



Life Scientist

News from

May session, 2008 – Fall semester, 2008

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Swenson College
OF SCIENCE AND ENGINEERING

Department of Biology

Three New Faculty Members join the Department of Biology

The Department of Biology welcomed three new faculty members this fall, Instructor Paul Bates, Microbiologist John Dahl and Developmental Biologist Jennifer Liang.

Dr. Paul Bates

Dr. Paul Bates and his wife Mary Kay moved to Duluth from Madison, WI. Prior to living in Madison, he lived in North Carolina, where he received a B.S. in Biology from UNC-Chapel Hill. After graduating, Paul worked as a technician at UNC's Institute of Marine Sciences, studying nutrient limitation and eutrophication in coastal ecosystems. He moved to Madison in 1992 for graduate school, receiving his Ph.D. in Cellular and Molecular Biology from UW-Madison. Paul's doctoral work focused on protein degradation in the model plant *Arabidopsis thaliana*, and how the underlying processes are important in plant responses to stress. He completed a post-doctoral fellowship in the Department of Biochemistry at UW, investigating the relationship between the stability of a lipid carrier protein, ApoB, and levels of blood cholesterol and triglycerides. During this post-doc, Paul was fortunate to have the opportunity to gain some teaching experience within the department and in the UW School of Veterinary Medicine. Paul next worked as an assistant scientist in the UW Medical School's Department of Pharmacology, focusing on how changing levels of transcription factors in a specific signal transduction inflammation pathway may lead to the development of cancers of the immune system, such as leukemia. During this time, Paul realized that he truly missed being in the classroom, and so returned to school to obtain his teaching certificate. For the past 2 years, Paul has taught various biology courses at both Edgewood High School and Edgewood College, which share a campus and a science building in Madison.

Paul was excited to move to Duluth for several reasons. First, he was impressed by the combination of the UMD biology department's dedication to biology education and the facilities and support to enable a high level of instruction. Although it was an extremely busy one, he thoroughly enjoyed his first semester at UMD, teaching Biology and Society, Genetics, and Seminar II. Paul is looking forward to teaching Biology and Society and working with Lyle Shannon in teaching General Biology II during the spring semester. Second, Paul's wife Mary Kay is originally from Ashland, WI and still has family there. They enjoy being close enough to Ashland to be able to make frequent visits. Finally, Paul and Mary Kay share a love of the outdoors, frequently taking advantage of local opportunities to go hiking, paddling, and skiing. They are eagerly looking forward to exploring the woods and waters in the area in the years to come!

Dr. John Dahl

Dr. John Dahl received his B.S. degree in Molecular and Cellular Biology from the University of Washington before serving in the U.S. Peace Corps for two years. His training in microbiology began at the University of Virginia where he received his Ph.D. while studying bacterial gene regulation in *Escherichia coli*. This was followed by post-doctoral training in *Mycobacterium tuberculosis*, both at the University of Arizona and the National Institutes of Health. John comes to the University of Minnesota after working at Washington State University for several years and discovering the wonders of the spore-forming microbe *Myxococcus xanthus*. He has just finished



Left: Instructor Paul Bates
Center: Developmental Biologist Jennifer Liang
Right: Microbiologist John Dahl

teaching a General Microbiology course at UMD, and will create a new Medical Microbiology course to be offered in the fall of 2009. The two research projects John hopes to build at UMD both examine the ability of bacteria to survive stressful conditions. Mycobacteria comprise a number of major pathogenic species that survive for long durations within human hosts and they include species present in the environment in biofilms, which are very difficult to decontaminate. One mechanism mycobacteria use to survive the stressful conditions inside the host or in the environment is called the stringent response. This mechanism allows mycobacteria to both sense and respond to nutrient deprivations that require adaptation to ward off bacterial death. His second bacteria of interest are myxobacteria, which are non-pathogenic, soil-dwelling microbes capable of both multi-cellular development and morphogenesis into spores that are resistant to heat, desiccation, and toxic substances. The spore has a number of unique structures and proteins, and John's laboratory hopes to understand how the spore acquires enhanced stress resistance.

