

Department of Biological Sciences

creating leaders in research, education and service

College of Arts & Sciences

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Dreamers. Thinkers. Doers.



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From the Communications Committee

We hope you enjoy this issue of **Biology@Memphis**, the Department of Biological Sciences Newsletter. A lot has been happening at the University and in the Department. The University of Memphis has started celebrating its 100th anniversary with its Tigers Around Town. You'll be seeing a lot of them in the coming issues, starting with the Feinstone Tiger (right) which is located outside the Life Sciences Building. Our faculty and students are publishing at a brisk pace and presenting their work at meetings and invited talks. The graduate students now have a Graduate Student Organization to encourage interactions and provide resources. Finally, you can keep up with events in the Department and see what our alumni and friends are doing by liking us on **Facebook** www.facebook.com/pages/UofMemphis-Biological-Sciences/232013370188384. You can also keep us to-date by emailing your news to bionews@memphis.edu



The Feinstone Tiger

IN FOCUS: The Ecological Research Center

Training tomorrow's ecologists

The **Ecological Research Center (ERC)** was established in 1973 as an interdisciplinary unit of The University of Memphis. Located at the University's Park Avenue Campus, the ERC has laboratory and office space in two buildings, including one dedicated to aquaculture research. Resources in Ellington Hall and Life Sciences Building on main campus also support ERC activities. Three objectives central to the mission of the ERC are to: (1) provide an academic unit within the University that disseminates critical knowledge for sustainability of natural resources in the greater Memphis metropolitan area, the mid-South, nationally and internationally; (2) prepare graduate students for successful careers in ecology and related fields and supply a workforce qualified to address the world's growing demand for ecological information; and (3) engage in unique and diverse partnerships that foster programs in ecological research to meet current and future needs in management and conservation of natural resources. A relatively new ERC initiative is **Urban Ecology** – the study of dynamic interactions between humans and the sustainability of ecological systems and natural resources. Ecological issues in urban communities are complex and solutions are confounded by economic, political, and social drivers. Diverse and interdisciplinary approaches are required to resolve urban ecology problems and to develop conservation and management plans suited to urban environments. The ERC's initiative in Urban Ecology represents an opportunity for the University of Memphis and its partners to establish a model for training a new breed of ecologist using multi-disciplinary approaches to address complex issues in Urban Ecology-related fields.

The ERC is lead by co-directors Drs. Bill Simco and Michael Kennedy who have received over 200 grants and contracts, have more than 200 scientific publications, and have given numerous presentations at regional, national and international scientific meetings. Both have served in multiple capacities for national and international professional societies and acted as reviewers for society publications and national and international programs. They have directed more than 100 Master's and Ph.D. students who are now serving in government, higher education, public schools, private industry, and the

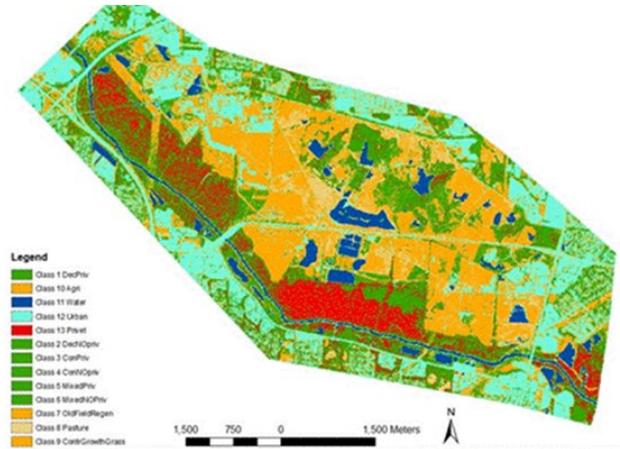


ERC-involved research: From left to right—Dr. Allan Houston (Hobart Ames Plantation) with Dr. Esra Ozdenerol (Dept. Earth Sciences) and her GIS class. Backpack shocking Nonconnah Creek with Jerry Garrett (US Geological Survey) and Dr. Simco's Ichthyology class. Thermal images of aerial and ground deer surveys. Dr. Kenney's students checking infrared-triggered cameras.

scientific community in 27 states across the country (*below, left*). To assist graduate student research endeavors, the ERC provides annual *Grants-in-Aid-of-Research*. Proposals are solicited from students in the Department of Biological Sciences conducting scientific research in any field of study related to ecology. The proposals are reviewed by a five-member panel of scientists from around the country. Since 2004, eight students have received awards to support their research. The ERC also initiated the *William H. Gutzke Seminar Series* to honor the late herpetologist and Department of Biological Sciences faculty member (1984-2004). The annual series has invited accomplished scientists to present the *Guzke Memorial Lecture*.



