



BioSynthesis

Volume 3, Issue 1 (February 2004)

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

Spring Semester Dates & Special Events

FEB 19: Biology Club Meeting: Dr. Brubaker, guest speaker

FEB 21: Science & Technology Day

MAR 3: Spring into Health Series: *The Obesity Epidemic in America:*

MAR 27: Pennsylvania Academy of Science meeting, Monroeville, PA

APR 1 and 2: Health Sciences Symposium. Kehr Union

APR 3: Commonwealth of Pennsylvania University Biologists Meeting, Indiana University of PA

APR 7: Spring into Health Series: *Synesthesia*, Dr. Spevak, speaker

APR 17: MCAT Exam

APR 24: Earth Day Fair, Town Park



Look what's inside:

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The Hartline Annex: An Update

You can't help but notice the oversized Tonka toys and the bustling activity outside Hartline Science Center. The annex is coming! Construction is continuing through the winter on the new wing to Hartline Science Center. The new facility will provide over 49,000 square ft. of badly needed space at a cost of \$9.8 million dollars. The cement pilings are now complete and crews are currently pouring the foundation. The building's projected completion date is September 27, 2004. Faculty offices and laboratory materials are scheduled to be moved into the new wing during the fall and winter of 2004 in time for Spring 2005 classes.

The Department of Biological and Allied Health Sciences will gain several new laboratory facilities. One of these is a Microbiology Suite that includes a "clean lab" and a "dirty lab" connected by a prep room. The suite will have self-contained storage facilities for all cultures. Anatomy and Physiology and Concepts in Biology will also have new facilities. The classroom labs will share a common prep room and storage room. The Anatomy and Physiology lab will be networked with computers that will be used both for data collection and for running anatomical software. Another new laboratory will be the Biotechnology Lab. It will consist of a main teaching lab with four molecular biology work stations. The teaching lab will be connected to an animal and plant cell tissue culture facility, enabling our students to learn cell culture techniques and perform research projects involving a variety of cell types including cancer cells, primary cultures of liver cells from mice and zebra fish, insect cells, and plant cell culture. Also connected to the teaching lab will be a student research laboratory to accommodate student projects involving molecular and cellular approaches. Courses to be taught out of this facility include: Molecular Biology; Plant and Animal Cell Culture; Developmental Biology; Bioinformatics and Genomic Analysis; and Methods in Biotechnology. In addition to these labs, the department will also have some new research laboratories and faculty offices in the annex.

Science and Technology Day

Bloomsburg University will host its annual Science and Technology Day on Saturday, February 21, 2004. This program provides 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. The Department of Biological and Allied Health Sciences will host those students who have expressed interest in majoring in our academic programs. Planned events include a welcome and introductory session, a tour of department labs, hands-on demonstrations, and meetings with academic advisors to learn about our various curricula in biology and allied health sciences. This will be followed by lunch at the Commons and a campus tour. We would love to have current students available to talk with our visitors and their families! If you are interested and willing to help out please see Dr. Wood, 103 Hartline. The total time commitment on Saturday, February 21 is from about 10 a.m. to 1:00 p.m. (This includes a free lunch!) Thank you! We appreciate your efforts to recruit the best and the brightest to BU!

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!

Pre-Physical Therapy

Megan Vickery

Pre-Pharmacy

Donald Ashford

Secondary Education Biology

Jennifer Intelicato-Young

Rachel Kaskie

Michael Rochford

Leanne Yeagley

Medical Imaging

Rachel Boring

Curtis Bower

Kelli Castro

Megan Coyne

Jennifer Dillow

Melissa Fye

Greta Gore

Todd Gray

Jessica Horst

Alison Lukjanczuk

Elyce Moring

Tanaya Shughart

Brock Solomon

Melody Wehry

Jamie Willour

Heather Woodrow

B.S. Biology

Stephanie Adams

Lindsay Baglini

Sara Barrett

Stephanie Bloom

Sarah Bounds

Kelly Bryant

Neema Chandel

Amy Christine

Nicole Dalessandro

John Gantz

Keri Garton

Eileen Garvey

Alicia Gilbert

Laura Halon

David Hakim

Amanda Hendricks

Bradley Hortman

Eric Horstick, Biotechnology option

Kathleen Jackson

Michael Kaminsky

Jennifer Kapusta, Microbiology option

Rebecca Kehler

Jennifer Kruk, Biotechnology option

Alisha Marmo

Laura Marnin

Charles Martin

Angela Mignogna, Microbiology option

Meredith Murray

Keri Ondrusek

Amy Risen

Andrea Schmidt

Amanda Schompert, Microbiology option

Jennifer Slodysko

Jennifer Soika

Jessica Teders

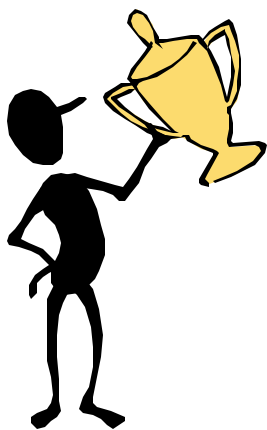
Maxwell Tolan

Angela Wickstrom

Erica Weiskircher, Microbiology option

Elisa Woodby

Ashley Yelinek



PRE-PROFESSIONAL COMMITTEE UPDATES



Register NOW for April 17 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. 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 17, 2004. The registration deadline is March 12 and the late registration deadline is March 26.** The summer MCAT is scheduled for August 14. The registration deadline is July 9. To register go to: <http://www.aamc.org/students/mcat/start.htm>

Register for the Computerized DAT

The Dental Admission Test (DAT) is the only required test for admission to all U.S. dental schools. The test consists of four sections: 1) Survey of the Natural Sciences (Biology, General Chemistry, and Organic Chemistry); 2) Perceptual Ability; 3) Reading Comprehension; and 4) Quantitative Reasoning. The DAT is taken online at a Prometric Testing Center, operated by Sylvan. It can be scheduled on almost any date. For more information or to apply go to www.ada.org.

