



BIOFEEDBACK

THE NEWSLETTER OF THE BIOLOGY DEPARTMENT AT RHODES

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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 or Dr. Alan Jaslow. *BIOFEEDBACK* is published each semester.

The Chair's Niche



Changes – sometimes scary, always exciting. As I look around the department, I am stunned by the changes that have happened so fast. Talk about punctuated equilibrium! As the editor of *BIOFEEDBACK*, I have hounded other people for more than 20 years to write

this column for our deadline, but in the blink of an eye, I am suddenly in the position of having to hound myself. And if you blink again, summer will arrive, and Dr. Lindquenter will be back from his sabbatical and resuming his duties as department chair. This change may have been big for me, but it is minor compared to the adaptive radiations of programs and faculty that provide more opportunities than ever for our students. Where there was once just a Biology major, Biochemistry and Molecular Biology and Neuroscience majors can also be found. Students can earn minors in Environmental Science and Environmental Studies, and can earn F11 credit through Biology courses that may take them to the Zoo just across the street, to LeBonheur Children's Hospital downtown, to the Rocky Mountains, to El Salvador or to Namibia. Perhaps the only constant is our population of majors who are so bright, hard-working, inquisitive, and motivated, they are a joy to teach!

For all of us in Biology, I think the most exciting change has been the recent influx of enthusiastic and dedicated new faculty. The arrivals of Drs. Fitz Gerald, Davis, Luque de Johnson,

Kabelik, and Boyle have added new dimensions to a department that was already strong and active. Our faculty offer students research opportunities in a smorgasbord of topics (molecular genetics to behavioral ecology) using a menagerie of organisms (plants, fungi, viruses, "protozoans," and animals). This change will continue over the summer, when Dr. Kesler takes off for a retirement of woodworking and bee-keeping in Iowa, and Dr. Michael Collins arrives to take up the role of ecologist. One consequence of all the changes in faculty will be some new courses offered and some old courses appearing at new times or on new days. Please consult the "Curricular Evolution" section on pages 3-4 for updates on course changes expected for 2010-2011.

Dr. Carolyn Jaslow

Primary Productivity and Secondary Growth



The following is a list of honors, awards, publications and meeting participation of our faculty and students since October 20, 2009.

Honors and Awards Congratulations to...

...**Dr. Sarah Boyle**, who accepted a full-time position in the Biology Department beginning next year. We look forward to having Dr. Boyle with us to continue teaching the Animal Behavior and GIS courses, and look forward to her contributions in other areas of organismal biology and environmental science.

...**Dr. Jonathan Fitz Gerald**, whose research was featured on the cover of *Development* last October. In the article (see Publications below for details), Dr. Fitz Gerald describes a maternally imprinted gene with a direct role in embryonic morphogenesis.

... **David Siu '12** and **Sarah Tchang '12**, Biology Majors and Environmental Sciences Minors, who received Study Abroad Grants from the Environmental Program to participate in the Namibia Field Study Trip 2010 (May 13 to June 3).

Grants and Fellowships

Dr. Jonathan Fitz Gerald was granted a CAP Mellon Study Leave for his "most impressive proposal" to research a "Molecular Analysis of the Arabidopsis Gene, *AtFH5*."

Dr. Fitz Gerald will be on leave to work on research next spring semester (2011).

Drs. Jonathan Fitz Gerald and Mary Miller received full funding from the Hill Presidential Initiative Grant (\$10,766) for their proposal "Designing an Interdisciplinary Computer Science and Biology course in Bioinformatics."

Dr. Mary Miller received a Mellon Faculty Renewal Award in collaboration with **Dr. Pam Hansen '96** of Birmingham Southern College to integrate new investigative laboratory exercises in their upper level genetics courses. Dr. Miller was also awarded a Rhodes Faculty Development Endowment Award to continue her work on G1 cyclin function and cell division this summer.

Dr. Sarah Boyle was awarded a software grant to expand research projects with students in the GIS Lab.

Publications

Boyle, S. A. and A. T. Smith. 2010. Behavioral modifications in northern bearded saki monkeys (*Chiropotes satanas chiropotes*) in forest fragments of central Amazonia. *Primates* 51:43-51.

Davis, J. R. and D. F. DeNardo. 2010. Seasonal patterns of body-condition, hydration state, and activity of Gila monsters (*Heloderma suspectum*) at a Sonoran Desert Site. *Journal of Herpetology* 44(1):83-93.

