the San Fernando Valley that have a high proportion of students from low-income families.

According to Dr. Vandergon, the ITEP students designed and implemented fun science activities based on the State Science standards for the middle school students. Some examples of activities last semester included building "Easter eggs" using Mendelian genetic traits, dissecting hearts and building blood pressure models, testing for amylase activity in saliva, making fossils, and analyzing data for adaptive traits.

Says Dr. Vandergon, "This experience not only exposes these students to more science but also provides opportunities for them to ask questions of the ITEP students and experience what it is like to be on a college campus." One 7th grader wrote of the program, "I liked all the units because they showed me that science is not always about working, it is also about having fun." When asked if

they would tell their friends about Tomorrow's Scientist Club, another 7th grader wrote, "I would, because it is very cool, and because what I think is cool they might think is cool."

"The ITEP students also find this experience very rewarding, dispelling the myth that science is hard and boring, and encouraging them to think of ways of integrating science into their future classrooms," says Dr. Vandergon. Assessment results showed that the ITEP students had positive changes in attitude. After completing the class, they felt more confident about teaching science effectively, and they felt they knew more science. This was substantiated by their performance on a standardized exam that has been given to a larger group of CSUN students over the last several years.

Tomorrow's Scientists will continue to be offered every fall as long as funding for the busses that we use to bring the students onto the campus continues. Cool!

Biology Honors Program Seeks Dedicated Students

"The Biology Honors Program is a great way for undergraduates to obtain research experience that will enhance their academic careers and better prepare them for graduate and professional schools," says Dr. **Cheryl Hogue**, director of the Honors Program.

Students admitted to the program conduct a Senior Thesis Project under the direction of a research sponsor and submit the thesis to the Honors Committee for approval. Biology Honors students have a special notation on their transcripts and are honored in public at the Biology Department honors ceremony held during commencement week.

To be considered for admission to the Honors Program, an applicant must have completed 90 units of college work, hold a G.P.A. of 3.50 both in the major and overall, and have a faculty sponsor. Interested students should contact Dr. Hogue at 677-3349 or cheryl.hogue@csun.edu.

Faculty Receive Grants

Dr. Steve Oppenheimer, Gini Vandergon, Gerry Simila (Geology), Norm Herr (Secondary Education) and Mr. Tony Recalde (Reseda High School) were funded for a third year for their grant, "Los Angeles super funded science leader initiative at Cal State Northridge." This year's allotment is \$278,294, from the Improving Teacher Quality Program, bringing the total for the program to \$815,882. The grant funds science workshops and research experiences programs for K-12 teachers. The Biology Department is committed to helping science teachers be prepared to offer outstanding science lessons to their K-12 students (our future students).

Dr. Pete Edmunds has just received one of NSF's Long Term Research in Environmental Biology program awards to support a 5-year program. The funds, totalling \$275,000, will support his on-going study of "Long term coral reef dynamics in the US Virgin Islands: 1987-2008."

Dr. Paula Schiffman and Christy Brigham, restoration ecologist for the National Park Service, received \$7,500 from the Western National Parks Association to fund their study of "Effects of competition from invasive plants on the endangered plant *Pentachaeta lyoni*." Graduate student, Jolene Pucci, will conduct much of the study and be paid off the grant.

Vandergon — On Training Teachers

Dr. Virginia Vandergon spoke at two conferences, one for Teacher Quality Enhancement, the other for the California Council on Teacher Education. At both, she spoke on giving faculty the power to redesign undergraduate curriculum for preparing teachers. Her coauthors on the presentations were several faculty from outside the department: Drs. Arlinda Eaton, Hillary Herzog, Terry Sweeting, and David Kretschmer.

