

## Fall 2010 Seminar Series

### September

13-15 HHMI Science Without Limits Symposium Week

14: 4 pm Dr. Jonathan Visick, "From E. coli to Aging, Epilepsy, Autoimmunity and Prions"

7:30 pm Keynote: Dr. Baldomero Olivera, "Fish-hunting cone snails: From venoms to drugs"

15: Dr Jonathan Visick, "From Genes to Genomes and Beyond"

7:30 pm Keynote: Dr. Baldomero Olivera, "Novel Chemical Diversity: from the biodiversity of the marine environment"

### Seminars: 4 pm JR Howard 124

Mon. 20: Dr. Alex Wilson "Nitrogen in a tri-trophic system that includes a host plant, an aphid and an obligate bacterial symbiont"

### October

Mon. 11: Eric Bend [LC Bio alum, PhD Candidate] "C. elegans as a model system to study synaptic vesicle fusion and recycling"

Mon. 25: Dr. Susan Strome [UC Santa Cruz] "Epigenetics & Chromatin"

### November

Mon. 15 Dr. David Lytle [Oregon State University] "Evolutionary ecology and conservation biology of aquatic insects"

All seminars are free and open to the public at 4 pm in JR Howard 124. They are a great way to meet faculty, current biology majors, and researchers in the NW community. Light refreshments provided. Dates TBA: Sept. 22, Oct. 4 and 18, Nov. 1, 8, 22 and 29, Dec. 6

## Overseas Programs New Zealand

In Spring of 2012 Greg Hermann will lead the overseas trip to New Zealand. The program focuses on the rich biological and cultural history of this unique location. The program offers Biology majors the opportunity to make progress towards departmental requirements while studying overseas.

## Faculty News

### Visiting Faculty

**Jason Merwin**, who was a visiting assistant professor in the department in 2009-2010, will continue in that position for an additional year, to the delight of the students who have come to appreciate his skill as a teacher. In the Fall, he'll teach a lab section of Bio 312, as well as a lecture course in Immunology. In spring, he'll teach Bio 200.

**Brenda Polster** will teach Bio 311/312 this fall, replacing Deborah Lycan, who is on sabbatical. Dr. Polster received her Ph.D. in summer 2010 from Oregon Health and Sciences University, where she studied some of the genes involved in brain neurodegeneration. We are excited to welcome her to the department.

**Jonathan Visick**, HHMI distinguished faculty scholar, is on campus fall semester to lead L&C faculty in Bioinformatics and course development workshops and to teach BIO 490-Molecular

Virology of Influenza. Professor Visick is a microbiologist and geneticist and is interested in what makes living things tick at the sub-cellular level. He finds the study of bacteria most exciting: where all of this genetic complexity works within single-celled organisms of unmatched diversity and adaptability. He is an Associate Professor of Biology at North Central College in Illinois.

### Sabbaticals 2010-2011

**Peter Kennedy** continues his research on ectomycorrhizal fungi and actinorhizal bacteria. In 2010, he published four papers on the ecology of these plant-microbial symbioses, which included four Lewis & Clark undergraduate co-authors. Dr. Kennedy is on sabbatical leave in 2010-2011 as a Fulbright-Garcia Robles fellow in Mexico. His research project is entitled "Mycorrhizal symbioses in Mexican *Alnus* forests: a community study using root-based molecular methods". Dr. Kennedy continued a second

summer of research with high school teacher Eileen Oppelt, West Linn High School, through the M.J. Murdock Charitable Trust's Partners-in-Science program.

**Deborah Lycan** continues her research on ribosome biogenesis in yeast. In 2010 she published a paper in Genetics on dominant mutations in LTV1 that inhibit the maturation of the small ribosomal subunit in the cytoplasm. Two undergraduates co-authored the paper. Last spring she was on sabbatical leave at the University of Texas at Austin where she worked with Dr. Arlen Johnson on ribosome export. This fall she continues her sabbatical at LC, participating in the Bio-informatics faculty development workshop and working with the Bio-informatics Visiting Scholar, Jonathan Visick, with bio-informatics post-doc Sarah Schaack, with Greta Binford and Yung-Pin Chen to develop new curricula in Genomics and Bio-informatics.

