



BioSynthesis

Volume 4, Issue 4 (September 2005)

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

Fall Semester Dates

- SEPT 20** Biology Club, 5:00 p.m., 178 HSC
- SEPT 21:** BUSTA Meeting, 7:00 p.m., 226 KUB
- SEPT 22:** Pre-Med Club, 6:00 p.m., 178 HSC
- SEPT 30:** Journal Club, 3:00 p.m., 178 HSC
- OCT 1:** Deadline to apply for graduation
- OCT 3—6:** Career Sessions, 7:00 p.m., 86 or 79 HSC
- OCT 4:** Biology Club, 5:00 p.m., 178 HSC
- OCT 7:** Journal Club, 3:00 p.m., 178 HSC
- OCT 10:** Pre-professional Meeting, 6:30 p.m., Andrus Library
- OCT 14:** Reading Day; no classes
- OCT 17:** Cancer Metastasis Talk, 9:00 p.m., Columbia Lounge
- OCT 18:** Temple Podiatry Visit, 6:30 p.m., 178 HSC
- OCT 28:** Journal Club, 3:00 p.m., 178 HSC



Look what's inside:

<i>Celebrating Achievement; News from Clubs</i>	2
<i>Pre-professional News</i>	3
<i>Allied Health News</i>	4-5
<i>BAHS Students Gain Hands-On Experiences</i>	6-7
<i>BAHS Updates</i>	8
<i>BAHS Research</i>	9
<i>The Reading Lamp</i>	10
<i>Biotechnology Updates and Communication</i>	11
<i>Graduate Program News and Journal Club</i>	12

What We Did with Our Summer Vacations



Have you checked out Hartline West (i.e. Hartline's new addition)? It is neat and generally very cool (in a literal sense, too). The labs are uptown, state-of-the-art. And, have you noticed that everyone's office has moved? This summer we cleaned house, packed up, and moved to new offices. Our custodians, Sean and Scott, did a great job of stripping and waxing floors as we vacated areas and before others moved in.

The Biological & Allied Health Sciences departmental office and offices of the chairperson and secretary remain at HSC 125 in Hartline East (the name for the older section of Hartline). Also located on the green floor of Hartline East are the offices for Drs. Ardizzi, Chamuris, Croll, Nolt, Rier, Williams, and Wood. Dr. Klinger continues to have his lair in Hartline East, red floor. (See the directory across from HSC 125 for room numbers.)

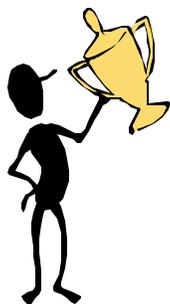
The First (main) Floor of Hartline West is the floor that opens into the Green Floor of Hartline East. It houses offices for Drs. Amin, Brubaker, Corbin, and Wassmer. It also has the new, absolutely fantastic Anatomy and Physiology Laboratories (Maroon and Gold Labs) and the Microbiology Laboratories. Research facilities for Drs. Brubaker, Hranitz, and a microbiologist (to be hired this year) are also on this floor. This floor includes the office suite for the College of Science and Technology. Dr. Marande, Dean; Ms. Fisher, Administrative Assistant; and Ms. Davis, secretary may be found here.

The Second (top) Floor of Hartline West opens into the Yellow Floor of Hartline East. It houses the offices of professors Davis, Diltz, Hansen, Hranitz, Kipe-Nolt, Melnychuk, and Surmacz. It also has the Biotechnology Laboratory Suite, including a teaching lab, research facility, cold room, and cell culture lab. This is a gee-whiz laboratory suite; you must check it out. Research facilities for Drs. Davis and Hansen are on this floor, also.

A few faculty from Geography and Geosciences have offices on the top floor of Hartline West. Drs. Beyer, Hill, and Hintz share this floor with biology colleagues. The Geography and Geosciences departmental office remains at HSC 116, Hartline East, Green Floor. The Department of Chemistry has both its new Biochemistry and Organic Chemistry Labs on the second floor of Hartline West. Geography and Geosciences has its Geochemistry and Mineralogy/Petrology Labs on this floor.

The Department of Physics' office is now located on the ground floor of Hartline West along with Drs. Stine (chairperson), Ray, Moser, and Couch. Drs. Xin, Ibrahim, and DiFrancesco are on the First Floor. The Ground Floor has labs for Physical Science and General Physics.

The Basement Floor of Hartline West is occupied by Geography and Geosciences labs, including Paleontology, Stratigraphy, Geophysics & Hydrology, Cartography, and a computer lab. NOTE: rooms in the basement and ground floors are designated with B or G, respectively.



CELEBRATING STUDENT SUCCESS

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 Spring Semester 2005. Great job!

B.S. Biology: Nicholas Bixler, Sarah Bounds, Jeffrey Brannon, Rachel Brous, Nicole Dalessandro, Jacqueline Flynn, Jared Geissing, Alicia Gilbert, Tyson Hale, Laura Halon, James Heim, Amanda Hendricks, Deborah Hunsberger, Michael Kaminsky (Biotechnology), Elena Insinga-Krick, Chase Kelch, Rebecca Kehler, Kimberly Kushner, Talia McAlister, MaryJo Melichercik (Marine Biology), Inna Nechipurenko, Keri Ondrusek, Heather Pursel, Jamie Rozowski, Roger Scull, Sydney Schreck, David Sibley, Jason Smith, Brock Solomon, Jessica Teders, Kristine Tofts, Alexandra Totino, Ashley Yelinek

B.A. Biology: Eileen Garvey

Secondary Ed Biology: Sabrina Zeimer, Benjamin Evancho, Paul Farley, Charlene Feyers, Robert Maurer, Amy Miller, Rachel Jacobs, Nathan Mutic, Rachel Kaskie

Pre-Pharmacy: Donald Astleford, Kaitlyn Sanders; **Pre-Physical therapy:** Courtney Dean, Kaylee Fischer, Robert Heim