Where are they now? ERC graduates are working around the USA.



Shelby Farms Park—Habitat Classification Map

Partnerships are an important part of the ERC's programs. Interactions with *US Fish & Wildlife Service* and the *US Geological Survey* allow their researchers to mentor students and engage in collaborative research. Both organizations share ERC facilities on the Park Avenue Campus. Also contributing to the functions of the ERC are faculty and students within the Department of Biological Sciences, multiple departments within The University of Memphis, neighboring academic institutions, personnel from local and state agencies, as well as businesses and non-profit organizations. The ERC was selected by Shelby Farms Park Conservancy to provide a biological inventory of the animal and plant communities on the Park. Faculty and students from Arkansas State University, Christian Brothers University, Hobart Ames Plantation, and Rhodes College participated in the surveys and helped develop a management plan for natural resource sustainability in Shelby Farms Park. Collections and observations have been geo-referenced and photo-documented and represent the first comprehensive analysis of plant and animal communities in the Park. The ERC is also working with the Jackson field office of the Tennessee Department of Environment and Conservation to ensure inclusion of information relative to Lucius Burch Natural Area, a major component of the Shelby Farms Park bottomland forest. Biodiversity maps are being developed from these data in collaboration with the Spatial Analysis and Geographic Education Laboratory in the Department of Earth Sciences (*a sample is pictured above, right*). The integrated natural resources management plan developed for Shelby Farms Park will become a model for sustainability for other parks. The ERC has also assisted in developing an integrated natural resources plan from the Department of Defense's Milan Army Ammunition Plant in which they will monitor animal populations on the facility and adapt management practices to ensure sustainability.

In addition to Shelby Farms Park and Milan Army Ammunition Plant, Dr. Kennedy and his students have conducted long-term studies of game and non-game mammalian species at the University's Meeman Biological Station in Shelby Forest, Hobart Ames Plantation in Grand Junction, TN, at multiple sites across the Southeast and internationally. Faculty and students of the ERC, and colleagues at the University of Oklahoma and Auburn University, have conducted ecological studies in Colima, Mexico for more than 30 years, providing an international research experience for many of their students. Strong collaborative relationships have been established with scientists at the *Departamento de Zoología, Instituto de Biología, Universidad Nacional Autónoma de México* and their research has been published in national and international journals. Recently, three posters documenting the bats and small mammals of Mexico were produced with the support of SEMARNAT (Secretariat of the Environment and Natural Resources), the national Ministry responsible for environmental policy and legislation; a sample is pictured to the left.



Sample of "The Beneficial Bats of Colima" poster.

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Aquaculture research has been conducted at the ERC for 40 years. Some of the issues studied are factors that limit production in ponds and intensive culture, development and maintenance of intensive culture development and maintenance of intensive culture systems, and influence of genetics, reproduction, stress physiology, diseases and nutrition on growth and survival. In many urban communities, including Memphis, there are “food deserts” that have no place to purchase any groceries, much less fresh fruits and vegetables and fish and meats. As economic difficulties cause grocery stores to close or consolidate, food deserts have proliferated. A new aquaculture effort of the ERC is to integrate intensive fish culture techniques with hydroponics to develop modular systems that could be established in food deserts to provide locally produced food for Memphis communities. The ERC is collaborating with Sky Farms and partial funding for this effort has been provided by Unistar-Sparko Computers, Inc.



Aquaculture Lab and intensive fish culture systems

It fosters research, teaching, and service activities of the University as they relate to ecology and conservation issues. It is a resource for research and information. It provides a framework from which multidisciplinary and multi-institutional investigators can collaborate and seek solutions to ecological problems. It conducts and directs research activities and mentors students for successful careers in the workplace. It fosters interdisciplinary research and teaching. It strengthens community linkages and assists stakeholders in planning and development of ecological projects. It obtains external funding to support its programs. Overall, it provides the University with a unit that can be a force in meeting the ecological challenges of higher education during the 21st Century (the Ecological Age).

