From the Chair

Professor J. Michael Parrish

The academic year 2001-2002 has been another banner year for the Department of Biological Sciences, with students, staff, and faculty demonstrating, through scholarship, grantsmanship, and peer recognition, that our department is on the cutting edge of many of the biological sciences. Allow me to spotlight some of these accomplishments:

Long Mao, the bioinformaticist who joined our faculty as an assistant professor last year, played a key role in sequencing the complete genome of the rice plant. This study, which was published earlier this year in *Science* magazine, is the first complete sequence of an economically important crop species, and will form the basis of a wealth of subsequent studies on the molecular genetics of rice and other crop plants.

Hans Beck, who came to NIU as a conservation biologist/ethnobotanist in 2000, was part of a successful interdisciplinary effort (also including geology and environmental geosciences faculty Melissa Lenczewski and Reed Scherer) to obtain funding for a low vacuum scanning electron microscope from the National Science Foundation.

Patricia Vary, the Distinguished Research Professor who also served as department chair from 1995-1999, was awarded the Wilma Stricklin Award for the Enhancement of Women on Campus.

Assistant Chair for Finance and Facilities **Richard Becker** was awarded a 2002 Presidential Supportive Professional Staff (SPS) Award for Excellence, an award given to only four SPS across campus this year.

Two of this year's three Presidential Research Professorships went to BIOS faculty, **Rangaswamy Meganathan** and **Michael Parrish**.

Doctoral candidate **Phil Senter** received one of a handful of Dissertation Completion Fellowships, and M.S. candidate **Thomas Liggett** was awarded a University Fellowship to aid in completion of his thesis research.

Rangaswamy Meganathan and **Patricia Vary** both received research grants from the National Institutes of Health, and **Michael Hudspeth, Deborah Hudspeth,** and **Sally Glockling** received funding from the National Science Foundation for a collaborative project on mitochondrial molecular phylogeny of the Peronosporomycetes/Oomycota.

Visiting Professor **Anne Berg** received a $4.1 million grant from the NIH Institute for Neurological Disorders and Stroke for her trailblazing interdisciplinary research on epilepsy.

This summer marks transitions for some familiar faces, with Distinguished Teaching Professor **Laszlo Hanzely** and Vice Provost for Research and Dean of the Graduate School (and BIOS Professor) **Jerrold Zar** both retiring. Fortunately, both Las and Jerry plan to stay in DeKalb and maintain active roles in the biological sciences community.

We were also pleased to welcome some new faces this year. **Ana Calvo**, whose specialty is molecular genetics and genomics of fungal plant pathogens, joined our faculty as an assistant professor in January. **Kristi Henke** also joined the department as an animal care technician mid-year.

Although the economic impact of September 11 and its aftermath was felt keenly on campus, we have continued to use available resources to improve teaching and research facilities in the department. We added a UNIX server, necessary for bioinformatics research and teaching, to our arsenal of computing equipment, and made significant upgrades to our teaching equipment for ecology, microbiology, and neurobiology courses. With the addition of a computer projection unit in MO 441, we completed the 'smartening' of all of the major departmental classrooms.

The university's teacher certification programs were reviewed last year by both the state and the National Council for Accreditation of Teacher Education (NCATE), and Assistant Professor (and head of the biological sciences teacher certification program) **Jon Miller** played a pivotal role in drafting the extensive documentation required for the review, as well as in modifying the secondary science curriculum to bring it into NCATE compliance. Miller is also deeply involved in two new certification programs, the Alternative Certification initiative and the Master's Plus program, which is designed to allow teachers in rural areas of Illinois to be in the classroom while pursuing M.S. degrees from NIU.

We were fortunate enough to receive endowments for two new departmental awards this year. The Jerrold Zar Scholarship will be awarded each year to an outstanding undergraduate major entering the senior year in the department. The Cancer Federation Scholarship Award will be given to one or more biological sciences students studying in cancer-related fields. David Layman, a 1957 graduate of the department who previously endowed a scholarship for a department student intending to teach science at the high school level, funded an endowment to provide cutting-edge lectures on biology and biology related fields. These generous gifts, along with those provided from many of you throughout the year, are an essential part of what allows us to continue to excel at training undergraduate and graduate students in the biological sciences. With the potential of further budget cuts looming on the horizon, we are especially grateful for such generosity, and for the faith it demonstrates in our department and its programs. ♦

Professors Parrish and Meganathan Named Presidential Research Professors

March 6, 2002, Northern Today

Passion for Paleontology

It's safe to say Professor J. Michael Parrish wears more than one hat. He's as equally adept at spotting rare fossils while on digs in the forests of Madagascar as he is running the NIU Department of Biological Sciences, which he oversees as chair. He also teaches courses in biology, is recognized worldwide for his scholarly work, and edits the *Journal of Paleontology*, the leading scientific journal in his field. The post requires that Parrish read and/or critique about 100 research manuscripts a year. He also somehow finds time to write rock, jazz, folk, and world music reviews for the *Chicago Tribune*.

"It is a real plus for NIU to have Mike and to have him bring his reputation, energy, and abilities to the very demanding job of chair of one of our largest and most important departments," said Fred Smith, associate dean of the College of Liberal Arts and Sciences.

Parrish has long pursued his passion for paleontology, dating back to his boyhood interest in dinosaurs. He renewed this interest during the 1970s as a student at the University of California at Santa Cruz and later at the University of Chicago, where he earned his Ph.D. He has since authored numerous scholarly articles on the evolution and biology of vertebrates, focusing primarily on dinosaurs and other extinct reptiles.

In 1988, Parrish arrived at NIU, where his research has garnered international media attention. He and collaborators at the Field Museum in Chicago reported in the prestigious journal *Science* on their discovery in Madagascar of the 230-million-year-old jaws of two dinosaur-like creatures. He and other researchers also published on their discovery of a jawbone fragment that pushes the age of modern mammals back by 25 million years. In another groundbreaking study, Parrish used computer models to determine the neck movement of the giant sauropod dinosaurs.

Parrish recently received a National Science Foundation grant to expand the computer modeling research to learn more about dinosaur mobility. He also has two book chapters coming out later this year and continues his Madagascar research.

