



BioSynthesis

Volume 2, Issue 4 (September 2003)

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

Fall Semester Dates & Special Events

SEPT 29: Pre-Professional Student Orientation, 7 p.m. Schweiker Room, Andruss Library; Career Night, 7 p.m., 83 HSC; BU Science Teachers Association Meeting, 7 p.m., Kehr
SEPT 30: Career Night, 7 p.m., 83 HSC
OCT 1: Career Night, 7 p.m., 83 HSC
OCT 2: Career Night, 7 p.m., 83 HSC
OCT 3: Trip to Open House at Philadelphia College of Osteopathic Medicine
OCT 10: Fall Weekend, No Classes
OCT 13: BU Science Teachers Association Meeting, 7 p.m., Kehr
NOV 27: Deadline: Undergraduate Research Proposals



Look what's inside:

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Welcome to a new Academic Year!

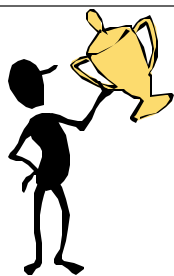
Welcome to the Department of Biological and Allied Health Sciences, a place where there is never a dull moment! We are an active, diverse, and growing department. We are delighted that you are here. Welcome to all new freshman, transfer students, and returning students. We are eager to get to know you and we are looking forward to working with you this academic year. Where do you go if you have questions or need some help? Each student has an academic advisor. To find out who yours is, a list of all students and their academic advisors is posted on the bulletin board directly across from the main department office (125 Hartline). A list of faculty office locations appears immediately to the right.

How can you find out what's going on? Two important sources of information that you should check periodically are: 1) the BU Biology/Allied Health Website (<http://departments.bloomu.edu/biology/>) and 2) the bulletin board near the elevator on the "green floor." In addition, we encourage you to read *Biosynthesis*, the department newsletter. In *Biosynthesis* you can learn about upcoming classes, discover research opportunities, celebrate the successes of BAHS students, hear the latest from department clubs, get updated on curricular changes, and find out more about your professors and classmates. We would love to feature your news. Are you doing an internship, conducting research, working at a job in your field, volunteering or job shadowing, or gaining acceptance to a clinical program, professional school, or graduate program? Let us know! We want to hear from you. To communicate your news, see Dr. Surmacz (105 Hartline Science Center) or drop her an e-mail at surmacz@bloomu.edu. Let us know what kind of information would be helpful to you to include in the newsletter. Thanks for reading and best wishes for a rewarding and successful semester!

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 any of the following career sessions. All sessions begin at 7 p.m. and are held in 83 Hartline. Many of the presenters are from affiliated schools and clinical sites or are BU alumni. Everyone is welcome! Freshmen are especially encouraged to attend.

- Monday, September 29** - Thomas Jefferson University, Jefferson College Health Professions (Physical Therapy, Occupational Therapy & other programs)
Reading Hospital School of Radiological Technology
- Tuesday, September 30** - Jennifer Orr, Water Quality Specialist, Susquehanna River Basin Commission
BU Career Development Center
- Wednesday, October 1** - Wade Jodun, Research Biologist, US Fish & Wildlife Service
Jim Hostetter, Biology teacher, Milton School District
- Thursday, October 2** - Robert Packer Hospital, Clinical Lab Science/Medical Technology
Dawn Seiders, 2nd year medical student, The Penn State College of Medicine in Hershey, PA



Salute to Academic Achievement!

Dean's List Spring Semester 2003 Biology and Allied Health Students

Congratulations to Biology and Allied Health Students who earned a GPA of 3.5 or greater and were named to the Dean's List. Great job!

B.S. Biology

Lindsay Baglini
Emily Bray
Kelly Bryant
Neema Chandel
Amy Christine
Nicole Dalesandro
Eileen Garvey
Amanda Hendricks
Brett Hensley
Eric Horstick
Jon Ivey
Michael Kaminsky
Rachel Kaskie
Rebecca Kehler
Chase Kelch
Lois Kirchner, Marine Science
Jennifer Kruk
Kimberly Kushner
Denise Lucas
Rachel Melnick

Angela Mignogna, Microbiology
Jennifer Miller
Katy Parise
Amy Risen
Andrea Schmidt
Amanda Schompert
Brett Siegfried, Biotechnology
Erica Smith
Eric Steffen
Kristine Tofts
Erica Weiskircher, Microbiology
Elisa Woodby
Evan Yost

Secondary Education Biology

Holly Binkley
David Hakim
Amy Miller
Leanne Yeagley

Medical Imaging

Jennifer Dillow
Stefanie Fyrmoeyer
Greta Gore
Jessica Horst
Alison Lukjanczuk
Stacey Minarsky
Elyce Moringg
Janelle Shaw
Tanaya Shughart
Brad Smith
Melanie Snyder
Justin Stevens
Ellen Walter
Patricia Welsh
Nicole Zimmerman

Pre-Occupational Therapy

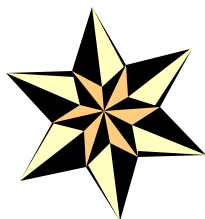
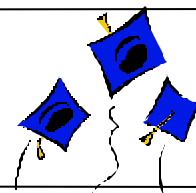
Elizabeth Muscarella

Hats off to the following BAHS August Graduates!