Questions concerning the ERC should be directed to the co-Directors Dr. Michael L. Kennedy, mlkennedy@memphis.edu (901 678-2597) and Dr. Bill Simco bsimco@memphis.edu (901 678-2594) or the Program Director Dr. Cheryl Goudie cgoudie@memphis.edu (901 678-2605). For additional information, visit the ERC website www.memphis.edu/erc

So what does the ERC do? It fosters research, teaching, and service activities of the University as they relate to ecology and conservation issues. It is a resource for research and information. It provides a framework from which multidisciplinary and multi-institutional investigators can collaborate and seek solutions to ecological problems. It conducts and directs research activities and mentors students for successful careers in the workplace. It fosters interdisciplinary research and teaching. It strengthens community linkages and assists stakeholders in planning and development of ecological projects. It obtains external funding to support its programs. Overall, it provides the University with a unit that can be a force in meeting the ecological challenges of higher education during the 21st Century (the Ecological Age).

FACULTY FOCUS: Tracking Florida Scrub-Jays from Egg to Death

Twenty years of work on the Florida scrub-jay population has yielded numerous surprises to Dr. Stephan Schoech

Florida Scrub-Jays (*Aphelocoma coerulescens*) are one of the few cooperative breeding birds in North America and the only bird species endemic to Florida. Cooperative breeding, a relatively rare occurrence in birds (by most estimates less than 5% of all bird species), is characterized by young, non-breeding birds contributing to the care of the young and helping the breeding pair defend their territory.



Dr. Stephan Schoech, Professor of Biological Sciences, has been studying these birds for more than 20 years, and oversees a banded population of over 60 breeding pairs at the Archbold Biological Station in Lake Placid, FL.

One unique aspect to Dr. Schoech’s research is that he knows every individual and its extended family in the study population. As Dr. Schoech says, “We know everything about everyone. This means that we don’t have to estimate fitness, we actually *measure* it.” While there are occasional

immigrants, the resident population does not disperse. The birds aggressively defend their territories and are born and die within 1 square kilometer. Dr. Schoech’s interest in these birds started in graduate school when he wondered how the non-breeding helpers delay their own reproductive efforts to help a breeding pair raise offspring. In an early study, Dr. Schoech discovered the helpers were not stressed since their levels of the stress hormone corticosterone were not elevated. In addition, the helpers were not developmentally delayed although the male helpers did have lower levels for testosterone, which could explain their lack of reproductive activity.

Scrub-jays breed between March and May, but in 1992, Dr. Schoech noticed that the breeding season was very late and in the following year, the birds had their earliest breeding season on record. In scrub-jays, early is better as there are fewer predators and if the birds lose a clutch they can re-nest. Dr. Schoech reasoned that food availability might be an important regulator of reproductive behavior. In fact, food supplementation increases all reproductive behavior as described in the highly cited article *Food supplementation: a tool to increase reproductive output? A case*

Study in the Threatened Florida Scrub-jay (Biological Conservation 141:162-173, 2008). Not surprisingly, good food is better for the scrub-jays than junk food. Dr. Schoech continues to assess the impact of feeding on reproductive behaviors using PIT (Passive Integrated Transponder) tags and RadioFrequency Identification-enabled (RFID) Smart Feeders to provide food supplementation to individuals.



Scrub-jays are relatively long-lived birds (up to 12 years) and with age comes a few surprises. Recent studies from the lab show that immune function increases with age and that older birds have the most robust immune systems. However, this reflected the loss of individuals with weaker immune systems rather than an age-dependent increase in immune function (Wilcoxon *et al.*, *Behav Ecol Sociobiol* 64:1527–1535, 2010). Another “benefit” of being an older scrub-jay is the diminution of damage from reactive oxygen species (ROS). Antioxidants such as vitamin C and vitamin E as well as enzymes like catalase and superoxide dismutase combat the effects of ROS, but as organisms age, the production of anti-oxidants declines. In scrub-jays, elevations in oxidative damage levels during the pre-breeding period lowers reproductive effort, a response that can be reversed by feeding the birds antioxidants. However, like immune function, oxidative damage appears to decline with

age, providing another example of survival of the fittest (R. Heiss, unpublished data).

