

# Bio Buzz

Denison University Department of Biology



## 2012-2013 Senior Fellows

Justina Bartling, Roxanne Banker, Annie Harmon,  
Katherine Ireland, Robert Stenger

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I think I can pinpoint my desire to become a veterinarian at around age four. My parents had to keep a close eye on me when I was growing up, because I was always the child bringing in salamanders, wild rabbits, stray kittens, and even neighbors' pets that I claimed needed my help. Fortunately, for my parents, I was able to hone my desire to help animals by falling in love with studying biology. I remember being excited about all science classes in my grade school and high school education, and never hesitating to say "veterinarian" when asked what I wanted to be when I grew up.

Denison may not have the run of the mill pre-veterinary program that some other undergraduate colleges have, but I can honestly say that I doubt many other colleges could have provided me with the same incredible experiences that Denison did. While a biology major, I was able to take classes at Denison like genomics that studied up and coming research in the biology field, I had the opportunity to be a teaching assistant for biology classes that I loved the first time I took them, and I was

able to take my major abroad with me. It's rare to see a science major study abroad at other schools, but I was able to travel to East Africa and discover my love for studying wildlife management and conservation. I was also given the opportunity to do almost a year of amphibian conservation research with a biology professor here at Denison. In fact, I am planning on pursuing an MS degree in wildlife conservation and ecology before I apply for vet school—something I definitely would not have done had I not studied abroad or done research at Denison. I am thankful for the experiences that Denison has provided me while here, and I am excited to continue my studies as a scientist and hopefully a veterinarian!



Justina Bartling '13

### Notes from the Chair – Fall Semester 2012

The fall semester was off to a strong start during the first week of classes, when 19 biology majors joined 61 other science students to present the results of their summer research projects at the annual Summer Science Research Symposium. During the symposium our students talked with faculty, administrators, students, parents, and friends about the research they conducted over the summer and about their plans for the future. These students did a terrific job with their projects and in presenting their findings at the symposium!

Two highlights from this semester: In September the department joined with President Knobel and the family and friends of **Dr. Patricia Gibbons (DU'72)** for the dedication of the Gibbons Lecture Room (Talbot 212). President Knobel, senior **Jared Liston (DU'13)**, and I each spoke about the value Denison places in educating young science students and about the important role that gifts from alumni play in supporting science education and opportunities at Denison.

The second highlight was the start of a departmental initiative to provide more purposeful guidance to our majors about career options. This initiative arose from data collected in our Senior Interviews. As those who graduated in the past 8 years know, during part of our assessment program the biology faculty interview all graduating seniors about their experiences in the major. Recently we heard an increasing number of comments from seniors who wished the department took a more active role in providing career information. We found that our students were interested in knowing more about the sorts of jobs and careers that are possible with a biology degree from Denison. In response, the department planned an initiative to host four Career Information Panels during 2012-2013. The first panel occurred during Big Red Weekend and featured three alumni who have careers in medicine and education. (cont. pg 2)



Roxanne Banker '13

I entered Denison my first year as an undeclared major, trying to decide between Art, French, or Biology. After my first semester of taking two lab classes simultaneously, I was

hooked. Over the course of my career at Denison I have taken a variety of science courses, ranging from biology and chemistry to geology and physics. Even though biology has been my focus as an undergraduate, I have come to appreciate that having at least a basic working knowledge of other scientific disciplines is paramount to understanding biology. My senior research, which I conducted in the geology department, was reconstructing the intra-annual growth of freshwater mussels

using the stable isotopes of shell carbonate. When I began my research the summer after my sophomore year, I was exposed to a variety of topics that were completely unfamiliar to me. I enjoyed the challenge and learning about different facets of biology, and it was this new exposure that motivated me to forge ahead into the world of research.

I have learned a lot during my time at Denison through both my coursework and my re-

search. I think that the most important conclusion I have made is that there is always something new to learn about or investigate. I am constantly impressed by biological systems and processes, and how they are interconnected with other sciences. I want to continue my interdisciplinary education after Denison and move towards a career that will allow me to stay curious and follow my interests.

