



Elizabethtown College

Biology Newsletter

Fall 2011

Faculty involve students in the preparation of a Preserve for use as an outdoor classroom



Dr. Tom Murray and Dr. David Bowne engaged their students in conservation biology and stream research at the recently established Donegal Highlands Preserve. This property purchased by the Lancaster County Conservancy, a non-profit land trust, is being developed for use by the public. Dr. Bowne's conservation biology class put approximately 200 hours of work into blazing the main trail through the preserve. The students gained knowledge about tree identification and discovered both salamanders and garter snakes. The preserve will be used by Biology classes for research purposes and as an outdoor classroom. The trail is approximately one mile long and crosses a narrow stream. Some significant attributes of this preserve include an ecological edge where students over time will be able to observe succession, an ecological process in which a meadow slowly transforms back into forest. A stream flowing through the preserve also offers some rare opportunities for students, since it is fully forested, it affords students a good habitat to study the resources it offers. Dr. Murray's students will be monitoring the stream as part of a large scale project on stream temperature involving undergraduates at ten other institutions. Results from that study are expected in early 2012.

From the Chair...



Dr. Jonathon S. Coren

Greetings Biology Alumni!

On behalf of the students and faculty, I am pleased to share my second alumni newsletter with you. The first year as chair has been a real trial by fire. I am now a bit more seasoned but still have much to learn. Our students and faculty had another successful year. Congratulations to Dr. Jodi Yorty who was awarded Junior Leave for this semester and to Dr. David Bowne who was first author of an article that was published in the journal Bioscience. Congratulations to Dr. David Karli '93 who is the winner of this year's alumni award. I hope that you can join us to celebrate his achievements during Homecoming weekend.

We are in the process of assessing all of our programs and individual courses to determine if our students are meeting the outcomes that we established last year. Last spring we sent out an alumni survey. If you have not yet completed the survey, you can access it by visiting the department website at www.etown.edu/biology and clicking on the survey in the left column. Your continued feedback and support are vital to the Department. If you would like to talk about your career or your research to our students, please get in touch with me at corenj@etown.edu or at 717-361-1342. I look forward to seeing many of my former students and reconnecting with other alumni at Homecoming!

A handwritten signature in blue ink that reads "Jon Coren".

Department News

Dr. David Bowne was lead author on a paper published in Bioscience which espoused the merits of collaboration among faculty at undergraduate institutions to enhance both scholarship and teaching. He, as part of the Ecological Research as Education Network (www.erenweb.org), launched a national research project on the population structure of aquatic turtles and led a related training session at the Ecological Society of America national meeting in Austin, TX. Dr. Bowne, Chelsea Payne, '13, and Samantha Hartzell, '12 continued collecting pre-restoration data on salamanders at Big Spring Run in Lancaster County, PA

Dr. Diane Bridge conducted research together with premedical students Stephanie Ellwood, '12 and Stephanie Gingrich, '12, using the simple invertebrate hydra as a model to understand diseases of aging. This project is funded by a grant from the National Institutes of Health. Its goal is to determine the molecular causes of the difference between a species of hydra which appears to be immortal and a species that shows physical deterioration with age, as well as unusual sensitivity to heat. Results from the summer research were presented this fall at a meeting on invertebrate developmental biology in Tutzing, Germany.

Dr. Jane Cavender started a new 4+1 BS in Biotechnology and MS in Molecular Medicine Program with Drexel University College of Medicine. This summer, she also worked with Frank Pankowicz, '11 on narrowing down the functions of T antigen that block the differentiation of pre-adipocytes to mature fat cells. Frank created cell lines to investigate the necessity of p53 sequestration, and hsp70 binding for T antigen inhibition of differentiation. Frank has now moved onto the graduate Ph.D. program at Baylor College of Medicine.

Dr. Aaron Cecala is working with colleagues at the University of Rochester and Elizabethtown College student Alisha Martin, '13 on several projects aimed at determining the effects of aging and reward on motor learning in humans. He will also be attending the Society for Neuroscience Conference in Washington, DC this fall.

Dr. Jon Coren has six undergraduate students performing research on the tumor suppressor gene p53. He recently submitted manuscripts to BIOS and to Gene and an NIH AREA grant proposal in June.