Perhaps the most exciting development in Dr. Schoech’s work is the recent finding that a nestling’s plasma corticosterone level ‘predicts’ that individual’s behavioral phenotype or *personality*. Michelle Rensel’s dissertation research on nestling developmental physiology combined with former post doc Eli Bridge’s interest in epigenetic effects of perinatal corticosterone exposure led Dr. Bridge to use a suite of behavioral tests to characterize birds on a timid-to-bold continuum. When relating the personality of approximately 8-month-old jays back to their corticosterone levels at 11 days-of-age Dr. Schoech and his colleagues were amazed to find strength of the relationship ($R^2 = 0.84$; see Schoech *et al.*, *Gen. Comp. Endocrinol.*163:201-207, 2009). In large part, this finding was key in the current NSF grant and further exploration is currently underway.

Using techniques from behavioral ecology, environmental physiology, comparative endocrinology, and immunology, Dr. Schoech’s long-term field studies of cooperatively breeding Florida Scrub-Jays have provided considerable insight into the reproductive physiology and behavior of this species. Dr. Schoech has been supported by grants from the National Science Foundation, and the contributions of graduate students past (Drs. Raoul Boughton, Travis Wilcoxon, and Michelle Rensel and Gina Morgan, M.S.) and present (Rebecca Heiss, Sara Bebus, Emily Elderbrock and Blake Jones), post-docs (Drs. Tom Small, Eli Bridge, James Reynolds) and collaborators (Dr. Reed Bowman, Archbold Biological Station).

Dr. Schoech is a member of the American Ornithologists’ Union, Animal Behavior Society, Association of Field Ornithologists, British Ornithologists Union, Cooper Ornithological Society, International Society for Behavioral Ecology, Sigma Xi, Society for Behavioral Neuroendocrinology, Society for Integrative and Comparative Biology, Tennessee Ornithological Society, and Wilson Ornithological Society and is a Fellow of the AOU and International Ornithological Union. Learn more about the work in the [Schoech lab](#) and visit the [Archbold Biological Station](#)



Dr. Schoech’s pictures of other interesting birds. From left to right the Amazon Kingfisher (female), the Blue-fronted Parrot, and the Burrowing Owl (juvenile)

FACULTY NEWS: Awards, Invited Talks, Review Panels, Presentations

AWARDS

CAS Early Career Research Award

At the annual August faculty meeting of the CAS, **Dr. Andrew Liu** received the Early Career Research Award (ECRA). This award is given to a select group of faculty



members who are in the early stages of developing their research programs. As noted on the CAS website, "In addition to an impressive record of publications in top-ranked peer-reviewed journals such as *Cell* and *Journal of Biological Chemistry*, since coming to the University of Memphis

Dr. Liu has received a National Science Foundation grant for over a half a million dollars to support his research on circadian rhythms in mammals."

Service Awards: Several Biological Sciences faculty were recognized for their service to the University of Memphis

10 years: Ramin Homayouni, Matthew Parris, and Steven Schwartzbach; **35 years:** Lewis Coons and T. Kent Gartner

45 years: Martha Brown and Bill Simco



Pictured from top left: Dr. Ramin Homayouni, Dr. Matthew Parris, Dr. Steven Schwartzbach. From bottom left Dr. Lewis Coons, Dr. T. Kent Gartner and Dr. Bill Simco. Not pictured; Dr. Martha Brown.

Highly Cited Paper Award

On October 8, 2011 **Dr. Stephan Schoech** received a Highly Cited Author citation from Biological Conservation 2008 - 2011 for Schoech, S. J., E. S. Bridge, R. K. Boughton, S. J.

Reynolds, J. W. Atwell, and R. Bowman. 2008. Food supplementation: a tool to increase reproductive output? A case study in the Threatened Florida Scrub-Jay. *Biological Conservation* 141:162-173.

GUEST EDITOR

Dr. Michael Ferkin was a guest editor for a Special Issue on animal cognition for *Current Zoology* (volume 57 issue 4) This issue about animal cognition included 13 peer-reviewed articles, including papers from the laboratories of Dr. Ferkin and **Dr. Stephan Schoech**. *Current Zoology* is an open access journal without any processing fee or publication charges. Dr. Ferkin is a member of the editorial board for *Current Zoology*.

INVITED TALKS

Dr. Thomas Sutter gave several invited talks around the country. At the National Toxicology Program, NIEHS, he presented a talk entitled *Methods for Assigning Structure Activity to Genome-Chemical Relationships*, February 25, 2011, at Research Triangle Park, NC. On June 16, 2011 he spoke on *The Effects of Dioxin on Epidermal Barrier Formation* at University of Rochester Medical Center, Department of Environmental Medicine in Rochester, NY. On August 23, 2011, he presented a talk entitled *The Effects of Dioxin on Epidermal Barrier Formation*, Dioxin 2011 Session on Mechanism of Action Toxicity, Brussels, Belgium.