Medical Imaging: Ashley Albertson, Robert Blasko, Ashley Boos, Bruce Bortree, Megan Coyne, Kelleigh Eckenrode, Megan Enterline, Eric Funk, Melissa Fye, Stephanie Gabel, Keri Garton, Susan Heckman, Laura Hurley, Lauren Keeny, Signe Klinger, Amanda Knepp, David Lindemann, Natalie Livelsberger, Alison Lukjanczuk, Lisa Mason, Lindsey May, Tanya McFalls, Valery Mead, Emily Miller, Joseph Miller III, Ashley O'Gara, Mary Plytage, Amy Reifsnnyder, Leah Rineer, Nicole Shambach, Cara Shellenberger, Leanne Stoner, Danielle Swartz, Erin Sweeney, Kristen Sweigart, Melodie Wehry, Brett Wiest, Bryan Wiest, Jamie Willour, Heather Woodrow



Check out the BAHS Clubs! Biology Club

Biology Club kicked off the 2005-06 academic year with its first meeting. Serving as officers this year are: President, **Val VanCleaf**; Vice-President, **Becky Rugg**; Secretary, **Rachel Brous**; and Treasurer: **Joel Gyimesi**. **Dr. John Hranitz** serves as the faculty advisor. One item under discussion was a proposal to rename the Biology Club to the Biology and Allied Health Club in order to expand the club's membership beyond biology majors. The group also worked on a T-shirt design. Order forms will be available soon. The club plans to work with Quest to arrange a white water rafting trip. The Biology Club is invited to accompany the Vertebrate Zoology class on its weekend field trip in October to the Marine Science Consortium at Wallops Island, Virginia. The club is interested in recruiting members to create and update a web page that would contain an events calendar, club photos, and other relevant links. The group also expressed a desire to become more involved with the community and to explore future opportunities for community service. Meetings are planned for Tuesday, September 20 and Tuesday, October 4 at 5:00 p.m. in 178 Hartline Science Center. Please bring along your ideas for community service projects, trips, and any other activities that interest you. All are welcome!

Pre-Medicine Club

The Pre-Medicine Club will hold an organizational meeting on Thursday, September 22 at 6:00 p.m. in 178 Hartline Science Center. The purpose of the meeting is to elect officers and to plan for the coming year. The group welcomes any pre-professional student including those in pre-medicine, pre-optometry, pre-dentistry, pre-chiropractic, and pre-physician assistant. For more information contact **Nicole Dalessandro**. **Dr. Ardizzi** serves as the faculty advisor.

BUSTA

What is BUSTA? The Bloomsburg University Science Teachers Association, of course! The organization welcomes all science education majors including elementary education majors and secondary education majors specializing in biology, chemistry, physics, earth science and general science. **Charlene Feyers** and **Eric Weathers** are holding an organizational meeting on Wednesday, September 21 at 7:00 p.m. in 226 Kehr Union. Plans for the year will be discussed including the possibility of starting a high school science tutoring service. We hope to see you there!



News from the Pre-professional Committee

What is the pre-professional committee?

The BU pre-professional committee assists students in gaining admission to professional schools such as allopathic, osteopathic, podiatric, or veterinary medicine, as well as dentistry, optometry and chiropractic medicine. The committee's mission is to advise pre-professional students, assist students with the application process, evaluate student credentials, prepare committee recommendation letters, obtain resources for students relating to professional schools, and establish relationships with professional schools. The co-chairs of the committee are **Drs. Joseph Ardizzi** and **Mark Melnychuk** from BAHS. Other committee members include **Dr. Cindy Surmacz** (BAHS) and **Drs. Christopher Hallen** and **Toni Trumbo-Bell** from Chemistry. Students are encouraged to check the committee's website (<http://departments.bloomu.edu/biology/preprof.htm>) for announcements, current events, information on course selection, pre-professional test materials, and links to relevant web sites. Also, current information is displayed on the bulletin board outside room 106 HSC.

Where can I learn more about professional school?

An information session for all students interested in attending professional school will be held on Monday, October 10 at 6:30 p.m. in the Schweiker Room of Andruss library (immediately to your left when entering the library.) The session provides an opportunity to meet members of the pre-professional committee, to learn about the requirements for professional school, and to gain insights about the application and admissions process. **Refreshments will be served!**

Upcoming programs

A Regional Health Professions Conference will be held on Saturday October 8, 2005 at the University of Medicine and Dentistry of New Jersey, School of Osteopathic Medicine, 1 Medical Center Drive Stratford, NJ. Following opening sessions on *Communication in Healthcare*, students will have the opportunity to meet with admissions representatives from several health professional schools including Drexel University College of Medicine, Jefferson Medical College, Philadelphia College of Osteopathic Medicine, Temple University (Dentistry, and Podiatric Medicine), University of Medicine and Dentistry of New Jersey, and the University of Pennsylvania (Medicine.) The program will also include a Health Information Fair and a tour of the facilities at the University of Medicine and Dentistry of New Jersey. Registration is \$10 and is due September 29. For more information see <http://som.umdj.edu> To register, please contact Dr. Ardizzi.

Campus Visit

Mr. David Martin, a student recruiter with the Temple University School of Podiatric Medicine, will discuss careers and opportunities in podiatric medicine on Tuesday, October 18 at 6:30 p.m. in 178 Hartline. For more information contact **Dr. Melnychuk**.

PRACTICE! PRACTICE! PRACTICE!

The Pre-professional Committee will offer its annual Mock MCAT exam on **Saturday, November 12, 2005 from 8 a.m. to 3 p.m.** MCAT, a test developed by the Association of Medical Colleges, is the standardized test required for medical school admission. Although dental and optometry schools have their own specialized standard examinations, pre-dental and pre-optometry students would benefit by this opportunity to gain exposure to the standardized test experience. The MCAT assesses mastery in biology, general and organic chemistry, physics, scientific problem solving, critical thinking, and writing skills. Scores are provided in four categories: biological science, critical thinking, physical sciences, and writing. By taking a practice MCAT you will become familiar with the length and format of the exam and the depth and breadth of its questions. After receiving your "practice scores" you will get a better understanding of the content areas that require further study. The practice MCAT is recommended for sophomores, juniors, or seniors. Freshmen should probably wait until they have had more college science courses. **To register for the practice MCAT, email Dr. Hallen at challen@bloomu.edu by November 8. On test day, bring a lunch with you, but leave your calculators, cell phones, and backpacks at home.**

Congratulations!

