The First Edition of Biology@Memphis
Welcome to volume 1 issue 1 of the Biology Department newsletter, our new means for keeping in touch with our Alumni, informing the Memphis community of the research activities in the Department and recruiting new students into the Biology Family. We will publish twice a year, updating you on department news, including recent publications, grants and awards to our faculty, students and staff and any new faculty joining the family. We’d like to know where you are and what you’re doing, so drop us a line at Biolcc@memphis.edu

A Message from the Chairman
The past few years have been good ones for the Department of Biology. Our faculty continue to produce high quality publications and receive grant funding, we’ve hired three new faculty members (read about them on page 3) and continue to expand our graduate program. In the spring of 2008 we established BARC—the Biology Advising and Resource Center to guide our undergraduate majors through their academic careers. We have a new and improved website (www.memphis.edu/biology) to help attract the brightest and the best to work in the department. Now we want to brag on you, our alumni, friends, faculty and students so send us your news!

Dr. Randall Bayer, Professor and Chair

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Biologists@Large

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The research mission of the Meeman Biological Field Station (MBFS) is to examine the effects of spatial scale, spatial and temporal heterogeneity and periodicity on ecosystem functions. Its educational mission is to teach ecology and evolution using hands-on inquiry-based learning. Current research at MBFS emphasizes multidisciplinary realms of inquiry. To facilitate its research endeavors, the MBFS maintains a weather station which provides year-around measurements of air temperature, humidity, rainfall and soil temperature. These data are uploaded to MBFS computer facility where they are available to researchers online. The MBFS also spreads mist catch nets throughout the field station as means for producing an annual inventory. Jones array pit-fall traps are also present in the MBFS and are monitored seasonally to survey vertebrate animal populations. The educational mission is to teach ecology and evolution using hands-on inquiry-based learning. The faculty, staff and students using the field station scientists are studying river, floodplain and wetland ecology, evolutionary ecology of hydridization, wildlife ecology, genetics, conservation biology and the evolution of mammalian behavior systems. Dr. Jack Grubaugh is the Director of the MBFS and Darrell Van Vickle is caretaker. Visit the website at www.memphis.edu/meeman.

The 2009 William H.N. Gutzke Memorial Seminar

The William H.N Gutzke Memorial Seminar Series was established by the Ecological Research Center in 2005 to honor the late Bill Gutzke, a well-known herpetologist and a long-time faculty member in the Department of Biology. Dr. Gutzke received his Ph.D. from Colorado State University and did his post-doctoral work with James Bull at the University of Texas. Dr. Gutzke joined the Biology Department at Memphis State University in 1986, and was promoted Associate Professor in 1989. He was a member of the American Society of Zoologists, the Society for the Study of Evolution, the American Society of Ichthyologists and Herpetologists, the Herpetologists League and the Society for the Study of Amphibians and Reptiles. Dr. Gutzke also served as President of the Faculty Senate from 2000-2001 and was a member of the search committee that brought President Raines to the University of Memphis. In his tenure at the University of Memphis, he mentored four Ph.D. students, two Master’s students and at least sixty undergraduates.

This year’s speaker was Dr. Stephen Secor from the Department of Biological Sciences at the University of Alabama, Tuscaloosa. His talk, entitled Evolutionary Responses to Feast and Famine was presented Oct 29 to a large audience that included Dr. Gutzke’s daughter Rachel (pictured with Dr Secor) and granddaughter Kylee. Dr. Secor earned his doctorate from UCLA and did post-doctoral work with Dr. Jared Diamond. His research explores the evolution of digestive physiology, energetics, feeding ecology and morphology, and the underlying mechanisms of digestive and metabolic responses in amphibians and reptiles. Visit www.memphis.edu/biology/special/spring_seminar.php to see the seminar schedule for the spring.
Dr. Duane McKenna joined the Department as an Assistant Professor in January, 2010 after a post-doctoral fellowship at the Museum of Comparative Zoology, Harvard University. Dr. McKenna studies insect (especially beetle) molecular systematics and evolution, and the evolutionary-ecology of insect-plant interactions. He also has a general interest in phyloinformatics and the design and implementation of biological inventories involving insects. Dr. McKenna recently published *Temporal lags and overlap in the diversification of weevils and flowering plants.* Proc Nat’l Acad Sciences 106(17): 7083-7088, 2009.

