Bio Buzz E-Newsletter

Department of Biology

Denison University

May 2015

Issue 9.1

2014-2015 Senior Fellows

Elizabeth Bailey '15

I've always loved the people who love biology. In my awkward and insecure middle school days, I spent many afternoons in Ridgewood School's land lab catching invertebrates and collecting water samples with a science teacher who made me feel like I could do or be anything I wanted. Bill Nye the science guy always answered the questions I was too embarrassed to ask in class and looked superbly cool in a lab coat while doing it. A science fair project that investigated the age old question "To Pee or Not to Pee" introduced me to my childhood best friend; she too was unafraid to swab fixtures in public bathrooms for bacteria. High school teachers explained to me the biology of the breathtaking trees that make New England radiant in the fall and shared their love of hiking, dogs, and figuring out how things work with me.

When I enrolled at Denison I figured the biology department would be a good place to find "my people," so I declared my major right away. Within the department I have found advisors, dance party buddies, jokesters, and friends for life. My lab partners over the years have taught me that ethanol is flammable, nudibranchs are amazing, and goldenrod is much more than just a yellow plant. Professors have encouraged me to keep questioning and always have an alternative hypothesis. My time in the Monroy and Thompson labs has introduced me to a larger scientific community and the world of research. My time spent tutoring and attending conferences further confirms my hypothesis that biologists are cool people who are passionate and just as excited to learn about the world around them as I am. While I am unsure what my future holds, I know that the skills I have developed during my time here will serve me well. More importantly though, the people I have met in Talbot and the memories I have made with them will stay with me no matter where my path takes me in life.

Hannah Brown '15

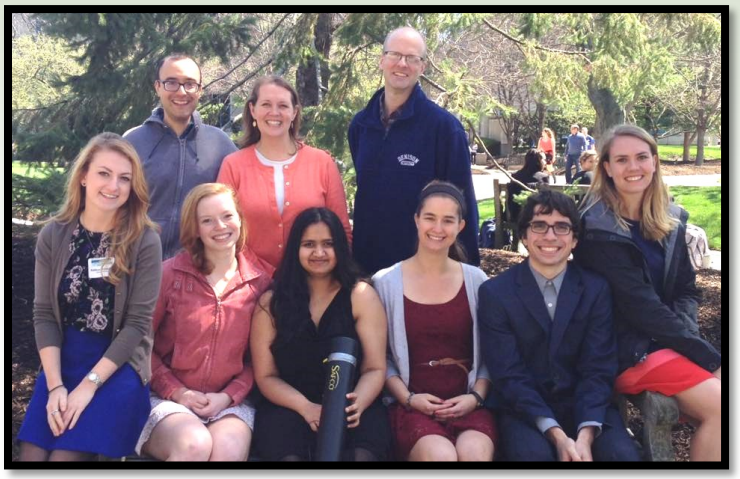
Dr. Robert Sapolsky preaches the idea that: "The unique distinction between human beings and the rest of the animal kingdom is the human ability to see possibility in the impossible and to strive to overcome adversity." I would have to agree. As humans we can overcome obstacles, embrace challenges, rethink, retry, and redo. These four years at Denison have been full of the daunting feeling of uncertainty, the struggle of facing an obstacle, and the triumph of overcoming academic challenges. I am certain that I would have missed out on all of this adventure if it hadn't been for the classes and faculty I encountered in my short career in the biology department. While, strangely enough, I thoroughly enjoyed my courses in organic chemistry and statistics, it was the many hours spent in Talbot Hall that I will ultimately remember. Experiences like watching mating dances and vibrations of the peacock spider and capturing damsel flies with a fishing net in Animal Behavior, and our attempts to dorsalize a *Xenopus* embryo in Developmental Biology, inspired and encouraged me to pursue a career in this field. Perhaps my favorite moment, though, was the isolation and identification of the bacteria *Brochothrix campestris* off of a plant outside of Curtis in my Microbiology course. This supported my growing interest in "small biology," and convinced me to switch from my pre-medicine track into a research-based path involving molecular genetics and microbiology. My subsequent research with Dr. Liebl has solidified this new path even more by fine-tuning my lab skills as well as making sure that I am cut out to be a researcher.

