



BioSynthesis

Volume 2, Issue 1 (February 2003)

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

Spring Semester Dates & Special Events

- FEB 11:** Spring Into Health Series: Your Healthy Voice
- MAR 3:** Last day to sign up for August Graduation
- MAR 4:** Spring Into Health Series: Body Composition Assessment
- MAR 10-14:** Spring Break
- APR 3-4:** Health Sciences Symposium
- APR 8:** Spring into Health Series: Marijuana: Friend or Foe
- APR 11-13:** Commonwealth of University Biologists Meeting
- APR 26:** MCAT Exam



Look what's inside:

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Science and Technology Symposium

Bloomsburg University hosted the second annual Science and Technology Symposium on Saturday, February 1, 2003. The symposium provided an opportunity for high school seniors who are interested in BU's College of Science and Technology to visit campus and meet with faculty and students. About 50 students and their families visited the Department of Biological and Allied Health Sciences. After a warm welcome and introduction by Dr. Margaret Till, department chairperson, our guests toured several department labs. They were treated to a variety of hands-on demonstrations that included everything from biotechnology and electrocardiography to photosynthesis in azaleas. The students also met with academic advisors to learn about our various academic programs in biology and allied health sciences. This was followed by lunch at the Commons and a campus tour. Special thanks to the following Biology and Allied Health majors who took time from their weekend to meet with our visitors: **Rachel Melnick, Nicole Zimmerman, Meredith Murray, and LeAnn Hess.**

Who's Who?

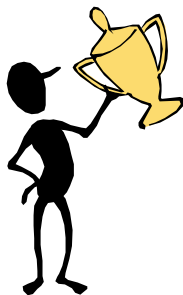
Department Chairperson	Dr. Margaret Till, 125 HSC
Department Secretary	Ms. Vicki Beishline, 125 HSC
Assistant Chairperson	Dr. Marianna Wood, 103 HSC
Allied Health Coordinator	Dr. Judith Kipe-Nolt, 104 HSC
Graduate Program Coordinator	Dr. Carl Hansen, 123 HSC
Department Webmaster	Dr. George Chamuris,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

Advisors: 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.

Check out the New Bulletin Board!

There is a NEW bulletin board on the green floor next to the elevator. You can't miss it—purple background, DNA border. (Quiz question for Concepts I graduates: Are the cells pictured in the border prokaryotic or eukaryotic?) You will find News, Notices, and Nonsense featured here. Please check it often. You are invited to post items of interest to biology and allied health students. Please submit your notice to the main office with a "post date" and a "removal date."

Salute to Academic Achievement!



Biology and Allied Health Students on the Dean's List

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! Students on the Dean's List may pick up their certificates at the Student Life Office, 329 Kehr Union between 8 a.m. and 4:30 p.m., Monday – Friday.

Pre-Physical Therapy

Jennifer Brocavich

Pre-Occupational Therapy

Elizabeth Muscarella

Medical Imaging

Greta Gore

Janelle Haas

Tyson Hale

Mary Katherine Johnson

Alison Lukjanczuk

Sarah Mott

Laura Reynolds

Brad Smith

Melanie Snyder

Pamela Startzel

Justin Stevens

Alison Wagner

Ellen Walter

Nicole Zimmerman

B.S. Biology

Lora Banks

Nicole Dalessandro

Tanita Eliam

Bryan Helm

John Ivey

Michael Kaminsky

Rachel Kaskie

Rebecca Kehler

Jennifer Kruk

Laura Owen

Amy Risen

Brett Siegfried—biotechnology

Erica Smith

Kristine Tofts

Valarie VanCleef

Erica Weiskircher-microbiology

Evan Yost-microbiology

Medical Technology

Loren Abbott

Secondary Education in Biology

Holly Binkley

Kelly Bryant

Andrew Cole

David Hakim

Debbie Kupsho

Alex Lopashanski

Lawrence Pryzblick (also B.A. Bio)

Austin Schofield (also B.S. Bio)

Elizabeth Wagner

Leanne Yeagley

Secondary Ed. in General Science

Janet Pegarella

Richard Piaskowski

Pre-Pharmacy

Edward Hance

Learning Communities Honor Academic Achievement

Several campus dormitories are homes to interest houses, communities that provide programs and living environments that foster learning and group interaction. The four campus Learning Communities honored their members who earned a GPA of 3.0 or higher at their first annual Academic Achievement Reception on January 15 at Kehr Union. The following Biology or Allied Health majors who reside in the Health Science Learning Community received awards: **Bryan Helm, Jessica Horst, Kelly Maziarz, MaryJo Melichercik, Elizabeth Muscarella, Keri Ondrusek, and Sabrina Zeimer.** Award recipients from Biology or Allied Health who are members of the Honors Program Learning Community include: **Samantha Anderson, Eileen Garvey, Abigail Hogue, Kristine Tofts, and Leanne Yeagley.** **Oluwasayo Adeyemo** is a biology major who received this award from the Frederick Douglass Learning Community.

Health Science Learning Community News: The Health Sciences Interest House will be located in Columbia Hall next year!

