



# BIOFEEDBACK

THE NEWSLETTER OF THE BIOLOGY DEPARTMENT AT RHODES

Volume 26

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Number 2

The purpose of *BIOFEEDBACK* is to provide an important and timely vehicle for the dissemination of information concerning BOTH faculty and students of the Biology Department. Any notices or information that you wish to include in *BIOFEEDBACK* should be submitted to either Dr. Carolyn Jaslow. *BIOFEEDBACK* is published each semester.

## The Chair's Niche



In 1992, the Memphis Zoo opened an exhibit featuring twenty-one Dinamation creatures. These animated dinosaurs were arranged along a path under festival-style outdoor tents. I remember pushing strollers with my two toddler

sons along the gravel path as the huge animals moved their heads or tails, pawed their feet, and roared. One of my sons was fascinated; the other was terribly frightened. If you are from the Memphis area, perhaps you took in the exhibit when you were only one or two as well.

Just as my sons had varied reactions, apparently reaction varied among the general population. You can now find reference to a humorous note that appeared in several newspapers around the country at the time and even in Jay Leno's routine on the *Tonight Show*. As reported by Memphis Zoo staff, at least six people asked for a refund for the exhibit when they were disappointed to find that the name of the exhibit, "Dinosaurs Live", was false advertising. And this was even a year before the movie, *Jurassic Park*, exposed the world to the amazing power of genetic engineering.

As the exhibit wrapped up, it became apparent that the *Pentaceratops* was developing mechanical problems. Its state made it more cost effective for the Dinamation company to donate it than to return it for repair. Rhodes hired a crane, took out a window in the FJ lounge, and lowered the *Pentaceratops* to its current home. Thus, the Dino Lounge came into existence.

My purpose in writing this is not simply to provide a history lesson. It is to celebrate what has become a widely recognizable icon of the department. In fact, you will soon see some items available in the Biology Office featuring the dinosaur. Meanwhile, we also recognize that change is inevitable. As we look forward to the possibility of much needed renovations, we also regret the possibility that we may have to bid farewell to the dinosaur. If and when that happens, you will be invited to a farewell party. Nevertheless, even if the dinosaur goes, its legacy will "live" on.

*Dr. Gary Lindquester*

## Primary Productivity and Secondary Growth



The following is a list of honors, awards, publications and meeting participation of our faculty and students since October 18, 2011.

...**Drs. David Kabelik** and **Laura Luque de Johnson**, who were awarded Rhodes Early Leaves for 2012-2013. These grants give each of them a semester release from teaching so they can have more time to conduct research.

... **Allie Dillon '12** who won third place for her poster presented at the Mid-South GIS Conference in November. See below for poster title.

...**Lindsey Bierle '12** who was awarded the Outstanding Platform Presentation by an Undergraduate at the South Eastern Regional Yeast Meeting. See below for Lindsey's presentation title.

... **Dr. Rosanna Cappellato** who will be the Interim Director of the Environmental Program during the 2012-2013 academic year. Dr. Cappellato is also responsible for overseeing the Rhodes Arboretum, which the Tennessee Urban Forestry Council (TUFC) certified as a Level IV Arboretum on November 3, 2011. This is the highest designation recognized by TUFC.

... to the new  $\beta\beta$  officers: **Adiha Khan '13** (President),

**Kimber Jones '13** (Vice President), **John Garry '13** (Secretary), **Sara Beth Taylor BMB '13** (Treasurer) and **Bethany Larkin '13** (Historian).

## Grants and Fellowships

Faculty Development Endowment Grants have been awarded to **Dr. Sarah Boyle, Dr. Rachel Jabaily** and **Dr. David Kabelik** for this upcoming summer. Dr. Boyle's project is entitled



"Primate-patch dynamics in eastern Paraguay: How does land cover impact conservation?", Dr. Jabaily's is "Resolving evolutionary relationships in *Goodenia* (Goodeniaceae) with molecular systematics" and Dr. Kabelik's is "Connectivity among brain regions".

In January, **Sarah Boyle** received a grant of high-resolution satellite imagery from DigitalGlobe for conservation-related research in Paraguay for her proposal "Conservation applications of multiband spectral imagery in forest fragmentation analysis."

