

Biology@Memphis

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Department of Biological Sciences

creating leaders in research, education and service

College of Arts & Sciences

THE UNIVERSITY OF
MEMPHIS
Dreamers. Thinkers. Doers.



2 IN FOCUS: The Biology Advising and Resource Center Under the direction of Dr. Anna Bess Sorin, The Biology Advising and Resource Center guides undergraduates along the path to graduation.

3 FACULTY FOCUS: The Department welcomes Dr. Amy Abell

5 THE WILLIAM H.N. GUTZKE MEMORIAL SEMINAR: Dr. Daniel Ware presented Environmental and maternal effects on embryo development in reptiles

6 FACULTY NEWS: Invited Talks, Trips, Awards and Outreach



7 GRADUATE STUDENT NEWS: Defenses, Degrees, Awards and Presentations Read about the successes of our graduate students

10 UNDERGRADUATE NEWS: Meet an alumna starting her career, the students receiving the Department's Awards & scholarships and read about undergraduate research

12 SELECTED PUBLICATIONS: Another productive period for faculty and students

13 NEXT ISSUE, LINKS, CREDITS: Take sneak peek at what's in next semester's issue, plus a list of links and credit for content



From the Communications Committee

We hope you enjoy the Spring issue of **Biology@Memphis**, the Department of Biological Sciences Newsletter. In this issue, we talk with Dr. Anna Bess Sorin, Director of Undergraduate Advising and Coordinator of the Biology Advising and Resource Center (BARC) and welcome Dr. Amy Abell who uses stem cells to define the signaling/gene expression networks controlling the conversion of stationary epithelial stem cells to motile mesenchymal cells. Dr. Dan Warner presented this year's William H. N. Gutzke Memorial Seminar and the Ecological Research Center is participating in a new environmental education opportunity for students in the Mid-South. Our graduate students continue to win awards and present their research at local, national and international meetings, successfully defend their theses and dissertations and move on to new career challenges while our undergraduates participate

in faculty research and receives honors for their academic successes. Remember, you can keep up with the Department by following us on [Facebook](#) and let us know what you're doing by emailing your news to us at bionews@memphis.edu



IN FOCUS: The Biology Advising and Resource Center

Under the direction of Dr. Anna Bess Sorin, The Biology Advising and Resource Center (BARC) guides undergraduates along the path to graduation.



Dr. Anna Bess Sorin

In the five years since the BARC opened, hundreds of students have graduated with a BS in Biology and hundreds more are working on a Biology major or minor. What do they all have in common (besides a love of Biology)? They have spent time with Dr. Anna Bess Sorin and Mr. Steve German in the friendly confines of the BARC. As graduation approached, we sat down and talked with Dr. Sorin to get her thoughts on the role the BARC plays in the educational experience of Biology majors at the University of Memphis.

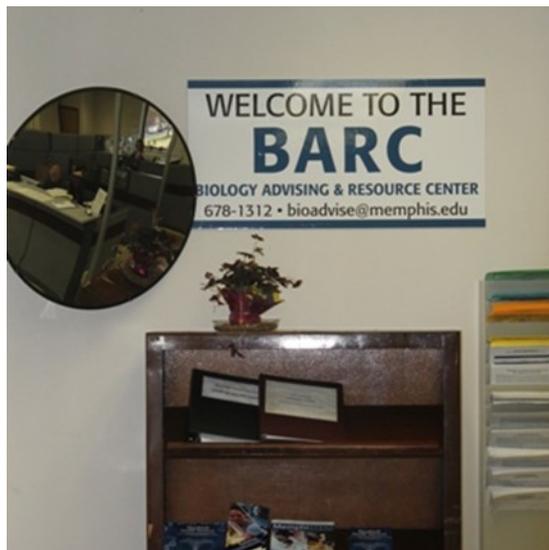
Dr. Sorin came to the University of Memphis in 2002 to take a one year teaching position and do post-doctoral work with several faculty members including then chair Dr. Jerry Wolfe. She then accepted a Visiting Assistant Professorship to teach two sections of BIOL 1010 - Introduction to Biology, the Department's introductory course for non-majors. When asked how she approaches teaching Biology to non-majors, she replied that

she tries to show them how important science is in their everyday life. To achieve this goal, she might survey to class to see how many students know someone with cancer and then talk about what causes cancer. She has shown her class the movie *Supersize Me*, a documentary on the consequences of eating fast food every meal for 30 days - and then asks her students why people would eat such meals. Not surprisingly, Dr. Sorin has won awards for her teaching including *The Thomas W. Briggs Foundation's Excellence in Teaching award* which recognizes outstanding educators for their positive impact on undergraduate teaching.

In 2008, when it became clear that that undergraduate advising in the Department was overwhelming the faculty, Department Chair Dr. Randall Bayer and Chair of the Undergraduate Studies committee Dr. Barbara Taller requested a position for a faculty member who would also serve as the coordinator of a centrally located advising facility. This request led to the establishment of the BARC and the selection of Dr. Sorin as



Mr. Stephen German



its coordinator. The busy seasons for BARC advising are the six or so weeks before Fall and Spring registration as well as the two weeks before and after terms start. During those times, all biology majors come through the BARC to receive assistance with registration and course scheduling, obtain permits for classes and help in career planning. In addition, students can drop in to find information on internships and undergraduate research opportunities in the department and in the community at places such as St Jude Children's Research Hospital and The Memphis Zoo.

The BARC publicizes departmental seminars and special events and provides information on department scholarships and STEM clubs (Science Technology Engineering and Mathematics). Dr. Sorin and Mr. German work with the Pre-Health committee to make sure students take courses that will help prepare them for medical school and provide information for students preparing applications for Medical, Pharmacy, Veterinary and Graduate School. Dr. Sorin also helps students find Semester Abroad opportunities and makes sure their credits

transfer back to the University of Memphis.

