BIOFEEDBACK

THE NEWSLETTER OF THE BIOLOGY DEPARTMENT AT RHODES

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A Special Thank You to the Jaslows and Ms. Sarah Hasty





Dr. Carolyn Jaslow



Ms. Sarah Hasty

With a very heavy heart, the Department of Biology says goodbye to three incredible colleagues this year. Dr. Alan Jaslow joined the Biology faculty in 1984, and has served as the Director of Health Professions Advising. Dr. Carolyn Jaslow joined in 1988, and has held numerous leadership roles at the college, including the Biology Department chair from 2013 to 2019. Ms. Sarah Hasty joined the Department in 2009, and has been pivotal in creating a powerful learning environment and community for our students. It is difficult to imagine the Department without any one of these amazing people, and to lose all three in one year is so hard! But we are excited for what retirement will bring for Carolyn, Alan, and Sarah. Join me in sending a deep thank you to each of them, and on May 11, 2021 at 4:00 PM, we will have a virtual celebration of their work and a festive Rhodes Biology "fare forward" from the Department to Carolyn, Alan, and Sarah. We truly appreciate all that you have each done for Rhodes. – Dr. Mary Miller, Chair



HONORS AND AWARDS

Congratulations to Faculty and Students for the Following Achievements and Activities:



Barnett AA, **Boyle SA**, Kinap NM, dos Santos-Barnett TC, Camilo TT, Parolin P, Piedade M, and Bezerra B. 2020. Buds, bugs and bienniality: the floral biology of *Eschweilera tenuifolia* (0. Berg) Miers (Lecythidaceae) in blackwater flooded forest (*igapó*), Central Amazonian Brazil. *Forests* 11:1251. <u>https://doi.org/10.3390/f11121251</u>

Boyle SA, Berry N CHEM/MATH '14, Cayton J BIOL '14, Ferguson S BIOL/ENVS '17, Gilgan A BIOL '18, Khan A BIOL '13, Lam H ENVS '19, Leavelle S BIOL '14, Mulder I BIOL '17, Myers R BIOL '18, Owens A NEUR '11, Park J CHEM '17, Siddiq I BIOL '18, Slevin M BIOL '12, Weidow T BIOL '15, Yu A BIOL '13, and Reichling S. 2020. Widespread behavioral responses by mammals and fish to zoo visitors highlight differences between individual animals. *Animals* 10:2108. <u>https://doi.org/10.3390/ani10112108</u>

Boyle SA, de la Sancha N, Pérez P, and Kabelik D. 2021. Small mammal glucocorticoid concentrations vary with forest fragment size, trap type, and mammal taxa in the Interior Atlantic Forest. *Scientific Reports* 11:2111. <u>https://doi.org/10.1038/s41598-021-81073-2</u> *The findings from this publication have been highlighted by news outlets in North America, South America, and Europe. **Laport RG.** 2020. Remnant American chestnut (*Castanea dentata* (Marsh.) Borkh.; Fagaceae) in upland forests of western New York. *Proceedings of the Rochester Academy of Science* 21: 5-14.

https://cdm16694.contentdm.oclc.org/digital/collection/p16694coll84/id/7304/rec/91

Laport RG, Minckley RL, and Pilson D. 2021. Pollinator assemblage and pollen load differences on sympatric diploid and tetraploid cytotypes of the desertdominant *Larrea tridentata*. *American Journal of Botany* 108: 297–308. <u>https://doi.org/10.1002/ajb2.1605</u>

Shen Q and Rappleye CA. 2020. Living within the macrophage: dimorphic fungal pathogen intracellular metabolism. *Frontiers in Cellular and Infection Microbiology*, 10. <u>https://doi.org/10.3389/fcimb.2020.592259</u>

Souza-Alves JP, Chagas RRD, Santana MM, **Boyle SA**, and Bezerra BM. 2021. Food availability, plant diversity, and vegetation structure drive behavioral and ecological variation in Endangered Coimbra-Filho's titi monkeys. *American Journal* of *Primatology*. 83:e23237 <u>https://doi.org/10.1002/ajp.23237</u>