This is the first time living in the Midwest for John, his wife Debbie Landon and daughters Landon and Mari. They are enjoying the winter weather and the chance to get outside in the snow for downhill skiing and snowshoeing.

Dr. Jennifer Liang

Dr. Jennifer Liang's appointment to a faculty position in the department brings her in a full geographic and scientific circle. She grew up in

New Brighton, a suburb of St. Paul, and got her first research experience in a laboratory at the University of Minnesota, St. Paul campus. Since then, she has studied and done research at the University of Wisconsin-Madison, where she earned her B.S. degree, Washington University in St. Louis, where she earned her Ph.D. and The Carnegie Institution of Washington where she was a post-doctoral fellow. Most recently, Dr. Liang was a faculty member in the Biology Department at Case Western Reserve University.

The research in the Liang laboratory uses the zebrafish model system to explore the genes that underlie the development of the vertebrate brain. She is building a state-of-the-art aquatic facility in the Swenson Science Building that will hold hundreds of tanks and over 8,000 fish. Her research is giving insights into the genetic causes of human birth defects such as spina bifida. She will be teaching Developmental Biology, Genetics Laboratory, and will continue her commitment to giving undergraduates hands-on experience with research.

Jennifer, her husband Hongming (a faculty member in the Department of History, Politics and Culture at The College of St. Scholastica) and son Craig already feel like true Duluthians, as they have had a parade of deer and even a Black Bear come through their front lawn. She is looking forward to re-learning how to ice skate, cross-country and downhill ski.

From the Department Head

By Department Head
Matt Andrews



As we proceed through the 2008-2009 academic year, the Department of Biology has accomplished a great deal despite various challenges associated with the current economic climate. As with life itself, we have adapted to our environment and dealt with our challenges so that we

continue to pursue excellence in life science teaching and research. The Department of Biology continues to have the largest number of majors in the Swenson College of Science and Engineering and the third largest number on the entire UMD campus. Despite current budgetary challenges the department remains 100% committed to serving our students without compromising any aspect of the educational experience. Our hard-working faculty and

staff continue to provide our students with the best education possible including state-of-the-art instructional and research facilities. Over the past couple years the UMD campus has received funding through the highly competitive National Science Foundation (NSF) Major Research Instrumentation Program to acquire a scanning electron microscope, high-field nuclear magnetic resonance, and in 2008 a flow cytometer for aquatic ecosystem research. The principal investigator on the flow cytometer proposal was one of our newest faculty members, Dr. Stephanie Guildford. Two other major research proposals funded by NSF were also awarded in 2008 to Dr. Clay Carter and Dr. Julie Etterson. Dr. Etterson was promoted and tenured last spring, and in the fall we hired three new faculty, Drs. Paul Bates, John Dahl and Jennifer Liang. Overall we are dealing with the challenges of today, but at the same time we are optimistic and very excited about our future.



Dr. 'Raj' Karim Retires

We wish Dr. M. Reza-ul 'Raj' Karim the best on his retirement. Dr. Karim retired after teaching a final Microbiology course during the 2008 summer session.

Dr. Karim joined the UMD faculty in 1989 as the Associate Vice Chancellor for Academic Administration, and has been teaching at the university since 1992. Dr. Karim taught a large number of courses throughout his career, and was instrumental in developing the following courses at UMD: Experimental Immunology, Introduction to Veterinary Medicine, Introduction to Virology, Food Preservation, Sanitation and Handling, and General Biology II.

Dr. Karim has received many awards from professional organizations, including the 2002 Lifetime Achievement Award from the Pakistan Society for



Microbiology (Dr. Karim earned his undergraduate degree at the University of Karachi in Karachi, Pakistan); he has served on numerous committees; traveled extensively; received funding and developed patents pertaining to his research with triterpenes, including Betulin; and has authored many publications. Dr. Karim has especially enjoyed his

work mentoring both undergraduate and graduate students. He was a 1999 recipient of the UMN John Tate Award for Excellence in Undergraduate Advising.

