



BioSynthesis

Volume 8, Issue 1 (February 2009)

BioSynthesis On-Line: <http://departments.bloomu.edu/>

Spring Semester Dates

FEB 21: BAHS Club Trip to Mutter Museum, Philadelphia

MAR 2 - 7: SPRING BREAK

MAR 14: Tri-Beta Regional Meeting at Moravian College, Bethlehem, PA

MAR 16: Pre-Med March Madness, The Application Process, 5:30 p.m. ABLE, Columbia Hall

MAR 23: Pre-Med March Madness, Resume Writing, 5:30 p.m. ABLE, Columbia Hall

MAR 28: Pennsylvania Academy of Science Meeting, Harrisburg

MAR 30: Pre-Med March Madness, Writing the Personal Statement, 5:30 p.m., ABLE, Columbia Hall

APR 2 - 3: Health Sciences Symposium, KUB

APR 17: Science Iditarod, Hartline; CPUB Meeting, Lock Haven



Look what's inside:

Saluting Student Achievement; 2

Internships 3

Pre-Professional & Allied Health News 4 & 5

Darwin's 200th Birthday; Reading Lamp 6 & 7

Summer College Offerings and Opportunities 8

Report from SICB 9

Student and Faculty Research 10 - 11

RA Program & Alumni Updates 12

RENOVATION OF HARTLINE EAST 2009-2010

As most you have already heard, Hartline Science Center East (the old wing or "L") will be closed next year. I would like to keep you apprised of the situation and of new developments as they emerge. We will have an evening Q and A session later in the semester to give you a chance to learn more. For now, I will summarize the plan.

The building will be closed May 10, 2009 and will not reopen until August 2, 2010. Fortunately we will still have the "new" wing (Hartline West). Faculty with offices in the Hartline East will be relocated. In a future newsletter we will publish the temporary faculty office locations. Most will be in Old Science Hall.

We have to run our lab sections out of five labs in Hartline West: 155 and 157 (the microbiology labs), 161 and 163 (the A & P labs), and 259 (the molecular lab). Lab and lecture times may be unusual, but I hope not too inconvenient. Keep in mind that biology courses need to be as free from conflict with other bio courses, and with chemistry and physics courses as well. Some conflicts are unavoidable, but I hope that any conflicts can be dealt with by developing a plan B with your advisor.

The following electives are planned for Summer 09: Field Zoology, Immunology, and Medical Microbiology. For the Fall 09, electives will be: Human Genetics, Immunology, Vertebrate Histology, Evolution, Limnology, Current Topics (Signal Transduction Pathways), Vertebrate Zoology, and Radiation Biology. Only one physiology lecture will be offered, Vertebrate Systems Physiology, but there will be two sections.

Feel free to email me your questions, or wait until the assembly is scheduled (gchamuri@bloomu.edu). We all have to be patient and realize that for a little sacrifice, we will get much-needed improvements to our home building. Dr. C.



Join us for the BAHS Seminar Series

Come and learn about the latest research in biology by attending the BAHS seminar series this semester. The seminars are funded through a College of Science and Technology Research and Scholarship Fund grant to **Drs. Rier, Hranitz, and Corbin**. Seminars will be held in 83 Hartline.

February 20, 2009. "From bioindicator to cancer: An emerging model from the marine environment." S. Anne Boettger, Ph.D., Department of Biology, West Chester University, PA.

March 20, 2009. "Rapid microbial interactions in aquatic biofilms." Steven N. Francoeur, Ph.D. Biology Department, Eastern Michigan University.

April 17, 2009. "Profile of a Killer: The application of comparative psychology to applied and theoretical problems in the analysis of invertebrate behavior." Charles I. Abramson, Regents Professor, Department of Psychology, Oklahoma State University.



Salute to Academic Achievement

Congratulations to Biology and Allied Health students who earned a GPA of 3.5 or greater and were named to the Dean's List for Fall Semester 2008.

Great job!

Andrew Ackerman, B.S. Biology, Pre-Medical Sciences
Jessica Albright, B.S. Health Sciences, Pre-Physician Assistant
Taylor Anderson, B.S. Biology
Christopher Arbogast, B.S. Medical Imaging
Emily Barkanic, B.S. Biology, Pre-Medical Sciences
Kyle Bartol, B.S. Biology, Pre-Medical Sciences
Michael Bierds, B.S. Biology
Kevin Bingaman, B.S. Biology
Joelle Bittner, B.S. Health Science, Pre-Physician Assistant
Justin Blessing, B.A. Biology, Pre-Physical Therapy
Michael Brabander, B.S. Biology
Stacy Brussell, B.S. Biology, Pre-Medicine
Wendy Bunting, B.A. Biology
Samantha Bussanich, B.S. Biology
Marisa Cipolla, B.S. Biology
Grace Colangeli, B.S. Medical Imaging
Erinda Como, B.A. Biology
Rebecca Conrad, B.S. Medical Imaging
Leslie Cope, B.S. Biology, Pre-Medical Sciences
Kyle Correll, B.S. Biology, Pre-Medical Sciences
Amy Cortellini, B.S. Biology
Grace Crispell, Pre-Occupational Therapy
Alyssa D'imperio, B.A. Biology
Tyler Dear, B.A. Biology
Lauren Dibernardino, B.S. Clinical Lab Science
Darrin Doran, B.S. Biology, Pre-Medical Sciences
Ryan Dorkoski, B.S. Biology, Pre-Medical Sciences
Meghan Duell, B.A., Biology
Brandon Dunbar, B.S. Biology, Pre-Medical Sciences
Alaina Egger, B.S. Health Science, Clinical Lab Science
Ethan Ernst, B.S. Medical Imaging
Chardei Eshleman, B.S. Biology, Pre-Medical Sciences
Charla Fender, Pre-Occupational Therapy
Matthew Fickinger, B.S. Medical Imaging
Mark Freed, B.S. Biology, Environmental Biology
Karmyn Gill, B.S. Medical Imaging
Catherine Goetz, B.S. Medical Imaging
Melissa Goff, B.A. Biology, Pre-Physical Therapy
Laura Grieco, B.S. Biology, Pre-Medical Sciences
Kristin Gross, B.S. Medical Imaging
Stefanie Hendel, B.S. Health Science, Clinical Lab Science
Charmaine Henderson, B.A. Biology, Pre-Physical Therapy
Jessica High, B.S. Biology, Pre-Medical Sciences
Michael Hollman, B.S. Biology
Deborah Hunsberger, B.S. Biology and Chemistry
Heidi Huynh, B.S. Biology
Amanda Kaehler, B.S. Health Science, Pre-Physical Therapy
Jillian Kida, B.S. Medical Imaging
Andrea Klacik, Pre-Occupational Therapy