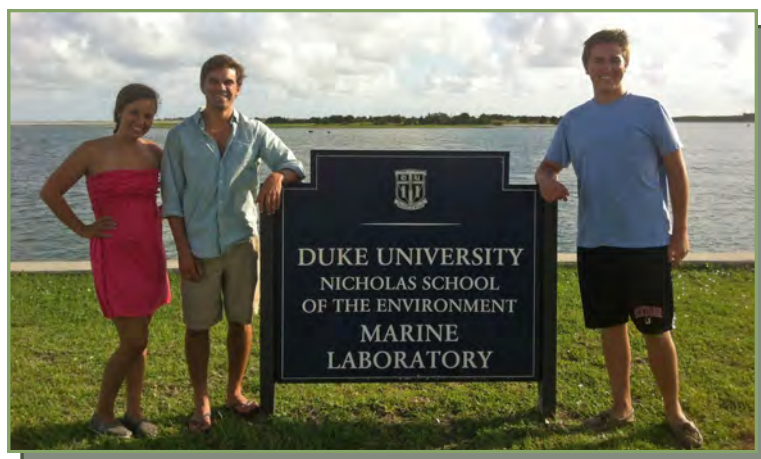


**2012-2013:**

Front row: Visiting Professor Tessa Carrel, Whitney Stocker, Warren Hauk, Jeff Thompson, Tom Schultz, Geoff Smith & Jenny Etz

Back: Eric Liebl, Clare Jen, Rebecca Homan, Heather Rhodes, Jessica Rettig, Laura Romano, Andy McCall, Lina Yoo, Ayana Hinton & Chris Weingart

Spring '13 Visiting Professor Robin Brown will teach a section of E&E for us. Dr. Brown also assists in ENV5.



Summer '12 Mollie Alter '14, Zach McKelvey '13, and Andrew Uhlman '14 all had a great time at the Duke Marine Lab. Denison was the most represented school at the Marine Lab (not including the students from Duke)!

## Faculty News



I'm ba-ack!

B.S. in Biology from Muskingum University (1997)

M.S. in Molecular, Cellular and Developmental Biology from Ohio State University (2003)

Ph.D. in Molecular, Cellular and Developmental Biology from The Ohio State University (2004)

### Visiting Professor Tessa Carrel

Teaching Introduction to Cellular and Molecular Biology, Introduction to Neuroscience, and Toxicology

I am back for my third run as a visiting professor in the biology department. My research experience began at Muskingum where I evaluated the changes in hippocampal culture physiology after altering the neurotransmitter GABA. As an graduate student, my focus shifted to the genetics and molecular interactions of neural development. During my postdoctoral research, I continued along this path, studying the disease Spinal Muscular Atrophy. Using zebrafish as an animal model, I specifically examined how the disease affected the ability of motorneurons to form connections with their target muscles and how drugs could improve this process.

As a result of my research experience, my current interest focuses on development and cellular signaling and how environmental factors can inhibit or alter these processes.

## Notes from the Chair cont.



A second panel in November featured four alum-

na spanning a range of careers in healthcare. Student feedback from the Career Panels has been very positive. The biology department is grateful to the alumni who participated in these events. We send thanks to Elaine Binkley ('07), Emily (Elsom) Cunningham ('97), Andy Zidron ('04), Ashley (Bath) Berman ('06), Ariel Biggs ('07), Allison (Boyd) Burner ('06), and Rhiannon (Crouse) Reid ('06). We look forward to running our panels in the spring.

One challenge we faced this semester was in contacting alumni, so if you have not updated your email address recently, please send it to the college. As our fall semester winds down with some unseasonably warm weather for December in Ohio, we wish you an enjoyable holiday!

~ Jessica Rettig





My experience as a biology major over the past three years has been defined by the very best kind of absurdity. When I enrolled in introductory biology as an uncertain freshman, I never expected I that I would someday spend hours identifying katydid under a microscope—by their genitalia. I never could have predicted that I'd get to spend a whole afternoon carefully making caterpillars out of modeling clay, or count thousands of frog eggs during summer research. I'm sure my roommates never expected to open our shared refrigerator to find jars of dead insects and bags of plant samples. And yet, as a biology major, I've gotten to experience these surprising moments of absurdity, and more. My classmates and I ran around a perfect tropical rain forest searching for flowers, then gleefully spread them all over the classroom floor to classify them. I've caught wild rare iguanas with my hands and held the friendliest

wild tarantula you'll ever meet.

Every biology major should have these moments in which we step back and think, "Well, this is the strangest thing I've ever had to do for a class! And I'm actually getting graded for this?" In a way, the absurdity and the surprise define the way I feel about my chosen field of study. These moments remind me that the natural world is endlessly marvelous and eye-opening, and I can never be sure of where I'll end up if I keep jumping at every opportunity to study it. My classes in Talbot have prepared me extremely well to observe and study organisms in logical, controlled ways, but I also love those moments when, despite how much we love the science, we temporarily forget all about it and are overwhelmed by the simple feeling, "I can't believe I'm here, doing this, in such an amazing world." I am so grateful to the professors who have made all my absurd

**Annie Harmon '13**



moments possible. I have never been more confident that I chose a great major, department, and college.