Tomanek P, Mourthe I, **Boyle SA**, and Barnet AA. 2020. Calls for concern: matching alarm response levels to threat intensities in three Neotropical primates. *Acta Decologica* 109:103646. <u>https://doi.org/10.1016/j.actao.2020.103646</u> Yousuf S BMB '19, Karlinsey JE, Neville SL, McDevitt CA, Libby SJ, Fang FC, and Frawley ER. 2020. Manganese import protects *Salmonella enterica serovar* Typhimurium against nitrosative stress. *Metallomics*, 12: 1791-1801. <u>https://doi.org/10.1039/D0MT00178C</u>



Craddock H and **Laport RG**. Restoring the American chestnut tree. Wolf River Conservancy. Virtual (March 3, 2021)

Kelly PT, Taylor J, Andersen I, and Scott JT. Positive responses of net ecosystem

productivity to increasing N:P ratios in experimental lake mesocosms. North American Lake Management Society Annual Meeting. Virtual (November 18, 2020)



Laport R. 2016-2022. National Science Foundation, DEB Ecological and Evolutionary Processes (1556371). Small Grant: Is pollinator discrimination among populations of the southwestern desert creosotebush differing in chromosome number promoting speciation? \$149,999 Laport R. 2019-2022. Al for Earth Microsoft Azure Compute Grant, LeafMachine: Autonomous Trait Data Extraction from Digitized Plant Specimens Using Machine Learning. \$10,000

Miller M. 2017-2021. (Senior Personnel/Workshop Coordinator) National Science Foundation 15-527 RCN-UBE: Yeast Orphan Project: Finding a place for ORFans to GO. \$485,852.00 funding over five years to support workshop training for faculty to incorporate research approaches in the teaching laboratory.

Senior Seminar Remote Lottery

Next year, the Biology Department will offer three sections of Biology Senior Seminar: one in the fall and two in the spring. Rising seniors, please consult the descriptions of these senior seminar courses below.

All rising Biology seniors must e-mail to Dr. Carolyn Jaslow (cjaslow@rhodes.edu) a ranked list of their senior seminar preferences by 4:00 PM on Wednesday April 7th. Your list must include all three seminar sections in order from #1 (first choice) to #3 (last choice).

Remote Lottery Procedure: Each of you will be assigned a random number, which will be used to assign you, one at a time, to a seminar section based on the order of your three choices. If you do not have a strong preference, please indicate that clearly in your list. For example, if you prefer seminar section #2 as your first choice, but would be equally happy with sections #1 or #3 as your next choice, then your list would look like this:

Choice 1) Seminar section #2

Choice 2) Seminar section #1 or section #3

Otherwise, please send a list that clearly specifies #1 (first choice), #2, and #3 (last choice). Anyone who does not include all three courses in their e-mail will be given last pick. Anyone who does not send their choices via e-mail by **4:00 PM, Wednesday April 7th** will be placed into whatever openings are left after the selection process is completed.

After the remote lottery is finished, you will receive an e-mail informing you of your placement. Following our usual procedure, if one or two sections fill before everyone has been entered in their first choice, up to 4 students may be placed on a waitlist for any closed section. The e-mail you receive will notify you if you are on a waitlist, in addition to your placement.

How to Enroll in your Assigned Section: the lottery reserves you a place in a senior seminar without costing you a "pick" on your Tree, but it does not enroll you in the course. You will need to do that yourself. When you preregister for the semester when your reserved seminar section is scheduled, you should list your senior seminar last on the preregistration Tree under the category of "Other Courses" or you can add yourself to your reserved section during online drop/ add. Biology students will not be allowed to register in a seminar section other than the one in which they were placed during 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 (cjaslow@rhodes.edu) immediately.

Senior Seminar Choices for 2021-2022

Fall Senior Seminar

BIOL 485-01. Seminar in Biomedical Science TR 3:45-5:00 | Dr. Gary Lindquester

This senior seminar will be offered in partnership with St. Jude and supervised by Dr. Lindquester. Specific topics include Novel Therapies for Hematological Diseases, The Molecular Biology of Childhood Leukemia, Gene Regulatory Disruptions in the Pathogenesis and Pharmacogenomics of Leukemia, Microenvironmental Regulation of Hematopoietic Stem Cell Development, and The Science Behind Optimizing Hematopoietic Stem Cell Transplantation. Students will be teamed with a post-doctoral fellow and a principal investigator from St. Jude to explore their areas of interest in the oral and written presentations typical of senior seminars. For more information on this seminar, contact Dr. Lindquester.