Davis, J. R. and D. F. DeNardo. 2009. Water supplementation affects the behavioral and physiological ecology of Gila monsters (*Heloderma suspectum*) in the Sonoran Desert. *Physiological and Biochemical Zoology* 82(6):739-748.

Fitz Gerald J. et al. 2009. Polycomb group-dependent imprinting of the

actin regulator *AtFH5* regulates morphogenesis in *Arabidopsis thaliana*. *Development* 136:3399-3404.

Kabelik D., A. M. Kelly, and J. L. Goodson. 2010. Dopaminergic regulation of mate competition aggression and aromatase-fos colocalization in vasotocin neurons. *Neuropharmacology* 58:117-125.

Luque L. E., O. A. Bridges, J. N. Mason, K. L. Boyd, A. Portner, and C. J. Russell. 2010. Residues in the heptad repeat a region of the fusion protein modulate the virulence of Sendai virus in mice. *Journal of Virology* 84(2):810-21.

McAuley J. L., **Kelly Zhang '11** and J. A. McCullers. 2010. The effects of influenza A virus PB1-F2 protein on polymerase activity are strain specific and do not impact pathogenesis. *Journal of Virology*. 84(1):558-64.

Meetings

In November 2009, **Dr. Sarah Boyle** and **Andy Foss Grant '10** attended the 9th Annual Mid-South GIS Conference held in Memphis. Dr. Boyle presented "The use of GIS to assess the impacts of land cover change on fauna and flora" and Andy presented "Areas of Texas at high risk for water contamination." Dr. Boyle also attended the NITLE Google Earth for the New Geographer Workshop at Washington and Lee University in October.

Last fall, **Dr. Rosanna Cappellato** represented Rhodes College on the Advisory Committee for the Shelby County Brownfields Coalition Assessment Project. An outcome of this project will be research on brownfields, which are potentially hazardous abandoned or underused industrial or commercial facilities in the Hollywood Community (just north of the Rhodes campus).

In January, **Dr. Jon Davis, Allison Graham '10,** and **Daniel Eastlack '11** attended the Society for Integrative and Comparative Biology meeting in



Seattle Washington. Dr. Davis presented "Natural and captive habitat conditions of Chinese giant salamanders" with co-authors J. Pingping, S. Willard, and A. Kouba. Allison and Daniel presented posters of their Memphis Zoo summer internship research: "Development of non-invasive reproductive monitoring techniques for endangered snow leopards and Amur leopards" with co-authors A. Kouba and E. Willis and "Is the bufonid *Anaxyrus fowleri* resistant to chytrid fungus?" with co-authors J. Davis, A. Kouba, and C. Vance, respectively.

Drs. Terry Hill and Darlene Loprete attended the 10th International Fungal Biology Conference & 7th Congreso Nacional de Biología Molecular y Celular de Hongos in Ensenada, Mexico in December 2009. There, they presented "Regulation of localization of the *Aspergillus nidulans* orthologue of protein kinase C to sites of septum formation" coauthored with Dr. Loretta Jackson-Hayes, **Erinn A. Ogburn '11, Brittany K. Chavez '11, Chassidy J. Groover '10,** and **Michael J. Pluta '11.** They also presented "Characterization of a novel membrane protein that affects cell wall integrity in *Aspergillus nidulans*" with **John L. Musgrove '10, Erinn A. Ogburn '11** and Dr. Loretta Jackson-Hayes.

In October 2009, **Dr. Jen Houghton** presented "Applications of diversity indices, geochemical models, and infrared imaging: two very different approaches to integration" at the NSF-sponsored RIDGE2000 Meeting: Developing a Holistic View of Oceanic Spreading Center Processes. She also was an invited speaker at the On the Cutting Edge Workshop: Teaching Service Learning in the Geosciences, presenting her work "Investigating contaminant transport and environmental justice issues in a local watershed through service learning projects with Sierra Club" based on the Geology 214 course taking place this semester.

In October 2009, **Dr. David Kabelik** was in Cambridge, MA, attending the 2009 *Anolis* Symposium at Harvard

University and an affiliated event, the *Anolis* Genome Symposium Workshop, at the Broad Institute (MIT and Harvard University).