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 **Michael Kaminsky, Krissie Tofts, and Valarie Van Cleef**. Mike was enthusiastic about his JAN PLAN experience. He observed two surgeries, seeing both a mitral valve replacement and an aortic arch replacement. Mike also had the opportunity to observe bronchoscopy being performed. He rotated through several of the departments at Geisinger including: Cardiac Catheterization, Dermatology, Anesthesia, and IV therapy. Val also had a wonderful experience at Geisinger. She observed open heart surgery and saw how a heart valve is repaired. Val spent time with physicians in the following clinical departments: Anesthesia, Pediatrics, and Otorhinolaryngology. Val noted that the whole Jan Plan experience allowed her to see what physicians and other members of the health care team do on a daily basis and was a good reality check. The JAN PLAN experience is helpful in deciding whether the medical profession is for you.

Congratulations!

Amanda Schompert has been accepted to the Philadelphia College of Osteopathic Medicine! Way to go, Amanda!



Health Professions Scholarship Program

The U.S. Army has full-tuition scholarships plus monthly stipends available to eligible students who have been accepted to an accredited graduate health care program. For more information, please see **Dr. Melnychuk** or contact our local Army Health Care Recruiter, Staff Sergeant Ellis Carroll (570-823-9914)

Summer Program at Weill Medical College

The Weill Medical College of Cornell University will sponsor a seven-week program for premedical students "from diverse backgrounds who have a major interest in working with underserved populations." The program provides students with an opportunity to do an independent research project and to become acquainted with clinical and public health aspects of medicine that will have particular impact on underserved minority populations. The program is highly competitive. Deadline for receipt of applications is March 1, 2004. For further information check out <http://www.med.cornell.edu/education/travelers>

Osteopathic Medical Education Forum

The Lancaster Osteopathic Health Foundation is sponsoring an osteopathic medical education forum at Elizabethtown College on Saturday, April 3, 2004 from 9 a.m. to 12 p.m. The program will introduce interested undergraduates and their families to a career in osteopathic medicine and will provide practical information from faculty and students of PCOM and LECOM. A panel of practicing physicians will discuss the realities of osteopathic medicine and give a demonstration of manipulative therapy. Also, a scholarship to PCOM available to those who have a Lancaster home address will be described. Registration deadline is 19 March 2004. For further information or to register, please see **Dr. Ardizzi**.

Be on the look-out for e-mail notices and upcoming events, such as campus visits. You can register with the pre-professional committee at their website <http://departments.bloomu.edu/biology/preprof.htm> If you have any questions, 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**.



Health Sciences Symposium: “Living with our Genes”



The thirteenth annual health sciences symposium is slated for April 1 and 2, 2004 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 “Living with our Genes.” The featured speaker is Dr. Dean Hamer. Dr. Hamer has worked at the National Institutes of Health for 20 years, where he is currently the Chief of the Section on Gene Structure and Regulation in the Laboratory of Biochemistry of the National Cancer Institute. He has a Ph.D. from Harvard Medical School, has published over 100 technical papers, and holds three patents in the biotechnology area. His research has led to contributions in a variety of areas including recombinant DNA technology, drug and vaccine production, and gene regulation. For the past seven years, Dr. Hamer has been studying the role of inheritance in human behavior, personality traits, and cancer risk-related behaviors. His discovery of genetic links to sexual orientation, risk taking, anxiety and cigarette smoking have changed the way we think about human behavior and raise a host of important scientific, social, and ethical issues. Dr. Hamer will present the keynote address on Thursday, April 1, 2004, 7:30 p.m. in Kehr Ballroom. On Friday, April 2, 2004 at 8:30 a.m. in Kehr Ballroom, he will also lead a workshop entitled “Genetics: Predicting Our Future?” 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.

The Epidemic of Sexually Transmitted Diseases: Facts and Figures

by Dr. Zareen Amin

The epidemic of sexually transmitted diseases (STD) takes a toll on almost 12 million people in the United States each year. These infections are also called hidden infections, as they so often escape public attention, due to lack of knowledge and a lack of clear symptoms. Partly for these reasons, they may have long-term health consequences, including, cancer, infertility, ectopic pregnancy, infection of offspring, and other chronic illnesses. Here are some facts and figures about these infections:

