BIO BITS
Biology News from Jewett Hall

Science Center

Construction of the new $60 million Science Center has begun! The official groundbreaking ceremony is imminent and the construction webcam will soon be operational. Please visit the Science Center webpage at http://www.fredonia.edu/sciencecenter/ for more information about construction progress and naming opportunities within the building.

Fiftieth Anniversary Celebration of Jewett Hall – Homecoming 2012

Information about the celebration will be posted on the Biology homepage http://www.fredonia.edu/biology/ and the Alumni Portal http://alumni.fredonia.edu/ in early 2012. In the meantime, we are continuing to collect 'Reflections and Reminiscings' from our alumni. Please visit our webpage or the portal for details. You can also share your written reflections or be interviewed at the 2011 Homecoming activities. Written and videotaped reflections will be displayed at the Fiftieth Anniversary celebration, and ultimately at the new Science Center.

Biology Honors Program

The Biology Department is pleased to announce the development of a Biology Honors program which will allow talented Biology students to perform research at an advanced level. Honors students will perform a minimum of two semesters of research, produce a formal thesis and offer a lecture to the campus and a private thesis defense to the faculty. Honors students will be recognized with a biology cord at graduation and the designation "Honors Biology Major" will be printed on the student's transcript. The program is open to Biology department students of sophomore standing or higher who have maintained a 3.5 GPA in stipulated courses.

Scholarly Activities:

The faculty demonstrated significant scholarly activity this year. Faculty published 5 articles in peer reviewed journals (3 with student co-authors), have 7 manuscripts in prep, gave 3 scholarly presentations, performed 14 manuscript reviews, and submitted 10 grants (7 extramural) totaling more than $1.25 million.

Graduating Masters' Student Alex Ladowski talks with Drs. Bill Brown and Ted Lee at the 2011 Biology Commencement Breakfast!

HoHoHo! Santa came to visit the Biochemistry class this year! Guess who is really under that beard and win a FREE subscription to Bio Bits!

Shannon Gowen, undergraduate research student in Dr. Wayne Yunghan's lab, preparing aquaporin membrane.

New Biology Department Courses

Three new courses were offered during the 2010-11 academic year, six new or revised courses are on the horizon for 2011-12. The University and Biology department have identified the need to strengthen the pre-health program as a top priority; many of these new courses directly support that initiative.

Health Professions Seminar: This one credit sophomore level course taught by Dr. Ted Lee is designed to assist students preparing for medical, dental, veterinary and optometry schools. The learning goals for the students include development and focusing of their career objectives, understanding the history and nature of their chosen profession, and understanding the admissions requirements to those programs.

Molecules and Medicine: This upper level course taught by Dr. Ted Lee covered material on traditional and modern chemotherapeutic agents for treatment of disease. Aspirin was used as a model for a traditional therapeutic drug and the development of new drugs such as Lipitor, Viagra and Gleevec was discussed. Students also read the biography of Henrietta Lacks (from whom HeLa cells were derived) as well as primary literature and review articles.

Nitric Oxide: From Biochemistry to Medicine: An innovative research based seminar course led by Scripps Institute President Dr. Michael Marletta, '74, and Fredonia Biology faculty Drs. Matt Fountain and Ted Lee. Students developed innovative research projects and learned of the important role nitric oxide plays in promoting proper blood flow, kidney function, immune activity and nerve impulse transmission, illnesses associated with nitric oxide depletion or overproduction, and the subsequent development of therapeutic drugs

Human Anatomy and Physiology I and II: Human Anatomy and Physiology I will cover introductory concepts associated with molecular, cellular, tissue and organ levels of organization and functions, followed by an examination of the musculoskeletal, nervous and endocrine systems. Human Anatomy and Physiology II will build on these concepts and will cover the respiratory, cardiovascular, blood and lymphatics, digestive, urinary and reproductive systems. This two semester sophomore level lecture and lab course will be taught by Dr. Fred Harrington and is designed primarily for students interested in careers in allied health, exercise science and adolescence science education.