Early this year, **Dr. Laura Luque**

de Johnson visited her collaborator Dr. John Adams at the University of South Florida. Dr. Adams is a professor in the Department of Global Health with more than twenty years experi-

ence in Malaria research. Drs. Luque de Johnson and Adams were brought together thanks to SIPID program, a competitive program founded by the National Institute of Health.

Curricular Evolution

New Faculty and Course Updates for '10-'11



As changes rumble through the department, we see them reflected in our course offerings. In the fall, Dr. Collins' Ecology course will appear at the new time slot of Tu/Th 9:30-10:45, with lab scheduled on Thursdays. Histology will be also be offered at a new time slot on MWF 8:00-8:50. This year, Mechanisms of Development will be taught Fall 2010 and Genetics will be taught in the Spring. The schedule switch for Mechanisms of Development is only for the next academic year, but we anticipate that Genetics will be a Spring course offering from now on.

We are also very happy to announce that Animal Behavior (BIOL 207) has been approved for fulfilling both the F2i and F11 foundation requirements. Other new courses that fulfill the F11 requirement include two, 2-credit, Maymester offerings, An International Experience in Health Care: Improving Infection Prevention and Control in El Salvador (BIOL 160) and Rocky Mountain Ecology (BIOL 161). Of course, these new summer F11 courses are in addition to our F11 options, Environmental Field Study in Namibia (BIOL 214) and Biology Internships (BIOL 460).

If you are looking for additional courses that fulfill upper-level Biology requirements in the Fall, don't forget about Biochemistry (CHEM 414) and Pharmacology (CHEM 416). Both require Organic Chemistry (CHEM 212) as a prerequisite.

New Courses

An International Experience in Health Care: Improving Infection Prevention and Control in El Salvador (BIOL 160)

This summer, Rhodes students will travel to El Salvador to join an existing program headed by St. Jude Children's Research Hospital working with Latin American hospitals on infection prevention and control. Students will learn about hospital environmental hygiene through everyday procedures for sterilization, as well as for blood collection and storage. The goal of the program is to provide the local hospitals with realistic solutions on how to reduce hospital acquired infections, which are a serious public health problem in

"Nothing in biology makes sense except in the light of evolution," by the evolutionary biologist and Russian Orthodox Christian Theodosius Dobzhansky in 1973.

developing countries. This 2-credit, F11 course will be available Summer 2011 depending on interest.

Rocky Mountain Ecology (BIOL 161)

This exciting new 2-credit, F11 course will be offered in conjunction with Teton Science Schools in Jackson Hole, Wyoming and will focus on community ecology of the Greater Yellowstone Ecosystem. Topics include: regional geology, influence of topography and climate on vegetation; community interactions of plants and animals;



and plant, insect and bird identifications. The course will also familiarize students with basic field data collection and research techniques. Prerequisites: none except permission of instructor. Contact Dr. Kesler for further information.

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 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 any questions.

Where does the Methods Lab (BCMB 310) go on the tree?

Methods in Cell Biology & Biochemistry (BCMB 310) is the optional laboratory section for Cell Biology (BIOL 307) and/or Biochemistry (CHEM 414). Students who intend to request BCMB 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. Loprete as soon as possible.

What's Up for Next Spring?

Spring 2011, we expect to offer the following upper-level Biology classes: Evolution, Microbiology, Genetics, Molecular Biology, Neuroscience, Ornithology, and Topics in Biomedical Science. Also planned is a course that includes a Maymester field trip; Environmental Issues in South Africa. Bear in mind that this list of courses is tentative, and could change if unexpected circumstances arise. In particular, the field course will only be offered if it has adequate enrollment.

Environmental Science minors: note that **Earth Systems Science (GEOL 111)** will be offered in Fall 2010, a change from this year. This course will cover geological processes from the perspective of our diverse National Parks. **Environmental Geology (GEOL 214)**, a course focusing on the hydrologic cycle, water quality and sustainability, will return in Spring 2011. Additionally, please note that **BIOL 105, Environmental Science**, is now numbered **BIOL 120** instead of BIOL 105.