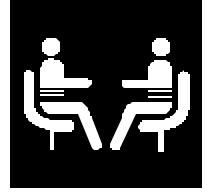
- Every year, eight million new cases of STDs are found among men and women under age 25.
- 54 % of high school students are sexually active.
- Each year, 3 million teenagers acquire a STD.
- Each year, an estimated 100,000 to 150,000 women become infertile, as result of an STD.
- About 44, 000 ectopic (tubal) pregnancies are directly related to pre-existing STD infection.
- 4,500 American women die each year from cervical cancer, which is directly linked with the human papilloma virus (HPV) which causes genital warts. 90% of all cervical cancer and dysplasia (abnormal growth of cell) is caused by HPV.
- 56 million Americans may be infected with viral STD like herpes, genital warts and hepatitis B.
- There are 90, 000 new cases of AIDS every year.
- Each year there are 3 million new cases of chlamydial infection.
- 75 % of women with chlamydial infection do not have any symptoms. They don't know they have the disease until after four to five years after initial infection. Symptoms include severe pelvic pain and the inability to become pregnant several yers later.
- 21% of Americans over age 12 are herpes simplex virus positive.
- 82% of U. S. teenagers consider themselves fairly knowledgeable about STIs, but
- 23 % of them can name only the HIV infection (causing AIDS), as a STD.
- Annual costs of selected major STDs are about \$10 billion. If the cost of AIDS is added, it amounts to \$17 billion.
- Men and women who have 2 to 3 partners are 5 times more likely to have STDs; those with 4-6 lifetime partners are 10 times as likely, and the odds are 31 times greater for those who report 16 or more partners.

Sources: National Health and Social Life Survey, Henry Kaiser Family Foundation Survey, American Social Health Association, Infectious Diseases Society for Obstetrics and Gynecology, Institute of Medicine/ National Academy of Sciences.

ALLIED HEALTH NOTES

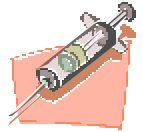
It's Interview Season!

Many Medical Imaging students are currently interviewing for clinical slots for the coming academic year. Good luck and remember to be yourself! Once you have made a decision, please see Dr. Kipe-Nolt to finalize your plans and complete the appropriate forms.



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 2004 must have the PPD tuberculosis test administered this semester. Cost is \$5. Two screening clinics are offered by the Student Health Center in KUB 340 from noon to 4 pm:



FEBRUARY CLINIC: test administered Feb 16 and read Feb 18.

MARCH CLINIC: test administered March 22 and read March 24.

Radiography Students at Geisinger

The Radiologic Technology Students at Geisinger Medical Center recently took time from their busy clinical schedule to pose for a picture. Meet: **Lisa Johnson, Michelle Blandina, Carrie Huffman, Kelly Boslego, Gina Bolinsky, Calvin Mahoski, Faith Warner, Amanda Lukas, Janine Hess, Tara Womer, Ember McCarty, Dave Simcox, Awawu Osunde, Tiffany Schnure, Corinne McCloskey, Lindsay Smith, Adam Strzempke, and Desiree Hackenburg.**



Congratulations!



Eileen Garvey has been accepted into the Physician Assistant program at King's College. Good luck, Eileen!

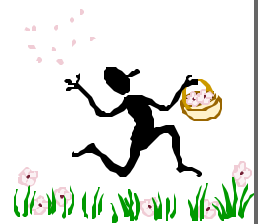
Spring into Health Program Series

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 Wednesdays at 9:00 p.m. in Columbia Hall lounge. Beside interesting topics and lively discussions, there is also FREE FOOD. Please join us for the following programs:

March 3: *The Obesity Epidemic in America: Fast Foods, Physical Inactivity or Bad Genes?* Dr. Eric Rawson, Department of Exercise Science and Athletics. Come and learn more about the causes and prevention of obesity.

April 7: *Synesthesia: When Letters Have Colors and Sounds Have Tastes*, Dr. Alan Spevak, Biological and Allied Health Sciences. Stop in to learn more about this intriguing topic!

The series is sponsored by the Departments of Audiology/Speech Pathology, Biological and Allied Health Sciences, Exercise Science, Nursing and Residence Life. For more information, contact Kathy Kollar (389-4089) or kollar@bloomu.edu

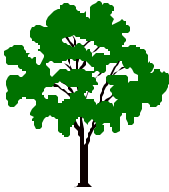


SUMMER OPPORTUNITIES

It's not too soon to think about the summer!



BU FIELD COURSES



Dendrology (50.200) presents the basic principles of dendrology: the identification, biology and economic significance of trees and shrubs. Emphasis is placed on tree species of eastern North American forests. Dendrology will be offered Session 5 (the second 3-week session). The course will be featured in the March newsletter. Professor: **Dr. Chamuris**. Prerequisite: Concepts in Biology II (50.115).



Ornithology (50.459) Studies the biology of birds including bird identification in the field by song and sight, anatomy, physiology, behavior, ecology and other aspects. Prerequisite: 50.115 or consent of the instructor. Ornithology will be offered Session 6 (the third three-week session). Professor: **Dr. Corbin**. Prerequisite: Concepts in Biology II (50.115)

Dendrology and Ornithology will be featured in the March issue of *Biosynthesis*.



MARINE SCIENCE CONSORTIUM COLLEGE SUMMER PROGRAM SCHEDULE SUMMER 2004



The following courses are being offered at the Marine Science Center, Wallops Island, VA during summer 2004.
For information, see **Dr. Klinger**, 5 HSC (red floor)

COURSES & INSTRUCTORS

May 17 - June 4

55-211 Field Methods in Oceanography Staff
55-241 Marine Biology Staff
55-394 Comparative Physiology of Marine Organisms Staff
55-491 Coral Reef Ecology Staff

June 7 - June 25

55-250 Wetlands Ecology Staff
55-343 Marine Ichthyology Staff
55-451 Coastal Environmental Oceanography Staff
55-490 Aquaculture Staff

June 28 - July 16

55-221 Marine Invertebrates Staff
55-342 Marine Botany Staff
55-464 Biological Oceanography Staff

July 19 - August 6

55-260 Marine Ecology **Dr. Hranitz**
55-343 Marine Ichthyology Staff
55-362 Marine Geology Staff
55-493 Behavioral Ecology Staff

The Marine Science Consortium is again discounting room and board fees (we can't do anything about tuition...) for students enrolling for multiple courses. Students may register for a third course during the summer at 1/3 off of room and board fees, and a 4th course for 2/3 off.