Colleagues and advisees thanked Dr. Karim for his service and commitment, and friends and family gathered to celebrate Raj's 'freedom' at an open house on the UMD campus on May 9, 2008.

Gifts to the Department of Biology

The Department of Biology warmly thanks the following alumni and friends who supported our students and programs with a charitable gift. Listed below are the names of individuals who donated to biology department funds between May 1 and December 31, 2008. Thank you for your generous contributions.

Dr. Nancy Auer	Professor Stephen Hedman	Mr. & Mrs. Timothy Nelson
Dr. Thomas Becker	Professor Emeritus Linda Holmstrand	Mrs. Heather Parenteau
Mr. John Bernard	Gunner & Ingrid Johnson	Ms. Gladys Roskaff
Dr. Edward Bersu	Mr. Gary Johnson	Dr. Laurence Skog
Mr. Jon Birch	Professor Emeritus M. 'Raj' Karim	Dr. Terry Tumpey
Dr. Storm Carroll	Cheryl Kelley	Dr. Lloyd Turtinen
Mrs. Margaret Dooley	Mr. Philip Loucks	Jody Ullmann
Mr. Douglas Fitton	Ms. Linda Malm	Daniel Weaver
Mrs. Betty Foster	Mr. Thomas Matthiae	Mrs. Janice Wicklund
Mr. & Mrs. Bruce Gilbertson	Dr. & Mrs. Joseph Mayasich	
Mr. & Mrs. Paul Hanten	Dr. Thomas Mowbray	

For more information on supporting our students and programs with a gift, please call Tricia Buntten, SCSE Development Director, at 218-726-6995, or email tbuntten@d.umn.edu

Ornithology Book Collection Donated

The UMD Library has received a valuable donation of 644 ornithology books from the Brooks family on behalf of Kevin Brooks.

UMD and the Duluth area were the places where Kevin's passion for birds was born, so the Brooks family decided to donate to the UMD Library the things Kevin valued most—his books—hoping that they will inspire other students to soar in their life's pursuit of knowledge and beauty.

Kevin Brooks graduated from UMD in 1976 with a bachelor's degree in Biology and a minor in Biochemistry. It was ornithology that captured his imagination.

Throughout his life as a member of many bird clubs, Kevin gathered and purchased a remark-

able collection of colorful and informative books on birds. Their content ranged from bird care and feeding to the habits and habitats of many different species from around the world, including grassland birds, waterfowl, tropical birds, song birds, and birds of prey (his favorite). Kevin pursued his interest in birding in many places, and he made an annual pilgrimage to Hawk Ridge, as a member of Friends of Hawk Ridge, to see the fall migration.

The ornithology books added to the UMD Library collection will have bookplates placed in them in memory of Kevin Brooks.

2008 SCSE Academy Inductee – Dr. Antionette Moran

By Professor Emeritus Conrad Firling



The newest biology inductee into the SCSE Academy of Science and Engineering is Dr. Antoinette Moran. Dr. Moran presented the biology seminar and was inducted into the SCSE Academy on Friday, October 3, 2008. Established in 2002, the SCSE Academy gives public recognition to distinguished alumni and special friends of the college who have

brought distinction to themselves through their participation, commitment and leadership in their chosen profession.

Dr. Antoinette Moran graduated with a B.S. in Biology from UMD in 1980, and has gone on to a distinguished career in teaching and research in medicine. She received her Doctor of Medicine from the University of Minnesota in 1984. She continued her training in medicine at UMN, completing her residency in pediatrics in 1987, and a fellowship in pediatric endocrinology in 1990. In 1990, she received an appointment in the UMN Department of Pediatrics. She has risen through the ranks to achieve the title of Professor of Pediatrics.