On the surface, it might seem easy to guide students on the path to a timely graduation; however, students often come to the University of Memphis needing more than a list of courses to take. Some students struggle to mix coursework with college life and the BARC staff directs them to the resources they need to succeed including tutors, student disability services, and counseling. Student-athletes must balance their athletic and academic commitments and the BARC staff work with the Athletic Department to plan their academic careers. Non-degree students often come to the University to take courses that will prepare them for professional school; they can come to the BARC for insights (and while they're taking all those courses, why get a second Bachelor's degree as a bonus?). We asked Dr. Sorin what she enjoys most about the work she and Mr. German do in the BARC. She replied "helping students realize and achieve their goals, knowing that students appreciate a place where they can come and get answers, and that the BARC makes a significant contribution to getting students finished in a timely fashion." For her efforts as an advisor, Dr. Sorin received *the Distinguished Faculty Advising Award* in 2011.

Visit the [BARC website](#) for more information and drop into the Center in Life Sciences 237.

FACULTY FOCUS: The Department welcomes Dr. Amy Abell



Dr. Amy Abell

In January of this year, Dr. Amy Abell joined the Department of Biological Sciences as an Assistant Professor. Dr. Abell also has a joint appointment in the Department of Biomedical Engineering. Dr. Abell received her Bachelor of Science Degree from the University of California-Davis and did her Ph.D. work with Dr. Deborah Segaloff in the Department of Physiology and Biophysics at the University of Iowa.

After completing her Ph.D., Dr. Abell went on to do a post-doctoral fellowship with Dr. Gary Johnson, then at the University of Colorado Health Science Center. Dr. Abell assumed the position of Research Assistant Professor and continued to work with Dr. Johnson when he assumed the Chair of Pharmacology at the

University of North Carolina. Dr. Abell's work at UNC, which will continue here at the University of Memphis, utilized stem cells to define the signaling and gene expression networks that control the conversion of stationary epithelial stem cells to motile mesenchymal cells. Stem cells are unspecialized cells that can self-renew for long periods of time and given the correct environmental signals they can differentiate into diverse specialized cells. These environmental signals include intracellular events controlled by changes in gene expression and extracellular cues produced by hormones, growth factors, and contact with other cells. Epithelial to mesenchymal transition (EMT) is a key biological process during normal development where epithelial stem cells lose their polarity and cell-to-cell adhesiveness and gain migratory and invasive properties, which allow the movement of cells through the extracellular matrix into neighboring tissues. The change from epithelial to mesenchymal cells is associated with substantial alterations in cell morphology, gene expression and phenotype. Interestingly, when

EMT “goes wrong” it can produce a number of pathologies including organ fibrosis (production of excess fibrous connective tissue in an organ or tissue) and cancer metastasis (the spread of cancer from the site of origin to another organ). One goal of Dr. Abell’s research is to identify master regulators of EMT and the reverse process MET, including identifying the signals and genes that determine if a cell is epithelial or mesenchymal and the events that drive cells in one direction or another. Identifying these events can then be used to design new strategies for regenerative medicine and the treatment of EMT-related pathologies. She is also interested epigenetic regulation of EMT where changes in gene expression are caused by mechanisms such as DNA methylation and histone modifications. Dr. Abell is particularly interested in the signaling networks controlling the expression and activity of epigenetic modifiers like acetylases and deacetylases as well epigenetic regulation of gene expression important for EMT and invasiveness in primary epithelial stem cells. Dr. Abell will also serve as a resident expert on stem cell biology for members of the University

of Memphis and the Memphis research community. She will submit her first collaborative research grant in June, has enrolled her first graduate student, and recruited undergraduates to work in her lab for the next several semesters.

Read samples of Dr. Abell’s work

Trophoblast Stem Cell Maintenance by Fibroblast Growth Factor 4 Requires MEKK4 Activation of Jun N-Terminal Kinase

Molecular and Cellular Biology 29: 2748-2761, 2009.

MAP3K4/CBP-Regulated H2B Acetylation Controls Epithelial-Mesenchymal Transition in Trophoblast Stem Cells