**Dr. Michael Collins, John Menz '14, Jordan Robinson '13, and Melissa**

**Welch '14** received a Fellowship grant from Rhodes College to conduct research on "Avian health and parasite incidence in an urbanized landscape."

## Publications

Carlson A., **Fitz Gerald JN**, Telligman M, Roshanmanesh J, Swanson RJ. 2011. Defining the genetic architecture underlying female- and male-mediated nonrandom mating and seed yield traits in *Arabidopsis*. *Plant Physiol.* 157:1956-64.

**Boozalis, TS '12, LaSalle LT '12, Davis JR.** 2012. Morphological and biochemical analyses of original and regenerated lizard tails reveal variation in protein and lipid composition. *Comp Biochem Phys A.* 161:77-82.

## Meetings

**Allie Dillon '12** won third place for her poster "The historical city planning of New Orleans, elevation, and Hurricane Katrina" at the Mid-South GIS Conference in November. **Sarah Tchang '12** also presented



a poster, "Memphis restaurants reduce waste in landfills with the help of Project Green Fork (PGF)." Allie and Sarah joined four other Rhodes students who presented and won awards at the conference. **Dr. Sarah Boyle** also gave a talk: "Habitat risk assessments using high-resolution satellite imagery."

On December 13, **Sarah Tchang '11** and **Dr. Rosanna Cappellato** presented "Brownfields in Memphis, TN" to the Department of Planning and Development for the City of Memphis and Shelby County.

On February 24-26, **Dr. Mary Miller** and **Lindsey Bierle '12** attended the South Eastern Regional Yeast Meeting at Emory University in Atlanta, Ga. At this gathering of over 150 faculty, postdoctoral fellows and graduate students, Lindsey presented her research conducted with Dr. Miller, "Ruthenium-based chemotherapeutic kp1019 induces DNA damage response in *Saccharomyces cerevisiae*", and was awarded the Outstanding Platform Presentation by an Undergraduate.

## Curricular Evolution

### New Faculty and Course Updates for '12-'13



#### Curricular Shifts for 2012-2013

Looking over the schedule for fall, it may seem as though someone shuffled the deck and randomly dealt out a new set of Biology courses. Yes, we are missing some usual courses, and other courses are being offered in different semesters, but there was nothing random about the scheduling. The department set up this schedule to ensure that most of the courses students want and

need will be offered next year, even though three faculty members will be taking one-semester breaks from teaching. Dr. Carolyn Jaslow will be on a sabbatical leave in the fall, and she will not offer Histology in 2012-13. Drs. Kabelik and Luque de Johnson were each awarded a highly competitive early leave, which they will take in opposite semesters. This means that Dr. Kabelik will teach Animal Physiology in spring 2013 instead of the fall because he

will be on leave during the first term. In addition, Dr. Luque de Johnson will teach Microbiology in the fall instead of its usual spring position because she is taking a spring leave. By swapping Microbiology to fall and Animal Physiology to spring, we are ensuring that these important courses are offered next year.

We also know that some of you have tried unsuccessfully to enroll in Genet-

ics in the past two years. For this reason, Dr. Mary Miller has agreed to offer Genetics twice next year – not only in its usual spring position, but also in the fall. We hope that the diploid scheduling for Genetics will help satisfy some of the backed-up demand for this class. The other major change in the fall schedule is the introduction of a new plant course with lab taught by Drs. Fitz Gerald and Jabaily (see below for details).

## New Upper-Level Biology Course Germinates this Fall!

Have you ever wished that you could clone yourself before finals week? What about growing extra limbs if you needed? Or producing pheromones to control those around you? If so, you may have



DR. RACHEL JABAILY '11

us and are vital to our daily lives, this sessile group of organisms is often mistaken for being inactive. Dr. Fitz Gerald and Dr. Jabaily are combining their research expertises in developmental genetics and evolutionary biology to offer a new course, **Plant Genetics and Diversity (BIOL 235)**, that will showcase the dynamic inner workings and rich evolutionary history behind these deceptively quiet organisms. The course lectures will follow their mutual passion for all things chlorophyllous, from the development of an individual to the evolution of the 300,000+ species that make up the plant kingdom. Topics to be covered include the genetics underlying morphological form and function, plant responses and adaptations to the environment, the biomechanics of plant anatomy and physiology, evolutionary history, taxonomic diversity, and interactions between people & plants. Examples of laboratory activities include characterizing the genetics behind environmental responses, looking at hormonal pathways with transgenic plants, as well as learning to identify the rich diversity of plants in our Memphis area. BIOL 235 will meet MWF 10:00-10:50, Wed lab 1-4.