Amber Kolk, B.S. Health Sciences, Pre-Physical Therapy
David Kolk, B.S. Medical Imaging
Megan Kopec, B.S. Biology
Allison Kunkelman, B.A. Biology, Pre-Physician Assistant
Laura Laidacker, B.A. Biology, Pre-Physician Assistant
Ryan Larum, B.S. Biology, Environmental Biology
Heather Love, B.S. Health Science, Pre-Physician Assistant
Ashley Matrazzo, B.S. Health Science, Pre-Physician Assistant
Samantha McAteer, Pre-Occupational Therapy
Carrie McClure, B.A. Biology
Robert Medon, B.S. Medical Imaging
Sarah Monaco, B.S. Biology
Katelynn Nelligan, B.S. Health Science, Pre-Physician Assistant
Sandra Newell, B.S. Biology
James Noll, B.A. Biology, Pre-Physical Therapy
Jason Nolt, B.S. Biology, Pre-Medical Sciences
Rose Novinger, B.S. Medical Imaging
Laura Ogle, B.S. Medical Imaging
Justine Okurowski, B.S. Health Science, Pre-Physician Assistant
Gary Oster, B.S. Medical Imaging
Patricia Owen, B.S. Biology
Holly Peters, Pre-Occupational Therapy
Kelly Pidgeon, B.A. Biology, Pre-Physical Therapy
Amanda Pulsifer, B.S. Medical Imaging
John Redinski, B.S. Biology, Pre-Medical Sciences
Essie Reed, B.S. Biology
Julia Rush, B.A. Biology, Pre-Physical Therapy
Aubrey Schmidt, Pre-Occupational Therapy
Sean Scubelek, B.S. Clinical Lab Sciences
Alexandra Shierant, B.S. Medical Imaging
Matthew Snyder, B.S. Biology, Pre-Medical Sciences
Philip Sobolesky, B.S. Biology
Lauren Sosnoski, B.S. Health Science, Pre-Physician Assistant
Britnie Spaunhorst, B.S. Biology, Molecular Biology
Erin States, B.S. Biology, Pre-Medical Sciences
Lauren Statile, B.A. Biology, Pre-Physical Therapy
Michelle Stipanovic, B.S. Biology, Pre-Medical Sciences
Neil Sullivan, B.S. Health Science, Pre-Physician Assistant
Sara Taylor, B.S. Medical Imaging
Kristen Tinney, B.S. Biology, Pre-Medical Sciences
Arifah Uqdah, B.S. Medical Imaging
Susan Wade, B.S. Medical Imaging
Karly Walushka, Pre-Pharmacy
Taylor Washburn, B.S. Medical Imaging
Jessica Whitenight, B.S. Medical Imaging
Krysta Whitmoyer, B.S. Biology, Microbiology
Sonya Wolfe, B.S. Medical Imaging
Danielle Yoder, B.A. Biology, Pre-Physical Therapy
Melanie Yodock, B.S. Biology, Pre-Medical Sciences
David Yovic, B.S. Biology, Pre-Medical Sciences

Consider an Internship

An internship is a supervised learning experience that allows you to apply your classroom knowledge to the work environment. Internships can be very beneficial. In addition to helping you to clarify your career goals, internships can assist you in gaining admission to graduate school, professional programs, or clinical experiences. They provide great opportunities to learn more about your field of study and to network with professionals. Internships can count for 3 to 15 hours of credit; however only 3 credits may be applied as biology elective credits. For more information on internships, contact your academic advisor. Advanced planning is required!

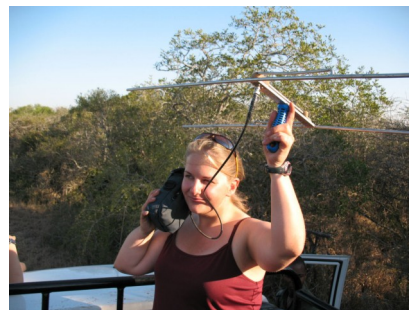
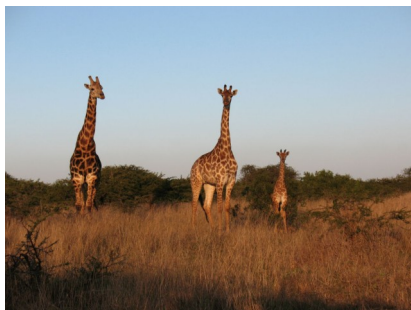
Check out BU's New Internship Website

<http://internships.bloomu.edu/index.html>

Internship Feature

Deborah Hunsberger, a senior biology and chemistry major, interned as a research assistant for Operation Wallacea this past summer. She spent two months last summer in South Africa working on various conservation projects. Her first week was spent learning the basics of bush craft in Hluhluwe-Imfoluzi Game Reserves. The most important thing she learned was that the saying, "you don't have to be the fastest runner, just don't be the slowest," was not particularly useful unless one wanted to become dinner. The best thing to do is to stand your ground. Her second week was spent taking a game reserve management course in Pongola Game Reserve where she got the opportunity to track elephants (aka "elephanting"), do road maintenance, and spend a night under the African stars! Next she spent a month in Mkhuze Game Reserve helping out on bird surveys and learning the basics of telemetry on a cheetah tracking program. She got the chance to spot a rare bird that is on every South African birding list – not one, but a breeding pair of African broadbills! Debbie finished off her internship with two weeks in Sodwana Bay where she obtained her PADI Open Water and Advanced Open Water dive certifications.

