



BioSynthesis

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

Upcoming Events

- DEC 8:** Final Exams Begin
- DEC 12:** Graduate Commencement
- DEC 13:** Finals End; Undergraduate Commencement
- JAN 6 –12:** E-Registration for Spring Semester 2004
- JAN 12:** Spring Semester classes begin
- JAN 19:** Martin Luther King, Jr. Day, No classes
- JAN 23:** Monday classes meet on Friday



Look what's inside:

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Good Luck on your Finals!

Beyond Designer Genes...



by Dr. George Davis

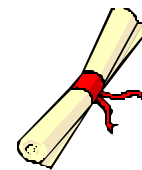
One of the oldest fields in all of science has recently undergone rejuvenation. The term "biotechnology" was coined in 1917. The Office of Technology Assessment of the US Congress defines it as "any technique that uses living organisms or substances from those organisms, to make or modify a product, to improve plants or animals, or to develop microorganisms for specific uses." Though recently defined, biotechnology has been employed by humans for thousands of years. Ancient farmers and herdsman observed that desirable characteristics of animals and plants could be perpetuated through selective breeding. They found that not all food spoilage was bad, and that some of the spoiled products had desirable qualities. Cheese, yogurt, wine, and bread are a few examples of these early accidents that ancient humans came to enjoy and depend on. In fact, the accidental use of microbes in making bread may even pre-date agriculture. By around 1800 BC, however, Egyptian bakers had observed that saving a little dough from one successful batch of bread would guarantee a similar result in the next loaf. Beer was brewed in Egypt as far back as 5000-6000 BC and Chinese were making yogurt 6000 years ago.

However, when the first recombinant bacteria were made in 1970, a new kind of biotechnology was born, one in which we can manipulate living things at their most basic, molecular level. Molecular biotechnology allows scientists to develop new biological hybrids, unconstrained by taxonomic lines. Goats yield milk high in spider silk, valuable drugs can be made by plants and animals, and bacterial genes are harnessed to protect plants from insects. The new biotech has also brought us the cloning of higher animals, and the promise of genetically improving plants and animals at a much faster rate than our ancestors. The techniques employed in biotechnology have found their way into virtually every other field of modern biology. Ecotypes can be determined by using molecular evidence, criminals ferreted out based on DNA evidence, defective alleles detected before an individual succumbs to their effects, and questions in physiology can be addressed using molecular probes.

The Department of Biological and Allied Health Sciences now offers a biotechnology option for those interested in this ancient, exciting field. Though similar to the standard BS Biology option, there are some significant differences. Molecular Biology (50.333) is required and strongly suggested for your junior year. This will allow you to take another requirement, Methods in Biotechnology (50.445) your senior year. Both Biochem I and II are required, also recommended for your junior year. Finally, a new course will soon be offered, Plant and Animal Tissue Culture (50.444) which can substitute for IPL (50.479). New electives are being developed and old courses are being revised to reflect the interest in molecular biology. For example, Dr. Carl Hansen has updated Developmental Biology (50.431), and developed a new course in Bioinformatics and Genomic Analysis (50.435). New courses are in the works. For example, Dr. Davis is working on a course tentatively entitled "Advanced Molecular Biology", which will address topics like the molecular biology of cancer. Finally, 2002 saw the arrival of a true molecular biology laboratory in the department. Undergraduate researchers now have the resources to address myriad problems in ecology, evolution, physiology, and microbiology. If you think the biotech option is right for you, please contact Dr. Davis or Dr. Hansen. Who knows, someday you may become a certified "gene jockey"!



Congratulations!



We salute the following December graduates. Best of luck and be sure to stay in touch!

Medical Imaging

Shawn Booker
Marie Wadding
Megan Hoffman
Chad Killeen

B.S. Biology

Justin Bixler
Jennifer Slodysko
Brianna Villano
Angela Wickstrom

B.S. Biology/Secondary Education in Biology and Chemistry minor

David Hakim
Michael Rochford

B.A. Biology

Doreen Gill

Holly Richendrfer will receive her master's degree at the December commencement. She conducted a directed study research project on the functional impacts of spine loss and regeneration in sea urchins. Holly's research mentor is **Dr. Thomas Klinger**.

Program Updates...

Allied Health



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

Pre-professional Committee



MCAT Preparation Workshop at King's College

King's College in Wilkes-Barre, PA (about a one hour drive) is offering a 15- hour MCAT preparation workshop. MCAT is the standardized test required for medical school admission. The workshop will teach participants various skills and strategies for approaching the various sections of the test: essay, verbal reasoning, biological science, and physical science. The course also includes practice on actual MCAT test questions and a discussion of such issues as how to deal with stress and distractions and time management during the test. The course is taught by James Yoho, J.D., Ph.D. and William Van Der Sluys, Ph.D., veteran instructors of test preparation. The workshop consists of four sessions:

Tuesday, January 20, 6 to 9 p.m.
Thursday, January 22, 6 to 9 p.m.
Saturday, January 24, 10 a.m. to 3:30 p.m.
Sunday, January 25, 10 a.m. to 3:30 p.m.

The workshop costs \$300 and includes all course materials. Students must provide their own copy of the MCAT Practice Test 3R available for free from the MCA website (www.aamc.org). For further information contact the Educational Conference Center at King's College [(570)208-5807 or semccabe@kings.edu]. Brochures describing the workshop can be obtained from **Dr. Ardizzi** and **Dr. Melnychuk**, the co-chairs of the Pre-professional Committee.

NEWS FROM BAHS FACULTY AND STUDENTS....

Tops In The Field!