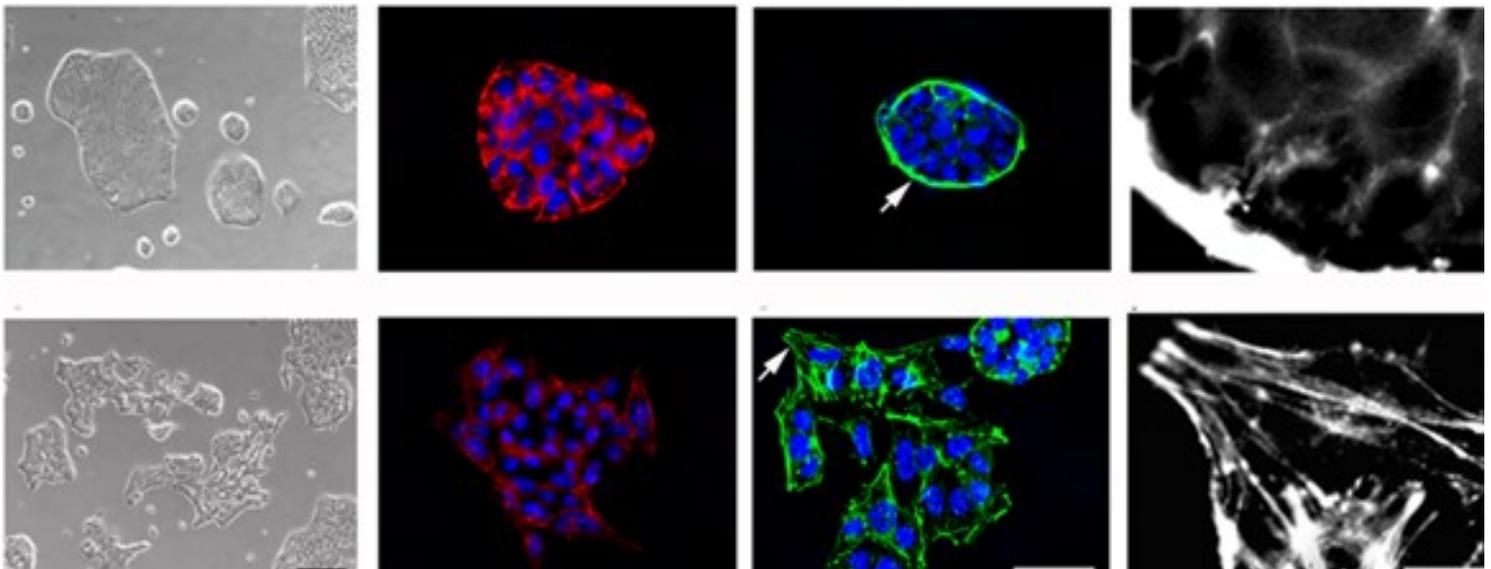
Cell Stem Cell 8: 525-537, 2011.

Tracking the intermediate stages of epithelial-mesenchymal transition in epithelial stem cells and cancer

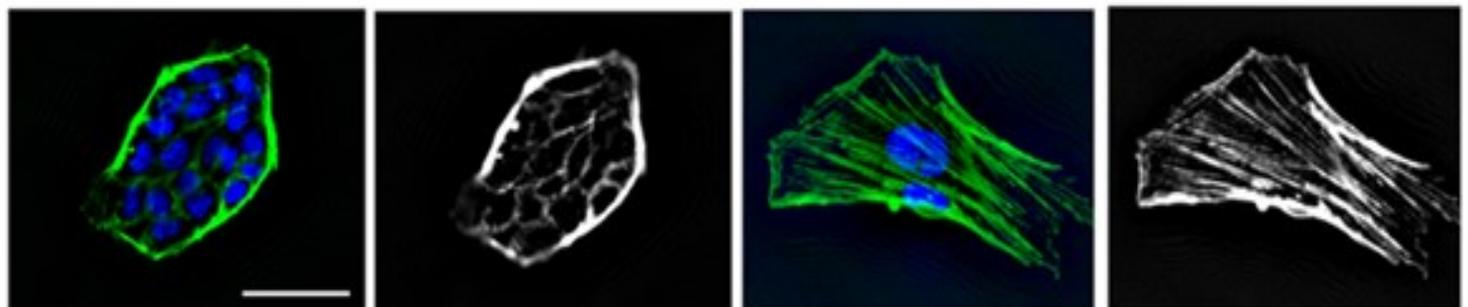
Cell Cycle 10: 2865-2873, 2011

Defining the expressed breast cancer kinome

Cell Research 22:620-623, 2012.

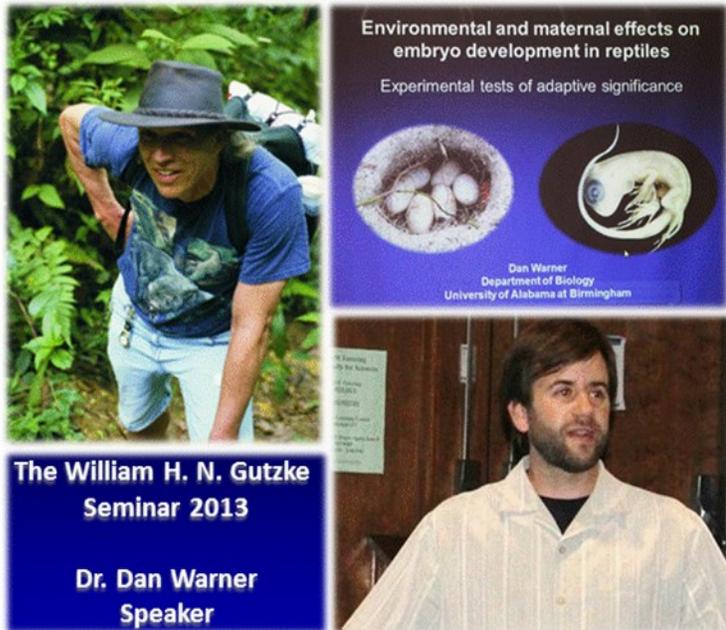


This panel shows images of wild-type, epithelial, trophoblast stem cells (top panel) and kinase-inactive MAP3K4 (KI4) stem cells in an intermediate stage of EMT. Grayscale images show phase microscopy images. Colored images show immunostaining for E-cadherin (red), nuclei (blue) and actin (green).



This panel This shows undifferentiated, wild-type, epithelial, trophoblast stem cells in left two panels and differentiated, invasive, mesenchymal trophoblasts in right two images. Actin (green) and nuclei (blue) immunostaining are shown

THE WILLIAM H.N. GUTZKE MEMORIAL SEMINAR: *Dr. Daniel Ware presented Environmental and maternal effects on embryo development in reptiles*



Dr. Daniel Warner from the Department of Biology at the University of Alabama-Birmingham presented the 8th Annual *William H.N. Gutzke Memorial Seminar* on February 21, 2012. The Gutzke Memorial Seminar was established by the Ecological Research Center in 2005 to honor the late Bill Gutzke, a well-known herpetologist and a long-term faculty member in the Department of Biology. Dr. Gutzke, who received his Ph.D. from Colorado State University and did his post-doctoral work with James Bull at the University of Texas, joined the Biology Department at Memphis State University in 1986. 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. In his tenure at the University of Memphis, he mentored four Ph.D. students, two Master's students and at least sixty undergraduates.

