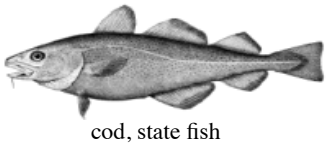
mayflower,
state flower

BioMass

Biology Alumnus Newsletter

University of Massachusetts at Amherst

chickadee, state bird

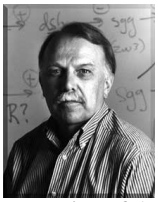


cod, state fish

No. 01 **Spring 1999**

Howard Hughes Grant for Undergraduate Programs

Undergraduate programs in biology on this campus have been given big boosts by grants from the Howard Hughes Medical Institute's Undergraduate Biological Science Education Program. Two consecutive grants, totaling $2.2 million, have had an enormous impact on undergraduate education in biology.



Under the direction of **Dr. Rod Murphey,** Professor of Biology and Director of the Molecular and Cellular Biology Graduate Program, the grants have made possible dramatic improvements in equipment available to undergrads, and assisted in development of the Microbiology and Molecular Biology Laboratory Support Services which runs a state of the art lab for molecular studies. They also have supported expansion of the research experiences for undergraduates. Students at all levels, from freshmen to seniors, are now working in faculty research labs during the academic year, and have the opportunity to spend 10 weeks during the summer on research projects in chemistry, biology, neuroscience, and molecular biology. Students in these summer Research Experience for Undergraduates programs receive $250 per week; they work full time in faculty labs and participate in seminars with other students and faculty. During the last academic year, 170 students worked in over 60 labs.

The importance of the undergraduate research experience is confirmed by our own survey of recent graduates. Virtually all students who have had this experience have gone on to graduate or medical school, or have obtained research positions after graduation.

The grants have also supported the development of the Biology Computer Resource Center (BCRC) (*see article on page 3*) and a variety of outreach programs, including a Summer Institute for High School Teachers administered by **Dr. Bruce Byers,** and special programs for high school students, particularly those from Springfield schools.

Botany + Zoology = Biology?

Except for those of you who are recent grads or among those who received our newsletter of 1994, it may seem this newsletter is coming from a department you do not know. Six years ago, Botany and Zoology faculty joined to form a Biology Department, with **Dr. Steve Kaulenas** (former Head of Zoology) as Head, and **Dr. James Walker** (former Head of Botany) as Associate Head. After completion of Dr. Kaulenas' term, **Dr. Chris Woodcock** took the Headship.

In order to keep some sense of unity in the plant field, a Plant Biology Graduate Program (PBGP) was formed within the new Biology Department. During the 1997-1998 academic year, the PBGP became campus-wide for all faculty working in the plant field. The current director of the PBGP, **Dr. Peter Hepler**, is a 20 year faculty member of the University and Ray Ethan Torrey Professor of Botany.

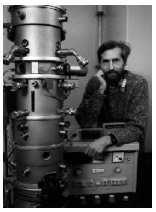
The merger of the Botany and Zoology Departments was just one of the administrative changes which have occurred on this campus in recent years. As in higher education elsewhere in the United States, major efforts are being made to reduce isolation between departments and "blur" departmental boundaries.

The Molecular and Cellular Biology Program, which has been in existence for more than 15 years, was the first of the graduate programs to cross departmental lines. It was followed by the Neuroscience and Behavior Program.

As Botany and Zoology were being united, the Program in Organismic and Evolutionary Biology came into existence. Now, with the creation of these four graduate programs, virtually all faculty in the life sciences have another potential "home" in one of the programs.

Although the latter are all graduate programs, they have had a major impact on our undergraduate programs; they have led to undergraduate seminars in these fields, and increased opportunities for undergraduates to work in faculty research labs during the summer and academic year. Since the graduate programs have become central to the development of the life sciences on our campus, in future issues of this newsletter, we will provide a more detailed picture of them.

Message from Chair Chris Woodcock



Dear alumni and friends,

Welcome to the first of a regular series of Newsletters to keep you up to date with events in the Biology Department, and in touch with each other. We aim to establish a web-based network of alumni through which you can communicate with classmates, and which will also serve as a forum for discussion.