"Research and teaching complement each other," Parrish said. His fieldwork provides fresh and often cutting-edge lecture material, and students regularly work in his laboratory. "I always liken research to mining a vein of ore," Parrish said. "It takes a direction of its own and you never quite know where it's going to turn." ♦

Vitamin K(ing)

Over the past 25 years, the work of Professor Rangaswamy "Nathan" Meganathan has shed new light on scientists' understanding of vitamin K biosynthesis. "It's safe to say that Nathan is the world's expert on vitamin K," said biology chair Parrish. "His steady stream of research funding over the years speaks to how highly he is regarded in the microbiology community."

A native of India, Meganathan earned his Ph.D. in microbiology from Oklahoma State University. He began his pursuit of understanding the complex workings of vitamin K in the laboratory of Professor Ronald Bentley at the University of Pittsburgh. In 1982, he joined the faculty in the Department of Biological Sciences at NIU, where he has continued to unravel how bacteria produce vitamin K and how the vitamin works at the molecular level in bacteria.

His basic research also has provided important insights into how cells breathe and into how organisms get energy from food through vitamins. Because vitamin K plays a key role in plants as well as the clotting of blood in humans and other mammals, Meganathan's discoveries could have far-reaching effects on agriculture, medicine, pharmaceuticals, and other industries.

Meganathan has published more than 80 research articles and abstracts, has won numerous grants from the National Institutes of Health, and in 1998 was named a fellow of the American Academy of Microbiology. He also is known as a rigorous teacher at both the undergraduate and graduate levels. "He's somebody who feels very strongly about providing students with a top-notch education," said Patricia Vary, former biological sciences chair and a friend of Meganathan's.

"I like the combination of teaching and researching," Meganathan said. "If you're not a researcher, then you can't be up-to-date in the classroom. And in science, being up-to-date is more important than just reading the textbook and regurgitating facts."

He has directed four Ph.D. dissertations, and about 50 graduate and undergraduate students have worked in his laboratory. Meganathan said he owes much of his own success to the hard work of his students, post-doctoral fellows, and collaborators. When he's not in his lab or in the classroom, Meganathan often can be found with a book in hand. ♦

What is a Presidential Research Professor?

The annual Presidential Research Professorships recognize outstanding faculty scholarship. The award recipients receive special financial support of their research for four years, after which they carry the title of Distinguished Research Professor.

"The people we recognize not only have very substantial records of scholarly research but also are people who hold great promise for further advancement of their fields," said Jerrold Zar, Graduate School dean and vice provost for graduate studies and research.

J. Michael Parrish and **R. Meganathan** join five other faculty members in the Department of Biological Sciences who have been named Presidential Research Professors. **Arnold Hampel** was awarded the title in 1982 for his work on RNA synthesis and ribozymes; **John Mitchell** in 1987 for his work on orinthine decarboxylase; **Patricia Vary** in 1991 for her work in genetics of *B. megaterium*; **Jozef Bujarski** in 1997 in recognition of his work in RNA viral recombination and replicases; and **Peter Meserve** was awarded the honor in 1999 for his work in the population ecology of small mammals in North and South America. ♦

NIU Graduate School Dean Jerrold Zar Retires

When Jerrold Zar began work on a master's degree in biology at the University of Illinois, he soon realized how well Northern Illinois University had prepared him for graduate school.

Zar, who earned his bachelor's degree at NIU in 1962, completed his master's, Ph.D., and post-doctoral studies in Champaign at the institution highly regarded for its biological research.

When he was recruited to return to NIU as a faculty member, the decision was easy.

"I had a very good experience here as an undergraduate," Zar said. "I thought I'd come here for a couple of years to get started in my professorial life. I found it a great place to have a teaching and research career."

Thirty-four years later — half of those spent as dean of the Graduate School — Zar is planning to retire this summer.

"I'm happy to have been here 34 years. It's been great. I've done a lot, and there's a lot more that could've been done," Zar said. "I thought seriously of retiring last year…but decided to stay one more year to overlap with the new provost."

Zar, who is also vice provost for graduate studies and research, spent his initial years here teaching biology and conducting research into physiological adaptations of animals to their environment and statistical analysis of biological data.

In 1974, Prentice Hall published his book, *Biostatistical Analysis*. A fourth edition of the book was published in 1999, and he has a publisher's contract to write the fifth edition.

Named chair of the Department of Biological Sciences in 1978, Zar continued to teach and wrote the last half-dozen of 13 proposals for a Ph.D. program until it finally was approved. In the meantime, faculty in the department stepped up research and achieved a strong balance between teaching and scholarship.

"The maturation of that department reflects the maturation of the university," Zar said. "It has been exciting to be part of that."

Zar became acting dean of the Graduate School in 1984 and earned the job permanently after a national search. He works closely with the provost's office and with more than 40 department chairs and deans, and serves on 20 committees, about half of which he chairs.

"One of the exciting things for me, which you don't get as a department chair, is to see the tremendous variety of research and teaching going on at NIU. We're advancing and applying knowledge in many fields," he said.

"The faculty and staff are capable of more than we can support financially, so external sources of funding have to be sought. Our level of external funding has gone up every year as far back as anyone can remember, even in bad economic times and with intense competition."

Graduate schools currently enjoy high demand — typical in bad economic times — along with a greater mission to share the larger knowledge base through advanced training. Meanwhile, dollars are limited.

"There will always be a place for what we're doing," Zar said. "We just have to find a way to deliver it."

He is proud of his success with the biological sciences Ph.D. (to which he credits the faculty) and his accomplishments as vice provost and dean in three areas, working with departments to develop new graduate programs, assisting departments and faculty in pursuing research and artistry, and recruitment of minority graduate students. For example, Zar is involved with two statewide fellowship programs that encourage minority students to become university faculty.

Retirement will give Zar time to fulfill several contracts to write books on biology. He will remain in DeKalb because his wife, Carol, a research associate at NIU's Center for Governmental Studies, is "still going strong" here.

Zar also plans to indulge his love of music by attending more concerts and recitals and through his membership as a trumpeter in the Kishwaukee Symphony Orchestra, where he also plays in a brass quintet.