"It was a truly amazing experience, not only because of everything I learned and all the awesome sightings, but for the people I met. I made lifelong friends. This internship will also open doors to great research and job opportunities in the future, such as studying elephant behavior or impacts of commercial diving on coral reefs."



Internship Scholarships Available

Need funds to defray internship expenses? Scholarships of \$250 - \$1,000 are available to fund travel, the purchase of required insurance or clearances, immunizations, lab coats or safety devices, and necessary software or resources. For applications or information, contact Ms. Alison Stone-Briggs, Director of Community Outreach and Academic Internships, 140 Student Services Center, (389-4962) or astbriggs@bloomu.edu.

Spring Semester BAHS Interns

The following students are conducting internships during spring semester:

Jessica McFee and **Cynthia Mirra** are interning in the Radiology Department at Geisinger Medical Center. There will be four internships in Medical Imaging available for the summer 2009. Internship applications will be announced after spring break. See Dr. Hranitz for details.

Paul Celona is serving as an intern in physical therapy at Phoenix Rehabilitation & Health Services, Bloomsburg. Paul reports that he is observing many procedures and enjoying his time at the clinic.



Pre-professional Committee News

JAN PLAN

Geisinger Medical Center's Jan Plan brings students into the hospital for an intensive, week-long experience that provides a first hand look at the medical profession. Jan Plan students have the opportunity to interact with medical and pharmacy students, residents, and physicians during rounds and medical procedures. Participating in Jan Plan this year were biology majors pictured from left **Jason Nolt**, **Ryan Dorkoski**, and **Emily Barkanic**. Among the medical specialties that Jason, Ryan, and Emily observed were Nephrology, Urology, Dermatology, Orthopedics, Internal Medicine, Obstetrics/Gynecology, Emergency Medicine, Surgery, and Pediatrics. The students had the opportunity to observe surgeries and interact directly with medical professionals and patients. Emily found Jan Plan to be a "cool experience" and she had the opportunity to observe several deliveries. Jason reports that Jan plan was an "eye opener" and particularly enjoyed the surgeries and the opportunity to talk through procedures with members of the health care team. Ryan gained insights into daily operations of a hospital and was impressed with the hard work and dedication of the physicians. He also appreciated the opportunity to talk to current medical students about their experiences in medical school. Jason, Ryan, and Emily report that the experience reinforced their desire to become physicians. They all agree that if the opportunity arises to participate in Jan Plan, "ABSOLUTELY DO IT!"



Don't Miss:

Pre-Med March Madness



Sophomores and Juniors who are interested in careers in various medically-related professions (medicine, dentistry, veterinary medicine, optometry, etc.) are strongly encouraged to attend the Pre-Med March Madness workshops to be held from 5:30-7 p.m. at ABLE in the Columbia Living Learning Community Room on these Mondays in March:

March 16: The Application Process. The Pre-Professional Advisory Committee will guide you through the rigors of the application process, including AMCAS.

March 23 Creating an Appropriate Resume. Sure you have a resume, but is it appropriate for your application? Come to this workshop with a print-out of your resume for break-out sessions of peer and advisor review. It is OK if the resume is kind of rough. *Sophomores are especially encouraged to attend.*

March 30 Telling Your Story in the Personal Statement. Writing about yourself is probably the most difficult part of the application. For that reason, applicants tend to procrastinate in writing this important document. Come to this workshop with a printed rough draft of your personal statement, or at least some ideas on paper for break-out sessions of peer and advisor review. *Juniors are especially encouraged to come.*



Attention Pre-Dental Students:

The ADEA AADSAS brochure has arrived for the 2010 applicants to dental school. You may pick one up from **Dr. Ardizzi**.

Pre-Medical Science Club Updates

The Pre-Med club is having a busy spring semester. **Dr. Kristy Follmer** (B.S. Biology, 2001), an Emergency Medicine physician at Geisinger Medical Center, recently met with the club to discuss medical school and the admissions process. The club recently held a Valentine's Day bake sale complete with adorable teddy bears. For details on the Pre-Med Club's activities and upcoming meetings, check out the bulletin board outside Dr. Ardizzi's office. You are encouraged to participate. The pre-med club is here to serve your needs!

Allied Health Updates



Important Notice for Medical Imaging and Clinical Lab Science Majors

Medical Imaging and Clinical Lab Science students who have applied to clinical programs this year should see Dr. Kipe -Nolt after spring break. If you have been accepted and made a decision regarding a clinical site, bring the following along with you: curriculum sheet filled out (in pencil) with all the courses you have taken and grades earned; clinical site; clinical director's name and contact information (phone and e-mail); and starting and ending dates for the program.

Share your good news!

Have you been accepted to a graduate or professional school or clinical program? Have you decided where you will attend next year? Do you have a cool summer experience in biology or health science lined up? Please send **Dr. Surmacz** an e-mail message with your final plans for inclusion in the next issue of *BioSynthesis* (csurmacz@bloomu.edu). Thanks!



