Alumni Corner

- Karen Hansen Bosch ’03 finished her Ph.D. from University of Kentucky and is currently working in AIDS epidemiology.
- Justin Whitehill ’06 recently published his senior thesis with Dr. J. Lehman entitled “Ips pini is a vector of the fungal pathogen, Sphaerotheca sapinea, to Austrian pines, Pinus nigra (Pinaceae)” under the population ecology section of Environmental Entomology 36: 114-120. Currently, Justin is a Ph.D. student in plant pathology at the Ohio State University working on the emerging threat Emerald Ash Borer.
- Kristen Moxley (‘05) received her Masters Degree in Genetic Counseling from Case Western Reserve University.
- Leslie Tuttle (‘03) and Mary Lawley (‘02) just graduated from Med school at Ohio University
- Tia Jean (‘03) just graduated from Dental School at OSU
- Alex Mack and Brandt Weininger both (‘07) started Dental School at OSU this fall.
- Amber Murphy (‘06) is in her second year of Med school at OSU
- Ashika Nanayakkara (‘05) is starting a Ph.D. Program in Epidemiology at Johns Hopkins University
- Neelima Sharma (‘03) received her M.A. from Case Western in Bioethics
- Suzu Igarashi ’09 published her senior thesis with Dr. J. Lehman entitled “Host resistance to Monilinia vaccinii-corymbosi in flowers and fruits of highbush blueberry” in the journal Plant Disease 91:852-856. Suzu is working as a laboratory manager and research specialist in nephrology at the University of Arizona.
- Gary Todd Cooper (’05) completed his M.A. in plant pathology at University of Florida.

The Department of Life and Earth Sciences is getting a new home

After many years of planning, the Department of Life and Earth Sciences, along with chemistry and biochemistry, physics, nursing, and equine science, is getting a new home. The venerable McFadden and Schear Halls, built in 1919 and 1969, respectively, are giving way to a new, 95,000 square-foot science complex scheduled to be completed in March 2009. On June 11, 2007, the bricks began to fly as remodeling started on McFadden Hall (phase 1). Phase 2 will begin in December 2007 as Schear Hall is remodeled and a 30,000 square-foot addition is constructed. Dr. Jeffrey Lehman, chair of the science building project and faculty liaison, states, “The need for a new science facility is clear, not only for the benefit of science majors, but also non-majors. This project will make Otterbein a better school and a better community as a whole. I am very excited by the possibilities.” To make way for the new construction, the Department of Life and Earth Sciences has moved to temporary housing across Alum Creek, a brisk 7-minute walk from the main campus. This temporary space will be home to the Department of Life and Earth Sciences until continued on page 7

Fossil Reefs in the Dominican Republic

During the past two summers Dr. Lescinsky has traveled to the Dominican Republic with Otterbein students Ann Hoedt, Avi Minhas and Ben Titus to study fossil (6,000 year old) reefs in the Enriquillo Valley and to compare them with living reefs in Belize. Superb preservation of the fossil corals is allowing the Otterbein team to reconstruct the Dominican reef’s growth history and the proportion of the reef coral that was alive at a particular time in the past. The goal is to develop a baseline in geological time that can then be used to interpret the crash in live coral cover in the Caribbean that has occurred over the last two decades, from human impacts. Results of the work will be presented at the International Coral Reef Symposium in Fort Lauderdale in July.
Dr. Kevin Svitana Joins the Life and Earth Science Department

Dr. Kevin Svitana has joined the Otterbein Life and Earth Science Department as an Assistant Professor teaching Environmental Studies classes and chairing the Environmental Studies Program. Prior to joining the Life and Earth Science Faculty, Dr. Svitana held a temporary teaching position at Denison University and a Post Doctoral Appointment at The Ohio State University. When asked to describe his academic background, Dr. Svitana replies “non-traditional.” He completed his B.S. at Juanita College and his M.S. degree at West Virginia University then worked as an environmental professional for 20 years before beginning his Ph.D. work at Ohio State.

Dr. Svitana is a native Pennsylvanian and an avid WVU fan. Kevin and his family have lived in Westerville since 1991 and are familiar with Westerville’s growth and transitions.

