



BIO BITS

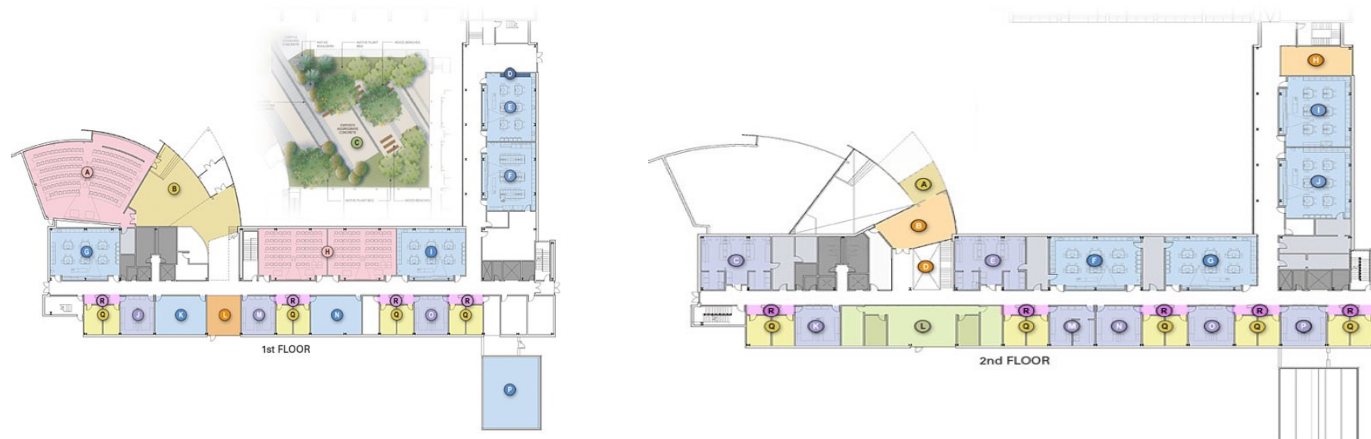
Biology News from Jewett Hall

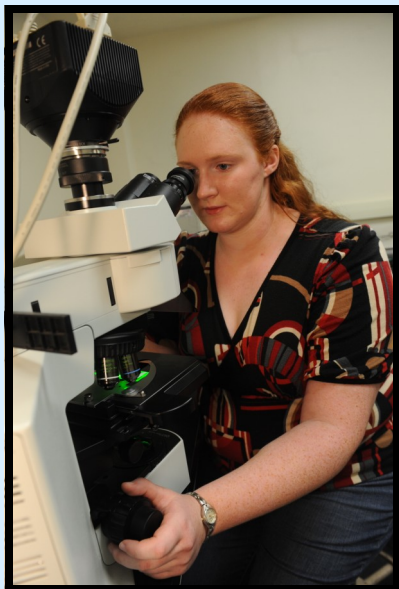
Groundbreaking for New Science Center Scheduled for Spring 2011

Biology faculty and staff have had many productive meetings this year with the Mitchell/Giurgola architectural firm, and the design plans for the Science Center are near completion. The Center will be equipped with state of the art instructional and research equipment, and it is exciting to think of the wonderful learning opportunities in store for our students. The bulk of the biology labs and offices will be on the second floor with dedicated teaching labs for molecular and cellular biology, genetics, microbiology, developmental biology and anatomy and physiology. Specialized areas include a microbiology/molecular biology research suite, a genetics research suite, a specialized imaging room with a confocal microscope, and a clean room for cell culture. An administrative suite for advisement of biology, chemistry, pre-med/pre-health and science education students will be located on the second floor. The first floor will be home to the environmental and ecological science faculty and their specialized teaching and research areas. The greenhouse/head house complex will feature various environmental, teaching and isolation zones to safely study plants from numerous ecosystems. A mudroom adjacent to the van pull off features a place to wash and store wet and muddy equipment and specimens. The first floor will also be home to a large lecture hall and other classroom spaces designed to accommodate small group learning activities as well as technology driven lectures. The Herbarium, specialized environmental chambers and cold rooms will be located in the basement; relocation of the Animal Colony to Houghton Hall after renovation is under consideration.

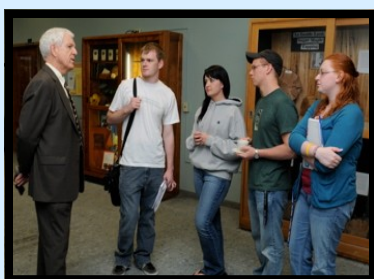
Groundbreaking for the Science Center is scheduled for spring 2011; the official ribbon-cutting ceremony is planned for Homecoming 2013.

