

BIOFEEDBACK

THE NEWSLETTER OF THE BIOLOGY DEPARTMENT AT RHODES

VOLUME 29

OCTOBER 2014

NUMBER 1

The Chair's Niche



The department is overflowing this year with new students, new faculty, and new construction workers drilling and hammering. As I look from my office down the hall at the bare floor, the overhead pipes, and struts for the ceiling tiles, I think of the building as a great anatomy project. It is interesting to see the guts, but I'm looking forward to

having the skin stitched back in place.

This year we are offering more sections of upper-level classes than ever before, and we hope that you have had an easier time getting the courses you need. Some course alterations took place because of unexpected staffing changes – some good and some unfortunate, but we have several wonderful new people here this year who bring a lot of energy to the department. Please read about our new faculty in the Departmental Migrations section on page 5 and take a moment to say hello when you see them. Also in this newsletter are the titles of the many presentations given by students at conferences off and on campus. Research is a great way to learn science by doing it, so glance through the projects and talk to faculty if you think you might be interested in doing some of the research described.

– Carolyn Jaslow, PhD



BMB majors Madhuri Prasad (left) and Arishna Patel (right) proudly display the custom-designed BMB Program banner during the Homecoming Parade line-up. International Studies major Monali Lipman (center) joined in on the fun.



Congratulations to...

Anna Kushnir '14 received the award for Excellence in Biology. She was also awarded Honorable Mention in National Russian Essay Contest Competition of the American Council of Teachers of Russian

Carlos (Teddy) Huerta '15 was presented the Award for Outstanding Research in Biology. He also was awarded a prestigious Goldwater Scholarship to support his research in '15-'16

Albert Vacheron '17 and **Maria Yousof '17** received the Award for Excellence in First-Year Biology

Kristen Wendt BMB '14 was given the BMB Outstanding Research Award

Alix Matthews ENVS '14 was presented the Rhodes Early Career Award in Environmental Sciences and Studies

Madeline Carwile '16 received the Rosanna Cappellato Memorial Award

Matthew Roberts NEUR '14 and **Elizabeth Bigus NEUR '14** were presented the Outstanding Senior in Neuroscience Award

Caroline Elbaum NEUR '14 received the Hunter Award for Excellence in Neuroscience

Several students received presentation awards at the Western Regional Meeting of Tennessee Academy of Science, April 5, 2014. Poster awards went to **Maggie Blake '14** (1st place); and **Aubrey Howard '15**, **Lipman M '16**, **Patel A '17** (3rd place). Oral presentation awards were received by **Alison Hanson '15**, **Alix Matthews ENVS '14**, and **Jackson Roberts '14** (1st place/organismal biology); **Wendt K BMB '14** (1st place/health and medical sciences); and **Stephen Leavelle '14** (2nd place/organismal biology).

Aubrey Howard '15 received a Marc Dresden Student Travel Award to help defray the cost of his trip to New Orleans to present his research at the 2014 meeting of the American Society of Parasitologists

Tina Dao BMB '15 was awarded the ASM Undergraduate Research Fellowship to attend the American Society for Microbiology 114th General Meeting in Boston, MA

New Omicron Delta Kappa Honor Society members:

Maggie Blake '14, Matt Cannavo BMB '15, Shelley Choudhury NEUR '15, Blake Harrell BMB '15, Jordan Infield BMB '14, Liz Karolczuk NEUR '14, Richard McGuire BMB '15, Taylor Sieben ENVS '15, Lauren Stokes BMB '14, Katherine Robinson BMB '15, Secretary

New Mortar Board Honor Society members:

Matthew Cannavo BMB '15, Shelley Choudhury NEUR '15, Kathryn Cyrus NEUR '15, Blake Harrell BMB '15, Alyssa Johnson NEUR '15, Sarah Johnson '15, Katherine Robinson BMB '15

New Phi Beta Kappa Society members

Elizabeth Bigus NEUR '14, Maggie Blake '14, Noah Stephen Brown BMB '14, Mary Dubose ENVS '14, Caroline Elbaum NEUR '14, Anna Kushnir '14, Stephen Leavelle '14, Jake Magness ENVS '14, John Menz '14, Roberta Moore ENVS '14, Matthew Sommers NEUR '14

Grants & Fellowships

David Kabelik: Kim Gerecke, Rebecca Klatzkin, Mauricio Cafiero, and Katherine White: Rhodes Neuroscience Summer Research Fellowship, \$12,274.

David Kabelik: The Bold-Shy Continuum: Neural Regulation of Social Behavior. Faculty Development Endowment Grant, \$5,000.

Mary Miller: Understanding regulated cell division through genetic and biochemical one-on-one mentored independent project. Rhodes College Cell Cycle Fellow, \$4,341.46.