All of my biology-based classes have challenged me to question if and why I really love science. They have pushed me outside my comfort level, presented me with ideas I still have trouble articulating, and dared me to stray from a career path and pursue a true passion. My training in the liberal arts, paired with my experiences in the scientific field has established me as a well spoken, determined, and morally discerning student. I want to continue this development in graduate level work, and I am determined to make my mark in the field. Whether that is through the creation of a new antibiotic strain that can target bacteria such as *Staphylococcus aureus* from evading the immune system in blood clots; administering vaccines to countries with limited access; or training future scientific minds in an academic institution similar to ours here on the hill, I want my work to matter. I have grown so much in the hallowed halls of Samson Talbot, and I want to thank my faculty and classmates for making that possible.

Search for our Facebook group "**Denison Biology Alumni and Faculty**" & request to be added!

DON'T FORGET US WHEN YOU HAVE SOME FUN NEWS TO SHARE!

In April, Drs. McCall, Homan and Thompson took 6 senior researchers to Indianapolis, IN for the Butler University Undergraduate Research Conference 2015 attendees .



***Rollerskating with juniors and seniors** in March was a big hit! The students were a bit surprised at the "old folks" and their skating abilities. They forget when we were young, we didn't have videogames, internet, or more than 3 TV channels!"*

From Jenna Monroy:
Dory Enright '16 was awarded the American Physiological Society Summer Research Fellowship which funds 24 full-time undergraduate students to work for 10 weeks during the summer in the laboratory of an established APS investigator. In addition, Fellows receive a travel grant to allow them to present their research data at the following year's APS annual meeting (Experimental Biology), which is a broad-based scientific meeting of five to seven diverse biological scientific societies that are members of the Federation of American Societies for Experimental Biology (FASEB).

Dory will be working on a project to study the role of the protein titin in active muscle with me this summer. Dory is a Margaret Ann Watkin Scholar in biology this year.

Eric Liebl created a unique "ribbon" of planaria for our grand re-opening!

Haubrich Study Space

On March 3, 2015, we officially re-opened and renamed the Talbot 4th floor reading room as the Haubrich Study Space. Jeff Thompson said a few words thanking the committee, students for their helpful survey responses, and gave a brief history of Dr. Bob Haubrich so current students had a greater understanding of the man behind the name of their new favorite study space. It is now very cozy and functional and we hope students enjoy this improved space for years to come.

Kiira Harkins '15

When I first arrived at Denison, wide-eyed and a bit insecure, I did not have the slightest inkling that I would find a home in Samson Talbot Hall. As a pre-med student, picking a biology major just made sense. I wasn't sure it was love, but out of expediency, I agreed to a "marriage of convenience." It is said that love grows over time and once I had completed my first upper level course, Genomics with Dr. Thompson, it was blooming in abundance. Taking this class was like looking into the future and I began to see the possibility and promise that the field of biology has to offer the world. I was hooked and my journey as a biology major became a passionate affair.

After Genomics, I was introduced to the extraordinarily diverse microscopic world of viruses in Dr. Weingart's Virology course. These miniscule entities are all around us staging diabolical cell coup d'états in cleverly nuanced, choreographed ways. We now have the capability to harness viruses to solve pertinent human problems. Viruses can be manipulated to preserve produce in supermarkets, serve as alternatives to chemical pesticides in agriculture, and even treat and cure disease. In 2013, I joined Dr. Weingart's research lab and my project combines my two favorite areas of biology. I have isolated a bacteriophage that specifically targets a multi-drug resistant bacterium that primarily infects cystic fibrosis patients. After evaluating its efficacy in preventing infection in a plant model, I am in the process of sequencing and analyzing its genome to determine if it is safe for application in human medicine. How lucky I have been to work with and enjoy the mentorship of Denison's incredibly inspiring and talented faculty. There have been times of laughter, a few tears, but always learning.

As my time at Denison comes to a close and the days spent working in the lab, tutoring my peers in The Biosphere, engaging in epic battles of wit with the Thompson lab, and studying under the watchful eye of the lynx become fewer and fewer, I am making ready for the next stage of my life. After graduation, I will attend medical school. The end point of my biology journey remained constant, but the trip has been so much more than preparation for the future. I have found joy in stopping to smell the flowers along the way.