More details are available on the Science Center Web Site; look for our construction web cam to appear upon ground-breaking! <http://www.fredonia.edu/sciencecenter/>





Susan Cronin, an undergraduate student from Pittsford, NY, uses the epifluorescent microscope to conduct research in Dr. Ferguson's lab.



Alum Dr. Jeff DuBois conversing with Medical Technology and Biology majors before his seminar.



Biology seniors Marianne Moehle of Rochester, NY, and Mark Herron of Leroy, NY, examine a specimen in Human Anatomy and Physiology lab.

New Courses—2009-2010

2009 saw the addition of new and enhanced courses to the repertoire of department offerings, including:

Local Natural History – Dr. Titus developed this entirely field-based course which took students to a variety of locations twice a week to learn about the natural science history of the region. Students were also required to read contemporary nature writing from the likes of Hapers, Audubon and Orion.

Tropical Islands – This innovative field and classroom course offered by Dr. Titus required students to read “The Song of the Dodo” for group discussion purposes, develop a field guide based upon the flora and fauna of Andros Island, and participate in an 8 day marine biology field experience at the Andros Island field station in the Bahamas.

Molecular Genetics – Students learned a number of advanced molecular genetics and cell biology techniques in the context of a research project. Under Dr. Ferguson's instruction, they successfully conducted a gene mapping exercise in *Drosophila melanogaster* that required the identification of descriptive single nucleotide polymorphisms in a unique mutant strain. Techniques performed included Reverse Transcriptase PCR, Western Blotting, Chromatin Immunoprecipitation, Immunohistochemistry, DNA sequencing and DNA cloning.

Molecular Biology of Disease – Taught by Dr. Ferguson, this course was based entirely on a reading of primary literature about the genetics and biochemistry of disease. Topics included inborn errors in metabolism, gene therapy, stem cell research, protein folding, neurodegeneration and cholesterol metabolism. Students were required to formulate a novel research proposal in the format of a small grant, which required a survey of relevant literature, formulation of a hypothesis and an experimental proposal to test the hypothesis. Following peer review and critique of grants, students offered formal presentations of their proposals.

Cancer Biology Seminar – This innovative Honors type course was led by alumnus Dr. John Baust, '65, Professor Biology at Binghamton University, and a world-renowned researcher in cryobiology and the use of cryomedicine in the treatment of cancer and other diseases. Instruction was also offered by SUNY Fredonia Biology faculty Astry, Lee and Yunghans. The course required students to immerse themselves in cancer biology literature and develop alternative therapeutic strategies for cancer treatment. The highlight of the course was a weekend trip to Dr. Baust's research lab, where students were able to perform cell culture and cryotechniques.

Experimental Design and Analysis – Dr. Bill Brown designed this course for senior undergraduate and graduate students engaged in mentored research experiences. The course offered students the opportunity to learn experimental design, statistical analysis, presentation and critical analysis of scientific research.

New Courses—2010-2011

Fall 2010: Following on the heels of the alum-led Cancer Biology seminar, alumnus Dr. Michael Marletta, '73, will lead a new course, *Nitric Oxide: From Biochemistry to Medicine*, for Biology and Chemistry undergraduate and graduate students. Dr. Marletta, a member of the National Academy of Sciences and Professor of Chemistry at the University of California Berkeley, will be assisted on the course by SUNY Fredonia faculty Fountain and Lee. Students will learn how nitric oxide signaling research leads to the development of therapeutic drugs. The course will have a seminar format and most sessions will use video conferencing to enable the students to interact with Dr. Marletta.

Fall 2011, Spring 2012: In response to increasing student interest in the health sciences, the department will be developing a two semester sophomore level sequence; *Human Anatomy and Physiology I and II*. The sequence will be required for Medical Technology majors and recommended for students interested in pharmacy, physician assistant, physical therapy and nursing programs. The junior level Mammalian Physiology course is being modified to more directly suit the needs and interests of students wishing to enter medical, veterinary, dental or optometry school.

New Instruments and Equipment

The department acquired new equipment that will enhance the laboratory instruction we offer students, especially in physiology and cellular and molecular biology.