Spring Senior Seminars

BIOL 486-01. Prokaryotic-Eukaryotic Symbioses

MWF 11:00-11:50 | Dr. Elaine Frawley

Most multicellular eukarvotic organisms are not just the individuals they appear to be at first glance. Rather, they are one member of a multi-species community consisting mainly of prokaryotes (microbes). This microbial community living on or within a eukaryotic organism can affect aspects of the eukaryote's biology such as metabolism, behavior, development and reproduction. The host environment likewise exerts a strong selective pressure on the microbial community and influences prokaryote physiology and genetics. This senior seminar will examine these close associations between prokarvotes and eukarvotes from both sides of the relationship. 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, ocean habitats and other environments, according to class interests. Independent review papers will focus on the current

literature characterizing a symbiosis of the student's choice. This seminar should be suited to those with evolutionary and ecological interests as well as those with molecular and biochemical interests.

BIOL 486-02. Medical Mycology TR 11:00-12:15 | Dr. Terry Hill

This course will focus on fungal pathogens of humans and other animals through studentselected topics. Example topics from previous seminars have included molecular mechanisms of pathogenesis, the ecology of fungal pathogens, emerging fungal diseases, cellular aspects of development, molecular biology of drug therapy and drug resistance, and recent advances in vaccine development, among several other topics. Students will select and present recent research from the primary literature and lead class discussions in their topics. All students will be responsible for submitting summaries and discussion questions from the assigned readings and for evaluating one another's work. A studentwritten and student-graded final exam will be one component of the final grade.



Curricular Evolution Biology Course Updates for 2021-2022

NEW THIS FALL: BIOL 348/348L Wildlife Biology with Lab

Put on your boots! Taught by Dr. Collins, this discussion-based course will emphasize the synthesis and integration of ecological principles to address complex issues in wildlife conservation and management. Ecological topics include estimating population size, habitat management, hunting, population viability analysis, wildlife interactions, human/wildlife conflict, and endangered species management. Labs will include substantial time in the field learning wildlife techniques coupled with computational approaches to synthesize data. Class meets TR 11-12:15 with labs M 1-4.

BIOL 380 Topics in Biomedical Science

TiBS features clinically-relevant topics from St. Jude Children's Research Hospital and will be offered in the Fall. Topics for 2021 are TBD; however, previous topics have included COVID-19, antimicrobial drug resistance, genetics of personalized medicine and neural sensory circuits.



COMING IN THE SPRING

BIOL 330 Virology/Immunology

After a year's absence, Virology and Immunology will once again be offered in Spring of 2022. Dr. Frawley looks forward to teaching this course for the first time and discussing this timely topic with interested students.

NEW COURSE: BIOL 316 Freshwater Ecology with Lab

Aquatic ecosystems range broadly in scale: from small stormwater ponds to the Great Lakes, and from headwater streams to the Mississippi River. This course focuses on different aspects of each of those environments, with particular attention paid to the biology of freshwater systems, including biodiversity, biogeochemistry, and food webs. We will cover carbon and nutrient cycling in streams and lakes, relationships between watersheds and characteristics of inland waters, and the role of environmental change in shaping physical, chemical, and biological traits of freshwater ecosystems. Additionally, we will cover ecological interactions of organisms living in aquatic environments and the role that humans have played in influencing how our aquatic ecosystems behave. Laboratories will involve skill building in field, lab, and computer settings, including study design and implementation, field sampling, organism identification, data analysis, and mathematical and ecosystem modeling. The course will also build skills in communication through presentations and class discussions, as well as a continued focus on reading and interpreting peer-reviewed literature.

Prerequisites:

Biology I, Biology I Lab, Biology II, Biology II Lab —OR—

Biology 120 with Lab and Chemistry 120 with Lab

What Else Will Be Offered Next Spring?

In addition to Virology/Immunology and Freshwater Ecology, we tentatively plan to offer the following courses: Animal Physiology, Genetics, Microbiology, Molecular Biology, Population Genomics, Plant Diversity & Evolution, Ornithology, and Developmental Neuroscience. Spring should also include sections of Biochemistry, Mechanisms of Drug Action, and Neuroscience.