"I'll miss being at NIU," he said. "These are great people to work with whose goals I think are excellent, and I'll miss helping to advance the university." ♦

Note: *Professor T. Daniel Griffiths of the Department of Biological Sciences has been named Acting Vice Provost for Research and Dean of the Graduate School, effective August 1, 2002.*

Former NIU professors

Develop New FDA-Accepted Method for Identifying Listeria in Foods

The FDA recently informed two former members of the Department of Biological Sciences at NIU, **Lawrence Restaino** and **Elon W. Frampton**, that bacteriological media they developed for identifying the organisms responsible for listeriosis have been accepted for inclusion in approved methods for identifying food-borne pathogens. Nearly 2,000 cases of Listeria infection are reported yearly in the U.S. with a mortality rate of almost 25 percent. The symptoms include fever, flu-like symptoms, nausea, vomiting, and diarrhea. More serious manifestations may include septicemia, meningitis, and encephalitis in people with compromised immune systems such as the elderly and those undergoing chemotherapy, and spontaneous abortion or stillbirth in pregnant women. Although Listeria is a normal inhabitant of the intestinal tract of humans and other animals, it has been implicated in outbreaks traced to un-pasteurized milk, soft cheeses (Feta, Brie, and Camembert), hot dogs (the recent Ball Park Franks outbreak), and luncheon meats.

Working in conjunction with BioSynth AG, the Swiss firm synthesizing and supplying a chemical substrate that produces a blue color when cleaved by a specific bacterial enzyme in pathogenic Listeria, the method was developed at **R & F Laboratories** in West Chicago, Illinois. The method is based on detection of a specific enzyme phosphoinositol-specific phospholipase C that is unique to the two pathogenic species of Listeria, i.e., *Listeria monocytogenes* and *Listeria ivanovii*. This enzyme is a virulence factor or is closely linked to a virulence factor in two pathogens and is not present in the four other non-pathogenic Listeria species. Previous culture methods for Listeria identification were not specific for the two pathogenic strains, requiring additional time-consuming methods to identify and isolate *Listeria monocytogenes*, the bacterium responsible for most of the cases of listeriosis in humans.

Professors Restaino and Frampton founded R & F laboratories in 1990 upon the latter's retirement from NIU. Professor Restaino, who has had extensive experience in the food industry, obtained both bachelor's and master's degrees from NIU and also served as an adjunct professor in the Department of Biological Sciences. An emeritus professor at NIU, Professor Frampton has an extensive background in teaching and research and taught microbiology at NIU from 1969 to 1990. Bacteriological media for detecting other food-borne pathogens such as *E. coli* 0157:H7, which has caused such concern in hamburger and other foods, as well as Salmonella, Bacillus, and Shigella, have already been developed at R & F Laboratories and are currently in final stages of evaluation by the federal agencies. ♦

Professor Laszlo Hanzely Retires

Professor J. Michael Parrish

One of the most popular members of our faculty, **Professor Laszlo Hanzely**, retired this summer after 32 years in the Department of Biological Sciences. In his roles as director of undergraduate studies (1993-2002) and director of graduate studies (1986-1993), Professor Hanzely advised, encouraged, and mentored hundreds of students, including many recipients of this newsletter, at one time or another. His years in these positions served Las well, and he has excelled at helping students find creative solutions to even the stickiest academic problems. As the principal adviser for a department that currently has just over 500 undergraduate majors, students may have had to wait to see Hanzely, particularly during peak times, but they could count on a warm smile and some good advice when they entered his office.

Hanzely joined our faculty in 1969, just after completing his doctorate in cell biology at Southern Illinois University. He has published 29 papers, most dealing with the ultrastructure and development of plant cells, and was instrumental in the establishment and maintenance of our microscopy facility. A talented and versatile instructor, Hanzely has taught many courses at NIU including Cell Biology, Human Biology (a course he developed), Electron Microscopy, Plant Biology, and General Biology. His expertise and popularity in the classroom led to his receiving the NIU Award for Excellence in Undergraduate Teaching in 1982. He was later elected as a Presidential Teaching Professor in 1993, and became a Distinguished Teaching Professor in 1997.

Las has also been active in professional societies, serving as vice president (1983-1984) and president (1985-1987) of the Illinois State Academy of Science and putting in many years as treasurer for the NIU Chapter of Sigma Xi. Although Hanzely is retiring, we are welcoming him back as a visiting professor next fall. He and his wife, Pat (who is research services coordinator of the Office of Sponsored Projects at NIU), will stay in DeKalb, where Las will presumably have more time to indulge his passion for officiating soccer.

Stepping into the role of director of undergraduate studies is **Associate Professor Kenneth Gasser**, who came to NIU in 1990 after receiving his doctorate from Washington State University in 1985 and serving as a postdoctoral fellow and research associate at Case Western Reserve University from 1985-1990. A cell physiologist with expertise in mechanisms of molecular transport across mammalian cell membranes, Gasser is also one of the department's most popular teachers. We are grateful to Professor Gasser for his willingness to assume this role, and to provide guidance and inspiration to the department's undergraduates. ♦

NIU Hosts Joint Human Anatomical Sciences Meeting

Professor Daniel Olson

The Department of Biological Sciences hosted a combined Chicago Area Human Anatomy and Physiology Society (CAAPS)/Human Anatomy and Physiology Society (HAPS) meeting on April 27th. Daniel Olson served as the conference coordinator, assisted by Chris Hubbard, Virginia Naples, and many past and present graduate students from the M.S. (Anatomy) program.

The morning session was devoted to three speaker presentations. First, Reid Nelson from the Department of Kinesiology and Physical Education at NIU presented a very informative talk on incorporating cardiovascular pathophysiology into the curriculum. Reid provided many Websites that will provide participants the opportunity to incorporate new ideas and information into their own curricula. Second, Bill Wilson from the Cook County Crime Laboratory presented forensic information extremely useful in solving violent crimes. Although some of the pictures were quite graphic, Bill provided interesting information about bullet wounds and trajectories, knife wounds, and blood spatter patterns that he incorporates into his work on a daily basis. Finally, our keynote speaker was Scott Barrows from the medical illustration program at the University of Illinois-Chicago (UIC). Scott showed beautiful examples of the type of artistic anatomical work the people in the medical illustration program produce. In addition, Scott informed the participants of some cutting-edge work in three-dimensional imaging that is currently in use at UIC.

