Notes From the Chair ~Jeff Thompson

The 2015-2016 academic year is a big one for the Biology Department, as we are implementing substantial changes to the biology major curriculum. BIOL150 is no more, Cell & Molecular Biology has undergone a major facelift (no more Gal4 project!), and a brand new course is coming on board. The new “core” curriculum is a three-course sequence: “Molecular Biology & Unicellular Life”, “Multicellular Life”, and “Ecology & Evolution”. It is designed to tell a great story: how life originally emerged on our planet, and how it has evolved and diversified over the past ~3.5 billion years. The first course, “Molecular Biology & Unicellular Life” focuses on the molecular processes that enabled unicellular organisms to emerge, initially examined from the perspective of prokaryotes, then through unicellular eukaryotes. “Multicellular Life” continues the story, exploring how multicellularity emerged, moving up through the level of tissues, organs, systems, and whole multicellular organisms. We conclude the story in Ecology & Evolution, which provides a perspective of life through an ecological lens, while also formally covering evolutionary theory to tie the overall story together. Quantitative reasoning and writing are addressed in a strategic, developmental manner throughout the core to ensure that our students acquire the skills needed for success in our advanced-level courses and beyond. And all three courses provide many opportunities for group-designed experimental work so that our students learn how to be practicing biologists. It’s been an enormous amount of work on the part of the department to put this new plan together, but we are very excited to finally put everything into motion!

In addition to our new curriculum, we have a number of new faces in the department. We are joined by Dr. Ellie Nguyen, a cell biologist, and Dr. PJ Torres, an ecologist, who are both here for the 2015-2016 academic year. Additionally, we have added a new support staff member: Teresa Smit, a 2015 Denison graduate (and bio major/senior fellow) was hired as the Greene Biological Laboratory Specialist, a one-year position supported in part by the Leon C. and Grace Smith Greene Endowed Academic Venture Fund, to help manage and coordinate the transition from the old core to the new core lab curriculum. More on each of them is included in this newsletter. As for “returning faces”, we are happy to have Dr. Ayana Hinton and Dr. Clare Jen back with us this year, after both being on leave last year. And lastly, a familiar face with a new title, Dr. Heather Rhodes was awarded tenure and promoted to Associate Professor this past spring, and is on her well-earned sabbatical this semester.

Read on to learn more about all of the goings-on in the department!
On Sunday, November 8th, about 30 students from Denison, with many being biology majors, participated in the annual "Science, It's Elementary!" program at Granville Elementary School. Laura Romano has organized this program (on behalf of the local PTO) for three years, each time recruiting students as well as scientists/engineers from the local community. This year, about 200 kids (and their parents) attended an opening act featuring cool animals like the sloth brought by The Wilds, and then rotated through six sessions in disciplines such as biology, chemistry, paleontology, physics, engineering, and environmental science. For example, students in Laura Romano’s Invertebrate Zoology class did a session focused on locomotion in marine invertebrates, while students in Jenna Monroy’s Comparative Physiology class did a session focused on the effects of exercise on memory. Joo Hyung Park ’18 and Jed Dioguardi ’18 assisted a local paleontologist with his session, and Jaime Kass ’17 and Kim Huggler ’17 from Tom Schultz’s Entomology class brought insects to share with students in the front lobby. (About a dozen students from the Denison Chemical Society also participated in the program, offering a session related to the different states of matter). All of the students seemed to really enjoy time spent “down the hill” interacting with kids and sharing some of what they have learned through their science coursework at Denison!

Students in the Fall 2015 Population and Community Ecology class (BIOL 375) conducted one of their class research projects at the Granville School’s new LandLab. We have been conducting research on the wetlands at the Land Lab that has involved both Denison students and Granville students (ranging from 2nd grade through 12th grade). This property is in the process of being converted from corn fields into wildlife habitat that students and teachers in the Granville school district can use for teaching and learning. In BIOL 375, the students sampled insects during one lab, and plant diversity and abundance in another lab, so that they can examine ecological relationships between the two. During each lab the Denison students worked in teams with students from the Granville High School ecology class (mostly sophomores) to collect data. Dr. Rettig and Dr. Smith, co-instructors of BIOL 375, will be sharing data from these samples with the high school class, so that those students can begin to document how the animal and plant life in the Land Lab changes over time.