In his talk entitled *Environmental and maternal effects on embryo development in reptiles*, Dr. Warner described how embryonic development is affected by the surrounding environment and by the phenotype (an organism's observable characteristics) and environment of the parents (primarily the mother; see *figure, right*). Reptiles are a particularly good model as (i) they lay eggs which allows maternal provisioning to be separated from environmental effects, (ii) parental care is rare, and (iii) they lay a number of clutches per year making it easy to manipulate the maternal and developmental environment. Dr. Warner also indicated that reading a Letter to Nature by Dr. Gutzke describing the

effect of temperature on gecko sex determination gekkos (see *figure below*) sparked his interest in the effects of environment on fitness (how successful an organism is in passing on its genes). Using Jacky dragons, a lizard native to Australia, Dr. Ware described how temperature extremes not only led to the exclusive production of females, but also resulted in early hatching, larger body size, and greater reproductive success in the second generation. He went on to describe how nest moisture content and maternal nutrition affected the size and viability of offspring. Using brown anole lizards, he demonstrated that eggs from nests maintained in dry environments led to small offspring and that eggs laid by female anoles with limited access to prey were significantly smaller, due, at least in part, to a reduced yolk content.

In the last part of his talk, Dr. Warner described his cross-generational study on several populations of brown anole lizards located on islands in Florida's Intra-coastal Waterway. These islands were created when the U.S. Army Corp of Engineers dredged the Waterway. His lab has manipulated population sex ratios on several islands to assess its effects of on phenotypic selection and plans to use these islands to address critical predictions in sex-ratio theory, adaptation to variable developmental environments, and trans-generational effects of the maternal environment in the wild.

To read more Dr. Warner's work, visit his [website](#)

letters to nature

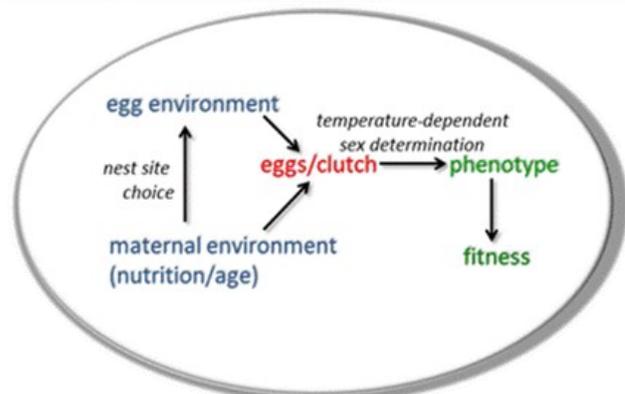
Nature 332, 832 - 834 (28 April 1988); doi:10.1038/332832a0

Embryonic temperature determines adult sexuality in a reptile

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CENTER NEWS: *The ERC contributes to environmental education*

The Ecological Research Center along with the Tennessee Achievement School District, Memphis Riverboats Incorporated, Mud Island River Parks and Museum, Riverfront Development Corporation, and the Wolf River Conservancy make up the Mid-South Outdoor Recreation and Education (MORE) Consortium. The mission of MORE is to provide underserved youth with a unique environmental, cultural and economic educational experience focusing on the Mississippi River, its watershed, its functions, and the people and animals that live along its shores and in its waters.

MORE, in conjunction with the Mississippi River Corridor-Tennessee and the ArkWings Foundation will provide outdoor learning experiences that include a working Mississippi riverboat, Mud Island River Park, Wolf River Harbor, and Mississippi River sandbars as classrooms. Beginning in the Fall of 2013, students from Gordon Science and Arts Academy and Westside Achievement Middle School will study the history, culture, science, environmental and economic issues, and occupations associated with the river, taking field trips to enhance their classroom learning.

FACULTY NEWS: *Invited Talks, Grants, Presentations, Service and Post-doctoral Fellows*

Dr. Stephan Schoech attended the Annual Meeting of the Society for Integrative and Comparative Biology January 2 -8 , 2013 where he was co-author on four talks by members of his lab. He also served as Session Chair and a Judge for student presentations for the Division of Comparative Endocrinology. Dr. Schoech also reviewed NSF proposals for the International Collaborations in Organismal Biology Program between US and Israeli Investigators and served as an external committee member on the dissertation committee of Dr. Susan DeVries at the University of Southern Mississippi.

Dr. Judy Cole received a Faculty Research Grant for her work entitled *Analyzing Biased Agonism at PTH Receptors*.

Dr. Thomas Small, a post-doctoral fellow with **Dr. Stephan Schoech**, presented Food supplementation of Florida Scrub-Jay (*Aphelocoma coerulescens*) nestlings: long-term effects on hypothalamic-pituitary-adrenal axis responsiveness. Annual meeting of the Society for Integrative and Comparative Biology, San Francisco, California January 2013.

Drs. Judy Cole, David Freeman, Michael Ferkin, Charles Lessman, Duane McKenna, Stephan Schoech and Anna Bess Sorin all served as judges for the Student Research Forum on April 1, 2013. The University of Memphis Student Research Forum is an annual event which showcases the diverse research of undergraduate and graduate students.