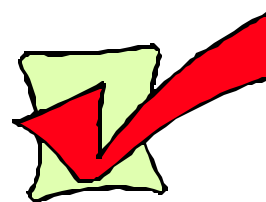
The Marine Science Consortium is recruiting students to serve as live-in chaperons for the summer high school programs. Chaperones are responsible for overseeing the activities of resident high school students while they are outside of class. This is a very good way for younger students (sophomores, juniors) to see what it is like to work at a field station and to participate in field courses in biology. Pay is competitive and you get to live for free for the summer at the seashore with most of your days and weekends free.

Bald Eagle/Wildlife Interpretation Internship



Would you like to earn college credit this summer while working with bald eagles, learning about their natural history, and sharing your knowledge with the public? Then this internship is right for you! The Department of Biological and Allied Health Sciences in association with the Pennsylvania Raptor & Wildlife Association and Knoebel's Grove Amusement Resort are sponsoring internships in Bald Eagle/Wildlife Interpretation. Interns will field questions about bald eagle natural history and give frequent presentations to the general public at Knoebel's Grove Amusement Park near Elysburg, PA. Junior class status and a strong work ethic are required. To learn more about the internship, please see **Dr. Clay Corbin**, 131 HSC, Phone 4134, e-mail ccorbin@bloomu.edu

CHECK OUT THESE OPPORTUNITIES



Bioinformatics Workshop at PSU

Penn State University is hosting their second Bioinformatics Workshop on May 3-8, 2004 at University Park. The workshop will present basic principles and techniques in the field of bioinformatics including biological databases and information retrieval, sequence alignments, homology searches, DNA sequence analysis and gene finding, protein analysis tools and protein structure prediction, high throughput gene expression analysis by microarrays, and phylogenetic analysis. The workshop is targeted to both faculty interested in exploring potential applications of bioinformatics in their teaching and research and **students who are interested in hands-on experience with these important tools and resources**. No previous experience is necessary. Participants from the state universities will receive FREE meals and accommodations, workshop fees, a parking permit, and up to \$100 for gas expenses. To register contact Dr. Loida Escote-Carlson at lje6@psu.edu or contact Dr. Carl Hansen, 123 Hartline Science Center.

Gettysburg College Summer Research Experience for Undergraduates: Land Conservancy and Resource Management at Nature Preserves in the Mid-Atlantic States.

The National Science Foundation is sponsoring an interdisciplinary research program in land conservancy and resource management at Gettysburg College from June 7 to August 13. The program is intended for students interested in environmental sciences. Participants will work individually or in teams in two nature preserves in the Gettysburg area under the direction of a research mentor. Specific topics that can be researched include: zoning nature (local attitudes toward conservation and nature), the role of small and large mammals in forest management, the effects of invasive species on forest regeneration, using biotic and abiotic measures to assess watersheds, the distribution, biodiversity, and community ecology of tree holes, and the role of conservation easements as a response to regional socio-economic change. The program will provide students with a stipend, housing, and some financial assistance for travel. Applications can be obtained from Dr. Surmacz, 105 Hartline Science Center. For more information contact: Dr. Véronique Delesalle, Department of Biology, Gettysburg College, Gettysburg, PA 17325; Tel. 717-337-6153; email: delesall@gettysburg.edu. Deadline for applications is March 15, 2004.

Molecular Biology Workshop at PSU

The Pennsylvania State University is offering their third *Molecular Biology Workshop for State Universities of Pennsylvania* on May 10 -21, 2004. This is an intensive 2 week lab workshop for faculty, research staff, **graduate students** and **advanced undergraduate students** that focuses on the principles, techniques, and applications of molecular biology. The workshop is held at the Instructional Laboratory in Molecular Biology of The Huck Institute of the Life Sciences at the University Park campus, State College, PA. Workshop participants will gain hands-on experience with such techniques as DNA purification, analysis by restriction enzymes and gel electrophoresis, DNA probes, Southern blots, cloning, sequencing, PCR amplification and analysis of gene products by western blots. No previous experience with these procedures is necessary. Now for the best part.....The workshop is FREE and includes meals and housing. A gas reimbursement up to \$100 is available. Space is limited at the workshop, so apply early, no later than March 31, 2004. Application forms and additional information may be obtained at the Workshop's Website at <http://www.lsc.psu.edu/techniques/workshop2.html>

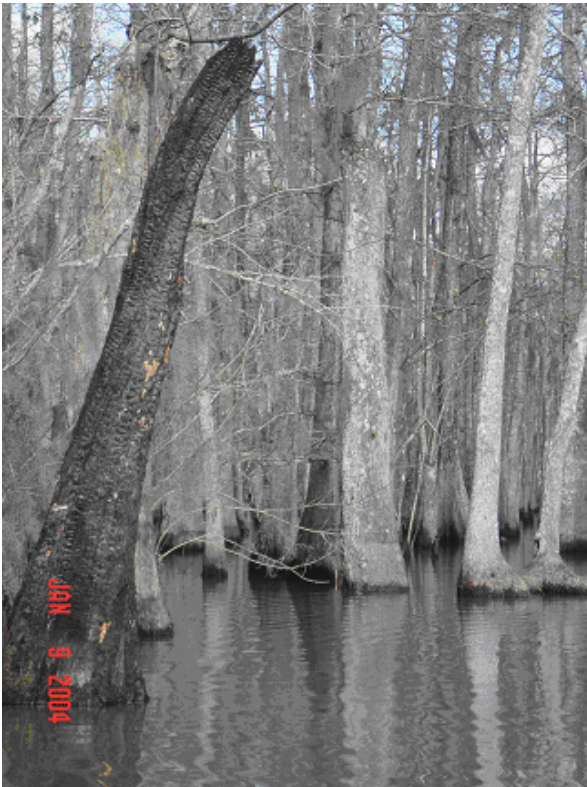
Saint Joseph's University Chapter of Sigma Xi hosts "A Celebration of Student Research"