Mammalian Physiology: Newly revised, this course will be taught by Dr. Scott Medler and will provide an integrative approach to functional systems physiology. Cellular regulation of homeostasis and individual physiological systems will be examined. Laboratory exercises will examine the integrative functions of organs and systems within the body and will include excitable cell physiology, cardiovascular, excretory and exercise physiology. This course is recommended for students wishing to enter professional programs in medicine, dentistry, veterinary science and optometry.

Comparative Vertebrate Anatomy: The course will focus on the functional anatomy of multiple vertebrate systems including the skeletal, muscular, cardiovascular, nervous, digestive, endocrine, and reproductive systems. Laboratory exercises will focus on the anatomy of the shark and the cat. This course will be taught by Dr. Scott Medler, and is recommended for students wishing to enter professional programs in medicine, dentistry, veterinary science and optometry.

Muscles and Movement: This course will be taught by Dr. Scott Medler, and will focus on skeletal muscle organization, muscle physiology, basic biomechanics, the central neural control of movement, and skeletal muscle adaptation to use/disuse. Motor system diseases including Parkinson's disease, muscular dystrophies, and the effects of aging on muscles will also be discussed. This course will be of general interest to Biology undergraduate and graduate students, and special interest to those students gravitating towards the health professions.

RNA Biology: This fall Dr. Ferguson will teach a new course called RNA Biology. The class will examine the roles that RNA plays beyond its traditional role as a "messenger" between DNA and proteins including the RNA-first hypothesis for the origin of life, catalytic RNA ribozymes, and the regulation of gene expression by small RNAs. The course will rely on primary literature, a collection of essays by prominent researchers in the field, and Dr. Ferguson's own research.

News from the Health Professions Advising Office

The University and Biology department have identified the need to strengthen the pre-health program as a top priority; many of the new courses listed above directly support that initiative. Additionally, SUNY Fredonia has a new articulation agreement with Lake Erie College of Osteopathic Medicine for their medical and pharmacy programs. The agreements will allow high school seniors and underclassmen to apply to LECOM for early acceptance. Both programs have 3+4 components where students spend 3 years at Fredonia and earn their BS degree after completing one year at LECOM and a traditional 4+4 component where students matriculate to LECOM after completing their BS at Fredonia. SUNY Fredonia alumni will be starting programs at Lake Erie College of Osteopathic Medicine as well as the University of Buffalo School of Dental Medicine this fall. Additional information can be found at http://www.fredonia.edu/hpap/

STUDENTS

Student Research and Internship Activities

A total of thirteen research fellowships were awarded to students conducting biology research at SUNY Fredonia during the summers of 2010 and 2011. Several students received fellowships to perform summer research at Osaka University, Japan, the University of Pennsylvania School of Medicine, and the University of Rochester Medical Center. Twenty Biology Department students gave oral presentations and presented posters at the 2011 SUNY Fredonia Student Research and Creativity Exposition and other professional conferences.

Twenty Biology Department students performed internships over the summer or academic year. Medical Technology internships were performed at Rochester General Hospital, WCA Hospital, Saint Vincent Health Center, and Northshore Hospital; pre-professional health, biotechnology, and environmental microbiology internships were performed at Boston University, the SUNY Technology Incubator, the Chautauqua County Health Department, Brooks Memorial Hospital and local physician offices, pharmacies and veterinary clinics.

The department awarded approximately $60,000 in scholarships and research fellowships to high-achieving students this year. These awards are made possible in part thanks to your generous contributions to the endowment funds.

Contributions to our scholarships and endowment funds can be made at the online site: http//www.fredonia.edu/giveonline

Drs. Bruce Tomlinson and Scott Ferguson and graduating seniors Alex and Katie Ames celebrate at the Biology Commencement Breakfast.

The Biology Club white water rafting at Zoar Valley!

Emeritus Professor Dr. Moti Sharma enjoys a laugh with alumni Joe Falcone, Renee Bush and Fred Zerega at the 2010 Alumni Breakfast!

New scholarship for incoming Biology students – the Yunghans-Mirabelli Biology Achievement Scholarship

The Yunghans/Mirabelli Biology Achievement Scholarship is named for longtime faculty member Wayne Yunghans, and was established by alumnus Christopher Mirabelli '77. Dr. Mirabelli was an undergraduate Biology major at Fredonia when Dr. Yunghans introduced him to the challenges and joys of scientific research. Minimum qualifications for consideration are a 90% unweighted high school average, 1,250 SAT or 28 ACT, along with strong Regents test scores in both Science and Math. The $8000 scholarship is renewable each year, provided that the student maintains a 3.25 GPA. Dr. Mirabelli has been a longtime supporter of the Biology Department and we are grateful for his benevolence.