Dr. Moran is a leading researcher on cystic fibrosis and diabetes. She has published over 75 publications including articles in leading scientific journals, book chapters, invited review articles, and editorials. Her research has been extensively supported by research grants from a range of agencies and foundations including the National Institutes of Health, the Cystic Fibrosis Foundation, and the Juvenile Diabetes Research Foundation. She received the first Cystic Fibrosis Richard C. Talamo Distinguished Clinical Achievement Award for "research contributions that have had a significant influence on the course of the disease." Dr. Moran's stature in her field is demonstrated by the numerous invitations she has received to speak at national and international research conferences. Dr. Moran has also been active in speaking before many local groups and in community outreach. In addition to her research, she is also involved in teaching medical students, graduate students, and residents. She has held numerous administrative appointments and currently is serving as Director of the Pediatric Diabetes Program and as Division Chief, Pediatric Endocrinology and Diabetes at the University of Minnesota. Recently, Dr. Moran was a visiting physician in Uganda as part of the UMN's Global Health program.

Seminar Series

The Department of Biology seminar series takes place on Friday afternoons at 3:15 pm in 185 Life Science during the academic year. The best place to find out about upcoming speakers is the biology department's webpage www.d.umn.edu/biology. The UMD community and the public are always welcome to attend the Department of Biology's seminar series.

During the 2008 fall semester, the biology department was pleased to host seminars by Dr.

Chris Farmer of the Hawk Mountain Sanctuary in Kempton, PA during the annual Hawk Ridge Weekend, Dr. Antoinette Moran, the 2008 SCSE Academy Inductee in Biology, Dr. Steven Franks, an evolutionary biologist from Fordham University, NY, Dr. Rolf Peterson of Michigan Technological University as part of the 50th anniversary of the wolf-moose study on Isle Royale, as well as many other distinguished speakers.

Faculty and Staff News

On May 9, the Board of Regents approved the promotion of **Julie Efferson** to Associate Professor with indefinite tenure.

In late May, the President of the International Association of Great Lakes Research announced that Duluth, Minnesota has been selected as the site of their 54th Annual Conference to be held in May 2011. Since its inception in 1953, the IAGLR annual conference has never been held in Minnesota or anywhere on the shores of Lake Superior. **Randall Hicks**, Biology Professor and Director of the UMD Center for Freshwater Research and Policy, said the Center, working with several university and local agency partners including the Large Lakes Observatory, Natural Resources Research Institute, GLMRI, Minnesota Sea Grant, MPCA, Minnesota DNR, the Great Lakes Aquarium, and the U.S. EPA developed and submitted the proposal to host this meeting.

Associate Professor **David Schimpf** and geology Professor Emeritus John Green served as guides for a Duluth-area field trip that was part of Evolution 2008, an international meeting of three professional scientific societies held on the UMTC campus in June. The field trip focused on geological and biological natural history near the western tip of Lake Superior.

Professor **Steve Bortone** was appointed to the international editorial board of *Biologia Marina Mediterranea* (*Journal of the Italian Society of Marine Biology*).

During a fishing trip to a remote part of Labrador in July, Professor **Randall Hicks** was in a float plane crash. He sustained a broken left arm and two broken ankles and spent the fall on medical leave, but expects a full recovery. While on leave he continued with some research activities and will return to teaching during the 2009 Spring Semester.

Professor **John Pastor** published a new textbook, *Mathematical Ecology of Populations and Ecosystems*, in August.

Associate Professor **Donn Branstrator** had an invited chapter entitled 'Origins of Types of Lake Basins' published in the *Encyclopedia of Inland Waters*.

Greenhouse Manager **Deb Shubat** serves as one of the main organizers behind the UMD Farmers' Market. The 2008 markets were held every Wednesday afternoon in front of Kirby Plaza from May 21 through September 24.