The 15th annual Sigma Xi Student Research Symposium will be held on Friday, April 23rd, 2004, at Saint Joseph's University in Philadelphia. Undergraduate and graduate students from any college or university, doing work in the areas of math, computer science, engineering, the natural and the social sciences, are invited to present their work. Previous symposia have featured posters presented by students from colleges and universities in Pennsylvania, New Jersey, Maryland, Delaware, and New York, with some students coming from as far away as Minnesota, Texas, Ohio, Oklahoma and Virginia. This year's speaker will be Dr. Eric Wieschaus of Princeton University, co-winner of the 1995 Nobel Prize in Medicine. His talk, which begins at 5:00 PM, is free and open to the public. Please register in advance for the symposium using the forms available at <http://www.sju.edu/honor-society/sigma-xi/>. The seminar will be followed by a public reception. The poster session will then open at 7:00 PM and remain open until 8:30 at which time there will be a dinner for the presenters, their faculty mentor's and guests. The symposium will conclude at 10:00 PM. Abstracts for posters are due by April 2, 2004. Abstracts and all registration materials are to be submitted electronically.

Greetings from the SICB Meeting New Orleans-style!

by Dr. John Hranitz

Still reeling from large doses of turkey, stuffing, and egg nog, our entourage (graduate student **Julia Fabrega-Climent** and **Drs. Corbin, Hranitz, Venn, and Wassmer**) boarded planes on January 5th in hopes of trading the frigid Pennsylvania weather for the Society for Integrative and Comparative Biology (SICB) meeting in the moderate climate of the gulf coast and New Orleans. When we arrived late-night after several flight delays, we found the crescent city still humming after hosting the Sugar Bowl. Early the next morning amongst the meeting participants fully engaged in the meeting's activities, we found Dr. Wassmer anxiously awaiting our arrival or perhaps, more accurately, the arrival of his poster presentation scheduled for the first day of the meeting. Julia presented her poster on the second day of the meeting and Dr. Corbin delivered his oral presentation on the third day of the meeting. Our contributions to the meeting aside, the five-day meeting offered excellent presentations contributed by scientists from around the world covering such diverse topics as gene expression in Antarctic fish, hormonal control of chorus behavior of toads, evolution of sex determination in vertebrates, skull morphology of sit-wait predators versus active foragers, reef ecology, and much, much more (see the web site www.sicb.org)! Interspersed among the scientific presentations, we met old friends, made new friends, and experienced Louisiana. Julia turned the meeting to her advantage by introducing herself to a scientist she identified as a potential doctoral advisor at the University of Southern California. Despite the allure of restaurants offering foods for which New Orleans is famous—coffee and beignets, red beans and rice, gumbo, jambalaya—the last day of meeting found us boarding a bus bound for (of all places) a swamp! We enjoyed a guided boat tour of the Honey Island Swamp, allowing us a glimpse of cypress trees, Spanish moss, Anhinga, and nutria we all have come to expect in the stereotypical southern swamp. In contrast to the menacing images of 'gator-filled swamps', we were impressed by the tranquil beauty of the swamp as well as its vulnerability to human impact, a fitting reminder of our commitment to the organisms and science that brought us to New Orleans in the first place.



**Scenes from
Honey Island Swamp**

Highlights of a paper session at SICB

by Dr. Clay Corbin

I took the opportunity to be a chairperson at a presentation session at this year's meetings of the Society for Integrative and Comparative Biology (SICB) (see the article by Dr. Hranitz on the previous page). The job of the chairperson is to make announcements, introduce the presenters, and keep things rolling and timely. Another benefit of the position is that you get to meet the investigators personally and discuss current developments in ecology. The session was titled Ecology and Behavior: Population and Community Ecology. The six studies in the session, true to the spirit of integrative biology, used a cross-disciplinary approach to answer questions about Ecology and Behavior.

The first talk was by A. Reitzel, a graduate student from Boston University, and his study focused on the population structure of an invasive anemone (*Nematostella vectensis*) along the Pacific and Atlantic coasts of North America. This species is interesting because it is listed as vulnerable by the International Union for the Conservation of Nature. However, it is an invasive to North America. Hence, data on the demography of the species and patterns of its invasion are at a premium. Using AFLP fingerprinting to characterize the genetic variability within and between local populations of the species, Reitzel showed that the North American invasion was really a series of multiple, and repeated events. The population genetic structure (or lack thereof) can be explained by dumping of ballast water by trading vessels between North America and Europe. The results of this study have resounding ramifications among conservation biologists.