Health Sciences Symposium to focus on Mental Health

Bloomsburg University will host the 18th annual Health Sciences Symposium on April 2 and 3, 2009 at Kehr Union. "*Improving Health Through Mental Well Being*" is the theme of this year's symposium. The keynote speaker is Terry Wise, J.D., author of "Waking Up: Climbing through the Darkness." Ms. Wise is dedicated to educating health care professionals and the public on topics such as grief, depression, long-term care giving, suicide prevention, and the recovery processes. Her knowledge stems from her experiences as a survivor of a near-fatal suicide attempt following her husband's death from Lou Gehrig's Disease (ALS). Ms. Wise received a National Mental Health Award for "distinguished achievement and work that has had a major impact on the depression community." She is the co-chair of the Consumer/Survivor Subcommittee for the National Suicide Prevention Lifeline and is a spokesperson for the U.S. Department of Health and Human Services/Substance Abuse & Mental Health Services Administration. She is board member of numerous organizations, including the American Association of Suicidology, Families for Depression Awareness, Advancing Suicide Prevention, and the Musical Hope Foundation. Ms. Wise will speak on Thursday, April 2, 2009 at 7:00 p.m. in Kehr Union Ballroom. The Health Sciences Symposium will also feature presentations and posters by students and faculty in biological and allied health sciences, audiology and speech pathology, exercise science, and nursing. The Symposium is held in conjunction with the annual Wellness Fair. Highlighting the Wellness Fair are exhibits on health-related topics and free health screenings. Mark your calendars! Everyone is welcome to attend. We hope to see you there. The symposium is sponsored by the Science and Health Sciences Living and Learning Community, Berwick Health and Wellness Fund of the Central Susquehanna Community Foundation, the Provost Lecture Series, BU Campus Suicide Prevention Grant, and Bloomsburg University.



BAHS Club heads to Mutter Museum

The BAHS Club, along with **Dr. Hansen** and Dr. Simpson (Physics) headed to the Mutter Museum in Philadelphia on February 21. The Mutter Museum was established in 1858 when Dr. Thomas Mutter, a professor of surgery at Thomas Jefferson Medical College, donated his collection of specimens to the College of Physicians of Philadelphia. The current collection now numbers over 20,000 specimens and includes skeletal materials; preserved anatomical specimens; plaster, wax and plastic models; pathological specimens; surgical instruments; medical equipment; photos and illustrations; and memorabilia from famous physicians. Some of the more famous exhibits are the tallest skeleton in North America, a plaster cast of Siamese twins, a skull collection, a collection of 2,000 objects removed by physicians from the pharynx, the tumor of President Cleveland, and the "soap lady's" body!

Under the leadership of its new president, **Megan Dager**, the BAHS Club would love to grow and encourages new members to join in the fun. All BAHS students are invited to participate. Hope to see at upcoming meetings and events.

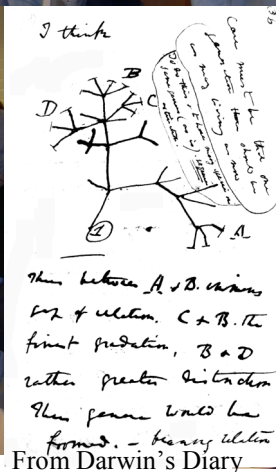
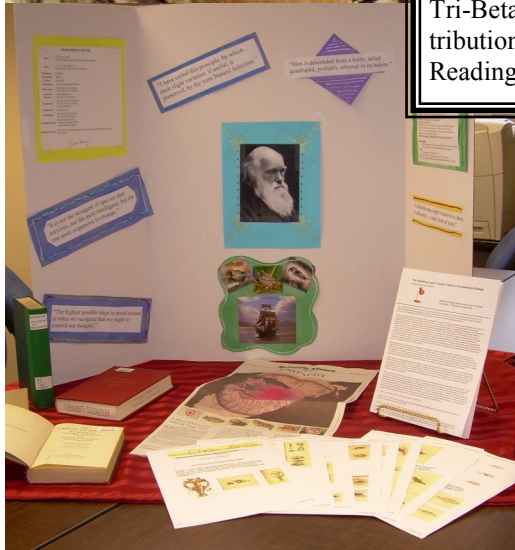
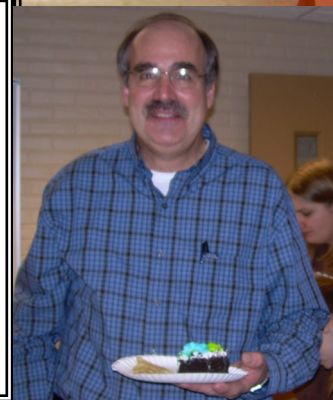
News from Tri-Beta

Members of Tri-Beta, the biology honor society, prepared a poster on Darwin's life and work for the recent 200th birthday celebration. Thanks to all Tri-Beta members who have tutored at ABLE each week and who volunteered for the COST symposium. Upcoming events include participation in the Sibling and Children's Carnival, a bake sale, and a reception for graduating seniors. Tri-Beta members who are interested in attending the regional meeting at Moravian College on March 14 should contact **Dr. Surmacz**.

BAHS Celebrates Darwin's 200th Birthday



February 12th marked the 200th anniversary of the birth of evolutionary biologist Charles Darwin. The day was commemorated by over 700 events in 45 countries that included scientific symposia, official proclamations, museum exhibits, book discussions, and ceremonies. Details of the global celebration can be found at <http://www.darwinday.org/>. BAHS noted the day with a birthday party complete with cake and an exhibit on Darwin's life and work prepared by Tri-Beta Honor Society. To learn more about Darwin's contributions to evolutionary theory and its future, check out the Reading Lamp by Dr. Chamuris on the next page.



The Reading Lamp: Current Topics in Evolutionary Biology

George Chamuris, Professor



Nothing in biology makes sense except in the light of evolution. – Theodosius Dobzhansky

On February 12, 2009 biologists everywhere recognized the 200-year anniversary of the birth of Charles Darwin (1809-1882). This acknowledgment gives us an opportunity to reflect on the importance of evolutionary theory to science in general and to biology in particular, and to appreciate the pivotal role Darwin played in the development of evolutionary thinking.

Today, every aspect of biology is framed within the paradigm of the Theory of Evolution. Numerous related disciplines such as medicine and psychology are also being informed by evolutionary theory (e.g. Nesse et al., 2006). True, Darwin provided the architectural framework for modern evolutionary biology, but he was not the first evolutionary thinker. Conceptualizing change over time goes back to the ancient Greeks. The pre-Darwinian history of evolutionary thought should be of interest to all biologists; I would urge readers to become familiar with the contributions made by individuals such as Buffon (1707-1788), Lamarck (1744-1829) and a host of others.