Following a catered lunch, the afternoon session was "hands-on." Participants had the opportunity to visit with textbook vendors (Benjamin-Cummings/Addison-Wesley, Prentice-Hall, and John Wiley and Sons, Inc.), software vendors (Bio-Pac and iWorx), view research projects produced by NIU graduate students enrolled in the M.S. (Anatomy) program, tour the anatomy laboratory, conduct bone analyses, and participate in physiological measurements.

The conference concluded with a "swap session," in which participants exchanged thoughts and ideas about a variety of teaching/education-related issues. The exchange of information during this session was quite lively, and lasted for 11/2 hours. ♦

Body Donor Program at NIU

The NIU Department of Biological Sciences teaches two cadaver-based courses, Bios 311, Functional Human Anatomy, and Bios 446, Gross Human Anatomy.

In 1994, NIU instituted its own body donor program to provide the Department of Biological Sciences with an adequate number of cadavers for our program.

For more information, call the department at: (815) 753-1753

We are indeed indebted to our donors for their thoughtfulness. Without them our program would suffer in quality and content.

Awards

- Chair Award - Anne T. Oestreich
- Dean's Award - Lore Patton-Fehrman
- Harvey A. Feyerherm Award - Lanea M. Keller
- Charles E. Montgomery Award - Rebecca C. Huchro
- George L. Terwilliger Award - Mary Dykas
- Dissertation Completion Award - Philip J. Senter
- Amanda Mangold Scholarship Award - Kimberly A. Kelem
- Jerrold H. Zar Scholarship Award - Jennifer L. Morphew
- Cancer Federation Scholarship Award - William E. Kyle
- NIU at Oxford 2002 Biological Sciences Scholarship - Nicole K. Boerboom
- August M. Gorenz Award - Mary G. Dykas
- University Fellowship Award - Thomas E. Liggett
- 2002 SPS Presidential Award for Excellence - Richard J. Becker
- NIU Pleiades Chapter of Mortar Board Senior Honor Society Honoree - Daniel R. Olson
- Wilma Stricklin Award - Patricia S. Vary
- Presidential Research Professorships - R. Meganathan, J. Michael Parrish
- Certificate of Appreciation - Paul D. Sorensen
- Department Honors - Autumn J. Bricker, Anthony D. Mullins
- Mortar Board - Senior Honors Society - Molly M. Kelly
- PMBC Graduate Research Assistantship - 2002 - Michael J. Palm, Rafal H. Wierzchoslawski 2003 - Carrie L. DeBlecourt, Rafal H. Wierzchoslawski
- PMBC Undergraduate Research Fellowship - Jennifer L. McGinnis

Chair J. Michael Parrish presented the Cancer Federation Scholarship Award to William E. Kyle at the 2002 Honors Convocation.

2001-2002

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Professor Long Mao Works on Sequence of Rice Genome

April 4, 2002, Northern Today

Northern Illinois University Professor **Long Mao** is among the members of a team of researchers who describe the draft sequence of the rice genome in the April 5 issue of the prestigious journal *Science*.

Cracking virtually the entire genetic code of rice, one of the world's most important crops and a potential genetic blueprint for other cereal crop plants, is considered a benchmark accomplishment in agricultural sciences that could lead to enhanced food crops.

"This is the first complete sequence of the rice genome and the first crop genome to be described in publication," Mao said. "The genetic map for rice will hopefully lead to the development of more nutritious rice, higher yields, more economical means of production, and crops that are resistant to disease and more tolerant to harsh growing conditions."

The agribusiness firm Syngenta, in collaboration with Myriad Genetics Inc., announced early last year that they had completed the genome map for rice. However, only now is a description of the discovery being published in a scientific journal. Stephen Goff, of the Torrey Mesa Research Institute (TMRI) in La Jolla, Calif., is the lead author on the Science article. TMRI is the genomics research center of Syngenta.

In addition to NIU's Mao, Goff's co-authors include collaborators from TMRI, Myriad Genetics, and several academic institutions. "It's as if, a year ago, it was announced we wrote a book," Mao said. "Now people can read the book."

During the past year, the scientists embarked on a more detailed analysis of gene activity and function in the rice genome, described in *Science*. In addition to an analysis of the genetic composition of rice, comparisons are made to Arabidopsis, the first higher plant to be genetically decoded.

Rice is among the world's most important crops. About one-third of the world's population depends on rice for more than 50 percent of their caloric intake. Mao said rice also is important in genetic terms. It is closely related to cereal crops such as wheat, corn, and barley. However, Mao said the rice genome is much smaller than other cereals, making it a logical choice for sequencing. The wheat genome, for example, is 40 times bigger than the rice genome.

The scientists used a method known as whole genome shotgun sequencing in mapping the genome of a rice variety known as Nipponbare, one of two major subspecies. The rice genome is spread across 12 chromosomes and is made up of about 420 million bases of DNA. The researchers also identified genes in rice that have the same origin and perform similar functions in other cereal crops.

"Rice is a model for cereal crops," Mao said. "The genetic map for rice provides us with a critical resource that allows us to better understand the genetic makeup of other crops."

Syngenta is making rice genomics information available to the academic scientific community through collaboration agreements.

Mao arrived on campus at NIU in August of 2001, after being recruited to bolster the university's program in bioinformatics, an area of study that uses advanced computing techniques to analyze vast amounts of biological data. A year earlier, NIU had become the first university in Illinois to offer a master's degree program with a specialization in bioinformatics.

Previously, Mao served as a postdoctoral fellow at Clemson University, where he worked in the bioinformatics group of the university's Genomics Institute. It was there that he began working on the DNA sequences of rice in a project supported by Syngenta.

Only weeks after arriving at NIU, Mao traveled to California to participate in a detailed analysis of the rice genome in preparation for the new publication. Mao classified and quantified the repetitive sequences of DNA.

"Repetitive sequences are ancient DNA elements that are non-functioning," Mao said. "However, they are an important component for the organization and structure of some chromosomes and they provide important information for studying genome evolution."

The draft assembled sequence of rice covers 93 percent of the 420 megabase genome. It is considered to be 99 percent accurate, when compared with finished segments of the rice genome already sequenced by a public consortium, Mao said. "We now know all the genes in the rice genome, but we don't know where each and every gene is located along each chromosome," he added.