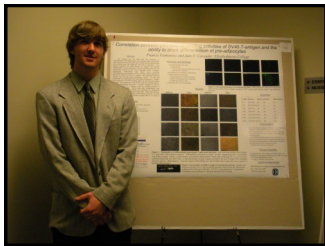
Department News continued...

Dr. Tom Murray is involved in a long term ecological research project investigating the role of riparian buffers on stream temperature. The project involves 15 researchers at twelve colleges and universities across the US and Canada and is part of the Ecological Research as Education Network (EREN). The research team is combining their data for a manuscript to be submitted later this year.

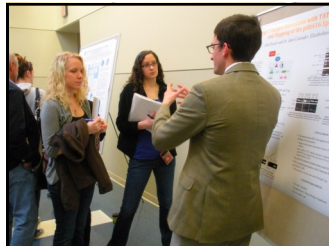
Dr. Debra Wohl continues her research examining antibiotic resistance in soil bacteria, as well as her research on an NIH funded grant with Dr. William Curry (Penn State College of Medicine) examining the relationship between antibiotics at delivery and eczema in young children. This past spring, Dr. Wohl co-authored a presentation with Kaitlyn Snyder '11 at the Beta Beta Beta regional conference.

Dr. Jodi Yorty was awarded a Junior Leave for the fall semester and is focusing on research projects examining the effects of the stress hormone, corticosterone, on the immune system. She is also writing a book chapter for the Handbook of Psychoneuroimmunology with a colleague from The Pennsylvania State University, College of Medicine. Additionally, she intends to write and submit a grant proposal to the National Science Foundation to acquire a flow cytometer for use in research and teaching.

Student Research Presentations



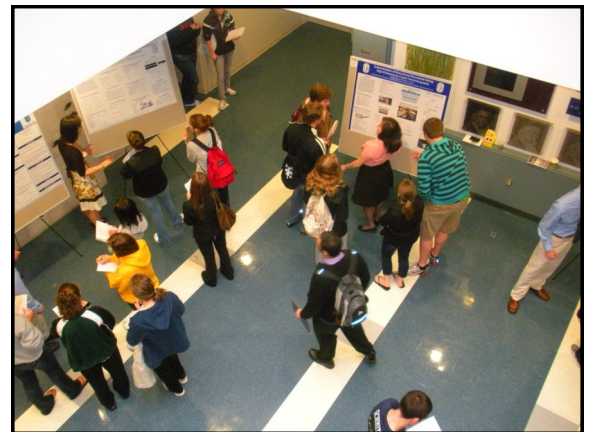
Frank Pankowicz, '11



John Fuesler, '11

Dr. Jane Cavender and two of her research students presented their research on April 2nd at the Pennsylvania Academy of Science Annual Meeting at Penn State, Altoona. Frank Pankowicz, '11 presented his research entitled; Correlation Between p53 and Rb-Binding Activities of SV40 T-Antigen and the Ability to Block Differentiation of Pre-Adipocytes and John Fuesler, '11 presented his research SV40 large T antigen interaction with TATA-binding protein is abrogated by W94A or F98A amino acid substitutions within the pAb 416 epitope. John will continue his graduate research at Princeton University and Frank at Baylor College of Medicine.

Three biology faculty members and six students presented their research at the 2011 Beta Beta Beta Northeast District 2 Convention at Lincoln University on March 26th. John Fuesler, '11 and Liz Sodomini, '11 gave oral presentations; Emily Brumbach, '11, Kaitlyn Snyder, '11 and Heather Peluso, '11 each had poster presentations.

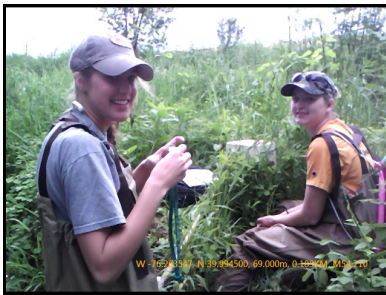


The Fourth Annual Scholarship and Creative Arts Day was held on April 19th. Thirteen biology students presented their research.

Summer 2011 Student Research Activity

Nine students performed research and worked with faculty this summer at the College. Their research was gratefully supported by the National Institutes of Health Dr. Wohl's grant and Dr. Bridge's funding, college faculty grants, PA Department of DEP subcontracted grant, and the continuing generosity of Dr. E. Jane Valas. The students share their experiences below.