PRE-PROFESSIONAL COMMITTEE UPDATES



Open House: University of Medicine and Dentistry of New Jersey—School of Osteopathic

Medicine. Pre-medicine students are invited to an open house at UMDNJ on Friday, April 25, 2003 from 12:00 p.m. to 4:00 p.m. Register online at <http://som.umdnj.edu> Come take a campus tour and learn about their medical curriculum, admissions, process, and research activities.

Register NOW for April 26 MCAT

The MCAT is a standardized exam required for admission to allopathic, osteopathic, and many veterinary schools. The exam assesses mastery in biology, general and organic chemistry, physics, scientific problem solving, critical thinking, and writing skills. Scores are provided in four categories: biological sciences, verbal reasoning, physical sciences, and writing. It serves as a common yardstick for medical schools when comparing students from different colleges and universities. The exam is typically taken in the spring of the junior year or the summer between the junior and senior year. The exam runs about nine and one-half hours. **The next exam is scheduled for APRIL 26, 2003. The registration deadline is March 21 and the late registration deadline is April 4.** The summer MCAT is scheduled for August 16. The registration deadline is July 11. To register go to: <http://www.aamc.org/students/mcat/start.htm>

JAN PLAN

Geisinger Medical Center's Jan Plan brings pre-medicine students into the hospital for a first hand look at the medical profession. Students shadow physicians as they rotate through various departments of the hospital. Participating in Jan Plan this year were BU pre-medicine majors **Jen Slodysko** and **Amanda Schompert**.

Jen Slodysko rotated through the following departments at Geisinger: Surgery, Anesthesia, Pediatrics, Dentistry, IV therapy, Respiratory Care, Pulmonary Lab, Radiology and Infectious Diseases. Jen reports that a highlight of her experience was her observations of cardiac and orthopedic surgeries. Amanda Schompert rotated through Surgery, Infectious Disease and the Neonatal Intensive Care Unit. Amanda also found surgery to be fascinating and noted that her experience in the infectious disease department related most to her coursework in microbiology and mycology at BU. Both Amanda and Jen indicated that the Jan Plan was an excellent (and useful) experience. It allowed them to see first hand what physicians and other members of the health care team do on a daily basis. It provided information about medical careers that cannot be found in books and helped them to decide whether this professions was for them.

ANY QUESTIONS ABOUT PROFESSIONAL SCHOOLS? Please feel free to contact any member of the Pre-professional Committee. The co-chairs of the committee are Drs. Ardizzi and Melnychuk, Department of Biological and Allied Health Sciences. Other committee members include Drs. Surmacz, Hallen, and Berg.

Scholarships for Secondary Education in 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 3.5 GPA. Applications for Fall 2003 scholarships may be obtained from Dr. Emeric Schultz, Director of the Honors Program (Luzerne Hall) and are due **APRIL 8, 2003**. 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.

Student Teachers Put Theory into Practice

Three students have headed into area classrooms spring semester for student teaching. The students and their placements are: **Kelly Chernago** (Mount Carmel), **Mark Bassett** (Southern Columbia) and **Heather Medashefski** (Hazleton). These students will participate in a special program funded by the National Science Foundation called the Collaborative for Excellence in Teacher Preparation. As part of this program, these students have been trained in inquiry-based learning practices in their classrooms. They will be visited on-site by both their supervisor in the Department of Educational Studies and Secondary Education and faculty from the Department of Biological and Allied Health Sciences.

Health Sciences Symposium Juggling Life's Stresses: Creative Silliness



The twelfth annual health sciences symposium is slated for April 3 and 4, 2003 at the Kehr Union. The symposium is an opportunity for the campus and community to explore contemporary health issues in a multi-disciplinary setting. The theme of this year's symposium is "Juggling Life's Stress: Creative Silliness." The featured speaker is Steve Allen, Jr., son of comedian Steve Allen and a board certified family physician. Dr. Allen will take a light-hearted look at stress and emphasize the value of play and laughter in both reducing and preventing the body's negative responses to stress. Dr. Allen has successfully taken his message of the therapeutic value of humor to audiences ranging from Nobel laureates to corporations. Dr. Allen will present the keynote address on Thursday, April 3, 2003, 7:30 p.m. in Kehr Ballroom. He will also lead a workshop in Kehr Ballroom on Friday, April 4, 2003 at 8:30 a.m. In addition to the featured speaker, the symposium will feature posters and presentations by graduate students, undergraduates, and faculty. Awards will be given for outstanding Bloomsburg University undergraduate student posters. The symposium will also feature a Wellness fair, including over 60 exhibits, demonstrations, and booths on a variety of health and wellness topics. This is always a big hit! Mark your calendars now! The symposium is sponsored by the School of Health Sciences, the Berwick Health and Wellness Foundation, the Provost's Lecture Series, and the University Health Center.

Spring into Health Program Series



Everyone is invited to join the Health Sciences Learning Community for its *Spring into Health Program Series*. All of the featured programs are held on Tuesdays at 9:00 p.m. in Elwell lobby. Beside interesting topics and lively discussions, there is also FREE FOOD. Please join us for the following programs:

February 11: *Your Healthy Voice*—Speech Pathology Students. It's basketball season and you'll be cheering your team on to victory. But you may need to temper your enthusiasm so you'll have a voice after the game! Come and learn about how to protect and care for your voice. Feature Food: cheese and pepperoni pizza and soda.