Nicole Dalessandro (senior, B.S. Biology) was selected to attend Temple University's one-week workshop in podiatry this summer. Nicole had the opportunity to explore the field of podiatry through hands-on labs, shadowing experiences, case studies, and seminars.

Michael Kaminsky (B.S. Biology, 2005) was accepted to the Philadelphia College of Osteopathic Medicine and has recently begun his first year of medical school.



ALLIED HEALTH NEWS

BU Students Head to Clinical

Clinical Lab Science: Amanda Ambrose, Robert Packer/Guthrie Medical Center; Christine Dry and Daniel Ehrat, York Hospital/Wellspan; Paul Kremser, Susquehanna Health System; Rulla Oweis, Graduate Hospital, Philadelphia; and Jeffrey Fay, Thomas Jefferson University.

Medical Imaging: The following students have begun clinical programs at Johns Hopkins Hospital: Donald Lubrecht in Nuclear Medicine; Robert Blasko, Megan Everly, Megan Saner, and Eileen Wolf in Radiography; and Lindsey Grove and Kelly Pendergast in Sonography. The following students have recently enrolled in Geisinger Medical Center's Radiology program: Kristy Bennage, Kelly Crawford, Keri Garton, Melissa Gerst, Natalie Livelsberger, Mariah Matrician, Joseph Miller, Dawn Moyer, Lisa Sabia, Melodie Wehry, and Susan Christman. The sonography program at College Misericordia is the clinical site for Kristy Clasen, Signe Klinger, Lindsey Solovey, and Siobhan Glover. Greta Gore, Edward Hance, Jennifer Heiland, Richard Carey, and Jennifer Phillips are in the radiology program at Abington Memorial. The radiography program at Wilkes-Barre General Hospital is the clinical site of Rachel Adu-Frimpong, Lindsey May, and Mary Plytate. The following students have begun clinical programs at Thomas Jefferson University: Alison Lukjanczuk (Radiology and Radiation Therapy); Erin Sweeney (Radiology and Sonography); and Kristen Sweigart (Sonography and Computed Tomography). The following students are in clinical radiology programs: Melissa Crawford (University of Pittsburgh Medical Center); Emily Miller (Reading Hospital); Lauren Foley (Drexel/Hahnemann); Rachyl Yanuskiewicz (St. Joseph's Medical Center, Reading); Miranda Snarburg (WCA Hospital, Jamestown, NY); and Heather Angell (York Hospital/Wellspan). Enrolled in sonography programs are Kristen Check (Northampton Community College) and Mary Shuman (Wyoming Valley Hospital). Chaz Loblein is pursuing nuclear medicine at Rhode Island Hospital, Providence, RI. We wish you all a productive and successful clinical experience. Stay in touch!



New Internships for Medical Imaging Students

Internship experiences for Medical Imaging students have been established at Bloomsburg Hospital and Geisinger Medical Center (in Danville, PA). Interns at Bloomsburg Hospital may observe in the areas of nuclear medicine and MRI. Interns at Geisinger Medical Center may observe all imaging areas and meet both a radiologist and a hospital supervisor. Internships were initially offered during summer 2005 after selecting interns from a competitive pool of applicants. It was great to see the interns' excitement grow as they gained more knowledge of their chosen career!

Applicants must write an essay describing their interest in a medical imaging career and their motivation for completing an internship. Once selected, interns will visit their internship mentor and write an internship proposal. Interns spend about one-half to two-thirds of the semester visiting the internship site under the guidance of the on-site supervisor and the remainder of the semester writing a 10-20 page internship report. Please contact Dr. Kipe-Nolt or Dr. Hranitz if you are interested. Applications for future medical imaging internships can be obtained from Dr. Hranitz. The deadline to submit spring semester applications for the Bloomsburg Hospital and Geisinger Medical Center internships is the last day of midterm exams.



Fall into Health Program Series

The Health Sciences Learning Community will sponsor a series of programs on health-related topics. All programs will be held at 9:00 p.m. in the Columbia Fireside Lounge and free refreshments will be served. The next program will be presented by our own Dr. Kris Brubaker on Monday, October 17. She will discuss *Cancer Metastasis: An overview with an emphasis on prostate and bone*. Cancer can spread beyond its initial site and invade other parts of the body, a process called metastasis. Bone is a common site of metastasis for a number of different cancers, including lung, breast, prostate, kidney, thyroid, and multiple myeloma. Dr. Brubaker will discuss several relevant cancer topics such as what genes are commonly mutated in cancers, how cancers grow/survive and how does cancer break free from the initial site. She will then focus on some specific aspects of prostate cancer and her research studies on why it targets bone. Other upcoming programs in the series are slated for Wednesday, November 9 on *Managing/Reducing Test Anxiety* by the Nursing Department and Wednesday, November 30 on topics in Exercise Science. Everyone is welcome to attend!



TB tests

A tuberculosis test is required for all students who will student teach or work directly with clients in hospitals or medical clinics. The test will be administered by the Student Health Center in 340 Kehr Union (across from the Information Desk.) The next clinic is on Monday, October 17 between 1:00 and 5:00 p.m. with results read Wednesday, October 19 between 1:00 to 5:00 p.m. The test costs \$10. No appointment is necessary.

