

Seminars and Events

Mon, March 13 - Charles Umbanhowar Jr., Ph.D., Chair, Environmental Studies Dept and Professor, Biology Dept, "*Fire, Climate, and Culture: Science and Exploration in Western Mongolia.*" SC 278, 4:00 pm

Thurs, March 16 - Dr. Marilyn Becker, Director of Admissions at the University of Minnesota Medical School - will discuss medical school and the application process. SC 278, 4:00 pm

Thurs, March 16 - "*M.D. or D.D.S.? What's the best choice for you?*" Hear from a physician and a dentist about what helped them make their decision between these two professional career paths. Biomedical Senior Capstone Project ~ Kaia Knutson SC 278, 7-8 pm

Mon, March 20 - Jill Morris, Ph.D., Assistant Professor of Pediatrics, Feinberg School of Medicine, Northwestern University. "*Molecular basis of schizophrenia.*" Joint seminar with Neuroscience and Biology SC 278, 4:00 pm

March 25 - April 2
Spring Break!

Mon, April 10 - Ian Barbour, Carleton College Professor Emeritus, Winifred & Atherton Bean Professor of Science, Technology & Society, "*Intelligent Design: A Scientific and Religious Critique.*" Joint seminar with Religion and Biology SC 278, 4:00 pm

Meet Dan Hernandez *by Liz Berg*

Most biology students have probably glanced into Professor Mike Swift's office and noticed a new bearded face. This semester, St. Olaf is fortunate to host visiting faculty member Daniel Hernandez. Daniel is currently a PhD candidate at the University of Minnesota. Because he hopes to one day teach at a small liberal arts college similar to St. Olaf, he took the opportunity to spend a semester teaching a subject he loves: ecology.

Daniel has thus far enjoyed his work in the biology department. He has found the faculty friendly, supportive, and fun to work with. He is also impressed by the interest and genuine investment of the faculty in teaching. The students are, of course, fun and hard working as well. Daniel has found at St. Olaf a great community of people.

As earlier stated, the area of biology in which Daniel has found his passion is ecology. Two questions form the basis of his doctoral research: how does fire influence decomposition in forests, and how do changes in plant litter inputs to soil affect microbial community structure and activity in forests? Not surprisingly, Daniel enjoys spending as much time as possible outdoors, engaged in activities such as fly fishing, canoeing in the Boundary Waters, rock climbing, and hiking.

Undergraduate biology majors in search of advice should appreciate what Daniel has to offer. He encourages students to take a variety of

courses, both within and outside of their majors, as college is a good time to explore different topics. He stated that everything following these four years will probably be specialized, both in graduate programs and employment. In addition, he highly supports study abroad. His own experience on a study abroad program in Costa Rica was life changing and led him to what he is doing now.

Following this semester at St. Olaf, Professor Hernandez plans to finish his degree and hopefully end up in a teaching position similar to the one he now has. Next time you pass by Daniel's office, stop in, say hello, and meet a new member of the biology department.

Book Review - "Aquiring Genomes" *by Eric Cole*

Thirty years ago, my undergraduate colleagues and I were mesmerized by a bold new personality in the biological sciences, Lynn Margulis. She introduced us to the concept that those cellular "organelles" whose names and functions we had memorized; chloroplasts and mitochondria, were possibly the descendants of invasive, symbiotic prokaryotes, and that every cell in our bodies was in fact a chimera of separate genomes fused into an obligatory union. Dr. Margulis' ideas were fascinating, and though they occasionally over-reached (cilia and flagella have not born up as symbionts of spirochetes), they burst on the scene with a fresh perspective bordering on that of a paradigm shift.

Thirty years later, Margulis has written

From the student naturalist

The month of March marks the beginning of spring, but in Minnesota, winter continues to linger on. Snowfall is common during the month, yet seldom having much more than an ephemeral existence, melting soon after it hits the ground and rendering the way for mud. While the weather is still winter-like, the deterioration of the snow and ice conditions has brought a halt to the recreational activities that depend on them, and even those of us who love winter begin to feel the first signs of cabin fever; spring is now welcome.

As March progresses and the days lengthen spring will eventually offer us its first tell tale signs: the sound of running water from the snow melt, the rising of sap in the maple trees, and the mating whistle of the chickadees. As old outdoor activities come to an end, new opportunities for outdoor recreation will present themselves: trout streams offer an opportunity for fisherman to wet their lines; early migrants provide an opportunity for birders to dust of their binoculars; and if you don't mind the mud that in synonymous with spring, hiking trails will soon be snow-free. Now, after the frozen silence is beginning to thaw, spring promises a rebirth of beauty, life, and opportunity.