Publications

Fitz Gerald J, Carlson A, Smith E, Maloof J, Weigel D, Chory J, Borevitz J, Swanson R. 2014. New Arabidopsis advanced intercross recombinant inbred lines (Van-0 X Col-0) reveal female control of nonrandom mating. *Plant Physiology*. 165:175-185.

Jabaily RS, Shepherd KA, Gardner AG, Gustafsson MHG, Howarth DG, Motley TJ. 2014. Historical biogeography of the predominantly Australian plant family Goodeniaceae. Online ahead of print: *Journal of Biogeography*. doi: 10.1111/jbi.12363

Jaslow CR. 2014. Uterine factors. *Obstetrics and Gynecology Clinics of North America*. 41:57-86.

Kabelik D, Alix VC, Singh LJ, Johnson A NEUR '15, Choudhury S NEUR '15, Elbaum C NEUR '14, Scott M NEUR '13. 2014. Neural activity in catecholaminergic populations following sexual and aggressive interactions in the brown anole, *Anolis sagrei*. *Brain Research* 1553:41-58.

Kabelik D, Magruder D NEUR '16. 2014. Involvement of different mesotocin (oxytocin homologue) populations in sexual and aggressive behaviours of the brown anole. *Biology Letters*. 10 20140566

Lindquister GJ, Greer (Green) KA '09, Stewart JP, Sample JT. 2014. Epstein-Barr virus IL-10 gene expression by a recombinant murine gammaherpesvirus in vivo enhances acute pathogenicity but does not affect latency or reactivation. *Herpesviridae* 5:1; doi:10.1186/2042-4280-5-1.

Miller M. 2014. Budding yeast for budding Geneticists: A primer on the *Saccharomyces cerevisiae* model system. *Genetics*. 197:33-48; doi:10.1534/genetics.114.163188.

Meetings

Boyle S. Oral presentation: Pitheciid primates in fragmented habitats: land cover change and its implications for conservation. Society for Conservation GIS. Monterey, CA (July 2014).

Gardner AG, Sessa EB, Michener P '17, Shepherd KA, Jabaily RS. Oral presentation: Leveraging the power of next-generation sequencing to resolve the phylogenetic backbone of Core Goodeniaceae. Botanical Society of America Conference, Boise, ID (July 2014).

Howard A '15, Lipman M '16, Patel A '17, Pérez-Estigarribia P, de la Sancha N, Boyle S, Luque L. Oral presentation: Forest fragmentation's effects on hemoparasites in small mammalian populations from Paraguay. American Society for Parasitologists. New Orleans, LA (July 2014).

Kabelik D. Poster Presentation: Anxiety signaling within the social behavior neural network. The International Congress of Neuroendocrinology and the Society for Behavioral Neuroendocrinology. Sydney, Australia (August 2014).

Matthews A ENVS '14, Ellis V, Hanson A '15, Roberts J '14 and Collins MD. Oral presentation: Avian malaria in East Tennessee. Association of Field Ornithologists and Wilson Ornithological Society. Newport, RI (June 2014).

Miller M. Invited Seminar: Cell cycle defects associated with the ruthenium based anti-cancer agent KP1019. Hendrix College, AR (February 2014).

Fitz Gerald J. Oral presentation: Natural variation in *Arabidopsis AtFH5* expression indicates an adaptive role for Polycomb regulation of the seed endosperm. Dr. Fitz Gerald was also an invited panelist at the workshop "Becoming a successful researcher at a primarily undergraduate institute." International Conference on Arabidopsis Research. Vancouver, BC, Canada. (July 2014).

Le P, BMB '15. Poster presentation: The maternally expressed GTPase ROP2 is a putative regulator of the imprinted plant formin *AtFH5*, suggesting a uniparental complex for the development of seed endosperm polarity in *Arabidopsis*. International Conference on Arabidopsis Research. Vancouver, BC, Canada. (July 2014).

Haymore J, BMB '15. Poster presentation: Genetic architecture of parentally-biased seed size determinants. International Conference on Arabidopsis Research. Vancouver, BC, Canada. (July 2014).

Dao T, BMB '15. Poster presentation: Role of copper homeostasis in the pathogenesis of *Streptococcus pyogenes*. American Society for Microbiology. Boston, MA (May 2014).

DeGenova A '14. Poster Presentation: Dispersal modes and areas of origin of invasive species in an old growth urban forest. Association of Southeastern Biologists Conference. Spartanburgh, SC. (April 2014).

Gardner A, Shepherd K, Howarth D, Fitz Gerald J, Sessa E, Jabaily R. Oral Presentation: In the Goodeniaceae, broad and deep sequencing facilitates taxonomic revision and development of the floral symmetry evolution model. Goodeniaceae Working Group Symposium. Perth, WA, Australia (August 2014).