NEWS From GEISINGER

Graduation

Eleven BU students received diplomas at recent commencement exercises at the Geisinger Medical Center School of Radiologic Technology: **Michelle Blandina, Gina Bolinsky, Kelly Boslego, Carrie Huffman, Amanda Lukas, Corinne Manny, Awawu Osunde, Tiffany Schnure, David Simcox, and Faith Warner**. Remarks were provided by Vincent Maier, MS, DABR, Medical Physicist, program director Kenneth Roszel, M.S., RT-R, and Dr. Cathy Woomert, radiologist. The class speaker was **Gina Bolinsky**. Attending from BU were **Drs. Kipe-Nolt and Surmacz** and **Vice-President Herring**.



Say Cheese!

First year radiology students at Geisinger Medical Center take time from their busy clinical schedule to pose for a picture. Front Row: **Kelly Crawford, Mariah Matrician, Lisa Sabia, Dawn Moyer**. Second row: **Melissa Gerst, Natalie Livelsberger, Melodie Wehry, Keri Garton, Joseph Miller, Kristy Bennage**.



X-Ray



Upcoming visits

A number of directors and admissions officers of clinical programs will visit Bloomsburg University during the first week of October to discuss their professions and their clinical programs. All students interested in allied health careers are invited to learn more about these professions by attending any of the sessions below.

Geisinger Medical Center, School of Radiologic Technology. Mr. Kenneth Roszel, M.S., RT-R, will present information on Geisinger's clinical program in radiologic technology on Tuesday, October 4, 2005 at 7:00 p.m. in 86 Hartline Science Center.

Thomas Jefferson University, College of Health Professions. Mr. Don Sharples, Director of Admissions, will present information on TJU's programs in physical therapy and occupational therapy on Thursday, October 6, 2005 at 7:00 p.m. in 86 Hartline Science Center.

Robert Packer/Guthrie Medical Center. Mr. Brian Spezialetti will present information on careers in clinical lab science on Wednesday, October 5, 2005 at 7:00 p.m. in 79 Hartline Science Center.

Wyoming Valley Hospital. Information will be presented on sonography. Date and time to be announced.



Allied Health Scholarship: Celebrating "A-HA!" Moments

Have you had an "A-HA!" moment? You know, those times when you experience that moment of clarity and understanding when wrestling with a difficult concept. Here is an opportunity to share your "A-HA!" moment and win a \$1,000 scholarship. Benjamin Cummings, a publishing company, is awarding five \$1,000 scholarships to allied health students. To be eligible, you must currently be taking Anatomy and Physiology or Microbiology or have done so in the past two years. A poster describing the competition is on the bulletin board outside 162 Hartline Science Center. As part of the scholarship application you must submit 1) a brief description of your "A-HA!" moment and the concept or process that you mastered and 2) an illustration or demonstration of your moment in a creative format (powerpoint slide, song, collage, sketch, visual analogy, etc.). Application forms may be obtained from **Dr. Surmacz**, 268 Hartline. Deadline is November 1, 2005.

BAHS Students Gain Hands-On Experience Internships

Internships are a great way to get on-the-job experience and earn credits at the same time! BAHS offers 50.490, Internship in Biology, to eligible juniors and seniors. While internships may vary from 3 – 15 credits, no more than 3 credits may be applied as biology electives. Internships may be paid employment or may be volunteer. To learn about internship opportunities, contact your academic advisor and visit the Internship Office at the Student Services Center (389-4678). A list of recent BAHS interns appears in the list below. Note the great variety of settings and diverse opportunities that these experiences provide.

Nathan Archey, Rachel Boring, Kelley Laughlin, and Susan Heckman participated in Geisinger's internship in medical imaging.

Malisa Bishop served as an intern at Memorial Hospital in Towanda, PA.

Eileen Garvey is interning with a physician assistant at Geisinger Medical Center.

Shannon Hauer did an internship in Bald Eagle/Wildlife Interpretation at Knoebel's Grove Amusement Resort. Shannon fielded questions about bald eagle natural history and gave frequent presentations to the general public.

Robert Heim interned with a physician assistant in the emergency room at Pocono Medical Center.

Sheena Ravenel did an internship at Susquehanna Physical Therapy Associates.

Frank Sheaffer did an internship in the podiatry office of Dr. Jodi Kubicki. Frank observed several foot surgeries and learned first-hand about the podiatry profession.

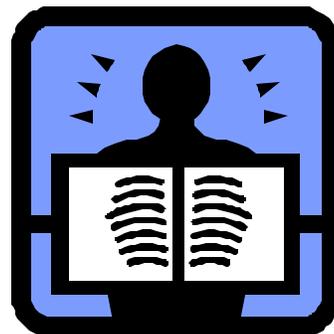
Pat Spadaro and Jamie Willour are doing/did an internship at the Bloomsburg Hospital in Nuclear Medicine.

Kevin Wascavage recently completed an internship in sonography at Shamokin Hospital.

Ashley Welikonich worked at the Smithsonian Institution International Center in Washington, DC on the Global Species Address Book Program. She researched biodiversity of protected areas in Tanzania and entered species lists into a publicly accessible database.

Leanne Yeagley was a summer intern at Weis Research Center, Geisinger Clinic, Danville, PA. Leanne helped to design, implement, and evaluate three week-long science education programs for area children. The programs *Fun With Science* and *Fun with DNA* provided hands-on science experiences for 60 children ranging from grades 3 to 8. Leanne poses with some future scientists in the photo on the right. Also participating in the program were BAHS faculty **Drs. Carl Hansen, George Davis, and Cindy Surmacz**.

Linda Yeany worked at Zoo America, Hershey, PA where she gained experience with animal care, nutrition, and behavior.



Student Teaching

Several students have headed into area classrooms for student teaching in biology. The students and their placements are: **Eric Anderson** (Warrior Run High School; co-op teacher is BU masters candidate, **Patrice Harringer**); **Sharon Ertel** (Muncy Jr/Sr High Schools; co-op teachers are BAHS alumni **Mark Temons** and **Eric Mitcheltree**); and **Bryan Horvat** (Berwick Middle and High Schools).



Career Nights are Coming!