Liesl Sieber, '12 and Arslan Rashid, '12—During this past summer we worked with Dr. Debra Wohl on her NIH funded research. This study investigates whether children delivered by vaginal delivery whose mother received antibiotics have a higher likelihood of developing atopic dermatitis before the age of two than those whose mothers did not receive antibiotics. For this retrospective study we looked at labor and delivery records, pediatric files from the first two years, and questionnaire data to assess children born between 1996 and 2008 at Penn State Hershey Medical Center. We invited 1944 individuals of which 436 gave their consent to the study, thus yielding a 22.4% response rate. Of the participating mothers each had one to four children eligible, therefore to date we have collected data for 448 mother and child sets. This next semester we aim to complete data collection and finish data analysis.



Chelsea & Samantha working in the field

Chelsea Payne, '13 and Samantha Hartzell, '12—worked with Dr. Bowne in collecting data on salamander diversity and abundance at Big Spring Run in Lancaster County, PA as part of a multi-institution research project on the biological and geological effects of a unique stream restoration technique. These baseline data will be compared to post-restoration data to determine how salamanders respond to stream restoration.

Stephanie Gingrich, '12 —This summer I worked in Dr. Bridge's lab with the goal of better understanding the function of the FoxO transcription factor in Hydra, a freshwater invertebrate animal. FoxO transcription factors are proteins that help regulate the life-span of some animals by responding to environmental stresses on cells. Certain alleles of FoxO genes are also associated with long lifespan in humans. I performed *in situ* hybridizations using a FoxO mRNA probe and a Hyzic mRNA probe to determine whether Hydra FoxO is expressed in stem cells. I will be continuing these experiments during the fall 2011 semester to gain conclusive results.

Stephanie Ellwood, '12—This summer I did research with Dr. Bridge, looking at the role of differences in the expression of heat shock proteins (HSPs) in stem cells in species of the invertebrate Hydra. HSPs are molecular chaperones that aid in protein folding. Under some form of stress, proteins misfold, and HSP genes are transcribed under regulation of heat shock factors to aid in correct protein folding. Certain species produce less of the heat shock protein HSP70 in response to stress and aging than others do. These species are sensitive to heat and other stress, and show rapid aging and death after reproduction. The goals for this project are to determine if low HSP70 production is responsible for aging and if increasing the expression of HSP70 will delay the aging.

Becky Porter '13—This summer I worked for Dr. Cecala with the goal of creating new illustrations for the Biology 201 (human anatomy and physiology I) laboratory manual. This manual, originally designed as a dissection guide by Dr. Jim Dively (Professor Emeritus), has served as the core reference for occupational therapy and allied health students who study cadavers in our anatomy lab. I spent the summer generating drawings of bones, muscles and physiological principles which will be added to the 2012 version of this manual.

Jess Manchak, '12 and Laura Wingert, '12—We worked for Dr. Coren on the Construction of bioluminescent p53 PAC clones in pJCPAC-Mam1 to visually demonstrate the location of the p53 protein in Saos-2 cells. We first dephosphorylated the pJCPAC-Mam I vector. We received p53 GFP and p53 Luc fosmid from Dr. Jon Jarvik, ligated them, and electroporated the fosmid into *E. coli* cells containing the vector. Colonies containing the vector and fosmid were then grown in LB media. We then mini-prepped the vector and fosmid containing cells and analyzed the DNA on a FIGE gel to detect if the fosmid inserted into the vector.

Student Summer Experiences

Many of our students spend the summer in research laboratories, pursuing internships, gaining experience “on the job” and volunteering in biology-related fields. Here are some personal accounts of what our students learn and experience from these opportunities. If you have openings for students, please let us know.

Brittany Daiutolo, '12—I participated in the Summer Undergraduate Research Experience (SURE) program at UM-DNJ in Stratford, NJ. I was lucky enough to be one of six chosen applicants assigned to perform research for 10 weeks in a lab on their campus. I was assigned to Dr. Yin, who currently is working on septic shock treatments. I felt really lucky to be put in his lab as I had just finished taking Immunology my spring semester at Etown and was familiar with all of the terminology. I also got to watch surgeries as his work involved inducing septic shock in rats to test treatment methods that could possibly be used for humans in the future. I enjoyed going to the lab every day and learned a variety of new techniques that I'm sure will benefit me both in the lab at Etown and in my career once I graduate. This internship solidified my career goals and led me to believe that research is the area I want to go into with my Biology degree.