### Other Courses that Count for the Bio Major:

If you are looking for an additional course to fulfill upper-level Biology requirements in the fall, don't forget about Biochemistry (CHEM 414) and Neuroscience (NEUR 270). Biochemistry requires Analytical Chemistry (CHEM

been wishing that you were a plant. Though plants surround

240 and lab) as a prerequisite, or you must have advance permission of the instructor to take it with CHEM 240 as a corequisite. Neuroscience only requires BIOL 130/131 and 140/141. Although Biochemistry and Neuroscience are considered equivalent to an upper-level Biology course without lab, Biochemistry can count as a lab course if you also take the 2-credit Methods lab (BMB 310) offered in the fall, and Neuroscience can count as a lab course if you also take the 4-credit Neuroscience Research Methods (NEUR 350) offered in the spring. When considering these courses, please keep in mind that no more than two courses from outside the Biology Department may be used to fulfill the six upper-level courses required for the Biology major.

### Comparative Vertebrate Morphology (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 PM. 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 Lab portion of the tree. See Dr. A. Jaslow if you have any questions.

### Where Does the Methods Lab (BMB 310) Go on the Tree?

Methods in Cell Biology & Biochemis-

try (BMB 310) is the optional laboratory section for Cell Biology (BIOL 307) and/or Biochemistry (CHEM 414). Students who intend to request BMB 310 as a lab with either Cell or Biochemistry should enter it into the Lab portion of the tree. Students who wish to take the course alone, because they took or will take Cell or Biochemistry cannot sign up for it on the tree. Instead, they should contact Dr. Hill or Dr. Miller as soon as possible.

### What's Up for Next Spring?

In the spring of 2013 we expect to offer the following upper-level Biology classes: Animal Physiology, Evolution, Genetics, Mechanisms of Development, Molecular Biology, Mycology, Ornithology, Plants and People, and Vertebrate Life. Additionally, the Chemistry Department expects that Biochemistry and Pharmacology will be among its



DR. DAVID KABELIK '11

spring course offerings. Also planned for spring are two Biology courses that include summer field trips: Environmental Issues in South Africa and Rocky Mountain Ecology. Bear in mind that this list of courses is tentative and could change if unexpected circumstances arise. In particular, the field courses will only be offered if they have adequate enrollments.

### Senior Seminar Lottery

Wednesday, March 21<sup>st</sup>

Next year, the Biology Department will offer three sections of Biology Senior Seminar. Rising seniors, please consult the descriptions of these senior seminar courses below. **Note: Some seminars conflict with at least one upper-level Biology class or lab. DO NOT sign up for a senior seminar that conflicts with a Biology class you are planning to take.**

**All rising Biology seniors must reserve a slot in a fall or spring Biology senior seminar section via a lottery that**



## Optimal Foraging

The following courses will be offered next semester.

Number	Course Title	Hours Offered
130	Biology I Lecture	MWF 8-8:50, 10-10:50, TuTh 8-9:15, or 9:30-10:45 4 Sections
131	Biology I Lab	Tu 12:30-3:30, Wed 1-4, Th 12:30-3:30, or Fri 1-4 7 Sections
207	Animal Behavior (Boyle)	MWF 10-10:50, Mon lab 1-4
235	Plant Genetics and Diversity (Fitz Gerald/Jabaily)	MWF 10:00-10:50, Wed lab 1-4
301	Microbiology (Luque de Johnson)	MWF 11:00-11:50, Wed lab 1-4
304	Genetics (Miller)	TuTh 9:30-10:45, Tu lab 12:30-3:30
307	Cell Biology (TBA)	TuTh 9:30-10:45
BMB 310	Methods in Cell Bio/Bioch (Hill)	W 1:00- 5:00
315	Ecology (Collins)	TuTh 11-12:15, Th lab 12:30-3:30
330	Virology/Immunology (Staff)	MWF 9-9:50
350	Comp Vert Morph (AJaslow)	MWF 9-9:50, Tu lab 12:30-3:30, Fri lab 1-3
380	Topics in Biomedical Science (Lindquenter)	TuTh 8-9:15
CHEM 414	Biochemistry (Loprete)	MWF 12-12:50
NEUR 270	Neuroscience (Klatzkin)	MWF 9-9:45