Jacob Merle, undergraduate research student in Dr. Scott Ferguson's lab, sorting fruit flies.

2010 Summer Research Presentations

Fellowship funds to support summer research in the SUNY Fredonia Biology Department come from the Holmberg Foundation, the Constantine Barker Endowment, the Leslie Wettingfeld Fund, the Merlin Fund and the Biology Endowment Fund.

- Ms. Laura Alsheimer, Sauquoit, NY, The Effects of Artificial Night Lighting on the Little Brown Bat (*Myotis lucifugus*). Faculty Mentor: Dr. Karry Kazial
- Mr. Michael Cross, Cassadaga, NY, *Typha latifolia* Versus *Phragmites australis*: The Competitive Abilities of Typha against Phragmites to test whether Typha would be a good reintroduction species in areas of Phragmites invasion. Faculty Mentor: Dr. Jonathan Titus
- Ms. Melissa First, Ripley, NY, White-nose Syndrome: Transmission and Persistence of the Fungus in a Summer Population of Little Brown Bats. Faculty Mentor: Dr. Scott Ferguson
- Ms. Ashleigh Hanner, Fredonia, NY, Incorporating Aquaporin into Polymer Nano-Layer Foam. Faculty Mentor: Dr. Wayne Yunghans
- Mr. Matthew Kraft, Eden, NY, The Effects of Native and Introduced Invasive Species on Plant Species Richness in Western New York Wetlands and Riparian Habitats. Faculty Mentor: Dr. Jonathan Titus
- Ms. Lauren O'Neill, East Aurora, NY, Effects of Coal Bottom Ash on Common Roadside Vegetation. Faculty Mentor: Dr. Jonathan Titus
- Mr. Nicholas Sard, Panama, NY, Genetic Evidence Supporting Male Site Fidelity in Smallmouth Bass Populations in Lake Erie. Faculty Mentor: Dr. Theodore Lee
- Mr. Hans-Peter Toews, Buffalo, NY, The Reintroduction of Native Tree Species in Fallopia japonica Invaded Habitat through the Reduction of Competition by Mechanical Control Measures. Faculty Mentor: Dr. Jonathan Titus

2011 Scholarship Winners

- **The Yunghans-Mirabelli Biology Achievement Scholarship** – Kaitlyn Crossan, Dunkirk, NY
- **Archer and Mabel Fox Memorial Scholarship** – Melinda Arrance, Kennedy, NY; Amber Inscore, Spencerport, NY
- **Adele Maytum Hunter Scholarship** – Leah Kerns, Cleveland, NY; Jill Mahon, Jamestown, NY; Jacob Merle, Portland, NY; Sierra Rotella, Syracuse, NY
- **Herbert and Marion Mackie Memorial Scholarship** – Jaime Teelin Hoffman, Newfield, NY ; Jacob Krocke, Marion, NY
- **Alice M. Sam Biology Scholarship** – Steven Gangloff, Amherst, NY
- **Willard F. Stanley Memorial Scholarship** – Shannon Gowen, Williamsville, NY
- **Kourelis-Stavrides Award for Outdoor Interests** – William Pszonak, Eden, NY
- **1929 Graduates' Bioethics Award** – Sierra Rotella, Syracuse, NY

ALUMNI

Homecoming Weekend Activities – Hope to see you!

Oct. 21, Friday - 3-4 PM - Biology reception for alumni, faculty, staff and students—Jewett Hall Lobby

Oct. 21, Friday, - 4-5:30 PM - Seminar presentation by Mr. Jeff Conroy, '87, Director of Core Genomics Facility, Roswell Park Cancer Institute—Jewett Hall 101

Oct. 22, Saturday, 9-11 AM - Breakfast reception for Biology alumni, faculty and staff—Jewett Hall Lobby

Sharing laughs and memories at the Biology Alumni Breakfast—Fall 2010.