The second presentation was about a study on a familiar species to ecologists, the Acorn Barnacle (*Balanus glandula*). Matt Berger from the University of Oregon was addressing the observation that barnacle populations become less dense as one goes inland from the coast. He hypothesized that as environmental conditions of an estuary get less and less like the ocean as one goes up river, growth rates and survivorship of juvenile barnacles should decrease. Berger seeded growing plates with juvenile barnacles in three experimental sites (ocean, mid-estuarine, and river) for observation. Surprisingly, the mid-estuarine sample had the highest rates for juvenile performance. He related the patterns of low to high to low growth rates (ocean to mid-estuary to riverine sites) to an intermediate disturbance hypothesis. This is where productivity will be highest at an intermediate point between density dependent effects (i.e. intraspecific competition) and density independent effects (i.e. wide ranging and unpredictable salinity levels).

Mike Saba presented the third study on dietary analyses of herbivorous and carnivorous prickleback fishes in the family Stichaeidae. Four species were studied using carbon and nitrogen signatures of wild-caught and experimentally fed fishes. In the wild, two of the four species shift through ontogeny from a carnivorous juvenile to an algal feeding adult while the other two remain carnivorous throughout life. Within these species, there is a corresponding shift in trophic position that accompanies their diet. In the case of the herbivores, the shift is downward (they are now primary consumers), and in the case of the carnivores, the shift is upward (growing carnivores eat increasingly larger prey items). In the lab, individuals of these species were fed the same diet to test whether the dietary shift is due to resource availability or if it was due to some inherent genetic mechanism. The laboratory data suggest that all four fish species (herbivores included) will maintain a similar trophic position as long as their diet is the same. In other words the dietary shift, which is permanent, is due to what food is available in the environment at a critical stage of ontogeny.

The next two talks were about small mammal population ecology. A colleague of mine, Marcy Brandenburg from Ohio University, presented the first of these studies. She conducted a mark-recapture study to test a prediction of the competition hypothesis. Small mammals (i.e. *Peromyscus spp.*) and white-tailed deer are potentially competing for acorns in Southeastern Ohio. If this is true, mice are predicted to benefit in areas where deer are excluded by a tall fence in comparison to mice in other areas where deer are permitted. Brandenburg predicted that mice would respond to decreased competition through either a numerical response (i.e. have more pups) or through a functional response (i.e. get fatter). Interestingly, while mice seemed to prefer feeding in the experimental enclosures, they were not increasing their body mass. Other mammals, (i.e. chipmunks) were also in the area and hence, the competition may be more diffuse than a two-species system or it may be the case that another, unmeasured, aspect of the habitat is of higher quality when deer are excluded.

The second of the mammal studies included density independent factors (fire) on small mammal population dynamics on Fraser Island, Australia. The researchers were testing whether predation or food availability (low after a fire) has a greater influence on rat population dynamics. The researchers were also asking if there is an interaction between predation and fire. Hence, when fire takes away the cover, do dingoes have an easier time capturing the rats? The data suggest that predation doesn't increase when fire has occurred. Also, the rat populations do not seem to be responding significantly to predation by dingoes alone. The population dynamics are more closely tied to the food availability. An interesting aspect of this study was that it was concerned with population interactions between the Bush Rat (*Rattus fuscipes*) and dingoes in Australia. Remember that this rat is a placental mammal and didn't make it "down under" on its own; all non-flying, terrestrial mammals (except the dingo and humans) that are native to Australia are marsupial. So it seems that, like the anemone study above, understanding the population dynamics of exotic species is a very attractive and contemporary topic amongst ecologists.

The final talk was my own. I am interested in whether morphological variability among species predicts ecological variability. Also, if these things are linked, is it a similar relationship as you go from one ecological community to the next? In this particular study, I was addressing these questions in two, genetically unrelated communities of sit-and-wait foraging birds. One community is here in North America and the other is in South Africa. Morphology is related to foraging behavior in both of these communities. Birds with longer legs are feeding on the ground more than those birds with shorter legs. Birds with large, gaping mouths are feeding in the air more than those birds that have small gapes. That is kind of cool, but what is really interesting is the evidence for large scale convergent evolution. The two genetically unrelated communities have almost the same exact relationship between morphology and ecology.

Overall, the meeting was very exciting, but for me one of the highlights was the two hours I spent chairing this particular session. Out of the hundreds of studies being presented, these will be among the few that I will remember for a long time to come. If anyone is interested in knowing more about these studies or potentially doing similar research with me or any of these folks above, feel free to call or email me: Dr. Clay Corbin, email: ccorbin@bloomu.edu, phone: x4134.

BAHS DEPARTMENT UPDATES

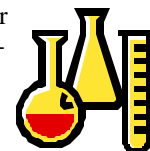
NEW EQUIPMENT



We are very fortunate to be the recipient of two major pieces of equipment donated by the Weis Center for Research at Geisinger Clinic. We now have an ABI 377 DNA sequencer. This instrument model was at the core for the rapid sequencing of the Human Genome through the Human Genome Project and will allow us to provide both teaching and research endeavors in the mainstream field of genomics. This instrument is currently located in HSC 111, but will be come a core item of our new Biotechnology Laboratory when we move into the new wing. Also from the Weis Center, we have received an automated film developer. It will allow us to perform sophisticated quantification of mRNA and proteins levels using highly sensitive chemiluminescent assays. We give many thanks and are highly appreciative of Geisinger for this equipment.