Dr. Stephan Schoech presented *Birds of Brasil* to the Memphis Chapter of the Tennessee Ornithological Society (TOS) on October 19, 2011, The Memphis Chapter has been affiliated with TOS since 1929.

Dr. David Freeman traveled to Mississippi State University on October 21, 2011 to present a seminar to the Department of Biological Sciences entitled *Adapting to life in the temperate zone: from gene expression to hormones & behavior*. He also visited the Department of Biology at the University of Mississippi on October 28, 2011 to present a talk entitled *Seasonal regulation of aggressive behavior: From gene expression to hormones and behavior*.

On November 16, 2011, **Dr. Michael Ferkin** presented a talk entitled *Decision Making in Voles* to the Cognitive Science Group at the FedEx Institute of Technology's Institute of Intelligent Design at the University of Memphis.

FACULTY NEWS: Awards, Invited Talks, Review Panels, Presentations

REVIEW PANELS

Dr. Thomas Sutter served on several review panels including NIH, Special Emphasis Panel Study Section, Outstanding New Environmental Sciences (ONES) Awards, ZES1 TN-J (R0), Research Triangle Park, NC February 24, 2011. NIH, NIEHS, Special Emphasis Panel Study Section, Superfund Hazardous Substance Research and Training Program (P42), ZES1-JAB-J-SF, Research Triangle Park, NC, October 11-12, 2011.

MEETINGS

Dr. Charles Biggers attended the 25th Annual Human Anatomy and Physiology Society Conference in Victoria, British Columbia in May, 2011.

Dr. Thomas Sutter was a Session Chair at the Gordon Research Conference on Hormone Action in Development and Cancer, "Session on Hormone Metabolism and Cancer Risk," Bryant University, August 1, 2011, Smithfield, RI

GRADUATE STUDENT NEWS: Defenses, Degrees, Awards, Presentations

DEFENSES AND DEGREES



On June 9, 2011 **Mariah Kathryn Benesh** defended her Master's thesis entitled *Does Seasonal Rainfall Act as a Molt Constraint in African Sunbirds? The Role of Climate in the Adaptation and Evolution of Delayed Plumage Maturation*. Ms Benesh's thesis work was performed under the joint direction of Dr. Matthew Paris, University of Memphis and Dr. Gary Voelker, Department of Wildlife and Fisheries Sciences, Texas A&M University. She is now an Education Programmer at the National Civil Rights Museum in Memphis, Tennessee.



Naby Yaya Sankhon defended his dissertation entitled *Cistronic Stop Signal Ratio of Mitochondrial Genes Suggests Multiple Waves of Human Migrations in and out of Africa* on July 8, 2011. Dr. Sankhon performed his dissertation work with Dr. Tit-Yee Wong and is now an Adjunct Faculty member in the Department of Natural Sciences at the Mid-South Community College in West Memphis, AR.

Diane Michelle Wilkes-Martin finished her Master's degree requirements and received her Masters in Biology in May 2011. Ms Wilkes-Martin did her graduate work with Dr. Judy Cole and Dr. Andy Kouba of the Memphis Zoo and is now Lab Assistant for the Upper School Science Department at classes at *the Hutchinson School* in Memphis.

Gopi Gadupudi defended his Master's thesis *Evidence for Genotoxicity of 3-hydroxyanthranilic acid but not anthranilic acid in the presence of a metal cofactor Cu²⁺ in vitro* on July 13, 2011. Mr. Gadupudi, who did his thesis work with Dr. King-Thom Chung, is now pursuing a Ph.D. at the University of Iowa, Iowa City in the Interdisciplinary Human Toxicology program.

On July 20, 2011 **Erica Hessen Vecchio** successfully defended her Master's thesis entitled *An assessment of differential susceptibility of raccoons (*Procyon lotor*) to capture in live traps in Western Tennessee*. Ms. Vecchiodid her thesis work with Dr. Michael Kennedy.

In August 2011, **Kelsey Beno** and **Sallye Hartmann** completes their requirements for a Masters degree in Biology with Dr. Thomas Sutter. Ms Beno is now teaching in the Memphis City Schools and Ms Hartmann is in medical school at LSU Health Science Center-Shreveport. **Deniz Chen** also completed his Masters degree in August 2011, doing his graduate work with Dr. Randall Bayer.