Department Head **Matt Andrews** and Professor **Steve Hedman** were granted semester leaves during Fall

2008. Instructor **Colleen Belk** was granted a sabbatical leave during the 2008-09 academic year.

Thank you to Associate Professor **Tim Craig**, who served as the acting biology department head during Fall 2008.

After serving for over 15 years as Dean of the UMD Graduate School and as UMD's Associate Vice Chancellor for Academic Administration, Professor **Steve Hedman** returned to the Department of Biology Fall 2008. He will be teaching *Biology 2201 Genetics* and *Biology 3987 Seminar* Spring 2009.

Assistant Professor **Stephanie Guildford** (PI), Associate Professor **Julie Efferson**, and Professor **Randall Hicks** received a 2008 NSF Major Instrumentation grant of \$193,827 for the acquisition of a flow cytometer for aquatic ecosystem research.

Assistant Professor **Clay Carter** received a grant from the National Science Foundation on the Plant Genome Research Program, 'Functional genomics of nectar production in *Brassicaceae*' for \$1,336,289 from 9/1/2008 to 8/31/2012.

Recently published: **Kram B.W.**, Bainbridge EA, Perera A., **Carter C.** (2008) "Identification, cloning and characterization of a GDSL lipase secreted into the nectar of *Jacaranda mimosifolia*" in *Plant Mol. Biol.* 68:173-183.

In October Assistant Professor **Clay Carter** gave an invited talk to the Department of Horticulture at Texas A&M University entitled "Nectaries and nectar: a molecular functional analysis." Carter also presented "Functional analysis of the *Arabidopsis thaliana* nectary transcriptome" at the Frontiers of Sexual Plant Reproduction meeting in Tucson, AZ.

Last fall, research being conducted in Professor **Randall Hicks'** lab to identify the cause of severe corrosion of steel port structures in the Duluth-Superior Harbor received attention from the local and national press. In October, a short notice about this work appeared in *USA Today*, after an article was published in the *Duluth News Tribune*. This research has been supported by the UM Center for Urban and Regional Affairs, the Great Lakes Maritime Research Institute, Minnesota Sea Grant, and the US Army Corps of Engineers.

Continued on Page 8.

Faculty and Staff News Con'd.

Professor **Robert Hecky** was inducted as a fellow of the Royal Society of Canada on November 15 in Ottawa, Canada. The RSC is Canada's most prestigious scholarly organization. The citation for his award reads: "Robert Hecky is world-renowned for his work on African great lakes and northern reservoirs. For over thirty years, he has led international groups investigating the hydrology, chemistry, biology, and paleoecology of these ecosystems, including the effects of land-use change, nutrient dynamics, alien species, human population growth, climate change and mercury pollution. His research has led to the development of an excellent research laboratory in Uganda, and the understanding of how climate, land-use and air quality have affected the great lakes of east Africa. His comparative studies have also greatly increased our understanding of the environmental impacts of northern reservoirs."

Associate Professor **Tim Craig** and Assistant Professor **Jennifer Liang** each received Chancellor's Small Grants for Research fall semester, 2008. Dr. Craig will use his grant to obtain plant specimens to aid in research on genetic differences in geographic populations of gall-forming flies. Dr. Liang will use her grant to purchase software used to maintain and expand the Zebrafish in the Classroom website www.zfic.org.

Professor **Steve Bortone** was appointed to the Research and Monitoring Advisory Committee of the St. Louis River/Estuary National Estuarine Research Reserve.

Assistant Professor **John Dahl** shared the innovative multimedia strategies he uses to teach his microbiology course in the UMD Instructional Development Services presentation 'Terrific Tactics and Tricks of the Trade' on October 30.

Cindy Hale gave presentations about her research with exotic earthworms at the MN Invasive Species Conference held in Duluth, the WI Citizen-Based Monitoring Conference in Onalaska and the Natural Areas Conference in Nashville, TN, all in October. Dr. Hale will be teaching *BIOL 4803 Ecology Field Methods* May session, 2009.