### Senior Seminar Sections

485-1	The Mississippi River (Cappellato)	TuTh 3:45-5
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### For Non-Majors

120	Introduction to Environmental Science	MWF 11-11:50, Mon lab 1-4
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will be held in the Biology Library at 11:00 AM on Wednesday, March 21<sup>st</sup>. 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, or are **planning to graduate in December**, contact Dr. C. Jaslow immediately.

**Senior Seminar Choices for '11-'12**  
**BIOL 485-1: Dr. Rosanna Cappellato's** fall senior seminar, "**The Mississippi River,**" will meet on **Tu/Th 3:45-5** and will focus on the ecology of the river. The course will cover basic concepts of river ecology and will investigate how human-driven changes, such as



dams, artificial channeling, and exotic species have affected the ecosystem's health. The Gulf of Mexico "dead zone" and the environmental impact of hurricane Katrina will be among the topics addressed during the semester. Emphasis will be placed upon research from the primary literature selected, presented and discussed by students in the class.

**BIOL 486-1:** Meeting in the spring on MWF 11:00-11:50, **Dr. Mary Miller's "Cancer Biology"** seminar will focus on the molecular basis of cancer, including impacts on cancer diagnosis and treatment. Students will read and discuss primary literature on topics including

cell cycle regulation, apoptosis and programmed cell death, signal transduction, and



metastatic tumors. Students will research a topic of their own interest that is pertinent to cancer biology, provide a summary of their findings, present this topic to the class, and evaluate the presentations of other students.

**BIOL 486 -2:** The third Biology senior seminar will be offered in the spring by the **new faculty member** we are hiring right now. Although the specific topic of this seminar is undetermined, it should focus on an area of **cellular or molecular biology**. This is the area of expertise we are seeking for this hire, who will help us in term I core and will help us to increase our offerings of courses in cellular and

molecular areas. This cell/molecular senior seminar will meet **TuTh 3:45-**



**5:00. This senior seminar conflicts with Animal Physiology lab.**



## Alumni Luminescence

The Health Professions Advising (HPA) program at Rhodes offers parallel advising to a large number of Rhodes students, the majority of whom are biology students. And, within this group, the majority of students are pre-med. However, other disciplines are represented in this group. So, this year we chose to spotlight a dental school student.

Zachary (Zac) Berry is currently a first year dental student, having graduated from Rhodes with a biology major. Zac told us that he was very involved at Rhodes through Woolsocks, Kappa Sigma, the Student Athlete Advisory Committee and volunteer work with St. Jude. According to Zac, "Rhodes was a great choice for me because it was a small enough campus that it afforded me the opportunity to be involved in so many things, while still demanding that my studies not suffer for it...the small class sizes demanded that I actually be there and not fall behind due to soccer or some other commitments."

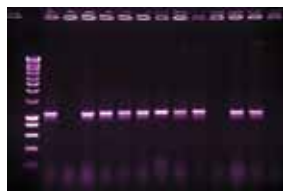
Zac initially came to Rhodes with the intention of going to medical school, but quickly decided that "the medical profession wasn't something I was interested in because of the demands outside of work. I didn't want the lifestyle that comes along with a residency and being on-call." He also didn't like the idea of an additional four years of schooling. Dentistry quickly became appealing to Zac "because it had the health aspect involved, along with requiring the skill to perform operations." Zachary went on to say that "to me, dental school is special because I will be operating on patients during my 3rd and 4th year."

Zac found dental school difficult to get into, so he did take a year off, moving to Dallas and working full time as a dental assistant while tending bar at night. As Zac told us, "70 hours a week wasn't a vacation, but the growth and maturity that you gain during a year off is something that has given me a huge edge over some of my classmates in school." In addition, Zac says that "Rhodes has given me a foundation and instilled a work ethic that is hardly matched by my peers from bigger state schools. The name 'Rhodes' on an application won't give you a free pass to any school, job, or profession, but it will convey that the applicant has a hard work ethic and knows what the demands of success are at any level."