Alisha Martin, '13—This past summer I had an internship in the Ophthalmology and Optometry department at Geisinger in Danville, PA. This internship allowed me to shadow many ophthalmologists and optometrists specializing in Lasik eye surgery, glaucoma, pediatrics, plastics, the retina, and low vision. I was able to observe treatment options, such as injecting medicine into the eye to treat AMD, and procedures such as cataract removals, eyelid removals, and a cornea transplant. When I was not shadowing the doctors I completed visual acuity tests on patients, and determined their intraocular pressures with non-contact tonometry (the air puff test). I had the opportunity to attend low vision support groups and interact with these patients. Through these interactions I was able understand the obstacles that these people face every day and observe the methods they use to manage their condition. I also assisted in the contact lens lab by teaching first time contact lens wearers how to put their contacts in, take them out, and proper cleaning and storage techniques.



Lauren holding a box turtle named "Speedy"

Lauren Breza, '14—My summer was spent alongside of Harbor seals, Sandbar sharks and South African Penguins, among many others. I was an Animal Care Intern at Jenkinson's Aquarium in Point Pleasant Beach, New Jersey. As an AC intern, I had the opportunity to interact with various marine organisms, from the smallest gooseberry jellyfish to 11 foot long Lemon sharks. On any given day, I could be logging the Atlantic Shark feeding at 9 am, taking one of our South African Penguins on an outreach to a nearby school by 11 am, sunning Terrapins on the boardwalk at 2 pm, working in the water quality lab at 3 pm and giving an aquarium tour to enthusiastic summer campers by 5 pm; to say the least, comfortable shoes were necessary. Above all, as an Animal Care Intern, I greatly improved my art of observation. Whether I was working with Pancho, a Blue and Gold Macaw, or Lucy, a blind Atlantic Harbor seal, it was imperative to keep detailed accounts of both animal behavior and diet in order to track their health. From discovering a new lesion on one of the Southern Stingrays, or unfortunately, recognizing that one of the Tarpons from the Atlantic Shark tank had “mysteriously” gone missing, my observational skills were constantly tested. Interning at Jenkinson's Aquarium was one of the most amazing experiences of my life. From seeing the wide eyes of a 3rd grade class upon touching a Sea Star to personally feeding Sequin, a Pacific Harbor Seal, my stay at Jenkinson's Aquarium will remain one of my most favorite memories.

Daniel Silver, '12—This summer I had an internship in the Pediatric Critical Care and Pediatric Intensive Care Units at Pennsylvania State Hershey Medical Center. I worked under doctors Michael Dettorre D.O. and Robert Tamburro M.D. to determine the success of a new protocol for patients that had experienced a cardiac arrest. The protocol is titled “Induced Hypothermia” and includes a broad spectrum of medication, a hypothermia machine, and several other apparatuses used to keep the patient under 34° C. My job was to create a database that included 90 charts of past patients that had sustained a cardiac arrest and evaluate those charts based on a list of criteria. At the end of the project we determined that 50 of the 90 patients had undergone the protocol, most experiencing a better outcome than the other 40 patients.

Study Abroad



Laryssa on top of Pic Boby, the highest accessible peak in Madagascar

Laryssa Witty, '12—For the spring of 2011 I had the opportunity to study abroad with the School for International Training (SIT) Madagascar Biodiversity and Natural Resource Management Program. The first two months of my experience was spent in Fort Dauphin, southeast Madagascar where, as a group of seventeen, we focused on various units ranging from lemur population, behavior, and habitat, to marine studies, the realities of protected areas such as the littoral forests, and the importance of mangroves. In addition, I conducted an investigation regarding a local mining site and its impact on the local people. One very insightful experience of these first two months was the opportunity to live with a village, hours away from civilization, whose houses consisted of huts and whose water was scarce. These people openly accepted me and showed me their customs, language, farming, daily lifestyle, and for four hours every night with the accompaniment of their whistles, drums, chanting, and shrills, their dance. The last two months of my time in Madagascar was spent traveling throughout the whole of the island experiencing the five diverse ecosystems and many of the species that are endemic to the island. Every day was filled with discovery as I saw lemurs, chameleons, weevils, spiders, snakes, and a great variety of plant species that I had only heard about but never imagined I would experience firsthand. After becoming adjusted with the lifestyle, culture, and my continuing grasp of the Malagasy language,

