



BioSynthesis

Volume 3, Issue 5 (November 2004)

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

Fall Semester: Upcoming Events

NOV 2: Biology Club Meeting, 5:30, 142 HSC

NOV 9: Last Day to Withdraw from a Class

NOV 10: Biology Club, presentation by Dr. Rier, 7:00 p.m.

NOV 12: MIB Proposals Due

NOV 13: MOCK MCAT, 8 a.m., 79 HSC

NOV 15: Fall Into Health Series, Now I Lay Me Down to Sleep, 9:00 p.m., Columbia Lounge

NOV 16: Biology Club Meeting, resume building, 5:30 p.m., 142 HSC

NOV 23: Deadline: Undergraduate Research Proposals

NOV 23: Thanksgiving Recess (begins 10 p.m.)

NOV 29: Classes Resume (8 a.m.)

NOV 30: Biology Club Meeting, 5:30 p.m., 142 HSC



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Fall Semester in Full Swing

It's a busy time of the semester! The energy level in Hartline is high as students and faculty juggle lectures, labs, midterms, research projects, papers, practical exams, and club meetings. This activity is not confined to the classrooms and labs, however. The following BAHS students headed out to the field in Dr. Williams' Ecology class:

(From left) **Sarah Rowson**, **Qudirat Jamiu**, **Taylor Triglia**, and **Laura Bauman**.



Upcoming Biology Club Programs

The Biology Club is having a fun and productive fall semester. A team of Biology Club members recently participated in BU's Second Annual Breast Cancer 5K Run/Walk. The event raised over \$8,000. (Thank you Bio Club for your service to the community!) The Biology Club invites you to the following upcoming events:

Nov 2	Opportunities for Undergraduate Research	5:30 p.m.	142 HSC
Nov 10	Research in Aquatic Ecology, speaker Dr. Steven Rier	7:00 p.m.	142 HSC
Nov 16	Workshop on Resume Building, by Dr. John Hranitz	5:30 p.m.	142 HSC
Nov 30	Planning for the Baltimore Trip on Dec 4	5:30 p.m.	142 HSC

For more information, please contact any club officer: President, **Valarie Van Cleef**; Vice-president, **Krissie Tofts**; Secretary, **Keri Ondrusek**; and Treasurer, **Joel Gymes**, or **Dr. Hranitz**, their faculty advisor.



What Electives should I take?

Biology majors who are pursuing the B.S. must take a minimum of 12 credits of biology electives while those enrolled in the B.A. program must take 9 credits. Which electives should you take? There are several possible strategies. One approach is to target your electives toward your particular academic and career interests. For example, a student interested in pre-vet might select comparative vertebrate anatomy and vertebrate zoology while a student interested in working in the pharmaceutical industry may choose molecular biology and microbial physiology. Another approach is to take electives to expand your horizons and to explore areas that you want to learn more about. Take advantage of your bio electives and make your choices wisely. They can help you stand out from the crowd! See your advisor to discuss your options. Below are brief descriptions of our spring elective offerings.

Human Genetics (50-233)



Dr. Hansen

Prerequisites: Concepts in Biology I (50.114) or Cells, Genes and Molecules (50.100) or Human Biology (50.101)

Human genetics provides one path to understanding who and what we are. We will address human heredity and variation from several perspectives: from the molecular basis of a gene to its expression as a trait; from the single cell to the individual; and from individuals to the human population. We will apply our understanding of genetics to address major issues in human society.

- human disease - from cystic fibrosis to schizophrenia to cancer.
- implications of the human genome project for medicine, biotechnology, and genetic engineering.
- human origins and the relatedness of human populations.
- nature versus nurture: just how much of what we are is encoded in our genes?

Medical Microbiology (50.342)



Dr. Parsons

Prerequisites: Biology of Microorganisms (50.242) and Cell Biology (50.271)

Provides a study of microorganisms capable of causing disease in humans. Emphasizes epidemiology, laboratory diagnosis, principles of pathogenesis, treatment, and prevention. The course utilizes medical models, and group and individual projects to attain this goal. Three hours of lecture and three hours of discussion/laboratory per week.