GRADUATE STUDENT NEWS: *Degrees and Defenses, Grants, Fellowships, Awards, Student Research Forum and Presentations*

The Department is pleased to announce the launch of graduate student individual webpages, a project initiated by Cynthia Stephens and Chris Powless to showcase our department by showing what our graduate student's projects are like. Have a look and see what our grad students are doing by visiting the [graduate student site](#)

Defenses and Degrees

Wendy Rose defended her doctoral dissertation entitled *Characterization of the Innate Immune Response in Sea Lamprey and its Suppression in Ictalurid Catfish* on December 5, 2012. Dr. Rose performed her dissertation work in the laboratory of [Dr. Donald Ourth](#).

On April 5, 2013, **Nina Poole** defended her dissertation entitled *The Global Effects of Tick Saliva on Host Cell Function* on April 5, 2013. Dr. Poole did her dissertation work under the joint direction of [Drs. Lewis Coons](#) and [Judy Cole](#).

Christian Vlautin defended his dissertation entitled *The effect of contextual variables on intraspecific interactions and space-use in meadow voles, *Microtus pennsylvanicus** on April 8, 2013. Dr. Vlautin performed his dissertation work with [Dr. Michael Ferkin](#).



From Left to right: [Dr. Wendy Rose](#), [Dr. Nina Poole](#) and [Dr. Christian Vlautin](#)

Markia Kelly and **Christopher Buckley** completed their Masters work and will graduate in May. Ms. Kelly worked with [Dr. Carlos Estrano](#) and Mr. Buckley worked with [Dr. Charles Lessman](#).

Biology Graduate Student Association

The BioGSA launched their [Facebook page](#) and elected next year's Executive Board. President: Jerad Henson, Vice President: Stephanie Haddad, Graduate Student Representative: Alex Aitken, Treasurer: Lauren Madeira and Secretary: Lyndsay Saunders



Pictured left to right: [Stephen Ferguson](#), [Shane Hanlon](#) and [Blake Jones](#)

Grants and Awards

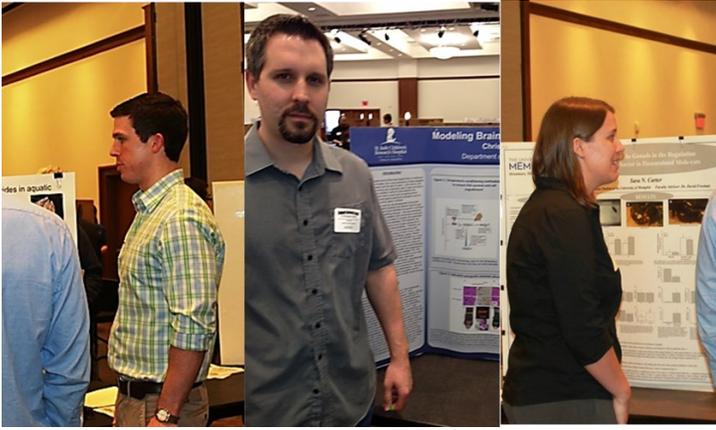
Stephen Ferguson a Ph.D. student with [Dr. Stephan Schoech](#), received a Tennessee Ornithological Society Research and Conservation Grant for his project entitled "Hormonal regulation of a female-specific vocalization in blue jays (*Cyanocitta cristata*)"

Shane Hanlon was named a University of Memphis Society Doctoral Fellow. A University of Memphis Society Doctoral Fellow must be a full-time graduate student enrolled in a doctoral degree program and must demonstrate exceptional academic achievement. A committee of faculty from across the university selected Shane from among the over 1000 doctoral students enrolled at the University of Memphis. Shane's selection is a tribute to the dedication and expertise he has shown as a scholar. Shane is a Ph.D. candidate in [Dr. Matthew Parris'](#) lab.

Blake Jones received a Grant-in-Aid-of Research from the Society for Integrative and Comparative Biology in January 2013. He also received the Aubrey Gorbman Best Oral Presentation Award at the Annual Meeting of the Society for Integrative and Comparative Biology in San Francisco, California, January 2013 and the Best Student Presentation at Annual Meeting of the Association of Field Ornithologists, Archbold Biological Station, Venus, Florida, March 2013. Blake is a Ph.D. candidate in [Dr. Stephan Schoech's](#) lab.

Student Research Forum

Hosted by the Graduate School, the University Honors Program, and the Graduate Student Association, The University of Memphis Student Research Forum is an annual event which showcases the diverse research of undergraduate and graduate students. The Research Forum provides a venue for University of Memphis students to present their research to a panel of faculty judges in their respective disciplines. This forum ena-



Pictured left to right: Shane Hanlon, Chris Eden and Sara Carter.

bles students to develop their presentation skills and present their research in a formal, supportive environment. Three graduate students from the Department of Biological Sciences won awards at the 25th Annual Student Research Forum, held on April 1, 2013. **Shane Hanlon**, a Ph.D. candidate in *Dr. Matthew Paris'* lab, won 1st place in Physical and Applied Sciences with his presentation *The mitigation of an amphibian disease by agricultural pesticides in aquatic communities*. **Christopher Eden**, a Ph.D. candidate in *Dr. Charles Lessman's* lab, won 1st place in Life and Health Sciences for his presentation *Modeling pediatric brain tumors in zebrafish*. Chris also won for Best Overall Presentation. **Sara Carter**, a Ph.D. student in *Dr. David Freeman's* lab won 2nd place in Life and Health Sciences for her presentation, *The role of the gonads in the regulation of sexual behavior in Damara-land Mole-rats*.

Presentations

Madeira LA, Houston AE, Stephenson SW, and **Kennedy ML**. Interspecific relationships of White-tailed Deer and Eastern Wild Turkey in western Tennessee. Tennessee Academy of Sciences, Nashville, TN November 2012.