Semester in Environmental Sciences at Marine Biological Labratory

The Marine Biological Laboratory at Woods Hole offers a Semester in Environmental Sciences Program every Fall. This 16-credit program is geared towards Biology, Chemistry, and Environmental Science majors interested in ecosystem science and biogeochemistry. Students take courses such as Aquatic and Terrestrial Ecosystem Analyses, Microbial Ecology, and Independent Research, and get to know many of the resident and visiting scientists at Woods Hole. The annual SES deadline is early March. There is a scholarship available. Students who are interested in learning more about the program for Fall 2022 or Fall 2023 should contact Dr. Sarah Boyle.



The Plant Science Research Facility enduring the blizzard of 2021.

FRAZIER JELKE SCIENCE CENTER

Optimal Foraging The following courses will be offered next semester

Number **Hours Offered Course Title** 120 Intro to Environmental Science MWF 11:00-11:50 (Kellv) T lab 12:30-3:30 130 Biology I (5 sections) MWF 9:00-9:50, 10:00-10:50 TR 8:00-9:15, 9:30-10:45, 11:00-12:15 131 Biology I Lab (10 sections) T 12:30-3:30 W 1:00-4:00 R 12:30-3:30 F1:00-4:00 200 Evolution (Laport) TR 9:30-10:45 R 12:30-3:30 207 Animal Behavior (Boyle) MWF 8:00-8:50 W lab 1:00-4:00 301 Microbiology (Frawley) MWF 8:00-8:50 R lab 12:30-3:30 304 Genetics (Miller) TR 11:00-12:15 T lab 12:30-3:30 307 Cell Biology (Hill) TR 8:00-9:15 311 Invertebrate Biology (Moyo) MWF 9:00-9:50 T lab 12:30-3:30 325 Molecular Biology (Wheeler) MWF 9:00-9:50 R lab 12:30-3:30 Wildlife Biology (Collins) 348 TR 11:00-12:15 M lab 1:00-4:00 Comp. Vert. Morph (TBA) MWF 12:00-12:50 350 T lab 12:30-3:30 375 Neuroendocrinology (Kabelik) MWF 10:00-10:50 T lab 12:30-3:30 380 **Topics in Biomedical Science** TR 8:00-9:15 (Lindquester) Methods in Cell Biology (Hill) **BMB 310** W 1:00-5:00 CHEM 315† **Biochemistry (Loprete, Stoddard)** MWF 11:00-11:50 TR 11:00-12:15 **NEUR 270†** Neuroscience (Klatzkin) MWF 10:00-10:50 **Senior Seminar Sections** 485 Seminar in Biomedical Science TR 3:45-5:00 (Lindquester)

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

DEPARTMENTAL MIGRATIONS



Farewell to the Jaslows!

After a combined 70 years at Rhodes, Dr. Alan Jaslow and Dr. Carolyn Jaslow will be retiring at the end of this spring semester.

Dr. A Jaslow arrived at Rhodes in 1984. Over the years, many students, and even several children of students, have learned vertebrate anatomy, behavior, and evolution from Dr. A Jaslow, using one of the most diverse collections of skeletal specimens at any liberal arts college. From a tiny shrew to an intimidating 14 ft. python, many of the skeletons were painstakingly prepared by Dr. A Jaslow from animals he had collected or received as donations. For any



student hesitating over a dissection step, Dr. A Jaslow's exhortation to "Just do it" became such a common lab expression that his students memorialized it on the Comparative Vertebrate Morphology (CVM) class t-shirt, which also featured a cat-fish skeleton chimera drawn by former CVM student, Stephen Montgomery '90.

Dr. A Jaslow received the Clarence Day Award for Research and Creative Activity in 1989 for his research on amphibian acoustics and middle ear evolution. In 2006, he took on the directorship of the Health Professions Advising program. Previously, the HPA duties were shared and rotated among other science faculty as extra service on top of their other obligations. The creation of a centralized HPA program under Dr. A Jaslow's leadership led to a period of exponential growth in programming, resources, and the number of students served. Dr. A Jaslow alone personally assisted over 1800 students until 2016, when the HPA office gained additional staff.

