CAL STATE FULLERTON

NSM Newsletter

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News from Around the College

Department of Biological Science

Dr. Marcelo Tolmasky was a guest speaker at a seminar series hosted by The Oregon Health and Sciences University, Department of Molecular Microbiology & Immunology, which was held on November 19 in Portland, OR. His topic was titled "Aminoglycoside antibiotics: mechanisms of action and resistance." His talk was also videoconferenced to the Vaccine and Gene Therapy Institute. This seminar series covers a range of topics including virology, immunology, bacterial pathogenesis, and microbial physiology & structure.

Dr. Doug Eernisse and his students recently presented talks at the annual Western Society of Naturalists meetings in Ventura, November 8-11. Masters student **Bill Hewson** presented the second talk and has also successfully defended his related Masters thesis, earlier this month. The following are the titles of their presentations:

- **Eernisse, D. J.**, **Hewson, W. E.**, and R. P. Kelly. Ecological convergence and divergence in limpets.
- **Hewson, W. E.**, and **D. J. Eernisse**. A common southern California limpet is a new species that overlaps with its sister species in northern Baja California.

Dr. Doug Eernisse also has the following new papers in press:

- Kelly, R. P. and **D. J. Eernisse**. Reconstructing a radiation: The chiton genus Mopalia in the North Pacific. *Invertebrate Systematics.*
- Puchalski, S. S., **D. J. Eernisse**, and C. C. Johnson. The effect of sampling bias on the fossil record of chitons (Mollusca, Polyplacophora). *American Malacological Bulletin*.
- Vendrasco, M. J., C. Z. Fernandez, **D. J. Eernisse**, and B. Runnegar. Aesthete canal morphology in the Mopaliidae (Polyplacophora). *American Malacological Bulletin*.

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Tung Tran, a biology undergraduate working in **Dr. Marcelo Tolmasky**'s lab, has won 1st prize in the student colloquium of the Southern California Branch of the American Society for Microbiology, held at the Hyatt Regency in San Diego, November 1-3. Tung competed in the microbiology field of research and won the undergraduate award. His project/presentation dealt with site specific recombination of natural multiresistance plasmids. This research has broad implications in the dissemination of antibiotic resistance genes. Tung works with Dr. Tolmasky to examine bacterial resistance to aminoglycoside antibiotics both at the molecular and cellular level. His current project focuses on the inhibition of an enzyme that mediates this resistance.

Department of Chemistry & Biochemistry

Dr. Katherine Kantardjieff has been invited to serve on a seven-person committee charged with organizing the NSF-sponsored "Cyber-Enabled Instrumentation in Chemistry" workshop, scheduled for April 24-25, 2008 in Washington DC. This workshop will assess the impact of cyber-enabled instrumentation in chemistry, especially for awards in the Chemistry Research Instrumentation Facilities Departmental Multi-user program at the NSF; identify future directions of instrument cyber-enabling; and determine how the National Science Foundation's Chemistry Division can best support these developments.

Department of Geological Sciences

Dr. Galen R. Carlson led a full-day Saturday workshop (WEST-Workshops for Earth Science Teachers) for 21 Earth Science Teachers in the Anaheim Union High School District on November 3. The workshop is the first of four academic year meetings that follow an intensive 5-day workshop for the same teachers last summer. The goals of the workshops are to enable the teachers to fully comprehend the content of the California State Earth Science Standards and to provide activities that allow them to transfer this knowledge to their students. Other workshops are scheduled for December 5, February 22, and April 19, 2008. The series of workshops will culminate in an 8-day field experience to the June Lake area during August 5-12, 2008 (Project FIST: Field Investigations for Science Teachers). Funding for WEST and FIST is from CESME funds (CSUF-$12,000) and funding from the Anaheim Union High School District ($17,000). Dr. Carlson is working with Suzanne Bowers (Earth Science Teacher at Buena Park High School) and most of the sessions take place in her classroom. Trey Petruzello (MATS student) is assisting and **Dr. Kris Weaver-Bowman** also assisted during the summer.

Dr. David Bowman gave a seminar titled "Accelerating Seismicity Before Large Earthquakes: Life and Death of an Earthquake Prediction Scheme" to the Seismological Laboratory at UC Berkeley.

Dr. Jeff Knott was interviewed by ABC News on October 4th regarding the La Jolla landslide. The story was broadcast and was aired by affiliates in the U.S. and Canada.