March 4: *Body Composition Assessment*-Exercise Science Students. Several measures of body composition such as skinfold measurements and waist hip ratios are predictive of your future risk of heart disease, diabetes, etc. Free assessments by trained students from the Exercise Science Program. Feature food: turkey and ham hoagie and soda.

April 8: *Marijuana: Friend or Foe*. Dr. Margaret Till, Biological and Allied Health Sciences. Stop in to learn more about and discuss the recent scientific evidence regarding marijuana use. Feature food: mozzarella sticks, chicken fingers, and soda.

Geisinger Offers Program in Cardiovascular Technology



BU grad Jason Hollerahan recently visited the Department of Biological and Allied Health Sciences. Jason is currently enrolled in the School of Vascular Technology at Geisinger Medical Center. Jason is enjoying his experience and has asked *BioSynthesis* to share the following information about his program. Cardiovascular technologists are members of the health care team that specialize in the technologies that aid in the diagnosis and treatment of heart disease. Cardiovascular technologists are currently in high demand. An important procedure that cardiovascular technologists assist with is cardiac catheterization. In this procedure, a thin plastic tube (catheter) is threaded through a blood vessel in the arm or leg and then advanced into the heart chambers or coronary vessels. This permits physicians to visualize the heart and to determine if there are blockages. Jason's training at Geisinger will also include rotations in the following areas in the Cardiology Department: echocardiography, electrocardiography, exercise physiology, electrophysiology, critical care, open heart surgery, pediatric cardiology, outpatient monitoring, and the vascular laboratory. Cardiovascular technology at Geisinger is a 12 month hospital program that requires 4 months of class work and 8 months of clinical training. The program is accredited by the Committee on Allied Health Education and Accreditation (CAAHEP). Admission requirements include: an associate or bachelor's degree in an applied science and a cumulative GPA of 2.5 or above. Applicants with healthcare experience are preferred. The program begins each year in January; applications are due September 1. For more information contact the program coordinator, Donna Myers BS, RCIS, M.C. 20-11 Geisinger Medical Center, Danville PA.

Career Feature: Physician Assistant



Periodically, we would like to feature some of our programs and majors in *BioSynthesis*. Dr. Shonis, our academic advisor for pre-PA students, provides us with the following profile of a Physician Assistant and the training and preparation required to enter this profession.

What is a PA? The physician assistant (PA) is a health professional who is licensed to deliver healthcare under the supervision of a physician. The profession has grown substantially since its inception in 1965 when PA programs were established to help alleviate the burden of an uneven distribution and shortage of doctors. PAs perform the following duties: take medical histories, order and interpret laboratory tests, perform physical exams, diagnose and treat illnesses, assist in surgery and fracture repair, and counsel patients. PAs also have the authority to prescribe medications in 47 states and the District of Columbia. PAs are educated as generalists in medicine with primary care being emphasized. PAs, however, can work in specialty fields such as pediatrics, obstetrics and gynecology, orthopedic surgery, cardiovascular surgery, emergency medicine, family medicine, and internal medicine. Settings in which PAs work include hospitals, physician's offices, HMOs, correctional institutions, military installations, VA medical centers, public health agencies, nursing homes, community clinics, research centers, health care education and administration offices, industrial medicine clinics and even the White House! The Department of Labor estimates a 48% increase in the number of PA jobs available between 1998 and 2008. Starting salaries are around \$60,000 per year.

How do you become a PA? Students must graduate from an accredited physician assistant educational program and achieve certification by the National Commission on Certification of Physician Assistants (NCCPA). There are more than 126 accredited PA programs in operation. PA programs offer either a bachelor's degree, a master's degree, a certificate of completion, or an associate's degree in PA. PA programs that offer a bachelor's degree usually require approximately two years of college credits in appropriate fields (biology, English, humanities/social sciences, chemistry, math, computer science and medical terminology), although specific prerequisite courses for each PA program vary substantially. PA programs that offer a master's degree require either a bachelor's degree or appropriate undergraduate credits, with a minimum GPA. Almost all PA programs require substantial health care experience prior to admission. This health care exposure can be gained through paid work, volunteer work, shadowing PAs in practice, or internships within the medical field. PA programs last an average of 111 weeks. Most accredited PA programs take about 24 months to complete. Students generally complete 9-12 months of classroom studies and followed by 9-15 months of supervised clinical rotations during this two year period. Program application policies, procedures, and deadlines vary considerably. If interested in applying to a program always check with that institution well in advance to determine their specific requirements for admission. A very useful website for current information on programs is www.aapa.org. Students may also talk to Dr. Shonis in 113B Hartline Science Center.

What are some of the PA programs in Pennsylvania?

Included in the table below are a list of some of the programs in Pennsylvania and the degrees they confer upon completion.

Name of Institution	Location	Bachelor's required for entrance?	Degree Awarded
Arcadia University	Glenside, PA	Yes	M.S.
Chatham College	Pittsburgh, PA	Yes	M.S.
DeSales University	Center Valley, PA	No/Yes	B.S. or M.S.
Duquesne University	Pittsburgh, PA	86 credit hours	M.S.
Gannon University	Erie, PA	No	M.S.
King's College	Wilkes-Barre, PA	No	Certificate or M.S.
Lock Haven University	Lock Haven, PA	No	Certificate or M.S.
Marywood University	Scranton, PA	No	B.S.
MCP Hahnemann University	Philadelphia, PA	No/Yes	Post Baccalaureate Certificate or B.S.
Pennsylvania College of Technology	Williamsport, PA	No	B.S.
Philadelphia College of Osteopathic Medicine	Philadelphia, PA	Yes	Certificate or M.S.
Philadelphia University	Philadelphia, PA	No/Yes	M.S. or B.S. in Health Sciences + M.S.
Saint Francis University	Loretto, PA	No	M.S.
Seton Hill College	Greensburg, PA	No/Yes	Certificate or B.S.