Perhaps you were never one of the CVM students told to "Just do it," or one of the BIOL 140 students





who handled specimens from tree stumps to fossilized feces that Dr. A Jaslow would pass around as visual aids. Nonetheless, if you have spent any time in FJ over the years, you likely have seen the snakes, tarantulas, lizards, and orchids that Dr. A Jaslow raised and brought out for display. As an undergraduate Zoology major with a Botany minor, Dr. A Jaslow's passion and interest in the adaptations of organisms have brought biology to life for many.

Dr. C Jaslow began teaching at Rhodes in 1988. Her Histology and Embryology courses, which focused heavily on human biology and health, were eagerly sought by many generations of prehealth students and she received the Clarence Day Award for Outstanding Teaching in 1995. Often former students would reach out to request additional course materials or to comment on how nice it was to have at least one class in their first year of medical school where they didn't have to study. Some served as unofficial Histology tutors for their classmates. Each fall, students in the Jaslows' classes were invited to an end-ofsemester dessert party featuring hot spiced cider and a tableful of homemade "high calorie per volume" treats that Dr. C Jaslow had baked.

For the latter part of her career, Dr. C Jaslow's research focused on reproductive biology, specifically factors contributing to recurrent pregnancy loss (RPL), which is a devastating

disease for couples who wish to bear children. In collaboration with Dr. William Kutteh of Fertility Associates of Memphis, the papers that Dr. C Jaslow generated contributed to the decision by the American Society for Reproductive Medicine to alter its recommendation for the diagnosis of RPL. This allowed women to receive diagnostic testing earlier.

From 2013-2019, Dr. C Jaslow served as the chair of the Biology Department. This was a period of substantive growth in student enrollment, the Biology faculty and staff, and our physical plant, which gained both Robertson Hall and the Greenhouse. She leaves the department carrying many fond memories of the wonderful students and colleagues she has known.

Both Dr. A Jaslow and Dr. C Jaslow are working remotely from home this year. If you are dismayed that you will not have a chance to see them in person to say goodbye, note that they have been granted another year after their May retirement to clean out their offices in FJ.

Farewell and thank you to Ms. Sarah Hasty!

Ms. Sarah Hasty will be retiring from Rhodes at the end of June. She joined the Biology Department in 2009 as the department Lab Supervisor, a term that doesn't do justice to the many roles she has played overseeing all that goes on in FJ. Ms. Hasty's duties have included set-up and take down of labs and supervision of the student TA's: ordering and paving for all supplies and equipment and arranging maintenance on the equipment; assisting faculty with their research; ensuring compliance with a host of government mandated safety regulations; responding to 2 AM alarms about power outages to the ultralow freezers; and caring for all of the living creatures in FJ, from Daphnia to Wallace, the bearded dragon. Most of Ms. Hasty's work goes on behind the scenes, but if you have ever taken a lab class in FJ, you have benefitted from her hard work!

The breadth of duties Ms. Hasty performs for the Biology Department is huge, but it is only the tip of the iceberg of her life's work experiences that include positions such as zookeeper, aquatic toxicologist, and senior lab specialist in medical departments at the Veterans Affairs Medical Center and the University of Tennessee Health Science Center. A life-long Memphian, Ms. Hasty is known for her long-distance running and her love of living creatures, including the dogs, fish, and pied zebra finches who share a home with her and husband, David.



When Ms. Hasty received the Rhodes Outstanding Administrator Award in 2014, she was highly lauded "for her amazing work ethic, her conscientious attention to detail, her investment of time finding and caring for our living organisms, her thoughtful contributions for improving the labs, and her good spirits and optimism." Ms. Hasty has been the beating heart that kept FJ running for many years, and we are deeply grateful for all her kindnesses and for the extraordinary efforts she has invested to support the work of the Department. We wish her much happiness in her retirement and will greatly miss the sound of her keys jingling through the hallways of FJ.



Signals & Displays Short Communications

Tri-Beta News

Beta Beta Beta ($\beta\beta\beta$) is a national biological sciences honor society with an active chapter at Rhodes College. $\beta\beta\beta$ 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. BBB 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 $\beta\beta\beta$ 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 Brandon Wardell, at wadbr-21@rhodes.edu.