Immunology (50.343)

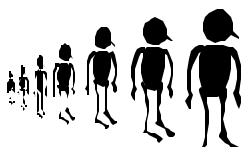


Dr. Brubaker

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

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

Population Biology (50.460)



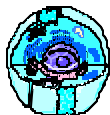
Dr. Klinger

Prerequisites: Genetics (50.332) and Ecology (50.351)

Presents selected themes in the biology of animal, plant, and fungal populations. Topics include: population structure and dynamics, population genetics, population ecology, and speciation. Fundamental principles and current models and hypotheses will be stressed, along with treatments of research techniques, computer modeling, and potential for future research.

Medical Parasitology (50.470) Undergraduate or (50.570) Graduate**Dr. Parsons**

An in-depth study of the parasitic infections (both intestinal and blood) that affect mankind. Special emphasis will be placed on clinical diagnosis, symptomatology, histopathology, laboratory identification, parasite-life-cycles, and treatment. Two hours lecture and three hours of discussion-laboratory per week.

Animal Cell Physiology (50.472)**Dr. Brubaker**

Prerequisites: Cell Biology (50.271), Organic Chemistry I (52.231) or Fundamentals of Organic Chemistry (52.230) or permission of the instructor

Multi-cellular organisms depend upon the homeostasis of cells to maintain their existence. Since cells are the fundamental units of life, a basic knowledge of cell physiology is essential for understanding how organisms work. This course will emphasize topics such as cell-cell and cell-matrix interactions, membrane transport and trafficking, cell signaling, and cell cycle. In addition, processes needed for cell functions such as metabolism and DNA replication will be examined.

Neurophysiology (50.476)**Dr. Till**

Prerequisites: Introductory Physics II (54.112) and Anatomy and Physiology II (50.174) or Vertebrate Systems Physiology (50.474). Background in mammalian or systemic physiology, biochemistry and anatomy recommended.

Examines normal physiology of the nervous system; specifically studying cellular neurophysiology, sensory physiology, motor control, and their integration. Three hours lecture and discussion per week.

Plant Physiology (50.477)**Dr. Williams**

Prerequisites: Cell Biology (50.271), Organic Chemistry I (52.231), or Fundamentals of Organic Chemistry (52.230)

How do plants convert radiant energy into chemical energy? How do plants move water hundreds of feet in the air without a pump? Why and how do plants make nifty drugs like aspirin and cardiac glycosides? Why don't plants have kidneys? How do plants "know" when to drop their leaves, and why do those leaves those strange colors in the fall? These and other secrets of how the green world works are exposed in Plant Physiology.

Methods in Biotechnology (50.484)**Dr. Davis**

Prerequisites: Introduction to Molecular Biology (50.333) or Biochemistry II (52.422) and permission of instructor

This is an investigation-based course in which students undertake a project of their own design employing methods used in biotechnology. Projects can involve a variety of molecular biology, genetic, and physiological approaches to address questions on almost any organism - bacteria, plants animals and yes, even fungi. Students will meet as a research group once per week to learn techniques and problem solve issues related to their research project. Much of the project will be performed by the student independently throughout the week. Students interested in this course need to see Dr. Davis ASAP. You must submit a short proposal by November 12 and have it approved before you can register for this course.



News from the Pre-professional Committee

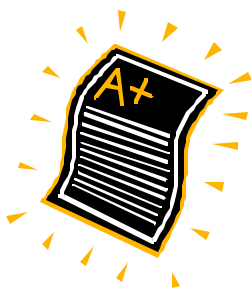
MCAT Review Course

An MCAT preparation course is being offered at King's College on Feb 1 and 3, 2005 (Tuesday and Thursday) from 6 to 9 p.m. and Feb 5 and 6, 2005 (Saturday and Sunday) from 10 a.m. to 3:30 p.m. The program uses a real MCAT exam to teach students how to apply their scientific knowledge to specific types of test questions. The class is instructed by Drs. James Yoho and William Van Der Sluys, veteran instructors of MCAT preparation classes, and costs \$300. For more information or to register, please contact Ms. Suzanne McCabe at semccabe@kings.edu

Upcoming Programs

Thomas Jefferson University and the University of Pennsylvania will host a joint open house for students underrepresented in medicine on Friday, November 19, 2004. The open house will feature Jefferson's programs in medicine, health professions, and graduate studies and Penn's programs in medicine, dentistry, veterinary medicine, and nursing. Information will also be provided on the admissions process and support services. For registration information, please contact Dr. Surmacz.

