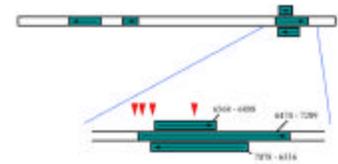


BIOFEEDBACK

Ca²⁺ Na²⁺ The Newsletter of the Biology Department at Rhodes



Volume 18

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Number 1

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* will be published each semester.

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The Chair's Niche:

This is truly an exciting and progressive time to be a Rhodes student. Rhodes is rising up the lists of notable colleges and universities at the same time it builds a new library, engages its trustees in discussions on innovative strategic imperatives, and gears up to initiate a large fund-raising endeavor. The Department of Biology is both a leader in, and a beneficiary of, many of these activities. First, the Student Engagement Imperative will develop resources and programs that enhance the already active undergraduate research program in which many of you are involved. This year, Dr. Robert Strandburg of the Psychology Department accepted the appointment of Associate Dean for Undergraduate Research and Service, a position that will develop and oversee new programs. This month, Dr. Chuck Stinemetz submitted a grant proposal to the Howard Hughes Medical Institute on behalf of the college requesting nearly \$1.6 million to support undergraduate research, outreach programs, and upper-level laboratory redesign. Finally, faculty in biology, chemistry, psychology and other departments are exploring the notion of developing interdisciplinary majors in areas such as Molecular and Cellular Biology and Biochemistry, Neuroscience, and Environmental Studies.

This semester, we welcomed two new post-doctoral faculty fellows to the department. Dr. Zhumei He is working with Drs. Terry Hill and Darlene Loprete while Dr. Cate Fenster is working with Dr. Jay Blundon. Meanwhile, Dr. David Kesler is on sabbatical and will return in the spring; Dr. Stinemetz is on sabbatical and will return next fall. Looking to the future, as we anticipate the arrival of a new member of the Miller family, Dr. Miller will be on leave during the spring term; and we are in the process of hiring part-time faculty to teach

Genetics and the Cancer Biology Senior Seminar. Dr. Terry Hill will be on sabbatical during the next academic year. We will seek a replacement to offer Cell Biology in the fall of 2004, but Mycology may not be taught during Dr. Hill's absence in the spring of 2005.

We have seen more improvements in the facilities of late. Most notably, students in laboratories have voiced appreciation for padded seating. The cell physiology lab has new computers, and FJC has computer projection capability. And thankfully, severe storms have tested the recent renovations and repairs in water-proofing the building and shown that the majority of our water problems are solved -- at least for now.

Finally, on the personal side, biology faculty are on the move. In the last few years, Drs. Olsen and Miller moved to new homes. In the last few weeks, Drs. Lindquester and Jaslow moved to new homes, and Dr. Kesler purchased a new home. You better not rely on Faces when you address those Christmas cards!

---- Dr. Gary Lindquester

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Primary Productivity and Secondary Growth

The following is a list of honors, awards, publications and meeting participation of our faculty and students since March 9, 2003.

Honors and Awards:

CONGRATULATIONS TO ...

.....**Katie Cox '03**, who won the Award for Excellence in Biology for the '02-'03 academic year. Additionally, **Shaunna Torrance '04** was named the recipient of the 2003 Award for Outstanding Student Research in Biology. Finally, **Bethany Drehman '06** won the Award for Excellence in First Year Biology.

...**Alison Groeger '04**, who won a best student presentation awards at the 10th annual South Eastern Regional Yeast Meeting, held at the University of Alabama, Birmingham and at the Western Collegiate Ten-

nessee Academy of Science meeting. See "Meetings" on p. 2 for Alison's presentation and those given by other Rhodes students and faculty.

.....**Kristy Kummerow '04** who was awarded a John Henry Davis Scholarship.

.....**Kimberly Bartmess '04**, who was awarded the Mertie Buckman International Scholarship for Women.