Alumni Portal

If you have not yet visited the Portal, please do so and fill out an alumni survey, join the Biology group and indicate your preference for how you wish to receive future newsletters. Please visit http://fredonia.edu/biology/ and click on 'For Alumni'. We also encourage you to submit your reminiscences about your time in Jewett Hall or your recent accomplishments that you may want to share with other alums.

Nitric Oxide Course led by Dr. Michael Marletta

A select group of undergraduate and graduate students in the Biology and Chemistry departments recently had a unique opportunity to take a class from a world-renowned biomedical scientist. Michael A. Marletta, Ph.D., a 1973 biology and chemistry graduate of SUNY Fredonia, was the lead instructor for the spring 2011 course, "Nitric Oxide: From Biochemistry to Medicine" (see page 2 for course description). Dr. Marletta is recognized as a leader in the discovery of the role of nitric oxide as a critical player in communication between cells. He is the President of the Scripps Research Institute in LaJolla, California, one of the world's largest independent, non-profit biomedical research organizations. Previously, Dr. Marletta was Aldo DeBenedictis Distinguished Professor of Chemistry and Professor of Biochemistry in the Department of Molecular and Cell Biology at UC Berkeley.

Antithrombotic drugs, humor and reading programs

Dana Abendschein, Ph.D., '74, Associate Professor in the Departments of Internal Medicine and Cell Biology and Physiology at the Washington University School of Medicine, St. Louis, offered a seminar to the SUNY Fredonia community entitled, "On the Road to Developing Targeted and Safe Antithrombotic Drugs" on Friday, October 1, 2010. Dr. Abendschein's translational physiology and pharmacology laboratory focuses primarily on development of new and safe approaches to inhibit thrombosis during heart attacks and strokes where injury to arteries is an underlying cause. Recent studies have focused on an apyrase protein, originally found in potatoes and also on the inside of blood vessels, that degrades ATP leading to inhibition of platelet activation much like the drug known as Plavix, but without the risk of bleeding.

After discussing his research, Dr. Abendschein shifted gears and talked about the role of humor in medicine, sharing stories of his own volunteer activities in 'clowning' and the way that gentle humor can help patients dealing with the fear and pain associated with disease diagnosis and treatment. Dana concluded the seminar with a discussion of 'Story Link', a reading program that he and his wife, Jane, developed to help incarcerated parents stay connected with their children. 'Story Link' is being used in the Chautauqua County Jail system.

Voracious beetles and cannibalistic spiders!

October was an appropriate month for alumni Jonathan Lelito and Brian Moskalik to return to the Biology department and share stories of their research involving alien beetles laying waste to acres of forests and female spiders that cannibalize their mates.

Dr. Jonathan Lelito graduated with his bachelor's and master's degree in Biology from SUNY Fredonia in 2003 and 2006, respectively. He earned his PhD in Biology at Pennsylvania State University, and is currently a Facility Manager for the United States Department of Agriculture Animal and Plant Inspection Service Plant Health, Plant Protection and Quarantine. Dr. Lelito's primary area of research interest is the Emerald Ash Borer, a highly invasive and introduced beetle that has killed nearly 30 million ash trees in the United States. The economic impact is severe, with losses estimated in the tens of millions of dollars. His presentation was entitled: Emerald Ash Borer – How to Trap a Pest: Mate-finding, visual cues, and host volatiles allow the detection and monitoring of the emerald ash borer in North America

Dr. Brian Moskalik graduated with his bachelor's and master's degree in Biology from SUNY Fredonia in 2003 and 2006, respectively. He earned his PhD in Biology at the University of Cincinnati, and is currently an Andrew W. Mellon Postdoctoral Fellow in the Department of Biology at the College of Holy Cross. His primary area of research interest is the wolf spider; his presentation was entitled Female Condition and Mate Choice in a Wolf Spider.

Joe and Jane Falcone, '74, to be honored Homecoming 2011

Joe and Jane (Schuster) Falcone, both graduates of the class of 1974, will be honored as Outstanding Alumni at Homecoming this October. They have been leaders in the region's fruit and vegetable industry, and have recently initiated an endowment fund to support student research projects within the Biology department. Our sincere thanks go out to Joe and Jane for their generosity and support.