Animal/Human Physiology iWorx instruments—The state of the art iWorx AHK/214 Advanced Combination Animal/Human Physiology instruments are used for laboratory instruction in our physiology classes, allowing students to perform ECGs, EMGs, EOGs, EEGs, and to measure blood pressure, heart rate, body temperature, lung activity and kidney function.

Leica EZ4 dissecting microscopes and digital camera—The microscopes are used in Genetics to distinguish subtle characteristics of fruit flies, in Developmental Biology to examine developing chick embryos and baby salamanders, and in Plant Taxonomy to examine plant roots, stems and flowers as an aid in plant identification. The digital camera greatly enhances the effectiveness of teaching demonstrations.

PCR Bio-Rad C-1000 Thermo Cycler—The C-1000 thermal cycler is a powerful instrument being used for PCR analyses in teaching and research laboratories. The C-1000 can be upgraded to real-time PCR, and we hope to be able to purchase the module for upgrade this year.

Equipment for Principles of Biology II and Genetics—Replacement of essential equipment for these introductory cellular and molecular biology courses is underway. Recent acquisitions include new spectrophotometers, micro centrifuges, gel electrophoresis rigs and automatic pipettes.

Scholarly Activities

Last year, Biology faculty published 6 articles in peer reviewed journals, gave 5 scholarly presentations, reviewed 25 manuscripts, and submitted 9 grants totaling more than \$1.5 million.

Tenure Track Physiology Search to begin Fall 2010

SUNY Fredonia is committing resources to meet the increased interest in health sciences expressed by our students, and the increased demand for health care professionals. Towards that end, the department will commence a search for a tenure track vertebrate physiologist this fall.



Above: Graduate Student Nick Sard of Panama, NY, catching bass in Canadaway Creek for his bass genetics research performed with Dr. Ted Lee.
Top Left: The Allen Benton Native Plant Garden contains only plants native to Chautauqua County, and was established Earth Day 2008 by the volunteer labor of Dr. Jon Titus, the Biology Club Students and others.
Bottom left: Dr. Jon Titus and research students removing invasive garlic mustard and re-introducing native plants species at the Bentley Preserve, Jamestown, NY.



Happy graduates at the Biology commencement reception!

2010 Graduates: Where are they headed?

Our most recent graduates are moving on to great new adventures! Sixteen have been accepted to medical and health professional programs (medical, veterinary, optometry, pharmacy, physician's assistant, nursing and radiologic technology school), twelve have begun careers in areas such as medical technology and biomedical research, and nine are heading on to graduate school. In addition, five medical technology seniors just started their clinical internships. For more detailed information about what the graduating class of 2010 is up to, please check our webpage, www.fredonia.edu/biology.

STUDENTS

Julie Graham awarded 2010 Lanford Presidential Prize and 2010 Chancellors Award for Student Excellence

Summa cum laude Biology graduate Julie Graham was awarded the prestigious Lanford Presidential Prize and the Chancellors Award for Student Excellence. The Lanford Presidential Prize, considered to be the highest student honor given by the university, is awarded to a member of the graduating class who has exhibited balanced achievement and exemplifies Fredonia's ideals. The Chancellor's Award for Student Excellence recognizes a student's ability to integrate academic excellence with diverse extramural activities. Julie, a native of Elmira, NY and a highly accomplished young woman, will begin pursuing her doctorate of Pharmacy degree at the State University at Buffalo's School of Pharmacy this fall.

Pictured at the right is Julie Graham receiving the Lanford Presidential Prize from President Hefner.



Students selected to present research posters in Albany

Undergraduate students Jessica Wooten and Chengwei Sun presented their award-winning research poster "The effect of garlic mustard on forest soils and understory species in western New York" at the "SUNY Undergraduates Shaping New York's Future: A Showcase of Scholarly Posters" at the State Capital in Albany, NY.

2010 Scholarship Winners

The department is awarding \$6500. in scholarships to high-achieving students this year. These scholarships are possible thanks to your generous contributions to the endowment funds, below.