Gardner A, Shepherd K, Fitz Gerald J, Sessa E, Jabaily R. Oral Presentation: The Australian plant family Goodeniaceae as a new model system for floral symmetry evolution. Association of Southeastern Biologists Conference. Spartanburgh, SC. (April 2014).

Johnson E '14. Oral Presentation: Building a massive molecular matrix while facilitating communication between continents. Goodeniaceae Working Group Symposium. Perth, WA, Australia (August 2014).

Menz J '14. Oral Presentation: Getting into shape: morphometric analysis of floral symmetry variation in Goodeniaceae. Association of Southeastern Biologists Conference. Spartanburgh, SC. (April 2014), and Goodeniaceae Working Group Symposium. Perth, WA, Australia (August 2014).

Michener P '17. Oral Presentation: Next Gen Sequencing: the difference, the methods, and the implications. Goodeniaceae Working Group Symposium. Perth, WA, Australia (August 2014).

Western Collegiate Division Meeting of the Tennessee Academy of Sciences, Memphis, TN. Saturday, April 5, 2014

Oral presentations:

Hanson A '15, Matthews A ENVS '14, Ellis V, Roberts J '14, Collins M. Avian malaria in East Tennessee.

Wendt KE BMB '14, Hill TW. SepG in *Aspergillus nidulans* encodes an IQGAP protein.

Leavelle S '14, Pisacane C, Miller L. Eau de tigres: effects of specialized scent enrichment on tiger behavior and physiology and visitor perception.

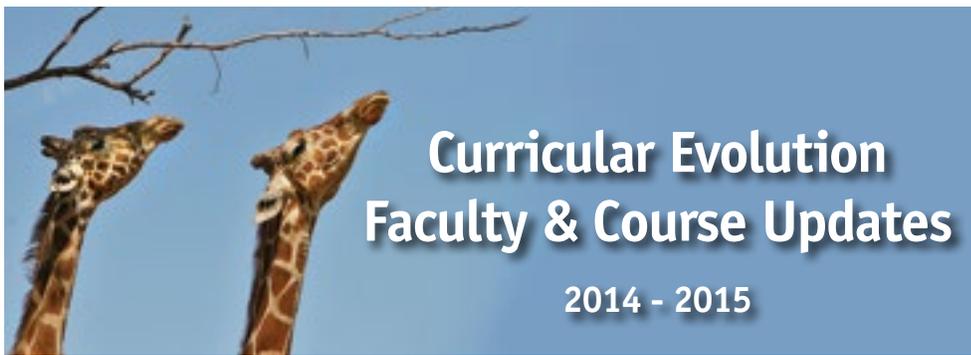
Poster presentations:

Blake M '14, Cohen JC. Visual mechanisms in copepod mating behavior: the effect of light on mating frequencies in *Labidocera aestiva*.

Howard AG '15, Lipman M '16, Patel A '17, Pérez-Estigarribia P, de la Sancha N, Boyle S, Luque L. Morphological characterization of hemoparasites from small mammals living in forest fragments in Paraguay.

DuBose ME ENVS '14, Sieben T ENVS '15, Menz JF '14, Moore R ENVS '14, Jabaily R, Shepherd C, Boyle S. Arboreal mapping of the Memphis Zoo.

Mattancheril S '14, Moore R ENVS '14, Boyle S. The influence of kinship on the presence of aggressive behaviors between Nile hippopotamuses (*Hippopotamus amphibius*) in captivity.



Curricular Evolution Faculty & Course Updates

2014 - 2015

Biology Course Update for Spring

In response to student demand we will be offering a double section of Microbiology next semester. There are also some returning courses (BIOL 253 Plant Genetics & Diversity and BIOL 320 Conservation Biology), a new course (BIOL 376 Molecular & Cellular Neuroscience), and a revised course (BIOL 212 Environmental Issues in Southern Africa). Please keep reading for important information about some of these great offerings!

BIOL 376 Molecular and Cellular Neuroscience will explore the unique cell biology and physiology of neurons. Students will learn how neurons grow and maintain highly specialized structures such as dendrites and axons, and then use them to send, receive, and process information. Course topics will include the neuronal cytoskeleton, axonal transport, axonal pathfinding and synaptogenesis, action potential generation and propagation, synaptic transmission, dendritic integration, and synaptic plasticity. This upper-level biology course (without a lab) will count as an elective for Biology majors. Neuroscience majors may count it as one of their depth requirements or use it to fulfill a breadth requirement if they have already completed BIOL 375.