~ **Annie Harmon '13**



Growing up, biology was just one of those fancy-named courses that high schoolers were required to take. At that time I really had no interest in science, and

thought instead I would become the next Martha Stewart or start my own clothing fashion line. It was not until I finally took my first biology course junior year of high school that my interest in biology and the world of science was sparked. I found myself wanting to know more about the biological processes we studied in class and being enormously excited to check-up on our fruit-fly experiments—unlike the rest of my fellow classmates. After this one class, I decided I wanted to continue to study biology and pursue this major in college. Upon coming to Denison, however, my steadfast resolve to pursue biology was shaken. My experience in Bio-150 was not what I had expected and left me questioning if this was a field of study I wanted to dedicate the next four years of my life to. I decided to continue with the biology core, however, and soon reaffirmed my passion for biology—which has grown steadily every since.

The biology department at Denison University has allowed me to grow in ways I never could have imagined. I have become a more critical and discerning

thinker, I have grown in my leadership abilities through my role as a departmental teaching assistant, and I have gained the confidence and knowledge to help my peers as a departmental tutor. The most important way the biology department has helped me grow, however, is through my embodiment of biology as a way of life. Through the powerful interactions I have had with my biology professors and classmates, I have been able to embrace my 'inner biology nerd' and have allowed this part of myself to saturate all aspects of my life. I have been a four-year member of the Denison Field Hockey team and find myself incorporating my knowledge and appreciation for biology into this facet of my life. Through courses such as cellular and molecular biology and human physiology, I have developed a deeper and richer understanding of how and why my body functions as I play the sport I love. I also find myself explaining the concept of thermals and how they relate to the turkey buzzard swarms that often occur over Deeds Field during practice that my teammates have so enduringly refer to as the buzzards' afternoon 'recess.' I love to sew and knit as well and now find that I have an appreciation for the natural fibers and yarns I use and the organisms and processes that created them. My knowledge and skills in biology have also allowed me to enrich my liberal arts education and incorporate these scientific principles into the other disciplines I have studied—such as psychology, sociology, and communication. Biology has become a way of life for me and I plan on carrying it with me as I embark on my next phase in life—the pursuit of a doctorate in physical therapy.

I will forever be indebted to the amazing biology faculty

and staff—I would not be the person I am today were it not for them. I am so grateful for all they have taught me in the classroom and beyond, for their continued guidance and support, and for enriching my life in such a moving and meaningful way.

~ **Katherine Ireland '13**



I have been interested in biology and the natural world ever since I can remember. I did not always know that I wanted to pursue a career in biology per se but I knew that

working outdoors in nature was a high priority for me. Growing up on a farm in rural West Virginia I was able to spend a lot of time observing biology in both a natural and agricultural setting. My curiosity for the phenomenon that I was seeing in nature and on the farm increased my interest in the natural sciences and I began to realize no matter what field of occupation I would end up in an understanding of biology would be crucial.

By the time I arrived at Denison I was fairly certain I wanted to major in (*cont. on back*)



DENISON  
UNIVERSITY

Bulk Rate  
Granville, OH  
43023

Denison University  
Department of Biology  
Samson Talbot  
Granville, OH 43023  
Phone: 740.587.6261  
Fax: 740.587.5634  
E-mail: biology@denison.edu



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### Bioreserve Storm Damage

On June 29, 2012 a major wind storm occurred which took down hundreds of 100+ year old trees. It took the rest of the summer to clear the trails.

Pictured: Whitney Stocker, Bioreserve Manager



### *Fellows cont.*

biology, but the going wasn't easy at first. I remember thinking I might be in the wrong major because Bio-150 was my lowest grade first semester. However, I realized that even though I wasn't getting an A in the class that it was the class that I found most interesting and intellectually challenging. I believe in the philosophy that an easy path is not worth taking and the challenge that the biology major presented only increased my desire to complete it. I have been lucky enough to take a wide range of biology courses and while the courses remain challenging I would not have it any other way.

I am not sure what I want to do heading out into the "real world", but I am confident that my Denison education has prepared me for anything. My time with the Biology Department at Denison has been a rewarding one. For me it has been the interaction with faculty outside of the classroom that has really shaped my college experience. From DUBS, to being a TA, to summer and senior research there are many ways to get involved with the department. If I was to give one piece of advice to students, it would be to take advantage of these opportunities and make as many connections as you can with the faculty. They are here because they are interested in interacting with students. Going forward, I know that whatever path I chose whether it is continuing my education, entering the workforce, or serving in a volunteer organization there is no obstacle I cannot overcome. ~ Robert Stenger '13