Contributions to our scholarships can be made at the online site www.fredonia.edu/giveonline

- **1929 Bioethics Award**, Lucy Evans, Fredonia, NY
- **Archer and Mabel Fox Memorial Scholarship**, Kelci Yousett, Lockport, NY
- **Bruce and Nancy Garlapow Memorial Scholarship, Archer and Mabel Fox Memorial Scholarship**, Darren Norris, Falconer, NY
- **Alice M. Sam Biology Scholarship**, Alicia Armeli, Ashville, NY
- **Willard F. Stanley Memorial Scholarship**, John Funka, Dewittville, NY
- **Adele Maytum Hunter Scholarship**, Alexandra Ames, Berkshire, NY; Lucy Evans, Fredonia, NY; Steven Kolenda, Oswego, NY; David Sherwood, Ballston Spa, NY
- **Kourelis-Stavrides Award for Outdoor Interests**, Andrea Solano, Geneva, NY
- **Herbert and Marion Mackie Memorial Scholarship**, William Pszonak, Eden, NY; Alexander Staunch, Fairport, NY

Student Research Activities

Many undergraduate and graduate students engaged in significant research activities this past year. Seven students performed summer research thanks to generous funding provided by the Holmberg Foundation and the Constantine Barker Endowment, and gave formal presentations to the campus in October. Twenty-seven students displayed research posters and gave talks at the 2010 SUNY Fredonia Student Research and Creativity Exposition, the Great Lakes Research Consortium, the American Society of Microbiology, the NYS Wetlands Forum Conference, and the Tom Ridge Environmental Center Fifth Annual Research Symposium.

Homecoming Week-end Activities – Hope to see you!

Oct. 1, Friday - 3-4 PM - Biology reception for alumni, faculty, staff and students - Jewett Hall Lobby

Oct. 1, Friday, - 4-5:30 PM - Seminar presentation by Dr. Dana Abendschein, '75 - Jewett Hall 101

Oct. 2, Saturday, 9-11 AM - Breakfast reception for Biology alumni, faculty and staff



Drs. Caldwell, Baust, and Fox at the Biology Alumni reception, Homecoming Weekend 2009.

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. Please email your stories to Bruce.Tomlinson@fredonia.edu for inclusion in the alumni portal.

2009 Summer Research Student Presentations

- Malachi Blundon, Franklinville, NY, Using Lanthanides to Study Metal Ion Stabilization of DNA Tandem Mismatches, Faculty Mentor: Dr. Matt Fountain
- Kristina Halliman, Forestville, NY, Cues of Fighting Ability in the Aggressive Songs of House Crickets, Faculty Mentor: Dr. Bill Brown
- Katelyn Miller, Fredonia, NY and Gabriel Shields, Fredonia, NY, Little Brown Bats: Has White-Nose Syndrome Impacted Populations in Western New York? & Do Males Show Preference for Female Scent?, Faculty Mentor: Dr. Karry Kazial
- Jack Padalino, Rochester, NY, Microbial Source Tracking of Lake Erie Beach Waters, Faculty Mentor: Dr. Ted Lee
- Alexander Staunch, Fairport, NY, Effects of Differing Hydrology and Substrate Application on Germination Rates of Woody wetland Plants, Faculty Mentor: Dr. Jon Titus
- Leslie Swinehart, Ripley, NY, Study of Larval Fish and Minnow Richness along Shoreline Habitats of Lake Erie, Faculty Mentor: Dr. Jon Titus

ALUMNI

Dr. John Baust, 2010 Commencement Keynote Speaker

Biology alumnus Dr. John Baust, '65, Professor of Biology and Director of the Institute for Biomedical Technology at Binghamton University, was the keynote speaker for the SUNY 2010 Commencement. To drive home his point about the value of a SUNY Fredonia education, he shared a story about a summer spent conducting research in Trinidad. Dr. Baust, then an undergraduate student at Fredonia, worked side by side with well known scientists and students from Harvard, Yale, Amherst and Wellesley. The experience was an intimidating one until an intellectual debate found his nemesis from Harvard posing a question that was right in Dr. Baust's 'wheelhouse of knowledge thanks to my Fredonia professors." He proceeded to knock the 'gotcha' question out of the park. "Hopefully my point is obvious," Dr. Baust concluded. "Your education has been at a level uncompromised by even the most prestigious institutions of higher education. You have the tools to forge ahead with the best - shoulder to shoulder and even ahead of the pack."



Dr. Kim Neifer-Caldwell and Dr. John Baust honored at Homecoming Weekend

Dr. Kim Neifer-Caldwell, '87 and Dr. John Baust, '65 received Outstanding Achievement Awards at the 2009 Homecoming Weekend alumni luncheon.