Senior Seminar Lottery

Wednesday March 24th
Next year, the Biology Department will offer three sections of Biology Senior Seminar. In addition, two Biology students may enroll in the Neuroscience Senior Seminar (NEUR 485), taught by Dr. Kabelik, and two Biology students may enroll in the BCMB Senior Seminar that Dr. Lindquenter will teach



Optimal Foraging

The following courses will be offered next semester

Number	Course Title	Hours Offered
130	Biology I (Hill, Fitz Gerald, Luque de Johnson)	TuTh 8-9:15 or 11-12:15
131	Biology I Lab	Tu 12:30-3:30 Wed 1-4 or Th 12:30-3:30 6 Sections
204	Mechanisms of Development (Fitz Gerald)	MWF 8-8:50 Wed lab 1-4
207	Animal Behavior (Boyle)	MWF 10-10:50 Mon lab 1-4
220	Biology of Human Parasites (Luque de Johnson)	MWF 11-11:50
307	Cell Biology (Hill)	TuTh 9:30-10:45
BCMB 310	Methods in Cell Bio/Bioch (Hill/Loprete)	W 1:00- 5:00
315	Ecology (Collins)	TuTh 9:30-10:45 Th lab 12:30-3:30
340	Animal Physiology (Kabelik)	MWF 9-9:50 Tu lab 12:30-5
350	Comp Vert Morph (AJaslow)	MWF 9-9:50 Tu lab 12:30-3:30 Fri lab 1-3
360	Histology (CJaslow)	MWF 8-8:50 Wed lab 1-4
CHEM 414	Biochemistry (Loprete)	MWF 11-11:50
CHEM 416	Pharmacology (Jackson-Hayes)	TuTh 11-12:15
Senior Seminar Sections		
485-1	Cancer Biology (Miller)	TuTh 11-12:15
485-2	The Mississippi River (Cappellato)	TuTh 4-5:15
BCMB 485	St. Jude/BCMB Interdisciplinary Sr. Seminar (Lindquenter)	TuTh 4-5:15
NEUR 485	Neuroscience Seminar (Kabelik)	TuTh 9:30-10:45
For Non-Majors		
120	Environmental Science (Cappellato)	MWF 10-10:50 Wed lab 1-4

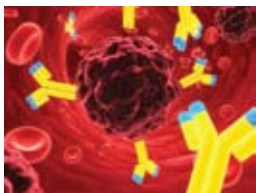


with researchers from St. Jude Children's Research Hospital. Rising seniors, please consult the descriptions of these five senior seminar courses below. **Note: Some seminars conflict with Animal Physiology lab or CHEM 416. DO NOT sign up for a senior seminar that conflicts with the Biology class you are planning to take.**

All rising Biology seniors must reserve a slot in a fall or spring Biology senior seminar section, or the fall Neuroscience or BCMB senior seminars, via a lottery that will be held in the Biology Library at 11:00 on Wednesday, March 24th. 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 by Monday, March 22nd.

Senior Seminar Choices for '10-'11

BIOL 485-1: Meeting in the fall on Tu/Th 11:00-12:15, **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.



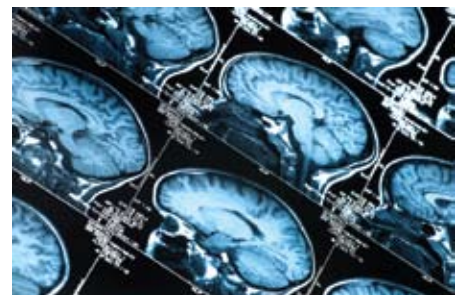
BIOL 485-2: **Dr. Rosanna Cappellato's** fall senior seminar, **"The Mississippi River,"** will meet on Tu/Th 4:00-5:15 and it will focus on the history and ecology of this mighty river.

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 devastation 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.

BCMB 485: "St. Jude/Biochemistry and Molecular Biology Interdisciplinary Senior Seminar" offered Tu/Th 4:00-5:15 by **Dr. Gary Lindquester**, will focus on the biochemistry and molecular biology of human health problems, with faculty from St. Jude Children's Research Hospital visiting Rhodes to present their research. Students will read and present background information and primary literature on the topics to be covered. This seminar is required for all BCMB majors. It will be open to two Biology majors who have taken Molecular Biology (BIOL 325), **or** Cell Biology (BIOL 307), **or** Biochemistry (CHEM 414). Biology majors who wish to take this seminar should contact Dr. C. Jaslow as soon as possible.