The University of Pittsburgh is sponsoring *The Pittsburgh Medical Scientist Training Program*, a 10-week summer research and professional development program, for disadvantaged and underrepresented minority students interested in careers as physician scientists. Freshmen, sophomores, and juniors are eligible. The program carries a \$4,300 stipend plus round trip airfare. The application deadline is February 1, 2005. Please see Dr. Surmacz for additional information.



MOCK MCAT COMING SOON!

The Pre-professional Committee will offer a practice 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. 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. 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 gain 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.

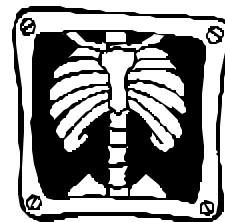
- **WHEN:** **Saturday, November 13**, 8:00 a.m. to 3:15 pm.
- **WHERE:** 79 Hartline
- **BRING:** A lunch, pencils, and erasers
- **DO NOT BRING:** cell phones, calculators, or back packs
- **TO RESERVE YOUR SEAT:** E-mail Dr. Hallen (cph@bloomu.edu) by November 9
- **ANY QUESTIONS?** Please feel free to contact any member of the Pre-professional Committee. (**Drs. Ardizzi, Melnychuk, and Surmacz** from BAHS and **Drs. Hallen and Trumbo-Bell** from Chemistry.)

Allied Health Updates

Medical Imaging Students:

Apply NOW to Clinical Programs

Medical Imaging Students are encouraged to submit their applications to clinical programs as soon as possible. Apply to several hospitals—there is a lot of competition. Go on line or call schools for applications.



Fall Into Health Program Series

The next offering of the Fall Into Health Series is *Now I Lay Me Down To Sleep* on November 15, 2004 at 9:00 p.m. in Columbia Hall's Fireside Lounge. Come learn about the things that can rob you of a good night's sleep and receive tips for improving your "sleep hygiene". The program is sponsored by the Health Sciences Learning Community. Free refreshments provided!



BAHS Students Gain Experience in Health Professions

Medical Imaging majors **Eileen Wolf** and **Dawn Moyer** are presently student interns in the Radiology Department at Bloomsburg Hospital. They are having the opportunity to learn first hand about the profession and are gaining valuable experience in the field. Dr. Kipe-Nolt is their internship supervisor. **Lindsay Baglini**, a B.S. Biology major, has completed an internship at the Lehigh Valley Health Center in the area of pediatric oncology. Lindsay worked with cancer patients and was introduced to a variety of laboratory tests, diagnostic tools, and treatment regimens.



Helpful Sessions at the Career Development Center

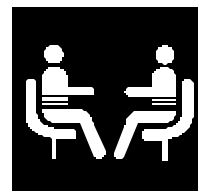
Working on an application to a clinical program or graduate school? Check out the following programs offered at the Career Development Center.

How to Interview

Tuesday, November 9, 3:30 - 4:30 p.m., 140 Student Services Center. Sponsored by Career Development. For more information contact Jeanne Fitzgerald, Asst. Director by phone at 389-4070 or jfitzger@bloomu.edu.

How to Write a Resume & Cover Letter

Wednesday, November 10, 3:00 - 4:30 p.m., 140 Student Services Center. Sponsored by Career Development. For more information contact Jeanne Fitzgerald, Asst. Director by phone at 389-4070 or jfitzger@bloomu.edu.



Learning Community Recognizes Achievement

Jamie Willour, a medical imaging major, was honored for outstanding academic performance at a recent awards ceremony held by BU's Learning Communities. Jamie was a member of the Honors Program Learning Community last year. This year she is serving as a Resident Advisor in the Health Sciences Learning Community.