Tri-Beta has some exciting service projects planned for the fall and spring semesters. One ongoing, community-serving project entails volunteering at Springdale Elementary Science Saturday events. Other campusserving events include Peer Advising hours in which students interested in the biological sciences can seek advice and suggestions about classes from upperclassmen majoring in Biology, Neuroscience, Environmental Science, or Biochemistry and Molecular Biology. Our next induction ceremony will take place next year in the Spring of 2022. We are excited to welcome new individuals into the society and congratulate them on their commitment to biological excellence.

\$\$ 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 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 their research supervisor, and a self-evaluation form to Dr. Dougherty at <u>doughertyk@rhodes.edu</u> by Friday, March 26th, 2021. Announcement of the award winner will be made at spring awards convocation ceremony.

Rhodes Symposium

The Rhodes Symposium (formerly known as 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. The Symposium will take place on Friday, April 30, 2021.

Work in the Biology Department TA and Summer Positions Available

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 20, 2021.

If you are interested in working in the Biology Department this summer, please contact Sarah Hasty.



Mugs for Majors!

The *Pentaceratops* dinosaur that occupied the FJ Lobby for 20 years was removed during renovations in 2013. We now have a mural and fond memories of its time in FJ, plus we have Biology Dinosaur coffee mugs for majors! This year, we also have brand new mugs (in Rhodes' black and red signature colors!) featuring our Biology department logo. When you complete your declaration of a Biology major, email Ms. Andrea Wilkins (<u>wilkinsa@rhodes.edu</u>) to ask for your mug. You can also contact Ms. Wilkins to pick one up if you declared before this year and never got one. Cheers!



Environmental Studies and Science Program

On behalf of the Environmental Studies and Sciences (ENVS) faculty, here is a big welcome to our new ENVS majors! There are a range of environmentally focused courses being offered in Fall 2021, A list of these courses, along with course descriptions, can be found on our ENVS Canvas Page, Would you like to join the ENVS Canvas site? Please email Dr. Boyle (boyles@rhodes.edu). The ENVS Canvas site contains information about opportunities related to research, internships, local seminars, jobs, and graduate school, All majors are welcome to participate in the page. If you are considering an ENVS major or minor, please speak with Dr. Boyle so she can make sure you receive important emails about environmental opportunities on and off campus.

Biochemistry and Molecular Biology

Welcome to all the newly declared BMB majors! We are also excited that Dr. Qian Shen has joined the BMB program.

Next fall, all three of the core, upper level, BMB lecture courses will be offered: BIOL 307 (Cell Biology), BIOL 325/325L (Molecular Biology with lab), and CHEM 315 (Biochemistry). Additionally, BMB 310 (Methods) will be offered in the fall. The spring semester will include only the two core BMB lecture courses: Molecular Biology with lab and Biochemistry. BMB senior seminar will be offered in the spring. Please consult the online course schedule for times and other information as it is made available for these courses and others that serve as BMB electives.

As an ASBMB accredited program, BMB majors take the ASBMB certification exam to earn a certified degree. The ASBMB Certification Exam will be taken on March 25 this year. We wish all the seniors taking the exam good luck!

Please feel free to contact program chair Dr. Peterson at <u>petersonl@rhodes.edu</u> if you have questions concerning the BMB program.

Neuroscience Program Announcements

The Neuroscience Program is seeing many comings and goings. First, we wish to congratulate Dr. Tanushree Pandit on her transition from a teaching fellowship to her new position as Assistant Professor. We also wish farewell and good luck to Dr. Julia Haas, who leaves the college for new pursuits overseas. We will additionally be without Dr. Kelly Dougherty during the upcoming year, as she will be conducting a year-long sabbatical at St. Jude Children's Research Hospital. And to top that off, we will also be without Dr. Jason Haberman, who will be on sabbatical leave during the fall semester. Thus, please bear with us, as we will be somewhat shorthanded during this upcoming year.

