A Newsletter of the Department of Biological and Allied Health Sciences, Bloomsburg University

BioSynthesis

Volume 1, Issue 1 (September 2002) BioSynthesis On-Line: http://departments.bloomu.edu/biology/biosynthesis.html

Biological and Allied Health Sciences

We are:

247 Allied Health Students
243 Biology majors
46 Secondary Education Majors (biology concentration)
4 Biology minors
8 full-time and 12 part-time graduate students
18 full-time and 1 half-time faculty members
1 secretary & 2 part-time student secretaries

Look what's inside:

Welcome!

Welcome to all of our new and returning students. We are glad you are here! You are studying biology and health science at an exciting time. Biology is daily news. Whether it is the debate on stem cell research or the evolution/creation science controversy, biological science will have an impact on all of our futures. New technologies will provide biologists with the tools to answer some of life's fundamental questions and to offer innovations that have the potential to transform society. The mission of the Department of Biological and Allied Health Science is to provide you with a high quality education that will prepare you to meet the challenges that lie ahead.

Our department is very diverse and very active. There are numerous opportunities for you to get involved and extend your education whether your interests lie in the health sciences or in biology. The purpose of this newsletter is to inform you of the department's activities and the many opportunities that await you. 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.

Meet our new chairperson and assistant chairperson

This summer Dr. Margaret Till assumed leadership of the Department of Biological and Allied Health Sciences. Dr. Till has been at Bloomsburg University for fourteen years. She has previously served as assistant chairperson of the department and as interim associate dean of the College of Arts and Sciences. Dr. Till is a physiologist by training, doing her graduate work at Auburn University and a post-doctoral fellowship at University of Alabama Medical School. She has taught previously at Old Dominion University in Norfolk, VA, and Troy State and Auburn University in Alabama. Dr. Till is the proud owner of a beautiful mule named Bella and a spirited horse named Cannon. In her free time, she enjoys gardening and hiking on the farm.

Dr. Marianna Wood is serving as the assistant chairperson of the department. She earned a B.S. in biology and chemistry from Northland College and a Ph.D. in ecology from the University of Kansas. Dr. Wood taught previously at St. John's University and the College of St. Benedict in Minnesota. Among the courses Dr. Wood teaches at BU are ecology, evolution, conservation biology, Concepts in Biology I and II, and University Seminar. In her spare time, she enjoys any outdoor activity-- camping, hiking, backpacking, canoeing, even biking to the University.

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. The committee will sponsor two events this semester. The first is an orientation session for students interested in attending professional school. The second is a practice MCAT exam to help students gain familiarity with both the format and the types of questions. MCAT, a test developed by the Association of American Medical Colleges, is the standardized test required for medical school. Dates and times for both events will be announced in biology and chemistry classes.

Other activities of interest to pre-professional students include:

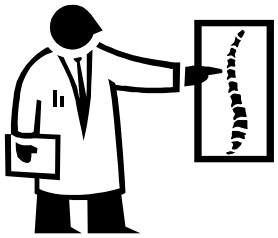
- A regional conference is being held for pre-professional students entitled "Meet the Deans." This is an opportunity to meet with representatives of various professional schools. The conference will be held on Saturday, October 5, 2002 at the Pennsylvania College of Optometry in Elkins Park, PA from 8:30 am to 2:45 p.m. The featured speaker is Dr. John F. Geehan, Director of Medical Education at Mercy Hospital, Scranton, PA and Associate Clinical Professor at Temple University School of Medicine. Other program highlights include breakout sessions to meet with representatives of the following professional schools: Drexel University College of Medicine, Pennsylvania College of Optometry, Temple University (Dentistry, Medicine, and Podiatric Medicine), Thomas Jefferson University Medical College, University of Medicine and Dentistry of New Jersey, University of Pennsylvania (Dental, Medical and Veterinary). Sessions also will be held on financial planning and application review. For an application and additional information, see Dr. Joseph Ardizzi, 74N1 Hartline. The conference registration fee is $14. Reservations must be made by September 20, 2002.

- Philadelphia College of Osteopathic Medicine is hosting an open house on Friday, September 27, 2002. 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 techniques, 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. There will be an opportunity to meet students and members of the faculty. For further information, please see Dr. Mark Melnychuk, 106 Hartline. Reservations must be made by September 20, 2002.

Medical Technology Updates

Medical Technologists, sometimes referred to as Clinical Laboratory Scientists, conduct laboratory tests that are essential for the detection, diagnosis, and treatment of diseases. They rely on sophisticated automated laboratory equipment and computer technology. Medical Technologists are currently in great demand! All of our recent graduates have had several job offers and sign-on bonuses. In addition to receiving offers at hospitals and clinics, many are being recruited for employment in forensics labs. Owing to the national shortage of medical technologists, starting salaries are up and those in the range of $40,000 or more per year are common. Medical technology at BU is a 3 + 1 program. Three years are spent at Bloomsburg University taking required science and general education courses and the last calendar year is spent off campus at an accredited hospital program for the clinical experience. Scholarships are available for the clinical year. Three BU students have currently begun their clinical year this semester. **Christina Lester** and **Lori Westbrook** are at Robert Packer Hospital, Guthrie Medical Center, in Sayre and **Michael Weaver** is at Susquehanna Health System in Williamsport. For more information about opportunities and careers in medical technology, see Dr. Parsons, Medical Technology Advisor, or Dr. Kipe-Nolt, Allied Health Coordinator.