Salute to Academic Achievement

Congratulations to Biology and Allied Health Students who earned a GPA of 3.5 or greater and were named to the Dean's List for Spring Semester 2004. Great job!

Biology

Sarah Bounds (BS)
Kevin Brace (BS) Microbiology option
Kristi Brinckman (BA)
Mary Sue Buss (BS) Biotechnology
Neema Chandel (BS)
Patrick Clancy
Nicole Dalessandro (BS)
Eileen Garvey (BA)
Alicia Gilbert (BS)
Laura Halon (BS)
Shannon Hauer (BS) Marine biology
Eric Horstick (BS) Biotechnology
Michael Kaminsky (BS)
Chase Kelch (BS)
Jennifer Kruk (BS) Biotechnology
Sarah Leshinski (BS)
Daniel Lindao (BS)
Amanda Matthews (BS)
Mary Jo Melichercik (BS) Marine Biology
Angela Mignogna (BS)
Meredith Murray (BS)
Lyndsay Nagy (BA)
Keri Ondrusek (BS)
Katy Parise (BS)
Jason Smith (BS)
Jessica Teders (BS)
Kristine Tofts (BS)
Maxwell Tolan (BS)



Medical Imaging

Sara Barrett
Rachel Boring
Curtis Bower
Megan Coyne
Jennifer Dillow
Kelly Duke
Megan Everly
Eric Funk
Keri Garton
Greta Gore
Tiffany Higley
Emily Hoffman
Kate Horshock
Christina Lanzos
Alison Lukjanczuk
Tanya McFalls
Joseph Miller III
Stacey Minarsky
Elyce Morring
Lindsey Solovey
Leanne Stoner
Erin Sweeney
Michael Thompson
Stephanie Tinna
Jennifer Tomcavage
Melodie Wehry
Jamie Willour

Pre-Occupational Therapy

Katie Fulkersin
Jenna Sejuit

Pre-Pharmacy

Phuoc Ho

Clinical Lab Science

Loren Abbott
Leamm McCracken

Pre-Physical Therapy

Courtney Dean
Kaylee Fischer
Laura Gilbert
Rebecca Schillinger

The list of Secondary Education in Biology students named to the Deans List for Spring 2004 was not available when the *BioSynthesis* went to press. This information will be published in the December issue.



BAHS Students Honored for Outstanding Performance in the Freshman Year

Phi Kappa Phi is the nation's oldest, largest, and most selective honor society that recognizes and promotes academic achievement in all fields of higher education. Each year, the Bloomsburg University Chapter of the Honor Society of Phi Kappa Phi presents awards to exceptional students on the basis of their academic performance in the freshman year. This year four BAHS students are among those honored by the Society. The award recipients include: **Katherine Huff**, Secondary Education in Biology; **Jamie Willour**, Medical Imaging; **Melodie Wehry**, Medical Imaging; and **Ashley Yelinek**, Biology.



BAHS Students Receive Awards at UMBC Research Symposium

Two BAHS students received awards for their research posters at the 7th Annual Undergraduate Research Symposium in the Chemical and Biological Sciences on Saturday Oct. 16, at the University of Maryland-Baltimore County. **Sheila Hovi** and **Lindsay Baglini**, biology majors with minors in chemistry, placed second in their division for presentation, explanation, and ability to answer questions about their project. Their poster was titled "Investigating Interactions Between the Blood-Clotting Enzyme Thrombin and Fibrinopeptide B-Like Models by Kinetic and NMR Methods."

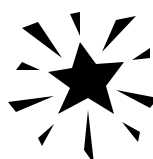
Their mentor is chemistry professor Dr. Toni Trumbo Bell.



BAHS Students Seeing the World

Mike Kaminsky, a senior biology major, is studying at the University of Edinburgh in Scotland this semester. In addition to studying pharmacology, writing papers, and keeping busy with other classes, Mike is making time for some excursions (educational ones of course!) Mike has visited Loch Lomond, the Scottish Highlands, the William Wallace Monument, and has even walked the St. Andrews golf course (following in Tiger Woods' footsteps.....) He has recently traveled to Rome and visited the Vatican City. Have a wonderful time, Mike, and we are looking forward to your return spring semester.