Zachary (Zac) Berry

So, if you see some sort of health profession in your future, even if it's not medicine, be assured that Rhodes will help guide you and prepare you for whatever it is you want to do. The future is yours to own!



## Departmental Migrations

Welcome to Our Newest Department Member...

Dr. Rachel Jabaily is originally from Loveland, Colorado and spent a lot of her childhood hiking in nearby Rocky Mountain National Park. She earned a B.S. in Botany at the University of

Wyoming, and completed a research project on leaf anatomy at the Royal Botanical Gardens in Kew, England. She then completed a Ph.D. in Botany at the University of Wisconsin-Madison, and her

thesis work focused on systematics and evolution of the genus *Puya* in the pineapple family (Bromeliaceae). This project involved significant fieldwork throughout the Andes. After graduate school,

Dr. Jabaily was a Postdoctoral Researcher at Old Dominion University in Norfolk, Virginia where she studied evolutionary relationships and floral development of the primarily Australian plant family Goodeniaceae.



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Dr. Jabaily has previously taught courses on Biogeography, Botany and many different versions of general Biology. At Rhodes, she is involved with both semesters of the Core Biology program, as well as Evolutionary Biology and the new Plant Genetics & Diversity course she will teach next semester with Dr. Fitz Gerald. As the successor to Assistant Dean Dr. Olsen, Dr. Jabaily hopes to expand the presence of

and participation in plant biology at Rhodes College. She will continue her research program in molecular systematics and biogeography of various plant groups, and is hoping to expand plant inventories of the natural areas around Memphis as well as begin a phenology database for the campus arboretum. This project will involve students

monitoring campus trees for date of first flower, leaf etc. She is thrilled to be part of a department with such strong representation from both molecular biology and environmental sciences and has greatly enjoyed her first semester as a faculty member at Rhodes. Dr. Jabaily and husband Matt, a librarian at the University of Memphis, are having fun exploring their new hometown and in particular love to take their new dog Daphne to Shelby Farms.



## Signals and Displays (short communications)

### TN Academy of Science Meetings

The annual Western Collegiate Division Meeting of the Tennessee Academy of Sciences (TAS) meeting will be held Saturday, March 31 at LeMoyen-Owen College in Memphis. Come see presentations by students from regional colleges and universities, including presentations by Rhodes Biology students. If you would like more information, please contact Professor Boyle.

### Tri-Beta News

Beta Beta Beta ( $\beta\beta\beta$ ) is a national biological honor society with an active chapter at Rhodes.  $\beta\beta\beta$  is dedicated to the enrichment of its members' scientific experiences and to the sharing and dissemination of information 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.  $\beta\beta\beta$  provides a forum to recognize those students, with a biological science as their undergraduate major, who excel academically. 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  $\beta\beta\beta$  president, Adiha Khan (khaaa@rhodes.edu) or vice president, Kimber Jones (jonki@rhodes.edu). Go to <http://www.rhodes.edu/academics/2981.asp> for detailed membership criteria.

Tri-Beta has some exciting service projects planned for the spring. These include participating with Springdale Science Club, which be meeting both March 10th and April 17th from 3:30-4:30. We also will volunteer with the mass tree planting, a joint event organized by Shelby Farms and

Wolf River Conservancy, taking place March 17th at 10 AM. Additionally, there we will be involved with the Earth Day Celebration at the zoo, taking place April 22nd. We are also organizing a trivia committee, that will be hosting a MCAT/DAT/GRE trivia night. We also plan to host a research night, where BBB members can present their academic research in biology and the sciences in general. If you have any interest in any of these projects or events please contact Adiha Khan (khaaa@rhodes.edu). Our induction took place on March the 7th, along with a dinner catered by India Palace. We think these new members are wonderful addition to our society, and pictures of the ceremony and dinner will be available on the Rhodes website and on the BBB bulletin board.

### \$\$ Biology Research Award \$\$

This spring, the Biology Department will be presenting the "Award for Outstanding Student Research in Biology." Any student with a declared Biology Major who has completed research at Rhodes or elsewhere (i.e. St. Jude or UTHSC) is eligible for this award. The winner will receive a cash prize, be honored at the award convocation ceremony, and have his or her 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 in standard scientific format, plus a recommendation from the research supervisor, to Dr. Luque de Johnson by Friday, March 30<sup>th</sup>. Copies of the application and recommendation forms may be obtained from Dr. Luque de Johnson. Announcement of the award winner will be made at spring awards convocation on Friday, April 27<sup>th</sup>.