In November Assistant Professor **Tim Kroff** gave an invited talk entitled "The SPE-42 Protein is Essential for Fertilization in the Nematode *Caenorhabditis elegans*" to the Applied Science Speaker Series at the University of Wisconsin-Stout.

UMD commemorated the 50th anniversary of the wolf-moose research on Isle Royale, the world's longest on-going large mammal study, with several events

on November 6 and 7, and a moose skeleton display in the library. Rolf Peterson, the lead researcher of this study, gave the biology seminar on November 7. Professor **John Pastor** has joined Peterson to conduct research on the island.

Professor **Gerald Niemi** and **Michael McDonald**, US EPA, were featured in *ScienceWatch.com* in November for their highly cited article "Application of ecological indicators" in the *Annual Review of Ecological Evolution and Systematics*, 2004.

Associate Professor **Julie Etterson** was invited to participate in the following meetings: seminar presenter and panelist at Climate Change Adaptation and Biodiversity Conservation: A Minnesota Response conference at UM Arboretum in June; invited speaker and participant at Assisted Migration: Evaluating a New Strategy for Species Conservation conference in Milwaukee, WI in August; panelist at Climate Change, Sustainable Agriculture and Bioresources Public Forum at UMTC in September; presented seminar 'Evolution in response to climate change' at Wesleyan University, Middletown, CT, in November.

Recently funded: 2009-2012 National Science Foundation. Collaborative Research: Adaptive differentiation, selection and water use of a seasonally dry tropical oak: implications for global change. J. Cavender-Bares (PI), **J.R. Etterson** and J.D. Sparks (Co-PIs) \$ 565,529 (funded 12/4/08).

Amphibian research of temporary faculty members **Lucinda Johnson** and **Patrick Schoff** was published in *Nature*, 455 (7217), pp. 1235-1239, in the article "Agrochemicals increase trematode infections in a declining amphibian species."

Dennis Hansen, recent M.S. Biology graduate, Professor **Randall Hicks**, and colleagues at the University of Minnesota-St. Paul recently had a research article accepted for publication. The article entitled "*Escherichia coli* Populations in Great Lakes Waterfowl Exhibit Spatial Stability and Temporal Shifting" is scheduled to appear in the March 2009 issue of *Applied and Environmental Microbiology*.

Graduating Master and Doctoral Degree Students

Good luck to the following students who graduated from master or doctoral degree programs during the summer and fall of 2008.

Mike Aho

Degree earned: M.S. Biology
Thesis title: Competition between cyanobacteria and green algae: factors affecting *Microcystis aeruginosa* and *Chlorella vulgaris* growth in direct competition
Advisor: Dr. Andrew Klemer

Margot Bergstrom

Degree earned: M.S. Biology
Thesis title: The round goby in Western Lake Superior: Distribution, competitive interactions, and sensory physiology
Advisors: Drs. Tom Hrabik and Al Mensinger

Caitlin Cleary

Degree earned: M.S. Integrated Biosciences
Thesis title: Antidepressive-like Effects of Rapamycin in Animal Models: Implications for mTOR inhibition as a New Target for Treatment of Affective Disorders
Advisor: Dr. Haim Einat

Nathan De Jager

Degree earned: Ph.D. Ecology, Evolution, and Behavior
Thesis title: Multiple scale spatial dynamics of the moose-forest-soil ecosystem of Isle Royale National Park, Michigan, U. S. A.
Advisor: Dr. John Pastor

Jessica Grochowski

Degree earned: M.S. Biology
Thesis title: Geographic distribution of *Solidago altissima* cytotypes and its relationship to drought
Advisor: Dr. Julie Etterson

Dennis Hansen

Degree earned: M.S. Biology
Thesis title: The Origins of *Escherichia coli* in Lake Superior Beaches, and Fish and Waterfowl Hosts
Advisor: Dr. Randall Hicks