Ashley Welikonich has recently been accepted into the Study Abroad Program of the School for International Training (SIT). Ashley will head to Africa where she will be based in Arusha in Tanzania. There she will become immersed in the Tanzanian culture and will receive instruction in field study techniques. As part of the program, Ashley will receive intensive study in Swahili, will take an interdisciplinary course in Wildlife Ecology and Conservation, and will visit the Serengeti National Park, Ngorongoro Crater Conservation Area, and Tarangire National Park. She will also learn from rural Tanzanians by spending one week in a rural Masai setting. Ashley will also take a seminar in Environmental Field Studies and will conduct an Independent Study research project. The SIT sponsors a variety of field-based learning programs in Africa, Asia and the Pacific, Europe, Latin America, and the Caribbean. If you would like to learn more about the SIT see Dr. Surmacz for a current catalog or go to www.sit.edu



Faculty Recognized for Service

The following BAHS faculty received Appreciation Awards for their distinguished service to BU: **Dr. Mark Melnychuk** (25 years of service), **Dr. James Parsons** (20 years of service), and **Dr. Marianna Wood** (10 years of service.)

News You Can Use!



Deadlines

Deadline to withdraw from a class: **Tuesday, November 9, 2004**

Methods in Biotechnology Course Proposals Due: **Friday, November 12, 2004**

Deadline to submit proposals for Research in Biology and Internship in Biology to the Dean's Office: **Nov 23, 2004.**

Scheduling Notes

- If you need a cell level physiology course during the upcoming year (Spring 2005-Fall 2005), take Animal Cell Physiology (50.472) during the spring 2005 semester. Microbial Physiology 50.478 will not be taught during the fall semester 2005.
- If you need Medical Microbiology before graduation, please plan on taking it this spring semester (2005). It will not be offered again until Spring 2007.
- Sophomores & Juniors: if you want to take Evolution in the Fall 2005, be sure to complete one pre-requisite by the end of Spring 2005. The pre-requisite is 50.351 Ecology OR 50.332 Genetics. After Fall 2005, Evolution will next be offered Fall 2007.

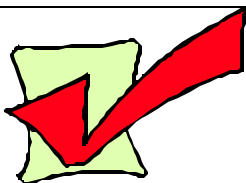
Stay Connected!

Two important sources of information are:

- 1) The BU Biology/Allied Health Website <http://departments.bloomu.edu/biology/>
- 2) The bulletin board near the elevator on the "green floor."

FACULTY AND STAFF RESOURCE PEOPLE

Department Chairperson	Dr. Margaret Till, 125 HSC
Department Secretary	Ms. Vicki Beishline, 125 HSC
Assistant Chairperson	Dr. Marianna Wood, 103 HSC
Allied Health Coordinator	Dr. Judith Kipe-Nolt, 104 HSC
Graduate Program Coordinator	Dr. Carl Hansen, 123 HSC
Department Webmaster	Dr. George Chamuris, 74N2 HSC
Department Pre-professional	Dr. Joseph Ardizzi, 74N1 HSC and
Committee Co-chairs	Dr. Mark Melnychuk, 106 HSC



Check out these courses that can be used to fulfill your Values, Ethics and Responsible Decision Making Requirement.....

Social Implications of Biology (50.254)

Dr. Wassmer

This course explores the societal implications of current thought in biology. The science of biology, and the technological advances that it generates, affects all aspects of our lives. It affects our legal systems, healthcare, politics, social justice issues, families, the environment, and economics. The aim of this course is not so much learning what to think about particular issues that arise from biology and its applications, but how to learn to think about them. Such an understanding will help prepare you to respond intelligently to future scientific findings. This course cannot be counted toward a degree in biology or toward Group C, natural sciences and mathematics.