Medical Imaging Updates



New Affiliate in Medical Imaging: The Geisinger Health System Option

Medical Imagers are allied health professionals who have expertise in the operation of imaging equipment and the preparation of patients for various diagnostic and treatment procedures. Bloomsburg University has several options for clinical training available to students. A new affiliation with the Geisinger Health System was recently established. In this option, the Geisinger School of Radiography accepts up to ten Bloomsburg Medical Imaging students for admission into their clinical program each fall. Students take the same courses at Bloomsburg as in the standard option, but some of these may be taken during the two-year clinical experience (3 to 7 credits of evening/night classes each semester). Students pay Bloomsburg University tuition and fees throughout the four-year program, and the University then pays Geisinger for their portion of the education program. The ten students who have been accepted into the inaugural class are: **Desiree Hackenburg, Janine Hess, Lisa Johnson, Natasha Kovach, Calvin Mahoski, Ember McCarty, Awawu Osunde, Lindsay Smith, Adam Strzempek, and Tara Womer**. For more information contact Dr. Kipe-Nolt, Allied Health Coordinator.

BU Medical Imaging Students head to clinical

Twenty BU students have begun clinical training programs in Medical Imaging this semester. Students who have started at Johns Hopkins Hospital are **Kathleen Connors, Megan Hoffman, Chad Killeen, and Marie Wadding.** Reading Hospital is the clinical site for **Melissa Glunz, Nadirah Muhammad, Janel Snyder, and Amanda Watkins. Harold Allen and Sameerah Williams** are enrolled at MCP Hahnemann in Philadelphia. St. Joseph's Hospital in Hazleton is the clinical site for **Sara Goerlitz, Sandra Pfleeger, and Gina Rizzardi. Meredith Stocker** is beginning her clinical training at Bellevue Hospital in New York City. **Jennifer Phillips** is receiving her clinical experience at Albert Einstein Medical Center. **Mike McCloskey, Stacey Ciccanti, and Kelly Mullen** are at Abington Memorial Hospital. We wish them all a successful clinical experience.

Medical Imaging Advisors: Dr. Kipe-Nolt, Dr. Shonis, and Dr. Hranitz

Attention Allied Health Students: Fall is the season for affiliate visitations

Several of our clinical affiliates are planning to visit BU this fall to tell students about their programs, to discuss the application and admissions process, to discuss financial aid and scholarship opportunities, and TO RECRUIT YOU! Some of the affiliates who are planning to visit campus this fall include Hahnemann University (physical therapy) Johns Hopkins Hospital (medical imaging), Thomas Jefferson University (physical therapy, occupational therapy, medical imaging), Abington Memorial Hospital (medical imaging), Robert Packer Hospital (medical technology), and Geisinger Health System (medical technology). Keep your eyes posted for dates and locations. Announcements will be made in biology classes.

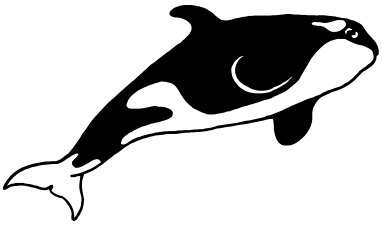
BU Students Go to the Head of the Class

Five BU secondary education in biology majors are moving to the front of the class this semester as they begin their student teaching experience. These students and their teaching placements are: **Larry Pryzblick** (West Hazleton and Hazleton), **Alex Kopashanski** (Benton Junior and Senior High Schools), **Bill Buza** (Dunmore and Abington Heights), **Austin Schofield** (Southern Columbia and Bloomsburg), and **Debbie Kupsho** (Wyoming Valley West Middle and High Schools). 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 have received training in implementing inquiry-based learning practices in their classrooms. They also may be visited on-site by both education department faculty and faculty from the Department of Biological and Allied Health Sciences. The faculty from the Department of Biological and Allied Health Sciences serve as a resource for lesson content and teaching approaches. Participating faculty from the Department of Biological and Allied Health Sciences include Dr. James Parsons, Dr. Marianna Wood, and Dr. Cindy Surmacz. This program is now in its second year and has been well-received by both participating students and faculty. Coordinating the program is Dr. Shelley Randall from Educational Studies and Secondary Education.

Scholarships Available for Secondary Education Biology Majors

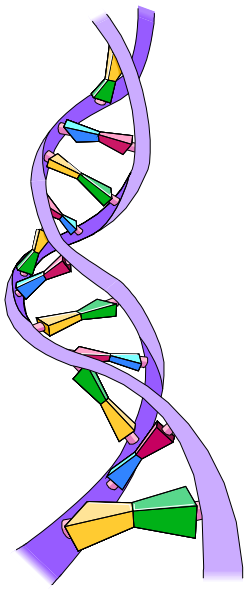
In an effort to attract excellent science students to a career in teaching, the National Science Foundation is providing 25 merit-based scholarships to students under a statewide program called the Collaborative for Excellence in Teacher Preparation (CETP-PA). Scholarships will be awarded to students (freshman through graduate students) in State System Universities who are currently enrolled in secondary education programs in math or any of the sciences. The award is $2,000 per semester. The funds are renewable for a second semester (pending review) and are paid directly to BU for educational expenses. Applicants in secondary education must have a GPA of 3.0 (3.5 for applicants for Fall 2003). Spring Semester Applications must be postmarked by Oct. 15 and Fall semester applications must be postmarked by April 1. Scholarship recipients will be expected to work with our local Math and Science Center, to assist with recruiting efforts, to act as a peer mentor, and to participate in state teaching conferences. To learn more about the program and to obtain an application, please contact Dr. Emeric Schultz, Director of the Honors Program (Luzerne Hall). Dr. Schultz is serving as the "campus shepherd" for BU applicants. Please consider applying for this prestigious scholarship. This is a great opportunity to be at the forefront of science education reform.