Christine Han
Matthew Hogg
Christina Lester

Karen Taylor
Christopher Urie

Lori Westbrook
Evan Yost



BAHS Student is Recipient of Phi Kappa Phi Freshman Award

Each fall, the interdisciplinary honor society Phi Kappa Phi presents awards to sophomores for outstanding academic performance during the freshman year. This year Phi Kappa Phi presented 19 awards at its annual luncheon and award ceremony. Included among them was **Rachel Kaskie**, a sophomore Biology and Secondary Education in Biology major. Congratulations Rachel and keep up the good work!

Student Teachers move to the head of the class!

Several BU secondary education in biology majors head to the classroom this fall in a new role—as student teachers. These students and their teaching placements are: **Kerry Eberhardt** (Mount Carmel), **Michael Rochford** (Central Columbia High School and Benton High School), **David Hakim** (Southern Columbia), and **Seth Reidenbach** (Berwick) They will be joined by several General Science majors who will also be teaching life science: **Brad Landis** (Parkland), **Lynn Bockorick** (Columbia Vo -Tech), **Ryan Luckman** (Columbia Vo-Tech), **Elizabeth Wagner** (Selinsgrove High School), and **Kurt Heller** (Southern Columbia). Several of these students will have the opportunity to participate in a special program funded by the National Science Foundation called *Collaborative for Excellence in Teacher Preparation (CETP)*. As part of this program, these student teachers will receive training in implementing inquiry-based learning practices in their classrooms. and will be visited on-site by both education faculty and faculty from the Department of Biological and Allied Health Sciences.





NEWS YOU CAN USE!

Deadline to withdraw from a class: Tuesday, November 4, 2003

Deadline to submit Undergraduate Research proposals to Dean's Office: Nov 27, 2003

NOTICE: Juniors and seniors who are contemplating the **Biotechnology Option**, please see Dr. George Davis about the course *Methods in Biotechnology*, to be offered this spring. If you are planning or thinking about this course, you need to write up a short research proposal by the end of this semester.

NEED HELP IN A BIOLOGY CLASS? Tutoring is available for many courses at University Tutorial Services, Student Services Center

NEED HELP IN CHEMISTRY? Tutoring is available from the Chemistry Club, Mondays at 8 p.m. in 238 HSC.

TO GRADUATE OR NOT TO GRADUATE?

For those planning to graduate in December 2003, have you applied to graduate yet? IF NOT, get to the Registrar's today (FRIDAY, SEPT 19 is the last day). Fill out a form and bring it to the department office, HSC 125.

Biology Courses: Spring Semester 2004

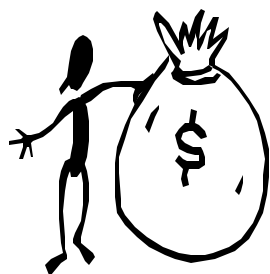
All biology core courses will be offered Spring 2004 as usual. One notable change, for this year only, Genetics (50.332) will move from its 11 a.m. MWF slot to the 12 noon slot. This will allow those Seniors taking Physics and needing Genetics to take both in the same semester. In the Fall 2004, Genetics will return to its 11 a.m. MWF time slot. Now that the Physics Department has placed the Introduction to Physics sequence in the 11 a.m. MWF time slot (as it was until ~5 years ago), you should plan to take Physics in your junior year and Genetics in your senior or vice versa.

To meet the physiology requirement, Animal Cell Physiology and Plant Physiology will be offered. Drs. Brubaker and Williams will teach these courses, respectively.

Sophomores should plan to take Writing in Biology during the spring semester.

The following biology electives will be offered Spring 2004: Human Genetics, Population Biology, Developmental Biology, Methods in Biotechnology, Medical Bacteriology, and Medical Mycology. Methods in Biotechnology has a prerequisite of Molecular Biology or Biochemistry 2. Also, students must submit a research proposal to the instructor, Dr Davis, and have it approved. Dr Jim Parsons will offer Special Topics in Medical Mycology; the prerequisites for this course are Microbiology (50.242); Medical Bacteriology (50.342) and Immunology (50.343) are recommended. Prerequisites for other courses may be found by checking the biology listings at <http://www.bloomu.edu/academic/courses/index.htm>. If you are interested in these courses, please sign-up early. Classes or sections with ten or fewer students are subject to cancellation.

Drs. Wassmer and Till will be offering two courses that meet the General Education Values, Ethics, and Responsible Decision Making Objective. Social Implications of Biology will be taught by Dr. Wassmer and Drugs in America by Dr Till.



Scholarships!

Allied Health Student Scholarship Competition

Would you like a \$1,000 scholarship? Benjamin Cummings, a publishing company, is awarding five \$1,000 scholarships to allied health students. To be eligible, you must be currently taking Anatomy & Physiology or Microbiology or have done so in the past two years. A poster describing the competition is on the bulletin board outside 114 Hartline. Application forms may be obtained from Dr. Surmacz, 105 Hartline. Deadline is October 31, 2003.

Sci Tech Scholarship

Scholarships are available for science and technology majors through a program called the New Economy Technology Scholarship (NETS). To be eligible for these \$3,000 scholarships you must be a PA resident, at least a sophomore, enrolled in a science or technology bachelor's degree program, have a 3.0 GPA, begin employment in PA in a related position within one-year of graduation (this may be deferred if you go to graduate school), complete a university approved internship or work experience in your field, and file a PELL grant and FAFSA form. Complete details may be obtained from the BU Financial Aid Office, 119 Student Services Center and at the website of the Pennsylvania Higher Education Assistance Agency (www.pheaa.org). Deadline: December 31, 2003.