## Senior Thesis Research

continued on page 2

The biology department is proud to have seven seniors conducting yearlong senior research theses:

**Hannah Somhegyi** is investigating the function of an evolutionarily conserved Rab GTPase that is required for lysosome formation, using sophisticated genetic approaches to identify factors that interact with this important protein. Her advisor is Dr. Hermann.

**Becca Fitch** is investigating the role of Ltv1 in ribosome biogenesis in yeast. She will be doing a structure/function analysis of Ltv1, using fusion PCR to make deletions in Ltv1 to define both the sequences necessary and sufficient for its nuclear export, and the region of Ltv1 that recruits it to the small subunit. Her thesis advisor is Dr. Lycan.

**Logan Higgins** is investigating the diversity and structure of *Frankia* bacterial assemblages in two Mexican *Alnus* (alder) for-

ests. Summer, Logan traveled to Mexico to collect her thesis samples; this fall she is using a range of molecular-based analyses to assess the bacteria. Her thesis is the first to ever examine *Alnus*-associated *Frankia* in Mexico. She is working with researchers at the National Autonomous University as well as her advisors, Dr. Kennedy and Dr. Binford.

**Arielle White** is studying the effects of tetracycline, a broad spectrum antibiotic, on muscle function. She is using whole *Rana pipiens* gastrocnemius muscle to test whether tetracycline alters the force, kinetics, and duration of muscle contraction. Her thesis advisor is Dr. Autumn.

**Miles Dale** is analyzing the composition of expressed genes within the *Loxosceles rufescens* venom. This will ultimately aid in distinguishing the toxin gene phylogeny of the Sicariidae family. He will use a combination of proteomic and transcrip-

tomc methods to analyze the diversity of the venom. His thesis adviser is Dr. Binford

**Alexandra Dixon** is investigating how chick ciliary neurotrophic factor is exported from cells, using immunofluorescence techniques to identify which cellular components the protein associates with before it leaves the cell. Her advisor is Dr. Reiness.

**Hillary Marler** is studying the feeding behaviors of native Douglas squirrels. She is interested in quantifying potential behavioral differences between urban and rural squirrels; in areas where invasive Red Fox squirrels are or are not present and in analyzing if there are any interactive effects from these two variables. Her thesis adviser is Dr. Clifton.

Senior thesis requirements may be found at: [http://www.lclark.edu/college/departments/biology/student\\_resources/policies/](http://www.lclark.edu/college/departments/biology/student_resources/policies/)

## Lewis & Clark College

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## Alumni Successes

Several Biology alumni were awarded prestigious National Science Foundation graduate fellowships in 2010: Andrea Bailey '05, who is studying animal behavior at the University of Minnesota, Twin Cities; Marjorie (M.G.) Weber '07, who is in the graduate program in ecology and evolutionary biology at Cornell University; and Katie Holzer '08, who is working on her Ph.D. in conservation biology at U. California, Davis. Fellowships were also received by Biochemistry/Molecular Biology alumni Claire Fassio '09, Conor Jacobs '09, Charles Morgan '08, Benjamin Ross '05, and Amelia Still '03. Congratulations! If this seems like a long list, it is; in 2010, Lewis & Clark alumni won more NSF grants than did alumni of Reed, Willamette, and the University of Puget Sound combined.

*Alumni, we want to hear from you! Drop us a line to bring us up-to-date on what you've been doing since graduation. Are you willing to serve as a networking contact for current students? Please send us your most current contact information via snail mail, e-mail at [biology@lclark.edu](mailto:biology@lclark.edu), or contact one of your former professors.*