Marine Science Updates



Students majoring in our B.S. Biology program may select the marine science option. This option provides students with the opportunity to specialize in marine biology while obtaining a foundation in the fundamental principles of biological science. Specific courses in marine biology are offered each summer at the Marine Science Center, Wallops Island, Virginia, a field station supported by the department. This past summer, Bloomsburg University students enrolled in courses in Marine Biology, Marine Botany, Marine Invertebrates, Marine Ornithology, Marine Mammals, and Behavior of Marine Organisms. Graduate students may also use this facility to take graduate-level courses in marine biology or to pursue research projects at the Bloomsburg University Marine Biology Laboratory. On May 4, the Marine Science Center held the official dedication ceremony of its new cafeteria. BU's own Dr. Thomas Klinger serves as the Vice President for Academic Affairs at the Marine Science Center. For additional information about the marine science option or the Marine Science Center, please see Dr. Klinger (005 Hartline—on the red floor in the basement).

New Biotechnology Option



Biotechnology is the use of biological processes and living organisms to either manufacture a product or to solve a particular problem. Biotechnology has given us new drugs, vaccines, diagnostic tests, agricultural products and even enzymes for laundry detergents. It has provided us with tools to solve environmental problems, to treat diseases, and to solve crimes. As a result , biotechnology is revolutionizing such fields as medicine, agriculture, forensics, pharmacology, wildlife management, environmental science, forensics, and the legal system. The tools of the biotechnologist are varied and include such techniques as cloning, genetic engineering, DNA fingerprinting, and tissue culture. According to the Biotechnology Industry Organization (BIO.org), the biotechnology industry has tripled since 1992 and employs 179,000 people. Pennsylvania ranks fifth in the U.S. in the number of biotechnology firms. There is a need for lab personnel in entry level positions in the biotech industry that require a bachelors degree in biology. To prepare students to meet this need, BU has recently approved an option within the B.S. biology major that provides a specialization in biotechnology. The requirements of the new biotechnology option are outlined in the table below. Students in the biotechnology option are required to take molecular biology , advanced topics in biotechnology, and biochemistry II. A new course in plant and animal tissue culture is being developed and may substitute for integrated physiology lab OR be counted as one of the biology electives. If you are interested in pursuing this option, please see Dr. Hansen.

Requirements for Biotechnology Option within the B.S. Biology degree

Biology Core Requirement		
50-114	Concepts in Biology I	4
50-115	Concepts in Biology II	4
50-242	Biol. of Microorganisms	4
50-271	Cell Biology	4
50-332	Genetics	3
50-333	Molecular Biology	3
50-380	Biology Seminar	1
50-445	Advanced Topics in Biotechnology	3

Chemistry Requirement		
52-115	Fund. Inorganic Chem.	4
52-116	Chem. Principles Measur.	4
52-230	Fund. Organic Chem. **	4
52-341	Biochemistry	4
52-442	Biochemistry 2	4

** If you are considering post-graduate education, please know that ONE course in organic chemistry will be insufficient. You are advised to take:
52-231 Organic Chemistry I AND
52-232 Organic Chemistry II

Physiology Requirement		
50-479	Integrated Phys. Lab.*	1
AND at least one of the following:		
50-472	Animal Cell Physiology	3
50-474	Vert. Systems Phys.	3
50-477	Plant Physiology	3
50-478	Microbial Physiology	3

* Tissue Culture may substitute for IPL for declared Biotech Option students. It may not substitute and also count as a biology elective.

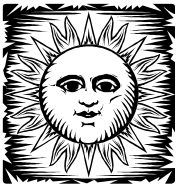
Physics Requirement		
54-111	Introductory Physics I	4
54-112	Introductory Physics II	4

Mathematics Requirement		
53-123	Essentials of Calculus	3
53-141	Intro. to Statistics	3

A minimum of 12 credit hours of Biology Electives must be selected from this list: Immunology; Ecology; Undergraduate Research in Biology; Microbial & Molecular Genetics; Virology; Environmental Microbiology; Animal Cell Physiology; Systemic Physiology; Vertebrate Systems Physiology; Plant Physiology; Microbial Physiology; Integrated Physiology Lab; Internship in Biology; and Plant and Animal Tissue Culture.

Social Implications of Biology is also required. It may be counted under Values, Ethics and Responsible Decision Making in the General Education Program.

What I Did on My Summer Vacation...



