BIOFEEDBACK

THE NEWSLETTER OF THE BIOLOGY DEPARTMENT AT RHODES

VOLUME 31 SPRING 2017 NUMBER 2

The Chair's Niche

Maybe I am a little biased, but science is awesome. I think that we all get a little thrill of learning some fascinating and complex biological information that makes us sit up and think, "Wow, is that how this works?!" But science is awesome not just for the amazing information we learn, but also because of the method we use to acquire this information in the first place. The scientific method is a powerful process for understanding the natural world. We observe, we hypothesize, and we make predictions that can test our hypotheses, which must be falsifiable. That is not a weakness, but a strength. If a hypothesis cannot be falsified, then it is a matter of faith, not science. Experiments are the tools for testing our hypotheses, so that the scientific method yields knowledge that is based on data, not conjecture. Our goal should always be to seek factual knowledge that arises through this evidence-based process, and not knowledge that exists merely because someone claims it as an alternative fact. Science is awesome, and our greatest goal is for you to leave Rhodes with a solid understanding and appreciation of both biology and of the scientific method.

- Carolyn Jaslow, PhD

HONORS AND AWARDS
Congratulations to:

At the Mid-South GIS conference in November, **Samantha Ramsey ENVS '17** won a $2,000 GIS Scholarship for her presentation. **Chandler Joiner ENVS '18** won 1st place in the poster competition, **Erica Carcelen BIOL/ENVS '17** won 2nd place in the poster competition, and **Katharine Goebel BIOL-ANSO '17** won 3rd place in the poster competition. Details of their presentations are in the "Meetings" section.

Ellie Fratt NEUR '18 was one of the recipients of the Buckman Fellowship for Study Abroad. She will be spending the Spring 2017 semester in Copenhagen, Denmark on a Neuroscience program at the Danish Institute for Study Abroad.

Christie Campion BIOL '07 received her PhD in Biology from University of Memphis.

Congratulations!
New βββ honor society members:

Hope Elliot, Ellery Hayden, Omid Taghavi, Katharine Goebel, Alexandra Sutphin, Ethan Jones, Erin Gleeson, Pooja Dave, Ian John, William Schultze, Dwight Wilson, Madeline Evans, Alana Heyrana, Isabelle Mulder, Emily Lichtenberger, Sylvie Sontheimer, Christina DiFelice, Garrett Durbin, Mac Williamson, Aidan O'Reilly, Chandler Joiner, Andrew DaRosa, Caitlin Drummond, Mary Passmore, Jamie Crowley, Madeline Evans, Hannah Porter, Fatiha Abdulahi, Arianna Amini, Katelyn Sanchez, Benjamin Aiken, Rachel Bassett, Peter Daniels, Lauren Sylwester, Michael Gipson, Griffin Williams, Katherine Farmer, Sarah Ferguson, Ellie Fratt, Mary Elizabeth Massey, Luke Malanchuk, Allison Long

New βββ Officers: Mac Williamson BMB '17 (President), Fatiha Abdulahi '18 (Vice President), Hannah Porter NEUR '18 (Secretary), and Andrew DaRosa NEUR '18 (Treasurer)

Norconk, M and **Boyle S.** 2016. Biogeography and conservation of the pitheciines: sakis, bearded sakis and uacaris *(Pithecia, Chiropotes* and *Cacajao)*. In: *Phylogeny, Molecular Population Genetics, Evolutionary Biology and Conservation of the Neotropical Primates*. Nova Science Publishers, pp. 521-550.

Estrada, A, Garber P, Rylands A, Roose C, Fernandez-Duque E, Di Fiore A, Nekaris K, Nijman V, Heymann E, Lambert J, Rovero F, Barelli C, Setchell J, Gillespie T, Mittermeier R, Arregoitia L, De Guinea M, Gouveia S, Dobrovolski R, Shanee S, Shanee N, **Boyle S**, Fuentes A, MacKinnon K, Amato K, Meyer A, Wich S, Sussman R, Ruliang P, Kone I, and Baoguo L. 2017. Impending extinction crisis of the world's primates: why primates matter. *Science Advances* 3: e1600946.