NEUR 485. This fall, on Tu/Th 9:30-10:45, **Dr. David Kabelik** will offer the Neuroscience senior seminar course which will cover a wide range of neuroscience topics and will focus on understanding and critiquing primary literature through discussion and written analysis. This course is required for Neuroscience majors, and there will be space for two Biology majors who have already completed either BIOL 370 and/or PSYC 318. If you are interested, please contact Dr. Kabelik as soon as possible.



BIOL 486: Dr. Jon Davis is offering the spring Senior Seminar **“Environmental Physiology: Life in the Extremes”** on Tu/Th 11:00-12:15. Food, water, and shelter are keys to meeting physiological needs of most animals. *How* do species meet these needs in hyper-arid deserts, frigid Antarctic waters, or oxygen-poor swamps and *why* live under such inhospitable conditions? We will integrate physiology, ecology, and behavior to study a variety of approaches to life under extremely challenging environmental conditions. Students will gain insight into these fascinating approaches to life by reading and presenting recent research from the primary literature, conducting comparative case-studies of species and habitats, and engaging in class discussions and peer evaluations.



“Nobody boasts of ignorance of literature, but it is socially acceptable to boast ignorance of science.” Richard Dawkins

Alumni Luminescence



A significant number of Biology majors leave Rhodes to pursue some sort of graduate study – medical school, PhD programs, dental school - well, you get the picture! However, there is a small, but dedicated group of students whose career plans take them on a different path - one that allows them to give back to the community through some sort of volunteer program. In

this issue of BIOFEEDBACK, we wanted to highlight some of the experiences of our Biology alumni who have dedicated their time to helping others. Here are some stories of recent graduates who moved from graduation to volunteerism.

Kelsey Dean '09 is currently involved in City Year, an AmeriCorps program that recruits participants for 10 months

*“No amount of experimentation can ever prove me right; a single experiment can prove me wrong.”
— Albert Einstein*

of service. Kelsey works in an elementary school mentoring first graders on the ABCs – Attendance, Behavior and Coursework in English and Math. Kelsey said “My time at Rhodes definitely influenced my decision to give a year of my time to serve others after graduation. Rhodes’ motto of “Truth, Loyalty, Service” lives through me as I continue to strive for the truth in life, remain a loyal alumna to the college, and plan to live a life of service (even after my term with City Year ends and I move to the “real world”). Interestingly, she found that “having a biology background has helped a lot!” Kelsey goes on to say that “I’m also one of the only science majors in the entire program, so anytime we talk about a topic related to genetics, or ecology, or the environment, or anything else science-related, the questions are directed at me — and I’m able to answer thanks to my diverse biological background from Rhodes.” It has obviously worked out well for Kelsey in that she is applying to volunteer for yet another year. From there she plans to



return to school with the intent of becoming a physician's assistant so that she can continue to "help people in an entirely different way."

Marianne Olson '09 teaches chemistry and physics at Douglass High School, which is only ten minutes from Rhodes. According to Marianne, "I decided to apply to Teach for America because of the service I did at Rhodes. I volunteered with the Learning Corridor, and knew I wanted to work with science education in Memphis. I was interested in how my biology and chemistry classes related to real-life issues: I did two internships in public health agencies. Today I see ideas I studied at Rhodes play out every day in class and in my students' lives: many live near Cypress Creek, or face various health issues. At Rhodes, I not only learned how to find molar mass of a compound (which I taught today!), but also to recognize the challenges associated with my students' low-income neighborhood."

Finally, **Altovise Ewing '05** sent in a moving testament to her time at Rhodes and how it led to her choices post graduation. "I was one of the few minorities in the entire student body at Rhodes so there were many obstacles...inside and outside of the classroom." This led to her decision to pursue Teach for America (TFA Corps). She goes on to say that "Drs. Carolyn Jaslow and Terry Hill were two enlightening sources...that sparked my passion to be of service...in Dr. Jaslow's Reproductive Seminar, it was her feedback during

"An experiment is a question which science poses to Nature, and a measurement is the recording of Nature's answer."

— *Max Planck*

my presentations along with the excitement she always exuded in her classroom that enabled me to garner the courage to apply to the TFA Corps...I also benefited greatly from the counseling sessions with Dr. Hill where he would so eloquently remind me that I have my entire life ahead of me to pursue my dreams and that graduation from college was not the commencement of my final destination in life. He assured me that I would probably change my life plenty of times... but amidst my journey it would be important to follow my heart and learn from every opportunity engaged."