Charles Darwin is best-known for proposing natural selection as the mechanism for evolutionary change, the related concept of sexual selection, and for planting the idea and common ancestry firmly into the realm of scientific investigation (see the excerpt from his notebook pictured on the previous page). He also made significant contributions to botany, zoology, paleontology and geology. Darwin should also be recognized for constructing numerous insightful evolutionary predictions that endure as good examples of applying the scientific method. He predicted, for instance, that human origins lie in Africa, that bipedalism preceded brain enlargement, and that the earth must be very old. Most of his predictions have withstood the test of time and have come to be supported by modern scientific evidence.

Darwin recognized the variation between individuals in a population, but had no explanation for this variation or for how traits are transmitted from generation to generation. His argument for natural selection was theoretical, but consistent with the evidence he had amassed through intensive study and field work carried out in remote parts of the world (read *The Voyage of the Beagle*). He put two-and-two together into an elegant explanatory model that stands today as one of the big ideas of science. One must keep in mind, however, that most of the key questions regarding the genetic mechanisms of natural selection could not be addressed by Darwin. We continue to explore these questions at the genomic frontier of evolutionary biology. This frontier is exciting, promising, and only in its infancy.

Charles Darwin is credited with proposing the mechanism of natural selection as the force shaping the diversity of life. He was not alone, however. Alfred Russell Wallace (1823-1913), a younger contemporary of Darwin, also came up with the idea of natural selection. In fact, they co-submitted a series of papers to the Linnean Society in 1858 which outlined the basic argument for natural selection. The next year, Darwin published *On the Origin of Species by Means of Natural Selection*, in which the evidence was laid out in full. Because Darwin developed this idea for over 20 years, and published the full argument and evidence in his book, he is given the historical credit for evolution's big idea. And rightly so.

We had to wait until the 20th century to add genetic, molecular, and more complete paleontological dimensions to Darwin's theory. Today we are on the exciting verge of a unified Theory of Evolution, incorporating data and observations from genetics, genomics, proteomics, bioinformatics, ecology, morphology, paleontology, and developmental biology. Even as we celebrate the contributions of Charles Darwin, we should be careful when referring to modern evolutionary theory as "Darwin's Theory of Evolution." Creationists, especially of the Intelligent Design variety, are especially fond of linking Darwin's name to evolutionary theory because in their minds this keeps the focus on the 1800's, implying that evolutionary theory is old, dusty, and out of date. We should celebrate Darwin's enormous contributions to the development of evolutionary theory, but stay focused on the future and toward the improvement of the theory. The excitement of being a biologist today should include the quest to further unravel the evolutionary mysteries of life . . .

Culotta, E., and E. Pennisi. 2005. Evolution in action. *Science* 310:1878-1879.

Darwin, C., and A. Wallace. 1858. On the tendency of species to form varieties; and on the perpetuation of varieties and species by natural means of selection. *Proceedings of the Linnean Society* 3:45-62.

Nesse, R.M., S.C. Stearns, and G.S. Omenn. 2006. Medicine needs evolution. *Science* 311:1071.

Watson, J.D. (Ed.). 2005. *Darwin: The Indelible Stamp. The Evolution of an Idea*. Running Press, Philadelphia, PA. A collection of Charles Darwin's principal writings, with a foreword by the editor, James Watson. Includes: *The Voyage of the Beagle*; *On the Origin of Species by Means of Natural Selection*; *The Descent of Man*, and *Selection in Relation to Sex*; and *The Expression of the Emotions in Man and Animals*.

What are you doing this summer?



BAHS Summer College Offerings

The following courses will be offered by BAHS during summer 2009:

Session I: Human Biology (Dr. Melnychuk); Anatomy & Physiology I (Drs. Surmacz & Wassmer); Intro. Microbiology (Dr. Kipe-Nolt), Immunology (Dr. Brubaker).

Session II: Cells, Genes, and Molecules (Dr. Chamuris); Anatomy & Physiology II (Drs. Till and Amin); Human Sexuality (Dr. Amin.); Field Zoology (Dr. Hranitz); Medical Microbiology (Dr. Henry).

Summer Sessions 2009

- Session I - May 18 to June 26 (6 weeks)
- Session II - June 30 to Aug 7 (6 weeks)

Summer Chemistry and Physics Offerings

The chemistry department at Bloomsburg University plans to offer the following courses this summer: Intro. Chemistry (50.101), Chemistry for the Sciences I (52.115), and Chemistry for the Sciences II (52.116). The physics department will offer Intro. Physics I (54.111) during Session I and Intro. Physics II (54.112) during Session II.



Check out the Biology Elective Offerings this Summer!

Immunology (50.343), 3 credits, Dr. Brubaker, Session 1, M – Th, 3:20 p.m. to 5:00 p.m.

Prerequisites: Cell Biology (50.271) & background in biochemistry, genetics, or medical microbiology are recommended.

Immunology is the study of how the body responds to infection by bacteria, viruses, and other foreign materials. This class will focus on the mechanisms involved in the immune response. We will address aspects of cell-mediated immunity in health and disease.

Medical Microbiology (50.342), 3 credits, Dr. Henry, Session 2, M - F, 8:00 - 9:40 a.m., T Th 9:50 - 1:20

Prerequisites: Microbiology (50.242) and Cell Biology (50.271)

Did you ever wonder why malaria is such a world-wide problem but you have never known anyone that has it? Have you ever tried to imagine how the organism that causes necrotizing fasciitis (“flesh-eating” disease) is capable of “eating” flesh (not to mention if it prefers to have it with some fava beans and a nice chianti)? You can learn the answers to these questions and more this summer by enrolling in Medical Microbiology and learning more about the organisms that cause human disease. In addition to lectures that will cover the epidemiology, pathogenesis, mechanisms, and treatment/prevention of disease-causing agents, we will also take a hands-on approach to the diagnosis and testing of many clinically-relevant microbes.