Drugs in America (50.275)

Dr. Till

This is a 3 credit course that fulfills the Values, Ethics, and Responsible Decision Making objective of the general education curriculum. It can also count as a Group C course (but for biology and allied health majors that is of little consequence, since you have many Group C courses). This course will educate you about how drugs (legal and illegal, prescription, and over-the-counter (OTC)) work without preaching. The introduction covers terminology, drug sources, federal laws, and principles of drug action. More specific mechanisms will be discussed for the following categories: narcotic analgesics, stimulants, barbiturates, tranquilizers, marijuana, hallucinogens, anti-ovulatory agents, OTC pain relievers, other common OTC medications, and antibiotics. Pre-requisites are Concepts of Biology I (50.114) OR Anatomy and Physiology II (50.174).

The Reading Lamp: Current Topics in Evolutionary Biology

George Chamuris, Professor



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

Have you ever wondered why males of some birds have brightly-colored beaks or bills and the females do not? A number of studies have provided evidence that these ornaments are an honest signal to females, indicating male quality that cannot be assessed otherwise. For example, the bright red beaks of the zebra finch (*Taeniopygia guttata*), and bright yellow bills of the mallard (*Anas platyrhynchos*) have been studied recently. Females of each of these species are attracted to males with the most intensely colored ornaments (Blount et al., 2003; McGraw et al., 2003; Omland, 1996).

Generalizations are emerging from this fascinating aspect of sexual selection (the ability of individuals to differentiate and select a mate). First, the color intensity of the ornament is correlated with the concentration of carotenoids (derived entirely from the diet) in the blood. High levels of plasma carotenoids are associated with anti-oxidant activity and a boost in immune function (both cell-mediated immunity and antibody responses). A good immune system makes for a healthy mate.

Second, as brought to light for ducks by Peters et al. (2004), the higher levels of anti-oxidant carotenoids are associated with higher levels of sperm motility. This may be especially important in mallards because females are subject to unsolicited matings. If the sperm from a preferred male (with high carotenoid levels and good immunity) are fast, they may out-swim the unsolicited sperm that may also be present in the female.

Female mallards select their mate some months before the breeding season. Although males do not help rear their young per se, they do protect females from harassment during foraging. Healthier males will be better protectors.

Natural selection has favored the male display of colored ornamentation because it indicates immunocompetence, resistance oxidative stress, and good sperm motility. Females strongly prefer to mate with males possessing the brightest ornamentation, increasing the fitness of both ornamented males and choosy females.

Blount, J.D., N.B. Metcalfe, and P.F. Birkhead. 2003. Carotenoid modulation of immune function and sexual attractiveness in zebra finches. *Science* 300:125-127.

McGraw, K.J., A.J. Gregory, R.S. Parker, and E. Adkins-Regan. 2003. Diet, plasma carotenoids, and sexual coloration in the zebra finch (*Taeniopygia guttata*). *Auk* 120:400-410.

Omland, K.E. 1996. Female mallard mating preferences for multiple male ornaments I. Natural variation. *Behavioral Ecology and Sociobiology* 39:353-360.

Peters, A., A.G. Denk, K. Delhey, and B. Kempenaers. 2004. Carotenoid-based bill colour as an indicator of immunocompetence and sperm performance in male mallards. *Journal of Evolutionary Biology* 17:1111-1120.

The Blooming and Booming of BU Biotech

Coming soon: A fully equipped state of the art molecular and cellular student research facility. Biotech at BU has just gotten another big boost. The last few years has seen the establishment of a beautifully equipped biotech research laboratory in HSC 66, with faculty and students actively engaged in molecular-based research. But this is just a hint of things to come. A recently funded grant from the National Science Foundation is bringing \$160,000 worth of equipment into the program, and, with the opening of the new Hartline Annex this summer, a suite of new laboratories will be dedicated to molecular biology and biotechnology instruction and research.



Is the Biotechnology Option for you?

What is the Biotechnology Option?

Biotechnology applies the cutting-edge techniques of the biological and chemical sciences (recombinant DNA, genetic engineering, cell and tissue culture, and cloning) to improve the quality of our lives. It has revolutionized agriculture, medical and veterinary diagnostics, pharmacology, and even the legal system. This option will allow you to develop the skills to be competitive in this exciting field. The Biotech Option will provide you with a strong background in the molecular sciences and real hands-on research experience. Following Molecular Biology (50.333), you will then proceed to take three newly created courses:

Plant and Animal Tissue Culture: a laboratory-based course that will teach you sterile technique and the culturing and passaging of cells.