Altovise is now working towards a PhD in Genetics with a specialization in Genetic Counseling. Her days of service are not behind her as she plans to help "vulnerable/underserved populations" by teaching that "knowledge is not a secret," and that it is important to know one's "family health history."

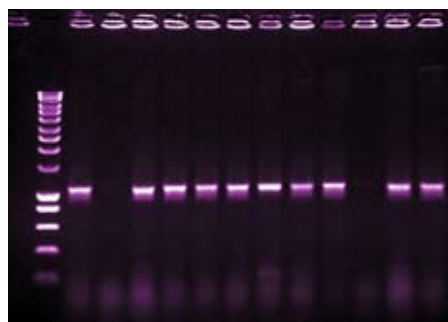
Altovise closed her message with a hope that "many of you will join the ranks of those of us who have been chosen to graciously serve as teachers for a better America."

Enough said.



Departmental Migrations

Welcome to Our Newest Department Member...



Sarah Hasty recently joined the Department of Biology as the Lab Supervisor and Biological Safety Officer. Ms. Hasty graduated from Louisiana State University in 1980 with a B.S. in Agriculture, and from Memphis State University in 1989 with a M.S. in Biology. She recently came from the Veterans Affairs Medical Center, where

she worked as a lab supervisor and senior lab specialist in the Department of Medicine, Division of Rheumatology, and in the Department of Surgery in the Division of Infectious Disease at the University of Tennessee. Ms. Hasty, was responsible for more than 103 strains of recombinant inbred mice and HLA transgenic mice for a large repository at UT. In this job, Ms. Hasty did RNA preparation for microarrays and in genotyping HLA mice using PCR, and was in charge of breeding the mice and shipping them to researchers all over the world. Ms. Hasty also worked both as a zoo-

keeper, and as an aquatic toxicologist in an environmental testing lab. She is a Midtowner, living with her husband, three dogs, two freshwater aquariums, and several Lady Gouldian finches. Her latest interest is her husband's African Grey parrot.



Signals and Displays (short communications)



TN Academy of Science Meetings

This year the Collegiate Division of the Tennessee Academy of Science will be meeting at Christian Brothers University on Saturday, April 10th. This meeting is an excellent opportunity to learn about the research of other undergraduates or to have your abstract published in the *Journal of the Tennessee Academy of Science* if you present (a great addition to your curriculum vitae). Meeting information is at <http://www.cbu.edu/~aross/biodept/TAS2010/TAS2010.html>. Contact Dr. Kesler for more information or if you are interested in a ride to the meeting.

Campus Roots

Have you noticed anything new with the trees on campus? **Dr. Rosanna Cappellato** has been working on a tree survey which will be part of the application to recertify Rhodes College as a Level 4 Arboretum. So far, all the trees on campus have been measured and GPS'd and 75 different tree species have been identified. By April, all identified tree species will be tagged, which should complete the project.

“The mere formulation of a problem is often far more essential than its solution, which may be merely a matter of mathematical or experimental skills. To raise new questions, new possibilities, to regard old problems from a new angle requires creative imagination and marks real advances in science.”
— *Albert Einstein*

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 sharing and dissemination of information gleaned from those experiences. Current chapter activities include participation in the Rhodes Journal of Biological Science, Science Fair judging at Memphis City Schools, student research presenta-

tions, and a proposed URCAS reception for the biological sciences. (βββ) 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 (βββ) president, Cassie Burton (burcl@rhodes.edu). Go to <http://www.rhodes.edu/academics/2981.asp> for membership criteria.

\$\$ Biology Research Award \$\$

This spring, the Biology Department will be presenting the “Award for Outstanding Student Research in Biology”. Any biology major 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 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, plus a recommendation from the research supervisor, to Dr. Miller by Monday, March 29th. Copies of the application and recommendation forms may be obtained from Dr. Miller. Announcement of the award winner will be made at spring awards convocation on Friday, April 30th.

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 30th 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 March 24th. Online submission will open well in advance of this deadline; you will receive notification when it is open.

The best presentation and best poster with an Environmental Science theme at this year's URCAS will be eligible for a \$200 award. Please apply to Dr. Cappellato for consideration in Environmental Science or Dr. Boyle for the GIS category.

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 dis-

cussed on an individual basis. 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 28, 2009. Also, if you are interested in working in the Biology Department this summer, please contact Sarah Hasty.