Hatfield M, Chen J, **Fratt E NEUR '18**, Chi L, Bollinger J, Binder R, Bowling J, Hyatt J, Scarborough J, Jeffries C, and Potter P. 2017. Selective inhibitors of human liver carboxylesterase based on a β-lapachone scaffold: novel reagents for reaction profiling. *Journal of Medicinal Chemistry* doi: 10.1021/acs.jmedchem.6b01849.

Honsa E, Cooper V, Mhaissen M, Frank M, Shaker J, Iverson A, Rubnitz J, Hayden R, Lee R, Rock C, Tuomanen E, Wolf J, Rosch J. 2017. RelA mutant *Enterococcus faecium* with multiantibiotic tolerance arising in an immunocompromised host. *MBio* doi: 10.1128/mBio.02124-16.

Kabelik D, Crews D. 2017. Hormones, brain, and behavior in reptiles. In: Pfaff, D.W and Joëls, M. (editors-in-chief), *Hormones, Brain, and Behavior* (3rd ed). Oxford: Academic Press. Vol 2. 171-213

Smith A NEUR '16, Kabelik D. 2017. The effects of dopamine receptor 1 and 2 agonists and antagonists on sexual and aggressive behaviors in male green anoles. *PLOS ONE* 12: e0172041.

Muller B, **Pike D**, Schwarzkopf L. 2016. Defining the active space of cane toad (*Rhinella marina*) advertisement calls: males respond from further distance than females. *Behaviour* 153:1951-1969. Doi: 10.1163/1568539X-00003404.

Mainwaring M, Barber I, Deeming D, **Pike D**, Roznik EA, Hartley IR. 2016. Climate change and nesting behavior in vertebrates: a review of the ecological threats and potential for adaptive responses. *Biological Reviews* doi: 10.1111/brv.12317.

Griffin D CHEM '18 Poster presentation: Using natural variation to uncover potentially adaptive transcriptional networks in *Arabidopsis thaliana* seed regulation. The GARNet Natural Variation Conference at Cambridge University (December 2017).

Smith M BMB '19 Poster Presentation: Dissecting the regulation of imprinted gene targets using natural ascensions of *Arabidopsis thaliana*. The GARNet Natural Variation Conference at Cambridge University (December 2017).

Mid-South GIS conference in Memphis, TN (November 16-17, 2016)

Oral Presentations:
Carr C ENVS/HIST '17. Yellow fever 1878: mapping victims and geography of Memphis' worst epidemic.

Ramsey S ENVS '17. Bottled economics in Washington State.

Poster Presentations:
Joiner C ENVS '18. Rhinoceros populations and protected land areas.

Carcelen E BIOL/ENVS '17. Protected areas of the southeastern region of the United States.

Goebel K BIOL-ANSO '17. The current distribution and potential spread of Zika virus.

Williams G BIOL/ENVS'18. Remapping the Bibb County Glades and Predicting El Niño: an analysis of El Niño hurricane patterns.

Seahorse Sighting in FJ

By Sarah Morris

What will you find inside that lone fish tank in the newly-renovated hallway just outside Dr. Dougherty's office in FJ? At the moment, one friendly sea horse called Katz. She isn't the first inhabitant, however. The tank has a short but rather tumultuous history.

It had been established in the Fall of 2016 that the austere hallway needed a pet and when the vacationing Jaslows happened upon the Hawaiian-based seahorse farm, Ocean Rider, they knew that they had found just the organism. Right after Thanksgiving two seahorses arrived after a rather turbulent two-day journey from their home in Kailua Kona, Hawaii. Although the general public had many pet names for them, Dr. Dougherty, who presides over these creatures, called them Hodgkins and Huxley after the 1963 Nobel Prize winning neuroscientists. Unfortunately, after arriving in an ill state, both Huxley and Hodgkins soon passed.

In the wake of these losses, Ocean Rider sent another seahorse—the one we know today as Katz. While right now she lives alone, stay on the lookout for a new edition in the upcoming months!