Field Zoology (50.252), 3 Credits, Dr. Hranitz, June 30 to July 17, M - Th 9:00 a.m. to 1:50 p.m.

An introduction to the natural history of animals with an emphasis on vertebrates identification and field research techniques. What better way to become familiar with animals than to spend three weeks in the summer seeing them in action? This is a hands-on, roll up your sleeves, and get dirty approach to the study of animals in Pennsylvania and coastal marine habitats. Students collect live animals in the field for observations in the laboratory and gain experience in sampling techniques, observations, and data analysis. Field trips include many of Pennsylvania habitats (forests, bogs, barrens, ponds, streams, and much more). The course features a field trip to the Wallops Island Marine Science Center in Virginia to conduct experiments in coastal marine habitats (an additional student expense), possibly including boat trips and experience with other coastal habitats (barrier islands, salt marshes, bays, intertidal zones).



Marine Science Consortium: SUMMER 2009 College Program

The following Marine Science courses serve as biology electives and are offered at the Marine Sciences Consortium at Wallops Island, VA. E-mail **Dr. Hranitz** (jhranitz@bloomu.edu) or see **Drs. Klinger** (HSC 005), **Hranitz** (HSC 131), or **Corbin** (HSC 173) for details. Fees include tuition to BU and MSC station fees.

SESSION I: MAY 11 - MAY 29, 2009

MS0100 Windows to the Oceans - non-majors
MS-241 Marine Biology - Ryan (Kutztown University.)

SESSION II: JUNE 1 - JUNE 19, 2009

MS-211 Field Methods - Kumar (Millersville University)
MS-343 Marine Ichthyology - Thompson (Lock Haven University)

SESSION III: JUNE 23 - JULY 11, 2009

MS-260 Marine Ecology - Hunt (East Stroudsburg Univ.)
MS-343 Marine Ichthyology - Dagit (Millersville Univ.)
MS-451 Coastal Environmental Oceanography - Cornell

SESSION IV: July 13 – July 31, 2009

MS-221 Marine Invertebrates - Hunt (East Stroudsburg Univ.)
MS-464 Biological Oceanography - Ambler (Millersville)

Happy New “Year of Science” from the Annual Meeting of the Society for Integrative and Comparative Biology

– by John M. Hranitz

Every year, members of the Society for Integrative and Comparative Biology gather to share research findings. **Drs. Gary Wassmer** and **John M. Hranitz** each presented results of their research. Dr. Wassmer presented partial amino acid sequences of a development-associated storage protein, and other proteins, in the wood cockroach. The occurrence of this protein in hemolymph is regulated by photoperiod. Dr. Hranitz presented an ecological genetic analysis, 623 bp of the cytochrome oxidase subunit I gene, of an invasive bee. The results revealed that the invasive populations inhabiting Santa Cruz Island (California) possess higher genetic diversity than native populations on Lesvos (Greece). Undergraduate researchers on this project, who collected bees for genetic analysis and/or conducted molecular analysis in the lab at BU, included **Amy Savitski** (Bloomsburg University), Meredith Clement (The University of Central Oklahoma), and Daniel Song (The University of California, Berkeley).



Undergraduate students in the field on Lesvos, Greece. From left to right: Daniel Song, Amy Savitski, and Meredith Clement.

This year, with a new political outlook and a stalled economy, many are looking to science for innovative technologies and scientific study of environmental problems. In fact, scientific societies across all disciplines of science have joined together to declare 2009 the Year of Science (<http://www.yearofscience2009.org/home/>), an effort to support President Obama's position on science, restoring science to its rightful place in decision-making and planning in government. With promises from the new administration to substantially increase spending for basic and applied research, the mood was cautiously optimistic among attendees. If the new administration can support it, the future may be bright for young scientists starting careers.

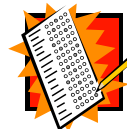
One of the highlights of the meeting is to hear the featured speakers, typically well-known scientists. Ira Flatlow, host of National Public Radio's *Science Friday* series, delivered an enlightening plenary address entitled "Talking Science in a World Gone 'Show Biz'." The John A. Moore Lecturer was Sean Carroll, who received an award and presented "Into the Jungle: Great Adventures in the Search for Evolution and What Students Can Learn from Them." Sean Carroll recently published two books in evolutionary biology. Look for these in your favorite bookstore in the science section.

SICB Presentations:

Hranitz, J.M.*; Savitski, A.N.; Barthell, J.F.; Clement, M.L.; Song, D.S.; Petanidou, T. Nucleotide Diversity in Native and Invasive Island Populations of the Leafcutting Bee (*Megachile apicalis*). Annual Meeting of the Society for Integrative and Comparative Biology in Boston, Jan 3-7, 2009.

Wassmer, G.T. Characterization of a Photoperiodically Regulated Protein from a Woodroach. Annual Meeting of the Society for Integrative and Comparative Biology in Boston, Jan 3-7, 2009.

Attention Graduating Seniors



Students graduating with a BS or a BA in Biology in May or August must take the ETS Major Field Test in Biology. Sign-up at the department office to take the test on Friday, April 24, 3:00 - 5:00 p.m. or Wednesday, April 29 from 3:30 - 5:30 p.m. during a final exam make-up period. This test is required. Please contact **Dr. Wood** if you have any questions.



Check out BAHS Student and Faculty Research

Graduate Students:

Chelsea Barnes is currently teaching in the Pittsburgh area and is completing editorial changes to her thesis to satisfy requirements for graduation. Mentor: Dr. Hranitz.

Joseph Margotta is currently sequencing the cDNA encoding the HSC70 gene in the invasive leafcutting bee, *Megachile apicalis*. He will conduct a bioinformatic analysis to investigate the structure and function of protein domains in this protein. Mentor: Dr. Hranitz.

Jonathan Snaveley is initiating a departmental paper reviewing factors that cause the *Centaurea* leafcutting bee to be invasive in western U.S. but not in areas where this species naturally occurs. Mentor: Dr. Hranitz.