Three Courses on Conservation and Environmental Issues:

BIOL 320 Conservation Biology returns: After a two-year hiatus, Conservation Biology will be offered in the spring. This course examines the science of biodiversity and wildlife conservation at genetic, population, species, landscapes, ecosystem, and ecoregional levels. Lecture will cover the biological basis of conservation, global biodiversity, use

of modern technology in conservation, social and political dimensions of biodiversity conservation, and national and international conservation actions. Lab will familiarize students with research methods and tools used by conservation biologists and wildlife ecologists. Lab will include local field trips, data analysis, case studies, and conservation-driven research projects. Prerequisites are BIOL 130/131 and 140/141 or BIOL 120 and Chem 120. If you have any questions contact Dr. Surasinghe.

BIOL 212 Environmental Issues in Southern Africa is now a 4-credit, upper-level course: The African continent is famous for its captivating scenery, natural resources, and the cultural diversity of its people. Environmental Issues in Southern Africa will focus on the role of parks and community-based conservation projects in achieving a balance between people's needs and wildlife conservation. Interactive class meetings will include discussions of research papers and case studies. Topics will include African wildlife management, biodiversity and natural resources, conservation issues, and environmental and human health. References may be made to similar issues in other continents as well. Prerequisites are BIOL 130/131 and 140/141 or BIOL 120 and CHEM 120. By itself, BIOL 212 is a 4-credit upper-level Biology course without lab that is open to anyone with the appropriate prerequisites. When combined with the Maymester course, (BIOL 214 Environmental Field Study in Namibia), BIOL 212 and 214 together will count as an upper-level Biology course with laboratory and will fulfill the F11 requirement (see description of BIOL 214 next page).

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Maymester Course: BIOL 214**Environmental Field Study in Namibia**

is tentatively scheduled for 2015. If a minimum of students enroll, the Maymester will be offered May 14th – June 4th. The course visits the Namib Desert, dry thornveld savannas, and the Kalahari sands, along with meeting indigenous people, NGOs, and governmental officers involved in local environmental issues. This 4-credit Maymester to Namibia (BIOL 214) may be combined with the 4-credit spring course at Rhodes (BIOL 212) to fulfill one upper-level Biology course with lab, an Environmental Science elective, and the F11 requirement. Interested students **MUST** enroll in BIOL 212 and should have attended an informational session held by Dr. Boyle and Dr. Fitz Gerald.

Rocky Mountain Ecology Maymesters

Are you interested in spending June studying and gaining ecological field experience in Grand Teton and Yellowstone National Parks? If so, check out the Rocky Mountain Ecology Maymesters. Students may choose one of two courses: ENVS 160 Rocky Mountain Ecology (two credits, F11) or ENVS 170 Rocky Mountain Ecology Field Research (four credits, F7 and F11). Both courses are appropriate for Biology majors, as well as non-majors. The application deadline is February 15, but applications will be considered on a rolling basis. If you would like to be considered for financial aid, the deadline is December 1st. Please contact Dr. Boyle for more information.

Senior Seminar News

The spring Biology senior seminars are: BIOL 486-1: Reproductive Biology, TuTh 11:00-12:15, taught by Dr. C. Jaslow; and BIOL 486-2: Medical Mycology, TuTh 3:45-5:00, taught by Dr. Hill. Students who signed up for one of these seminars during the lottery last spring should list it on their tree under "Other Courses" when they preregister this fall.

Juniors note that senior seminars for the '15-'16 academic year will be listed in the spring issue of BIOFEEDBACK.



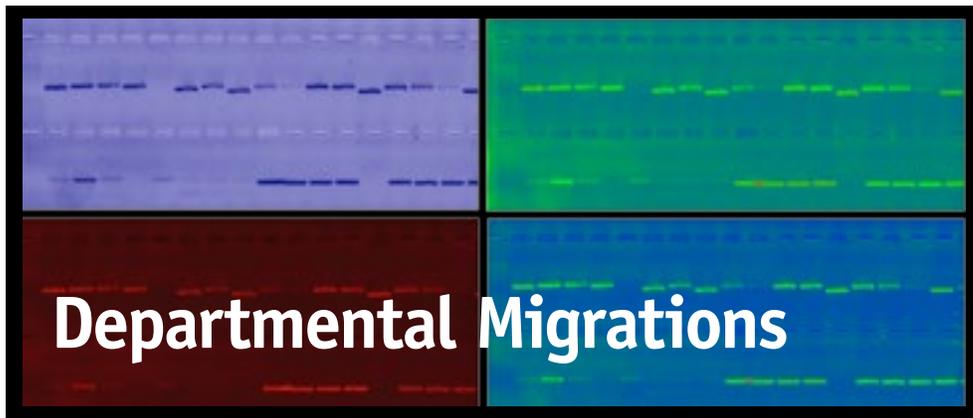
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Optimal Foraging