Curricular Evolution
Biology Course Updates
SPRING 2017

New Courses, More Sections, & Course Inversions

Course Updates for 2016-2017

Due to some staffing changes, both expected and unexpected, we anticipate a few alterations to our normal sequence of course offerings next year. For example, Dr. Jabaily is leaving this summer, so we will not be offering Evolution in '17-'18 while we undergo a search for a new evolutionary biologist. We fully expect Evolution to be back in the course rotation the following year. Also, some courses will be offered in different semesters. The two upper level Neuroscience courses, Neuroendocrinology and Molecular and Cellular Neuroscience, will flip back to their normal fall and spring time slots. Dr. Pike will be teaching his Vertebrate Biology upper-level Biology course this fall, and we expect to bring Conservation Biology back during the spring semester. Once again, we anticipate offering Genetics, Molecular Biology, and Microbiology both fall and spring semesters, and this year we will do the same with Cell Biology.

Other Courses that Count for the Bio Major:

When planning your schedule, keep in mind that Biochemistry (CHEM 414), Mechanisms of Drug Action (CHEM 416), and Neuroscience (NEUR 270), with and without the Neuroscience Methods lab (NEUR 350) may count as upper-level Biology courses, but students may count no more than two of these courses toward their major.

What's Up for Next Spring?

In the spring of 2018 we tentatively plan to offer the following classes: Animal Physiology, Cell Biology, Conservation Biology, Genetics, Mechanisms of Development, Microbiology, Mycology, Molecular Biology, Molecular and Cellular Neuroscience, Ornithology, and Topics in Biomedical Science. There is also a chance we will offer Environmental Issues in Southern Africa with the Namibia Maymester course, but that depends on both staffing and student demand. Spring will also likely include sections of Neuroscience, Biochemistry, and Mechanisms of Drug Action.

BIOL 350 Comparative Vertebrate Morphology/Anatomy

Comparative Vertebrate Morphology or Anatomy (BIOL 350) CVM will again be offered with two 9 AM lectures most weeks and two (unequal) formal lab meetings a week. One lab meets Tuesday from 12:30-3:30. The second lab each week meets Friday for a minimum of 50 minutes, either from 1-1:50, or from 2-2:50. Two additional hours in lab are required, but these hours may be completed at other times during the week. The variable Friday lab time allows students to pre-register in another class meeting MWF at either 1 or 2. CVM has two course numbers. The first includes the lecture and Tuesday lab. This one must be enrolled from the main tree (A, B, or C). The second number allows you to choose one of the two Friday lab times. Please pick the 1 PM Friday time if you can. This Friday section should be added from the Lab portion of the tree. See Dr. A. Jaslow if you have questions.

Senior Seminar Choices for '17-'18

Fall Senior Seminars

BIOL 485-01 Tropical Ecology MWF 9:00-9:50 Dr. David Pike

Tropical regions are important centers of biological diversity worldwide, but are rapidly becoming degraded by human activities. We will explore the ecology of tropical habitats, why the tropics are so biologically diverse, why natural habitats are being altered at alarming rates, and what we can do to protect and restore remaining habitats and species. We will do this through background readings, student presentations, and written reports that cover topics of student interest, which could range from molecular fields to organismal biology and community ecology, and include diseases and health issues facing humans, plants, and/or animals.

BIOL 485–02 Bacterial Virulence Mechanisms and Host Interactions. TuTh 4:00-5:15 Dr. Erin Honsa

This senior seminar series will focus on the virulence mechanisms of bacterial pathogens, as well as a global focus on human-bacterial interactions. Students will have a choice of either broad subject, and will complete oral and written presentations typical of senior seminars. The overall goal of this seminar series is to explore in depth the infectious disease side of Microbiology, and how bacteria infect our tissues, cause disease, or establish symbiotic relationships.

Spring Senior Seminars

BIOL 486-01 Microbial Communities and Symbioses
MWF 11:00-11:50
Dr. Elaine Frawley

Many of us only give thought to the microbial world when we become sick, but in terms of the vast microbial diversity on earth, very few organisms are involved in causing disease. This senior seminar will focus on the positive roles microbial symbionts and communities play in shaping life on earth. Students will learn about high-throughput sequencing and metabolic profiling technologies and will discuss primary literature related to the microbial communities of humans, plants, animals, insects, ocean habitats and other environments, according to class interests. Independent student projects will focus on the current literature characterizing a microbial community or symbiosis of the student's choice. Students may choose to focus on the molecular, biochemical and/or genetic nature of a well-defined symbiotic association or explore a specific, larger microbial community. This course should be suited to those with evolutionary and ecological interests as well as students who like to investigate questions at the cellular and organismal level.