Debra Walter will present her paper titled "Signaling Pathways and Proliferation in both Highly and Poorly Aggressive Human Melanoma: A Role for EphA2" at the upcoming Pennsylvania Academy of Sciences meeting. Mentor: Dr. Hess.

Undergraduate Students:

Alison Adamski is investigating whether the levels of the cellular stress protein HSP 70 can be used to predict changes in observable physiological and behavioral responses of blackworms (*Lumbriculus variegatus*) exposed to various environmental pollutants. An understanding of the relationship between observed responses and cellular stress proteins will assist aquatic biologists in using blackworms to assess the health of aquatic ecosystems. Mentors: Drs. Surmacz and Hranitz.

Eileen Burkett is conducting a bioinformatic analysis of the control region in the collared lizard *Crotaphytus collaris*. She is comparing partial control region DNA sequences obtained by Mary Jo Melichercik in an earlier study to completed lizard mitochondrial genomes. Mentor: Dr. Hranitz.

Emily Kinkead has studied the ecological community and morphological variation of barnacles on two tropical Pacific Ocean buoys from the TAO array. She is currently sequencing part of the cytochrome oxidase subunit I gene to compare the morphological variation and genetic variation of one species, *Lepas anatifera*, on these two buoys. Mentor: Dr. Venn.

Christopher Krum has designed primers and cloned an intron of the HSC70 gene in *Megachile apicalis*. He is currently characterizing the DNA sequence in order to compare mutation rates between an intron and exons of the HSC70 gene. Mentor: Dr. Hranitz.

Jared May and **Laura McCourt** are investigating the mechanisms by which genes that encode multidrug resistance (MDR) pumps are regulated at the transcriptional level. Using strains generated in the lab which lack genes for certain transcriptional regulators, they will be able to test for changes in drug sensitivity and MDR gene expression. In addition, drug-resistant clinical isolates will be used to test the effect of inhibitors of specific types of transcriptional regulators on resistance and MDR gene expression. Since several of these inhibitors are being used clinically to treat cancer patients, positive results could provide the basis for their testing as novel co-therapeutics in the treatment of opportunistic fungal infections. Mentor: Dr. Henry.

Christopher Ort is investigating how light influences the lateral leaf movements of *Desmodium gyrans*. The compound leaves of *D. gyrans* consist of a large terminal leaflet and two small lateral leaflets. In light the lateral leaflets move up and down with a periodicity of around 3-4 minutes. This periodicity of these movements have been shown to be correlated with light intensity. Mr. Ort is investigating which parts of the plants are sensing the light regulating leaf movements and which wavelengths of light regulate the movements. Mentor: Dr. Williams.

Diana Pierce is examining the regulation of genes involved in morphogenesis in *Candida albicans*. Mentor: Dr. Henry.

Shanna Quinn is working on two projects. The first is to clone and sequence a splice variant of the *daf-16* gene from *Megachile rotundata* larvae. The full length *Daf-16* gene was cloned from bee larvae RNA, but the RT-PCR for the full length gene is run, a much shorter PCR product is found. The full length product can be amplified from adult bee RNA. In addition, Shanna will be probing for the full length *Daf-16* gene in adult and larvae RNA using Northern blotting. Mentor: Dr. Brubaker.

Paige Ricci is working on the generation of two hybridoma cDNA libraries. She will isolate heavy and light chain cDNAs from both lines. Each of the four genes will ultimately be transformed into separate *Arabidopsis*. The goal will be to produce hybrids expressing functional antibodies directed against a root specific protein involved in iron uptake (ferric chelate reductase) Mentor: Dr. Davis.

Anna Simpson is investigating bill morphology of hawks, eagles, and falcons. By employing geometric morphometric techniques, Anna is exploring phylogenetic conservatism in bill evolution. Specifically, she is trying to answer the question: do phylogenetic groups within the Accipitridae exhibit clade-dependent evolution as one might expect from differences in age of origin, biogeography, and/or ecology? Anna will be presenting her work at the 2009 meetings of the Pennsylvania Academy of Sciences. Mentor: Dr. Corbin.

More faculty and student research

Philip Sobolesky is working on a method for isolating heat shock protein 70 (HSP70). His methods will include size exclusion and an ATP column, as HSP70 has ATPase activity. HSP70 ATPase can then be compared in different species of solitary bees and between bees which have been heat shocked or incubated at normal temperatures. Mentor: Dr. Brubaker.

Britney Spaunhorst is working on transforming yeast with the avenic acid transporter gene isolated last semester by Missy Tomcavage and Dr. Davis. She will evaluate the effectiveness of the transporter in complementing a mutant strain that is defective in iron uptake. Mentor: Dr. Davis.

Danielle Yoder is designing improved primers for sequencing the control region in collared lizards. She will sequence a sample of potential dams (females) and hatchlings to evaluate genetic variation at the control region as a maternal genetic marker in this species. Mentor: Dr. Hranitz.

Need help in a class?

Tri-Beta, the biology honor society, provides tutoring in introductory biology classes each Monday from 4 to 5:00 p.m. at ABLE, Living Learning Community Room, Columbia Hall. The Chemistry Club provides tutoring in Chemistry on T, W, and Th in 238 Hartline from 6:30 to 8:30 p.m. Tutoring is also available through the University Tutoring Center, Student Services Building. Course materials, review sessions, office hours, and workshops for Anatomy & Physiology I and Concepts in Biology I are also available at ABLE. See schedule on BAHS bulletin board for information.



Need to take the GRE for graduate or professional school?

The Psychology Club is offering a practice Graduate Record Exam (GRE) on Saturday March 14 in 1303 McCormick Human Services Center. The day begins with breakfast at 8:30 a.m. followed by the exam from 9 a.m. to 12 p.m. You can register for the practice GRE at the following locations and times: 2155 McCormick (M 9 - 10 a.m., W 1 - 2 p.m. and Th 3:30 - 4:30 p.m.) and 2111 McCormick (T Th 8:30 - 9:30 a.m. and W 1 - 4 p.m.). The fee for the exam is \$10.