Allied Health Updates

BU Students head to clinical



Medical Imaging

Twenty BU students have begun clinical training programs in Medical Imaging this semester. Students who have started at Johns Hopkins Hospital are **Tonyia Gandenberger** in Nuclear Medicine; **Mary Kate Johnson, Elizabeth Kase, Melanie Snyder, and Ellen Walter** in Radiography; and **Nicole Zimmerman, Kristin Gerhard, and Justin Stevens** in Sonography. **Diana Naugle and Liza Pepper** are enrolled at Lancaster General Hospital for Nuclear Medicine. The Radiography program at Reading Hospital is the clinical site for **Stephanie Frymoyer**. The following students have begun a clinical program in Radiography at Geisinger Medical Center: **Michelle Blandina, Gina Bolinski, Kelly Boslego, Carrie Huffman, Amanda Lukus, Corinne McCloskey, Tiffany Schnure, David Simcox, and Faith Warner**.



Clinical Lab Science

Loren Abbott and LeAnn Hess have begun clinical training in Clinical Lab Science/Medical Technology at Robert Packer/Guthrie Medical Center in Sayre, PA.

We wish them all a successful and rewarding clinical experience!

Fall Into Health Program Series

Dr. James Parson presented a program on *AIDS and Human Sexuality* to a packed house as part of the Fall into Health Program Series at Columbia Hall on Tuesday, September 16. The health series is sponsored by the Health Sciences Learning Community.



Student Research

The research labs in Hartline are busy this semester:

Justin Bixler has submitted an abstract with Dr. Wassmer and his colleagues from U.C. Davis entitled *Observations of the effects of light and gravity on biological rhythms in the desert beetle Cryptoglossa verrucosus*, to the Society for Integrative and Comparative Biology.

Emily Bray is examining methane production from hog manure digestion in her Honors Independent Study project. Dr. Kipe-Nolt is her mentor.

Michael Kaminsky and Eric Horstick are working with Dr. Hansen on cloning and sequencing G protein subunits from the killifish *Fundulus heteroclitus*. With these sequences and sequences from other fish, they will start a phylogenetic analysis of vertebrate G protein subunits. **Jennifer Kapusta** will also be working along with them in our molecular biology laboratory.

Inna Nechipurenko prepared a collared lizard (*Crotaphytus collaris*) genetic database for parentage analysis in order to compare the reproductive success of yearlings (not displaying territorial behavior) and adult males (displaying territorial behavior). Currently, Inna is helping to review and download mitochondrial DNA sequences for crustaceans closely related to pedunculate barnacles. She is working with Dr. Hranitz.

Katy Parise is studying heterozygosity - fitness correlations in a single cohort of collared lizards (*Crotaphytus collaris*) for her Honors Independent Study Project. Katy also is also a student researcher on Dr. Hranitz's Research and Disciplinary grant studying the population genetic structure of pedunculate barnacles from the equatorial Pacific Ocean.

Amy Risen is examining the effects of several compounds used as deicers or in agriculture on the biological responses of the aquatic oligochaete *Lumbriculus variegatus*. Dr. Surmacz is her mentor.

Jennifer Slodysko will be screening herbs for antimicrobial activity, using one eukaryotic dermatophyte and two prokaryotes - a Gram + and a Gram - bacterium. Dr. Parsons is her mentor.

Brianne Villano will be screening spices for antimicrobial activity, using one eukaryotic dermatophyte and two prokaryotes -- a Gram + and a Gram - bacterium. Her research mentor is Dr. Parsons.

Jordan Ward has returned to the Aquatics Laboratory to oversee animal care. The fish, crabs, starfish, tadpoles, etc. are delighted!



News from the Pre-professional Committee

The pre-professional committee at Bloomsburg University assists students in gaining admission to professional schools such as allopathic, osteopathic, podiatric, or veterinary medicine, dentistry, optometry and chiropractic. Among the committee's activities are advising pre-professional students, assisting students with the application process, evaluating student credentials, preparing committee recommendation letters, obtaining resources for students relating to professional schools, and establishing relationships with professional schools. The co-chairs of the committee are Drs. Joseph Ardizzi and Mark Melnychuk, Department of Biological and Allied Health Sciences. Other committee members include Dr. Cindy Surmacz from Biological and Allied Health Sciences and Drs. Christopher Hallen and Michael Berg from Chemistry. Students are encouraged to check the website of the pre-professional committee (<http://departments.bloomu.edu/biology/preprof.htm>) for announcements, current events, information on course selection, pre-professional test materials, and links to important web sites. This semester the committee will sponsor several events:

1) **ORIENTATION SESSION:** An information session for all students interested in attending professional school will be held on **Monday, September 29, 2003 at 7:00 p.m. in the Schweiker Room, Andruss 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!**

2) **PRACTICE MCAT.** The Bloomsburg University Pre-professional Advisory Committee will offer a Mock MCAT exam to students interested in allopathic, osteopathic, podiatric, or veterinary medicine, dentistry, optometry, and chiropractic. MCAT, a test developed by the Association of Medical Colleges, is the standardized test required for medical school admission. Other professional schools may or may not require the MCAT for admission. Schools of chiropractic do not require standardized exams. Although dental and optometry schools have their own specialized standard examinations, pre-dental and pre-optometry students are encouraged to take advantage of this opportunity to gain exposure to the standardized test experience. This is also true for pre-veterinary and pre-podiatric students since all of these schools require a standardized examination, but not necessarily the MCAT. 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. This will help you to be better prepared for the real exam. This is a special opportunity! Most colleges and universities do not provide their students with the opportunity to take an MCAT for free. The cost of the practice exams has been offset by a Special Initiatives Grant from the College of Science and Technology. The practice MCAT is recommended for sophomores, juniors, or seniors. Freshmen should probably wait until they have had more college science courses.