Dr. Andrew Liu joined the Department in Fall 2008. In mammals, many aspects of 24-hr rhythms in behavior and physiology are regulated by endogenous circadian clocks. His lab studies how the clock works (mechanism) using molecular genetics approaches and what the clock does (physiology) using genetics and genomics approaches. Dr. Liu’s goal is to find methods for modulating our timing systems to improve treatments of clock-related disorders and enhance body fitness. Dr. Liu recently received a grant from the National Science Foundation and published *A Genome-wide RNAi Screen for Modifiers of the Circadian Clock in Human Cells* in Cell 139:199-210, 2009.

Dr. Takuyu Nakazato joined the Department in September 2009, coming from Indiana University. Dr. Nakazato is interested in local adaptation and ecological divergence as well as genetic mechanisms involved in environmental stress mechanisms in wild tomatoes as well as polyploidy and genome evolution in ferns. Dr. Nakazato recently published *Investigating species boundaries in the Giliopsis group of Ipomopsis (Polemoniaceae): Strong discordance among molecular and morphological markers.* Am. J. Bot. 96:853-861, 2009.
Dr. Judy Cole was promoted to Associate Professor and received tenure in the Fall of 2009. Dr. Cole’s research involves understanding how many different receptor agonists can use a limited number of signaling molecules to produce agonist specific responses. She is focusing on the cross-talk between G protein-coupled receptors, receptor tyrosine kinases and use of the mitogen-activated protein kinase ERK to regulate cellular functions such as proliferation, migration and differentiation.

Dr. Carlos Lopez-Estrano was also promoted to Associate Professor with tenure in the Fall of 2009. Dr. Estrano studies Plasmodium falciparum, the causative agent of malaria which infects approximately 500 million people and kills approximately 2 million people per year. His research is focused on two aspects of malaria biology: (1) protein trafficking to the parasite food vacuole which is a metabolically active organelle and (2) Regulation of Plasmodium gene expression searching for potential targets for therapeutic intervention.

Dr. Tom Small joined Dr. Stephen Schoech’s lab in 2009. Dr. Small comes to the Department of Biology after a post-doctoral experience with Dr. Ignacio Moore at Virginia Tech. Dr. Small is in charge of the day to day running of the projects detailed in Dr. Schoech’s 2009 NSF Grant. Dr. Small’s research focuses on the environmental and physiological regulation of life history stages in free-ranging animals. He is most interested in how animals regulate reproduction and reproductive trade-offs in environments where resource availability is spatially and temporally less predictable during the annual cycle, such as in deserts and tropical ecosystems.

Dr. Carrie Hayes Sutter received funding from General Electric for a two year project starting in Jan 2010 to compare in vitro aryl hydrocarbon receptor-mediated responses in human keratinocytes exposed to environmental pollutants (total $197,230).

Dr. Ramin Homayouni received a grant from the UM FedEx Institute of Technology to develop a mouse knock-out model for investigating the role of NIPSNAP1 in Alzheimer’s Disease ($79,393 for 1 year).

Drs. Michael Kennedy and Bill Simco received funding from Shelby Farms Park Conservancy for An Inventory and Natural Resources Management Plan for Shelby Farms Park ($115,000) and from the Tennessee Department of Agriculture – Division of Forestry for An Assessment of Forested Habitat at Shelby Farms Park ($20,000).

Dr. Judy Cole is a Co-Investigator on The influence of cranberry beverage on systemic immune functions, urinary and systemic biomarkers of health and fecal characteristics of human subjects during a 10 week administration. from Oceanspray ($176,175 for 1 year).
Selected Publications


Faculty News: Awards

Thomas W. Briggs Foundation’s Excellence in Teaching Award: Dr. Anna Bess Sorin received the 2009 Thomas W. Briggs Foundation’s Excellence in Teaching Award. The Briggs Award is the highest award for excellence in undergraduate teaching.

Meritorious Faculty Award: Dr. Michael Kennedy received this award which is given by the College of Arts and Sciences to recognize exceptional faculty within the college.

College of Arts and Sciences Award for Excellence in Teaching. Drs. Charles Lessman (top) and Charles Biggers (bottom) received the Excellence in Teaching Award in recognition of exemplary teaching in undergraduate courses.