.....the Phi Beta Kappa initiates of the class of '03: **Adam Becker '03, Katie Cox '03, Miriam Dillard '03, Timothy Hoggard '03, Jennifer Riem '03, Eric Santiago '03**, and **Sandra Scott '03**.

.....**John Bienvenu '03, Natalie Dumont '04, Matt Fletcher '04**, and **Kristy Kummerow '04** who were inducted into the Phi Circle of ODK.

.....the following students were named to the Search Advisory Council: **Kelley Babcock '06, Valerie Hartmann '06, Daniel Keedy '06, Latoya Newsom '06**, and **Rachel Pigg '06**.

.....**Kimberly Bartmess '04, Natalie Dumont '04, Liz Glass '04, Kristy Kummerow '04**, and **Michael Lyerly '04** who were recently inducted into the Mortar Board honor society. Additionally, **Laura Borg '04** was named treasurer for the coming year.

.....the new officers of Rhodes' chapter of βββ: **Alison Groeger '04** (President), **Rose Hiner '04** (Vice-President), **Heidi Rademacher '05** (Secretary), **Carolyn Westfall '05** (Treasurer), and **Jodi Little '05** (Historian). For more information about βββ, see p. 6.

.....**Daniel Keedy '06** received the Fred W. Neal Award for Outstanding First Year Search Student.

PLEASE BE SURE TO LET US KNOW ABOUT YOUR AWARDS, HONORS AND ACTIVITIES.

Grants and Fellowships:

Becky Heineke '04 was awarded a Summer Fellowship through an Assisi Foundation Grant at the Memphis zoo. Her work included a study of Panda behavior.

Dr. Alan Jaslow along with Michael Pelton and John Ouellette were awarded a Conservation Action Network Grant from the Memphis Zoo. If permits come through they will travel to the Mountains of China in March to observe Pandas mating in the wild.

Dr. Alan Jaslow received a President's Hill Discretionary Fund Grant to fund a summer fellowship at the zoo. The grant funded **Bethany Drehman '06** who worked included a project investigating the reproductive cycle of Aardvarks.

Publications: (Be sure to send us copies of your publications when they appear! Thanks!)

Brewer, S.W., M. Rejmánek, M.A.H. Webb, and P. Fine. 2003. Relationships of diversity and phyto-geography of tropical tree species with limestone topography in southern Belize *Journal of Biogeography* 30(10): 1669-1688.

Meetings:

In August, Drs. Hill and He attended the annual meeting of the Mycological Society of America in Pacific Grove, CA. There they presented their work, "Genetic complementation of Calcofluor hypersensitivity in a *calC* strain of the filamentous fungus *Aspergillus nidulans*," co-authored with students **Tim Hoggard ('03)** and **Mario Maruthur ('03)**, and Dr. D.M. Loprete.

Also In August, **Dr. Miller** presented her research at the Yeast Cell Biology Meeting at Cold Spring Harbor Laboratories, NY. Her presentation was entitled "Structure/Function Analysis of the G1 Cyclin Cln3 in *Saccharomyces cerevisiae*," and was coauthored with student Alison Groeger.

Dr. Steven Brewer gave an oral presentation at the Botanical Society of America Meeting 29 July, 2003: "Relationships between phyto-geography of tree species and limestone topography in southern Belize."

The following student presentations were given in April at Rhodes' Undergraduate Research and Creative Activity Symposium.

Prentice Bowman '04 and Richard Kriwacki. "An analysis of Fibrilization p53tetWT & p53tet R337H."

Daniel Dunnavant '04, Darlene Loprete and Terry Hill. "Genetic complementation of Calcofluor White hypersensitive mutants of filamentous fungus *Aspergillus nidulans*."

Matt Fletcher '04 and Jay Blundon. "NMDA receptor exhibits decreased CA²⁺ permeability and desensitization following incorporation of NR4 receptor subunit."

Alison Groeger '04 and Mary Miller. "Characterizations of the hydrophobic patch domain in the C1 cyclin, Cln3, of *Saccharomyces cerevisiae*."