WHEN: Saturday, November 8, 8:00 a.m. to 3:15 pm.

WHERE: 79 Hartline

BRING: A lunch

TO RESERVE YOUR SEAT: E-mail Dr. Berg (mberg@bloomu.edu)

ANY QUESTIONS? Please feel free to contact any member of the Pre-professional Committee.

3. **VISIT TO PCOM:** Philadelphia College of Osteopathic Medicine is hosting an open house on Friday, October 3, 2003. The open house will begin with a buffet at 4:30 PM with the actual program beginning at 6:00 PM. The program will include group demonstrations of osteopathic manipulative therapy, tours of the campus, informative sessions on the practice of osteopathic medicine today, admissions, financial aid, and a question and answer session with PCOM students, interns and residents. Transportation will be available. To register, contact Dr. Mark Melnychuk, 106 Hartline, as soon as possible.

4. **RECRUITING VISITS:** The New York College of Chiropractic Medicine and the U.S. Army will be visiting BU this fall to inform pre-professional students of opportunities. Dates and locations will be announced. Watch the BAHS Bulletin Board.

Medical Mycology to be offered Spring Semester 2004



The course Special Topics: Medical Mycology (50.483-01) will be offered Spring Semester on Tuesday and Thursday 3:30 – 4:45 p.m. The course is taught by Dr. James Parsons and is presented in a lecture format with PowerPoint slides. Medical Mycology deals with the fungi [yeast and molds] that are the (a)etiologic agents of infections and/or intoxications found in man and animals. The course will utilize an epidemiological approach to the subject matter.

What I did on my summer vacation...

Emily Bray worked at Camp Echo, a camp for kids with Open Heart Surgery in Millville.

Mike Kaminsky served as a phlebotomist at Holy Spirit Hospital in Harrisburg.

Denise Lucas worked in the office of an oral and maxillofacial surgeon and observed numerous extractions and surgeries.

Meredith Murray monitored larval and adult populations of black fly in Bradford County for the Department of Environmental Protection. Meredith also had the opportunity to observe the acid mine drainage reclamation project at Pine Creek and various stream reconstruction projects in Bradford County.

Katy Parise worked for the Warren County Mosquito Control Commission in New Jersey. She was responsible for examining wetland sites for mosquito larvae. She assisting with sampling for analysis of West Nile virus.

Amy Risen worked on an enhanced genomic library for microsatellite regions for sea scallops in the lab of Dr. Michael Pugh, Department of Chemistry. The objective of her project was to develop a primer for microsatellite regions. Amy also worked at the Weis Research Center, Geisinger Clinic, where she maintains a breeding colony of zebra fish.

Michelle Sienkiewicz helped with Brain Links, a neuroscience program for elementary and middle school children.

Jennifer Soika (double major, Biology and Anthropology) took classes at the Southern Institute of Forensic Sciences through the University of New Orleans. She took a classes in Basic Forensic Anthropology and in Facial Reconstruction. She gained experience in skeletal analysis and was assigned a case study to evaluate.

Krissie Tofts shadowed in a Cardiology office in Elmira, NY.

Jordan Ward, Chistopher Urie, Matt Hogg, Karen Taylor, Lindsay Miller, Sarah Fair, Mary Jo Melichercik and Jenifer Vrentas were among the BU undergraduates who headed to the Marine Science Center at Wallops Island, VA this summer. They enrolled in the following courses: Marine Biology, Marine Ecology, Marine Invertebrates, Biological Oceanography, Coastal Environmental Oceanography, Scanning Electron Microscopy, and Coral Reef Ecology.

Erica Weiskircher worked as a lab technician and phlebotomist at the Reading Hospital and Medical Center.



Internships

The following students have recently completed internships, getting some great on-the-job experience and earning credits at the same time.

Joe Andrulewicz is currently doing an internship at Bloomsburg Hospital in Nuclear Medicine.

Kevin Brace interned at Hawk Mountain Labs in Hazleton, PA. He tested drinking and pool water for coliform bacteria and also tested compost for bacteria. He gained experience sampling and water testing.

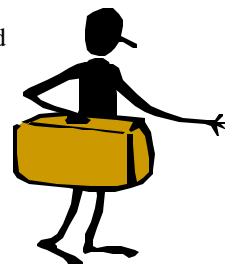
Emily Bray had an internship in the office of Dr. Mark Williams, an orthopedic surgeon and BAHS alumnus.

Jenn Kruk was an intern at the Los Alamos National Lab in New Mexico where she researched tuberculosis proteins.

Angela Mignogna had an internship at York Hospital where she worked in transfusion services.

Melissa Miller did an internship at OraSure Technologies in Bethlehem, PA. The company's main focus is to produce saliva test kits for drugs of abuse and HIV. Melissa worked in the research and development lab and gained experience in ELISA testing and Uplink Phosphorus Technology.

Bethany Rovnack did an internship with the Brain Links program, where she developed and taught neuroscience modules for elementary and middle school children in Berwick School District.