Fall ’15 DUBS vs Faculty Kickball game
The students clobbered the faculty on Saturday, Oct. 3rd. A good time was had by all!
I am very happy to join the vibrant biological community at Talbot Hall, where I can pursue my passion in teaching molecular biology. My research and teaching interest encompass the areas of molecular plant pathology. Plants are constantly exposed to a variety of pathogenic microbes and pests. Thus, plants have developed diverse mechanisms to fine-tune defense responses to different types of enemies. Cross-regulation between these signaling pathways may allow the plant to prioritize one response over the other. Then, what is the connection between biotrophic microbe- and herbivorous insect–triggered resistance signaling pathways that converge on one gene? In previous work, we identified SUPPRESSOR OF rps4–RLD 1 (SRFR1), as a negative regulator of effector triggered immunity against the bacterial pathogen Pseudomonas syringae pv. tomato. Surprisingly, srfr1-1 plants showed increased resistance to herbivory by the beet army worm Spodoptera exigua and to parasitism by the cyst nematode Heterodera schachtii compared to RLD. This finding places SRFR1 at an intersection between multiple defense pathways. More details about this story has been published recently on Molecular Plant Pathology journal with the title “The Arabidopsis immune regulator SRFR1 dampens defenses against herbivory by Spodoptera exigua and parasitism by Heterodera schachtii”.

Besides biology, my second interest is college science education with post-doctoral academic training. Thus, I am also conducting research on this field in collaboration with Dr. Marcelle Siegel at the University of Missouri-Columbia (MU). Recently our team has focused on research about College Science Teaching training and follow-up case studies to understand how four former graduate students at MU (including me), who were trained in the college science education courses, have employed what they learned to their pedagogical methodologies. I’ve joined the team of teaching Molecular Biology and Unicellular Life - Biol 210 for my one year visiting here. My hobby is scenic photography and crystal stones. Last but not least, I always serve chocolate candies in my office, Talbot 327, so please stop by anytime that you need some sweets.
Glad to see all is still well in DU’s biology department! I’ll be defending my thesis and graduating with my M.S. in Environmental Toxicology from Texas Tech University in June. My research here involves pesticide interactions and mosquito ecotoxicology. I also just received one of my department’s top two masters student awards.

This Fall I’ll be beginning my Ph.D. in Entomology at Clemson university, studying agricultural insect pests.

Shout out to Dr. Schultz for all his help along the way! ~Thomas Bilbo ’12
Dr. David Millett, ’63, was so impacted by his advisor in the Biology department, Dr. Gail R. Norris, that he decided to create an enduring honor. In 2014 Dr. Millett established the Dr. Gail Norris Memorial Endowed Scholarship Fund, a fund that will exist at Denison in perpetuity. The Fund’s expendable income will be used to provide scholarship for students with financial need, with first preference going to students studying biology.

“Dr. Norris introduced me to scientific methods that have remained with me for a lifetime,” said Dr. Millett. He has put those methods to good use. Dr. Millett went on to earn his medical degree at Yale University School of Medicine. In addition he graduated from the USAF School of Aerospace Medicine in 1971 and received his M.P.H from Florida International University in 1987. He also served active duty in the U.S. Air Force from 1970-78 and was the Assistant Air Attache and Post Medical Officer at the American Embassy in Moscow in the mid-seventies. Later in his career Dr. Millett was the Director of Flight Medicine at Eastern Airlines where he directed medical programs for 4,500 pilots and 7,500 flight attendants. Currently Dr. Millett is the Executive Vice-President of the Civil Aviation Medical Association and serves as the president of the Airlines Medical Directors Association.

It is Dr. Millett’s hope that other Denison Biology students who were impacted by Dr. Norris would consider honoring him with a contribution to the fund. Did Dr. Norris have an impact on your Denison experience? If so, Dr. Millett and the college invite you to make a contribution to the fund. You may mail a check made out to Denison University, with Dr. Gail Norris Endowed Scholarship Fund marked in the memo portion of your check.

The address is: Denison University, P.O. Box 716, Granville, OH 43023-0716.

For additional information you may contact Nan Steyn, Development Officer, at steynn@denison.edu.

Dr. Norris was a professor of biology at Denison University briefly before serving for eight years as the head of the biology department at Mount Union College in Alliance, OH. He was invited back to Denison where he taught biology and pre-med courses from 1959 until his retirement in 1984. During his tenure at Denison, he spent most summers at various universities throughout the country and at the nuclear reactor in Oak Ridge, Tenn., as a researcher investigating biological occupational hazards, particularly lung diseases.

Dr. Norris passed away on July 10, 2010 at the age of 91.