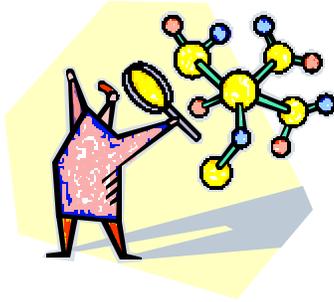
What can you do with your biology or allied health degree? Come learn about educational and career opportunities in biology and allied health by attending our upcoming career sessions. The programs run each evening from Monday, October 3 to Thursday, October 6 from 7:00 to 8:30 p.m. Sessions will be held in 86 Hartline with the exception of those on Wednesday, October 5 which will take place in 79 Hartline. Featured will be speakers representing a broad array of careers in biology and allied health science. Look for posters and announcements listing specific speakers. Everyone is welcome! Freshmen are especially encouraged to attend.

Check out these two great websites for more information on careers in biology and allied health sciences:

<http://facweb.furman.edu/~jsnyder/careers/gencareer.html>

<http://www.emporia.edu/biosci/carebiol.htm>

Student Research



The research labs in Hartline are certainly busy this semester! The following students are working on research projects either as part of Research in Biology I or II, Honors Independent Study I or II, or as volunteers to gain valuable experience. We look forward to learning the results of their studies at various local or state meetings.

Cassie Clay is characterizing the expression of osteoprotegerin (OPG) downstream of bone morphogenetic protein (BMP) signaling in prostate cancer cells. BMPs are involved in organ development and bone formation. Interestingly, prostate cancer cells express BMPs and have a proclivity for metastasizing to bone. OPG inhibits bone resorption and stimulates bone formation. The research team is interested in determining whether BMP signaling regulates OPG expression through a transcription factor called Runx2. Cassie will use a dominant negative construct of Runx2 which knocks out normal function to see if OPG expression is ablated after BMP treatment. Dr. Brubaker is Cassie's mentor in Research in Biology I.

Joel Gyimesi is currently reading background literature for his project. Later this semester Joel will compare HSP70 levels in minnows from Catawissa Creek and other watersheds to investigate whether acid mine drainage is stressful to the species in Catawissa Creek. Dr. Hranitz is Joel's mentor.

Laura Halon is investigating the expression of two genes related to the immune system and stress response in several thermotolerant bee species. The first gene is TotA, whose product is secreted by fat bodies after a stress challenge such as heat shock or bacterial infection. The second gene is Daf-16, which increases during stress. Interestingly, when Daf-16 is over-expressed, it increases longevity. We are interested in determining whether these genes play a role in the survival and ability to reproduce in areas where most bee species would die. Laura is enrolled in Research in Biology I and Dr. Brubaker is her mentor.

Jennifer Intelicato-Young will investigate the effects of microbial inoculants on manure digestion and odor. Jennifer is enrolled in Research in Biology I and Dr. Kipe-Nolt is her mentor.

Krissie Tofts will evaluate how obesity and smoking affect the reproductive success of various age groups of women at Geisinger's Fertility Center. It is hypothesized that both factors will have a more pronounced deleterious effect on infertility as age increases. Krissie is continuing this project in Honors Independent Study II under the guidance of Dr. Surmacz.

Andy Troutman is investigating the toxicity of several road de-icers on the blackworm *Lumbriculus variegatus*. Andy is working with several channel blockers to understand the mechanisms underlying the detrimental effects of several salts on pulse rate. Andy is a research volunteer working with Dr. Surmacz.

Danielle Wartko is genotyping collared lizards (*Crotaphytus collaris*) to study the correlation between heterozygosity and fitness. She will isolate DNA from blood, perform gel electrophoresis, amplify DNA by PCR, and prepare samples for genotyping on a DNA sequencer. Danielle is a paid research assistant on Dr. Hranitz's grant.

Ashley Yelinek will investigate how the stretch cords used in training swimmers affect actual swimming performance. Ashley will measure the swimmers' heart rate, stroke count, and the maximum time that various loads can be maintained on the stretch cords during training sessions. She will then determine if these parameters are correlated to the swimmers' times and distance per stroke during races. Ashley is a member of BU's swim team and is a scholar athlete. She is conducting this study to fulfill the requirements of Honors Independent Study in Biology I. Dr. Surmacz is her mentor. This work is in collaboration with Drs. Rawson and Mookerjee of the Department of Exercise Science and the BU men's and women's swim team.



Student Research Funds Available

Applications are now available for the Kozloff Undergraduate Research Awards. These funds support student research projects that are conducted under the direction of a faculty mentor. Applications may be obtained from the Office of Research and Sponsored Programs and are due on October 14, 2005 at 4:00 p.m.

Taking a Research Break!

Limnology students take a dip after sampling Loyalsock Creek during a 24 hour survey of the stream. Pictured left to right are: **Robin Tracey, Jennifer Carter, Sabrina Ziemer, John Shirvinski, and Stephanie Benfer.**





BAHS UPDATES

A Sampling of Faculty Scholarship

Dr. Clay Corbin has two papers in press. The first is a chapter coauthored by L.M. McBrayer and is entitled “Patterns of head shape variation in lizards: Morphological correlates of foraging mode.” The chapter will appear in the book *Patterns and Paradigms in Lizard Foraging Ecology*, edited by S.M. Reilly, L.M. McBrayer, and D.B. Miles and published by Cambridge University Press. The second is an article coauthored with N.J. Cordeiro on “Gliding characteristics of Lord Derby’s anomalure (*Anomalurus derbianus*) in Tanzania” that will be published in the *African Journal of Ecology*.

Dr. George Chamuris has just published the third edition of his *Hiker’s Guide to the Trees, Shrubs, and Vines of Ricketts Glen State Park*. The guide introduces the reader to 79 species of woody plants that grow along the various hiking trails in this nearby park. The first edition of the guide was funded by an applied research grant from the PA State System of Higher Education. To view the internet version or to request a free paper copy, see <http://departments.bloomu.edu/biology/Ricketts/> Don’t hike without it!