News from the field....



ENTOMOLOGY

Students in Dr. Gary Wassmer's summer entomology class found a Great Leopard Moth in Columbia County, the first time the moth has been found in the eastern part of the state. See the cool photo! This enthusiastic group of Bug Hunters included: **Melissa Bresenhan, Jenna Walters, Jill Remaley, Shawn Butler, Eric Horstick, Connie Wilson, Nina Green, Lucas Blair, and Janice Kutchinsky**

FIELD ZOOLOGY

Field Zoology students at the Wallops Island Marine Science Consortium (from left to right), **Bill Donmoyer, Lucas Blair, Jenna Walters, Jon Torres, Eric Horstick, and Jerry Waltman.**

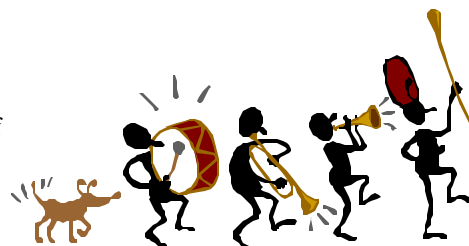
Students waded, hiked, mucked, boated, biked, trawled, swam, and seined their way through a three week long foray into Field Zoology this summer. The course started with a field trip to the Wallops Island Marine Science Consortium, Wallops Island, VA. This served as a launching pad for our visit to Assateague Island and the surrounding coastal environments. We started with a quick tour of the wildlife loop. We spotted numerous birds including the Canada Goose (not a surprise to anyone!), Black Duck, Common Tern, and (a pleasant surprise) a Bald Eagle that seemed particularly gregarious. During our stay we also enjoyed the night (wild)life on the beach, finding ghost crabs out of their burrows, scurrying along the beach, and partially burying themselves in the sand when disturbed. We later trawled Queen's Sound and observed many species including the longsnout sea horse, striped burrfish, purple sea urchins, Atlantic croakers, mantis shrimp, blue crabs, sponges, and a southern butterfly ray. Students learned the meaning of "long pants and shirt sleeves recommended" when we visited the salt marsh on Wallops Island. For the remaining 2 weeks in Pennsylvania, local field trips to Rickett's Glen, Jakey's Hollow, Montour Preserve, and Fishing Creek yielded many excellent finds. Interestingly enough, the relatively small area of Jakey's Hollow was found to be home to five species of salamander! This included two species of salamander, the spring salamander and the Eastern red salamander, that are bio-indicators of good water quality at Jakey's Hollow.



News from Student Organizations...

Biology Club

The Biology Club's first meeting on Sept. 10 was a huge success with 41 people showing up and many new faces! Some of the ideas discussed for the upcoming year were trips to places like Hawk Mountain, the Baltimore Aquarium, and the Mutter Museum of Medical Oddities, fundraisers, and hiking at Rickett's Glen. Annual dues are \$5. Dr. Jennifer Collins from the Department of Geography and GeoScience stopped by and invited all students to a trivia night in October (with refreshments!) See Dr. Collins in 121B Hartline for more information. This was primarily an informational meeting, so it is not too late to join us. All are welcome! We are excited about this coming year. The officers are **Erica Weiskircher** (President), **Denise Lucas** (Vice-President), **Katy Parise** (Secretary), and **Mike Kaminsky** (Treasurer). For more information contact Erica (x2852).



Marine Science Club

The Marine Science Club has recently organized for the 2003-2004 academic year and is planning trips and other fun stuff. Stay tuned...

Introducing...BSTA

Interested in science? Interested in education? Like to work with children? Come join the BU Science Teacher Association. This newly re-activated organization is open to ALL BU science and education majors. The group is establishing an affiliation with the National Science Teacher Association (NSTA) with the intent of becoming a student chapter. The officers are **Amy Miller** (president), **Steven Major** (vice president) and **James Kofskie**, (Secretary/Treasurer.) The group meets every other Monday at 7 p.m. in 410 Kehr Union. Upcoming meetings are slated for September 29 and October 13. The goal of BSTA is to advance science education through involvement in the community. The group plans to volunteer at area schools and at the Bloomsburg's Children's Museum. The group hopes to raise enough funds to attend the PA Science Teachers Association conference in December in Hershey PA. Please contact Amy Miller for more information. Interested freshmen and sophomores are especially encouraged to attend. BSTA's advisor is Dr. Donald Pratt.



18 Ideas for Becoming a Master Student

Reprinted with permission from *A Miniature Guide for Students on How to Study and Learn a Discipline* by Richard Paul and Linda Elder. 2001. **Foundations for Critical Thinking.**