Bioinformatics and Genomics: a computer-based course that will teach how to data mine and interpret the human genome.

Methods in Biotechnology: a senior year, student-designed, independent research based course applying the tools of biotechnology to relevant life science problems.

What background do you need to be a Biotechie?

The tools of biotechnology cross all disciplinary lines in biology and chemistry. From ecology to engineering, these tools have application. The background needed: A fascination with science and desire for discovery.

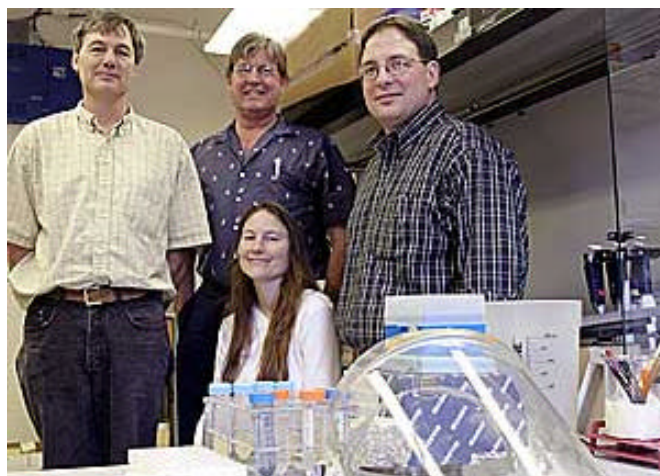
What makes the Biotechnology Option Special?

In addition to providing you with a firm theoretical foundation in molecular biology, the biotech option further promotes the general departmental move towards inquiry-based learning, i.e., ask questions and figure out a way to get them answered. While independent study and research are strongly encouraged, those who elect this option are *required* to take a research based course, Methods in Biotechnology (MIB). This course provides students with an in-depth look at the functioning of a modern biotechnology laboratory. Its problem-based approach simulates the real world of modern science; it will not only enhance your technical prowess in the laboratory, but will improve your overall ability to effectively employ the scientific method. In addition to the fun and fascination you'll enjoy in this field, you can also plan on a pretty good salary. According to Salary Wizard.com, the median salary for an entry level Biotechnology position (Biologist I) is \$37,863. Maybe money can't buy happiness, but having it gives you one less thing to worry about.

What must I do to be a Biotechnology Option major?

See any of the following: **Drs Davis, Hansen, Brubaker or Hranitz**, or tell your adviser that you want to be a Biotechie. After discussing it with a faculty member, declare your major in the Academic Advisement Office, Student Services Center.

See these profs for more
information on the
Biotechnology Option.



FACULTY RESEARCH NOTES

Operation Migration:

Banding Birds at Powdermill Nature Preserve

Dr. Clay Corbin spent a week in September at Powdermill Nature Reserve in southwestern Pennsylvania. He attended a bird banding development workshop and was part of a team that banded over 700 birds that were on their way to their non-breeding grounds for the winter. Banding data is gathered on hundreds of thousands of birds every year and provides useful information on the life history aspects of the birds such as migration routes, winter and breeding ranges, and fluctuations in population sizes. Other data can be gathered as well depending upon the research question and the conservation status of the species which are caught. At this workshop, birds were captured in mist nets, extracted and taken to a banding center where each bird was processed. A small aluminum band with a unique identifier (in case the bird is caught again) was placed around the leg and data were taken such as sex, age, weight, and general condition of the bird. More information on the workshop and bird banding in general can be found at the Powdermill website and these other links: Powdermill Nature Preserve banding site (<http://www.westol.com/~banding/>), United States Geological Survey site (<http://www.pwrc.usgs.gov/bbl/>) and the Eastern Bird Banding Association site (<http://www.pronetisp.net/~bpbird/>)

Photos LEFT: Male (left) and female (right) black-throated blue warblers (*Dendroica caerulescens*) – long distance migrants captured in Southwestern PA, banded and then released on their way to South America. Aluminum band can be barely seen on leg of the female warbler. RIGHT: **Dr. Corbin** (far left) with other workshop participants and Powdermill folks. Photos by Tom LeBlanc, used with permission.