Student Research Underway Spring Semester



The research labs in Hartline are buzzing this semester:

Loren Abbott is examining the effects of pH on competition between various strains of Rhizobia as part of the requirements for Honors Independent Study II. Loren's mentor is Dr. Kipe-Nolt.

Emily Bray is currently developing a proposal which examines methane production in anaerobic digestion for her Honors Independent Study research. Dr. Kipe-Nolt is Emily's mentor.

Jennifer Bryan is developing a method to isolate and culture hepatocytes from fish livers. These cells will be used as a model to explore the function of heterotrimeric G proteins. Jenn is conducting Undergraduate Research in Biology in Dr. Hansen's lab.

Rebecca L. Ebling is studying the antimicrobial effects of honey. Her mentor is Dr. Parsons.

Lois Kirchner is isolating DNA from barnacles, optimizing the PCR conditions for the cytochrome oxidase (subunit I) locus with Dr. Hranitz.

Tiffany Kulaga is isolating DNA from barnacles, optimizing the PCR conditions for the cytochrome b locus with Dr. Hranitz.

Rachel Melnick is continuing her research on spore germination and spore formation in basidiomycete fungi (mushroom and bracket fungi.) in Honors Independent Study II. Rachel is currently analyzing her results and planning for future studies that will use fluorescence microscopy to document suspected aberrations in the karyological events leading up to basidiospore formation. Dr. Chamuris is her research mentor.

Meredith Murray is working in Dr. Williams' lab. She is currently developing a lab exercise that examines the influence of hormones on C-Fern sex expression. She will also continue her research on the effects of smoke on seed germination.

Katy Parise is working with Dr. Hranitz on the parentage analysis of collared lizards from Oklahoma. She is using four microsatellite loci and sequences from two mitochondrial loci (cytochrome b and cytochrome oxidase (subunit III).)

Amy Risen's project is to clone a novel G protein gamma subunit from an Antarctic Icefish and determine whether its primary sequence reveals any modification that suggest function adaptation to its environment of -2C. Amy's Undergraduate Research Project is being conducted in Dr. Hansen's lab.

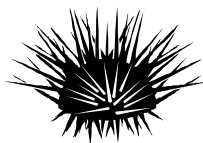
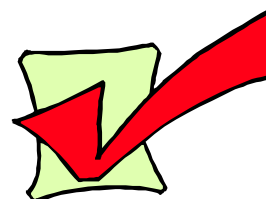
Angela Sabol is continuing her research on the effects of various pesticides on pulse rates in the black worm *Lumbriculus variegatus* in Honors Independent Study II. Angela has established the dose-response curves for 5 commonly used pesticides and is currently examining their synergistic effects. Angela is working with Dr. Surmacz.

Brett Siegfried is conducting a survey of the temporal and spatial distribution of heterotrimeric G protein gamma subunits in developing zebrafish. Brett will also be attempting to subclone several zebrafish gamma genes into expression vectors for transfection into fish hepatocytes. Brett is conducting an Undergraduate Research project in Dr. Hansen's lab.

Erica Weiskirchner, Evan Yost, Mike Kaminsky, and Jennifer Kapusta are participating in Dr. Hansen's research projects in many different ways with the goal of gaining laboratory experience and developing future undergraduate research projects.

Jordan Ward is helping to maintain the zebrafish colony. His diligent help is greatly appreciated.

Check it out!



Marine Science Consortium Offers Summer Classes

The following courses are being offered at the Marine Science Center, Wallops Island, VA during summer 2003. For information, see Dr. Klinger, 5 HSC (red floor)

Session I (May 26—June 13): Field Methods in Oceanography (55.211); Marine Invertebrates (55.221); Marine Ichthyology (55.343); Marine Ornithology (55.345)

Session II (June 16-July 4): Marine Biology (55.241); Ecology of Marine Plankton (55.431); and Coastal Environmental Oceanography (55.451)

Session III (July 7—July 25): Marine Biology (55.241); Biological Oceanography (55.464); and Marine Mammals (55.492)

Session IV (July 28-August 15): Marine Invertebrates (55.221); Marine Ecology (55.260); Scanning Electron Microscopy: Marine Applications (55.471); and Coral Reef Ecology (55.491)

Have you had your TB test?



Students who will teach or work directly with clients in hospitals, medical clinics, therapeutic clinics, and day care centers during Fall semester 2003 must have the PPD tuberculosis test administered this semester. Cost is \$3. Two screening clinics are offered by the Student Health Center in KUB 340 from 1 pm to 5 pm: FEBRUARY CLINIC: test administered Feb 17 and read Feb 19. MARCH CLINIC: test administered March 24 and read March 26.