we were provided the opportunity to independently conduct our own research projects. The focus of my study was bats in the Ranamafana Rainforest, located southeast of the Capital, Antanarivo. With the help of a Malagasy research technician and Malagasy cook I camped in the rain forest for two weeks. There I investigated three caves and four species of bat. The purpose of this study was to document the location of the caves, behavior of the bats found, organization of the bats within the cave, and the measurements of bats found. This experience provided me real world experience with conservation, the wealth of understanding that local people withhold, and the importance of perspective. I am very grateful for the support of Elizabethtown College especially that of Dr. Simes, Dr. Trachte, and Dr. Murray, without which this experience would not have been made possible.

Melanie Sturm '12—In August of 2010 I drove into Washington, DC and settled into the dorms at American University to begin my fall semester in the Washington Semester Program (WSP). The WSP is an intensive, specialized program that consists of a seminar, internship, and field practicum. My choice of International Environment and Development (IED) for the 8 credit seminar portion was the perfect match, allowing me to study issues of development that were lesser known to me, such as use and distribution of water and sanitation practices, political corruption stifling economies, social injustice in the labor market, and the empowerment and community benefits wrought by education. Our class discussions also led into environmental themes, including biodiversity conservation and sustainable fishing, reasons for destruction or conversion of natural habitat, and the urgency and evidence of climate change. As if this didn't sustain my interest, multiple times a week the class would venture into the heart of the capitol city to meet with stakeholders involved in IED topics. Some of the highlights for me were Greenpeace, World Resources Institute, and the Smithsonian Zoo. Two days every week I also had a great internship experience at Friends of the Osa, a non-profit conservation organization dedicated to preserving the tropical biodiversity of the Osa Peninsula in Costa Rica. In addition to the personal project I had of composing a researcher's guide for scientists interested in studying at FOO's field stations on the Osa, I contributed to grant research and proposals, donor relations, volunteer coordination, and administrative tasks. On several occasions while in the office I spoke with Bruce Babbitt, former Secretary of the Interior to President Clinton, who has championed environmental issues throughout his career. The culmination of the semester was a three-week study in Ecuador. Throughout the country in Quito, the rainforest, the Galapagos, and Otavalo in the Andes I was absolutely enthralled by the culture and landscape and thrilled to be on foreign soil discussing real-life development and environment problems and solutions. Last fall was truly the best learning and bonding experience I've had, so I would readily encourage other students to participate in the WSP as well.



Melanie (on right) and her friend at in Lahneck Castle in Koblenz

Melanie Hartman, '13—I am currently in Germany participating in a Youth Exchange Program called the Congress-Bundestag Youth Exchange (CBYX). It is a youth exchange completely funded by both the US Congress and the German Bundestag (Parliament). 75 students from each nation go to the opposite nation for almost exactly 1 year. There are 3 phases: a 2 month intensive language course, a 4 month semester of study in

the field of your choice, and a 5 month internship also in your field. I am attending language school in Cologne and starting in October will spend the rest of the year in Leipzig. I will take biology related classes at the University of Leipzig. While I am taking classes, I will be applying and interviewing at various labs to try to find an internship. So far it has been a wonderful experience and I am having a ton of fun!

We would like to congratulate Melanie on receiving such a prestigious competitive award.

Erin Johnson, '12—This past spring I studied with the School For Field Studies (SFS) in Atenas Costa Rica. I can honestly say it was one of the best decisions I have made during my academic career. I learned about the ecology of the tropics, natural resource issues in Costa Rica, and was introduced to the topic of sustainable development. I have now had class under a wind turbine, in the tropical rainforest of Monteverde, at the mouth of the Tarcolés river and in the middle of a coffee farm. I was surrounded by fellow students who had a contagious passion for environmental issues. I gained a whole new respect for coffee after having the opportunity to do research on a coffee farm. Culturally I had the opportunity to live with a Costa Rican family for a weekend, attend a soccer game, enjoy Costa Rican food and music, and travel on public transportation in a foreign country without a cell phone. These experiences, in class and out, allowed me to re-evaluate my everyday habits and strive for a more sustainable lifestyle. I have eaten countless strange fruits, learned that scorpions glow in the dark under UV light, seen breathtaking beaches and sunsets, traveled on terrifying roads and bridges, eaten the perfect mango, been close enough to a sloth to touch it, and made unforgettable memories with unforgettable friends. This experience truly helped me grow both academically and personally and, given the chance, I would be on the next plane back. As they say in Costa Rica...Pura Vida!