Check out what the following Biology/Allied Health Students did this past summer:

Meredith Murray (biology) worked as a Scientific, Engineering, and Technological Intern at the Williamsport Office of the Department of Environmental Protection (DEP). Meredith got a lot of great field experience (and got to drive the DEP car also!). She worked on black fly population control and was involved in the detection of West Nile Virus in area mosquito populations. Her work took her to ponds, creeks, and rivers in the 14 counties in north central PA.

Larry Pryzblick (secondary education, biology) served as the assistant director of the Children's Summer Arts and Science Museum in Bloomsburg. As part of his duties, Larry developed and built exhibits, organized volunteers, and taught classes on biodiversity, conservation, and pollution.

Rachel Melnick (biology) worked as an intern in the Microbiology Department at the Bureau of Labs of the Department of Environmental Protection in Harrisburg. She was responsible for testing water quality. She tested for total and fecal coliforms in water samples from homeowners' wells, state park beaches and streams, and industrial sources. She has become an expert on making media!

Angela Sabol (biology) did an internship at the Weis Research Center, Geisinger Medical Center, in the lab of Dr. Janet Robishaw. She studied the behavioral phenotypes of γ7 double knockout mice. These are mice that are genetically engineered to be homozygous for the deletion of the γ7 gene. This gene codes for a protein that plays an important role in signal transduction pathways in the cell.

Bethany Klein, a biology minor and anthropology major, took classes in forensics at the University of New Orleans. She studied fragmentary human osteology (identifying human remains from bone pieces) and practical applications in forensic anthropology. She plans to apply to graduate programs in forensic anthropology.

Lois Kirchner (biology, marine science), **Tiffany Kulaga** (biology, marine science), and **Rachel Radel** (biology) were among the BU biology majors who took courses in marine biology at the Marine Science Center, Wallops Island, Virginia.

Chris Urie has successfully completed his 3-month Internship aboard the NOAA Research Vessel Ka'Imimoana in the central Pacific Ocean. Dr. Thom Klinger was Chris's academic supervisor.

Denise Lucas (biology, pre-dentistry) worked in the office of an oral and maxillofacial surgeon this summer and observed numerous extractions and surgeries.

News You Can Use

Need help in Concepts in Biology I?

Mentoring/tutoring for both the lecture and lab of Concepts in Biology I is available in 122 Hartline Science Center from 7 p.m. to 9 p.m. every Tuesday, Wednesday, and Thursday. For the first half of the semester, mentors will have practice exam-type questions to work though. Questions will be available for one week only and each week will cover a new set of questions covering the previous week's topics in Concepts I. Mentors include the following upperclassmen: Jenn Kruk, Larry Pryzblick, Holly Williams, Steve Spencer, and Brett Siegfried. Hope to see you there!

How to find out who is your academic advisor

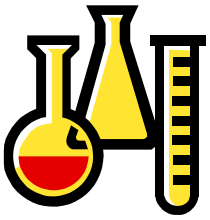
Across from the main department office (125 Hartline Science Center) is a bulletin board that lists all students and their academic advisors. A list of faculty office locations appears immediately to the right.

Deadline to apply for December graduation: SEPTEMBER 20, 2002

Stay Connected! Two important sources of information are:

1) The BU Biology/Allied Health Website http://departments.bloomu.edu/biology/
2) The bulletin board case near the office (Notes, Notices, and Nonsense)

Undergraduate Research Underway!



Loren Abbott will be examining competition between different strains of beneficial bacteria that infect bean roots and fix nitrogen. Loren's project is being conducted as part of the requirements for Honors Independent Study in Biology. Loren's mentor is Dr. Kipe-Nolt.

Angela Sabol has begun an Honors Independent Study project investigating the toxicity of various chemicals on the black worm *Lumbriculus variegatus.* Black worms are useful for toxicity testing because they an important part of aquatic food chains and are sensitive to a wide variety of toxins. Angela will specifically determine how pesticides and herbicides affect pulse rates in the black worms and if there are synergistic effects of these chemicals. Angela's mentor is Dr. Surmacz

Rachel Melnick has just begun an Honors Independent Study in Biology with Dr. Chamuris. Rachel will be investigating several aspects of spore germination and spore formation in basidiomycete fungi (mushrooms and bracket fungi). Preliminary research in Dr. Chamuris' lab has suggested that the basidiospores of some bark- and wood-inhabiting fungi are stimulated by exogenous carbohydrate, and that the stimulation displays saturation kinetics. Rachel will be verifying these findings, as well as testing other species with the underlying supposition that environmental factors (such as exogenous carbohydrates) may signal the spores as to the availability of a suitable source of energy for the early stages in mycelium establishment. Rachel will use various fungi, and an array of carbohydrates for this portion of the study. The preliminary work on basidiospore germination in the bark-inhabiting mushroom *Mycena meliigena* has also strongly suggested that some basidiospores are shed lacking a nucleus, and therefore will not germinate and establish a mycelium. Rachel will be collecting and fixing specimens of this fungus so that in the spring semester she can attempt to document any aberrations in the karyological events leading up to basidiospore formation. She will be using fluorescence microscopy for this portion of the study.

Meredith Murray is working as a research volunteer in Dr. Willliams' lab. They are investigating the effects of smoke on germination rates of lettuce seeds.