## Faculty News Cont'd

*continued from page 1*

**Faculty on Campus Fall 2010**  
**Kellar Autumn** and his research team published four papers (*Journal of the Royal Society*, *J. Experimental Biology*, *J. Physical Chemistry*, *J. Physics Condensed Matter*). In one study, they discovered that the nano-hairs on gecko feet actually become stickier as they slide faster. They developed a mathematical theory based on the random vibration of nano-hairs, and fabricated synthetic gecko hairs that become stickier as they slide—a first for science. Prof. Autumn was a co-recipient of a \$250,000 grant from the W.M. Keck Foundation for nanoscience development at L&C. He spoke at numerous venues, including an Alumni event in Seattle, a Nano-technology Workshop in Israel, the American Physical Society, the Materials Research Society, and the OMSI Science Pub. Autumn's research was featured by *National Geographic*, *New York Times*, *Discovery Channel*, and over 5 million viewers will see his research team on a NOVA episode entitled *Smart Materials*, to air in Nov. 2010. Prof. Autumn also had

so much fun teaching BIO 151 last Spring that he will teach it again in 2011. He is also Biology's new Department Chair, so please be extra nice to him.

**Paulette Bierzychudek** is happy to be stepping down as Chair of the department and is looking forward to having more time to devote to her teaching and research. She's excited to be teaching Evolution for the first time since 2005. She'll also teach Ecology and will be part of the teaching staff for Exploration and Discovery, the core course for first-year students. The tentative topic of her E&D section will be "dangerous scientific ideas." It will focus on why people have found three ideas – the heliocentric view of the universe, evolution, and global climate change – so contentious and threatening.

**Ken Clifton** continues his studies of tropical marine organisms and has recently published two papers on spatial and temporal patterns of reproduction by tropical seaweeds. With the help of two student co-authors, he was finally able to publish the results of fish surveys conducted by students during the biology overseas program to Micronesia in 2002. A similar paper on the fishes of Kosrae is to follow. Work in Clifton's lab continues to investigate the consequences of ocean acidification on the skeletons of calcified green algae. In the fall, Professor Clifton is teaching Bio 141, with Animal Behavior in the spring. He is also the Math and Natural Sciences representative on the Faculty Council.

**Greg Hermann** is continuing his studies of the mechanisms controlling the biogenesis of lysosomes in *C. elegans*. Six Lewis & Clark College students

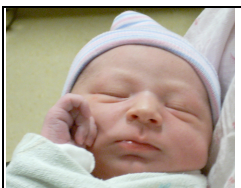
who worked in the Hermann lab were co-authors on a paper published in the *FEBS Journal* this spring. He will be accepting applications for the 2012 Biology Department Overseas Program in New Zealand this spring.

**Gary Reiness** is Associate Dean of the College of Arts and Sciences for 2010-11. In addition to his administrative duties he is co-teaching a new course, Introduction to Neuroscience, with Dr. Yueping Zhang of the Psychology Department. During the summer, his lab was bursting with students conducting research on the movement of neurotrophic proteins in cells—Quinn Roth-Carter '12, Alix Dixon '11, and Dan Li, a junior at Clackamas High School who was supported by the College's HHMI grant. In February, Gary was one of a group of faculty from Oregon colleges who were awarded a one-year grant from the National Science Foundation to form the Willamette Valley Biological Education Network. He is Principal Investigator on a proposal to NSF to extend the network and continue its activities for 5 more years.

**Greta Binford** returns from sabbatical this fall and is continuing studies of biogeography and venom evolution in brown recluse and their relatives. In 2010 she published two papers (*Molecular Phylogenetics and Evolution*, and *Toxicon*) with a total of 3 LC alums – Rebecca Duncan '07, Melody Rynerson '06 and Melissa Bodner '04. New directions in her research include analyses of the evolution of whole venom composition in the brown recluse spider lineage. She is teaching an arachnology focused Bio 100 course this fall.

## Biology Department Search

The Biology Department is searching to fill a tenure-track position in neuroscience. This new faculty member will overlap with Professor Reiness for two years. Professor Reiness moves to a half-time position prior to retiring. The new professor will help to develop the College's offerings in neuroscience.



The Biology Department welcomes Isaac Xavier Litchy, Sarah's baby, born on August 31, 2010, 8 lbs 8 oz, 22". Sarah will be on maternity leave until after Thanksgiving. Sharon Barnes, retired from Lewis & Clark, is working in the office until Sarah's return.