The following courses will be offered
next semester

Number	Course Title	Hours Offered
140	Biology II 3 Sections	MWF 9:00-9:50, TuTh 9:30-10:45, 11:00-12:15
141	Biology II Lab 7 Sections	Tu 12:30-3:30; W 1:00-4:00; Th 12:30-3:30; 4:00-7:00
204	Mech. of Development (Fitz Gerald)	MWF 9:00-9:50, Th lab 12:30-3:30
212	Env. Issues in S. Africa (Surasinghe)	W 7:00-9:30 PM
220	Parasitology (Luque de Johnson)	MWF 10:00-10:50
253	Plant Genetics & Diversity (Fitz Gerald/Jabaily)	MWF 11:00-11:50, W lab 1:00-4:00
301	Microbiology (Ryder)	MWF 11:00-11:50, W lab 1:00-4:00 or Th lab 2:30-3:30
304	Genetics (Miller)	TuTh 9:30-10:45, Tu lab 12:30-3:30
320	Conservation Biology (Surasinghe)	TuTh 9:30-10:45, M lab 1:00-4:00
325	Molecular Biology (Lindquenter)	MWF 10:00-10:50, Th lab 12:30-3:30
340	Animal Physiology (Kabelik)	MWF 8:00-8:50, M lab 1:00-5:00
376	Molec. & Cell. Neuroscience (Dougherty)	MWF 9:00-9:50
380	Topics in Biomedical Science (Hill)	TuTh 8:00-9:15
CHEM 414†	Biochemistry (Loprete)	MWF 11:00-11:50 or 12:00-12:50
CHEM 416†	Mech. of Drug Act. (Jackson-Hayes)	TuTh 11:00-12:15
NEUR 270†	Neuroscience (Dougherty)	MWF 11:00-11:50
Senior Seminar Section		
486-01	Reproductive Biology (C Jaslow)	TuTh 11:00-12:15
486-02	Medical Mycology (Hill)	TuTh 3:45-5:00
Courses for non-majors (fulfills the F7 requirement)		
105	The Biology of Infectious Diseases (Sturm)	MWF 8:00-8:50, Tu lab 12:30-3:30 or W lab 1:00-4:00

† No more than two courses taken outside the Biology Department may count for the six upper-level courses required for the Biology Major.



Welcome to Our Newest Department Members

Dr. Kelly Dougherty joins Rhodes as a new Assistant Professor in the Biology Department and Neuroscience Program. As



an undergraduate at West Chester University in Pennsylvania, she studied halophilic microbes that were over 250 million years old—the oldest living organisms

known at the time. During graduate school at Thomas Jefferson University in Philadelphia Dr. Dougherty fell in love with neuroscience and hasn't looked back since. Dr. Dougherty spent the last 5.5 years as a postdoctoral fellow at the Center for Learning and Memory at the University of Texas at Austin working with neurons in living brain slices, and plans to continue this research here. Specifically, she is interested in understanding how genetic changes in voltage-gated ion channels lead to epilepsy. Dr. Dougherty is very excited to begin her work here, take on undergraduate research assistants, and teach in both biology and neuroscience curricula.

Dr. Cynthia Ryder is a new Assistant Professor of Biology. Dr. Ryder loves learning and discovering, and her favorite question is “why?” This led her from her home in Knoxville, TN to major in Biology at Furman University and to earn her Ph.D. in Microbiology and Immunology from Wake Forest University. At Wake



Forest, Dr. Ryder investigated the genetic mechanisms of polysaccharide-associated virulence factors in the bacterium, *Pseudomonas aeruginosa*. As a lab assistant at Furman, and through research presentations and meetings in graduate school, Dr. Ryder discovered that teaching provides another avenue of learning that allows her to pass her enthusiasm for science to others. Dr. Ryder taught Molecular Genetics, Microbiology, and Immunology, and continued research on *P. aeruginosa* virulence factors, at Lincoln Memorial University. As a liberal arts student herself, Dr. Ryder is very excited to work at Rhodes and to forward liberal arts education from the front of the classroom as she teaches Microbiology this year. Outside of teaching and research, Dr. Ryder enjoys reading (murder mysteries and fantasy genres), knitting, watching tv and movies, and spending time with friends.

Dr. Christopher Lupfer is interested in trying to find cures for viral diseases like influenza A virus, “The Flu.” To accomplish this, he studies the immune system in order to better understand how the body naturally fights off viruses. He is also interested in understanding why, in some people, their immune system overreacts to virus infection causing increased lung damage and potentially death. This is particularly true with the “Bird Flu” in Asia. Dr. Lupfer taught in the BIOL 380 Topics in Biomedical Science course last semester and he is currently



teaching a section of BIOL 130. Outside the classroom, Dr. Lupfer enjoys spending time with his wife and 5 children and fishing.