Drs. Margaret Till and **Cindy Surmacz** have recently published a paper with colleagues in the Department of Exercise Science, Dr. Swapan Mookerjee and graduate student Brandy Weller. The paper, “Validation of an equation for predicting energy cost of arm ergometry in women,” appeared in the July 2005 issue of the *European Journal of Applied Physiology*.

Dr. Carl Hansen was promoted from assistant to associate professor.

Meet our office and support staff

Our main department office is located in 125 Hartline Science Center (the room with the large picture window!) **Ms. Vicki Beishline** is the department secretary. She has been at the University for 25 years and holds a bachelor’s degree from BU in Office Administration. Ms. Beishline attended a women’s conference this past summer in New Orleans where she attended workshops on rising health care costs, dwindling safety net programs, and President Bush’s proposed social security plan. She left New Orleans the same day Hurricane Dennis hit the shoreline!

Assisting in the office are student secretaries **Kristi Brinckman**, **Maxine Ferrante**, and **Grace Seda**. Laboratory assistants include **Stephanie Findley**, **Jennifer Intelicato-Young**, **Brian Young**, **Michelle Sienkiewicz**, **Laura Halon**, and **Elena Insinga-Krick**. Welcome to all new and returning staff!

Faculty re-join BAHS for Fall Semester

Dr. Zareen Amin is teaching Human Biology, Human Sexuality, and Anatomy and Physiology I lab this semester. Dr. Amin holds a B.Sc with Honors in Biochemistry & Nutrition from the University of Dhaka and a Bachelor of Medicine and Bachelor of Surgery (M.B.B.S.) degree from Dhaka Medical College, Bangladesh. She also earned a master’s in Health Education from Kent State University. Dr. Amin worked as Project Manager with the American School Health Association under Cleveland Clinic Foundation and the U.S. Dept of Education. Dr. Amin and her husband Shah (a member of the Department of Geography and Geosciences) have three children. Dr. Amin is involved with various programs at Central Columbia School District and is an active member of the Bangladesh Association of Bloomsburg Area.

Dr. George Croll joins us this semester to teach a section of Concepts in Biology I lab. Dr. Croll has a BS from Bloomsburg (Secondary Education, General Science), a MS (Biology) from Bloomsburg, and a PhD from the University of Alabama at Birmingham. He has taught Secondary Education Science for 17 years and has recently taught Marine Biology at the Marine Science Consortium at Wallops Island. Dr. Croll enjoys bicycling, SCUBA diving, travel, cross-country skiing, and rejuvenating everything from cars to houses.

Mrs. Melinda Diltz is back again this semester to teach Human Biology and Anatomy and Physiology Lab. She holds a master’s degree in biology from Millersville University and a bachelor’s in biology degree from Bloomsburg University. She and her husband Mike have two sons. Mrs. Diltz serves as a Cub Scout leader and a Boy Scout Committee member. In her spare time she enjoys gardening, camping, fishing, and making stained glass windows.

BAHS Research

A team of BAHS researchers is collaborating on a multi-faceted project examining the effectiveness of a pollution treatment system being constructed at the headwaters of Catawissa Creek in Schuylkill County (see photo at right). This system will treat 8,000 gallons of acidic mine drainage (AMD) per minute. AMD is entering the stream through an abandoned mine tunnel. It renders the stream almost lifeless from the headwaters near Hazleton to its confluence with the Susquehanna River in Catawissa.

AMD from abandoned coal mines is, by far, the most widespread human-induced disturbance to streams in Pennsylvania.

Over 3,000 stream miles in this state are severely degraded by this form of pollution. Streams that receive AMD generally do not support abundant and diverse assemblages of fish, invertebrates, algae, and microorganisms. AMD is created when pyrite, associated with coal seams, is exposed to water and oxygen. A series of subsequent chemical reactions results in high acidity ($\text{pH} < 4$) and often high concentrations of dissolved heavy metals such as aluminum. AMD is most commonly produced when water exits abandoned deep mines through drainage tunnels that were originally drilled from the mine into lower elevation stream valleys. Fortunately, treatment systems have begun to be deployed throughout the state in an effort to lessen the effects of AMD. Although there are a variety of methods for treating AMD, most involve passing AMD water through a bed of limestone to neutralize the acid and then allowing the heavy metals to settle in a constructed pond or wetland before discharging the water into the stream.

The treatment system that is being constructed will be the largest treatment system of its type ever built in Pennsylvania and probably the world. It is expected to dramatically improve conditions for aquatic life throughout the entire 40 mile stretch from headwaters to mouth of Catawissa Creek.

The Bloomsburg University research team will monitor ecosystem function, levels of physiological stress in aquatic fauna such as fish, and use of the adjacent riparian zone by vertebrates, such as birds and bats, along Catawissa Creek both before and after this treatment system goes online. **Dr. Rier** will focus his efforts at the bottom of the food chain, examining important ecosystem processes such as nutrient dynamics. **Roger Scull**, an undergraduate researcher, is currently enumerating aquatic macroinvertebrates. **Dr. Corbin** is looking for changes in the bird and bat communities that utilize aquatic insects and fish as a food source. **Dr. Hranitz** will focus on the amount of physiological stress experienced by fish and invertebrates inhabiting the stream as it recovers. If anyone is interested in working on this project, please contact Drs. Rier, Corbin or Hranitz.



Dr. Brubaker spent part of her summer working on several projects in Dr. Vessella's lab at the University of Washington in Seattle. The first project was studying the overlap of *Wnt* signaling and androgen receptor signaling in prostate cancer cells. *Wnt* signaling is associated with cancer progression and prostate cells use androgens for differentiation and survival. There is a kinase called NLK which phosphorylates various proteins and inhibits their functions. It appears that NLK down-regulates androgen signaling and increases Wnt signaling. She also examined the effects of *Runx2* on androgen signaling in prostate cancer cells. *Runx2* over-expression appears to inhibit androgen signaling, but it is not known exactly how. Additionally, she completed a study on the effects of zoledronic acid (ZA, an inhibitor of bone resorption) and docetaxel (chemotherapy agent) on a prostate cancer bone metastasis animal model. Interestingly, sub-lethal doses of ZA and docetaxel together inhibited tumor growth in bone. This study is important because there are currently several clinical trials on humans using these two agents. The animal studies are important because we can analyze the tumor/bone samples directly, where patient samples are unavailable.