Dr. Nicole Bonuso and her GEOL 201- Earth History students traveled to the Grand Canyon for a 5-day field trip over the fall semester break. Ten out of the seventeen students braved the hike to the Colorado River covering approximately 30 miles, 4780 feet of elevation change, and exploring over 1 BILLION years of geologic time. After descending through rocks formed near the ancient coastline of Laurentia, the "Grand Canyon Gang" became part of the elite few that found themselves surrounded by twisted shiny black schist and salmon-pink granite of the inner gorge; less then 2% of the total Grand Canyon visitors explore the deep time (~1.7 billion year old rocks)

of the inner gorge. The students left the canyon feeling energized by their physical and education accomplishments. One student wrote me the following: "'Those who dwell, as scientists or laymen, among the beauties and mysteries of the earth are never alone or weary of life.' -Rachel Carson. Hiking into that canyon, I realized how significant geological time is. It took millions of years for the processes of time to carve the beauty, however, only a moment to appreciate its immensity and glory." Another student wrote, "…it was the trip of a life-time." What an excellent reward for all the time and effort that went into planning and executing the trip. Dr. Bonuso can't wait for her next trip with students. For pictures, see page 5.

Dr. Matthew Kirby gave a guest lecture at Cal-State Northridge Department of Geological Sciences titled "Lakes: more than a bucket of water and mud."

Department of Mathematics

Dr. Nicole Engelke presented a paper titled "A Framework to Describe the Solution Process for Related Rates Problems in Calculus" at the 29th Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education on October 26, 2007.

Dr. Todd CadwalladerOlsker presented a talk titled "Proof Schemes and Proof Writing" at the CMC South Conference on November 2.

Six mathematics teachers in the five-year grant project TASEL-M (Teachers Assisting Students to Excel in Learning Mathematics) traveled to the California Mathematics Council conference in Palm Springs with **Dr. Armando M. Martínez-Cruz** and **Dr. Stephen Lancaster** November 2-3 to share pedagogical ideas to entice students to learn mathematics. They presented six sessions that have evolved from their work with Dr. Martinez-Cruz, who is the faculty partner with Buena Park cluster in this project. Buena Park High School (BPHS) teachers Maria Fernandez, Isaura Deleon, and Fernando Rodriguez presented *Learning mathematics together: English learners, parents and teachers*. Lisa Schirm from Buena Park Junior High School, Stephen Lancaster and Armando Martinez-Cruz presented *Linear functions in Junior High with a graphing calculator*. Paul Sexton (BPHS) co-presented with Martinez-Cruz the session *Pythagoras and Archimedes meet GSP and a digital camera*. TASEL-M work is also expanding to collaborate with other universities. Dr. Jose Contreras from The University of Southern Mississippi joined their efforts as well. Fernando Rodriguez co-presented with Contreras the session *Generating problems and conjectures with Sketchpad*. Contreras and Greg Love (BPHS) co-presented *Representing, modeling and solving problems with Sketchpad*. Finally, Contreras and Martinez-Cruz co-presented the session *Generalizing numerical patterns with technology*. TASEL-M is a five million dollar project funded by NSF and is directed by **Dr. David Pagni**.

An Astronomer Searches for Life in Other Solar Systems

Physicist Patricia Cheng focuses her research on one of the most fascinating subjects a human being can investigate: Is there life in other solar systems? She has narrowed her inquiries to roughly 60 stars that, like our sun, are all on the cool side – about 8,000 degrees Kelvin. They are the most likely supporters of life-sustaining planets. Once she identifies a star, Cheng has to mask its brilliance so she can study its planets as well as the interstellar dust and gases.

Cheng gets more than a visual take on her targets, thanks to infrared, ultraviolet and far-ultraviolet technologies. Even X-ray and radio waves help to distinguish inconsequential dust from particles that some day might harbor life. Her research yields few epiphanies, but it's replete with small successes that add pieces to an almost unfathomably big puzzle.

Because Cheng is a teacher as well as a researcher, her students benefit from her expertise. Cheng's office shows how she connects with her astronomy students as well as those in her basic physics and upper-level classical mechanics classes. A Hula-Hoop helps her explain how objects maintain orbits, while a Frisbee-like toy allows students to visualize proto-stellar disks that are thought to presage planets. Five of Cheng's students have gone on to earn or pursue graduate degrees in astronomy at San Diego State, and several are now working astronomers.