Dr. Mel Durrett is a new Assistant Professor and will soon take over as Lab Coordinator for the Biology core labs. She grew up just down I-55 in Como, Mississippi, so she has always had a soft spot for the plants and animals of the Mid-South area. She changed majors five times, at three different undergraduate universities, before deciding on biology. After getting her BS from the University of Wyoming, she started her PhD at the University of Alaska Fairbanks with a project in New Zealand. Dr. Durrett



investigated nutrient cycling on very small islands where seabirds nest in underground tunnels, digging up the soil and adding lots of nutrient-rich, marine-based

guano. She also taught more than ten different classes at UAF and developed her own summer course to give students field experience in Alaskan wetlands. She is very interested in the ways that students learn and retain knowledge in the sciences, so her favorite class to teach is introductory biology—and she is really excited to be teaching the terrific students at Rhodes! Dr. Durrett lives with her two cats in a small cabin in the country, surrounded by flowers, trees, and lots of wildlife.

Dr. Thilina Surasinghe is a wildlife ecologist with specialization in environmental sciences and biodiversity conservation who joins the department as a new Assistant Professor. Dr. Surasinghe's academic experience began in the tropical rainforests of Sri Lanka during his undergraduate education, but he earned his PhD from Clemson University, SC with his research focus on the impacts of current and historical land uses on stream ecosystems. Dr. Surasinghe is also interested in biology education and has published in the field of science pedagogy. He taught



Continued on page 6



The Hybridization Zone

Neuroscience Program Announcements:

The Neuroscience Program is hopping as usual! During the spring semester, we will offer courses from two new faculty members. Dr. Dougherty will be offering a lecture-only course entitled BIOL 376 Molecular and Cellular Neuroscience, which will count as a depth requirement for the major and can be taken as an alternative to BIOL 375 Neuroendocrinology. Also, Dr. Jason Haberman will be offering PSYC 345 Cognitive Neuroscience, which will also count as a depth requirement and can be taken as an alternative to NEUR 318 Neuroscience of Brain Disorders. Remember, however, that if you take additional depth courses (beyond the required two), then the additional courses will count toward your breadth requirements! Apart from these two courses, we will be offering a spring section of NEUR 270 and two sections of NEUR 486 Neuroscience Senior Seminar.

Environmental Studies and Sciences Program Announcements:

There will be a number of courses offered in Spring 2015 that haven't been offered in several years (or ever). Dr. Russ will be offering a new course, CHEM 206 Environmental Chemistry. CHEM 120 is a prerequisite for Environmental Chemistry, and Environmental Science majors and minors are encouraged to enroll in this course. The BIOL 320 (L) Conservation Biology and BIOL 212 Environmental Issues in Southern Africa will also be offered (see page 3), and Dr. Fitz Gerald will be leading the Maymester to Namibia (see page 4). In addition to these courses, INTD 225 Introduction to Geographic Information Systems (GIS) and ENVS 486 Senior Seminar will be offered, along with several other ENVS elective courses. For details about the major, please contact Dr. Keller in History or Dr. Boyle in Biology.

Departmental Migrations

Dr. Thilina Surasinghe (*con't from page 5*)

Vertebrate Zoology and Organismal Biology at Gustavus Adolphus College in MN before coming to Rhodes. This semester, Dr. Surasinghe is teaching the Introduction to Environmental Science class, and in the

spring he will be teaching Conservation Biology and Environmental Issues in Southern Africa. Dr. Surasinghe is greatly looking forward to working with the Rhodes community and exploring the natural resources of Mississippi floodplains.

Biomathematics Major

In Spring 2015, Dr. Bodine will offer a special topics class in Game-Theoretical Models in Biology (MATH465). The course will cover topics in evolutionary game theory and will explore models of biological phenomena such as the sex ratio of many species being close to one-half, the evolution of cooperative behavior, and the existence of adornments (i.e., a male peacock's tail). Congratulations to Shelby Scott for being awarded the Robert Allen Scott Award in mathematics providing her with a stipend over the summer of 2014 to work on an agent-based model that simulates the predator-prey dynamics of golden eagles and Santa Cruz island foxes. She will be presenting her work on October 12, 2014 at the International Symposium on Biomathematics and Ecology: Education and Research (BEER) in Claremont, CA. Ms. Scott is the first Biomathematics major to win the Robert Allen Scott award. For details about the major and its course requirements, please consult Dr. Fitz Gerald in Biology or Dr. Bodine in Math.