## Undergraduate Research and Creative Activities Symposium (URCAS)

The Rhodes Undergraduate Research and Creative Activities Symposium (URCAS) provides you the opportunity to showcase your outstanding work to the entire campus community. You will gain first-hand experience in communicating your research and creative activity, an essential part of professional growth. It will take place on Friday, April 27th this year – keep your eyes open for a final schedule of paper/poster presentations.

Those wishing to present a paper or poster need to identify a faculty sponsor and must submit an abstract via the online submission process by **5:00pm on Wednesday, March 21<sup>st</sup>**. Online submission opened March 5<sup>th</sup>.



Dr. Luque de Johnson

### Biology Seminar Series

There are still two remaining Seminars sponsored by the Biology Department this spring. Monday, March 26<sup>th</sup>, our own Dr. Luque de Johnson, Assistant Professor, Biology department will present "Snake Parasitism in an Urban Old-Growth Forest." Monday, April 16<sup>th</sup>, Dr. William

Browne, Assistant Professor, University of Miami will be our guest speaker. He will present "Niche Partitioning in the Pelagic Zone and the Evolution of the Hyperiid Amphipods." Be sure to mark the dates!



Dr. William Browne

### 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 someone who has an interest in Biology and has taken Bio I and II for the job. Pay and further details concerning being a TA will be discussed on an individual basis. Also, the RSAP position is becoming 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 room FJ 102E. The deadline for the fall/spring positions is April 27, 2012. Also, if you are interested in working in the Biology Department this summer, please contact Sarah Hasty.

## Student Research 2011-2012 Sponsored by Programs at Rhodes (Rhodes faculty supervisors listed)

**Veronica Alix CHEM '12** *Immunohistochemical localization of dopaminergic activation in the brain following social encounters.* BIO 451 & 452 (Dr. David Kabelik)

**Sophie Altamirano '12** *Mapping gene loci responsible for differential expression of Polycomb targets between natural variants in Arabidopsis.* BIO 451 & 452 (Dr. Jonathan Fitz Gerald)

**Lindsey Bierle '12** *Ruthenium-based chemotherapeutic KP1019 induces DNA damage response in Saccharomyces cerevisiae.* Research Assistant (Dr. Mary Miller)

**Maggie Blake '14** *Behavioral and movement patterns of African elephants and Assessment of environmental changes to reduce stress in captivity.* Bio 452 (Dr. Sarah Boyle)

**Piper Carroll NEUR '13** *Immunohistochemical localization of neural activation in the hypothalamic paraventricular nucleus following social encounters.* Research Assistant (Dr. David Kabelik)

**Wenbin Du BMB '13** *Dissecting function of a chromatin remodeling complex in S. pombe.* Dr. Janet Partridge, St. Jude Children's Research Hospital (Dr. Mary Miller)

**Sarah Ferguson '13** *Behavioral and movement patterns of African elephants.* Bio 451 & 452 (Dr. Sarah Boyle)

**Sarah Ferguson '13** *Red panda behavior and ecology.* Bio 451 & 452 (Dr. Sarah Boyle)

**Brianna Hoge '12** *Immunoprecipitation of S-tagged and GFP-tagged PkcA in Aspergillus nidulans.* BIO 451 & 452 (Dr. Terry Hill)

**Kelsey Jones '13** *Behavioral and movement patterns of African elephants.* Bio 451 & 452 (Dr. Sarah Boyle)

**Kimber Jones '13** *Assessment of environmental changes to reduce stress in captivity.* Bio 451 & 452 (Dr. Sarah Boyle)

**Kimber Jones '13** *Snow leopard behavior and spatial patterns.* Bio 451 & 452 (Dr. Sarah Boyle)

**Aaron Kala NEUR '12** *Immunohistochemical localization of dopaminergic activation in the brain following social encounters.* BIO 451 & 452 (Dr. David Kabelik)

**Leo Kokorev '13** *Bonobo social behavior.* Bio 452 (Dr. Sarah Boyle)

**Anna Kushnir '14** *Identifying Protein Interactions with Drak 2 in T Cells* Blaine Creasy, PhD St. Jude Children's Research Hospital BIO 451 & 452 (Dr. Gary Lindquenter)