Research Grant Received

Dr. Steven Rier recently received a College of Science and Technology Scholarship and Research Grant to initiate studies in aquatic ecology at BU. Overall, this research project will focus on leaf decomposition in streams to assess the ultimate impact of global change on this process. Streams commonly rely on autumn-shed leaf litter from adjacent trees as an energy source. A potential consequence of increasing atmospheric CO₂ levels is that the chemistry of leaf litter will be altered in a way that stream biota are unable to effectively utilize this energy source. One chemical change to leaf litter, associated with growth under elevated CO₂, that might inhibit leaf litter utilization in streams is an increase in the concentration of bound tannin. However, very little is known about the effects of bound tannin on leaf decomposition in streams. This investigation will focus on the natural variation in bound tannin between tree species and will involve the analysis of leaf litter chemistry and will eventually look at leaf decomposition and microbial utilization of this litter in local streams

NEW Hartline Residents

Dr. Gary Wassmer has recently received some new research animals. These include three species of cockroaches and one species of woodroach, a vinegaroon, scorpion, tarantula, and huge millipedes. He would be happy to show them to anyone who is interested. Also, please see him if you are interested in opportunities for research on the woodroach.

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).

SPRING 2005 GRADUATE OFFERINGS

Medical Parasitology
Plant Physiology
Animal Cell Physiology
Population Biology
Neurophysiology
Integrated Physiology Lab

Congratulations

Nina Green has successfully passed her graduate candidacy exam. Congratulations Nina!

Upcoming Opportunities...



CPUB: Mark Your Calendars

The Commonwealth of Pennsylvania University Biologists (CPUB) is an organization of biology faculty from the fourteen universities in the State System of Higher Education. CPUB holds annual meetings to highlight student and faculty research. This year's CPUB meeting will be held April 1, 2 & 3, 2005 at Millersville University. This is a good venue to present the results of your undergraduate or graduate research projects! The keynote speaker will be Holmes Morton, founder of the Special Children's Clinic. See **Dr. Kevin Williams** for more information.



Summer Research Experiences for Undergraduates

The Department of Biochemistry and Biophysics at Texas A & M University is sponsoring an intensive 10-week summer undergraduate research program in biochemistry from May 31 to August 5, 2004. Possible areas of research include molecular genetics, bioinformatics, genomics, enzymology, biophysics, and structural biology. To be eligible, students must be majoring in biology, genetics, chemistry, biochemistry or any life science; have taken organic chemistry and biochemistry; and be juniors. Outstanding sophomores will also be considered. Participants will receive a \$3000 stipend, room and board, a \$600 airfare allowance, and paid tuition for 2-credit hours. Further information and applications are available at <http://biochemistry.tamu.edu/>. A

flyer describing the program is on the BAHS bulletin board. Applications must be received by February 15, 2005. The program is funded by The National Science Foundation Research Experiences for Undergraduates (REU).

The Mayo Clinic College of Medicine is sponsoring a 10 week summer undergraduate research program beginning in early June. Possible areas of research include biochemistry and structural biology, biomedical engineering, cell biology, genetics, immunology, molecular neuroscience, molecular pharmacology and experimental therapeutics, tumor biology, virology, and gene therapy. The program carries a \$4000 stipend. Further information and applications are available at www.mayo.edu. The deadline for applications is February 1, 2005. A flyer describing the program is posted on the BAHS bulletin board.



Open House at PCOM

The Philadelphia College of Osteopathic Medicine is hosting an open house for their graduate programs on Friday, November 12, 2004 from 5:30 to 8:00 p.m. PCOM offers graduate programs in the biomedical sciences, physician assistant studies, forensic medicine, clinical and school psychology, and organizational development and leadership. Register by November 11 to PCOM'S Office of Admissions (1-800-999-6998 or admissions@pcom.edu).