FACULTY RESEARCH

Dr. Kris Brubaker has published a paper in the January 1, 2004 issue of the *Journal of Cellular Biochemistry*. The paper is entitled "Bone morphogenetic protein signaling in prostate cancer cell lines." The research was conducted in collaboration with colleagues E. Corey, L.G. Brown, and R.L. Vessella. The complete citation is (J Cell Biochem. 2004 Jan 1;91(1):151-60). Dr. Brubaker has also received a Margin of Excellence Award for \$9300 to study Inhibition of Runx2 Function in RCH a Prostate Cancer Cell Line by siRNA. Please see Dr. Brubaker if you are interested in this research and in learning cell culture, molecular biology techniques, and protein work. Please see her if you are interested.



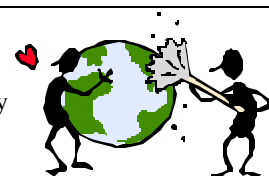
NEWS FROM DEPARTMENT CLUBS:



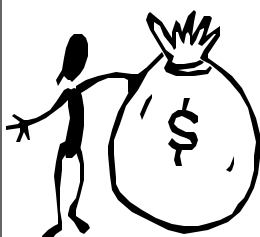
The Biology Club and the Marine Science Club are merging forces this semester. Events in store include a trip to the Philadelphia Zoo on March 28. The group is also looking for designs for T-shirts for their fundraiser and are also considering a plant sale. The Biology Banquet is slated for April 18. The combined group meets every other Thursday at 5 p.m. The next meeting is February 19, 2004. **Dr. Brubaker** will be the guest speaker. She will discuss "Prostate Cancer and Factors Which May be Involved in Bone Metastases." New members are welcome! If you are a new member or have not paid your dues, please give \$5 to Mike Kaminsky. Officers are: Bio Club: President: **Erica Weiskircher**; Vice-President: **Denise Lucas**; Secretary: **Katy Parise**; Treasurer: **Michael Kaminsky**, Marine Science Club: President: **Kevin Brace**; Vice-President: **Jordan Ward**; Secretary: **Katy Parise**; Treasurer: **Ben Day**.

EARTH DAY...WE NEED YOU!

Volunteers are needed to help with Earth Day activities on Saturday, April 24 at the Bloomsburg Town Park. For more information or to volunteer, please contact **Amy Risen**. She hangs out in 67 Hartline, the Physiology Research lab on the blue floor.



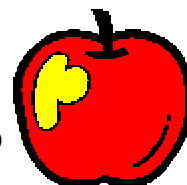
SCHOLARSHIPS FOR SECONDARY EDUCATION IN BIOLOGY MAJORS



In an effort to attract excellent science students to a career in teaching, the National Science Foundation is providing 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 science. The award is \$2,000 per semester and are renewable for a second semester (pending review). Applicants in secondary education must have a 3.5 GPA. Applications for Fall 2004 scholarships may be obtained from Dr. Bruce Wilcox, Director of the BU Math and Science Learning Center 211 Hartline Science Center and are due **FRIDAY, APRIL 2, 2004**. Scholarship recipients will be expected to work with our local math and science center, to assist with recruiting efforts, and to participate in state teaching conferences.

STUDENT TEACHERS HEAD TO CLASSROOMS!

Several students have headed into area classrooms for student teaching in biology. They will have the opportunity to move to the other side of the desk and put their theory into practice. The students and their placements are: **Pam Kreis** (Danville Middle and High Schools), **Shawn Butler** (Berwick Middle and High Schools), **Jeremy Kuhar** (Crestwood School District), **Paula Wehry** (Mount Carmel School District), and **Ed Mariano** (Hazleton High School).



STUDENT RESEARCH IS BLOOMING!

Kevin Brace will be screening brewed teas [Black, Green, Oolong, and White] for anti-microbial activity. The inclusion of tea [especially Green] in one's diet is believed to decrease microbial induced dental caries, etc. **Dr. Parsons** is Kevin's mentor.

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

Erik Francis is conducting research in stream ecology this semester. Erik is measuring the flow of macroinvertebrates and detritus from headwaters and small tributaries into streams. Macro and detritus from fishless upstream areas can be a significant portion of the diet of trout and other fishes. **Dr. Wood** is Eric's mentor.

Eric Horstick and Michael Kaminsky are both continuing their independent research project from last semester with **Dr. Hansen**. Eric has become quite proficient in bioinformatics. He is currently assembling a catalogue of fish RGS proteins in order to design degenerate primers to clone RGS proteins from non-model fish. In addition, he is learning how to microinject zebrafish embryos with morpholino-oligonucleotides in order to suppress gene expression during development. This approach allows the elucidation of essential genes contributing to developmental processes. Mike has begun a project looking at the effect of temperature on G protein coupled signaling pathways in fish. Using eurythermal Killifish acclimated to 5C and 20C, Mike will examine compensatory mechanisms involved in maintaining signaling pathways in the presence of large changes in environmental temperature.

Rachel Radel is examining the effects of pH and aluminum toxicity on germination and growth of maple seedlings. The practical application of this research is that it will help us to gain clues about the influence, if any, of acid rain on the decline of some maple species in Pennsylvania. **Dr. Williams** is Rachel's mentor.

Robert Ray is performing an independent research project with the goal of optimizing transfection approaches in a variety of cell lines. Transfection is the process where foreign DNA is introduced into a host cell. The host cell then produces the protein that is encoded by the introduced DNA. This allows the function of the protein to be studied in a more physiologically meaningful environment: that of an intact cell. **Dr. Hansen** is Bob's mentor.

Bethany Rovnack will examine the effectiveness of various treatments on bone density in two groups of post-menopausal women, those on Hormone Replacement Therapy (HRT) and those not receiving this therapy. This research is being conducted in association with OB-GYN Associates at Bloomsburg Hospital. **Dr. Surmacz** is Bethany's mentor.