Bebus SE, **Small TW**, and **Schoech SJ**. Developmental corticosterone exposure is correlated with exploratory behavior and learning flexibility in Florida scrub-jays (*Aphelocoma coerulescens*). Annual meeting of the Society for Integrative and Comparative Biology, San Francisco, California January 2013.

Elderbrock, EK, **Small TW**, and **Schoech SJ**. Effects of supplemental food and corticosterone treatment on begging and feeding behavior in Florida Scrub-Jays (*Aphelocoma coerulescens*). Annual meeting of the Society for Integrative and Comparative Biology, San Francisco, California January 2013.

Jones BC, **Bebus SE**, **Small TW**, Bateman PW, and **Schoech SJ**. Corticosterone responsiveness and be-

havioral phenotype reveal learned antipredator behavior is sex specific in Florida scrub-jays (*Aphelocoma coerulescens*). Annual meeting of the Society for Integrative and Comparative Biology, San Francisco, California January 2013.

Ferguson SM and Lynn SE. Exogenous corticosterone reduces circulating testosterone but not courtship behavior in male zebra finches (*Taeniopygia guttata*). Annual meeting of the Society for Integrative and Comparative Biology, San Francisco, CA. January 2013.

Madeira LA, Houston AE, Stephenson SW, and **Kennedy ML**. Assessing Interspecific relationships between White-tailed Deer and Eastern Wild Turkey in western Tennessee. *The Colloquium on the Conservation of Mammals* and The Southeastern Bat Diversity Network, Pikeville, TN. February 2013.

Ferguson SM, Rosvall KA, Reichard DG. Song playback elicits aggression but not testosterone or corticosterone release in male dark-eyed juncos (*Junco hyemalis*). Association of Field Ornithologists Annual Meeting. Archbold Biological Station, Venus, FL. March 2013.

Elderbrock EK, **Small TW**, and **Schoech SJ**. Effects of supplemental food and corticosterone treatment on nest behavior of Florida scrub-jays. Annual meeting of the Association of Field Ornithologists, Archbold Biological Station, Venus, Florida, March 2013.

Bebus SE, **Small TW**, **Elderbrock EK**, and **Schoech SJ**. Behavioral phenotype correlates with corticosterone levels in Florida scrub-jays (*Aphelocoma coerulescens*). Annual meeting of the Association of Field Ornithologists, Archbold Biological Station, Venus, Florida, March 2013.

Jones BC, **Bebus S**, Bateman PW, and **Schoech SJ**. Stress response correlates with learned antipredator behavior in free-living Florida scrub-jays (*Aphelocoma coerulescens*). Annual meeting of the Association of Field Ornithologists, Archbold Biological Station, Venus, Florida, March 2013.



picture by LA Madeira



pictured: Lauren Madeira and a study subject. (fawn picture courtesy of LA Maderia

Madeira LA Interspecific associations of White-tailed Deer and Eastern Wild Turkey. The Tennessee Chapter of The Wildlife Society , Buchanan, TN March 2013.

Madeira LA , Houston AE, Stephenson SW, and Michael L. **Kennedy ML**. Interspecific Association of Two Distantly Related Species (White-tailed Deer and Eastern Wild Turkey) The Southwestern Association of Naturalists, Lake Charles, LA April 2013.

UNDERGRADUATE ALUMNI NEWS

Lakeisha Chism, who graduated with a B.S. in Biology in 2009 wrote to update us on her recent achievement. On May 18, 2013 she graduated from Meharry Medical College in Nashville, TN with an M.D. degree. She will be doing her residency in Family Medicine at North Mississippi Medical Center in Tupelo, MS. Congratulations to Dr. Chism we are proud of you and your accomplishment and we wish you all the best!



Lakeisha Chism, B.S., M.D. Picture courtesy of L. Chism.



pictured: Bridget Sutton-Fisher presenting at EB2013 in Boston MA.

Poole NM, Mamidanna G, Smith RA, Coons LB, Cole JA. Prostaglandin E2 in tick saliva regulates host cell migration and cytokine profile. Experimental Biology 2013, Boston, MA, April 2013

Sutton-Fisher B, Estrano CE, Cole JA. Modeling Long-term Host Cell-Giardia lamblia Interactions in an in vitro 3D Cell Culture System Experimental Biology 2013, Boston, MA., April 2013



UNDERGRADUATE NEWS: Scholarships and Research

Winners of the Department Awards and Scholarships for 2012-2013

The Biology Faculty Award is presented to the student who has made the most significant contribution to the department during the academic year. Nominations are solicited from Biology faculty and the recipient is selected by the Biological Sciences Undergraduate Studies Committee.

Aldan Blake Daniels

The Chi Beta Phi Award is presented to the Biology Major with the highest GPA

Taylor L. Brewer

The Botany Scholarship is given to a Biology major with interests in Botany

Caroline Havrilla

The Edward T. Browne Biology Scholarship is given to a Sophomore, Junior or Senior majoring in Biology who has a GPA of at least 3.25 or the demonstrated potential for academic distinction in Biology.

Eron Raines

The Goldye Feinstone Scholarship goes to a Sopho-

more, Junior or Senior Biology major with an interest in microbiology or molecular cell sciences.

Zachary Hunt

The Dr. Virginia M. Norton and Dan Norton Scholarship given to a Junior or Senior majoring in Biology with an expressed interest in a career in Health Sciences.

Kelcey Rose

The Priscilla Rushton Scholarship goes to a Sophomore, Junior or Senior with a minimum GPA of 3.25 or the demonstrated potential for academic distinction in Biology as well as leadership ability and the strong potential for professional success

Justin Pinkston

The Omar E. Smith Ecology Scholarship is presented to a student majoring in Biology with preference given to students in Ecology. The student selected will develop an ecological research project to be conducted under the guidance of a faculty member in the Department of Biological Sciences.