While in Seattle, Dr. Brubaker had the opportunity to visit Mt. St. Helens, where on average there is an earthquake everyday (usually about a 3.1 on the Richter scale.) See photo on left. She also trekked around Denali National Park in Alaska. Yes, that is Dr. Brubaker on an ATV trip!

Dr. B.

The Reading Lamp: Current Topics in Evolutionary Biology

George Chamuris, Professor



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

More Evidence for Sympatric Speciation

The mechanisms by which new species are formed, speciation, constitute an active area of biological research. Speciation as a process represents the fundamental evolutionary divergence event in the radiation of all living things. Current speciation theory views this process as operating in three geographical fields.

Allopatry, where divergent subpopulations are separated by a barrier, specifies unlikely gene flow across the barrier. Allopatric speciation appears to be the most common mode of speciation and has the best documentation. Parapatry, where contiguous (sub) populations occur, for example, along a sharp habitat boundary, is probably more limited in occurrence. Gene flow would be limited in parapatry as well.

In sympatry, subpopulations (or populations or species) occupy the same area and are well within each other's dispersal zone. Sympatric speciation is controversial and has the least amount of empirical support. It is difficult to imagine how reproductive isolation could arise within a mutual dispersal area – gene flow seems likely. Aside from allopolyploidy (where otherwise sterile interspecific hybrids overcome reproductive barriers by doubling their chromosome numbers), promising cases of sympatric speciation are currently limited to plant host-specific insects and fungi.

In fungi, possible cases of sympatric speciation are seen where plant host-specific parasites (e.g. rust fungi and powdery mildew fungi) or substratum-specific saprotrophs are most likely to mate and produce viable, fertile offspring on the common host. In many cases, the host-specific species are cryptic – genetically discrete and reproductively isolated, but morphologically indistinguishable. I have studied a species complex of wood-inhabiting fungi, *Peniophora cinerea*, where allopatric speciation produced European and North American species, and in Europe substratum specialization spawned two cryptic, reproductively isolated sympatric species (Chamuris, 1991).

In insects, there are four good examples of sympatric speciation in insects, and one new example described below. Perhaps the best-known example is that of the apple-maggot fly *Rhagoletis pomonella*, from which the hawthorn-associated ancestral population is speciating into at least two new species – one on cherries and one on apples (e.g. Linn et al., 2004). Another example is the goldenrod-associated fly *Eurosta solidaginis*, which has diverged into two host races associated with different goldenrod species (Craig et al., 1994). A third case is that of the larch bud moth *Zeiraphera diniana*, which is diverging into larch- and pine-feeding species (Emelianov et al., 1995). The fourth case is that of the elliptical goldenrod gall moth, *Gnorimoschema gallaesolidaginis*, which is splitting into two species based on different goldenrod host species (Nason et al., 2002).

In the February issue of the journal *Evolution*, Bucknell University researchers documented sympatric speciation via goldenrod host race-formation within the tumbling flower beetle species *Mordellistena convicta* (Blair et al., 2005). Using various genetic (e.g. allele frequency data) and statistical methods, the authors revealed six sympatric, cryptic species morphologically assigned to *M. convicta*. The cryptic species were not only host-related, but in some cases, showed association with galled vs. nongalled stems.

As more empirical evidence accumulates in support of sympatric speciation, at least involving host-race formation in plant-associated insects and fungi, the importance of this mode of speciation will gain increasing acceptance.

References:

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News from the Biotechnology Option

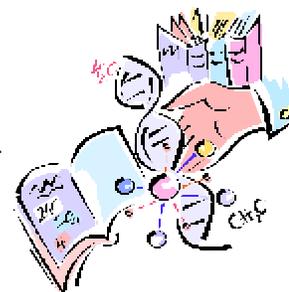
New Course Offering: *Bioinformatics and Genomic Analysis* (50.435, 50.535).

Students in this new course will learn how to understand and manipulate genomic sequence information by extracting meaningful information about genes, gene structure, gene regulation, gene evolution and proteomics. Bioinformatics will be used to identify coding, non-coding, and regulatory sequences in a variety of bacterial, plant, and animal species. The course will focus on the kinds of information that can be extracted from large DNA sequences in order to understand gene function and protein evolution. Particular emphasis will be placed on understanding our genetic predisposition(s) to disease and the relationship of the human genome to those of other organisms.

The Human Genome Project has led to a revolution in our capability to generate genetic data. Now that the human genome and the genomes of many model organisms have been sequenced, biologists are confronted with analyzing the information content of genomes. Currently, less than one percent of the sequence information is understood. DNA sequence data must be analyzed for the presence of genes and their regulatory regions (genomics), and the genes analyzed in terms of the RNAs and proteins they encode (proteomics). Analysis of genomic and proteomic data is at the forefront of almost all current biological and medical investigative research, and it is an area in which biology students should be knowledgeable. Finally, it is a driving force in the applied fields of molecular engineering, drug design and molecular medicine.

The goals of the course include:

- becoming familiar with the application and use of bioinformatics in genomic analysis
- understanding how to acquire and analyze genomic and proteomic sequence data.
- understanding how to extract information from the Human Genome Project databases.
- understanding human genomic variation and its implication for the evolution of genomes.
- understanding genomic expression with respect to DNA microarrays and proteomics.
- understanding gene expression from the whole genome perspective.
- understanding the impact of genomic analysis on classical genetics and modern biology.
- acquiring practical experience using web-based bioinformatics analysis packages.