The genetic map is considered a draft because the sequence, in order to be considered complete, must be 99.9 percent accurate, Mao said.

Mao, whose other research specialty is in the area of tomato genetics, teaches bioinformatics and molecular biology at NIU. He holds a Ph.D. in plant genetics, earned jointly from the John Innes Center for Plant Research in Norwich, England, and from the Chinese Academy of Sciences in Beijing, where he also earned his master's degree. His list of previous publications includes a first-authored article in the prestigious journal *Nature*. ♦

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- **W. Elwood Briles**—Avian Immunogenetics
- **Mason Fenwick**—Algology; Applied Botany
- **Elon W. Frampton**—Microbiology *(Bacteriology)*; Molecular Biology; Virology
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- **Robert W. Pearson**—Environmental Biology; General Biology
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- **Marvin J. Starzyk** Aquatic/Pathogenic Microbiology; Microbial Ecology
- **Robert Wittrup**

Snow in May? BIOS 405 at Heart Lake ADK

by Professor Hans Beck

The temperature dropped to 32 degrees Fahrenheit the first night at camp. The students had been advised that this was a real possibility, and that it might even snow! The next morning, all awoke to find three inches of snow outside the tents. What a beautiful and rare sight, to behold the spruce-hemlock forest flocked in white.

This year's summer field course **American Ecosystems** (**BIOS 405**) traveled to the Adirondack Mountains of upstate New York. Professor Hans Beck led eight students on a two-and-a-half-week investigation to study the natural history of the largest state park in the United States. The base camp for this year's class was three canvas tents at the Adirondack Mountain Club (ADK) wilderness camping facility at Heart Lake. Numerous diverse habitats are located within a day's hike or drive: alpine meadows to sub-alpine krummholz, spruce-fir to mixed hardwood forests, boreal bogs to alder swamps, reed marshes to freshwater lakes. The elevation gradient ranges from 95 feet above sea level at Lake Champlain to 4,680 feet on top of White Face Mountain.

The goal of the course is to learn to read the landscape and interpret the ecology at the ecosystem level. Students receive outdoor lectures and hands-on demonstrations in botany, ornithology, ecology, geomorphology, and geology. One of the objectives is to study the spring flora, which usually comes into bloom in mid-May below 3,000 feet elevation; however, this year the spring was delayed, and the students enjoyed hiking in cold weather and even several snow storms. With most of the herbaceous species still in hiding from the snow, the class focused mostly on trees, shrubs, mosses, and lichens. ♦

Lagoon Renovation

by Professor Richard Becker

View of east lagoon before dredging

NIU's east and west lagoons, as well as the intermediary Watson Creek, are undergoing extensive remediation as part of a campus stormwater management project funded by the state Capital Development Board. The project impetus was recurring flooding which occurred on central campus and outlying areas following heavy rains. The west lagoon has been expanded considerably to provide increased retention and controlled release of stormwater runoff on its route through campus to the east lagoon and ultimately the Kishwaukee River. The campus east lagoon, adjacent to Montgomery Hall, had silted in to the extent that it was only a few inches deep in many areas. Clearly the east lagoon had done its job in reducing the amount of undesirable sediments flushed into the Kishwaukee River. However, the low volumes of shallow water and heavy sediments became non-conducive to a healthy ecosystem, necessitating drainage and dredging. Members of the Department of Biological Sciences (aka "Turtle Task Force") became involved in assisting select wildlife (reptiles and amphibians) in egress from the construction site. The situation became somewhat controversial in the local community with our decision not to relocate the fish population (predominantly carp) to the Kishwaukee River. Relocation of this non-native, invasive species was deemed ecologically unsound, a decision later supported by the Illinois Department of Natural Resources. The lagoon dredging phase has been completed and the lagoon perimeter has been planted with a variety of native grasses and wildflowers. The aquatic ecosystem is in the process of reestablishment, and "Turtle Task Force" can report that the turtle population has begun to re-populate the area. ♦

SPS Excellence Award Professor Richard Becker

April 29, 2002, Northern Today

Four members of NIU's Supportive Professional Staff (SPS) were chosen to receive the university's Presidential Awards for Excellence. Among the recipients was **Richard Becker**, assistant chair of the Department of Biological Sciences. The recipients were honored at a reception on May 7. Each received a plaque and $1,000 in appreciation, presented by President Peters, for their outstanding contributions to NIU.

Here's what was said about our own Richard Becker: Richard Becker, assistant chair for business and operations in the Department of Biological Sciences, works to stop problems before they occur.

"His cordial and cooperative working relationships with other campus administrators is instrumental in his not only keeping on top of our own accounts, but anticipating ways that events in other departments will impact our fiscal health," said Biological Sciences Chair J. Michael Parrish.

Becker, who joined NIU in 1987, serves as the department's fiscal officer and as manager of Montgomery Hall's classrooms, offices, and laboratories.

He oversees information on budgets, personnel, and equipment and contributes to the maintenance of safety and security measures. He also shares in network administration duties with the department information systems manager and teaches several biology classes.

"Rich has been able to maintain his high standing as a microbiologist through teaching, research, and service," said Marvin Starzyk, professor and chair emeritus. "He is a professional scientist as well as an excellent administrator."

Becker said maintaining good relationships across campus is essential for the success of the department.