Terri Jicha

Degree earned: M.S. Biology
Thesis title: Predicting spatial and temporal patterns of nitrification from flood pulse disturbance on the Upper Mississippi River forested floodplain
Advisor: Dr. Lucinda Johnson

Marte Thabes Kitson

Degree earned: M.S. Biology
Thesis title: Patterns in morphology, life-history, and migration behavior of *Bythotrephes longimanus* among lakes and reservoirs of Minnesota, Michigan, and Wisconsin (USA)
Advisor: Dr. Donn Branstrator

Brian Kram

Degree earned: M.S. Biology
Thesis title: Uncovering the *Arabidopsis thaliana* Nectary Transcriptome & Functional Analysis of Nectar Proteins from *Jacaranda mimosifolia*
Advisor: Dr. Clay Carter

Jenna Mollison

Degree earned: M.S. Integrated Biosciences
Thesis title: The Role of DNA Damage Response and Mitochondrial Activity in Tumor Stem Cell Resistance to Chemotherapeutics
Advisors: Drs. Jon Holy and Ed Perkins

Matt Ostendorf

Degree earned: M.S. Integrated Biosciences
Thesis title: Cytomegalovirus, age and atherosclerosis
Advisor: Dr. Kent Frohberg

Juline Smith

Degree earned: M.S. Biology
Project title: Modern Technologies to Enhance Traditional Teaching
Advisor: Dr. Benjamin Clarke

Kyle Snell

Degree earned: M.S. Integrated Biosciences
Thesis title: Experimental light manipulation influences endopolyploidy, morphology and physiology
Advisor: Julie Etterson

Right: IBS graduate students Brice Hansen, Dan Lexcen, Jeff Ruhlman, and Diana Ostrowski at the annual biology picnic.





Biology Course Offerings

The Department of Biology continues to make improvements and changes to its courses to offer students the best in life science education.

As of Fall 2008, all *BIOL 1011 General Biology I* and *BIOL 1012 General Biology II* courses include three components: lecture, discussion and lab meetings. Another major course change is the combination of Seminar I and II classes into *BIOL 3897 Seminar*. Students will now attend, evaluate, and discuss the content and mechanics of department seminars and research and prepare their own presentation in one course.

A new upper division biology course, *BIOL 5866 Algal Ecology and Physiology*, is being offered for the first time Spring 2009. This course was developed by Dr. Stephanie Guildford as a review of fundamental algal processes and application of traditional and modern techniques to quantify these processes.

During Summer 2009, Dr. Shannon Stevenson will be offering a new course, *BIOL 3101 Molecular Biology of Cancer*. Topics in this course will include: intracellular signaling systems including oncogenes and tumor suppressors, cell cycle, tumorigenesis, multi-step carcinogenesis, invasion and metastasis and genetic instability in cancer. The detection and modern treatment of cancer will also be discussed.

Other course offerings during the upcoming summer session include Dr. Cindy Hale's *BIOL 4803 Ecology Field Methods: Identification and Natural History of Terrestrial and Aquatic Organisms* course. This course, held at Boulder Lake Environmental Station, provides undergraduates with an introduction to field ecology, including field identification of northern Minnesota terrestrial and aquatic flora and fauna and basic field methods to quantify distribution and abundance of plants and animals. For students looking for the opportunity to study abroad, *BIOL 4503 General Microbiology in Wroclaw, Poland* will again be offered, along with *BIOL 4807 Plant Physiological Ecology in Wroclaw, Poland*.

Above: Pre-Dental Club member Niki Wojack reads aloud to students at Lowell Elementary School. Joining a student club is a great way to get involved in the UMD community and beyond.

Center: Dr. Cindy Hale teaching students in a summer course.

Lower: Biology student Robert Duerst working in Dr. Clay Carter's lab. Undergraduate students have opportunities to gain hands-on research experience at UMD.