Student Research 2009-2010 Sponsored by Programs at Rhodes (Rhodes faculty supervisors listed)

Veronica Alix '12 *Localization of neural activation during aggressive behavior.* Bio 452 (Dr. David Kabelik)

Mohammad Atiq '10 *Heterologous expression of the yeast Mid2 gene in the filamentous fungus Aspergillus nidulans.* Bio 451 & 452 (Drs. Darlene Loprete, Terry Hill, and Loretta Jackson-Hayes)

Carsen Bahn '11 *National Outdoor Leadership School. An experience in outdoor environmental education.* Bio 451 (Dr. Rosanna Cappellato)

Carsen Bahn '11 *Completion of the ecosystem analysis of Rhodes Campus.* Bio 452 (Dr. Rosanna Cappellato)

Jason Ballard '11 *Localization of neural activation during aggressive behavior.* Bio 452 (Dr. David Kabelik)

Lindsey Bierle, '12 *Budding yeast CLN3 function in cell cycle progression requires the mRNA transport protein NPL3.* Bio 451 & 452 (Dr. Mary Miller)

Ted Boozalis '12 *Tail regeneration in lizards.* Bio 451 & 452 (Dr. Jon Davis)

Emily Burford '10 *Localization of neural activation during aggressive behavior.* Bio 451 & 452 (Dr. David Kabelik)

Stephanie Cassel '10 *Predator-predator interactions in captivity: How sharing a border with Ursus arctos affects the habitat use, behavior, and vocalizations of Canis lupus.* Bio 451 & 452 (Dr. Sarah Boyle)

Brittany Chavez '11 *Promoter replacement of genes regulating cytokinesis in the filamentous fungus Aspergillus nidulans.* Chem 451 & 452 (Drs. Loretta Jackson-Hayes, Terry Hill, and Darlene Loprete)

Cybil Covic '10 *Assessing the anthropogenic and natural risks posed to sea turtle critical habitats.* INTD 322 (Dr.

Sarah Boyle)

Cybil Covic '10 *Parasitology of amphibians & reptiles.* Bio 451 & 452 (Dr. Jon Davis)

Claire DelBove '11 *GFP tagging of genes regulating cytokinesis in the filamentous fungus Aspergillus nidulans.* BCMB 451 & 452 (Drs. Terry Hill, Loretta Jackson-Hayes, and Darlene Loprete)

Daniel Eastlack '11 *Development of a novel amphibian disease screening technique (at Memphis Zoo).* Bio 451 & 452 (Dr. Jon Davis)

Andy Foss-Grant '10 *Using GIS and climate predictions to anticipate global and regional issues.* INTD 322 (Dr. Sarah Boyle)

Katelyn Foster '11 *Role of EBA-175 dimerization in tight junction formation with red blood cells* Bio 452 (Dr. Laura Luque de Johnson)

Shannon Fuller '11 *Role of EBA-175 dimerization in tight junction formation with red blood cells* Bio 451 & 452 (Dr. Laura Luque de Johnson)

endangered leopards (at Memphis Zoo). Bio 451 & 452 (Dr. Jon Davis)

Chassidy Groover '10 *Promoter replacement of genes regulating cytokinesis in the filamentous fungus Aspergillus nidulans.* Chem 451 & 452 (Drs. Loretta Jackson-Hayes, Terry Hill, and Darlene Loprete)

Nina Guo '10 *Role of EBA-175 dimerization in tight junction formation with red blood cells.* Bio 451 & 452 (Dr. Laura Luque de Johnson)

Lindsey Gurkovich '11 *Heterologous expression of the yeast Mid2 gene in the filamentous fungus Aspergillus nidulans.* BCMB 451 & 452 (Drs. Darlene Loprete, Terry Hill, and Loretta Jackson-Hayes)

Jackie Hancock '10 *Thi73 dependent activity of the G1 cyclin Cln3 in S. cerevisiae.* Bio 451 (Dr. Mary Miller)

Rachel Hickey '11 *Promoter replacement of the gene encoding the Scca protein in the filamentous fungus Aspergillus nidulans.* (Drs. Darlene Loprete, Terry Hill, and Loretta Jackson-Hayes)

“Those who dwell among the beauties and mysteries of the earth are never alone or weary of life.” Rachel Carson