Lisa Harsch '05 and Romi Burks. "Impact of water lilies (*Nymphaea tuberosa*) on predator-avoidance behavior of *Daphnia magna*."

Chip Hartigan '05, Hung Hoang '05 and Terry Hill. "Characterization of *Aspergillus nidulans* mutants defective in cell wall metabolism."

Timothy Hoggard '03, Darlene Loprete and Terry Hill. "Genetic complementation of Calcofluor White hy-

persensitive mutants of filamentous fungus *Aspergillus nidulans*.”

Daniel Keedy '06 and Chuck Stinemetz. “SEM Visualization of sorbitol-induced plasmolysis in *Pisum Sativum* roots.”

Forrest McCullough '04 and David Kesler. “Condition indices of the Asian clam (*Corbicula fluminea*) in the Wolf River.”

Amir Paydar '04 and Jay Blundon. “Signal transduction mechanisms of GABA-B regulation of calcium currents in isolated hippocampal neurons.” Amir won first place for his oral presentation.

Carolyn Pinkerton '03, Joe Vaughan '05 and. Mary Miller. “Different handshakes spread *E. coli* with varying success.”

Heidi Rademacher '05, Linda Hendershot (St. Jude's) and Mary Miller. Creation of a kinase-defective mPERK protein by point mutation.”

Jennifer Riem '03 and David Kesler. “Mammalian diversity across an urban gradient.”

Jennifer Riem '03 and David Kesler. “A comparison of two riparian spider communities of the Wolf River.”

Sandra Scott '03 and Chuck Stinemetz. “Predictors of Self-reported physical symptoms in children.”

Shaunna Torrance '04 and Chuck Stinemetz. “Development of a quantitative real time PCR assay for respiratory syncytial virus.”

31 students from Christian Brothers, Union University, University of Memphis and Rhodes College presented their undergraduate research at the TAS meeting last spring. From Rhodes, the following students presented:

Alison Groeger '04 and M. Miller. Characterization of the hydrophobic patch domain in the G1 cyclin, Cln3, of *Saccharomyces cerevisiae*.

Forrest McCullough '04. and D.H. Kesler. Condition indices of the Asian Clam (*Corbicula fluminea*) in the Wolf River.

Heidi Rademacher '05, L. Hendershot, and Y. Ma. Creation of a kinase-defective mPERK protein by point mutation.

Prentice Bowman '04, and R. Kriwacki. Analysis of the kinetics of p53 fiber formation.

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Curricular Evolution: Course Changes and Announcements

Students who are now taking Biology I (BIO-130) and who feel ready to begin their upper level biology studies without waiting until their sophomore year are reminded that there are two upper-level courses being offered next term, which have only BIO-130 as a prerequisite. These are: Evolution (BIO-200) and Mycology (BIO-201). Students who are doing well in Biology I and who're confident of their preparation for continued study in biology may take one of these courses simultaneously with Biology II (BIO-140).

Please see the Rhodes College Catalogue for formal descriptions of these courses, as well as on-line information at the following urls:
<http://www.rhodes.edu/biology/olsen/evolution.html>
<http://www.rhodes.edu/biology/hill/HILL/mycology.html>

Coral Reef Biology and the field trip (Bio 252, 253, and 254) will not be offered this spring.

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Signals and Displays (short communications)

The Rhodes Undergraduate Biological Journal will be taking submissions next semester. More information on format will be available closer to that date. If you are currently involved in research, I hope you will make plans to submit a paper. If you have any questions, please feel free to contact the editor Katie Jameson at JAMKL@Rhodes.edu.

BIOLOGY RESEARCH AWARD

Each spring, the Biology Department honors a student with its **Award for Outstanding Student Research in Biology**. Any student who has completed research at Rhodes or elsewhere is eligible for this award and cash prize. To be considered, a student must submit a five to seven page research paper, plus a recommendation from the research supervisor. If you are interested in submitting your work for this prize, please speak to your advisor or to **Dr. Miller**. The deadline for applications for this Research Award will be announced in the spring issue of Biofeedback.