As you can see from the lead article, Biology is a young department on Campus. Since our merger, we have seen a three-fold increase in number of majors, and a similar increase in faculty scholarship, measured by grant activity and publications in journals, *four **Nature** papers in two years!* Recent innovations include the establishment of the BCRC (Biology Computer Resource Center), development of a new curriculum based on learning goals, and renovation of the Intro Biology teaching labs to promote enquiry- based learning.

We want to make the newsletter of interest and use to our alumni, and would like to hear the sort of things you like to read about. Would you prefer articles on the current activities of former friends and colleagues, or news about 'hot' items of local research? Would you be interested in visiting the campus, maybe with a group from your year? Could you write a short article for the newsletter? Let us know how to adjust the style and content of *your* Alumni Newsletter.

If your Newsletter arrived by mail, you may like to check out your alumni web site which includes the letter, an event calendar, as well as links to additional info at URL: **www.bio.umass.edu/biology/alumni.** We also set up a forum for Email conversations. To subscribe to your Alumni Email Forum, simply send an Email message to: **majordomo@bio.umass.edu** with the words **subscribe alumni_forum** in the body of the message. You will receive a message back with details of the system. If you can access Newsletters via the web, please let us know - reducing the number of printed copies and postage (there are over 6,000 Alumni) will funnel more resources into education, our primary mission.

PS. Those who were on campus in the 80's may recognize the Siemens 102 electron microscope (left) which did 12 years of yeoman service, was replaced in 1988 and is now in a DC museum!

Ted Sargent Recounts 40 Years as a UMass Son

Many students of introductory biology and animal behavior will well remember Professor **Ted Sargent** who plans to retire this December. Ted earned a B.S. degree from the University in 1958 and, after receiving a Ph.D. from the University of Wisconsin in 1963, returned to the University as an Assistant Professor in Zoology.

Ted looks back wistfully at his long association with the University. During his undergad years, Ted's favorite teachers included Physics Professor **Bill Ross** who convinced Ted that physics could be interesting and useful to a naturalist. English Professor **Sid Kaplan** taught Ted a special appreciation for American authors like Melville. Ted also fondly remembers his honors thesis advisor Professor **Larry Bartlett**, a fanatical bird enthusiast who passed on some of that enthusiasm to Ted. Another prof Ted reveres was **Bill Nutting**, "a nut" in the best sense of the word.

Recounting his finest hours at UMass, Ted unflinchingly listed mentoring of his students as his greatest joy. Two shining examples are **Deane Bowers**, "who will always be a butterfly", and who became a Professor of Biology, and **Debbie Schlenoff**, who was "brilliant - no one smarter-"; and whose "thesis made a lasting impact on her field and who then went on to become a successful mom of four kids".

Ted clearly has a reverence for good teachers. His favorite model of teacher/professor was **Dave Klingener** who commanded the respect of his discipline as well as the hoards of students who passed through his Comparative Anatomy course. Ted urges that any further growth of the Biology Department be through addition of colleagues with the passions for organisms and teaching that he saw in his idols.

In retirement, Ted will return to perusal of the nature literature, the love for which was nurtured by Sid Kaplan. Several books are in progress. One is a "Words on Birds" theme that catalogs the voluminous literary allusions to nature which are becoming difficult for us to comprehend as their subject matter (e.g. the passenger pigeon) has been erased from our memorable experience. Another work in progress is based on Elaine Goodale, child poet of the Berkshires, whose nature poetry helps us understand our New England heritage.

The Constantine J. Gilgut Chair in Plant Biology

The new University-wide Plant Biology Graduate Program (PBGP) has gotten off to a superb start with the establishment of a chair in Plant Biology in the name of **Dr. Constantine Gilgut**. The holder of the chair, established by a major gift from the Gilgut family, will serve as Director of the PBGP. Dr. Gilgut graduated with the class of 1931 and, after receiving a M.A. degree here, completed a Ph.D. at Harvard. He was a long time member of the University faculty, first in the Botany Department and later, when the Botany Department was restructured in the 1950's, in the Department of Plant Pathology. A student of **Ray Ethan Torrey**, he was a member of the impressive group of Torrey's students who received their Bachelor degrees here, and went on to earn Ph.D.s and assume academic positions in the plant sciences throughout the United States. It is particularly satisfying, that the new University-wide PBGP should be given such a wonderful start with a tie to its distinguished past. We are grateful to the Gilgut family and share the pleasure of recognising Connie's many contributions to the University and community at large.