BIOL 486-02. Metamorphosis
Monday and Thursday 4:00-5:15
Dr. Jonathan Fitz Gerald

The ability of a young organism to radically transform its body plan has captivated the imaginations of scientists and non-scientists alike, yet still we understand very little about the process. The history of metamorphosis research has been called "the most exciting story in biology", yet still we have only a sketch of what the molecular mechanisms entail. Modern technology is starting to open new windows on the process and bring greater insight. Old questions remain about how selection can target distinct features of a single organism with more than one lifestyle or if metamorphosis is simply an extreme version of a maturation process that is required for all organisms? This semester we will consider metamorphosis from multiple angles to draw our own conclusions about the advantage, basis, background, and mechanism of this exciting process.

FRAZIER JELKE SCIENCE CENTER

Optimal Foraging

The following courses will be offered next semester

120	Intro to Environmental Sciences*	MWF 10:00-10:50; lab W 1:00-4:00 or Th 12:30-3:30
130	Biology I (5 sections) 11:00-12:15	MWF 8:00-8:50, 9:00-9:50; TuTh 8:00-9:15, 9:30-10:45,
131	Biology I Lab (8 sections)	Tu 12:30-3:30, 4:00-7:00, W 1:00-4:00, Th 12:30-3:30, Fri 1:00-4:00
207	Animal Behavior (TBA)	TBA
301	Microbiology (Honsa)	MWF 11:00-11:50; W Lab 1:00-4:00
304	Genetics (Wheeler)	TuTh 8:00-9:15; W Lab 1:00-4:00
307	Cell Biology (Hill)	TuTh 8:00-9:15
315	Ecology (Collins)	TuTh 11:00-12:15; M Lab 1:00-4:00
325	Molecular Biology (Lindquester)	MWF 10:00-10:50; Th Lab 12:30-3:30
330	Virology/Immunology (Lindquester)	TuTh 9:30-10:45
350	Comp. Vert. Morph. (AJaslow)	MWF 9:00-9:50; Tu Lab 12:30-3:30; F lab 1:00-2:00 or 2:00-3:00
360	Histology (CJaslow)	MWF 8:00-8:50; W Lab 1:00-4:00
365	Vertebrate Biology (Pike)	MWF 11:00-11:50; Lab Tu 12:30-3:30
375	Neuroendocrinology (Kabelik)	MWF 9:00-9:50
BMB 310	Methods in Cell Biology (Hill)	W 1:00-5:00
CHEM 414	Biochemistry (Loprete)	MWF 11:00- 11:50
NEUR 270	Neuroscience (Klatzkin, Dougherty)	MWF 9:00-9:50, 10:00-10:50
NEUR 350	Neuroscience Research Methods (Dougherty, Kabelik, Haberman)	Th 3:30-4:45; lab M or Tu 1:00-5:00

Senior Seminar Section

485-01	Tropical Ecology (Pike)	MWF 9:00-9:50
485-02	Bacterial Virulence Mechanisms and Host Interactions (Honsa)	TuTh 4:00-5:15

Does not count towards Biology major

Senior Seminar Lottery

Wednesday, March 22 at 4:15 PM in FJ 185

Next year, the Biology Department will offer four sections of Biology Senior Seminar: two in the fall and two in the spring. Rising seniors, please consult the descriptions of these senior seminar courses on pages 3-4.

All rising Biology seniors must reserve a slot in a fall or spring Biology senior seminar section via a lottery that will be held in the core Bio lab 185 at 4:15 PM on Wednesday, March 22.

If you cannot attend the lottery, you must send a representative prepared with an ordered list of your choices. Once you have signed up by lottery, you should list your reserved senior seminar section last on the registration tree under the category of "Other Courses" when you register for that particular semester. Biology students will not be allowed to register in a seminar section other than the one which they reserved through the lottery. If you have questions about the lottery, are planning to be abroad for a semester next year, or are planning to graduate in December, contact Dr. C. Jaslow immediately

BIOLOGY DEPARTMENT LUMINESCENCE

Pentaceratops Returns

By Sarah Morris

Have you ever felt like you were being watched in the FJ lobby this year? Perhaps our large *Pentaceratops* friend on the eastern wall had its eyes on you. Although its size may be quite imposing, until recently the dinosaur used to observe an even more central place in the lobby as a full-size animatronic *Pentaceratops*.