Kelli L. Schaffer is examining the anti-microbial activity of various types of garlic. She will be screening ten varieties of garlic for their qualitative effects on gram-positive and gram-negative bacteria and on eukaryotes. Kelly is enrolled in Undergraduate Research in Biology. Dr. Parsons is her mentor.

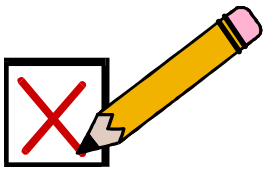
Justin Bixler is working with Dr. Wassmer to characterize the biological rhythms of various species of roaches and beetles. Their goal is to determine which species are good candidates for space flight in order to study the effects of gravity on biological rhythms. They have identified the Blue Death Feigning Beetle *Cryptoglossa verucossa* as an ideal insect for future experiments in space. The beetles have beautiful rhythms and should be able to live for several months without food or water.

Kristel Price conducted research in Dr. Klinger's lab on cell growth and proliferation in *Strongylocentrotus droebachiensis* (Green Sea Urchins) (Echinodermata: Echinoidea) following a short-term, temporally-varied feeding schedule. To support her work, Kristel obtained a grant from the Commonwealth of Pennsylvania University Biologists.

LeeAnn Hess (medical technology) is conducting Undergraduate Research in Biology aimed at identifying the time course of expression of edg receptors (sphingosine-1-phosphate receptors) in developing zebrafish. The edg-5 receptor has been identified as a key receptor whose expression corresponds with the specification of embryological tissues towards heart differentiation. By applying RT-PCR techniques to mRNA extracted from various developmental stages of zebrafish embryos, she aims to produce an accurate time course of the expression of edg receptors in embryological development. LeeAnn's mentor is Dr. Hanson.

Jen Bryant (biology, premedicine) and **Brent Siegfried** (biology) are assisting Dr. Hansen in developing strategies to clone G protein γ subunits genes from a variety of non-model vertebrates and invertebrates. The primary approach will be to design primers based on conserved regions identified from corresponding genes from model organisms (*C. elegans*, *Drosophil*a, sea urchins, zebrafish, *Xenopus*, chicken, mouse and human) to amplify corresponding cDNAs from various target organisms. By gaining proficiency in a variety of molecular techniques and a background in G protein structure and function, both Jen and Brent plan to develop Independent Research Projects for the Spring 2003 semester.

Faculty and Staff: News and Updates



Welcome to new faculty!

Several new faculty members have joined us this fall semester:

Dr. Barry Nolt is presently teaching medical terminology and lab sections in Cell Biology and Concepts in Biology I. Dr. Nolt earned his undergraduate degree in Biology at Messiah College (Grantham, PA) and then went to Penn State for his masters and doctoral degrees in Plant Pathology, specializing in plant viruses. After graduate school, he headed to India (with his wife, Dr. Judy Kipe-Nolt) and worked as a research fellow for two years in the International Crops Research Institute for the Semi-Arid Tropics. As part of a multidisciplinary team he studied the viruses that cause diseases in groundnut (peanuts). He then moved to the International Center for Tropical Agriculture in Cali, Colombia where he directed a research program on the identification and control of viruses affecting cassava, an important root crop. He has taught at Bloomsburg on a part-time, temporary basis, over the past four years and is excited to now be in a tenure track position. He has conducted some research on the effects of compost on plant disease suppression and looks forward to working with students who are interested in plant and agricultural research.

Mrs. Karen Avery can be found teaching Cells, Genes, & Molecules and Ecology & Evolution. She holds a masters in biology degree from Bloomsburg University and a bachelors degree in biology from Lycoming College. She has previously taught at Montgomery High School. Her areas of interest include molecular biology and education. Mrs. Avery is an avid runner and is training for a marathon on October 27 to benefit the Leukemia and Lymphoma Society. She has two children. Her office is 113A Hartline.

Mrs. Melinda Diltz teaches Introductory Microbiology Lab. She holds a masters degree in biology from Millersville University and a bachelors in biology degree from Bloomsburg University. She is active in the Fishing Creek Watershed Association and serves as its secretary and co-chairperson for monitoring. She has two sons and helps out with the Cub Scouts. In her spare time she enjoys gardening and fishing.

Dr. John Hranitz is currently teaching Anatomy and Physiology, Concepts in Biology and Human Biology. (You can read more about him in our faculty feature.)

Two BAHS profs retire

Dr. Louis Mingrone and **Dr. Judith Downing** recently retired from Bloomsburg University after long years of dedicated service. Dr. Louis Mingrone's career at Bloomsburg University spanned over 30 years. During this time, Dr. Mingrone taught a variety of courses such as general biology, biology of plants, and field botany. Dr. Mingrone was actively involved in the athletic program at BU and coached on the men's soccer and football teams. He served as chairperson of the department for 16 years. During his tenure, the department increased both in the number of faculty and students and the diversity of its offerings. Dr. Mingrone served as the academic advisor to students enrolled in the secondary education in biology degree program.

Dr. Judith Downing, a microbiologist, retired after 27 years in the department. She taught courses in medical bacteriology, virology, and immunology. She was instrumental in developing the course Writing in Biology. Dr. Downing advised students who were enrolled in the Medical Technology curriculum or the Microbiology option. Drs. Mingrone and Downing have been elected faculty emeriti and both currently live nearby.