CPUB to hold 34th Annual Meeting on April 11-13

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's mission is to promote research and teaching in biology. To accomplish this goal, CPUB holds annual meetings to highlight student and faculty research, presents awards to outstanding biology students, sponsors workshops and institutes on topics of interest, and provides a forum for the exchange of ideas among biology faculty and students. The 34th Annual Meeting of CPUB will be held April 11-13, 2003 at Shippensburg University. This is a good venue to present the results of your undergraduate or graduate research projects!

Give a "Piece of Your Mind" to Area Children this Summer (and get PAID!)

The Northcentral Area Health Education Center, Berwick Area School District, Bloomsburg University and the Berwick Hospital Center are teaming up to offer a summer program to students from the Berwick area. The program is called "BrainLinks" and has been developed for elementary, middle and high school students in an effort to increase knowledge about the human brain and its functions. Sponsors of the program are looking for approximately four students from Bloomsburg University that would be willing to work with Berwick Teachers as aides for the 2 week session. The program dates this summer are BrainLinks 1 –July 21-26, 2003 and BrainLinks 2 –July 28-Aug 1, 2003. Sessions are held from 9 a.m. to 3 p.m. at the Berwick Area Senior High School. Students from BU that are interested may apply for a paid internship during the summer or have the option of being paid an hourly wage during the program without internship credit. To sign-up for 50.490 you must be a junior and a biology or allied health science major. Students do not have to be a biology major. Non-biology students could participate as a paid volunteer. It's a great opportunity to teach students from grades 2-10, build resumes, get paid and have fun! If interested see Dr. Shonis in room 113B Hartline Science Center as soon as possible.





Your (Intern) ship has come in!

How do you get some great on-the-job experience working as a biologist and earn credits at the same time? Internships, of course. The Department of Biological and Allied Health Sciences offers 50.490, Internship in Biology to eligible juniors and seniors. While internships may vary from 3 – 15 credits, no more than 3 credits may be applied as biology electives. Internships may be paid employment or may be volunteer. Where can you do an internship? Past internship sites have included the following: the National Park Service; the Smithsonian Institute; the Pennsylvania Department of Agriculture and the Fish and Wildlife Commission; Children's Museum; MacNeil Pharmaceutical Company; Philadelphia Zoo; Geisinger Medical Center; Pennsylvania Power and Light; and many other private and government agencies. To learn about internship opportunities, contact your academic advisor and visit the Internship Office at the Student Services Center (389-4678).

BioSynthesis spoke to Elizabeth Bonnes, a junior biology major, about her recent internship experience:

BioSynthesis: Where did you do your internship?

Elizabeth: I worked in the Plant Pathology Lab in the Bureau of Plant Industries at the PA Department of Agriculture in Harrisburg. (It's across from the Farm Show Complex.)

BioSynthesis: Who was your supervisor?

Elizabeth: My supervisor was Dr. Seong Hwan Kim in the Plant Pathology Screening Lab. Dr. Nolt was my academic supervisor from BU who visited me on-site.

BioSynthesis: What did you do during your internship?

Elizabeth: I was involved in a research project which focused on a plant pathogen called *Ralstonia solanacearum*. This is a bacterium that infects economically important plants like geraniums, potatoes, and tomatoes. It may also infect other hosts. One of our projects was to determine the host range of this pathogen. I specifically examined various types of *Ralstonia* according to their carbohydrate utilization and their temperature.

BioSynthesis: What lab skills did you learn?

Elizabeth: I used Koch's postulates for much of my work. I performed dilutions, isolations, and inoculations. I learned how to run ELISAs. I also used basic skills like making media and cleaning glassware. My work required me to use the spectrophotometer and to learn how to care for a greenhouse. I also used computers a great deal and gained experience using BIOLOG software, as well as programs such as Excel, Powerpoint, Access and Word.

BioSynthesis: What did you like most about your internship?

Elizabeth: I enjoyed the independence of working on my own projects. I also liked doing all my own preparation from scratch. As a student a lot of the work is done for you.

BioSynthesis: What did you like least about your internship?

Elizabeth: Days and days of dilutions!

BioSynthesis: How did you find out about this internship?

Elizabeth: I submitted a resume to the Department of Agriculture.

BioSynthesis: Would you recommend an internship to your classmates?

Elizabeth: YES! I think it should be required.

BioSynthesis: How long was your internship and how many credits did you receive?

Elizabeth: My internship was 6 months long. I was paid and received 12 credits.
(Note: No more than 3 credits of internship may count as biology electives.)

The Revised Bachelor of Arts (B.A) Degree in Biology

What is new with the B.A. in Biology degree?

The requirements for the B.A. in Biology have recently been revised to reflect new state guidelines effective Fall 2003.

What is the difference between a B.S. and a B.A. in Biology?

The B. S. in Biology is the more accepted degree for those planning to work in science and the coursework is more prescribed. In addition to a required core of biology courses and biology electives, the B.S. degree requires 16 credits of chemistry, 8 credits of physics, and 6 credits of math. The biology degree fulfills the prerequisites for graduate and professional schools such as medical, dental, veterinary, etc. This degree also prepares individuals for entry level laboratory positions in the pharmaceutical industry, biotech industry, forensics, academic labs, etc.

Who should enroll in the B.A. program?