This giant dinosaur made FJ its home after retiring from the Memphis Zoo's 1992 exhibit "Dinosaurs Live!". When it began experiencing mechanical problems, the *Pentaceratops* was donated to Rhodes as the exhibit came to a close. No easy task, the installation of the dinosaur in the FJ lounge required Rhodes to hire a crane and remove a window before lowering it into its new home. Thus, the FJ Dino Lounge came into existence, and the "Dino" became the mascot of the Biology Department.

Really the perfect representative for the department, the *Pentaceratops* appeared at the dawn of the Cretaceous era, more than 140 million years ago (even older than FJ!). As Pangea continued its dispersion, the *Pentaceratops* roamed what today is North America. Angiosperms had begun to appear almost everywhere by the end of the Crustaceous era, so these 5 ton herbivores got to enjoy consuming flowering plants before the extinction of every non-avian dinosaur 65 million years ago. Against all odds, our *Pentaceratops* survived, however, as the center of attention in the FJ lobby, until renovations called for its removal in 2013. Because the Dino Lounge wouldn't be complete without its faithful mascot, this year the *Pentaceratops* was brought back to FJ in the form of a beautiful mural so that you may continue to enjoy its company. Don't hesitate to say hello next time you pass by!

Is FJ the Best Place for a Halloween Party or What?

Last October, students, faculty, and staff joined together for a celebration of Halloween with delicious food and a chance to show off cleverly designed costumes representing their favorite biological theme or model organism. It was quite a display that included cells, molecules, and viruses, organisms from kangaroos and tardigrades to carnivorous plants and fungi, and themes from tertiary trophic levels to squid giant axons. The winner of the best costume with a biological theme was Yanai Almalem, who dressed up as a Core lab yeast plate. Peter Dorn's giant hot dog was voted the best non-biological Halloween costume.

Peter Dorn – first prize for hot dog

Yanai Almalem – first prize for Core lab yeast plate

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, **Mac Williamson (**wilmh-18@rhodes.edu**)** or vice president, **Fatiha Abdulahi (**abdfa-18@rhodes.edu**)**. Tri-Beta has some exciting service projects planned for the spring semester. One 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, have recently inducted new members this spring semester. We are excited to have welcomed 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.

Farewells

At the end of this semester, two members of the Biology faculty, Dr. Rachel Jabaily and Dr. Mel Durrett, will be leaving Rhodes. Please be sure to take a moment before you leave for the summer vacation to stop by their offices to say goodbye. We wish them both a fond farewell and best wishes for their future endeavors.

Biology Research Award

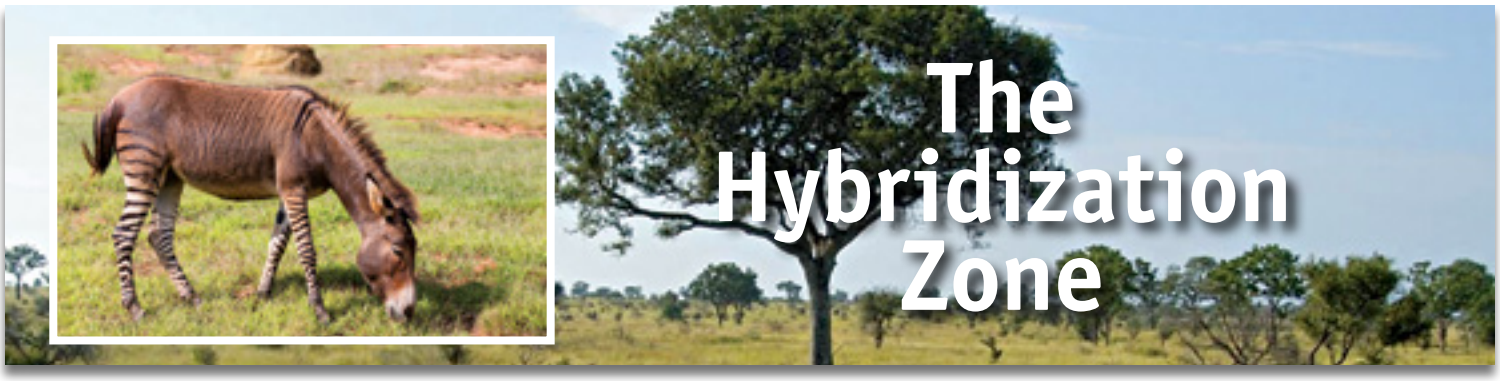
This spring, the Biology Department will be presenting the "Award for Outstanding Student Research in Biology". Any student who has completed research at Rhodes or elsewhere is eligible for this award. The winner will receive a cash prize, be honored at the award convocation ceremony, and have their 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. Kelly Dougherty by Friday, March 24th. Announcement of the award winner will be made at spring awards convocation on Friday, April 28.