"Dances with Cows" Video

The history of farming in the Amherst area was imaginatively portrayed in a video "Dances with Cows" in which retired Professor **Dana Snyder** played a leading role. Dana has been restoring antique farm implements such as hay rakes and bailers that were used throughout the long agricultural history of Massachusetts, in which Amherst and the University played important parts. The tape was entered in a national amateur video competition, but was rejected on the grounds it was "too professional". All who viewed it on our local access TV station, ACTV, agree that it captures the unique flavor of our town and its unique blend of inhabitants. Our local Amherst Conservation Commission, a sponsor of the video, would be willing to cooperate with any effort to publish it. Any entrepreneurs out there?

College Teaching Award to Dr. Sandra Petersen

Biology Professor Dr. **Sandra Petersen** has won a 1998 College Distinguished Teacher Award. These awards, separate from the Distinguished Teaching Award made by students, recognize faculty members' contributions to the advancement of undergraduate teaching across campus, efforts in involving undergrads in faculty research projects, and performance in classroom teaching. Just prior to joining the Biology Department, Dr. Petersen held the position of Assistant Professor in the Department of Anatomy at the University of Missouri School of Medicine in Columbia. While there, she received an award for Distinguished Teaching in Histology.

Sandy has an outstanding research program with currently over $2 million in research support from the NIH and NSF. She has two major projects. Sandy hopes to elucidate how the brain, pituitary gland and ovary communicate in order to insure that the signal from the brain that ovulation should commence is sent only when the follicles are mature, and she is also trying to gain insight into the disruptive role of environmental pollutants in the control of ovulation by the brain. Sandy's lab is much sought after by postdoctoral and graduate students, and she routinely sponsors undergraduate research.

Spring Conference for Teachers, Undergraduates and High School Students

The annual meeting of the Northeast Section of the American Society of Plant Physiologists was held at the Amherst campus on May 1, and followed on May 2 by a National Academy of Sciences sponsored symposium *"Frontiers in Plant Biology: Plant Diseases, Pests and Defense Mechanisms"*. This special symposium was directed at undergraduates, and area teachers and high school students. It provided an extraordinary opportunity for students to hear, in a forum designed specifically for them, a group of internationally known scientists talk on a variety of topics. The Symposium included presentations by Dr. Frederich Ausabel, Department of Molecular Biology, Harvard Medical School (*Common Themes in Plant and Animal Pathogenesis*), Dr. Ilya Raskin, Agricultural Biotechnology Center, Rutgers University (*Salicylic Acid and Plant Disease Resistance*), Dr. Anne Simon, Department of Biochemistry, University of Massachusetts, Amherst (*Kill or Cure: the Enigma of Small Virus Associated RNA's*) and Dr. Gregg Howe, MSU-DOE Plant Research Laboratory, Michigan State University (*Plant Defense Strategies Against Insects*).

Retirements

Mary Blajda, long our bookkeeper, first in the Botany and then the Biology Department, retired Dec. 1997. Mary was known by generations of students for her help in ordering supplies, and the joyful spirit she brought to the department office. We will all miss her, remembering the help she extended to so many.

Professor Arthur Stern, a plant physiologist who came to the Botany Department in the 1960's with a Ph.D. from Brandeis University and taught several generations of students in plant metabolism, retired last December. As a member of first the Botany and later the Biology Department, he served as our Honors Program representative and is currently playing a critical role for the Biology Department in developing a program for the new Honors College.

Professor Ted Sargent, currently the faculty member with the longest appointment in the Zoology/Biology Departments will retire in December 1998. With **John "Bud" Moner** and **Peter Webster**, he was a mainstay of our large introductory biology course for many years. For an interview with Ted, see page 2 of this issue.