“My years in the trenches working as a consultant gives me a unique perspective on environmental issues that I hope will enhance Otterbein Students’ learning experience.” Dr. Svitana has done extensive work with surface water, ground water and soil remediation at mining and industrial sites and Brownfield redevelopment sites. As an Ohio Voluntary Action Program Certified professional, he is aware of the interdisciplinary aspect of environmental issues and the need to have a team oriented approach to problem solving. “I believe this experience will be helpful in continuing to grow student opportunities through the Environmental Science and Environmental Studies Programs.”

Students Commend Their Otterbein Experience

Each year at Visitation Day the Department of Life and Earth Science hosts two information sessions for high school students and their parents. One is a joint session with Chemistry and Biochemistry on the popular pre-professional health sciences, and the other session presents the programs of study of which high school students are generally less well aware: the molecular biology and environmental science degrees, the ecology, molecular biology, plant science, and general biology concentrations within the Life science major, and the minors in earth science and environmental science.

This October the PowerPoint presentations by Dr. Mary Gahbauer (showing images of students working in laboratories, students working in the field, students presenting their research posters at state and national meetings) were greatly enriched and enlivened by a group of live upperclassmen, who spoke thoughtfully and eloquently on their experience in the Department and at Otterbein.

Seniors Heather Manring, Maria Wheeler and Lindsay Davis, and juniors Caitlin Joy and Shelly Hobbs described their careers as undergraduates as enabling them to develop as thinkers, as scientists, and as individuals. They looked back at their own academic development with pleasure, and thought that they had had advantages at Otterbein not available elsewhere. They particularly appreciated the opportunity to work closely with professors in coursework, research projects and academic advising. "The faculty and students really do make up a genuine community, which is probably one of the most valuable attributes a college can offer." Because of this they felt that they had had an integrated education that allowed them to extend themselves into many aspects of both career-oriented and pre-professional science and discover for themselves a suitable path toward an enriching future. Maria declared, “My experience in the Life and Earth Sciences department has been nothing short of excellent!”

The audience’s interest in what the students had to say was very clear; questions and individual conversations went on long after the sessions were officially over.
Turtle Research

It has been another fun, productive year in the turtle lab. This past spring we said goodbye to a fine group of seniors who dedicated their final year of college to the pursuit of turtle knowledge! Molly and Megan Myers completed their research studying gut bacteria that turtles use to help digest their food. Molly examined the effects of antibiotics on bacterial populations, and Megan discovered that some of the bacteria can break down the chitin found in the exoskeletons of turtle invertebrate prey items. This function was previously only known in bacteria from whale and penguin digestive tracts. Kurt Marks headed to the field where he surveyed turtle populations in Central Ohio Metroparks and residential ponds. He found a wide variety of species, including some rather large snapping turtles that lived up to their name. All three of these up and coming scientists successfully presented the results of their work at the Annual Meeting of the Ohio Academy of Science. Although we were sad to see them go, they are clearly headed for great things!

This past summer a new group of rising seniors got started on an exciting field project. We received a grant from the Ohio Department of Natural Resources to study the effects of a non-native invasive plant, Phragmites, on painted turtle diets. This plant forms thick dense stands in wetlands where painted turtles are found. We hypothesized that in the presence Phragmites, turtles would have difficulty foraging for invertebrate prey items and would become more herbivorous. Ethan Landau is examining the effects of this plant on turtle prey availability, and Maria Wheeler is using stable isotopes analyses of blood samples to determine turtle diets. Mike Frank conducted foraging trials in the lab to look at the ability of the turtles to maneuver through the plant. These students spent much of their summer wading around in wetlands, up to their bellies in thick, stinky muck. Gotta love field work! Stay tuned to hear the results of their efforts.

Symmes Creek Mussel Report to be Published in OJS

Ben Van Allen (currently in graduate school at Virginia Commonwealth University), Dave Kimberly (currently in graduate school at the University of Texas at Tyler), and Dr. Michael Hoggarth have had their paper, A Study of the Mussels (Mollusca: Bivalvia: Unionidae) of Symmes Creek and Tributaries in Jackson, Gallia and Lawrence Counties, Ohio accepted for publication in the Ohio Journal of Science. They discovered four species never before reported from Symmes Creek: Simpsonaias ambigua (Ohio species of special concern), Quadrula pustulosa, Obiquaria reflexa (Ohio threatened species), and Ligumia recta (Ohio threatened species), and a few specimens of an Ohio endangered mussel, Villosa lienosa, which had been reported from the upper reaches of Symmes Creek previously. The specimens of S. ambigua were found along with their host, the mud puppy. They concluded, “The mussel community in the lower mainstem of Symmes Creek has remained healthy while the communities in the headwaters of Symmes Creek and its smaller tributaries have become severely reduced.” This work was supported by a grant from the Wayne National Forest.
Dr. Amy Jessen-Marshall Takes On New Role at Otterbein