1. Make sure you thoroughly understand the requirements of each class, how it will be taught, and what will be expected of you. Ask questions about grading policies and for advice on how to best prepare for class.
2. Think of each subject as a form of thinking.
3. Become an active learner. Be prepared to work ideas into your thinking by active reading, writing, speaking, and listening.
4. Become a questioner. Engage yourself in lectures and discussions by asking questions. If you don't ask questions, you probably will not discover what you do and do not know.
5. Look for interconnections. The content in every class is always a SYSTEM of interconnected ideas, never a random list of things to memorize. Don't memorize like a parrot. Study like a detective, always relating new learning to previous learning.
6. Think of your instructor as your coach. Think of yourself as a team member trying to practice the thinking exemplified by your instructor.
7. Think about the textbook as the thinking of the author. Your job is to think the thinking of the author.
8. Consider class time as a time in which you PRACTICE thinking using the fundamental concepts and principles of the course. Don't sit back passively, waiting for knowledge to fall into your head like rain into a rain barrel. It won't.
9. Relate content whenever possible to issues and problems and practical situations in your life. If you can't connect it to life, you don't know it.
10. Figure out what study and learning skills you are not good at. Practice those skills whenever possible. Recognizing and correcting your weaknesses is a strength.
11. Frequently ask yourself: "Can I explain this to someone not in class?" If not, you haven't learned it well enough.
12. Seek to find the key concept of the course during the first couple of class meeting. Fundamental ideas are the basis for all others.
13. Routinely ask questions to fill in the missing pieces in your learning. Can you elaborate further on this? Can you give an example of that? If you don't have examples, you are not connecting what you are learning to your life.
14. Test yourself before you come to class by trying to summarize orally or in writing the main points of the previous class meeting. If you cannot summarize the main points, you haven't learned them.
15. Learn to test your thinking using intellectual standards. "Am I being clear? Accurate? Precise? Relevant? Logical? Am I looking for what is most significant?"
16. Use writing as a way to learn by writing summaries in your own words of important points from the textbook or other reading material. Make up test questions. Write out answers to your own questions.
17. Frequently evaluate your listening. Are you actively listening for main points? Can you summarize what your instructor is saying in your own words? Can you elaborate what is meant by key terms?
18. Frequently evaluate your reading. Are you reading the text book actively? Are you asking questions as you read? Can you distinguish what you understand from what you do not?

Faculty Research Feature.... Meet Dr. George Chamuris

Dr. Chamuris is currently involved with two research areas, both involving student collaborators. One project is the completion of a manuscript to be submitted to the journal *Environmental Entomology*. The work summarized in this paper was begun by Julie Frey (BS '99) and extended by Alison Pottage (MS '01) dealing with forest litter invertebrates. The core of these student projects involved inventories of the total invertebrates (Frey) and of the Collembola (Pottage) at two study sites (Jakey's Hollow and Upper Campus).



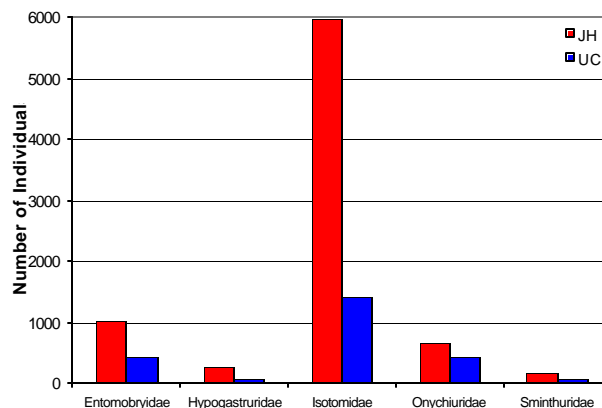
Among her many conclusions, Alison was able to make some comparisons between the two sites, drawing inferences regarding disturbance. The Upper Campus site is relatively disturbed where as Jakey's Hollow is relatively undisturbed. One interesting set of findings was the differences in the abundance of collembola between three soil horizons (O1, O2 and A), and between the two sites. For each site members of the family Isotomidae were most abundant ($p < 0.05$); Jakey's Hollow harbored many more Collembola than did the disturbed Upper Campus site. Aside from being a very nice pilot study, Julie's undergraduate project revealed a surprising finding: the ticks belonging to the group that carry *Borrelia* bacteria causing Lyme disease occurred at a density of 3.5 individuals per cm² of litter! Our state forest entomologists have told us that no one really had any idea of the abundance of ticks in the family Ixodidae in litter.



Alison Pottage

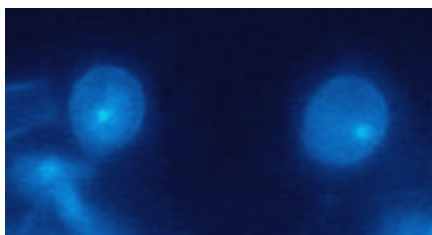


Julie Frey



Rachel Melnick

Dr. Chamuris' other project is an extension of the work of Rachel Melnick (BS Honors '03). She assessed the effects of exogenous carbohydrates on spore germination frequencies in a variety of wood- and bark-inhabiting basidiomycetes. One of Rachel's side projects explored the use of DAPI (a fluorescent stain) to visualize nuclei in basidiospores and basidia of the bark-inhabiting *Mycena meliigena*.



Basidiospores

Previous work by Dr. Chamuris (alone and with Holly Ibbotson, BS '94) suggested that some basidiospores are shed without nuclei and therefore cannot germinate to produce a mycelium. With Rachel's ground work done, Dr. Chamuris is now trying to document and characterize any aberrations in meiosis or sporogenesis that would result in basidiospores lacking a nucleus. Current undergraduate biology major Meredith Murray is Dr. Chamuris' right-hand woman for this cytological study.



Meredith Murray

MEET OUR NEW FACULTY

Three new faculty members have joined BAHS this year. Meet them in this exclusive Biosynthesis interview.

Dr. Kristen Brubaker

Where are you from?

I grew up in Stroudsburg, PA. But, I have also lived in Indiana and Washington.

Where did you receive your education?

I received a B. S. in chemistry at Lafayette College and a doctorate in Molecular and Cell Biology at Penn State University.

What is your area of expertise?