Harshida Pancholi '15

I entered Denison University with a very focused aim to be a Biology major and a neuroscience concentrator. After almost four years of being a part of the biology department, I can honestly say that the Talbot Hall of Biological Sciences feels like a second home. Here, I have had the chance to explore every direction of interest, and in doing so, have realized that even if a course is not in my field of neuroscience, the faculty, syllabus and engaging classes make for a truly intriguing experience. In the biology department, I have had a chance to explore the entire length and breadth of the biology spectrum: from neurophysiology, to developmental biology and all the way to paleontology and geosciences. I have received more knowledge in these four years of biology courses than I honestly thought I would ever get.

I had decided very early on that my future was going to be in pure science and in research. With that in mind, I have focused much of my time and energy on doing research in the department. The university and the department have a brilliant system of directed and independent studies, which I have utilized to the maximum. The lab components to the course have also provided opportunities to work with different models of study. My research experiences have included working with human breast cell cultures, leeches, frogs, bacterial cultures, protozoans, sea urchins and fruit flies. The most important skill I take away from my experience at Denison and in the biology department is to deal with unsuccessful experiments that don't always proceed as envisioned. Science is definitely not smooth sailing, but it is proper and firm steering that helps one reach their destination, and I am sure that this lesson will stay with me for the rest of my academic and research career.

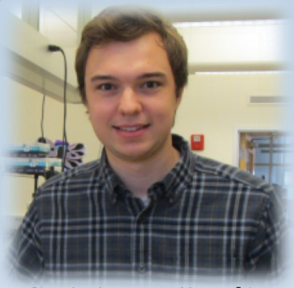
Teresa Smit '15

Upon arriving to Denison, I knew one thing for certain: I loved biology. What I was going to do with my degree seemed to be constantly up in the air, but I was studying in the field I loved and that was all that mattered. My passion was ignited in my AP biology class by my teacher who was constantly amazed by the complexity of life. Every day, I am confounded by just how amazing the world is and studying biology has enabled me to conduct experiments and understand the nuances of life.

My education in the biology department has included courses in genetics, conservation biology, community ecology, and many others. These courses have educated me holistically, allowing for both a broad and specific understanding of biology. Without professors who are engaging and committed to student learning, I would not have grown this much as a student and learned all that I have.

The relationships I have built with professors in the department and knowledge from their courses has greatly affected my career choice. With my heightened appreciation for our Earth, I have decided to become an environmental attorney. I hope to convey the importance of science, and specifically biology, throughout my life and plan to do all that I can to protect this fascinating place we inhabit.

2014-2015 Senior Fellows, cont.



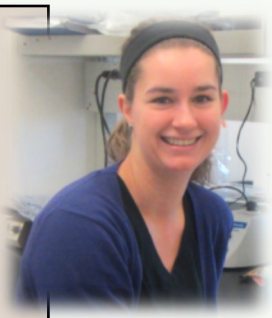
Christiaan Wijers '15

I first became interested in Biology in high school, when I started thinking about going into medicine. However, it was not until my first semester sophomore year – when I took BIOL 150 – when I came to fully appreciate biology for its own virtue. Having been a biochemistry major up until that point, I switched my major to biology immediately as I had fallen in love with the science of figuring out how living organisms work, develop, and interact. The other core classes of the biology major further confirmed that switching my major had been the right choice, and when I took my first upper level biology course I knew that I had found something that I wanted to continue to be involved with until long after I had graduated from Denison. *Diversity of Microorganisms* first sparked my love for the smallest – but, in my opinion, most intriguing – organisms: bacteria. I became infatuated with figuring out how they worked, how they continuously seemed to adapt to their environment, and why modern medicine still has not won the battle against many of these bacterial pathogens. Following up on my interest in microorganisms, I started doing research in Dr. Weingart's microbiology lab around the same time as well, and I continued to seek out courses that focused on the microscopic world, such as virology. While I still have the desire to go into medicine, my education and research in biology here at Denison have persuaded me to pursue a career in biomedical sciences as well, and I am therefore planning on applying to MD/PhD programs in the near future.

We as biology students at Denison have the incredible opportunity to explore the natural world in the classroom, laboratory, and a beautiful biological reserve. I am thankful that our curriculum has allowed me to explore fields outside of my main area of interest, such as developmental and evolutionary biology, as we are completely free in choosing which upper level courses we take. This, in combination with my experiences in the laboratory, has allowed me to make the most of my education, and to become a more well-rounded student within the larger discipline of biology. I know that I will continue to apply all that I have learned here as a biology student at Denison long after I have graduated, and I will forever be grateful for the educational experience that has helped me grow into the Biologist that I am today.