Graduate Student News

Defenses and Degrees

Jessica Erin Fender, a Masters student with Dr. Michael Kennedy, presented her thesis work entitled Habitat Heterogeneity and Species Richness: Is Spatial Scale a Factor? on August 13, 2009.

Jennifer Wendelyn Williams received her Master’s in August 2009. Ms Williams did her graduate work with Dr. David Freeman and is the coordinator for the Anatomy and Physiology labs in the Department of Biology at the University of Memphis.

Charles Michael Knight defended his doctoral dissertation on The Influence of Natural Selection on Interactions Between Native and Exotic Species in an Invaded Ecosystem October 27, 2009. Dr. Knight was a student in Dr. Michael Kennedy’s lab.

Brian D. Carver, a Ph.D. student with Dr. Michael Kennedy defended his dissertation entitled Ecological Relationships of Virginia Opossums (Didelphis virginiana) and Raccoons (Procyon lotor) November 9, 2009.

Matthew L. Smith received his Master’s degree in December, 2009. Mr. Smith did his graduate work with Dr. Judy Cole.

Derek Norman defended his Masters thesis entitled Regulation of Immediate Early Gene Expression by α-Adrenergic Receptor-mediated ERK activation in Vascu

lar Smooth Muscle November 16, 2009. Mr. Norma was a student in Dr. Judy Cole’s lab and is now a research associate with Dr. Abby Parrell in the Department of Chemistry at the University of Memphis.

Grants

Travis E. Wilcoxen is the co-PI with Dr. Stephen Schoech on a National Science Foundation, “Doctoral dissertation improvement grant: reproductive senescence in the Florida scrub-jay (Aphelocoma coerulescens).”

Michelle Rensel received a Grant-in-Aid-of-Research from the Society for Integrative and Comparative Biology.
Graduate Student News

Publications


Presentations


Travis E. Wilcoxen presented a paper entitled “Age-related differences in HPG responsiveness to GnRH challenge in Florida Scrub-Jays” at the Annual Meeting of the Society for Integrative and Comparative Biology, Seattle, WA, January 2010.

Nhu Quynh T Tran presented “Chemical genomics of cancer chemopreventive dithiolethiones” at the 48th Annual Meeting of the Society of Toxicology in Baltimore, MD.

Christopher Grow presented “A Survey of Mammals at Russell Cave National Monument” to the Tennessee Academy of Science, Knoxville, TN, October 2009

Derek Norman presented “ERK activation by the α1-adrenergic receptor agonist phenylephrine in human aortic vascular smooth muscle (AoSMC) cells” at Experimental Biology 2009 in New Orleans, LA.

Nina Poole (pictured) presented Dermacentor variabilis: Tick saliva inhibits osteosarcoma (Saos ) cell migration and invasion at Experimental Biology 2009 in New Orleans, LA.

Carolyn Kramer presented Dermacentor variabilis: Regulation of Macrophage Migration and Phagocytosis by Tick Saliva at Experimental Biology 2009 in New Orleans, LA.
Graduate Student News

Presentations, cont...

Dennison, J. S. 2009. An assessment of population density of white-tailed deer in western Tennessee utilizing aerial-thermal imaging. Tennessee Chapter of The Wildlife Society, Fall Creek Falls State Park, Pikeville, TN.


Awards

Nhu Quynh T Tran received the 2009 Outstanding Graduate Student Award from the Graduate Studies Committee and the Department of Biology.

Jobs

Travis Wilcoxen has accepted a tenure-track Assistant Professor of Biology position at Millikin University in Decatur, IL. Founded in 1901 by James Millikin, a prominent Decatur businessman, the University serves approximately 2,400 students.

Staff News

Biology Staff Member helps in Educational Assessment

Ms E.O. Wade, who is the Lab Technician in charge of the Department of Biology's Microbiology labs, is a member of the Center for Research and Education Project (CREP) which provides funding to improve the reading skills of elementary school children. Ms Wade travels through the states of Tennessee, Mississippi and Missouri testing children's reading and comprehension skills. These data are then used to match students with appropriate reading programs and to assess the effectiveness of the Center's funding. Ms Wade has been participating in this project for the past 6 years and is also involved in science fairs projects in the City of Memphis Public Schools.

Anna Christine (Chris) Powlless, LTSII/Webmaster received the Recognition for Innovative Technology Excellence from Douglas Hurley, VP and Chief Information Officer October 21, 2009.