In Fall 2021, we will therefore only offer one section of NEUR 270 "Neuroscience," as well as one section of NEUR 485 "Senior Seminar." In Spring 2022, we will offer one section of NEUR 270, and two sections of NEUR 486 senior seminar. We will email rising seniors to schedule them into either a fall or spring senior seminar. In terms of depth courses, PSYC 345 "Cognitive Neuroscience" will unfortunately be on hiatus this upcoming year, but to make up for it, we will offer BIOL 375 "Neuroendocrinology" (in the fall) after all. PSYC 344 "Movement Neuroscience" will also be offered in the fall, and in spring we offer a new Biological depth course, taught by Dr. Tanushree Pandit, in the area of Developmental Neuroscience (it will fulfill the same major requirement as BIOL 375 and BIOL 376). In the breadth course category, we will



Braxton Jeffcoat (ENVS/BIOL '22) counting and measuring Pawpaw trees at T.O. Fuller State Park.

have PSYC 318 "Clinical Neuroscience" scheduled in both semesters, and CHEM 411 Medicinal/ Computational Chemistry in spring.

Have other burning Neuroscience questions? Please email Dr. Kabelik (<u>kabelikd@rhodes.edu</u>), the chair of Neuroscience.

BioMath Major Announcements

Required math/cs courses offered in Fall 2021: MATH 122 (Integral Calculus, 3 sections), MATH 211 (Applied Statistics, 2 sections), MATH 214 (Discrete Math Modeling w/ Bio Applications), MATH 251 (Differential Equations), COMP 141 (Fundamentals of Computer Science); please note that MATH 122 and COMP 141 will also be offered in Spring 2022.

Required biology courses offered in Fall 2021: BIOL 130 + 131 (Biology I + Lab), BIOL 200 (Evolution), BIOL 304 (Genetics)

Elective math courses offered in Fall 2021: MATH 201 (Transition to Advanced Math), MATH 223 (Multivariable Calculus), MATH 305 (Probability & Simulation), MATH 321 (Real Analysis)

Elective math courses offered in Spring 2022: MATH 223 (Multivariable Calculus), MATH 261 (Linear Algebra), MATH 312 (Mathematical Statistics), MATH 314 (Agent-Based Modeling)

Elective biology courses: As a reminder, any biology course at the 200 or 300 level can be counted as a biology elective. At least two biology electives must have a lab.

If you have questions about math/cs required or elective courses, please contact Dr. Bodine (<u>bodinee@rhodes.edu</u>). If you have questions about biology required or elective courses, please contact Dr. Miller (<u>millerm@rhodes.edu</u>).



The goals of the Biology Inclusivity, Diversity, and Equity (BIDE) Committee are to understand how students and faculty, with an emphasis on those from historically underserved and/ or underrepresented groups, experience our classrooms and labs, to help promote a sense of belonging, and to help ensure equal access to opportunities. Current members include Professors Sarah Boyle, Carolyn Jaslow, Patrick Kelly, Robert Laport, and Bayly Wheeler. Comments or questions? Please let us know at <u>bide@rhodes.edu</u>

Student Research 2020-2021 Sponsored by Programs at Rhodes (Rhodes faculty supervisors listed)

Batschelett M NEUR '21 and Waddell B NEUR '21. Baseline neural activity differences between bold and shy male green anoles, Anolis carolinensis. (Dr. David Kabelik)

Boren R BMB/MUSC '21. Engineering Pseudomonas aeruginosa mutants for evaluation of novel antibiotics. (Dr. Elaine Frawley)

Brookover Z BIOM '21 and Christman B BIOM/ENVS '21. Demographic modeling of remnant American chestnut (Castanea dentata) populations in western Tennessee and northern Mississippi. (Dr. Robert Laport)

Cohn M ENVS '21 and Cheang A ENVS '20. Amphibian behavior and conservation. Dr. Sinlan Poo, Memphis Zoo. (Dr. Sarah Boyle)

Fontana E BIOL '22, Brown C BMB '22, and Krisanic G BMB '23. Synthesis of potential LpxC inhibitors as antibacterial agents. (Dr. Larryn Petterson)

Greebon E ENVS '22, Mihalevich P '24, and Wigman G BIOL '22. Louisiana pine snake physiology. Dr. Mark Sandfoss, Memphis Zoo. (Dr. Sarah Boyle)