$275K Renovation Project Under Way

In keeping with the efforts afoot to improve undergraduate teaching and learning, three Introductory Biology teaching laboratories are being remodeled with the aim of integrating the traditional laboratory experience with computer-based small-group problem solving. In the renovated laboratories, students, working in groups of three, will be able to use computers to simulate biological phenomena, to acquire data and images by means of analog-to-digital interfaces and digital cameras, to summarize data by generating charts and graphs, and to analyze data statistically. Presentation of data will be facilitated by projection systems that will be installed in the new labs. The laboratory remodeling project, scheduled to be completed in the Fall 1998 semester, is made possible by funds from the Howard Hughes Medical Institute ($100,000) and the University ($175,000).

Return Mail/Email

Biology alumni are encouraged to keep in touch with their alma mater and the Biology Department using various avenues provided:

- You are encourage to jot down your comments and send them along to us, using the enclosed preaddressed return card, or at:
  Biology Alumnus Newsletter
  Biology Department
  University of Massachusetts
  Amherst MA 01003-5810

- We also set up an electronic route to keep in touch via a Biology Alumni Forum on the Internet where you can leave Email messages for the entire Biology Alumni participating. Chairman Chris Woodcock explains this route in his opening message.

We hope you will enjoy our efforts and keep in touch with us and your fellow classmates. We will endeavor to provide a personal response to each alumnus that contacts us. *The BioMass Staff*

BCRC A Beehive of Activity

The Biology Computer Resource Center (BCRC), made possible by funds from the Howard Hughes Medical Institute (HHMI), opened its doors to students of the life sciences in the Fall of 1995. In the first year of operation, 4000 signatures were entered in the BCRC register; during the 1996-1997 academic year, the number of signatures tripled. Although the majority of the students who use the BCRC are from the Biology Department, the facility also attracts students from Forestry and Wildlife Management, Plant and Soil Sciences, Animal Science and Anthropology, to name a few.

Supported by funds from HHMI and the University, the BCRC is committed to improving undergraduate science teaching and learning. One of the goals of **Steven Brewer,** Director of the BCRC since August 1996, is to help faculty develop and implement teaching methods that will enable students to become proficient problem posers and problem solvers.

Under Brewer's auspices, the BCRC has also adopted an instructional role. Workshops on a variety of topics (authoring world wide web pages, using the flat-bed scanner, color printers, surfing the net, useful techniques in Photoshop, etc.) are offered to faculty and students, and faculty are being encouraged to hold occasional classes in the facility; during the summer of 1997, Peter Forey of the British Museum presented a special course in cladistics in the BCRC. Recently, the BCRC has made available to every course offered by the Biology Department a set of instructional technology resources which permits faculty to easily create and post web pages and offers them the use of an on-line course calendar, a course mailing list and a free-links page. For current information, visit the BCRC home page URL:

http://www.bio.umass.edu/bcrc/

Alumni Support

Our alumni may not realize how important they have been and can be to the Biology Department. For years, alumni, now situated in academic departments throughout the U.S.A. or holding nonacademic positions, have been invaluable to our recent graduates by providing advice and help in locating support for graduate studies and finding jobs. We want to remind all alumni that help from nonacademic quarters is more important than ever. If you would like to be on our list of potential contacts, please send a brief description of your field of work with advice on the most appropriate way to contact you to **Ed Davis** or **Bruce Byers,** Biology Department, Morrill Science Center, U. of Massachusetts, Amherst, MA 01003 or by Email to bbyers@bio.umass.edu. We have many student requests to have individuals with "real life" jobs (i.e., nonacademic ones) come speak with them. Should you be available for such talks with small student groups, or for one on one conversations, please let us know.

The new Biology Department is continuing the scholarship funds started in the former Botany and Zoology Departments and established with alumni contributions. They include the Ray Ethan Torrey Scholarship for undergrads in the plant sciences, the **Bill and Margaret Nutting** Scholarship in field biology, and the Albert DeLisle Award for graduate students in the plant sciences. In addition, the newly created Massachusetts Museum of Natural History would appreciate alumni support. Beyond specific funds, the Biology Department greatly appreciates unrestricted contributions. University budgets have been tight for many years and alumni contributions have become an extremely important source of funds for many initiatives for our students.