New Equipment: BAHS is pleased to announce the acquisition of three new pieces of major equipment for the Biotechnology Option. We have a brand new Beckman Capillary DNA Sequencer obtained through matching funds Genomics Education Grant from Beckman-Coulter Corporation and Bloomsburg University. This instrument provides BU with state-of-the-art DNA sequencing technology. We have also purchased a Beckman Table Top Ultracentrifuge that allows us to rapidly isolate cell membranes and organelles. Finally, we have an Alpha-Innotech ChemiImager for direct imaging and quantification of chemiluminescent reporter and detection procedures. The ChemiImager was obtained through a National Science Foundation-Bloomsburg University matching funds grant.



Communication

Do you know Lily Tomlin? Do you know her character Ernestine the Switchboard Operator? If not, you should try to find some old video clips of Lily Tomlin as Ernestine. Ernestine knew the importance of communication. In a department as big as BAHS it can be easy to get lost; more likely, it can be difficult to be found. It is the department's intention, that of your advisor, your faculty, and Ms. Beishline, our secretary, not to let you get lost. But to accomplish this anti-Houdini act, we need your help.

TWO things are critical to your communicating with us: first, updating your personal address information at the Registrar's Office. Each time your local (or "while I'm at school") or permanent ("where you call home") address changes, you should obtain a Biographical Data Change Form from the Registrar's Office (in the Student Services Center). (This is also the form you use if you want to change your name, for example to Mickey Mouse (this does require official documentation, however).) Keeping your addresses and telephone numbers up-to-date means that we can locate you quickly, e.g. if the status of a course you requested changes or the Pennsylvania Lottery calls to say that you have won the Powerball jackpot.

The second thing is to check your university e-mail regularly OR if you prefer to use another e-mail address, forward your Bloomu e-mail to that address. The simple steps below will allow you to forward you Bloom e-mail to another account.

Step 1: Go to <http://www.bloomu.edu/index.php>, under Current Students, click E-mail (MyMail). If you do not know your userid and password, log on to STINF and click on Biographical. This will give you your userid and default password (it will not include any changes you have made in your password).

Step 2: After you have logged into student e-mail, click on the Options and Styles Drop Box.

Step 3: Click on Forwarding.

Step 4: Type in your personal e-mail address. Messages will be forwarded to that address.

THE BU MASTERS PROGRAM

The Department of Biological and Allied Health Sciences offers both a Masters of Science degree (M.S.) and a Master of Education (M.Ed.) in Biology. Our master's program in general biology provides opportunities for course work and research at the supraorganismal, organismal, cellular, and molecular levels of biology. The program prepares students for admission to doctoral programs or professional schools and also enhances the knowledge and experience of high school biology teachers. For more information, contact the graduate program coordinator, **Dr. Carl Hansen** (270 HSC).

Graduate Student News

WELCOME: The Department of Biological and Allied Health Sciences wishes to extend a warm welcome to our new graduate students, **Jennifer Carter** and **Jithender Gundawar**.

CONGRATULATIONS! **Jonathan Shirvinski** has recently passed his graduate candidacy exam and is planning to research linkages between fitness and asthma occurrence.

GRADUATE STUDENT UPDATES:

Stephanie Benfer has been researching nutrient uptake in local streams with Dr. Rier. Stephanie is a graduate assistant assigned to Concepts in Biology.

Jennifer Carter has been looking into ecology projects with Dr. Rier. Jennifer is a graduate assistant assigned to Anatomy and Physiology.

Jithender Gundawar – Jithender (Jit, pronounced Jeet) is a new graduate student who has come to us all the way from India, via Pittsburgh, PA. He is interested in molecular biology and bioinformatics. He is settling into his courses, preparing for his candidacy exams, and learning skills he will need for his master's thesis research project on heat shock protein genes in solitary bees native to California. Jit is a graduate assistant and is assigned to Cell Biology and Integrated Physiology lab.

Michelle Pettite is currently analyzing results of her directed study and preparing her research paper. She investigated the effects of an herbicide, atrazine, on the growth and development of frog tadpoles. She plans to present her results to the department this semester. Dr. Hranitz is Michelle's mentor.

Stacy Rogers has been actively gathering data on the ectoparasite loads of barn swallow nests under the watchful eyes of Drs. Wassmer and Corbin. Stacy is investigating whether the parasite load is dependent on the density of the barn swallows.



Journal Club

What is a journal club? A journal club is an opportunity to get together informally with fellow students and faculty to discuss late-breaking research articles on the cutting edge of biology, while eating munchies! A graduate student or faculty member leads a discussion of a recent paper from the biological literature. The papers under discussion can be downloaded from <http://facstaff.bloomu.edu/ccorbin>

Journal Club meets on selected Fridays at 3 p.m. in the Biological and Allied Health Sciences Seminar Room, 178 Hartline Science Center. Upcoming journal club dates, speakers, and topics are outlined in the chart below. For more information, contact Dr. Corbin at X4134 or ccorbin@bloomu.edu Everyone is invited! We hope to see you there!

Biological and Allied Health Sciences Journal Club, Fall Semester 2005 Schedule

All sessions at 3 p.m. in 178 Hartline Science Center.

Date	Speaker	Topic
Friday, Sept. 30	Dr. Brubaker	Class V lipid rafting
Friday, Oct. 7	Dr. Wassmer	Wassmer, G.T., Cain, W., and Paige T.L. 1996. "Photoperiodic regulation of hemolymph protein in the woodroach <i>Parcoblatta pennsylvanica</i> " <i>J. Insect Biology</i> 42:851
Friday, Oct. 28	Dr. Hranitz	New uses for old phylogenies: character mapping and evolutionary hypotheses
Friday, Nov. 11	Dr. Rier	A Midsummer's Dry Stream, Act 1: Using measurement of ecosystem function to assess stream health
Friday, Nov. 18	Stephanie Benfer	A Midsummer's Dry Stream, Act 2: Puck and Robin measure uptake velocity
Friday, Dec. 2	Stacy Rogers	Sex, lice, and videotapes: you have cuddly parasites in your barn.