"I really value the personal relationships I've made with a wide range of administrators on campus and have particularly enjoyed the resource acquisition partnerships we've entered into with other units," he said. ♦

Patricia Vary Named 2002 Recipient of the Wilma B. Stricklin Award for Improving the Campus Climate for Women

The **Award for Enhancing the Climate on Campus for Women** was created in the spring of 1995 by the President's Commission on the Status of Women. Since its establishment in 1981, the mission of the commission has been to enhance the campus climate for women. The commission members felt that it was appropriate to recognize those who significantly contribute to that effort. Criteria used in judging the nominees for the award include demonstrated extraordinary effort, commitment, and time given to enhance the climate on NIU's campus for women; exemplary and continuing leadership; orienting, training and mentoring women; and, achieving results/effecting change in the climate on campus for women. The first award was presented to Lois Self at the Outstanding Women Student Award Ceremony, April 1995. The committee sought a candidate from the NIU community for whom to name the award, and **Wilma Stricklin** was the unanimous choice. When asked to describe Stricklin, one person noted, "...as a member of the pathfinder generation of women at the university, she took it as an obligation to make the way easier for those who would follow." Stricklin came to Northern in 1976 as professor and chair of the Department of Management. At a time when relatively few women were enrolled in the university's quantitative disciplines, Wilma worked to expand those numbers and served as mentor and role model for those who were willing to explore non-traditional areas. In 1979, Professor Stricklin was asked to serve as acting vice president and provost and to oversee the integration of the university's new College of Law into campus processes and organizational structures. She returned to her professorial role in management in 1980. In 1981, she was elected the first chair of the President's Commission on the Status of Women. In 1987 she accepted the position of associate dean of the College of Business, and in her final year at NIU, she again served as chair of her department.

Patricia S. Vary was presented with the Wilma Stricklin Award this year, for her work in mentoring undergraduate and graduate student women. She sponsors a "Women in Science Floor" on campus, where women majoring in science and mathematics live together on a floor of the Douglas residence hall. She also taught a 400-level course entitled "Women in Science," and helped the class design a website called NIU Women in Science. The website is geared toward encouraging young junior high age girls to pursue an interest in science, and also includes tips for teachers and parents of budding girl scientists. You may view the site at: **www.bios.niu.edu/wis/**

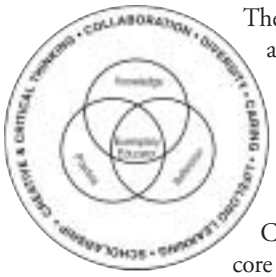
Each year the recipient of the award is presented with a work of art created by a woman from the NIU art faculty. Julia Sober was commissioned to create five pieces especially for the Wilma D. Stricklin Award. The individual design elements in this piece are simple — a matte black box with a design of squares, circles, and bright colors — yet these simple elements interact in an exciting way, resulting in a dynamic and vibrant whole. An enhanced climate for women on campus gives women the opportunity to contribute their part to a much greater whole. The resulting atmosphere is dazzling with possibilities for women, allowing us to shine in the workplace just as brilliantly as the colors and shapes dancing around this box. ♦

Grants Awarded Fiscal Year 2002

Berg, A.	Long-Term Outcomes of Childhood-Onset Epilepsy *U.S. Department of Health & Human Services*	$ 797,863
Berg, A.	Multicenter Study of Epilepsy Surgery *Yale University*	63,246
Blackstone, N.	REU supplement: Redox Control in the Development and Evolution of Colonial Hydroids *National Science Foundation*	6,000
Bujarski, J.	Genetic Recombination in Brome Mosaic Virus: The Role of Intergenic Region in Junction Site Selection *National Science Foundation*	14,914
Bujarski, J.	Genetic Recombination in Brome Mosaic Virus: The Role of Intergenic Region in Junction Site Selection *National Science Foundation*	5,000
Bujarski, J.	Genetic Recombination in Brome Mosaic Virus: The Role of Intergenic Region in Junction Site Selection *National Science Foundation*	110,000
Duvall, M.	Seeking the Phylogenetic Root of Monocots: A Study of Paleoherb Genomes *National Science Foundation*	6,000
Hudspeth, M. Hudspeth, D. Glockling, S.	Mitochondrial molecular phylogeny of the Peronosporomycetes/Oomycota *National Science Foundation*	280,000
King, R.	Hibernation, Seasonal Activity, Movement Patterns, and Foraging Behavior of Adult Lake Erie Water Snakes (*Nerodia sipedon insularum*) *U.S. Fish & Wildlife Service*	10,000
King, R.	Hibernation, Seasonal Activity, Movement Patterns, and Foraging Behavior of Adult Lake Erie Water Snakes (*Nerodia sipeodon insularum*) *Ohio Dept. of Natural Resources Division of Wildlife*	10,000
Meganathan, R.	Studies on Vitamin K Biosynthesis *U.S. Department of Health & Human Services*	144,000
Miller, J. Windelborn, A. Cole, K.	Meeting the Needs of Exceptional Learners in Science *Illinois State Board of Education*	90,000
Parrish, J.	Fellowship *National Science Foundation*	28,500
Parrish, J.	Aspects of the Functional Morphology of Sauropoda (Dinosauria: Saurischia) *National Science Foundation*	170,000
Sims, T.	Transgenic Identification Markers *Oligo Trail LLC*	6,000
Sims, T.	PhSPB1: A Potential S-RNase Inhibitor in Gametophytic Self-Incompatibility *U.S. Department of Agriculture*	123,000
Vary, P.	Sequencing of the Largest Plasmids of *B. megaterium* *National Institutes of Health*	144,000
Total		$2,008,523

Teacher Certification in Biology at NIU Changes to a Standards-Based Program for 2003

By Professor Jon S. Miller,
Director of Teacher Certification in Biology



The teacher certification program in biology at NIU is designed to produce moderate numbers of very well qualified entrance-level teachers. To become a good biology teacher, one must be a good biologist brought to a high standard of skill in the processes of teaching biology. Consequently, the subject discipline is the core upon which the rest of the program is built. Assuming an adequate discipline background, emphasis is placed upon sequencing experiences so that there is sufficient time to develop practical teaching skills that are common sense and of proven effectiveness. But, knowing biology is not all that is necessary to be able to teach biology. Other things, like an excellent work ethic, natural talent in organizing, communicating, knowledge of adolescent behavior and learning styles, ability to implement effective classroom management strategies, and visualizing how to prevent confusion and misunderstanding among learners are also essential. Needless to say, preparing to teach biology in the Illinois public schools, as well as across the nation, is not a walk in the park.

Recently the teacher certification programs at NIU went through the accreditation process conducted by the National Council for Accreditation of Teacher Education (NCATE). NCATE is recognized by the U.S. Department of Education as the accrediting body for colleges and universities that prepare teachers and other professional personnel for work in elementary and secondary schools. Every five years, NCATE performs a review of all the teacher certification programs and determines whether schools, colleges, and departments of education meet demanding standards for the preparation of teachers and other professional school personnel. Through this process, NCATE provides assurance to the public that the graduates of accredited institutions have acquired the knowledge, skills, and dispositions necessary to help all students learn. I am proud to say that NIU passed the review and has been accredited for another five years. However, from the NCATE accreditation process it became apparent that significant changes are occurring nationally in the way science teachers are prepared for teaching. As a result, changes in the teacher certification program for biology at NIU are being instituted and will go into effect in January 2003.