New Faculty Profiles

In September 1996, the faculty welcomed **Jin Meng** to the Biology Department. Dr. Meng received a Ph.D. from Columbia University in 1991. Prior to his arrival at UMass, Amherst, Dr. Meng held postdoctoral positions at the National Museum of Natural History in Washington, D.C., the University of Alberta and the American Museum of Natural History in New York.

Dr. Meng is a mammalogist who, by asking questions such as "What modifications of the short, straight cochlea of early mammals permitted the evolution of the coiled cochlea of living mammals?" hopes to elucidate the transitional stages in the evolution of the therian from the non-therian ear. He is also participating in an NSF sponsored project designed to clarify the relationships between the Rodentia (squirrels, beavers, rats, etc.) and the Lagomorpha (rabbits, hares, etc.), and the affinities of the Lagomorpha to other orders of mammals. It is hoped that this study will also shed light on the relationships within the Rodentia which are, at the present time, poorly understood.

Elsbeth Walker assumed her duties in the Biology Department in the spring of 1997. Dr. Walker received a Ph.D. from Rockefeller University in 1990. For the next three years she was a postdoctoral associate at Yale University and spent the following four years at Mount Holyoke College, first as Visiting Assistant Professor and then Principal Investigator.

Dr. Walker is a geneticist interested in the inheritance of changes in gene expression in plants not occasioned by the alteration of DNA base sequences; more specifically, she is focused on paramutation in maize. Concomitantly, she is investigating a family of transposable elements in maize that cause mutations in the gene complex governing aleurone pigmentation.

As the 1998-99 academic year began, we were joined by Dr. **Ron Adkins.** Dr. Adkins received his undergraduate degree from Oklahoma State University and a Ph.D. in Genetics from Texas A & M University. He was drawn to biology by his interest in nature, especially mammals, and spent many years live-trapping and working with field mice and rats, opossums, deer, gophers and armadillos.

Dr. Adkin's early interests were in ecology and evolution, and he has been involved in studies of nutrition, demography and hybridization. In graduate school, Dr. Adkin's interests shifted. He became interested in the manner in which the expression, function and sequences of molecules change over evolutionary time and how one can use such sequences to determine the relationships among organisms. At UMass, Dr. Adkins will be working on higher-level relationships among mammals; he will be trying to decipher how the growth hormone gene of higher primates became duplicated and how the sequences and the regulation of multiple copies of this gene have evolved.

Robert Wilce -- Honorary Doctor of Science

Professor Emeritus **Robert Wilce** has been awarded an Honorary degree by the University of Copenhagen for his decades-long work in the field of phycology. Starting in the 1950's, Bob made collections in the Arctic and subarctic regions of Canada. The latter led to his paper entitled "The Marine Algae of the Labrador Peninsula and Newfoundland" which remains a central work on the marine algae of this area. In 1990, Bob formulated his biogeographic hypothesis on the role of the Polar Sea as a bridge between the Pacific and Atlantic Oceans. This hypothesis has served as a stimulus for the extensive studies currently going on at the University of Copenhagen, some of which are already adding support to Bob's ideas.

Bob Wilce was one of the impelling forces behind the establishment of the Northeast Algal Society, of which he was president from 1982-1985. Although now an Emeritus Professor, his study and exploration have not ceased. In 1994, at nearly 70 years of age, Bob returned to northern Baffin Island to dive and collect algae. Many of our students will remember Bob as an untiring collector, not only in the Arctic, but along the Massachusetts coast as well. Throughout the years, Bob's lab was populated by graduate and undergraduate students, many of whom made trips to the Arctic with him, and collected along our coast at all seasons of the year. When not collecting, Bob is continuing with his work on the phylogenetic biogeography of the marine benthic flora of the North Atlantic.

Visit your Biology Alumni Web Page at URL: http://www.bio.umass.edu/biology/alumni/.

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