TN Academy of Science Meeting

Christian Brothers University will be hosting the 2017 Western Regional Meeting of the Tennessee Academy of Science (TAS) on Saturday, April 1. This undergraduate meeting is a great experience for students to present their research at a local meeting. Abstracts are due March 20. If you would like information about presenting at or attending TAS, please contact Dr. Sarah Boyle.

Work in the Biology Department

The Biology Department is looking for students to work as lab Teaching Assistants for the core biology classes next year. These TA positions will consist of approximately 8-10 hours per week of work. We prefer students for this job who have an interest in Biology and have taken Bio I and II. Pay and further details concerning being a TA will be discussed on an individual basis. Also, the RSAP position will be available. If you have been a TA for the fall and spring core labs, we encourage you to apply for this upper level position. Please feel free to contact Sarah Hasty at 843-3431 (email: hastys@rhodes.edu) for additional information. Applications for the lab TA job can be found outside FJ 157. The deadline for fall/spring positions is April 21, 2017. Also, if you are interested in working in the Biology Department this summer, please contact Sarah Hasty.



Environmental Studies and Science Program

Congratulations to Prof. Keller! He was awarded a 12-month Frederick Burkhardt Residential Fellowship for the upcoming academic year. Prof. Sciubba will also be on a full-year sabbatical for 2017-2018, but no worries, there will be plenty of environmental course options available. Prof. Keller's and Prof. Sciubba's courses will return in Fall 2018. Students who have not yet taken INTD 225 (GIS) should enroll in the Fall 2017 section. In addition to a host of studies and science electives, ENVS 150 Environment and Society will be offered in Fall 2017. Please do not wait until your senior year to take this course! Finally, students are strongly encouraged to enroll in BIOL 120 Intro to Environmental Science and/or ENVS 111 Physical Geology in the Fall. If you are considering an ENVS major or minor, please speak with Dr. Boyle so she can make sure you receive important emails.

Biochemistry and Molecular Biology

The Biochemistry and Molecular Biology Program has an impressive graduating class – warmest wishes to our graduating seniors! BMB majors are engaging in incredible research programs both on and off campus. Congratulations to our students and keep up the fantastic work. Our juniors should look forward to the lab coat celebration– be sure to respond to upcoming emails.

As you plan your schedules for next year, be mindful that the BMB 310: Methods will be offered only in the Fall. This means that if you are a graduating senior who has not had BMB Methods yet, you must take this course in the Fall to graduate. The BMB Senior Seminar course will be offered in the Spring of next year (Spring 2018); and as a senior you would be required to take this course as well. Other required BMB courses (Cell, Biochemistry, and Molecular Biology) will be offered in both semesters next year (Fall of 2017 and the Spring of 2018). As always, several elective course options are available in both semesters. Be sure to talk to your advisor about how to take advantage of these opportunities.

As always, Dr. Miller is happy to answer any BMB related questions that you might have. Best wishes from the BMB program committee, we hope for the perfect annealing conditions for everyone's hybridizations!

Neuroscience Program Announcements

Neuroscience majors take note—we have some large changes on the horizon! First, we are sad to have to say good-bye to Dr. Kim Gerecke, who will be leaving the college at the end of the current school year. However, we are also happy to congratulate her and wish her all the best in her new Behavioral Neuroscience position at Randolph-Macon College in Virginia. We therefore also anticipate running a search for a new faculty member in Fall 2017, but Dr. Gerecke's leaving unfortunately means that we will not be able to offer NEUR 318 Neuroscience of Brain Disorders in the 2017-2018 calendar year.