Undergraduate **Emily Bray** and graduate student **Connie Wilson** presented the results of their research on the effects of anaerobic digestion of manure on odor reduction and methane production at a recent Field Day. The program was held at the research site of **Dr. Judy Kipe-Nolt** and her collaborators in Pittman, PA. Despite the cold and blustery day, the program was well attended by farmers, representatives of the Department of Agriculture, the Department of Environmental Protection, and Conservation Districts. Other BU participants at Field Day were **Dr. Barry Nolt** and B.S. biology major **Amy Risen**.



BAHS Faculty Receive Grants



Drs. Kristin Brubaker and **Clay Corbin** have received Special Initiative Grants from the College of Science and Technology. Dr. Brubaker's funding is to establish culture stocks for two prostate cancer cell lines. This will help her to start her research program at BU. **Laura Halon**, a freshman biology major, will be volunteering in the lab. Dr. Brubaker is interested in recruiting a sophomore who is interested in learning cell culture, molecular biology techniques, and protein work. Please see her if you are interested. Dr. Corbin's grant will be used to purchase a semi-dedicated computer and phylogenetics software such as MacClade and Paup. This software can be used to test evolutionary hypotheses and can be applied to a variety of research programs in the department and college. Dr. Corbin is looking forward to training some undergraduates on its use this spring.

BAHS Faculty & Staff Recognized for Service

The Department of Biological and Allied Health Sciences was represented at the recent Faculty and Staff Recognition Luncheon held at Kehr Union. **Ms. Vicki Beishline**, Department Secretary, was honored for 30 years of service to the University. **Drs. Cindy Surmacz** and **Margaret Till** received recognition for 20 years and 15 years of service, respectively.



Biology Club heads to the Mountain

The Biology Club has had a busy semester. Some of the highlights were the fun hayride at **Jason George's** and the trip to Hawk Mountain in November (see photos below). Early spring semester, we will sell T shirts. Please contact **Erica Weiskircher**, Biology Club president, if you have any ideas for activities.



LEFT: After discovering that Dr. Hranitz can not navigate and carry on conversation, the group eventually arrived at the Hawk Mountain Sanctuary where they observed Redtail Hawks, Cooper's Hawks, Sharp-shinned Hawks, Black Vultures, and Turkey Vultures. RIGHT: The BAHS birdwatchers are from left: Dr. Corbin, Bill Donmoyer, Dr. Hranitz, Amy Risen, and Heather Davis.

A career option you are “dying” to know about: The Pathologists’ Assistant!

by Dr. Kristin Brubaker

This is a fascinating career choice for someone who is interested in studying tissues (histology) which are most likely abnormal because of cancer or some other disease (pathology). Pathologists’ Assistants aid anatomic pathologists (MDs) by participating in the examination, dissection and processing of tissues from surgeries, and by helping in gross autopsy dissection. Pathologists’ Assistants are employed in a variety of settings, which include community and regional hospitals, university medical centers, private pathology laboratories, and medical examiner offices. Because fewer people are training to be MD pathologists, this lucrative career is on the rise.

There are **only five** institutions certified by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS) offering programs in training Pathologists’ Assistants. They are: The University of Maryland (offers a Master’s of Science (MS) degree), Wayne State University (BS degree), The Ohio State University (MS), Duke University Medical Center (MS), Finch University of Health Sciences / Chicago Medical School (MS), and Quinnipiac University (MS). The average starting salary for a Pathologists’ Assistant is approximately \$50,000/yr with the master’s level degree. The standard requirements for the MS programs are a bachelor’s degree, preferably in the biological sciences, with upper level courses in biology, biochemistry, physiology, histology, and cell biology. In addition, the applicant must show evidence of competency in English composition, preferably by successful completion of one or more undergraduate courses stressing English composition. For more information on this career choice go online to <http://www.pathologistsassistants.org/> or <http://www.naacls.org/>.

Meet a Jumping Spider...

Dr. Alan Spevak provides us with this awesome photo of a jumping spider (Class Arachnida, Order Araneae, Family Salticidae, Genus (possibly) *Phidippus* or *Ghelna*) that he encountered at his home near Iola, PA. He used a 5 mega pixel Olympus digital camera on super macro setting; slight post-camera sharpening was applied with MS Photo Editor.

There are over 4000 species of jumping spiders in the world, mostly in the tropics, but many species also occur in North America. They are characterized by two large anterior eyes (of eight total), stout body, and a hunting life-style. Dr. Spevk found this one in a corn field by his house. These spiders do not build traditional webs, but hunt for their food like vertebrate carnivores. As their name indicates, they jump at their prey to subdue it. They are wary of humans but are not shy, and will often confront you with the above pose if you get close. A great web site on North American jumping spiders, with many photos plus classification information is: <http://spiders.arizona.edu>



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Recent BAHS Grad Offers Tips for Job Hunting

Austin Schofield, a December 2002 graduate, is presently working as a Quality Control Microbiologist in the Department of Anti-Infective Material at GlaxoSmithKline. His department is responsible for making antibiotics. Austin was a double major in biology (B.S.) and secondary education (B.S.) He suggests that new grads should check out Temporary Employment agencies for finding jobs. In Austin’s experience temp agencies are a great way to get your foot in the door quickly. The downside is that many of the jobs are not the best (no benefits). Here are some websites that Austin recommends that handle jobs in the pharmaceutical industry: www.aerotek.com, www.yoh.com, www.judge.com, and www.kellyservices.com Austin also recommends that you should not be intimidated by a job posting. His job description asked for two years experience and other qualifications. He suggests applying to what you like and see what happens. Austin strongly encourages you to check out internships and co-ops that pharmaceutical companies offer. It is a great way to gain experience, meet people, and build connections.

Also, check the department’s bulletin board periodically for new postings.