Julia Goss '10 *Assessing the anthropogenic and natural risks posed to sea turtle critical habitats.* INTD 322 (Dr. Sarah Boyle)

Julia Goss '10 *Behavioral responses to tail loss in lizards.* Bio 451 & 452 (Dr. Jon Davis)

Allison Graham '10 *Non-invasive reproductive monitoring techniques for*

Brianna Hoge '12 *Mitotic mapping of three novel septation mutants in the filamentous fungus Aspergillus nidulans.* Bio 451 (Drs. Terry Hill, Loretta Jackson-Hayes, and Darlene Loprete)

Brianna Hoge '12 *GFP tagging of genes regulating cytokinesis in the filamentous fungus Aspergillus nidulans.* Bio 451 & 452 (Drs. Terry Hill, Loretta

Jackson-Hayes, and Darlene Loprete)

Mary Elizabeth Huddleston '10

Nucleopore dependent G1 progression in budding yeast. Fall and Spring Research through the Rhodes Student Associate Program (Dr. Mary Miller)

Anna Johnson '11 *Parasitology of amphibians & reptiles.* Bio 451 & 452 (Dr. Jon Davis)

Stephen Juel '10 *Role of EBA-175 dimerization in tight junction formation with red blood cells.* Bio 451 & 452 (Dr. Laura Luque de Johnson)

Aaron Kala '12 *Neuropharmacology and neuroethology of aggression.* Bio 451 & 452 (Dr. David Kabelik)

Adiha Khan '13 *Molecular characterization of hemoparasites in local snakes: comparison between urban and rural environments.* Bio 452 (Dr. Laura Luque de Johnson and Dr. Jon Davis)

Landon LaSalle '12 *Tail regeneration in lizards.* Bio 451 & 452 (Dr. Jon Davis)

Lauren Lieb '10 *Behavioral observations of orphaned Ursus arctos cubs in a new captive environment.* Bio 451 & 452 (Dr. Sarah Boyle)

Trey Lowery '10 *Anti-sense knock-down of the Arabidopsis fasciclin-like*

arabinogalactan protein, FLA12. Bio 451 & 452 (Dr. Jonathan Fitz Gerald)

Kayla McCrury '11 *Ecosystem analysis of the Rhodes Campus by using the CITY Green computer model.* Bio 451 (Dr. Rosanna Cappellato)

John Musgrove '10 *Characterization of Aspergillus nidulans mutants expressing the gene SccA under control of the AlcA promoter.* Bio 451 & 452 (Dr. Terry Hill)

Erinn Ogburn '11 *GFP tagging of genes regulating cytokinesis in the filamentous fungus Aspergillus nidulans.* BCMB 451 & 452 (Drs. Terry Hill, Loretta Jackson-Hayes, and Darlene Loprete)

Michael Pluta '11 *GFP tagging of genes regulating cytokinesis in the filamentous fungus Aspergillus nidulans.* BCMB 451 & 452 (Drs. Terry Hill, Loretta Jackson-Hayes, and Darlene Loprete)

Kelly Patton '13 *Behavioral observations of orphaned Ursus arctos cubs in a new captive environment.* Bio 451 & 452 (Dr. Sarah Boyle)

Chris Perkins '13 *Role of EBA-175 dimerization in tight junction formation*

with red blood cells. Bio 452 (Dr. Laura Luque de Johnson)

Ke Shang '11 *Promoter replacement of genes regulating cytokinesis in the filamentous fungus Aspergillus nidulans.* BCMB 451 (Drs. Loretta Jackson-Hayes, Terry Hill, and Darlene Loprete)

David Siu '12 *Neuropharmacology and neuroethology of aggression.* Bio 451 & 452 (Dr. David Kabelik)

Jennifer Whatley '10 *Assessment of Chlordane levels in Memphis soils by ultrasonic extraction and gas chromatography-electron capture detection.* Geo 451 & 452 (Dr. Jen Houghton)

Miranda White '12 *Promoter replacement of genes regulating cytokinesis in the filamentous fungus Aspergillus nidulans.* Chem 451 & 452 (Drs. Loretta Jackson-Hayes, Terry Hill, and Darlene Loprete)

"To make a discovery is not necessarily the same as to understand a discovery."

Abraham Pais



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THE NEWSLETTER OF THE BIOLOGY DEPARTMENT AT RHODES



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