The new B.A. program has a great deal of flexibility to fit the needs of majors not planning a career in biology. In addition to the required core of biology courses, the BA requires 8 credits of chemistry and 3 credits of math. One must choose an additional 17 credits from among a list that includes courses in physics, chemistry and biology. At least 9 of these 17 credits must be biology classes. The B.A. also has a foreign language requirement. This curriculum allows students in majors such as Physical Therapy or Physician Assistant to complete their requirements for their professional school and obtain a B.A. degree in 4 years. A new "pink" curriculum sheet for PT students is available from your advisor that shows how the pre-requisites for PT school fit into the new B.A. Students in secondary education may also declare a B.A. in Biology major within their B.S. Secondary Education-Biology requirements.

Who can I talk to for more information?

See your advisor to learn more about the B.A. in Biology and for help in deciding which program is for you.

BA in BIOLOGY SCIENCE REQUIREMENTS

Biology Core Requirements			Chemistry requirements		
Crse #	Title	Cr	Crse #	Title	Cr
50.114	Concepts in Biology I	4	52.115	Fund Inorganic Chem	4
50.115	Concepts in Biology II	4	52.116	Chem Prin & Measure	4
50.242	Biol Microorganisms	4	Mathematics Requirement		
50.271	Cell Biology	4	53.141	Intro to Statistics	3
50.332	Genetics	3	Group C: Natural Sciences & Mathematics		
50.351	Ecology	3	General education requires 3 departments be represented in your Group C. You have biology and chemistry. If you have not chosen the math or physics from the list below, choose another course from departments Geosciences (51), Mathematics (53), and Physics (54) (not limited to this list).		
50.479	Integrated Phys Lab	1	5. _____		
At least ONE of the following:					
50.472	Animal Cell Physio	3			
50.474	Vert Systems Physio	3			
50.477	Plant Physiology	3			
50.478	Microbial Physiology	3			
Biology & Other Sciences Electives - 17 total credits, 9 cr min biology					
50-200	Dendrology	3	50-474	Vert Systems Physiology*	3
50-211	Invertebrate Zoology	3	50-476	Neurophysiology*	3
50-212	Vertebrate Zoology	3	50-477	Plant Physiology*	3
50-222	Comp Biol Plants	3	50-478	Microbial Physiology	3
50-233	Human Genetics	3	50-481 Senior Seminar		1
50-252	Field Zoology	3	50-484	Methods in Biotechnology*	3
50-253	Freshwater Biology	3	50-490	Internship Biol/AHS	3-15
50-263	Field Botany	3	50-493	Honors Indep Study I	3
50-331	Embryology	3	50-494	Honors Indep Study II	3
50-333	Molecular Biology*	3	52.230 Fund Organ Chem (* pre-req)		4
50-342	Medical Bacteriology	4	52-341 Biochemistry I*		4
50-343	Immunology	3	52-342 Biochemistry II		4
50-350	Plant Pathology	3	53-123 Essentials of Calculus		3
50-361	Comp Vert Anatomy	3	54.111 Physics I		4
50-364	Vertebrate Histology	3	54.112 Physics II		4
50-390	Independent Study I	3	55-221	Marine Invertebrates	3
50-391	Independent Study II	3	55-241	Marine Biology	3
50-411	Radiation Biology	3	55-250	Wetland Ecology	3
50-430	Evolution	3	55-260	Marine Ecology	3
50-432	Microb&Molec Genet	3	55-298	Physio Marine Invertebrate	3
50-441	Cytogenetics	3	55-300	Behavior Marine Organ	3
50-442	Virology of Mammals	3	55-320	Marine Microbiology	3
50-444	Plant&Animal Tiss Culture	1	55-330	Tropical Invertebrates	3
50-450	Mycology	3	55-342	Marine Botany	3
50-451	Conservation Biology	3	55-343	Marine Ichthyology	3
50-453	Neotropical Biology	3	55-345	Marine Ornithology	3
50-455	Environ Microbiology	3	55-394	Comp Phys Marine Organ	3
50-457	Entomology	3	55-431	Ecology Marine Plankton	3
50-459	Ornithology	3	55-432	Marine Evol Ecology	3
50-460	Population Biology	3	55-441	Biology of Molluscs	3
50-461	Animal Behavior	3	55-464	Biological Oceanography	3
50-462	Plant Anatomy	3	55-470	Research Diver Methods	3
50-463	Biol Photogr Tech	3	55-490	Marine Aquaculture	3
50-470	Medical Parasitology*	3	55-491	Coral Reef Ecology	3
50-472	Animal Cell Physiology*	3	55-492	Marine Mammals	3
50-473	Systemic Physiology*	4	55-493	Behavioral Ecology	3



BAHS DEPARTMENT UPDATES



Faculty and Staff News

Welcome back

to Dr. Davis! It is wonderful to have Dr. Davis back! You can find him in his new office, 113C Hartline (green floor). Dr. Davis is teaching Molecular Biology this semester.

to Mrs. Melinda Diltz and Mrs. Karen Avery. Mrs Diltz is teaching Anatomy and Physiology II lab this semester. Mrs. Avery is teaching Ecology & Evolution and Cells, Genes and Molecules. Mrs. Diltz and Mrs. Avery share an office in 67 Hartline (blue floor).