I would describe myself as a cell biologist who uses molecular and biochemical techniques to manipulate cells. My area of expertise is bone remodeling.

Where have you taught/done research previously?

During my first post-doctoral fellowship at the Indiana University Medical Center, I studied the mechanics of bone. We were interested in how mechanical strain (from exercise or work that requires lifting, etc) affects bone growth. During my second post-doctoral fellowship at the University of Washington in Seattle, I studied prostate cancer bone metastases. While in Seattle, I also taught Immunology and Molecular Biology at Seattle Pacific University as an adjunct professor.

What classes are you teaching at BU?

I am currently teaching Cell Biology lab, Concepts in Biology I lab and Immunology. In the spring, I'll be teaching Animal Cell Physiology and more labs. I also hope to develop a course on Classic Papers in Biology.

What is your area of research?

My area of interest is how prostate cancer (CaP) regulates bone remodeling. CaP stimulates bone formation, where most cancers which spread to bone cause osteolysis. Interestingly, CaP can adapt to the bone environment and express factors it wouldn't normally express in the prostate; where many of these factors are involved in bone remodeling. One of these proteins is a transcription factor called Runx2. Runx2 controls osteoblast expression of many factors important for bone/extracellular matrix formation. I am interested in determining what factors are involved in the expression of Runx2 in CaP through promoter studies. In addition, I am also interested in how the Bone Morphogenetic Proteins play a role in CaP bone metastases. Bone morphogenetic proteins (BMPs) are members of the TGF-beta superfamily, which promote bone formation. The connection between Runx2 and BMPs may be a crucial pathway in CaP-stimulated bone formation.

What do you like to do for fun?

My hobbies include collecting depression glass and buying old furniture at auctions. I love football and belong to two fantasy football leagues. I also love to ski, hike, bike and most of all...travel.



Dr. Clay Corbin

Where are you from?

Originally, I am from Jefferson City, Missouri. I have also lived in Montana and Ohio.

Where did you receive your education?

I received my Bachelor's in Zoology from the University of Montana in Missoula. From there I got my Masters in Biology at Southeast Missouri State University in Cape Girardeau and my PhD in Biology at Ohio University in Athens.

What is your area of expertise?

I tend to think of myself as being broadly trained in Ecology, Evolution and Morphology with emphasis on birds and avian systems.

What classes are you teaching at BU?

Over the next couple of years, I'll be teaching Histology, Embryology, Comparative Vertebrate Anatomy, Ornithology & Concepts. Also, I teach University Seminar and am trying to revitalize the course in Neotropical Biology. Any takers???

More from Dr. Corbin...

Where have you taught/done research previously?

My research sites have included the sky islands of Arizona (primarily in the Chiricahua Mts.), the deciduous forests of Missouri and Ohio, various habitats of Ohio and South Africa and tropical forests in East Africa. My teaching experience includes positions in the inner city Kansas City high school district, and community college in Overland Park, Kansas. Also, I have taught at the University level at Southeast Missouri State University and Ohio University as a teaching assistant. Most recently, I was an instructor of Conservation Biology, Zoology and Animal Ecology at Ohio University.

What is your area of research?

I'm primarily interested in adaptive radiations of organisms. The kinds of questions that are related to this are: what factors are responsible for a group of organisms to radiate evolutionarily. Also, I am interested in convergent evolution. Research that I've done in this area has concentrated on three independent groups of birds, the flycatchers. There are many species of "flycatchers" in the New World, Africa and Asia. Essentially, I am trying to answer the question of how flycatching behaviors and the corresponding morphological adaptations evolve. This work encompasses broad areas in biology such as comparative anatomy, behavior, ecology and evolution.

What do you like to do for fun?

I love to spend time with my family. I also love to travel. If I can, I like water sports (paddling) and hiking. Also, I plan on getting in some skiing and boarding this year.

Dr. Alan Spevak

Where are you from?

I am originally from Chicago, Illinois.

Where did you receive your education?

I received my B.S. in Zoology at the University of Illinois in Urbana, and my M.A. and Ph.D. in Biology at the University of Kansas in Lawrence.

What is your area of expertise?

My area of research interest is animal behavior, especially the interaction of the innate and learned in determining releasers of adult behavior. I also did postdoctoral research in developmental biology at the University of Southern California in Los Angeles and the University of Wisconsin in Madison.

Where have you taught previously?

I have taught at the University of Wisconsin-Platteville, Rockford College in Illinois, Central Methodist College in Missouri, and most recently at Shippensburg University.



What is your area of research?

One of my current research interests is the natural history of tardigrades; another is the effect of acid rain on macro invertebrates in forest soil in Pennsylvania.

What classes are you teaching at BU?

I am teaching Anatomy & Physiology and Human Biology.

What do you do for fun?

I am a nature photographer by avocation, received certification in photography at the Rocky Mountain School of Photography in Missoula, Montana, and have taught both basic and biological photography at two Midwestern colleges. My web site is www.lightsinger.com. Here is a sample of my work: a hover fly (family Syrphidae) on a cinquefoil (family Rosaceae) which I photographed with a 5 megapixel Olympus digital camera on macro setting.



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 (123 HSC).

WELCOME to new graduate students **Eric Steffen, Michael Fedako, and Stacey Rogers**.

CONGRATULATIONS to the following graduate students who passed their oral candidacy exams this summer: **Julia Fabrega-Climent, Connie Wilson, Holly Richendrfer, Michelle Bradley, and Khalique Ghani**.