In general, the teacher certification program in biology is changing from a course-based system of evaluation to one that is standards-based. The standards focus on systematic assessment and performance-based learning as teacher candidates pursue certification. The Illinois State Board of Education and NCATE require that certification programs show evidence that teacher candidates have demonstrated all of the competencies required by the numerous standards. As a result, several revisions to the current certification program in biology have been designed and put into practice to provide a mechanism for complying with these requirements. For example, course work in the professional development (i.e. clinical experiences, methods, and student teaching) phase of the program has been reconfigured to provide students with the necessary opportunities to demonstrate competency of the standards. Also, students will be expected to develop an electronic portfolio throughout the professional development phase of the certification program. The electronic portfolio serves as a means of assessing students' achievement in meeting the standards and can be formatted for employment purposes when successful candidates are seeking teaching positions as well.

The teacher certification program in biology will continue to emphasize a strong academic background in biology and teaching. However, additional emphasis will be placed on performance-based outcomes as students strive to meet the standards. The component of competence will be evaluated through assessments such as portfolios, grades, and field evaluations. The changes set forth will effectively ensure that graduates of the teacher certification program in biology are able to make a positive impact on student learning. ♦

Professor Ana Calvo Joins Faculty

Professor Patricia S. Vary

Since January, we have had a bright new face on the third floor. Professor **Ana Calvo** joined the department and has been busy arranging her lab and getting all the equipment delivered and working. Her area of research involves the investigation of signaling pathways regulating morphological development and secondary metabolism in the fungi *Aspergillus* spp. She works with genetics and molecular biology techniques, including functional genomics. Professor Calvo received her Ph.D. in 1995 from CIB-CSIC/University of Alcala de Henares in Madrid, Spain, and then came to the U.S. as a post-doc to work with Nancy Keller at Texas A & M University 1996-2001. She soon became an assistant research scientist and managed the Keller laboratory. She also has done work with Deb Bell-Pederson there and John Linz at Michigan State. Ana has taught graduate and undergraduate students and has several publications in leading journals. Since arriving, she has taught BIOS 103 (Introductory Biology for nonmajors) and will teach BI0S 313 (Microbiology) in the fall. We are delighted to welcome such an outstanding young scientist to the department. ♦

News

Faculty

Jozef Bujarski has made several trips to lecture at scientific conferences. In October 2001 he traveled to Bloomington, Indiana, to present the results of his research at the RNA Life Conference, organized at the Indiana University. In November 2001, he went to St. Louis, and gave an invited talk at the Cassava Biotechnology Network Meeting organized by Roger Beachy at the Donald Danforth Center. The talk was entitled "Homologous recombination activity of the subgenomic promoter sequences during a model plant virus infection." Also, in May 2002 he made a trip to Helsinki to attend a Symposium on Positive Strand RNA Viruses. He presented an invited talk entitled: "The mechanism of homologous RNA recombination at the subgenomic promoter sequence in brome mosaic bromovirus."

J. Bujarski has obtained a supplemental award to his major NSF grant to establish a collaboration with the Institute of Bioorganic Chemistry, Polish Academy of Sciences at Poznan, Poland.

Aleksandra Dzianott-Bujarska has made a major breakthrough in the research on viral RNA recombination, as she observed genetic exchanges in the genome of brome mosaic virus during infection in *Arabidopsis thaliana* plants. This will allow her to investigate the participation of host genes in viral genetic recombination.

Graduate Students/Post-Docs

M. Kunnimalaiyaan, (post-doc in Vary's lab) is now an assistant research professor in Dept. of Oncology, Univ. Wisconsin-Madison.

Autumn Joy Bricker graduated (B.S.) with departmental honors in Dec. 2001. Autumn will be continuing on with a master's degree, again in biology at NIU, working in the lab of Professor Ken Gasser. Autumn is currently on her honeymoon in Australia, New Zealand, and Fiji. Professor Melvin Duvall will present some of her work at the Botany 2002 conference in Madison, Wisconsin, this summer (Duvall and Bricker: "Nuclear-cytoplasmic incongruence among monocots and related paleoherb dicots," Aug. 5, 2002). Bricker and Duvall are working to get her undergraduate thesis published as part of a larger scientific paper.

Rafal Wierzchoslawski, a graduate student from Poland in the Bujarski laboratory, has recently passed the written part of the Ph.D. candidacy exam. He has been the recipient of the PMBC Graduate Research Fellowship.

A new graduate student from Ethiopia, **Mulu Tesfay**, has joined the Bujarski laboratory. Mulu is working towards his Ph.D. degree, studying RNA recombination in bromoviruses. He is accompanied by his wife and his several-month-old son.

Peter Nagy, a former long-term postdoctoral fellow in the Bujarski laboratory, is continuing his successes as an assistant professor at the Department of Plant Pathology at the University of Kentucky. Currently Nagy has eight people in his lab, including post-docs, graduate and undergraduate students, has obtained a large grant from NSF and has published several research articles. His research focuses on the molecular aspects of the life cycle of plant RNA viruses.

Alumni

Kevin Folta (former undergraduate and M.S. student with Neil Polans, and Sidney Mittler Award winner) accepted a tenure-track position as assistant professor in the Department of Horticultural Sciences at the University of Florida in Gainesville. Kevin did his doctoral work with Lon Kaufman at UIC and a postdoctoral appointment with Edgar Spalding at the University of Wisconsin-Madison.

Bill Muse (M.S., '90) and his wife, Linda, live in Canton, Michigan, where Bill is teaching chemistry at Thurston High School. They have two boys, Jeremy (6) and Justin (3). Linda is a music teacher at Jefferson Elementary.

Jeff Murley (Ph.D. '88) is a research professor at the University of Chicago. His wife, Cheryl Hartman Murley (M.S. '88) works at Guiness VDV Tech Center as a corporate microbiologist. They have three children: Tyler (8), Evan (5), and Jordan Elise, born 12/01.