Daniel Wolcott, who performed his Master's work with Dr. Michael Kennedy, defended his thesis on October 3, 2011. The title of Mr. Wolcott's presentation was *Population Density of the Virginia Opossum (*Didelphis virginiana*) and Associations of Occurrence and Density with Selected Habitat Variables*. Dan is now at Texas State University in San Marcos, TX pursuing a Ph.D. in the laboratory of Dr. Floyd Weckerly.

Rekha Bhaskarabhatla defended her Master's thesis entitled *Binning Metagenomic Data by CSSR* on October 28, 2011. Ms Bhaskarabhatla, did her thesis work with Dr. Tit-Yee Wang.

GRADUATE STUDENT NEWS: Defenses, Degrees, Awards, Presentations

DEFENSES AND DEGREES, continued...



Nhu Quynh T. Tran who performed her doctoral research with Dr. Thomas Sutter, defended her dissertation entitled *EGFR Regulation of Epidermal Barrier Function* on November 9, 2011. Dr. Tran also holds a Masters in Statistics and a Masters in Bioinformatics from the University of Memphis.



Ashlee Anne Vaughn defended her doctoral dissertation entitled *Sperm Allocation and Sociosexual Behavior in Meadow Voles* on November 10, 2011. Dr. Vaughn did her doctoral research with Dr. Michael Ferkin.

Justin James Geise, who performed his Masters work with Dr. S. Reza Pezeshki, defended his thesis entitled *The Effects of Habitat Fragmentation on Arthropod Biodiversity in Native Canebrakes* on Friday November 11, 2011.

Sahitya Emmadishetti defended her Master's thesis entitled *Optimization Studies for PHB and Biomass Production in Azotobacter vinelandii UWD* on November 16, 2011. Ms. Emmadishetti did her thesis work with Dr. Tit-Yee Wang.

GRADUATE STUDENT ASSOCIATION FORMED

The Biological Sciences Graduate Student Association (BioGSA) is a new Recognized Student Organization at the University of Memphis. The objectives of the BioGSA are to create a culture of engagement among graduate students in the Department of Biological Sciences and to promote their interests. The Founding Executive Board is



Pictured: Lyndsay Saunders, Forrest Brem, Nickolas Hobbs, Christian Vlautin, Melissa Koontz and Dr. Duane McKenna

comprised of the following officers: President – **Lyndsay Saunders**, Vice President – **Christian Vlautin**, Graduate Student Representative – **Forrest Brem**, Treasurer – **Melissa Koontz**, Secretary – **Nicholas Hobbs**. **Dr. Duane McKenna** is the organization's faculty advisor. In its first semester, the BioGSA has held a Fall Mixer, held several Tigers Football tailgating events, participated in intramural sports teams as the Darwin Fighting Finches, and are forming a peer review board for manuscript preparation, with more events and opportunities for participation planned. For more information or suggestions, please email biogsa@memphis.edu.

AWARDS

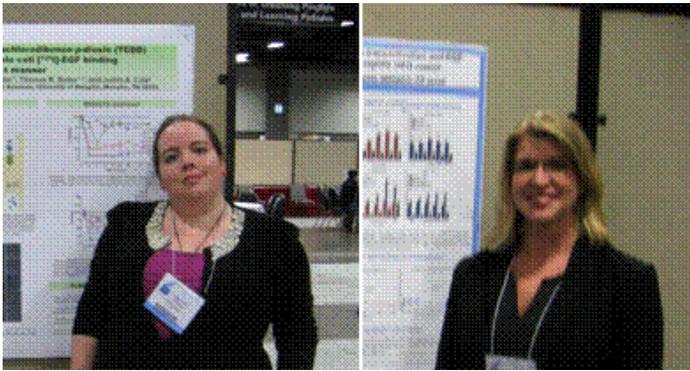
Rebecca Heiss, a Ph.D. candidate in Dr. Stephan Schoech's lab received an American Ornithologists' Union Presentation Award for excellence in the rigor and quality of her scientific paper *Oxidative stress and trade-offs in the cooperatively breeding Florida Scrub-Jay (Aphelocoma coerulescens)* at the 129th meeting in Jacksonville FL from July 24-29, 2011.