I came to Denison already certain that I wanted to major in biology. I spent a great deal of time around animals growing up and volunteered at the local zoo throughout high school. My love for animals dictated my passion for biology and I intend to pursue a degree in veterinary medicine after graduation.

During my time at Denison, I've been presented with a number of opportunities to expand my learning beyond the classroom: working as a TA for labs, tutoring students, and engaging in research under dedicated faculty members. My senior research has been the most challenging, yet rewarding experience of my life. Despite my passion for ecology and animal science, I've been able to pursue courses in cellular biology to expand my understanding of the microscopic world and it's interactions with the macroscopic view. I will be forever grateful to the biology department faculty and students for making my time here so extraordinary.



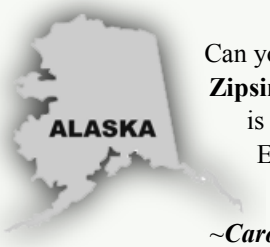
Sara Wilkes '15

2015 Haubrich Memorial Senior Research Symposium

On Saturday, April 25th, 14 students presented their senior research projects to faculty and fellow students with podium presentations occurring in Slayter Auditorium and poster presentations taking place in the Burton D. Morgan Center. An awards banquet followed in the Knobel Hall honoring 2014-2015 Department Awardees (Fellows, Academic Excellence, Outstanding Research, Outstanding Service, and Margaret Ann Watkin juniors.) Click here for more on our awardees: **http://denison.edu/academics/biology/whats-happening?wh_tag=1187**

Dr. Jeff Thompson took an opportunity during the day's events to honor **Dr. Leon C. and Grace Smith Greene '50/'50**, taking a moment to give a brief background of Dr. Greene's research and contribution in the area of pharmacology and career at Smith-Kline, his major accomplishment heading the research group that developed Tagamet.

Dr. Greene turns 90 years old in June, and research students and faculty signed a birthday card filled with good wishes and expressing their gratitude for the Greene's generosity with the Academic Venture Fund in the Biological Sciences established in 1991. Happy Birthday Dr. Greene!



Denison in Alaska!!!

Can you believe I ran into a Big Red Biology Alum **Zach Zipsir '00** during a Neuroscience outreach event? He is a PA here in town and his kids attend Huffman Elementary where my students were presenting "Move like Minions".

*~**Caroline Wilson**, former Visiting Asst. Professor now teaching at University of Alaska, Anchorage*

After graduation in '89 I began pursuing a MS Veterinary Pathobiology at OSU (based on advice/work with my awesome advisers at DU, Drs. Bob Haubrich and Ken Klatt) working in Dr. Richard Olsen's lab (FeLV vaccine inventor), and within a couple of months discovered it was not for me. A couple months later, I joined the Navy with the intention of becoming a SEAL, but instead wound up serving in EOD (bomb squad, diving, etc).

Fast forward to late '92/'93, I got hired by a small government contractor as a microbiology lab tech (pouring plates, and washing dishes, etc.—I started at the BOTTOM), but 6 months later got promoted to chemist. Since that time, I have done everything under the sun as far as analytical chemistry, research chemistry, environmental fields, microbiology, engineering, program management—you name it—for ARA. At one point I was going to pursue a MS in Civil/Environmental or ChemE, but could not find the time or money (married w/ 3 kids). Currently, most of my work relates to process engineering, operations, and program management regarding our patented technologies. We were basically the leader in perchlorate treatment remediation technologies (bio and ion exchange) until we began more actively pursuing our current work in hydrothermal processes (high P/high temp) as they relate to creating biofuels from non-food based plant oils and petroleum byproducts (we have conducted the world's only 100% biofuel flight). I have even ended up on a few patents. Rather than blabber on, here are some links to everything I have intimately worked on for the past 22 years:
http://www.ara.com/fuels/index.html
http://www.ara.com/perchlorate/

Jeffrey Rine '89
Senior Scientist

Stephanie Roach '08, earned a Masters in Marine Biology and Conservation from Scripps Institution of Oceanography in May 2014, and is now the Program Manager for the Waitt Institute in Washington DC. The Waitt Institute partners with Caribbean governments to empower communities to restore their ocean through the creation and implementation of sustainable coastal policy.