Elizabeth Sodomini, '11—Ghana is located in western sub-Saharan Africa and is therefore plagued with disease of the region, such as malaria and HIV/AIDS. A local non-government organization HEPENS accepted me for a four month internship in 2010. I worked as a community volunteer in Cape Coast, Abura, Kakumdo, and Antwikwa. There my role was mixed between teaching health in schools from year one to twelve, working with a women's group on health education and women's issues, meeting a youth group, and teaching and training individuals in first aid in the remote village of Antwikwa. In addition, I volunteered in the Abura Diagnostic Medical Laboratory where I learned to diagnosis disease from HIV to TB to Malaria. This experience has provided me with a greater understanding of the role of public health in a community and how it can provide the foundation for improvement of health care and the standard of living and general health of a population. It has also taught me that within a community, different individuals can aid health care in various ways. While the USA may be an ocean away from Ghana, an act as simple as donating a toothbrush can change the medical outcome of a child's life.



Liz (2nd from left) and the women of the Abura Diagnostic Medical Laboratory

You can read about Melanie's experience in Germany on her blog:

<http://alswissenschaftlerin.blogspot.com/>



Erin at Poas National Park standing under the 'Gunnera insignis' plant nicknamed the "Poor Man's Umbrella"

Student Club News

MEDICUS is a student-run organization created specifically for pre-health majors. The club is dedicated to strengthening the connection between Elizabethtown College students and the medical fields, as well as making them feel more comfortable in processes such as applications, testing and what schools are looking for in applicants. We are involved in numerous medically oriented service projects, which gives students valuable experience in the ever changing medical realm. This year, we are planning to do multiple volunteering events, such as helping at the local retirement community and nursing homes, disinfecting and cleaning toys at local daycares and hospitals, specifically during flu season, and hosting a dinner at the Ronald McDonald House in Hershey. Along with volunteer activities *we also plan to host* several speakers that encompass a variety of medical fields and avenues in which pre-health students may be planning to attend after their undergraduate experience. The club is also working on some new events, such as a possible “skills circus,” at which students will be introduced to skills and procedures that will be useful in the medical field. Skills would include—learning how to take a manual blood pressure, normal BP parameters for a certain age ranges, and the accepted way to wash your hands in the hospital setting. We will also be passing out articles (current events and/or educational), each meeting for each student to add to their vast knowledge of the medical field. We hope to have a large group that attends meetings and are willing to volunteer their time and want to make the club as fun as possible, while still being educational and helpful! Any questions or suggestions can be directed towards medicus@etown.edu.

BIOLOGY CLUB is starting another very exciting and fun year. We have some interesting programs, continued from previous years, that will incorporate getting the First Years of the Biology department more involved. We are very excited to continue the Bio Buddy program this year. The program this year will have upperclassmen assigned to each First Year lab, these students will help guide them through their experiences of college in the biology department for their first year. This is an exciting program because it allows the First Year students to have someone, who has been there and experienced the same things that they are going through currently, to aide them in their difficult first year transition from High school to College. Other plans for the biology club include volunteer activities including forming a biology club team at various fundraiser walks to raise money, volunteering at Hershey Park, and community involvement with local high schools by promoting biology in various forms. Our Into the Streets project will be to clean the Conewago creek. The club encourages those within the major to pursue numerous options for post-graduate work by hosting recent graduates, admissions officers to graduate schools, and community members who pursued industry after graduation. On the group bonding side of the club, we are planning on having a club camping trip and other outdoor activities. Overall, the club is looking forward to another awesome year. Any questions or suggestions should be directed toward biologyclub@etown.edu.

TRI BETA The Rho Lambda chapter of the $\beta\beta\beta$ National Honors Society is a group that is dedicated to promoting the understanding and appreciation of biology both on and off campus. Members will spend their time facilitating tutoring sessions for underclassmen, and assisting the community by judging at a local science fair. We will arrange for a speaker to present at the College, giving students the opportunity to enrich their understanding of Biology. We will also provide seminars on career preparation and develop student-run projects throughout the semester. We look forward to another great year at Elizabethtown College! You may contact us at tribeta@etown.edu.