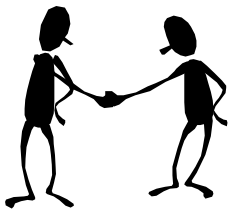
We miss you Dr. Davis!

Dr. George Davis is on medical leave this semester. We all wish him well in his recovery and look forward to his return. Cards and well wishes can be left in the Biological and Allied Health Sciences Office (125 Hartline). We will make sure they get to him. Dr. Davis's advisees can check in at the office to be assigned to an interim advisor.

Meet our Staff

Our main department office is located in 125 Hartline Science Center (the room with the picture window!) **Ms. Vicki Beishline** is the department secretary. She has been at the University for 24 years and holds a bachelor's degree from BU in Office Administration. **Shanna Davis** and **Suzanne Peist** are our part-time student secretaries. Other student workers include **Rachel Melnick**, greenhouse caretaker, and **Amy Magana**, lab assistant.

Faculty Feature: Meet Dr. John Hranitz



In each issue of the newsletter we would like to introduce to you one of the members of the faculty. This issue features one of our new faculty members Dr. John Hranitz.

I was born in Fairbanks, Alaska at Basset Army Hospital and lived in Alaska until I was about one and one-half years old, at which time we moved back to my parents' home town in western Pennsylvania. When I was entering second grade, Dad accepted a position at Bloomsburg State College (now Bloomsburg University) and we moved to Danville, where I attended school until high school. During my Freshmen year in high school, Dad bought the farm and we indeed moved to the farm near Bloomsburg. I have two sisters, Larissa who is a pharmaceutical sales representative, and Vanessa who works in her own computer business. From both parents, I learned the importance and value of education, hard work, and self-motivation. During the wide array of outdoor activities with my father, I gained an initial appreciation of nature.

After graduating high school, I "went off to college" at the newly renamed Bloomsburg University of Pennsylvania (BU). Over the next six years at BU, I earned my Bachelor of Science (B.S.) in Biology and Master of Science (M.S.) in Biology degrees. The experiences that I enjoyed as a student sparked my interest in becoming a biologist. From the broad strokes painted in ecology, evolution, and various organismal biology classes to the details revealed in physiology and genetics, the biology curriculum supplied me with the foundation of knowledge and skills to do biological research. I received my initiation into biological research by studying parasites with Dr. Lynne Miller and Dr. Mark Melnychuk in my junior-senior years and quickly understood why every faculty member has a passion about something biological. It is not something that you can either turn off or ignore. Nevertheless, the long hours at the microscope convinced me of the value of working with organisms that can be observed with unaided eyes. Shortly thereafter, I studied toads on Assateague Island and the nearby mainland (near the Wallops Island Marine Science Center) for my thesis research, with Dr. Thomas Klinger, Dr. Fred Hill and Mr. Robert Sagar on my committee.

The realization that I chose a truly exciting career did not occur until shortly after the seemingly arduous drive to Starkville, Mississippi. Upon entering graduate school to pursue the Doctor of Philosophy degree at Mississippi State University, I again noticed that everyone, but especially my major professor Dr. Walter Diehl, was passionate about something biological. It was during this first year that the value of the sound education I received became obvious. The foundation put in place by innumerable experiences in the classroom, field trips, and laboratory was just beginning to be adorned with the trappings from the advanced courses in my program of study. Skills that I already possessed yielded tremendous benefits in terms of my ability to work independently in the laboratory and the field and a shortened learning curve. In what seemed like an amazingly short time (four years), I found that toad tadpoles with increased heterozygosity attained a larger size in natural ponds, I was reporting the findings at meetings and, most unnerving of all, I was searching for a faculty position.

In 1993, I once again packed everything I owned and journeyed to Edmond, Oklahoma. Edmond is home to the University of Central Oklahoma, the Bronchos, and is about 20 minutes north of Oklahoma City. In my first year, anyone would have experienced difficulty in picking me out a line-up filled with UCO students. I wore ties with little effect. I taught a variety of courses in biology and also collaborated with faculty and students to research the ecology, genetics, and physiology of several animals. Students that participated in research were motivated for different reasons, some were pre-medical students wanting to gain insight into research and others were biology majors who simply wanted skills to help them either gain employment or enter graduate school after graduation. Nine years and many students later, I found myself packing another moving van and on the road to Pennsylvania. Now, with my feet firmly planted in the Fall 2002 semester as a new faculty member, I am excited to be collaborating with this faculty to provide educational opportunities to BU students.

Undergraduate Research in Biology: Attention all Undergraduates

The Biology degree opens many doors, but an essential component to getting through the door into that first job or advance degree program is **RESEARCH EXPERIENCE**. Where do you get **RESEARCH EXPERIENCE?** Right here at Bloomsburg University. The research interests of the Department of Biological and Allied Health Sciences are very diverse: From molecular biology to whole animal physiology, with specialties in anatomy, cell biology, ecology, and evolution and covering almost all types of organisms. While internships and independent research projects can be part of your degree program, you do not need a formalized course structure to gain research experience. Simply approach a faculty member and talk to them about research opportunities. The department websites (http://departments.bloomu.edu/biology/resint.html) lists the research interest of each faculty member. You should view research experience as a component to becoming a biological scientist. It is a time commitment, like any extracurricular activity - but the gains are immense: practical experience; gathering of novel data that no one else has yet seen; building a close relationship with a faculty member (great for those letters of recommendation); and gaining entrance into the scientific community.