Hameed M BMB '21. Using yeast two-hybrid to explore physical interactions between protein kinase C and cell wall polysaccharide synthases in Aspergillus nidulans. (Dr. Loretta Jackson-Hayes)

Hatfield M BIOL '23, Hill J BIOL/HIST '21, Pulaski J ENVS '21, Thomas N ENVS/MUSC '21, Ton K ENVS '23, Tuznik G BIOL '22, and Yde M BIOL/ENVS '23. Spatial and behavioral analyses of captive African elephants. (Dr. Sarah Boyle)

Hernandez J ENVS '21. Landscape metrics. Dr. Adam Alsamadisi, USFS. (Dr. Sarah Boyle)

Ho T BMB '22. Co-immunoprecipitation/Mass-Spectrometry investigation of protein-protein interactions involving EF-hand and IQ-motif proteins in Aspergillus nidulans. (Dr. Terry Hill)

Hyatt N BMB '21. Bimolecular fluorescence complementation investigation of protein-protein interactions between the protein kinase c and glycan synthases in Aspergillus nidulans. (Dr. Terry Hill)

Jeffcoat B ENVS/BIOL '22. Population density of Pawpaw (Asimina triloba), an evolutionary anachronism, in remnant forests of southwestern Tennessee. (Dr. Robert Laport)

Lempner A BMB '21. Indirect immunofluorescencebased localization of the Thi73 membrane transporter. (Dr. Mary Miller)

Lewin I '24. Consequences of unpaired heterochromatin in S. pombe. (Dr. Bayly Wheeler)

Marotta L NEUR '21, Weatherspoon S, Patterson A, Joyce C, Ridley-Pryor T, Petro A, and Wheless J. Prevalence and natural history of dysphagia in infants with infantile spasms: a retrospective review. Le Bonheur Neuroscience Research Fellowship. (Dr. David Kabelik)

Nguyen L BMB '23. GFP and RFP tagging of rhoclass GTPases in Aspergillus nidulans. (Dr. Terry Hill)

Nvamkondiwa K BMB '22 and Steiner J BMB/FREN '22. Synthesis and investigation of dopamine and related catechol derivatives. (Dr. Larryn Petterson)

Root E BIOL '22. Endocrinology of captive animals. Beth Roberts, Memphis Zoo. (Dr. Sarah Boyle)

Royal S '24 and Yde M BIOL/ENVS '23. Amphibian behavior and conservation Dr. Allison Bogisich, Memphis Zoo. (Dr. Sarah Boyle)

Saravanakumar A BIOL '24. Molecular basis of mitochondrial dysfunction in diabetic retinopathy. Dr. Thirumalini Vaithianathan, UTHSC. (Dr. Gary Lindquester)

Sarwar N '23. Stomatal size differences between diploid, tetraploid, and hexaploid L. tridentata at naturally-occurring zones of sympatry and parapatry. (Dr. Robert Laport)

Schulze C NEUR '21 and Holcombe B. Long term atypical teratoid rhabdoid tumor survivor with surprisingly intact neuropsychological functioning. LeBonheur Summer Plus Program. (Dr. David Kabelik)

Schweitzer S BIOL '22. Rapamycin dependent cycling of the Thi73 membrane transporter. (Dr. Mary Miller)

Strauss A ENVS/RELS '21 and Velasquez M ENVS '21. An assessment of nitrogen and phosphorus concentrations in lakes and streams throughout the Mid-South. Rhodes Summer Student Fellowship. (Dr. Patrick Kelly)

Taylor J ENVS '21. Agricultural research. Dr. Bruce Kirksey, Agricenter. (Dr. Sarah Boyle)

Tiwari A BMB'21. Comparing distributions of the neural activity markers Fos and pS6. (Dr. David Kabelik)

Xhafkollari G BMB '23. Determination of the pKa of dopamine and its derivatives using UV-vis spectroscopy. (Dr. Larryn Peterson)

Yammanur M NEUR '22, Honig M, Del Mar N, Henderson D, O'Neal D, Cox R, Li C, Perry A, Moore B, and Reiner A. Rescue of visual deficits and visual system pathology after single and repeat ocular blast injury via the cannabinoid type-2 receptor inverse agonism of raloxifene. Rhodes/UT Neuroscience Research Fellowship. (Dr. David Kabelik)