Faculty Updates

Dr. Angela Hess recently had a paper published in the journal *Cancer Biology and Therapy*. The title of the article is "EphA2 as a promoter of melanoma tumorigenicity". The article title appears on the cover of the February 1st issue of the journal as a "Highlighted Article." This research study investigated the role of EphA2 in mediating various aspects of an aggressive melanoma phenotype, including increased growth and invasion. Moreover, this provides the first *in vivo* evidence for the role of EphA2 in promoting melanoma tumorigenicity. This study was conducted in collaboration with researchers from the Children's Memorial Research Center and Northwestern University's Feinberg School of Medicine located in Chicago, IL.

Welcome back from Sabbatical **Dr. Davis!** Dr. Davis has been busy. He attended the Consortium for Plant Biotechnology Research meeting in Washington, D.C. from February 9-11. He was the lead author for a poster presentation entitled "Uptake Specificity of Synthetic Phytosiderophore Analogs by Graminaceous Plants" with Dr. Mark Stocksdales (Earlham College) and Dr. David Lightfoot (Southern Illinois University). The consortium consists of corporations and government agencies interested in funding research in plant biotechnology. Dr. Davis also received two grants recently. The COST Research/Scholarship Fund Award will support a project entitled "The Synthesis and Screening of Hybridoma cDNA Libraries Toward the Development of an 'Induced Autoimmunity' Cultivar in *Arabidopsis*". The funds were used to purchase the materials for generating cDNA libraries for Paige Ricci's independent study project. The Margin of Excellence Award funded a proposal entitled "Using Engineered *Arabidopsis* as a Model System in the Development of a New Intercropping Strategy." The project will investigate the efficacy of attenuating the activity of a root specific iron transporter by using antibodies made by the plant itself (induced autoimmunity). Dr. Davis has begun an intensive regimen of psychotherapy to facilitate his transition to the real world!



COST Symposium a Success!

Bloomsburg University hosted its annual Science and Technology Symposium on Saturday, February 7, 2009. This program provided an opportunity for high school seniors who are interested in BU's College of Science and Technology to visit campus and meet with faculty and students. BAHS hosted students and their families who have expressed interest in majoring in our academic programs. The day included a welcome and introductory session, a tour of department labs, hands-on demonstrations, and meetings with academic advisors to learn about our various curricula in biology and allied health sciences. The day was an unqualified success, due in large part to the students who helped make our visitors welcome. Thanks goes out to the following helpers: **Kyle Bartol, Josh Capelli, Kelsey Grabert, Michael Hollman, Laura McCourt, Jimmy Noll, Patty Owen, John Redinski, Essie Reed, Rachel Stoehr, Christine Wason, Danielle Yoder, and Nicole Zapotosky.**

Welcome to our new RA Students

Our third class of students in our new masters degree program in Radiologist Assistant (RA) began their studies fall semester by taking on-line courses. The group, now on campus for spring and summer, includes from left, **Alexander Khudysh** and **Rhyan Kleiner**, shown with program director **Mrs. Christine Mehlbaum**. Rhyan is also serving as a graduate assistant this semester. BU is among the first in the nation to offer this new health care program. The RA bridges the gap between radiologic technologists and radiologist physicians. RAs will work under the supervision of a radiologist to perform such duties as patient interaction, performance of certain radiology procedures that are currently conducted by a radiologist, and participation in the systematic analysis of the quality of patient care in radiology. For more information on the RA program and curricular details see <http://departments.bloomu.edu/biology/ra/index.html> or contact Mrs. Mehlbaum at cmelhbau@bloomu.edu.



Alumni Updates

Emily Bray, B.S. Biology, 2004, a fourth year student at Philadelphia College of Osteopathic Medicine, received the Dr. Corrine Santerian Memorial Scholarship in pediatrics.

Donna Counterman, B.S., Secondary Education Biology, 1991, and M.S. Biology, 1993, recently received the Community Award at BU's 15th Annual Martin Luther King, Jr. Banquet. Donna teaches biology at Danville Area High School. Donna was recognized for her role in having Danville High School proclaimed a "No Place for Hate" school by the Anti-Defamation League and in establishing "Spectrum," a club for tolerance and diversity. Donna also serves on the planning committee for BU's Diversity Conference, sponsored by the Task Force on Racial Equity. Congratulations Donna! Donna is pictured at right.



Marnie Cooper, B.S. Biology, 2005, is working as a biologist in the toxicology department at WIL Research Laboratories, in Ashland, OH. She performs in vivo toxicity and carcinogenic testing of pharmaceuticals and other products. She is enjoying her position and especially learning new techniques.

Valerie Letukas, B.S. Biology, 2008, is employed at SAIC-Frederick as a research technician in an HIV monitoring lab. She works with **Adam Rupert**, B.S. Medical Technology, 1997.

Heather Painter, B.S. Biology, 2002, earned a Ph.D. in Molecular and Cellular Biology from Drexel University.

Jason Paist, B.S. Biology, 1997, an optometrist, recently opened a professional practice in Limerick, PA.

Andrew Paluch, M.S. Biology 2008, is enrolled in the Ph.D. program in Cancer & Cell Biology at the University of Cincinnati College of Medicine. Andrew is investigating the role of IL-6 in senescence and metastasis of ovarian cancer in the laboratory of Dr. Angela Drew. In his spare time, Andrew is exploring the greater Cincinnati area.

Kristie Phelps, B.S. Medical Imaging, 2001, is employed as an interventional radiologic technologist at Reading Hospital and Medical Center.

Kevin Robatin, B.A. Biology, 2000, a physician assistant, joined the family medicine department at the Geisinger Medical Group in Sunbury.

Mark Temons, M.S. Biology, 1994, was a finalist in the PA Teacher of the Year competition. Over the years, Mark has taught biology, chaired the science department, and coached at Bishop Neumann, Williamsport, and Muncy High School. Congratulations Mark!