Biochemistry and Molecular Biology Program

The BMB program is growing by leaps and bounds! To the 23 class of 2016 majors and one declared 2017 graduate, welcome! BMB majors, old and new, represented the program in the Annual Homecoming parade held on campus October 11th. Thanks to all who marched in the parade and showed that Rhodes spirit. The BMB program is in the process of obtaining accreditation of the Rhodes BMB degree. Details are forthcoming, but seniors can look forward to having their biochemistry and molecular biology knowledge assessed on an exam offered by the American Society for Biochemistry and Molecular Biology. The assessment will be administered in the spring through the BMB 486 course. Students, due to Dr. Miller's sabbatical, please contact Dr. Jackson-Hayes with any BMB administrative issues.





Signals & Displays

Short Communications



Tri-Beta News

Beta Beta Beta ((βββ)) is a national biological honor society with an active chapter at Rhodes. βββ is dedicated to the enrichment of its members' scientific experiences and to the distribution of knowledge gleaned from those experiences. Current chapter activities include participation in the Rhodes Journal of Biological Science, coordination of student research presentations, organization of various fundraising events, and hosting of biological seminars. βββ provides a forum to recognize those students, with a biological science as their undergraduate major, who excel academically. May it be noted that Rhodes has an array of biological science disciplines, meaning there are βββ members who are not only passionate biology majors, but also neuroscience, environmental science, and biochemistry and molecular biology majors. Regular membership can only be attained through invitation but any student meeting the criteria who is interested in becoming an associate member for the next school year should contact the current president, Breanna Durbin (durbl-15@rhodes.edu) or vice president, Katherine Morrison (morkj-15@rhodes.edu). Go to www.rhodes.edu/biology/22139.asp for detailed membership criteria. Tri-Beta has some exciting service projects planned for the fall. One such ongoing project entails hosting monthly meetings with the Springdale Elementary School's Science Club. We will also be volunteering at Springdale Science Saturday events. Additionally, we are selling Rhodes College Biology t-shirts with a graphic version of

The Jabaily lab on a research trip in Australia minus their fearless leader and new mom, Dr. Rachel Jabaily (front row left and center: Dr. Andy Gardner and Eden Johnson '14; middle row center and right: John Menz '14, and Pryce Michener '17). The Jabaily lab heads the Goodeniaceae Working Group, an international collaboration of researchers from Rhodes College, St. John's University in Queens, NY, and the Western Australian Herbarium in Perth. Thanks to a National Science Foundation grant, the Jabaily lab has been busy sequencing DNA, running morphometric analyses, and building phylogenies to characterize floral symmetry evolution in the wildflower family Goodeniaceae.

our recently retired token FJ dinosaur. The shirts are \$10.00 and if you wish to order one, please email Katherine Robinson at (robkm-15@rhodes.edu) with your size and Rhodes box number. Finally, we will be inducting new members this fall semester. We are excited to welcome new individuals into the society and congratulate them on their commitment to biological excellence. Pictures of βββ events can be seen on the βββ bulletin board outside of the Biology Department office.

Get Your Research in Print

After hours of hard work in the lab or field, why not publish your research in the Rhodes Journal of Biological Science? We encourage you to submit papers from your summer research or research conducted during the school year, as well as commentaries and reviews of biological topics. If you haven't written a paper recently, think about helping out with the journal! Please contact Anna Stachura (staam-15@rhodes.edu) if you are interested in submitting a paper or working with the journal.

\$\$ Biology Research Award \$\$

This spring, the Biology Department will be presenting the "Award for Outstanding Student Research in Biology". Any student who has completed research at Rhodes or elsewhere is eligible for this award. The winner will receive a cash prize, be honored at the award convocation ceremony, and have their name engraved on the Biology Research Award plaque that is displayed outside of the Biology office. To be considered, a student must submit a three to five page research paper, plus a recommendation from the research supervisor, to Dr. Dougherty, doughertyk@rhodes.edu by Friday, April 3. Announcement of the award winner will be made at spring awards convocation on Friday, May 1st.

The Biology Department mourns the loss of **Dr. Kyle Johnson**, husband of Biology Professor Dr. Laura Luque de Johnson.

Dr. Johnson was a clinical research associate in Infectious Diseases-International Outreach at St. Jude. He passed away September 28.