Focus on Faculty Research: Meet Dr. Carl Hansen

In each issue of the newsletter, we would like to introduce the research program of one of our faculty members. This issue features Dr. Carl Hansen.

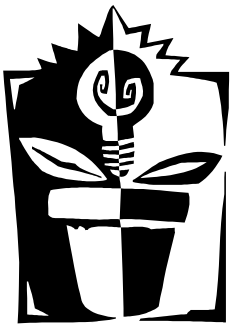
My research is focused in two major directions. The first of these is to understand the role of cell signaling pathways in embryological development. Following fertilization, a genetically determined developmental program is activated and then directs the single cell to develop into a multi-cellular adult organism. A primary mediator of this developmental program is a series of extracellular signals that coordinate cell division and cell specialization, leading to embryogenesis (formation of the basic body plan) and organogenesis (formation of the internal organs). We are currently investigating the developmental expression of a family of proteins known as heterotrimeric G proteins, which function to maintain the specificity and fidelity of cell signaling pathways. In order for a cell signaling pathway to be competent to respond to extracellular signals, the cell surface receptors must be appropriately coupled to the necessary intracellular effectors. That is, the appropriate coupling proteins must also be present. We are using a combination of genomic analysis, RT-PCR and *in situ* hybridization techniques to elucidate the embryonic expression pattern of the more than 35 G protein subunits. Quantifying the developmental expression patterns of G proteins will generate novel data addressing the molecular and biochemical mechanisms underlying vertebrate development. Understanding normal vertebrate development is essential to understanding the perturbations underlying hereditary diseases and congenital birth defects. A component of this research is currently funded by a Bloomsburg University Research and Disciplinary Project Grant entitled: *Molecular Signaling in Embryological Development.* Additional components of this research project are being performed in collaboration with the Janet Robishaw lab at the Weis Center for Research at Geisinger Clinic.

The second major research direction is to understand the relationship between structure and function of heterotrimeric G protein γ subunits. The G protein γ subunits family currently stands at 13 subunits. Interestingly, the amino acid sequence of each subtype is highly conserved across several vertebrate species, but between subtypes, the amino acid sequence can be up to 75% divergent within the same species. In order to help define the function of these subunits, yet also understand the conservation of structure across species, we are looking at members of this family in animals living in rather extreme environments. This approach should identify several key amino acids involved in G protein function. Currently we are using RT-PCR techniques to amplify G protein γ subunit cDNAs from Antarctic Ice-fish (who live at a constant -2C), which will subsequently be sequenced and compared with G protein sequences from zebrafish and other vertebrates.

Students wishing to participate in either of these projects should contact Dr. Hansen.

Calling all Hikers and Nature Enthusiasts!

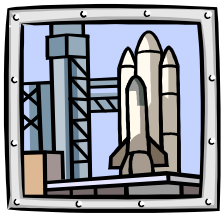
Dr. George Chamuris has just published the second edition of his *Hiker's Guide to the Trees, Shrubs, and Vines of Ricketts Glen State Park*. The guide introduces the reader to 79 species of woody plants that grow along the various hiking trails in this nearby park. The first edition of the guide was funded by an applied research grant from the PA State System of Higher Education. The guide is beautifully illustrated by Susan Grace and George Chamuris. To see a copy, see Dr. Chamuris or ask at the Park Office. Don't hike without it!



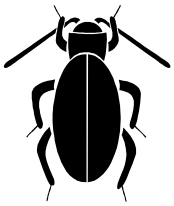
BAHS Acquires New Equipment

The Department of Biological and Allied Health Sciences has recently acquired a new Environmental Growth Chamber through university funds. The chamber will allow plants to be grown under conditions of controlled light and temperature. Dr. Kevin Williams would love to show you this new acquisition–it is almost as large as his office!

Bugs in Space!



NASA has selected experiments proposed by BU's Dr. Gary Wassmer, and Drs. Hoban-Higgins and Fuller from the University of California, Davis, for flight definition. The proposed experiments examine the effects of gravity on biological rhythms. Flight definition has three stages: 1) selecting animal models and designing experiments, 2) conducting ground studies to determine that the study is feasible and to gather preliminary data, and 3) flight. Dr. Wassmer and his co-workers have successfully completed stage 1 and are just starting stage 2. Bloomsburg University will be a sub-contractor for stages 2 and 3. Justin Bixler (a biology major) and Dr. Wassmer have studied several species of roaches and beetles, and begun experiments characterizing their rhythms. Their studies identify the Blue Death Feigning Beetle *Cryptoglossa verucossa* as an ideal insect for these experiments. They hope to fly these on the Space Shuttle in 2004 or 2005. Dr. Wassmer is looking for students interested in doing work on this project or other projects looking at how animals tell time. If you are interested in this research opportunity, please see Dr. Wassmer (132 Hartline). You can also visit the roaches and beetles!