On campus, Dr. Vandergon gave a talk at the Beck Teaching Forum on a differ-

M A R C a n d M B R S N e w s

Program Applicants Sought

Two minority-oriented programs—the Minority Access to Research Careers (MARC) and Minority Biomedical Research Support (MBRS)—are currently seeking student applicants. Both programs are sponsored and funded by the National Institutes of Health and are directed at improving the participation of historically underrepresented people in the biomedical work force.

According to Dr. Maria Elena Zavala, director of both programs, “Undergraduate students who are members of the NIH-identified underrepresented groups and who are majoring in Biology, Chemistry, Physics, Mathematics, Geology, Kinesiology, Psychology, or Engineering, are eligible for the programs.” To qualify, applicants must have a GPA of 3.0 or better for the MARC program and 2.5 or better for MBRS, and plan to pursue a doctorate in their field.

Applications for both programs are available in the CASA (Center for Achievement in Science and Academics) office, Science 2128.

Programs Offers Learning Aids

Students having a tough time in beginning science courses such as Physics 100 or Biology 107 should consult the study aids on the MARC/MBRS website (www.csun.edu/~csunmore). According to Dr. Zavala, “Materials specifically selected and prepared by professors who teach these and other courses are now on the MARC/MBRS website. Students are encouraged to check the materials out.”

Summer Programs Available

All students, especially those within two years of graduation are invited to look over the many paid internships

available for science students. The summer research experiences are offered by numerous universities and research institutes throughout the US. Information about the programs is available in the CASA office. Deadlines vary, but generally are from February through March 30.

Science Doctoral Programs are National Concern

Science and technology are cornerstones of this country's well being. For this reason, Ph.D. programs in the sciences have been identified as a national concern.

“It is imperative that we maintain a well prepared, flexible scientific workforce,” says Dr. Zavala. To this end, “Students in the sciences who enter Ph.D. programs are being heavily subsidized by the federal government or by doctorate-granting universities.” What this means, she says, is that “Most Ph.D. students complete their studies without incurring debt, a marked contrast to students who enter medical or other professional schools.” It is not uncommon for newly-minted physicians or dentists, for instance, to have incurred hundreds of thousands of dollars in debt upon completing their studies.

But, “Why would anyone want to go to school for another 5-7 years?” asks Dr. Zavala. In response to her own question, she then notes that “If you ask any Biology professor if they liked what they were doing, I would venture that almost everyone would say that they loved their work. What other career lets you spend your time working with students, thinking about things that interest you and through your research discovering the workings of nature? All of it is very gratifying.”

ent topic, “Can service learning better teach science content to pre-service teachers?” And she spoke at the annual faculty retreat regarding the Teachers for a New Era program.

Faculty Expertise Sought

Dr. Stan Metzenberg has been asked to evaluate the standards alignment of proposed science test items in the new Illinois assessment framework. Says Dr. Metzenberg, “The state of Illinois has developed new assessment objectives in science for grades 4, 7, and 11, and is seeking to identify the best test contractor to develop a new science assessment.”

Dr. Peter Edmunds has been invited to be a Reviewing Editor (RE) for the journal *Marine Ecology Progress Series*. Says Dr. Edmunds, “RE status comes with free on-line access to the journal, a boon since CSUN’s library is not a subscriber!”

Biology of Cancer Class Seeks Student Helpers

Dr. Steve Oppenheimer seeks interested students to help organize his Biology of Cancer (BIOL 285) course, tentatively scheduled for the fall semester M 6-7:40 p.m. If interested, contact him in his basement office, Science 2005.

Microbiologists Active

CSUN’s microbiologists were prominent at the meeting of the Southern California Branch of the American Society for Microbiology. Dr. Nancy Bishop, president of the organization, presided; Dr. Larry Baresi coordinated the student research colloquium; and alumni Michael Lewinsky and Lee Borenstein each coordinated a scientific session. Also attending were current students and recent graduates Natalie Chikhani, Jennifer Reynolds, Dela Araghi, and Cheryl Hanna. Also attending were alumni Bernardine Pregerson and Rika Wakelin.