Student Presentations given in April 2014 at Rhodes's Undergraduate Research and Creative Activity Symposium

Blustein E '14 Changes in avian body sizes in response to climate change (Dr. Michael Collins)

Choudhury S NEUR '15, Hartline J NEUR '16, Smith A NEUR '16 Neural activity in behaviorally relevant brain regions of the male Brown Anole (*Anolis sagrei*) after social behavior encounters (Dr. David Kabelik)

DeGenova A '14 Areas of origination and dispersal mechanisms of invasive plants in Overton Park (Dr. Rachel Jabaily)

Demonbreun A '15, Tran M BMB '16 Screening a diverse collection of Marine Actinomycetes produces interesting metabolites with antibacterial, antifungal and anticancer activity (Dr. Terry Hill)

Hanson A '15, Malanchuk J ENVS '14 Avian malaria in Brazil's Madeira River basin (Dr. Michael Collins)

Hayward E BMB '16 Expression, refolding, and purification of bone morphogenic protein 4 (BMP 4) for potential use as an anticancer agent (Dr. David Kabelik)

Heda R BMB '16 Scoliosis and other long-term complications of radiation therapy in pediatric patients with chest wall sarcomas (Dr. Terry Hill)

Hess K ENVS '15 Parks and demography in Dallas County, Texas (Dr. Sarah Boyle)

Howard A '15, Lipman M '16, Patel A '17 Morphological characterization of hemoparasites from small mammals living in forest fragments in Paraguay (Drs. Sarah Boyle and Laura Luque de Johnson)

Jacobs Q ENVS '16 Vendor sales of the bridge: The Memphis street paper (Dr. Sarah Boyle)

Jezeq A '15 Increase in protein dube3a could lead to idiopathic autism (Dr. Gary Lindquister)

Johnson E '14 Phylogenetics and species delimitation of the southwest Australian endemic wildflower genus *Anthotium* (Dr. Rachel Jabaily)

Laves S '16 The effect of distractions of chemotherapy prescribing: identifying and reducing errors in an oncology health care setting (Dr. Laura Luque de Johnson)

Leavelle S '14 Trends in big cat behavior and exhibit usage in association with husbandry schedules and Eau de tigres: Effects of specialized scent enrichment on tiger behavior and physiology and visitor perception (Dr. Sarah Boyle)



Magruder S NEUR '16 The regulation of social behavior: mesotocin and corticotrophin-releasing factor in the supraoptic and paraventricular nuclei of male brown anoles (Dr. David Kabelik)

Marshall J ENVS '14 Exploring suitable habitat for wild tigers in present-day Southeast Asia and Examining urinary cortisol levels of a female Sumatran tiger using enzyme immunoassay (Dr. Sarah Boyle)

Mattancheril S '14, Moore R ENVS '14 The influence of kinship on the presence of aggressive behaviors between Nile hippopotamuses (*Hippopotamus amphibious*) in captivity (Dr. Sarah Boyle)

Menz J '14 Getting into shape: morphometric analysis of floral symmetry variation in Goodeniaceae (Dr. Rachel Jabaily)

Meriwether C '16 Deaf family literacy 3: deaf athletes in hearing sports (Dr. Lori Garner)

Moore R ENVS '14 Whose greenspace is it anyway? A mixed methods approach to evaluating access and usage of greenspace in southwest Atlanta and Riverside Blues: The impact of urban sprawl on Shelby County's waterways (Dr. Sarah Boyle)

Moore R ENVS '14, Pyda P ENVS '14 The effects of triclosan on microbial communities in Tennessee's Wolf River watershed (Dr. Mary Doherty)

Petraglia A '15 Enzymatic resolution of amino acids and synthesis of peptide analogues from scorpion venom with potential antibiotic activity (Dr. Roberto de la Salud Bea)

Rao R BMB '16 Phosphorylation state of erythrocyte protein Band 3 after binding of *Plasmodium falciparum* protein EBA-175 to glycophorin A (Dr. Laura Luque de Johnson)

Rodriguez S ENVS '16, Rose B ENVS '16 American bullfrog (*Lithobates catesbeianu*): GIS analysis of population patterns across Shelby Farms Park in Memphis, Tennessee (Dr. Sarah Boyle)

Roys T '16 Loss of ATM cooperates with kras to promote widely metastatic pancreatic ductal adenocarcinoma (Dr. Mary Miller)

Shore S BMB '16 Role of the sclerotomal genes Shisa2 and pdgfr1 in hematopoietic stem cell specification (Dr. David Kabelik)

Sieben T ENVS '15, DuBose M ENVS '15 Arboreal mapping of the Memphis Zoo (Dr. Sarah Boyle)

Smith B BMB '16, Dahl E BMB '14 Fine scale mapping of Arabidopsis chromosome IV to identify natural variation in imprinted gene expression (Dr. Jonathan Fitz Gerald)

Valasareddy S '15 A realm of refugees: an ethnographic analysis of the refugee empowerment program (Dr. Julia Hanebrink)

Wilson T BMB '16 The role of conserved domains in acute megakaryoblastic leukemia associated CBFA2T3-GLIS2 fusion protein (Dr. Laura Luque de Johnson)