Lisa Manning (B.S. '93) is now teaching at St. Mary's College in South Bend, Indiana. She and her husband, Kirk, have three children, Anthony (13), Aidan (8) and Alaric (7).

Yi-Ping Tao (Ph.D. '91) works at IBM as an I/T architect/specialist, and is pursuing advanced training in bioinformatics.

Mel Duvall employed two undergraduate students this summer, **Tammy Wolford** (who recently started a B.S. in biology at NIU) and **Neill Mohammad**. Tammy and Neill are receiving training in bioinformatics under Duvall (they find sitting at a computer all day to be a lot of fun!), and are supported by an REU (Research Education for Undergraduates) supplement to his NSF grant. Tammy, who has a B.A. in graphic design from Illinois State Univ., is interested in plant sciences, and Neill in political and computer sciences (at U. of I.).

Sarah Oliai (former M.S. student with B. King) had a baby boy in December and completed law school this spring.

Hilary Lee Reno (honors undergraduate with B. King) is just beginning her residency in internal medicine at Washington University (Barnes-Jewish hospital) in St. Louis. ♦

Baby owl born in woods by Montgomery Hall, spring 2002.

Alumni Update

Would you please tell us what you and your fellow alumni have been doing (e.g., marriages, children, or other accomplishments). We would also like to know about any degrees received before or after your stint at NIU.

NAME

ADDRESS

CITY STATE ZIP CODE

( )
HOME TELEPHONE

SPOUSE

CHILDREN

E-MAIL ADDRESS

OCCUPATION

BUSINESS

BUSINESS TITLE

Mail to: **Department of Biological Sciences**
Northern Illinois University
DeKalb, IL 60115

BUSINESS ADDRESS

CITY STATE ZIP CODE

( )
BUSINESS TELEPHONE

Degrees Received at NIU:

DEGREE/YEAR RECEIVED

DEGREE/YEAR RECEIVED

Degrees Received from Other Institutions:

DEGREE/YEAR RECEIVED/INSTITUTION

DEGREE/YEAR RECEIVED/INSTITUTION

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- ☐ Harvey A. Feyerherm Endowment Fund
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- ☐ Charles E. Montgomery Endowment Fund
  (annual award to outstanding undergraduate teacher-certification student)
- ☐ George L. Terwilliger Endowment Fund
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Degrees Earned in Biological Sciences

GRADUATE DEGREES:
August 2001
James Michael Kerfin, M.S.
Matthew Fredrick Bonnan, Ph.D.
Maja Ordanic, Ph.D.
David Henry Van Winkle, Ph.D.

December 2001
Rebecca May Bratzke, M.S.
Mary Genevieve Dykas, M.S.
Katherine Amanda Radek, M.S.
Bridget Denise Stuckey, M.S.
Joseph Bennett Wetter, M.S.
Angie Dee Dimmig, M.S.*
Treacy Marie Nardulli, M.S.*
Karan Ann Oliver, M.S.*
Scott Eric Foss, Ph.D.

May 2002
Keith Allen Ameiss, M.S.
Michelle Suzanne Holtorff, M.S.
Kimberly Ann Dorrell, M.S.*
Donald Franklin Ellison, M.S.*
Jordan Christopher Kopcio, M.S.*
Robert Deleon Stockley, M.S.*
Lisa Anne Walsh, M.S.*
**with specialization in Human Anatomical Studies.*

UNDERGRADUATE DEGREES:
August 2001
Remsh Ali Abdulhafedh
Josh Aaron Brady
Kathleen Ahern Dryden
Steven Michael Hermans
Nadeem Stephen James
Connie Ann May
Christopher Lee McCallough
Michael William Osterbur
Brian L. Palger
Rahul U. Phatak
Theresa Anne Shakespeare
Muffie K. Slater
Jill Marie Tuttle

December 2001
Jilma H. Ellison
Olubukola Familola
Christy Marie Fusselbaugh
LaToya Yvette Hayden
Jason William Howland
Aimee Christine Morell-Watton
Anthony Dale Mullins
Happyman John Ogundele
Sarah Whalen Schaefer
Belinda M. Schmitt
Meschel L. Simmons
Jennifer Marie Spikinigs
Kshitij Y. Vyas
Cori Lee Wethington
Jacquetta Sue Wright

May 2002
Ali Daifallah Al-Magableh
Melissa Joanne Alderson
Edward Joseph Allen
Charles Wayne Anderson
Carol Ann Balconi
Jean M. Barrett
Jennifer Ann Bozych
Anthony Allen Brown
Joseph Paul Cavazos
Dipal Praful Chokshi
Stacia Lee Christiansen
Cheryl Lee Curtin
Sheilagh Marie Delorenzo
Cynthia Ann Donofrio
Juliet Ann D'Souza
Megan G. Fitzgerald
Shanna Christina Fritsch
Michelle Marie Gerber
Heather Jean Gillono
David Allen Glover
Laura Louise Gorges
Brissa Yedith Guzman
Rebecca C. Huchro
Mikael A. Johnson
Reina Denette Kalish
Karen Marie Klarmann
Monica Kumar
Tiffany P. Lewis
Bary David Lopez
James John Lotarski
Kimberely D. MacPherson-Miller
Christopher Douglas Maholy
Peter Mai
Brandi Hall Medlin
James Reyes Motos
Edward Michael Mullins
Kristine Marie Nicoletto
Denise Nixon
Elizabeth Mary Novosad
Eric Scott Owen
Lore Lynn Patton-Fehrman
Celia Perez
Margaret Ann Pierog
Judith Kathryn Ray
Elizabeth Mary Redfearn
Shane Paul Rivette
Knesha Narae Rose
Nicole Elizabeth Rouse
Paul William Schuppner
Matthew St. John Seibt
Thomas Preston Stanhope
Laura Patrice Strepek
Laura Anne Szymanski
Edsel Luigi Taala
Dara Ann Tannis
Nolaska Ixchetl Tardencilla
Elizabeth Whitten
Alan David Wilson

Corrections: *Renee Cedillo was inadvertently left off the list of graduates in our last newsletter. Renee received her B.S. in August 2000.*