Annie Chou '09 is currently a Legislative Aide for a State Assemblymember from San Francisco. She's putting her biology degree to good use staffing the Assemblymember on Water, Agriculture, Health, and Public Safety issues among many others. She is also on the board of Harm Reduction Services, working to decrease transmission of diseases such as HIV and Hep C in Sacramento.

After graduating from Denison University in 2008 I attended Regis University to complete my Bachelor's of Science in Nursing in 2010. in Denver, Colorado. I am currently an Assistant Nurse Manager in the operating room at Porter Adventist Hospital. I specialize in Skullbase, Head/Neck, and Neuro surgery. In the past I specialized in orthopedic surgery with a focus on knee and hip replacements. As a result I was able to attend my first mission trip to Panama City, Panama where we replaced 66 joints in 4 days. This past December 2013 I graduated with my master's degree as a Clinical Nurse Specialist in Adult/Geriatric Care from the University of Colorado Denver Anshcutz Medical Campus. ~**Kristen Oster '08**

Sarah Kosling '14, entered the Peace Corps and departed for Nepal March 6 to begin training as an agriculture extension volunteer. Sarah will live and work at the community level working to improve food security for rural families. Possible projects include establishing and maintaining soil and water conservation structures and practices, fruit tree production, fish cultivation, raising trees in small nurseries, apiculture and honey production, livestock health, meat and wool production, range management, vegetable gardening and nutrition education.

Sarah presenting on nutrition to a group of Nepali women.

We are relieved to report Sarah was not harmed during the magnitude 7.8 earthquake that rocked Nepal April 25th.

The Peace Corps has temporarily removed all workers there and will work stateside until further notice.

Ashley with some of her graduates of the UINCD Non-Communicable Disease Health Worker Training she developed and helped implement at Mulago National Referral Hospital in Kampala, Uganda (October, 2014).

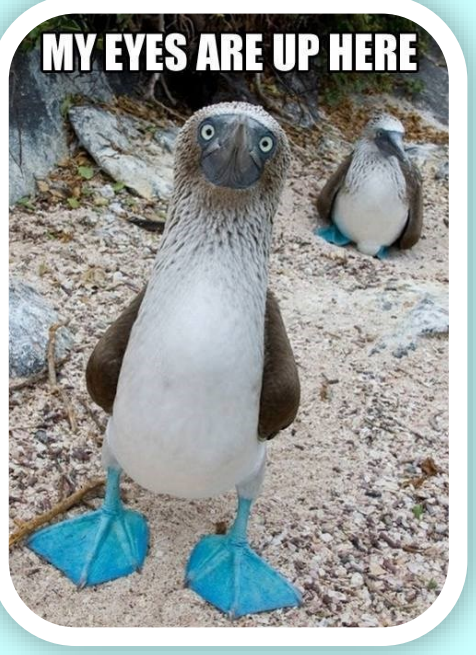
Ashley Dunkle '08 is currently serving as a Global Health Corps (GHC) Fellow in Kampala, Uganda. She is Curriculum Development Officer for an NGO called the Uganda Initiative for Integrated Management of Non-Communicable Diseases (UINCD), that aims to improve how NCDs are prevented and managed in Uganda through health worker education, research, and novel models of care.

After graduating from Denison, Ashley spent two months in Indonesia with UN FAO shadowing an epidemiologist working in avian influenza surveillance and response. She then worked in Denmark for a study abroad program planning academic travel. Next, she completed her Masters in Public Health (MPH) at Boston University School of Public Health, concentrating in Epidemiology and Global Health. During her MPH, she interned at CDC in refugee health, conducted research in OBGYN at Boston Medical Center, and worked on a pediatric pneumonia etiology study in Lusaka, Zambia. Previous to GHC, Ashley worked at the Massachusetts General Hospital Center for Global Health for the Global Primary Care Program, a residency program for primary care residents focusing in global health, with a partnership working to improve primary care in rural Uganda.

In August, Ashley will begin medical school at Geisel School of Medicine at Dartmouth where she looks forward to pursing her passion of working towards health equity for vulnerable populations through clinical practice and global health.

***We* notice your accomplishments!!**

SEND ALUMNI UPDATES TO BIOLOGY@DENISON.EDU



Find current and past issues of the ***Bio Buzz*** online at http://blogs.denison.edu/ science/bio-buzz-biology-newsletter/.

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