FACULTY, STAFF and EMERITI NEWS

Dr. Scott Medler to join Biology Department August 2011

The Biology Department looks forward to welcoming Dr. Scott Medler, Assistant Professor of Biology, in August 2011. Dr. Medler will teach courses in Mammalian Physiology, Comparative Anatomy, Muscles and Movement and Human Biology, and will continue his active research program focusing on the cellular and molecular organization of skeletal muscles and how these properties change in response to development, exercise, and other demands and activity. He will also offer important support to the pre-health and science education programs. Dr. Medler received his PhD in Zoology from Louisiana State University, was an NIH Postdoctoral fellow in the Biology Department at Colorado State University, and most recently a Research Assistant Professor at the University of Buffalo. Dr. Medler has 18 peer-reviewed articles to his credit, has given numerous professional presentations and has been the recipient of $400,000 in grant money, most from the National Institutes of Health.

Dr. Titus, Fulbright scholar, on sabbatical 2010-11 in Botswana, Africa

Dr. Jon Titus spent the 2010-11 academic year teaching and performing research as a Fulbright Scholar at the University of Botswana. Botswana, a land-locked nation in central southern Africa, is a study in contrasts. It is characterized by wide open spaces teeming with diverse wildlife, thriving diamond mine and the worlds' highest HIV/AIDS rate. Dr. Titus taught Biostatistics, Introductory Biology, and Plant Systematics. His research project examined the population dynamics of the mountain aloe (*Aloe marlothii*). The mountain aloe, which can grow up to 25 feet, occupies an important place in Botswana history, having purportedly scared off an invading Boer force, who confused the silhouettes of the towering aloes with an army of enraged warriors wearing spectacular battle headdresses. There is an ongoing discussion regarding the establishment of a Mountain Aloe Preserve in Molepolole because of their historical role, particularly because the range of mountain aloe in this area is much reduced due to development and is impacted by grazing and woodcutting. A longer essay describing Dr. Titus' sabbatical can be found on the SUNY Fredonia Biology webpage, www.fredonia.edu/biology. Dr. Titus' blog detailing his Botswana experiences can be found at http://lettersfrombotswana.blogspot.com/

Can you find Jon and Priscilla Titus in front of the baobab tree?

Professor Patricia Astry was reappointed to a second three year term as Department Chair. Pat continues to serve the department as Director of Medical Technology and also advises students interested in pharmacy, physician assistant, physical therapy and nursing professions.

Dr. William Brown celebrated 10 years as a member of the Biology Department of SUNY Fredonia, published a paper on reproductive allocation in insects in *Behavioral Ecology and Sociobiology*, and mentored five graduate students. A video of his mantid behavioral work can be viewed at http://www.youtube.com/watch?v=mKF3r95Ft9k

Dr. Roger Byrne completed the first year of his two year appointment as the Associate Dean of the College of Arts and Sciences.

Dr. Scott Ferguson submitted grants to the NSF and NIH totaling over $630,000 this year to support his research on developmental patterning and RNA localization. He is currently revising a manuscript for publication in the *Journal of Cell Science* on the effects of insulin signaling on growth factor translation. His lab is also developing a new technique to visualize interactions between proteins and RNA in living cells.

Dr. Matthew Fountain published two articles this year; the first on the structure of the RNA triple repeat associated with myotonic dystrophy in *Biochemistry*, the second on the binding of a zinc ion complex to a bulged thymidine nucleotide in *Chemistry Communications*. He was also an invited speaker at the Pacifichem conference in December where he discussed his work on lanthanide ion binding to RNA hairpin loops.

Dr. Frederick Harrington began development of the new Human Anatomy and Physiology I and II sequence, and supervised several undergraduate research students on his green algae biofuel project. Students are using molecular biology and enzymatic analysis to determine how green algae make the triglycerides that can be converted into biodiesel.

Dr. Karry Kazial collaborated in research presented at the Experimental Biology meeting in DC examining effects of exercise intensity & fluid restriction on cognitive function and salivary measures in athletes. Collaborators are Dr. Todd Backes (Dept. Sport Management & Exercise Science) and Dr. Peter Horvath (Dept. Exercise & Nutrition Sciences, UB). Other research examined effects of artificial night lighting on little brown bats.