Meet Dr. Helen Evrard

This semester we are joined by Helen Evrard, M.D. Dr. Evrard is teaching Immunology (to a dedicated group of students, as evidenced by their taking a class on Friday afternoon). Dr. Evrard is a Pennsylvania native, having grown up in the Lehigh Valley. She is a graduate of the University of Pennsylvania, where she majored in biology. Her medical education followed at Temple University. She was a Fellow in Allergy and Immunology at Mt. Sinai Medical Center. She is the Medical Director of Allergy and Asthma Care of Lewisburg, where she has been in private practice since 1992.

In addition to a very busy clinical schedule, Dr. E spends her time chauffeuring her 11-year-old twins, Morgaine and Corby, to their many school and extra-curricular activities. Morgaine is an accomplished young equestrian and Corby a talented young artist. She also enjoys walking her dog, Tippy, bird watching, patio gardening, and restoring her 150+ year old home.

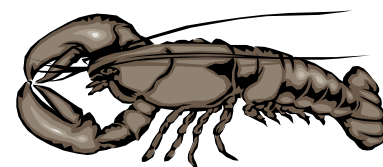
Welcome to new and returning student secretaries

Suzanne Peist is continuing in her position as a student secretary in the department office for spring semester. Suzanne is a junior nursing major. **Meredith Murray** is a new student secretary this semester. Meredith worked for the department last semester by assisting with the upper campus greenhouse. Meredith is a junior biology major who is pursuing minors in both Chemistry and Environmental Planning. **Maxine Ferrante** is our newest student employee. She is a second semester freshman majoring in Mathematics.

NEWS FROM DEPARTMENT CLUBS:

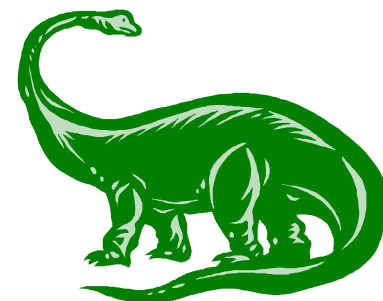
Marine Science Club

The Marine Science Club meets every other Wednesday at 5:45 p.m. in 25 HSC (the red floor). February meetings are scheduled for Feb 12 and 26. The club will be working with the Biology Club to prepare an exhibit for the Children's Museum. Spring plans include a trip to either the Camden or Baltimore Aquariums. The group is currently holding a 50/50 Raffle fundraiser. See any club member for tickets. The group's advisors are Drs. Klinger and Venn. New members are always welcome!



Biology Club

The Biology Club has a busy spring semester planned. The group is working on an exhibit on sound for the Bloomsburg Children's Museum. Also planned for spring semester are trips to the zoo and the Museum of Natural History in New York City. To learn more about these activities or how to become involved in the biology club, contact club president David Hakim at dhakim@planetx.bloomu.edu



Faculty Research Feature.... Meet Dr. Marianna Wood



Need an excuse to get outdoors and enjoy warmer temperature and sunshine as spring approaches? Field research in ecology is the ticket to time outside. And if the weather doesn't cooperate? Then field research builds character and increases your appreciation of the virtues of hot chocolate.

Dr. Marianna Wood is one of Bloomsburg's ecologists, and her research focuses on forest-dwelling small mammals. Ecology and conservation are not just issues in tropical rainforests but also here in our own backyards. Pennsylvania literally means Penn's Woods but look around—you'll notice that the forest that once covered this land exists only in patches surrounded by farms, towns, universities, and other types of human development. Dr. Wood's current research focuses on how development and forest fragmentation affect small mammal communities. She uses tracking tubes to collect small mammal footprints and measure the abundance of different species in a variety of natural and modified habitats. This technique allows her to ask questions such as:

- do different species of small mammals inhabit the interior and the edges of forest patches?
- are small mammals affected by invasive plants that spread along forest edges?
- does mowing create a barrier for the movement of small mammals?
- how do small mammals respond to roads?
- do small mammals use Christmas tree farms as habitat?

Dr. Wood invites students interested in ecology and conservation to participate in her research.

Greetings from the Annual SICB Meeting in Toronto— Dr. John Hranitz

One of the "behind the scenes" activities undertaken by faculty and students is attendance of professional meetings. As biologists, we are faced with difficult choices—particularly to choose among the many annual meetings and their respective areas of specialization ranging from molecular biology to ecology and evolution. Consequently, the choice to attend a particular meeting largely depends on one's area of interest and whether or not the audience is appropriate for the research being presented (and sometimes the exotic locales at which the annual meeting is held assists in the decision-making). Personally, I always found the Society for Integrative and Comparative Biology (SICB) to be a rewarding meeting and I try to attend regularly. This year the meeting was held in the Great White North—Toronto, Ontario—not exactly an exotic location with palm tree-lined beaches but quite convenient nonetheless.