Sometimes when it rains, it pours. This saying is apt as another change that was already percolating is now official. In response to student scheduling constraints and requests for more expansive laboratory experiences within the Neuroscience major, we will be retiring NEUR 350 after its final iteration in Fall 2017. To replace the pedagogical content of this course, faculty members will be adding laboratory sections to their depth courses, starting in 2018-2019. This change will ensure that students have an entire semester to spend on their lab experiences in a less rushed manner, and faculty can integrate topics discussed in lecture with greater depth of practical hands-on experiences in the laboratory. Students will need to take at least two such depth courses with labs. This change will not affect rising seniors, as they will be guaranteed space in NEUR 350. If you are a sophomore intending to declare Neuroscience this semester, please email Dr. Kabelik (kabelikd@rhodes.edu) as soon as possible to plan on whether you should take NEUR 350 in the fall of your junior year, or whether it is better for you to wait and take the depth courses with labs when they become offered. Either way, we need to add you to our email list for future announcements. In the 2017-2018 school year, we will still offer lecture-only versions of BIOL 375 Neuroendocrinology in the fall, and BIOL 376 Molecular and Cellular Neuroscience plus PSYC 345 Cognitive Neuroscience in the spring. All of these courses will be offered with lab starting in the 2018-2019 school year. If you already wish to take a depth course with lab in 2017-2018, then note that we will also accept the new course CHEM 411 Medicinal/Computational Chemistry as a depth course, at least for its iteration in Spring 2018. Other new course offerings will depend on staffing, including Dr. Gerecke's replacement hire, and will be announced as soon as possible. Finally, please spread this message to other students who are considering declaring Neuroscience as their major!

STUDENT RESEARCH 2016-2017

Sponsored by Programs at Rhodes

(Rhodes faculty supervisors listed)

Abdulkadir S NEUR '17, Dave P NEUR '19, and **Hamm L '19** Sex and seasonal differences in vasopressin receptor expression (Dr. David Kabelik)

Amini A '17, Cahill-Patray K '19, Forehand E '19, Lee W '19, Wang M '18, and **Zeng R '18** Behavioral and spatial patterns of the Nile hippo (Dr. Sarah Boyle)

Atiq Z BMB '18, Betton B '20, Campbell L '19, Olsen E BIOM '18, Parish P BMB '18, and **Singh A '19** Yeast two hybrid analyses of formin SepA interactions with protein kinase C in *Aspergillus nidulans* (Dr. Loretta Jackson-Hayes)

Bruneau A '18 Dissecting sibling competition from maternal effects in seed size as causal agents in non-reciprocal parental effects (Dr. Jonathan Fitz Gerald)

Carcelén E BIOL/ENVS '17 and **Ferguson S BIOL/ENVS '17** Spatial analyses of captive animals (Dr. Sarah Boyle)

Carcelén E BIOL/ENVS '17 and **Elkin L '18** Life skills for frogs. Dr. Sinlan Poo, Memphis Zoo (Dr. Sarah Boyle)

Carr C ENVS '17, **Farmer K ENVS '18, Ferrari G '20, Joiner C ENVS '18, Tucker E '17, Vincent D '18**, and **Zhang Y '20** Social behavior and spatial movements of captive African elephants (Dr. Sarah Boyle)

Daniels P BMB '18 Determining the role of ABIN-1 in cell death through treatment of immortalized mouse embryonic fibroblasts with apoptotic agents. Dr. Hans Haecker, St. Jude Children's Hospital (Dr. Gary Lindquester)

Daniels P BMB '18 The roles of various unknown proteins in the formation of septa in the filamentous fungus *Aspergillus nidulans* (Dr. Terry Hill)

Daniels P BMB '18, **Beckman S '19**, and **Rowland L BMB '19** Investigation of six novel genes identified as candidates for involvement in cytokinesis in *Aspergillus nidulans* (Dr. Hill)

Dishuck C '17 DFT design of inhibitors of the LpxC enzyme (Dr. Mauricio Cafiero)

Fahhoum R '17, Levesque C '19, Malanchuk L ENVS '17, and **Wilson M ENVS '17** Winter ecology of the Loggerhead Shrike (*Lanius ludovicianus*) in the Lower Mississippi Valley (Dr. Michael Collins)