Alumni News

Survey: Every five years the department conducts a survey of our alumni to obtain quantitative and qualitative data pertaining to the educational experience that you received here at Elizabethtown. The department is trying to ensure that our curriculum prepared each of you with the tools for a successful career and will continue to prepare future graduates. We would greatly appreciate your time and effort in completing the evaluation. *You can access the survey by going to www.etown.edu/depts/biology and clicking on the Alumni Survey in the left column.*

Send us your news: If you have something significant going on in your personal or professional life that you would like to share with other Alumni, we would love to hear from you. Please send us your brief message, and we will try to include them in the next newsletter as space allows. You can reach us at biology@etown.edu

A Special Thank You

to the Biology Students and faculty who contributed their summer research, work, volunteering, and internship experiences for the Newsletter

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Medicus Co-Hosts Think B.I.G. Summer Camp

After taking a one year hiatus from hosting the Think B.I.G. (Believe, Inspire, Grow) summer camp, Medicus hosted 15 Elementary school children from inner-city Lancaster from June 20-25, 2011. In previous years the camp was run as a science and business camp where the children would spend half of the day learning business concepts and the other half learning about science. This year the camp was focused solely on science. Each day the children would arrive at the College and learn

two different scientific concepts corresponding to the science of that day. There was Ecology day, Physics day, Chemistry day, and Human/Animal Biology day. Each day, along with learning different concepts, the children would perform labs that emphasized the main theory of each lesson. On Chemistry day, they learned how much chemistry was present in everyday life, and solved a crime scene using various chemistry techniques. On Ecology day, they took a trip into Lake Placida where they collected various insect larvae and classified them into different categories while determining the water quality of the lake. Physics day was a particular favorite for the campers, as they made Popsicle stick bridges with the intention of fighting the pull of gravity and various amounts of weights applied to the bridges. Lastly, on Human and Animal Biology day, female bull frogs were dissected. Through the camp, these elementary school students were exposed to a college setting, taught the endless possibilities of a college education, especially in science, and given encouragement that a college education was possible for them.



Ryan Sisbarro and Christine Taylor working with the campers to dissect female bull frogs

2011 Graduates

Twenty-six students received Bachelor of Science degrees from the Biology Department this past May. Four in Biotechnology, seven in Bio-Allied Health, thirteen in Biology and two in Environmental Science. Among those who graduated, two graduated with the high distinction of *Summa Cum Laude*, four graduated *Magna Cum Laude*, and five *Cum Laude*. One student graduated through the Elizabethtown College Honors program and five graduated with Department Honors. Among those who graduated approximately 11 students will continue their education this year and have been accepted at the following colleges and universities: Princeton University, Baylor College of Medicine, Thomas Jefferson University, Clark University, Millersville University, Temple University, Seton Hall University, DeSales University, Pennsylvania State University College of Medicine, and Philadelphia College of Osteopathic Medicine. Students pursuing additional study have enrolled in programs for Medicine, Physical Therapy, Nursing, Physician Assistants, Cell and Molecular Biology, Clinical and Developmental Psychology. Other students are serving in the Peace Corps. We congratulate our 2011 graduates and wish them well in their career and academic pursuits!



Elizabethtown College

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2011 Alumni Award Presentation



David C. Karli, MD, '93

At Homecoming the Department of Biology will be presenting the *Dr. Charles S. Farver-Apgar and Dr. Bessie D. Apgar Biology Alumni Award* to **David C. Karli, MD, '93**. He received his MD degree from the University of Maryland and is a former Chief Resident of the Harvard Medical School Department of Physical Medicine & Rehabilitation. Following Residency, he received additional training in advanced spinal injection techniques at Harvard. He served as a teaching physician at Harvard for several years before joining the Steadman Clinic in Vail, CO, where he continues clinical practice. His research interests led him to the field of Regenerative Medicine, from which he successfully developed, launched and operates Greylodge Technologies, a biotechnology company focused on developing blood based biotherapies. He is currently pursuing his MBA degree from the Daniels College of Business at the University of Denver. Please join us at the Alumni Award Ceremony on October 15, 2011 at 2:30 pm in Gibble Auditorium located in the Masters Center for Science, Mathematics and Engineering.