Kyle Lynch



Pictured (left to right) Eron Raines, Kyle Lynch, Zachary Hunt, Dr. Bayer, Caroline Havrilla, Kelcey Rose, Blake Daniels, Justin Pinkston



Undergraduates involved in research: Dr. Lessman's spring 2013 Biology 4000 research students included (from left to right) Breanna Phillips, David Jones, Mohamed Sheriff and Stephanie Spurgat. *Pictures courtesy of C. Lessman*

Undergraduate Research

Biology Practicum independent study

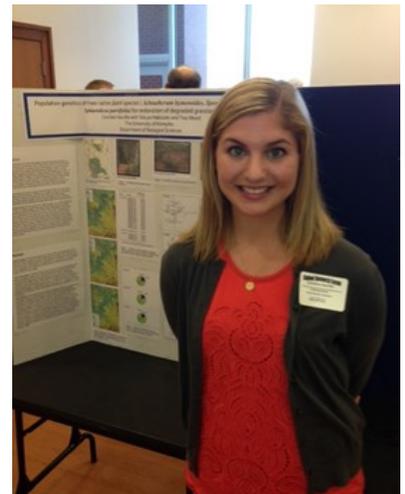
Eron Raines publicly defended his BIOL Practicum independent study entitled *Polycyclic Aromatic Hydrocarbons in the Environment* on January 25, 2013 (Fall term 2012). Mr. Raines performed his work with **Dr. Stephan Schoech** and submitted a paper entitled *Qualitative analyses of variations in poly-cyclic aromatic hydrocarbon concentrations in different soil types and depths* as result of his studies. Eron Raines also won the 2013 Memphis Herb Society scholarship. Along with his monetary award, he is receiving a Society membership for the year 2013-2014.

Biology 4000/4001: Faculty encourage students to pursue research as part of their undergraduate education. The department has two undergraduate courses that allow students to become involved in biologically related research with a faculty mentor. BIOL 4000 is a consultation, reading, and laboratory and/or field work in a selected area of biology under supervision of faculty member. BIOL 4001 is a continuation of the work begun in BIOL 4000 and consists of laboratory and/or field work; a formal paper and presentation of research results at a professional meeting or departmental seminar

is required.

Four undergraduates enrolled in BIOL 4000 with **Dr. Charles Lessman** (pictured above) to work on a project utilizing genetic crosses of casper double mutant zebrafish with the Fli-1 Green fluorescent protein (Fli-1 GFP) transgenic line. They are screening the F2 (second generation of fish) for casper -Fli-1 GFP phenotype. The casper mutant results in a transparent adult Zebrafish which allows Dr. Lessman to follow developmental changes in the fish which can be visualized by expression of the Fli-1 GFP transgene.

Caroline Havrilla (pictured left), who works with **Dr. Tak Nakazato**, presented *Landscape genetics of native plant species in Arches and Canyonlands National Park: Implications for restoration* at the 25th Annual Student Research Forum on April 1st, 2013.



Caroline Havrilla at the 2013 Student Research Forum. *Picture by C. Lessman*



SELECTED PUBLICATIONS

Blanchong JA, **Sorin AB**, Scribner KT. Genetic diversity and population structure in urban white-tailed deer. *J Wildlife Management* 77:855-862, 2013.

Cashion A, Stanfill A, Thomas F, Xu L, Sutter T, Eason J, Ensell M, **Homayouni R**. Expression levels of obesity-related genes are associated with weight change in kidney transplant recipients. *PLoS One* 8(3):e59962, 2013.

Cohen, AA, Bowman R, Boughton RK, Bridge ES, Heiss RS, **Schoech SJ**, and McGraw K. 2013. Circulating carotenoid levels are negatively associated with previous reproductive success in Florida Scrub-Jays (*Aphelocoma coerulescens*). *Canadian J Zoo* 91:64-70.

Joglekar MV, Ware J, Xu J, Fitzgerald ME, **Gartner TK**. Platelets, glycoprotein Ib-IX, and von Willebrand factor are required for FeCl₃-induced occlusive thrombus formation in the inferior vena cava of mice. *Platelets* 24:205-212, 2013.

Kennedy LH, **Sutter CH**, **Leon Carrion S**, Tran QT, Bodreddigari S, Kensicki E, Mohny RP, **Sutter TR** 2,3,7,8-Tetrachlorodibenzo-p-dioxin-mediated production of reactive oxygen species is an essential step in the mechanism of action to accelerate human keratinocyte differentiation. *Toxicol Sci.* 132(1):235-49, 2013.

LaFrentz BR, Shoemaker CA, Booth NJ, Peterson BC, **Ourth DD**. Spleen index and mannose-binding lectin levels in four channel catfish families exhibiting different susceptibilities to *Flavobacterium columnare* and *Edwardsiella ictaluri*. *J Aquat Anim Health.* 24(3):141-147, 2012.

Pierce, SC Koontz MB, **Pezeshki SR** and Kröger R. Response of *Salix nigra* [Marsh.] cuttings to horizontal asymmetry in soil saturation. *Environmental Exp Biol* 87:137-147, 2013.

Qiao S, Kim SH, Heck D, Goldowitz D, LeDoux MS, **Homayouni R**. Dab2IP GTPase activating protein regulates dendrite development and synapse number in cerebellum. *PLoS One.* 2013;8(1):e53635.