Dr. Ted Lee taught two new courses; Molecules and Medicine and Health Professions Careers and also participated in Dr. Michael Marletta's Nitric Oxide course. Ted also helped Jon Titus out while on sabbatical by supervising the Biology Club and taking care of Jon's famous canine, 'Doggy Dog'.

Dr. Bruce Tomlinson continues to teach multiple sections of Introduction to Biology using his book, "A Slice of Life", and perform campus service on the ITAB Committee.

Dr. Wayne Yunghans continues supervising student research involving the placement of aquaporin from kidney cell membranes into polymer foam. The ultimate goals is to prepare a water filtration type of membrane system.

Mr. Ed McCarrick, Instructional Support Assistant, spent many hours developing the $1.5 million Biology instrumentation list for the new Science Center, and initiated the purging of old materials and equipment in preparation for the move.

Mrs. Dawn Hunt, completed her second year as Biology Department Secretary. Dawn's superb organizational skills and command of technology are an enormous asset to the Biology faculty and students.

Dr. Allen Benton former chairman of the Biology Department, will celebrate his 90th birthday on Sept. 4th. Email address: marginal@mailbug.com

Dr. Kevin Fox "I would remind Homecoming attendees that some of us senior faculty no longer enjoy the faculties we had 20-50 years ago. As we enter our 8th decade our hearing declines and the neurons linking facial-recognition to name-recall are breaking down. We may recognize your smiling faces *and/or* your names but may be unable to link them at first. Humans lived in small groups for most of their history and an individual might meet fewer than a hundred others in their lifetime – we've not had time to evolve strong face-name association systems. So please speak clearly and sign the register as you enter (so we can check your info before we embarrass ourselves)! Thanks! Kevin." Email address: KFox@netsync.net

Dr. Ken Mantai and wife Chris continue to happily reside in Fredonia, NY. Email address: Kenneth.Mantai@fredonia.edu.

Dr. Moti Sharma and his wife, Kanta, continue to happily reside in Fredonia, NY. Sharma@netsync.net

Dr. Ken Wood and wife Jean split their time between their residences in Maine and Georgia. Ken was pleased to receive appreciative notes from alumni Frank Priznar, Tom Fink, Jules Silverman and Josephine Wilson. Ken concluded, 'It gives me great pleasure to have influenced the lives of these talented people.' Email address: caldy23@yahoo.com

Dr. Terry Weaver and wife Marilyn continue to happily reside in Virginia Beach.

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Message from the Chair…

Greetings to our alumni! Part of the mission statement of the Biology Department reads, " Through rigorous student centered programs of study, we aspire to produce graduates who are well-prepared to enter graduate and professional programs and a wide variety of career opportunities." I hope the content of this newsletter is a testimony to that aspiration, and to the significant talents and accomplishments of our alumni. As we reflect on past successes, we look forward to the future. We look forward to vertebrate physiologist Dr. Scott Medler's arrival and the support he will bring to the pre-health curriculum. Our newly approved Honors program will allow exciting new research opportunities for talented Biology undergraduate students. We are delighted that SUNY Fredonia is honoring two Biology alumni, Joe and Jane Falcone, '74, and that Jeff Conroy, '87, the Director of the Core Genomics Facility at Roswell Park Cancer Institute is going to be our keynote speaker at Homecoming this year. And before you know it, we will be celebrating the 50th anniversary of Jewett Hall in 2012, followed by the move to the new Science Center in 2013!

Thanks to the continuing generosity of our alumni and benefactors, we were able to award thousands of dollars in scholarships and research fellowships to deserving students. Thank you for all you do to support the department and our ongoing efforts to provide excellent educational opportunities for our students. Please visit our website, http://fredonia.edu/biology, and click on "For Alumni". At the alumni portal, you can share your ideas with us via our alumni questionnaire, and join the Biology group. Also send along any news you would like included on the Alumni webpage and in next year's newsletter to Patricia.Astry@fredonia.edu, or call me at 716-673-3283. I look forward to seeing many of you at our alumni activities during Homecoming weekend.

My thanks to Mrs. Dawn Hunt for her invaluable assistance in the preparation of this newsletter.