Dr. Alan Jaslow and **Becky Heineke '04** with contributions from **Ann Young '03**, produced a CD of animal sounds from the Memphis Zoo. The CD is to be given to morning DJ's for their use on their shows.

HELLO FROM OUR NEWEST DEPARTMENT MEMBERS

DR. ZHUMEI HE

Dr. Zhumei He joined the department in the position of Research Associate, working in the NSF-funded research project of Drs. Terry Hill and Darlene Loprete. Dr. He is on leave from his position as Research Associate at the Zhongshan (Sun-Yat Sen) University in Gongzhou P.R.C. His previous research has dealt with genetics and molecular biology of higher plants, especially in areas of genetic modification of crops and biotechnology.



Dr. He earned his Ph.D. in genetics from Fudan University. He is the author or co-author of over 25 research articles in plant molecular biology, including a sole-authored text, "Modern Genetics" (2002, Zhongshan University Press) used in Chinese university courses in genetics.

Dr. He's current research topic in his home institution is generation of edible vaccines against hepatitis B by introducing viral proteins into tomatoes. Current research at Rhodes concerns identification of fungal genes influencing cell wall integrity and production of "GFP fusion proteins", which will allow subcellular localization of proteins coded for by cell wall genes.

Dr. He is married, his wife is Yinglan Chen and they have a daughter Xiangying ("Yingying") He, who remain in Gongzhou but visited Memphis over the summer. Dr. He's hobbies include juggling, stamp collecting, and acquiring American slang.

DR. CATE FENSTER

Rhodes College and the Biology Department also welcome Dr. Catherine (Cate) Fenster as the new Biology Faculty Fellow. Dr. Fenster will be working with Dr. Blundon researching protein-protein interactions in the mammalian brain and their possible role in learning and memory. Dr. Fenster will also be teaching

laboratory sections in Bio 130 and 140 during the 2003 – 2004 academic year, and will teach Bio 370 Neuroscience in the Fall of 2004.

Dr. Fenster is very familiar with the liberal arts experience offered by Rhodes, having graduated with a BS degree from a similar institution, Furman University of Greenville, SC, in 1993. From there, she went on to the University of Alabama at Birmingham and received a MA degree in exercise physiology in 1995 and the Ph.D. in neurobiology in 1999. Most recently, Dr. Fenster worked at UAB as a postdoctoral research fellow from 1999 to 2003. Among many of Dr. Fenster's accomplishments are numerous publications in a variety of neuroscience and physiology journals as well as being first author on a recent review article of nicotinic receptors in the brain.



Dr. Fenster is an accomplished runner and biker who was voted Female Athlete of the Year in 1991 at Furman, and inducted into the Furman Hall of Fame in 2002. She still holds the Alabama 5 km record for female 25 year-old runners with a time of 17:42, and has recently competed in Alabama's Vulcan Run and Powerman competition.

St. Jude research program going strong

Applications for next year's Summer Plus Research Program will be available in late January. Keep a look-

Optimal Foraging

The following courses will be offered next semester

NUMBER	COURSE TITLE	HOURS OFFERED
105-1	Human Biology	TuTh 8-9:30, Wed lab
105-2	Biology Through Bees	TuTh 11:20-12:50, Tues lab
140	Biology II 3 lecture sections	MWF 8-9:00; MWF 9:10-10:10; TuTh 9:40-11:10
200	Evolution	MWF 8-9:00
201	Mycology	MWF 9:10-10:10, Wed lab
202	Vertebrate Life	TuTh 11:20-12:50
207	Animal Behavior	TuTh 11:20-12:50, Thur lab
209	Embryology	TuTh 9:40—11:10
304	Genetics	MWF 11:30-12:30, Fri lab
325	Molecular Biology	MWF 10:20-11:20, Tues lab
370	Neuroscience	TuTh 9:40—11:10, Mon lab
486-1	Cancer Biology	T,Th 4-5:30
486-2	Biodiversity	T,Th 4-5:30

out for notices or e-mails informing you of the details. For additional information, contact Dr. Blundon or see <http://blundon.biology.rhodes.edu/sjresearch.htm>