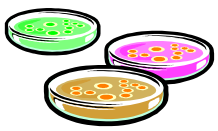


Biology Club News

The Biology Club held its first organizational meeting on Tuesday, Sept.10, 2002. The following students will serve as officers for the 2002-03 academic year: **President: David Hakim** (secondary education, biology), **Vice-President**: **Chris Bosco** (biology), **Secretary**: **Holly Williams** (pre-medicine), and **Treasurer, Brett Siegfried** (biology). Ideas for future activities include holding a picnic, hiking at Rickett's Glen, selling biology T-shirts, and sponsoring the second annual Biology Banquet in the spring.

BU Biology Major Interns at PA Dept of Agriculture

Elizabeth Bonnes is doing an internship at the PA Department of Agriculture in Harrisburg in their Plant Industry Lab. Betsy will work on a team to isolate and identify various plant pathogens before the plants are released to the public market. She will gain hands-on lab skills in bacteriology, mycology and virology. Dr. Barry Nolt is Betsy's academic supervisor.



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 pro gram coordinator, Dr. Carl Hansen (123 Hartline).

Graduate Student Updates

Returning Full-time Graduate Students:

Soniya Sinha admitted to candidacy in the Masters Degree Program in January 2002. She is currently spending her time as a Research Intern at the Weis Center for Research at Geisinger Clinic and is planning to complete her program for a December 2002 graduation.

Justin Reis was admitted as a candidate to the Masters Degree Program in May of 2002. He is currently serving as a Graduate Assistant in the department with responsibilities to Cell Biology and Integrated Physiology laboratories. He is also in the process of organizing a Friday afternoon Journal Club, open to anyone who wishes to get a feel of the cut ting edge of the research world.

Jennifer Venditti was admitted as a candidate to the Masters Degree Program in August of 2002. She is currently a Graduate Assistant with responsibilities to the Concepts I and II laboratories.

Holly Richendrfer is returning for her second year of graduate studies.

New Full-Time Graduate Students:

Michelle Bradley is serving as a Graduate Assistant with responsibilities to the Microbiology laboratories.

Constance Wilson s serving as a Graduate Assistant with responsibilities to the Anatomy and Physiology laboratories.

Amy Mudry is currently serving as a Graduate Assistant in the Office of Social Equities.

Khalique Ghani and Isoken Osunde are new full-time graduate students. Welcome aboard!

Part-Time graduate students include: **Rodney Maxfield, Patrice Harrigan, Jocelyn Holodick, Robert Hartman, Nina Green, Emily Kramer, Richard Spear, Roseann Weinrich, Michael Fountain,** and **Wade Jodun**.

Theses Completed

Several graduate students have recently defended their masters theses and have completed their degree requirements:

Joseph Connaghan's thesis was entitled *Plant Pathogen Suppression in Container Media with Compost Amendment.* Joe's mentor was Dr. Kipe-Nolt. He has recently started in the Ph.D. program in Microbiology at Penn State.

Dawn Seiders' thesis addressed *Nutrient Content and Odor Reduction of Swine Manure Following Anaerobic Digestion.* Some of you may have helped Dawn collect data by donating your nose! Dr. Kipe-Nolt served as her thesis advisor. Dawn is presently a first year medical student at Hershey Medical Center.

Dan Aruscavage's thesis described *The Use of Leaf Litter Compost for the Bioremediation of Diesel Fuel-Contaminated S oil.* Dan's thesis advisor was Dr. Kipe-Nolt. Dan is currently teaching Anatomy and Physiology and Microbiology at a nearby community college. In Jan., he hopes to begin a Ph.D. program in food science at Ohio State or Penn State .

Peter Bernhardt successfully defended his research, entitled *A morphometric comparison of the pelagic barnacle, Lepas anatifera, under various environmental conditions in the equatorial Pacific Ocean during the 1997-1998 El Nino.* Dr. Klinger served as Pete's thesis advisor. Pete is presently at Old Dominion University in Norfolk, VA where he serves as a lab director for several bio-oceanography projects.

Kevin (a.k.a.Tuna) Purcell thesis was on *Nitrogen assimilation efficiency of Bermudian Poriferans.* (Yes, Tuna really did this work in Bermuda—a tough job!) Dr. Klinger was Tuna's advisor. He is working at the Hershey Medical Center.

Karen Avery's thesis work examined the genetic diversity of prairie grass. Dr. Wood chaired Karen's thesis committee. Karen is currently teaching in the Department of Biological and Allied Health Sciences at BU.

Graduate Research

Michael Fountain has submitted an abstract describing his research on gene flow among mid-Pacific goose necked barnacles for inclusion on the program of the Annual Meeting of the Society for Comparative and Integrative Biology in January of 2003

Soniya Sinha has been spearheading an *in situ hybridization* approach to determine the time course and the spatial localization of G protein expression during embryological development in zebrafish, an established scientific model for vertebrate development. She is doing a research internship at the Weis Center for Research at Geisinger Clinic to learn this methodology.

Justin Reis is beginning his thesis research focusing on describing the structure of G protein γ subunit genes in Antarctic Ice-fish. He is designing PCR primer pairs based on conserved coding regions of homologous zebrafish G protein γ subunit genes to amplify the corresponding ice fish orthologs. The PCR products will be sequenced and used to design additional primer pairs, which will be used to obtain the corresponding genomic sequence using a 5'-RACE strategy.