Clubs in the Department of Biology

Joining a club in the Department of Biology is a great way to meet other students with similar interests, learn about opportunities on campus and beyond, and participate in activities that interest you. It also looks good on your resume! Please contact an officer if you would like more information about any of these clubs.

Biology Club

The Biology Club started events early fall semester, helping with the UMD Bulldog Bash and Welcome Week for new students. The club hosted the fall picnic for the entire biology department, baked cookies for biology seminars, cleaned up their stretch of adopted highway, sponsored a bowling party for faculty and students to get to know one another better, and met regularly throughout the semester.

2008-09 Officers

President: Danielle Souder

Vice-President: Natalia Hart

Secretary: Mike Benson

Treasurer: Josh Bednar

Faculty Advisor: Dr. Clay Carter

Pre-Veterinary Medicine Club

The objective of the Pre-Veterinary Medicine Club is to provide students with an opportunity to meet others with a common career goal and to provide information about admission to veterinary medical schools. On December 9 & 10, the club held its annual bake sale with all proceeds going to Animal Allies of Duluth.

2008-09 Officers

President: Wayne Gatlin

Vice-President: Brian Aluni

Treasurer: Jenny Erdman

Secretary: Jiethyl Piersak

Faculty Advisor: Dr. Joanne Itami

Pre-Pharmacy Club

The Pre-Pharmacy Club's purpose is to inform students interested in pursuing a pharmacy career. Club members get to know other students interested in the pharmacy profession, learn about the application process to pharmacy schools, and, most of all, have fun! During Fall 2008 the club attended the Mayo Clinic's lab sciences training program informational session, and Professors Bauer and Ranelli from the UMD School of Pharmacy talked to the club about their research.

2008-09 Officers

President: Amanda Wutschke

Vice-President: Alaina Heltemes

Secretary: Karen Olson

Treasurer: Laura Engman

Volunteer Coordinator: Brent Noble

Pre-Medicine Club

The Pre-Medicine Club advisor, officers, and representatives of the first and second year medical students at UMD are working to develop a student mentorship program to begin this year. In addition, the club toured the UMD cadaver lab with first-year medical students and volunteered to staff a holiday party at a local women's transitional housing childcare program during the fall semester.

2008-09 Officers

President: Alison Neal

Vice President: Shauna Halaharvi

Secretary: Josie Thole

Treasurer: J.J. Germscheid

Volunteer Coordinator: Travis Farhrenkamp

Public Relations Chair: Natalia Hart

Fundraising Coordinator: Bryce Meiczowski

Faculty Advisor: Dr. Lillian Repesh

Pre-Dental Club

The Pre-Dental Club met regularly during the fall semester to plan events and hosted a special speaker, Dr. Chart, who talked about dentistry experiences at the Lake Superior Zoo. The club also had a table at the UMD Winter Health Fair, took a field trip to the Simulation Clinic at the UM School of Dentistry, read to children at the 'Harvest of Literature' event and hosted a sugarless bake sale.

2008-09 Officers

Co-Presidents: Amy Laurila & Niki Wojack

Vice-President: Mark Thiele

Secretary: Betsy Cope

Treasurer: Ray Seaburg

Activities: Kelsey Bodell & Amy Babcock

Publicity: Tim Johnson & Travis Johnson

Membership: Brandon Heckmann

Faculty Advisor: Dr. Paul Bates

What's new?

Please contact us at biol@d.umn.edu with your update to be included in a future issue of the Life Scientist. We'd love to share your good news ... Did you change your job, get married, receive special recognition from a professional organization? Let us know!

Please remember to include your...

- Name
- Contact information
- Degree earned and graduation year
- A short paragraph with your news

Credits

Department Head: Matt Andrews

Editor: Nellie Danke

Faculty Advisor: Tim Kroft

Contributors: Conrad Firling, Brenda Risdon, Shixing Wen

Photos: Brett Groehler, Cindy Hale, Danielle Souder, Niki Wojack

Graphic Design: Patricia Gunderson

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