TRI-BETA

The Mu Rho chapter of the Tri Beta (βββ) Biological Honor Society would like to congratulate the fifteen new members who were initiated on October 8th. Students interested in associate membership should contact Alison Groeger GROAL@rhodes.edu. Requirements for associate membership are 1) the completion of at least one biology course at Rhodes with an overall 'B' average and 2) a \$20 initiation fee, which may count later towards regular membership.

Officers for the 2003-2004 school year are as follows:

President: **Alison Groeger '04**
Vice-President: **Rose Hiner '04**
Secretary: **Heidi Rademacher '05**
Treasurer: **Carolyn Westfall '05**
Historian: **Jodi Little '05**

This semester Tri Beta is offering many opportunities to get involved in the biology department at Rhodes. Consequently, Tri Beta strongly encourages its members to attend the next meeting at 9pm on Thursday November 6th. Tri Beta will be organizing a biology exposition at the Kipp Diamond Academy elementary school in November (those interested in participating in this event should contact Heidi at RADHA@rhodes.edu). Also, Tri Beta is arranging a trip to see the IMAX *Coral Reef Adventure* and will be hosting a Christmas party in December. Details on all events will be posted on the Tri Beta bulletin board.

Interested in field environmental biology?

Do you want the thrill of conducting your own field research in environmental biology at a pristine Northwood site?

The University of Notre Dame Environmental Research Center (UNDERC) and the Department of Biological Sciences are now accepting applications for the summer 2004 course, Practicum in Field Environmental

Biology (BIOS 569). This six-credit course is open to five sophomores/juniors from colleges/universities other than the University of Notre Dame. Acceptance in the program includes tuition, housing, round trip transportation between Notre Dame and UNDERC, and a **\$2500 stipend**.

The purpose of the course is to promote an understanding of field-oriented environmental biology and how field research is conducted. It is a unique 9½ week summer field environmental biology program at UNDERC, which is located in Michigan's Upper Peninsula. UNDERC encompasses more than 7500 acres with abundant wildlife (including wolves, black bear, deer, and fisher) and includes thirty lakes, several streams, wetlands, and northern forests that are unspoiled. The program includes five modules on field biology topics (bird/mammal ecology, amphibian/reptile ecology, insect ecology, aquatic ecology and forest ecology) with each module lasting five to seven full days. Each student is expected, in the remaining time, to design and complete an independent field research project under the direction and assistance of a faculty member or graduate student. Therefore, a portion of the course involves training in experimental design, data collection, data analysis and presentation of research results (a sixth module). The culmination of each student's research is completion of a written research report and seminar presentation at the end of the course. Applications and further information can be obtained from Dr. Karen Francl, Assistant Director (<<mailto:biology.underc.1@nd.edu>>biology.underc.1@nd.edu) as well as our website <<http://www.nd.edu/~underc/underc1.htm>><http://www.nd.edu/~underc/underc1.htm>. Completed applications for the summer of 2004 must be received by Friday, November 7, 2003 and notification of acceptance into the program will be provided by Monday, Dec. 1, 2003.

Acceptance to the program is competitive, based on previous academic performance, and requires a one-page, single-spaced essay on your professional goals and research interests which will be used to match the student with a research advisor with the most similar interests. Preference will be given to students intending to pursue graduate work in environmental biology. The course will take place from May 17 to July 23, 2004.

Cover page figures:

At left: a nicotinic receptor, courtesy of Dr. Cate Fenster

At right: Location of open reading frames (ORFs) and selected transposons in a genomic DNA fragment complementing a wall defect in the filamentous fungus, *Aspergillus nidulans*. For more information, see the research poster hanging across the hall from Dr. Hill's office.