FALL SEMESTER GRADUATE ASSISTANTS

The following students join the department as graduate assistants this semester: **Khalique Khani** (Anatomy and Physiology I and II), **Julia Fabrega-Climent** (Cell Biology and Integrated Physiology Lab), **Eric Steffen** (Microbiology and Genetics), and **Amy Mudry** (Concepts in Biology).

GRADUATE STUDENT RESEARCH UPDATES

Holly Richendrfer is finishing a directed study research project on the functional impacts of spine loss and regeneration in sea urchins. Holly's research project is under the supervision of Dr. Thomas Klinger.

Julia Fabrega-Climent is beginning a study of the effects of organic pollutants on larval and adult sea urchins. Julia was also appointed as a resident advisor overseeing college programs while she studied at the Marine Science Center this summer.

Connie Wilson has linked up as a research assistant with Dr. Judy Kipe-Nolt and is conducting thesis research on methane production and odor reduction from livestock waste using a vertical plug flow anaerobic digester.

Michelle Bradley conducted her directed study of the effects of atrazine exposure on the survival, growth, and development of frog tadpoles during the summer of 2003. Michelle's research project was under the guidance of Dr. John Hranitz.

Justin Reis continued cloning and sequencing G protein gamma subunits from Antarctic Icefish. Dr. Carl Hansen is his research advisor.

Amy Mudry initiated studies on whether changes in the Wnt signaling pathway occur when primary cancer cells become metastatic. Her research is supervised by Dr. Carl Hansen.

Jennifer Venditti completed an analysis of antibody profiles and white blood counts in college students involved in different levels of exercise. Dr. Kipe-Nolt is her advisor.

GRADUATE STUDENTS MOVING ON!

Several of our graduate students have moved on to bigger and better things.

Justin Reis has taken a Research Technician position in the Department of Pharmacology at The Penn State College of Medicine in Hershey, PA.

Jennifer Venditti has entered a Ph.D. program in Laboratory Medicine at Lehigh University.

Michelle Bradley accepted a high school teaching position in her hometown of Sayre.

SPRING 2004 GRADUATE COURSES

Graduate student courses for the spring will include: Biostatistics, Developmental Biology, Plant Physiology, Conservation Biology and Animal Cell Physiology.

WORKSHOP ON TECHNIQUES IN MOLECULAR BIOLOGY

BAHS was well represented at the Techniques in Molecular Biology Workshop at Penn State University in June. Dr. Barry Nolt along with graduate students **Heather Adams, Amy Mudry, Justin Reis, and Holly Richendrfer** attended the intensive two week lecture and laboratory course. The workshop is specifically designed for faculty, research staff and graduate students from the Commonwealth Universities. Participants gain valuable hands-on bench experience using current molecular techniques including DNA purification, restriction enzyme digestion and gel electrophoresis, labeling DNA probes, cloning, sequencing, PCR amplification, and Southern and Western blots. The lecture sessions provided the principles and theory forming the basis for many procedures. This workshop provides both valuable material for lectures and student laboratories, and background for the application of molecular tools to research projects in biology. Accommodations are free, the instructor and staff are friendly and helpful, and having the opportunity to learn really cool stuff about DNA was well worth the time.

Inside Story Headline

This story can fit 150-200 words.

One benefit of using your newsletter as a promotional tool is that you can reuse content from other marketing materials, such as press releases, market studies, and reports.

While your main goal of distributing a newsletter might be to sell your product or service, the key to a successful newsletter is making it useful to your readers.

A great way to add useful content to your newsletter is to develop and write your own articles, or include a calendar of upcoming events or a special offer that promotes a new product.

You can also research articles or find “filler” articles by accessing the World Wide Web. You can write about a variety of topics but try to keep your articles short.

Much of the content you put in your newsletter can also be used for your Web site. Microsoft Publisher offers a simple way to convert your newsletter to a Web publication. So, when you're finished writing your newsletter, convert it to a Web site and post it.



Caption describing picture or graphic.

Inside Story Headline

This story can fit 100-150 words.

The subject matter that appears in newsletters is virtually endless. You can include stories that focus on current technologies or innovations in your field.

You may also want to note business or economic trends, or make predictions for your customers or clients.

“To catch the reader's attention, place an interesting sentence or quote from the story here.”

If the newsletter is distributed internally, you might comment upon new procedures or improvements to the business. Sales figures or earnings will show how your business is growing.

Some newsletters include a column that is updated every issue, for instance, an advice column, a book review, a letter from the president, or an editorial. You can also profile new employees or top customers or vendors.

Inside Story Headline

This story can fit 75-125 words.

Selecting pictures or graphics is an important part of adding content to your newsletter.

Think about your article and ask yourself if the picture supports or enhances the message you're trying to convey. Avoid selecting images that appear to be out of context.

Microsoft Publisher includes thousands of clip art images from which you can choose and import into your newsletter. There are also several tools you can use to draw shapes and symbols.

Once you have chosen an image, place it close to the article. Be sure to place the caption of the image near the image.



Caption describing picture or graphic.

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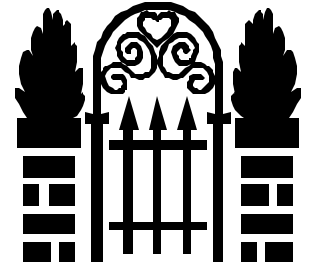
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