PRESENTATIONS

Melissa Koontz presented *Greenhouse study of nutrient and growth responses of a ditch plant, Leersia oryzoides (rice cutgrass), to varying degrees of soil saturation and water nitrogen concentration* to the Society of Wetland Scientists – South Central Chapter annual meeting October 2010 in Lafayette, LA. She received a student travel grant to attend this meeting. She also presented this work at 96th *Ecological Society of America Annual Meeting*, August 7-12, Austin, TX.



PRESENTATIONS, continued...



Pictured: **Christina Campion** and **Mellessa Miller**

Christina Campion and **Mellessa Miller** presented posters at Experimental Biology 2011 (EB2011) April 9-13 in Washington, DC. Christie, a Ph.D. candidate in Dr. Judy Cole's lab presented *Epidermal growth factor (EGF), 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) and calcium (Ca²⁺) induce the loss of whole cell [¹²⁵I]-EGF binding is a temporally distinct manner*. Lisa, a Master's student in Dr. Cole's lab presented *The role of the Na⁺/H⁺ regulatory factor (NHERF) in EGF receptor (EGFR) transactivation and EGF-induced extracellular signal regulated kinase (ERK) activity in NHERF-deficient and -replete OKH clones*.

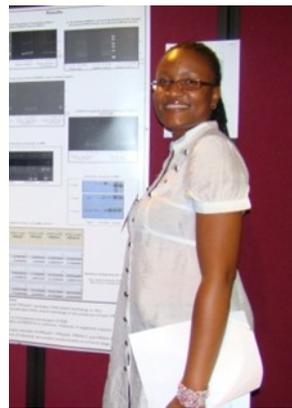
Sanjoy Khan, a Ph.D. candidate in Dr. Andrew Lui's lab, presented a poster entitled *Differential function of CRY1 and CRY2 in the mammalian clock: Genetic and Biochemical dissection* at the 2011 Rhythms In the South Eastern Region (RISER) Meeting held at Vanderbilt University, Nashville, TN, May 14-15. Sanjoy received a travel grant from the Department to attend this meeting.

Shane Hanlon presented a talk entitled *Interactive Effects of the Fungicide Thiophanate Methyl and Batrachochytrium dendrobatidis in Culture and on Southern Leopard Frogs (Lithobates sphenoccephalus)* at the 54th Annual Meeting of the Society for the Study of Amphibians and Reptiles, held July 6-11 in Minneapolis, MN. Shane was awarded travel funds from the *Student Government Association* for this trip. He went to Arizona State University November 11-13th to

present a talk entitled *Pieces of the puzzle: testing the interactions between a fungicide and Batrachochytrium dendrobatidis* at the Integrated Research Challenges in Environmental Biology. Shane is a Ph.D. candidate in Dr. Matthew Paris' laboratory.

Nicholas Hobbs presented a poster entitled *Reproductive state of female voles affects male's response to same- and mixed-sex over-marks* at the 48th Annual Meeting of the Animal Behavior Society, held in Bloomington, IN from July 25th-30th, 2011. Nick is a Ph.D. candidate in Dr. Michael Ferkin's laboratory and received a GSA travel award to attend this meeting.

Lilian Ogari a Ph.D. candidate in Dr. Carlos Estrano's lab presented a poster entitled *Complex Mitochondria Targeting Sequences from Higher Eukaryotes not Recognized by Giardia Mitosome Protein Transport Machinery* at the 22nd Annual Molecular Parasitology at the Woods Hole Marine Biological Laboratories, Woods Hole, MA, September 11-15, 2011.



Lilian was awarded travel funds from the College of Arts and Sciences, Student Government Association and the Department of Biological Sciences.

Lyndsay Saunders a Ph.D. student with Dr. Reza Pezeshki attended the Society of Wetland Scientists South Central Chapter Fall Meeting, October 20 – 22, Lafayette, LA where she presented a paper entitled *Mortality in Two Ditch Species Exposed to Root-Zone Glyphosate*. Lyndsay received a travel award from the Society to travel to the meeting.

Sarnai Ghosal, a Ph.D. candidate in Dr. Ramin Homayouni's lab presented a poster entitled *Gene network analysis reveals insights into the function of APP interacting mitochondrial protein NIPSNAP1* at the 41st annual meeting of Society for Neuroscience in Washington, DC, November 12-16, 2011. Sarani received a travel award from the Department to attend this meeting.



GRADUATE ALUMNI NEWS: Where are they now?



Pictured : Dr. Lockey, Dr. Dubray-Benstein, Dr. Ourth, and Dr. Chung.