Dr. Kim Neifer-Caldwell, '87 and Dr. John Baust, '65 received Outstanding Achievement Awards at the 2009 Homecoming Weekend alumni luncheon. Dr. Caldwell, Associate Professor of Biological Sciences at the University of Alabama in Tuscaloosa, reflected on how well her Fredonia education prepared her for her endeavors, and offered special thanks to Dr. Mantai and Dr. Yungans. Dr. Caldwell has found that excretions from common soil bacterial kill dopamine neurons in two different worms and in human neurons. These are the same neurons that die in Parkinson's patients, and her research team hypothesizes that this soil bacterium could be a contributor to the development of Parkinson's disease. Upon receiving his award, Dr. Baust (profiled in the commencement article, on page 5) commented, "I've been affiliated with many universities during my career, and I can tell you that the students and faculty here at Fredonia are as good as they come."

Dr. Jamie Wasilenko is Keynote Speaker SUNY Fredonia 2010 Student Creativity and Research Exposition

Dr. Jamie Wasilenko, '00, USDA research microbiologist, was the keynote speaker for the 2010 SCRE. Wasilenko, who has a doctorate in genetics and molecular biology from Emory University, reflected on the importance and benefit of her undergraduate research activities in the biology department, and described her research into pathogenic Influenza viruses.

Alumni Seminars—2009-2010

A Peek into the Research and Life Journeys of two Biology and Chemistry Alumni

Dr. Michael A. Marletta, '73, Chair, Department of Chemistry, UC Berkeley, Professor of Chemistry, Aldo DeBenedictis Distinguished Professor, Joel Hildebrand Distinguished Professor Dr. Jeffery W. Kelly, '82, Lita Annenberg Hazen Professor of Chemistry, The Scripps Research Institute

Point of Care Glucose Testing: How Do We Measure Up, What Standards Apply and Where Are We Headed? Dr. Jeffrey A. DuBois, '73, Vice President of Medical and Scientific Affairs, Nova Biomedical Corporation, Waltham, MA.

Worming Out A Potential Cause For Parkinson's Disease, Dr. Kim Neifer-Caldwell, '87, Associate Professor of Biological Sciences, University of Alabama

Insect Invaders! Chemical Ecology of the Asian Long horned Beetle and the Emerald Ash Borer, Dr. Jacob Wickham, '02, USDA Forest Service

Time for some "R&R"!

In this case, we're not talking about rest and relaxation. No, in preparation for the Biology Department 50th anniversary celebration and subsequent move to the new Science Center, we are asking you for "**Reflections and Reminiscings**" about your years in Jewett Hall. We hope to be starting to collect these memories via videotape and paper at this year's Homecoming receptions. The stories and recollections will be displayed at our gala 50th anniversary celebration in 2012, and will then become a permanent part of a Science Center display. Please plan on joining us during Homecoming weekend for the seminar, receptions and "R & R"!

FACULTY, STAFF and EMERITI NEWS

Professor Patricia Astry completed her second year as chair of the department, served as Biology liaison to the Science Center Committee, directed the Medical Technology program, and was the coordinator and an instructor for the Cancer Biology seminar.

Dr. Bill Brown had a busy lab this year with 11 research students working on mantis behavior, cricket aggression, and other projects. Dr. Brown and graduate student Kim Tuzzolino published a paper on ant ecology in Entomological Science; he also presented a paper at the International Ethology Congress in Rennes, France.

Dr. Scott Ferguson established a research program that aims to study the regulation of mRNA localization and translation. Using *Drosophila melanogaster* as a model, he is studying biological pathways that are associated with cancer and diabetes. The lab is embarking on two principle projects; to understand how alterations in insulin signaling modulate atypical translation initiation and to visualize protein-RNA interactions in living cells using fluorescence microscopy.



Alum Dr. Chris Mirabelli and Dr. Ferguson in the imaging lab.

Dr. Matt Fountain is studying how metal ions interact with DNA and has received two NSF-ROA collaborative grants with Dr. Janet Morrow at UB totaling \$75,000. He is also determining the structure of RNA triple repeats associated with Huntington's Disease and myotonic dystrophy through collaboration with Dr. Matthew Disney at Scripps Institute.

Dr. Karry Kazial conducted research pertaining to White Nose Syndrome on bats in the WNY area. She also collaborated with faculty from Clayton State University, Morrow, GA on a publication appearing in [Applications of Computer and Information Sciences to Nature Research](#), ACM Digital Library, and was on sabbatical in the Spring 2010 semester.