For six years Dr. Marshall has taught in the Life and Earth sciences, her focus on Microbiology, Cell Biology and developing courses in the Integrative Studies program for non-science majors, in addition to her research in molecular microbiology. This year Dr. Marshall has stepped up to become the new chairperson for the Integrative Studies program. She is the first faculty from the sciences to hold this position and already she has begun work towards revitalizing the science curriculum in Integrative Studies, through the National Science Foundation Grant she was awarded with Dr. Lescinsky and Dr. Lawrance. This summer she invited four Otterbein science faculty, Dr. Lawrance, Dr. Svitana (our new Environmental Geologist), Dr. Roberston from Physics and Dr. Esson, (a new faculty in Chemistry) to join her in Sonoma California to work with sixteen other colleges through the American Association for Colleges and Universities on Global Learning in the Sciences. Adding to this during the academic year faculty from all the science departments are working on questions of Global Learning in science at Otterbein.

Her new role as Integrative Studies chair has not taken Dr. Marshall out of the lab however. She continues to work with students on a new line of research with Extremophile bacteria. She has several ongoing projects including isolation and identification of hydrocarbon degrading bacteria from local sites of oil contamination around Otterbein (i.e., gravel parking lots), to the much more exotic efforts to grow haloalkaliphiles from samples collected in Death Valley, the Sierra Nevadas, the Dead Sea of Israel and the salt lakes of the Outback in Australia. She’s always looking for a new place to visit and collect cool microbes from.

Dr. Marshall also has an interest in the research of student learning and pedagogy and while in Sydney Australia this past July presented her finding on “Identifying variables that influence student learning in non-majors science courses, from the impact of gender on science anxiety to the outcomes of multidisciplinary team teaching on scientific literacy,” at the International Society for the Scholarship of Teaching and Learning conference.

Outreach Program Environmental Science Day at Centerburg Elementary

What do you get when you cross your typical field day event with Science? You get Outreach Environmental Science day, which was held in September 2006 at Centerburg Elementary School. The event was lead by a group of Otterbein student and staff volunteers.

The main focus of this program was Environmental Science. Prior to the event, the Centerburg teachers read students “The Lorax,” by Dr. Seuss, and the “In the Forest of S.T. Shrew,” from the Project Learning Tree Activity Guide. The teachers discussed the elements that make up an animal’s habitat: food, water, space and shelter.

The children made their own field notebooks (similar to the Blue’s Clues handy dandy notebook) which they used to collect data in each science station. The five stations were designed to prompt the students to think about the different parts of an animal’s habitat. Children learned about an animal’s space by examining a natural area for all living things. They learned about food by playing a relay game, and pretending to be birds. Students examined a decomposing fallen log for all living things to learn about shelter. The children learned about behavior and adaptation by playing a scientific version of Hide and Seek, using the idea of predator and prey. At the last station the children learned the importance of taking care of our water by playing a water relay game. The Otterbein volunteers assisted the children in gathering their data, charting it and interpreting it to learn more about an animal’s habitat.

This event was coordinated by Tara Grove and Andrea Graytock.
Otterbein Students Help Pilot MCAT Development

We all hope our doctors know their stuff, and are good at analyzing, evaluating and applying their knowledge. So it is no surprise that the Medical College Application Test (MCAT) - the threshold entry test for medical school - tests for these very things. But we also hope our doctors are easy to talk to, good at listening, and ready to respond in a humane and informative way. As medicine has become increasingly 'high-tech' and super-specialized in recent decades, some people have felt that the personal side of the healing art has been neglected.

The American Association of Medical Colleges is responding to this perception by making personal communication a part of the all-important MCAT. That definitely sends the signal to prospective M.D.s that the ability to relate humanely to others is essential.