NASA has supported Cheng's research for 18 years with grants totaling more than $800,000. "Her work has been extraordinarily well funded, which speaks volumes for the interest it generates," says Roger Nanes, former Physics Department chair.

Reprinted from: http://www.fullerton.edu/50/titan_pride/faculty/cheng.html

The Science, Mathematics, and Research for Transformation Defense Scholarship for Service Program (SMART)

This program is intended for U.S. citizens to support the education and recruitment of undergraduate and graduate students in Science, Technology, Engineering and Mathematics (STEM) fields. This program is used to recruit and to retain civilian scientists and engineers to work at DoD agencies and laboratories.

Recipients are awarded full tuition, educational fees, and a stipend. The application will close **December 14, 2007**.

For more information visit: *www.asee.org/smart* or email: **smart@asee.org**.

NSM Alumni and Current Students at the International Education Week, November 13th

Students posed with the Dean at the presentation by NSM alumni and current students who studied in Brazil. The event was held on November 13th as part of International Education Week.

Grand Canyon Trip

Students in GEOL-201 (Earth History), taught by Dr. Nicole Bonuso, posed in front of the Grand Canyon National Park sign, during a trip during fall break.
Refer to blurb on page 2.

SCHOLARSHIPS 2008 – 2009 !!!

Scholarships for the 2008 — 2009 academic year will be posted on the Financial Aid website after December 1, 2007:

http://www.fullerton.edu/financialaid/scholar/scholarships_default.htm

Applications will be on the website.
Deadlines vary by scholarships. Visit website for more details.

Dimensions

The Journal of Undergraduate Research in Natural Sciences and Mathematics

Submit your research articles to Dimensions and be recognized for the hard work you've put in to your studies and research.
Deadline for abstract or article submission:
February 1st, 2008.

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Contact Rochelle Woods
(rwoods@fullerton.edu)
for more information
about submitting your work.

Internships at Cal State DC

The Cal State DC program is now in its third year of offering students opportunities to spend a summer studying about and working in the world of politics in our nation's capital. Internships can be with congressional offices, executive agencies, political parties, advocacy groups, non-profits, and a variety of other offices in and around Washington, D.C. Here is just a sample of some internship sites: Center for Science in the Public Interest; Clean Water Action; Defenders of Wildlife; Environmental Working Group; Sierra Club; The Wilderness Society; World Wildlife Fund Juniors, seniors, and graduate students from all majors are encouraged to apply. Students will be enrolled in two 3-unit classes while in D.C. and applications are accepted on a rolling basis.

For more details visit http://hss.fullerton.edu/polisci/wip/

Volunteer at the Tucker Wildlife Sanctuary

The recent fires in Santiago Canyon have impacted the Tucker Wildlife Sanctuary, a property owned by CSUF. Volunteers are needed to help with general clean up in the canyon and placing of bales of hay and sandbags throughout the canyon to help prevent erosion due to the fires. There are 2 shifts available the weekends of Dec. 1st and Dec. 8th: 9am to noon or 1pm to 4pm. Everyone should dress in long sleeves, long pants, sturdy shoes, and wear work gloves. If students have scoop shovels, please bring them but be sure to put the family name on them so they don't get misappropriated. The staging area is a large dirt lot on the right side of the road immediately after turning onto Modjeska Canyon Road from Santiago Canyon Road. It's impossible to miss as there are large rolling dumpsters, thousands of hay bales and the like. Parking is at a huge premium in the canyon so volunteers should carpool if possible. Parking is available in the lot. There will be water and snacks available for volunteers. So far, there have also been volunteers that provide lunch for the volunteer laborers.

To volunteer or for more information,
contact Karon Cornell at kcornell@fullerton.edu.

SEMINARS

BIOLOGICAL SCIENCE

Wed, Dec 5, 4:00 pm in MH-513
Speaker: Dr. Catherine Salmon (University of Redlands)
Host: MARC
Topic: "Anorexic behavior and reproductive suppression: The modern impact of ancestral mechanisms"

GEOLOGICAL SCIENCES

Wed, Dec 5, 4:30 pm in MH-327
Speaker: Dr. Isabel Montañez (UC Davis)
Topic: "Late Paleozoic Climate"

MATHEMATICS ANALYSIS SEMINAR

Fri, Dec 7, 2:10 – 3:00 pm in MH-390
Speaker: Alain Bourget (CSUF)
Topic: "Spectral Asymptotic for the Gaudin Spin Chains"

Good Luck on Finals !