Among the highlights of the meeting each year are the Past-Presidential Address, the Bartholomew Award, and a wide variety of contributed research presentations. The meeting was initiated by this year's Past-Presidential Address, entitled "Days of Miracle and Wonder: The Future of Integrative and Comparative Biology", delivered by Dr. Martin Feder (University of Chicago). While the presentation was humorous and light-hearted (at one point showing scenes from 2001: A Space Odyssey), the central theme of the address was serious—the important roles that integrative and comparative research approaches play in unifying the many disciplines in biology. A corollary of Dr. Feder's central theme was that integrative and comparative research requires collaboration among scientists, together bringing a wide array of skills and experience to bear on a particular question or hypothesis. This year's Bartholomew Award was given to Dr. Adam Summers (University of California at Irvine) who delivered a talk entitled "From Mexico to Molecules—An Interdisciplinary Investigation of Cartilaginous Skeletons." Dr. Summers presented a summary of his research into the structure of cartilage in the cartilaginous fishes (Chondrichthyes). Interestingly enough, this research shows that, contrary to the cartilage commonly associated with bony skeletons and studied in biology courses, secondarily-derived cartilaginous skeletons are partially ossified in ways that withstand the particular stresses of muscle attachment and action and correspond to taxon-specific developmentally-regulated patterns of ossification! Aside from these two main events, interesting contributed research presentations by faculty and students (including BU's own Mike Fountain and Dr. Cindy Venn) from all over the United States and Canada were everywhere to be found—all that had to be done was to attend one of the of the many symposia or contributed paper sessions.



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!

We wish to welcome **Julia Fabrego-Climent** and **Crystal Burger** to our graduate program. Julia, working with Dr. Klinger, will be conducting research on marine invertebrate ecology. Crystal will be working with Dr. Kipe-Nolt on soil microbiology.

GRADUATE STUDENT UPDATES

Mike Fountain recently presented his research on gene flow among mid-Pacific gooseneck barnacles at the annual meeting of the Society for Integrative and Comparative Biology in Toronto, Canada. Mike's poster presentation entitled "Analysis of VNTR Locus Variation in Two Species of Gooseneck Barnacle (*Lepas*)" was co-authored with Drs. Hranitz, Venn, and Klinger.

Emily Kramer recently defended her masters thesis entitled "*Comparison of Blood Lipid Responses to Upper and Lower Body Aerobic Exercise in Women.*" Dr. Surmacz chaired Emily's thesis committee. Emily graduated in the winter commencement ceremony and is now off to the University of Maryland at Baltimore where she is pursuing a Ph.D. in Molecular Biology.

Jennifer Venditti's thesis research is getting underway. Jenn is examining the effects of exercise on the immune system. Dr. Kipe-Nolt is Jenn's thesis advisor.

Connie Wilson led a lively discussion on prion transmission and Mad Cow Disease at a recent Journal Club meeting. Connie is interested in pursuing a career in dentistry.

Soniya Sinha, who is in the final stages of finishing her Masters of Science degree, has begun a Ph.D. program in Genetics at Penn State University School of Medicine in Hershey. She is working with Dr. Keith Cheng, a leader in the field of using zebra fish genetics to understand human disease processes.

Amy Mudry successfully passed her candidacy exam in January and is currently developing a thesis proposal in the area of signal transduction in early embryological development.

Justin Reis is continuing his thesis research on the structure of G-protein gamma subunit genes in Antarctic ice fish.

Khalique Ghani has begun assisting in Anatomy and Physiology lab and IPL lab. He works at Geisinger and is interested in genetics research. Khalique is an accomplished musician and plays both piano and clarinet.

Michelle Bradley is pursuing certification in secondary education in biology in addition to her master's coursework. Michelle plans to student teach next year.

Holly Richendrfer is continuing her master's coursework and is planning an internship in neuropsychology this summer.

THANK YOU GRADUATE ASSISTANTS!

We wish to thank our current Graduate Assistants, **Michelle Bradley, Julia Fabrego-Climent, Khalique Ghani, Justin Reis, Jennifer Venditti, and Connie Wilson** for their time, energy and dedication in supporting the department in its educational mission.

THESIS DEFENSE SCHEDULED!

Joe Bernardo will defend his thesis on Thursday, February 20 at 12:30 p.m. Joe's research examines the use of fatty acid profiles to monitor microbial diversity in soils. Dr. Kipe-Nolt is Joe's advisor. Everyone is invited to attend.

SUMMER GRADUATE OFFERING:

Dr. Gary Wassmer will be offering Entomology (50.457) this summer during session V (June 16 to July 4, 2003). Entomology examines the physiology, morphology, behavior, classification & general biology of the insects. Please let him know if you interested in this course.

JOURNAL CLUB MARCHES ON!

Journal Clubs will be held alternate Fridays at 3 p.m. in 145 Hartline. February's sessions are set for Feb 14 and 28.

ITEMS OF INTEREST:

The Penn State University Intercollege Graduate Program in Genetics is hosting its 2003 Genetics Symposium on March 1, 2003 at the Penn State College of Medicine, Hershey, PA. The symposium theme is *Genetics and Functional Genomics in Model Organisms* and will feature presentations on plant development, cancer genomes, zebrafish genomics, and the use of drosophila as a model system for developmental and evolutionary genomics. For information on registration and poster abstract submission, see www.genetics.psu.edu. The symposium is free but registration is required by February 27, 2003.

Reminder: Registration for Penn State's *Molecular Biology Workshop For State Universities of Pennsylvania* is due April 30, 2003. This free, 2 week workshop for graduate students and faculty offers hands-on experience with a variety of molecular techniques. Application forms and additional information may be obtained at the Workshop's Website at <http://www.lsc.psu.edu/techniques/workshop2.html>.