Goebel K BIO-ANSO '17 Impacts of forest fragmentation on disease ecology in the Atlantic Forest, Brazil (Dr. Sarah Boyle)

Hayden E NEUR '18, Rashid S NEUR '17, Baldassaro, A NEUR '17, Dasani R '19, and **Cattaneo, C NEUR '18** The impact of chronic stress on acute-stress induced eating in college women (Dr. Rebecca Klatzkin)

Lichtenberger E '17 The effect of CPA and freezing technique on the reactivation of frozen bullsnake sperm (*Pituophis catenifer*) sperm. Dr. Beth Roberts, Memphis Zoo (Dr. Sarah Boyle)

Loome J BMB '18 Creation of a GCaMP plasmid for use in monitoring cytosolic calcium levels in *Aspergillus nidulans* (Dr. Hill)

Manley C BMB '17 Time-lapse video microscopy of the developing *Arabidopsis* seed (Dr. Jonathan Fitz Gerald)

May B '19 Correlating the behavior of *Drosophila melanogaster* to investigate the functions of genes involved in human neurological disease, such as idiopathic autism, through mutations found in the protein targets of the ubiquitin ligase UBE3A. Dr. Lawrence T. Reiter, University of Tennessee Health Science Center (Dr. Gary Lindquester)

Mikell I '19 Identification of genes responsible for autism phenotype in *Drosophila melanogaster*. Dr. Lawrence Reiter, University of Tennessee Health Science Center (Dr. Gary Lindquester)

Mulder I '17 Extraction of neuronal stem cells from dental pulp for human neurogenetic disease study (Dr. Gary Lindquester)

Myers R '18 Spaced phonological interference in face-name learning (Dr. Katherine White)

Parish C BMB '18 Phase separation and multivalent interactions between human nucleolar protein NPM1 and prokaryotic Ribosomal components (Dr. Dhammika Muesse)

Pettis C BMB '17 and **Williamson M BMB '18** Co-immunoprecipitation studies of proteins involved in septation in *Aspergillus nidulans* (Dr. Hill)

Popescu F '19 Recurrent pregnancy loss evaluation combined with 23-chromosome testing of miscarriage tissue explains the cause of pregnancy loss in over 90% of all miscarriages (Dr. Carolyn Jaslow)

Reed K BMB '17, Fields S BMB '19, Hill M BMB '19, HPLC analysis of sulfation of dopamine derivatives by *SULT1A3* (Dr. Larryn Peterson)

Regala S '18 Characterization of parental bias in *ROP2* and *AtFH5* function (Dr. Jonathan Fitz Gerald)

Rogowiec J NEUR '17 Shirwany H BMB '19 Synthesis of 6-substituted dopamine derivatives as probes of enzyme function (Dr. Larryn Peterson)

Sanchez K '17 Analyzing data associated with the hippocampus in mice subjected to mild traumatic brain injury in order to assess its effects on their emotional behavior, specifically their fear, anger and depression. Dr. Anton Reiner & Dr. Marcia Honig, University of Tennessee Health Science Center (Dr. Gary Lindquester)

Smith M BMB '19 Dissecting the regulation of imprinted gene targets using natural ascensions of *Arabidopsis thaliana* (Dr. Jonathan Fitz Gerald)

Sullivan B NEUR '17, Evans M NEUR '18, DaRosa, A NEUR '18, Colegrove M NEUR '18, Gaudio E '19, and **Shell J '20** Investigating the interaction between the anti-epileptic drug lamotrigine and HCN channels (Dr. Kelly Dougherty)

Williamson M BMB '18 Analysis of the role of paxillin ortholog PaxB in growth and septation of *Aspergillus nidulans* (Dr. Hill)

Wilson M ENVS '17, Williams G BIOL/ENVS '18, Deery E BIOM '18, Hulsey C '19, and **Malanchuk L ENVS '17** Urban forest regeneration in Overton Park (Dr. Tara Massad)

Worthen J '18 Analyzing the morphology of hippocampal microglia in a mouse model of traumatic brain injury to determine the effects of a multi-blast protocol. Dr. Marcia Honig, University of Tennessee Health Science Center (Dr. Gary Lindquester)

Yousuf S '19 Genetic complementation of manganese transport mutants in *Salmonella* Typhimurium (Dr. Elaine Frawley)

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