The stars aligned over Memphis this year, as three of **Dr. Donald Ourth's** former graduate students, **Dr. Tim Lockey**, **Dr. Barbara Dubray-Benstein** and **Dr. K.T. Chung** are currently in Memphis. Dr. Lockey is the manager of Therapeutics Production and Quality for the Children's cGMP (Current Good Manufacturing Processes) Facility at St. Jude Children's Research Hospital. St. Jude is one of the few pediatric cancer research center to have an on-site GMP facility to research and produce highly specialized medicines and vaccines. Dr. Dubray-Benstein is Professor and Chair of the Department of Clinical Laboratory Sciences, UTHSC Memphis and the Director of the Cytotechnology Program. Dr. Chung is Professor and Chair of the Department of Biotechnology and Microbiology and Director of Medical Technology Program at Dong Eui University, Pusan, Korea. Dr. Chung is on sabbatical leave at St. Jude Children's Research Hospital.

UNDERGRADUATE NEWS: This year's scholarship winners

BIOLOGY SCHOLARSHIPS

The Botany Scholarship is given to a Biology Major with interests in Botany. This year's winner is:

Caroline Melton

The Edward T. Browne Scholarship is given to a sophomore, junior or senior Biology Major with a minimum GPA of 3.25 or a demonstrated potential for academic distinction in Biology. This year's recipient is:

Tiffany Hoang

The Goldye Feinstone Scholarship is given to a sophomore, junior or senior Biology Major with preference given to a student with interest in microbiology or molecular cell sciences. Students must have a GPA of 3.25, academic and research achievements, potential for professional success and leadership ability. This year we had two winners.

Christian McCandless & Stephanie Sandor

The Dr. Virginia M. and Dan Norton Scholarship is given to a Junior or Senior Biology Major with an expressed interest in a career in Health Science. This year's recipient is:

Antedra Finger

The Priscilla Rushton Scholarship is given to a Sophomore, Junior or Senior with a GPS of 3.25 or the potential for academic distinction in Biology, leadership ability and strong potentials for profession success. This year's winner is:

Ashley Whitehead

Congratulations to all our scholarship winners!!!

Information on the Department of Biological Sciences Scholarship descriptions and the application form can be found at www.memphis.edu/biology/UnderGrad/scholar.php



SELECTED PUBLICATIONS

BOOKS AND BOOK CHAPTERS

The 2nd Edition of **Dr. Charles Biggers'** book entitled *Great Minds in the Life Sciences* was published this fall by Kendall Hunt Publishing Company, Dubuque, IA

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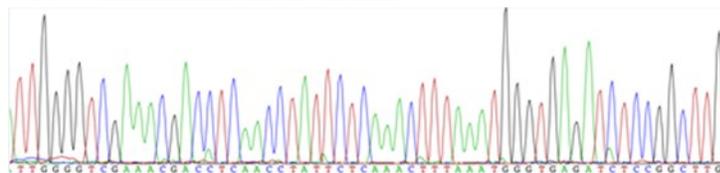
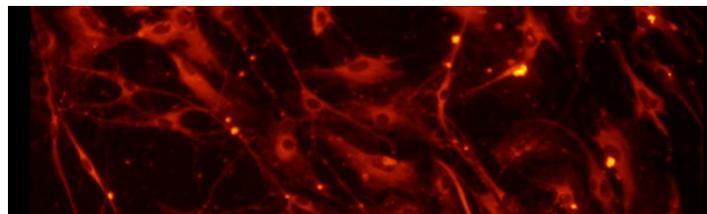
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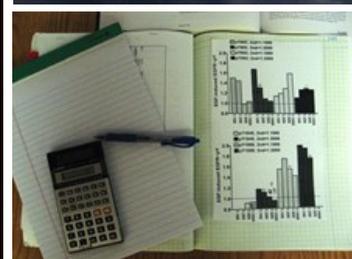
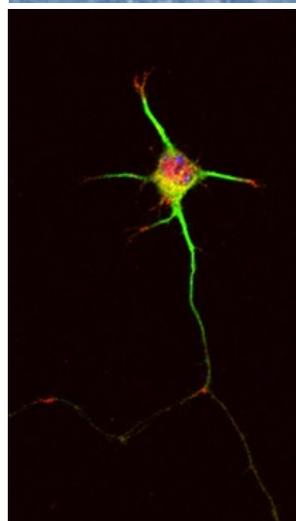
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