Dr. Ted Lee presented a poster at the American Society of Microbiology meeting in San Diego, CA, detailing his microbial source tracking research in Lake Erie beach waters. The data from the project indicate that the beach closings are likely due to naturalized strains of *E. coli* and that fecal pollution is not responsible for the high *E. coli* levels present.

Dr. Bruce Tomlinson made substantial revisions to his Introduction to Biology textbook, "A Slice of Life". Students frequently comment that the text is very readable and helpful, and appreciate the extra exercises added to the new version.

Dr. Wayne Yunghans was an instructor in the Cancer Biology Seminar led by Dr. John Baust and has continued research on aquaporin incorporation into thin layers of polymer.

Mr. Ed McCarrick, Instructional Support Assistant, spent many hours reviewing Science Center design plans for Biology teaching and research spaces, and compiling equipment and instrumentation lists for the architectural firm.

We bid a fond farewell to...

Ms. Suzanne Strakosh, who was an adjunct lecturer and a research technician in Dr. Lee's lab. Suzi has moved to Albany, NY with daughter, Liana, to begin work on her doctorate. We wish her much happiness and success; we will miss her!

See you in a year...

Dr. Jon Titus is the recipient of a Fulbright fellowship; he and wife/research partner Priscilla will spend the 2010-11 academic year on sabbatical at the University of Botswana, Africa. This past year, Dr. Titus continued his research on invasive Japanese knotweed and garlic mustard plant species, maintained the greenhouse and expanded the Allen Benton Native Plant Garden.

...Or two!

Dr. Roger Byrne is taking a two year hiatus from the Biology department as he moves over to Administration to serve as Associate Dean of the College of Arts and Sciences. Last year, Dr. Byrne provided an extremely important service to the university as Director of Campus Assessment and co-chair of the university's Middle States self-study.

And welcome to...

Dr. Fred Harrington, who joins us for two years as a visiting assistant professor. Dr. Harrington will teach the anatomy and physiology courses and will supervise students in research projects involving the generation of biofuel from algae.

Mrs. Dawn Hunt, who joined us last September as Department Secretary. Mrs. Hunt's cheerful attitude, efficient work style and high productivity quickly made her a valuable member of the department, and we look forward to having her with us for many years to come!

Dr. Allen Benton shares the following: "At the age of 88, I have turned from writing scientific papers to writing novels. My first, "Of Time Ill Spent", is a story of life in the late 19th century. The second, "Bronski's Medals", is a World War II novel, based loosely on personal knowledge. We (Marge and I) are both in relatively good health and spirits." Email address: marginal@mailbug.com

Dr. Kevin Fox continues to enjoy to enjoy hunting, fishing, maintaining a large vegetable garden, tending fruit trees, restoring antique furniture and researching the Fox family genealogy. Email address: KFox@netsync.net

Dr. Ken Mantai tells us that "I'm really enjoying retirement, although I miss the students a great deal. I'm still playing racquetball and working with the DEC on stream trout populations. I'm also on the Technical Advisory Committee of the Chautauqua Lake Management Committee (appointed by the County legislature). Frustrating how little science goes into major resource management decisions, but I plug on." Email address: Kenneth.Mantai@fredonia.edu.

Dr. Moti Sharma and his wife, Kanta, continue to reside in Fredonia while actively participating in the local service organizations in the community, such as the Lion's Club. Email address: Sharma@netsync.net

Dr. Ken Wood tells us "Jean and I spend our time between Georgia and Maine. I retired in 1987, and we helped build a house in the middle of a tree farm near Cairo, Georgia where we live most of the year." Email address: caldy23@yahoo.com.

Dr. Terry Weaver and wife, Marilyn live in Virginia Beach near their sons, daughters-in-law and 3 grandchildren. Dr. Weaver published a book last year on Influenza. Email address: tnmweaver2@aol.com



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Message from the Chair...



Greetings to our alumni! As I trust you can tell from this newsletter, the department had another busy and productive year. Our applications and enrollment are steadily increasing, and the number of students going on to graduate and professional schools increased dramatically this year. New equipment and faculty enhanced the curricular and research opportunities for our students in the areas of molecular biology and genetics. We are in the process of adding courses and personnel to better meet the needs of our many students interested in the medical and health professions. The department hosted its welcome back cookout in September, numerous receptions for student honorees and alumni, and a graduation reception in May for over 100 happy graduates, family members and friends! Planning activities for the new Science Center intensified, and we are looking forward to the groundbreaking this coming spring.

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>, 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.