Perry Williams

a book crystallizing all the insights and "aha"s of a rich and productive life of the mind. Reading "Acquiring Genomes", I keep expecting to be bored, to find the author lecturing me on things I've already heard. Instead, and on nearly every page, I find delightful treasures. Curiously, this book is a startlingly harsh critique of the neo-Darwinian synthesis that has led to our modern view of evolution! Margulis, and her co-author Dorion Sagan (son of Margulis and the late Carl Sagan), point to evolutionary dogma and its sole reliance on random mutation as puny players in the real drama of the evolution of life. She seemingly makes a strange alliance with creationists here, who also balk at random mutation as a sufficient cause of variation. But then, Margulis and Sagan load our cannons with fresh munitions as they make the case for "sybiogenesis" as the primary motivating force behind evolutionary change. This is no modest claim, or repackaging of an old quaint idea. These authors make a compelling case that sybiogenesis, (fusion and acquisition of genomes), far from being the province of natural curiosities such as lichens (fungal-algal associations), and corals (animal-algal associations) is rampant, pervasive, and perhaps a phenomenon that dwarfs all other sources of genetic change.

Humans make a fascinating example. I learned that 90 % of the cells that make up the human body, are non-human! Yes, that's right, 90%! Nearly 1,000 species of organisms reside in and on our bodies, and we have evolved to rely upon functions carried out by their genomes for survival. We are walking ecosystems! But the real brilliance of this thesis emerges when Margulis and Sagan shine their delicious spotlight

Congratulations to Prof Kim Kandl and Prof Henry Kermott!

In February Prof Kim Kandl was awarded tenure at St. Olaf and promoted to the position of Assistant Professor. Way to go Kim! Also in Feb Prof Henry Kermott was named the Marie Malmin Meyer Endowed Chair - one of three newly created endowed chair positions to award outstanding teachers, scholars and servants of the St. Olaf community. Nice job Henry!

on the world of unicellular organisms, on microbes, and the grand experiments of the Archean Age when genomes were shuffled, and a host of metabolic experiments were unleashed, vastly diverse and different from those over-emphasized, and relatively minor contributions from the eukaryote world of glucose respiration and Kreb's cycle.

The book is not without flaws. It is hilarious that they invited Ernst Mayer, (a towering figure in the development of modern evolutionary thought, and a bit of a curmudgeon), to write their forward. He bluntly lambastes the authors for over-stating the importance of sybiogenesis ("There is no indication that any of the 10,000 species of birds or 4,500 species of mammals originated by sybiogenesis."), but then goes on to proclaim this the very best writing on the subject, and a "brilliant new interpretation". In their defense, Margulis and Sagan point out that the mammals and birds represent only one ten-millionth of the species alive today, and relatively speaking, vertebrates (and eukaryotes in general) capture only a tiny fraction of the genomic diversity, much (or most?) of which may arguably owe its diversification to sybiogenesis. Here is a book to read in short bouts, in order to savor each bright and shiny new idea that it offers.

Student report -
Environmental Sci. Program
Location: Australia
Time: Sun, Feb 19 '06 5:40am
Journalist: Tim Mitchell

Howdy,

As I indicated in my last email, my first week was a bit disappointing because I didn't really get out of an Australian suburb; this last week has been much better. We stayed in Queenscliff, a town at the mouth of Port Phillip Bay (the same bay Melbourne is in) and studied at a Marine Biology lab. We learned about the biology of the temperate ocean. We found a lot of cool animals in a lot of different ways. Dragging a small dredge through the bay produced sea horses and pipefish, and we also saw Australian Fur Seals on a boating trip.

The next day we went canoeing through the bay and I caught two Banjo Sharks by hand (one was like 20lbs). A Banjo shark kind of looks like a ray, but doesn't have a stinger and has a thicker, finned tail.

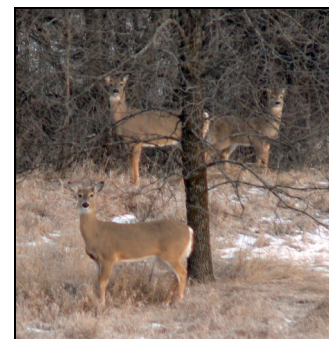
Unfortunately I didn't have a camera. They lie in the shallows and you can sneak up and grab their tail, but apparently they don't enjoy being grabbed so you have to hang on tight as they thrash around. I also saw a smooth ray which had about a 2m "wingspan" swim under my canoe. That afternoon has so far been the highlight.

We spent the last two days traveling down through the Otway region which has amazing forests. In the cool temperate rainforest I felt like a T-Rex could have been running along and not be out of place. We found a ton of marsupial tree-bears known as koalas which are quite easy to watch, since they hardly move. They are quite cute.

Since much of our days were spent on a bus, my friend Adam and I collected some vicious jungle ants that are about the size of a small car. We have been feeding them various other animals we find like wasps, giant spiders and flies. That proved to be less cute than the Koalas, but more entertaining than looking out the window on the long bus rides.

The Great Ocean Road runs through the Otway region, and is the most beautiful road I have ever been on. We stopped at Bells Beach to watch some surfers, the Twelve Apostles, and some other cool places along the way.

Tonight I am back in Melbourne for a week of lectures, but I am staying in nice apartments in the city this time, so I am excited. As far as herpetofauna goes, I have found some small skinks and naked tree frogs, but unfortunately no giant crocs or deadly snakes. I'm sure I will find them sooner or later. Anyway, I have been having a great time and I will write again when I have more things to say and time to say it. Hope everything is going well back home. Tim



Winter photo of three deer by John Giannini