But how can communication skills be tested in the setting of a computerized test? The MCAT is now all on-line, and although a little shorter than the pencil and paper version, it still time pressured. Can personal skills be evaluated in this format? Ten Otterbein Life Science Chemistry, and Biochemistry students gave it a try when they took part in the first prototype test. Software from AAMCS was installed in a library computer classroom, and under test conditions students donned headphones and launched into the interactive video modules. Soon the room was full of the rattle of busy keyboards as they responded to the handling of clinical situations presented by video. It seems fairly obvious that you shouldn’t laugh when delivering bad news, or that you should make sure the patient speaks English before giving extensive explanations, but what would your suggestions be about handling the situation when it is your colleague who is providing the problem? The skill of the actors was fascinating. Running through the same scenes several times in different moods they created alternative credible situations to which a doctor should respond with honesty, tact, and constructive direction.

Students were not surprised by the modules, and felt that they acquitted themselves well in handling the situations. But we won’t know – no feedback on their performance is available, since it was the test that was being tested. But we did get other rewards; firstly the knowledge that we aided an important new development in the selection of medical school entrants, and secondly our chapter of Alpha Epsilon Delta received a check for $300 dollars.

Highlight on Research

Mina Makary is a junior who began working with Dr. Marshall as a freshman and has worked for the past two summers on the characterization of hydrocarbon degrading bacteria through support of the Merck Foundation for summer undergraduate research. Mina’s work is unique in that he is looking at local effects of long term hydrocarbon exposure in the environment and the selective pressure on the microbial populations. In addition to isolating and identifying the diversity indices of hydrocarbon degrading bacteria he’s using molecular techniques to sequence the 16s rRNA gene for species identification and using biochemistry to identify metabolic end products of the hydrocarbon degrading pathways.
Department Welcomes New Medical Doctor, Lisa Marr

The Department of Life and Earth Sciences is pleased to welcome its second full time M.D., Dr. Elisabeth (Lisa) Marr. Her primary teaching responsibilities are with the nursing students in Anatomy and Physiology, though she is currently teaching a new Integrative Studies Course: Plagues, Pestilence and Pandemics which explores the scientific and global contexts of important and emerging diseases.

Dr. Marr has a strong interest in education and global issues. After majoring in geology as an undergraduate at Williams College, she received a year-long traveling fellowship to study the environmental aspects of alpaca herders in Peru and reindeer herders in Norway. She then taught high school environmental and physical sciences for two years before returning for a Masters in Ecology at the University of California, Davis. Medical school at the University of California, San Francisco was her next endeavor which she completed admirably, just slightly delayed by the births of her two daughters. After practicing family medicine in the area for several years, Lisa joined Otterbein to get back into education. Lisa was already well known to the department (her husband is Professor Hal Lescinsky), but now she is also a great asset to the students. Her interests outside of medicine and education include ice hockey, home-canning, dog training, and outdoor activities.

Mussels of The Little Miami River

Dr. Michael Hoggarth is in the second year of a two-year reassessment of the mussels of the Little Miami River. He performed the first systematic survey of the mussel fauna of this river system in 1990-91. Last year, with the help of students Marshall Goodman, Ann Hoedt and Matt Fosnaugh, he completed the majority of the study. His Field Biology students are assisting with the work this year. The Ohio Department of Natural Resources, Division of Wildlife and Little Miami River Incorporated (LMI) are funding the work. Mostly the group has found a decline in species richness and mussel abundance especially in the headwaters of the river and in the tributaries. In 1990-91 Todd’s Fork had a community of 12 species of mussels, none of which were found living in the stream the last two years. The mussel fauna in Caesar Creek and the East Fork have declined as well. The lower mainstem of the river appears to have retained most of its mussel diversity, but there is also evidence of disturbance here. Species of mussels associated with the freshwater drum (that use the drum as host for their glochidia) have increased their range and abundance in both the lower mainstem and East Fork. The data suggest the Little Miami River system is fighting for its life: especially where mussels are concerned. Two bright spots in the data are: 1) Marshall Goodman completed his Distinction research project on the development of a Mussel Index of Biotic Integrity (IBI), which he and I will be presenting at a water quality conference this November sponsored by LMI, and 2) we found a living specimen of Megalonaias nervosa (Ohio endangered species) downstream of the mouth of Todd’s Fork in the mainstem. This species of mussel hasn’t been recorded for the system in many years (see picture).
Letter from Dr. Lawrance