Andrea Schmidt will be screening chili peppers for anti-microbial activity. She will also be comparing their pungency [using the Scoville Scale] to any activity present. Mesoamerican cultures have reportedly utilized chilis in their diets for controlling systemic infections/infestations as well as their topical use for skin infections. **Dr. Parsons** is Andrea's mentor.

Erica Weiskircher is helping to develop microbial exercises for Integrated Physiology Lab in collaboration with Drs. Kipe-Nolt and Chamuris. Her mentor is **Dr. Williams**.

Students head to the Pennsylvania Academy of Science meeting

Several BAHS students are planning to present the results of their independent research projects at the annual meeting of the Pennsylvania Academy of Science, in Monroeville, PA on March 28. The students, the titles of their abstracts, and their co-authors are:

Katy Parise, John Hranitz, Troy Baird, Ronald Van Den Bussche, and **Inna Nechipurenko**. Reproductive Success in a Natural Population of Territorial and Yearling Male Collared Lizards.

Amy Risen and Cynthia Surmacz. Lethal and sublethal effects of two water pollutants, calcium acetate and methyl tertiary butyl ether, in *Limbriculus varegatus*.

Eric Horstick, Jasper Humbert, Anna Kempinski, Janet Robishaw, and Carl Hansen. Cloning and Sequencing of Fish Heterotrimeric G-protein gamma subunits.

CPUB to hold Annual Meeting on April 2-4

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 and provides a forum for the exchange of ideas among biology faculty and students. The 34th Annual Meeting of CPUB will be held April 2-4, 2004 at Indiana University. This is a good venue to present the results of your undergraduate or graduate research projects!

THE BU MASTERS PROGRAM

The Department of Biological and Allied Health Sciences offers both a Masters of Science degree (M.S.) and a Master of Education (M.Ed.) in Biology. Our master's program in general biology provides opportunities for course work and research at the supraorganismal, organismal, cellular, and molecular levels of biology. The program prepares students for admission to doctoral programs or professional schools and also enhances the knowledge and experience of high school biology teachers. For more information, contact the graduate program coordinator, Dr. Carl Hansen (123 HSC).

GRADUATE STUDENT NEWS

WELCOME TO NEW GRADUATE STUDENTS!

We give warm welcomes to two new graduate students who have started classes this semester: **Susan Walker-Moyer** and **Bernard Svab**.

SPRING SEMESTER GRADUATE ASSISTANTS

The department has three graduate assistants this semester: **Julia Fabrega-Climent**, **Amy Mudry**, and **Stacy Rogers**. They are the behind the scene individuals that make your laboratory experiences in Cell Biology, Integrated Physiology, Concepts in Biology, and Anatomy & Physiology Laboratories so efficient and exciting. Thank you for all your hard work!

UPDATES

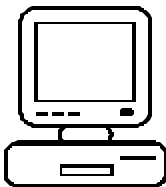
Khalique Ghani, while still working on his thesis research and taking courses is also working full time at the Weis Center for Research at Geisinger in Dr. Gerhardt's lab.

Connie Wilson is vigorously working to complete her thesis research with **Dr. Judith Kipe-Nolt**, since she been accepted at Temple Dental School and will be leaving us one way or the other come August. Congratulations Connie!

Holly Richendrfer has completed the research for her master's, entitled, "Effects of spine removal and regeneration on feeding, growth, and activity of *Strongylocentrotus droebachiensis* (Echinodermata, Echinoidea) in culture." She will present the results of her research to the department shortly. **Dr. Klinger** is Holly's mentor.

Julia Fabrega-Climent attended the 2004 Annual Meeting of the Society of Comparative and Integrative Biology and coauthored a poster on the depth distribution of Pacific goosenecked barnacles. **Dr. Klinger** is Julia's mentor.

CHECK OUT THE VIRTUAL CAREER FAIR!



The BU Career Development Center and other career centers from our sister institutions in the State System of Higher Education are teaming up to sponsor an on-line Government and Non-Profit Virtual Career fair. Listings will be included of employers from human services agencies, non-profits, and government who seek candidates for full time, internship, and cooperative education positions. Interested candidates may visit www.collegecentral.com/passhefair to register for the fair. The event will run from February 2-27, 2004. Please contact Carol Barnett, Career Center Director, at 389-4070 or via email at cbarnett@bloomu.edu

ALUMNI UPDATES

Amy Burke (BS Medical Technology) is currently working in the Chemistry department at York Hospital.

George Croll (MS Biology, 1995) received an award as an Outstanding Science Educator from the Northeast Regional Division of Sigma Xi.

Peter Licon (MS Biology) has recently taken a position as academic coordinator of the Upward Bound Math/Science program at Kutztown University.

Dawn Madzarac (BS Marine Biology, 1994) is still working as an elephant handler at the Philadelphia Zoo. She is currently the President of the local chapter of the American Association of Zoo Keepers.

Amy McDermott (BS Medical Imaging) graduated from the Physician Assistant Program at the Philadelphia College of Osteopathic Medicine. Amy is currently practicing as a PA in a nephrology group in Harrisburg.

Angela Sabol (BS Biology, 2003) has accepted a position as a research technician in the laboratory of Dr. Jonathan Raper in the Department of Neuroscience at the University of Pennsylvania. This lab investigates the growth of axons in developing embryos.

Christopher Urie (BS Marine Biology, 2003) has been accepted into a postgraduate conservation course at Victoria University in Wellington, New Zealand.