**Alison Lang '13** *Assessment of environmental changes to reduce stress in captivity.* Bio 452 (Dr. Sarah Boyle)

**Alison Lang '13** *Behavioral and movement patterns of African elephants.* Bio 452 (Dr. Sarah Boyle)

**Lucus Laudermilk BMB '13** *The potential for microRNAs to up-regulate gene transcription levels through triplex structure formation.* William E. Evans, PharmD, St. Jude Children's Research Hospital Bio 451 & 452 (Dr. Gary Lindquenter)

**Stephen Leavelle '14** *Assessment of environmental changes to reduce stress in captivity.* Bio 451 & 452 (Dr. Sarah Boyle)

**Stephen Leavelle '14** *Behavioral and movement patterns of African elephants.* Bio 451 & 452 (Dr. Sarah Boyle)

**Jennifer Marshall '14** *Behavioral and movement patterns of African elephants.* Bio 452 (Dr. Sarah Boyle)

**Madison Marullo '13** *Assessment of environmental changes to reduce stress in captivity.* Bio 452 (Dr. Sarah Boyle)

**Madison Marullo '13** *Behavioral and movement patterns of African elephants.* Bio 452 (Dr. Sarah Boyle)

**Rebecca Miller '12** *KP1019-induced Cell Cycle Arrest in Saccharomyces cerevisiae.* BIO 451 (Dr. Mary Miller)

**Megan O'Brien NEUR '12** *Immunohistochemical localization of vasotocinergic activation in the brain following social encounters.* NEUR 451 & 452 (Dr. David Kabelik)

**Kelly Patton '13** *Behavioral and movement patterns of African elephants.* Bio 451 & 452 (Dr. Sarah Boyle)

**Brittany Pope '13** *Behavioral and movement patterns of African elephants.* Bio 451 & 452 (Dr. Sarah Boyle)

**Salar Rafieetary NEUR '12** *Immunohistochemical localization of vasotocinergic activation in the brain following social encounters.* NEUR 451 & 452 (Dr. David Kabelik)

**Madeline Scott NEUR '13** *Immunohistochemical localization of dopaminergic activation in the brain following social encounters.* NEUR 452 (Dr. David Kabelik)

**Sara Beth Taylor '13** *Sibling competition between Arabidopsis seeds.* Rhodes Fellowship 2011, BIO 452 (Dr. Jonathan Fitz Gerald)

**Sarah Tchang '11** *Brownfields in Memphis, TN.* BIO 451 & 452 (Dr. Rosanna Cappellato)

**Rebecca Thompson '13** *Evaluating experimental effects of traumatic lumbar puncture on molecular detection of Herpes Simplex Virus Encephalitis (HSVE).* Dr. Kacy Ramirez and Dr. John DeVincenzo at LeBonheur Children's Hospital. Bio 451 & 452 (Dr. Gary Lindquester)

**Aaron Vancil '15** *Deletion of a Gene Encoding a Tropomyosin Orthologue in Aspergillus nidulans.* BIO 452 (Dr. Terry Hill)

**Sandra Videmsky '14** *Assessment of environmental changes to reduce stress in captivity.* Bio 452 (Dr. Sarah Boyle)

**Sandra Videmsky '14** *Behavioral and movement patterns of African elephants.* Bio 452 (Dr. Sarah Boyle)

**Laura Wagner '13** *Behavioral and movement patterns of African elephants.* Bio 451 & 452 (Dr. Sarah Boyle)

**Xiao Wang '13** *GFP and RFP Tagging of the Aspergillus nidulans Type-V Myosin Orthologue.* BMB 451 & 452 (Dr. Terry Hill)

**Kristen Wendt '14.** *Deletion of the Myosin Light Chain Gene in Aspergillus nidulans.* BIO 451 & 452 (Dr. Terry Hill)

**Emily Woods BMB '12** *Characterization of the Nucleolinus in Saccharomyces cerevisiae.* BIO 451 & 452 (Dr. Mary Miller)



## BIOFEEDBACK

THE NEWSLETTER OF THE BIOLOGY DEPARTMENT AT RHODES



Rhodes College

—1848—