Donna Haskins, Administrative Secretary, received the Distinguished Employee of the Year Award for 2009 from Dr. Shirley Raines, President of the University of Memphis. This award is conferred upon four (4) University of Memphis employees whose efforts and contributions have been acknowledged as distinguished and above all others recognized during the same fiscal year.

Cassandra Carthon received her B.A. in Organizational Leadership from the University of Memphis, December 2009.
Biologists@Large

Collaborative Research on the Ecological Disturbances of Hurricane Katrina

Hurricane Katrina struck southeast Louisiana on August 29, 2005. The destructive forces of the hurricane, its accompanying storm surge, and an extended period of inundation created a major ecological disturbance event for vegetation growing in the affected areas. The revegetation and recovery of hurricane-disturbed areas is the research focus of Dr. Fukuju Yamamoto, Professor of Forestry at Tottori University, Japan, with cooperation of Dr. Reza Pezeshki, a long-time colleague and friend. This research was established as cooperative agreement between Tottori University and the University of Memphis shortly after the hurricane event. Dr. Yamamoto, along with his students and the University of Memphis research team, have traveled to the US gulf coast area twice per year since 2006 to establish research areas, study the patterns of revegetation and assess the recovery of hurricane-impacted native plants, such as Taxodium distichum and Nyssa aquatica. Project participants from the University of Memphis have been graduate students from Dr. Pezeshki’s lab, including Sam Pierce, Lyndsay Saunders, Melissa Koontz, and Burton Kirk. These students aid in organizing trip logistics and data collection. In 2009, Pierce and Saunders co-authored a poster presentation on the work at the Annual Meeting of the Japanese Forestry Society at Kyoto University, Japan. During the most recent visit by the Japanese team in late February, a mini-symposium was held at the University of Memphis on the effects of flooding and natural disturbance on the physiological ecology of wetland plants. At this event, three scientists, Drs. Fukuju Yamamoto, Hitoshi Sakio, and Fumiko Iwanaga, and three students from Japan presented their research. The Japanese team is expected to return in September 2010 for further data collection.

Battle of the Brains

The City of Germantown sponsored the 2009 “Battle of the Brains,” a math and science competition between Germantown High School and Houston High School students. The purpose of the event is to encourage high school students to pursue a field of science or mathematics. This year’s theme was “Greening of America: positive environmental impact through applied math and science.” Participants work individually or in groups to develop projects that provide innovative solutions and measurable outcomes using applied math and/or science to solve environmental problems. The University of Memphis played an integral role in the Battle of the Brains”; Roy Van Arsdale (Earth Sciences) oversaw the event and judges include Drs. Jack Grubaugh (Biology), Brian Waldron (Engineering), Abby Parrill-Baker (Chemistry), Arleen Hill (Earth Sciences), as well as Drs. Firouzeh Sabri and Sanjay Mishra (Physics).

Wildlife Without Borders - Mexico

As an outgrowth of 30+ years of mammalian biodiversity research in Colima, Mexico, faculty of the Ecological Research Center (Drs. Michael Kennedy, Bill Simeco, Juliann Waits and Cheryl Goudie), the University of Oklahoma, Auburn University and Universidad Nacional Autonoma de Mexico met with the Secretary of Education to discuss an educational outreach program. Wildlife Without Borders is an international conservation program of the US Fish and Wildlife Service and in Mexico, SEMARANT, a government agency responsible for protection, restoration and conservation of natural resources. Discussions with the Secretary of Education centered around the Wildlife Without Borders signature initiative “Voices for Nature”, a program to provide local stakeholders with information about their natural resources and to build capacity for biodiversity conservation and management. In addition to faculty from the above institutions, graduate students from Oklahoma University, the Universidad Nacional Autonoma de Mexico and Biology graduate student Chris Grow participated in studies of mammalian biodiversity in Colima, Mexico during December 2009 and January 2010.
In Future Issues

In Focus:
The Feinstone Center for Genomic Research
www.memphis.edu/feinstone/
The Ecological Research Center
www.memphis.edu/erc/
The Integrated Microscopy Center
www.memphis.edu/imc/
The Bioinformatics Program
www.memphis.edu/binf/
Spring 2010 Graduation

Undergraduate News
Biology Scholarship Winners
Awards and Presentations

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The Department of Biology Webpage
www.memphis.edu/biology

The Meeman Biological Field Station
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Seminar Series
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