Dear Otterbein Alumnae,

Hard to believe that I am now in my 17th year at Otterbein! I am just now once again completing the first quarter of the year with our current freshman class - as always a wonderful group of young people with great potential. Molecular biology continues to both intrigue and baffle and I continue to love teaching it, as there is always something new. The era of personal genomics is now truly upon us – and this makes an understanding of molecular biology all that more important for everyone. In addition to my regular courses - molecular genetics, immunology & human genetics - I have taken on a new Integrative Studies class (team taught with Dr. Bouchard) on the evolution of sex and a new SYE class (team-taught with Dr. Glenna Jackson) that is a service-learning course that travels yearly to Rwanda. Also, based upon my most recent sabbatical at the Burnham Institute in San Diego I will be teaching a course in stem cell biology this coming spring. I also continue to enjoy working with students on research projects ranging from equine to behavioral genetics – as well as the MHC! I am proud as ever of our research lab and the continuing accomplishments of our research students.

My children, Henry & Hayley are now both at college. Henry is studying Information Technology at the University of Akron and Hayley is in her freshman year at the University of the South (aka Sewanee). Both are happy and doing well with their studies. Maria and I are enjoying spending time with Cats in the barn we built for her. As for me, my ponytail is long gone but my beard is back! Some of you may remember my love for British cars. Now I have 3: a ’58 MG Magnette, a ’62 Austin Mini-Cooper & a ’67 MGB. When they don’t run I enjoy spending time listening to Bob Dylan & the Grateful Dead while polishing them in the garage!

I have heard from many but not enough of you over the years. How are you doing? I would love to hear from you!

Best wishes,

Dr. Lawrance

New Home for Life and Earth Sciences

Continued from page 1

construction and renovation is completed. Otterbein’s Service Department, students, faculty/staff, and especially our departmental lab coordinator Tara Grove worked hard to relocate teaching labs, research spaces, and offices for the start of the new academic year. After weeks of preparation and unpacking, we have finally settled in for the fall quarter. Classes are operating and education is happening!

The new science complex has much to offer. The new facility will bring the departments together in modules that will include a large teaching lab, a smaller project lab, and an office for each discipline. The modules will be clustered together to increase interdisciplinary project-based learning and to create an atmosphere that will make the transition to graduate or medical schools easier for our students.

Watch the progress of the renovations on the Otterbein College web site at: http://www.otterbein.edu/giving/science_bldg.asp.

Environmental Geology Students Visit AEP Electric Generating Facility in Conesville, OH

The students toured the facility to see how electricity is generated and appreciate the amount of effort required to manage environmental issues associated with coal-fired generation of electricity. Included in the photo are Sarah Starr, Beth Downs, Whitney Prose, Dr. Svitana, Lisa Fabiny and Kristin Braun.
Otterbein Students Report at the Ohio Academy of Science Annual Meeting

Twelve Department of Life and Earth Science students participated in the Ohio Academy of Science’s Annual Meeting at the Cuyahoga Community College last April. These students presented podium and poster presentations on their undergraduate research projects. Their topics ranged from Microbial Bioremediation to Turtle Energetics and from Bioerosion of Reefs to Mussel Community Structure of the Little Miami River. It was one of the largest contingents we’ve ever sent. The following students participated (faculty research advisor): Megan Myers (Sarah Bouchard & Amy Jessen-Marshall), Molly Myers, (Sarah Bouchard & Amy Jessen-Marshall), Mina Makary (John Tansey – Biochemistry – & Amy Jessen-Marshall), Alexander Mack (Amy Jessen-Marshall & Simon Lawrance), Ann Hoedt (Hal Lescinsky), Dominic DePompei (Hal Lescinsky), Kurt Marks (Sara Bouchard), Rachelle Ramsey (Simon Lawrance & Laura Bennett-Murphy – Psychology), Marshall Goodman (Michael Hoggarth), Steve Beeley (Mary Gahbauer), Amanda Applegarth (Mary Gahbauer), and Avi Minhaus (Hal Lescinsky). Also presenting was Hayley Lawrence, daughter of Dr. Lawrance, who worked in his laboratory prior to going to the University of the South this year. The a indicates students who were supported by a Merck/AAAS Undergraduate Science Research Program grant and the b indicates the student who was supported by a research grant from the Ohio Department of Natural Resources, Division of Wildlife in partnership with Little Miami Incorporate. Congratulations to all of these fine researchers.