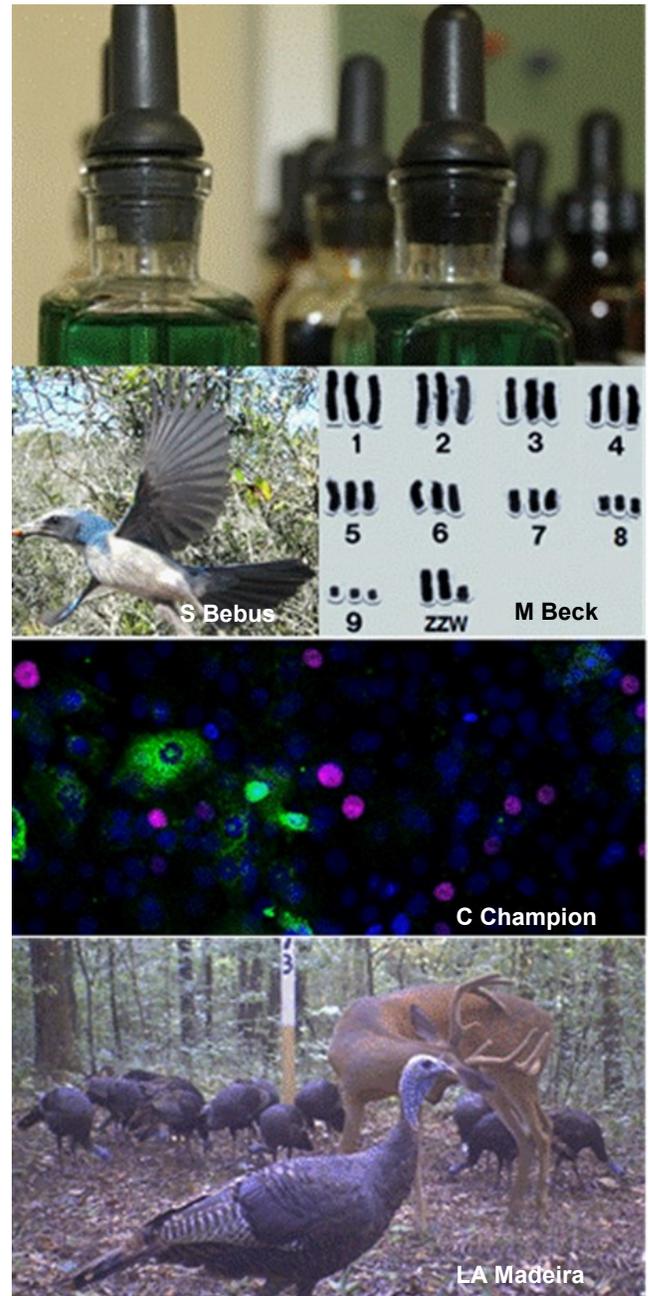
Poole, NM, Nyindodo-Ogari L, Kramer C, **Coons LB** and **Cole JA**. Effects of tick saliva on the migratory and invasive activity of Saos-2 osteosarcoma and MDA-MB-231 breast cancer cells. *Ticks & Tick Borne-Dis* 4:120-127, 2013.

Schoech, SJ. Individual variation in females: essential for studies of adaptation and breeding. A review of

physiological adaptations for breeding in birds. by T. D. Williams. *Ecology* 94:549, 2013.

Swanson JM, Wood GC, Xu L, Tang LE, Meibohm B, **Homayouni R**, Croce MA, Fabian TC. Developing a gene expression model for predicting ventilator-associated pneumonia in trauma patients: a pilot study. *PLoS One* 7(8):e42065, 2012

Xu L, Cheng C, George EO, **Homayouni R**. Literature aided determination of data quality and statistical significance threshold for gene expression studies. *BMC Genomics.* 2012;13 Suppl 8:S23.



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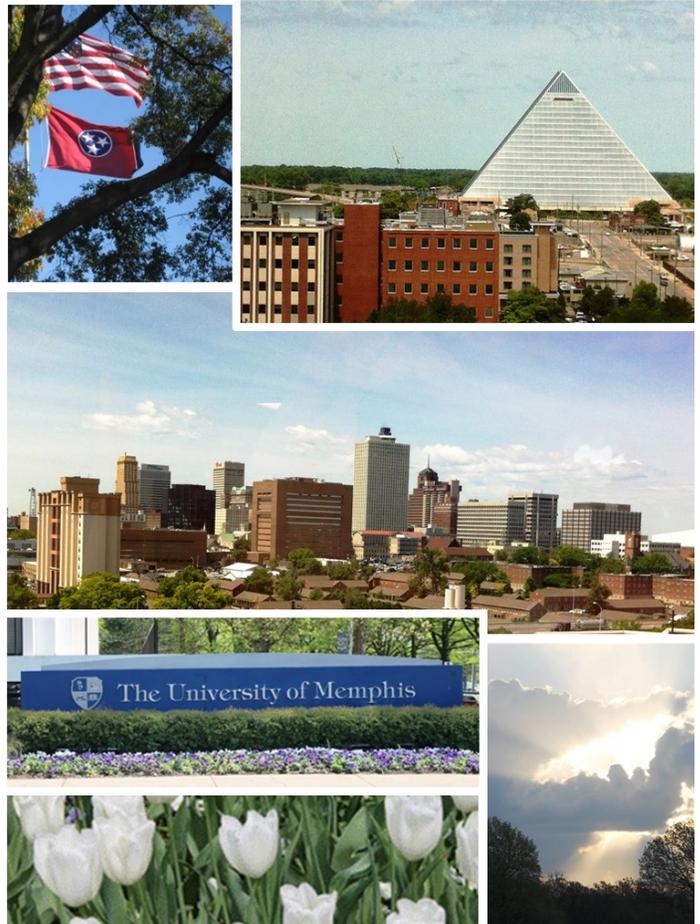
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