



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* will be published each semester.



The Chair's Niche:

In the last issue of *BIOFEEDBACK*, I remarked about various initiatives underway to advance the facilities and programs in Biology at Rhodes. The first such initiative to receive support is the Rhodes Learning Corridor. In December, Senators Bill Frist and Lamar Alexander announced that Rhodes College will receive a \$500,000 grant from the Department of Education. Rhodes will partner with Snowden School, Cypress Middle School, Central High School, the Memphis Zoo and St. Jude Children's Research Hospital to provide learning and research opportunities for Rhodes and K-12 students. While this grant will benefit all of the sciences, Biology will play a major role in its implementation. We encourage Biology students to take an active role in the Learning Corridor as the programs take shape. The Dean of the College will name a director of the program soon.

The Department of Biology will also be the recipient of a gift from the Agilent corporation allowing us to expand our offerings in bioinformatics. William Holden ('89), an employee of Agilent, has arranged for the company to donate \$153,000 worth of human microarray kits used to study changes in gene expression of human cells under different conditions. While these kits have reached their expiration dates for the purpose of guaranteed research results, they remain valuable in an educational setting. Molecular Biology and Genetics students may see new laboratory exercises and research opportunities as a result.

This semester, we welcomed two new part-time faculty to the department. Dr. Paula Arnold, formerly of St. Jude, is teaching Genetics, and Dr. Frank Dorsey, currently of the VA Hospital is teaching the Can-

cer Biology Senior Seminar. We also welcomed a new full-time member of the department, Mallory Elizabeth Miller, born on January 30. Congratulations to Dr. Mary and David Miller.

A number of staffing and course schedule changes will be in effect next year. Please pay close attention to the curricular information in this issue.

Finally, members of the department recently consulted with an architect to begin planning for building renovations. If you have comments on the pros and cons of our facilities and suggestions for changes, please send them to Dr. Lindquister, Dr. Stinemetz, or Dr. Becker.

--- Dr. Gary Lindquister



Primary Productivity and Secondary Growth

The following is a list of honors, awards, publications and meeting participation of our faculty and students since October 29, 2003.

Honors and Awards: CONGRATULATIONS TO ...

.....**Joe Vaughan '05**, who was awarded a Biodiversity Fellowship for research at the Memphis Zoo and Aquarium during this spring semester. The recipient of the summer award will be announced soon.

.....**Lauren Fay '05, Caroline Sartain '07, and Stanley Vance '05**, who received \$4000 fellowships to do summer research on fungal genetics with Drs. Hill and Loprete. These fellowships are funded by grants to Drs. Hill and Loprete from the National Science Foundation and the Merck Company Foundation. In addition, **Daniel Dunnivant '04** and **Lisa Harsch '05** received Merck Academic Year Fellowships to work on various aspects of phenotype characterization of wall mutants in *Aspergillus nidulans*.

.....The Biology or Bio-Psych bridge majors who were selected for the Rhodes/St Jude Summer Plus program. These students (along with their St Jude men-

tors) are: **Emily Backues '07** (Dr. Gerard Zambetti), **Matthew Cain '07** (Dr. John Schuetz), **Emily Ann Furlow '05** (Dr. Linda Hendershot), **Ross Hilliard '07** (Dr. Richard Kriwacki), **Monica Huerta '07** (Dr. Elisabeth Adderson), and **Justin Marlar '06** (Dr. Linda Harris).

.....**Thayer Hutcheson '05** who was selected to be a Zoo Biodiversity Fellow in the Rhodes Educational Corridor Initiative. Thayer will work with **Dr. Alan Jaslow** part time at Rhodes and part time at the Memphis Zoo to mentor Snowden Middle School students in "Introductions to Research" at the Zoo.

.....Juniors **Katie Jameson** and **Lauren Fay**, who each won an award for her research at the South Eastern Regional Yeast Meeting this past weekend. For the titles of their posters and their faculty co-authors, see "Meetings" below.

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

Grants and Fellowships:

Dr. Mary Miller was granted a Creative Advance Planning (CAP) Study Leave for the spring semester of '04-'05. This award, sponsored by the Mellon Foundation, will enable Dr. Miller to take a one-semester leave from the classroom to work on her research on G1 cyclins in the budding yeast *Saccharomyces cerevisiae*."

Dr. Gary Lindquister was also the recipient of a Mellon CAP award. This grant will give him time to work on the development of an Interdisciplinary Program in Molecular Genetics, Cell Biology, and Biochemistry. In addition, **Dr. Lindquister** received a Rhodes College Faculty Development Endowment Grant to support his research on "Mechanisms of Immune Evasion: The Role of the M3 Gene in Murine Gamma Herpesvirus."

Another recipient of a Rhodes Faculty Development Endowment Grant was **Dr. Cate Fenster**, who will be studying "Neuronal Interleukin-16: A Brain Protein Involved in Learning and Memory."

Meetings:

Dr. Jay Blundon presented research at the annual Society for Neuroscience Conference in New Orleans, in November 2003. The poster presentation was entitled "Investigating the functions of neuronal interleukin-16: Effects of a PDZ domain protein on maze performance and cerebellar granule cell potassium channels", by **Katie Cox '03**, **Karen Dobyns '05**, **Ann Young '03**, Dr. Connie Kurschner, and **Jay Blundon**.

In February, **Dr. Blundon** traveled to Arlington, VA where he chaired a National Science Foundation review panel for the Course, Curriculum, and Laboratory Improvement Program. Proposals reviewed by this panel were aimed at improving undergraduate laboratory curricula in physiology and neuroscience using other colleges and universities as model systems.

Rhodes hosted a major regional scientific conference over the spring break, on March 13 and 14. The 11th annual SERYM conference (South Eastern Regional Yeast Meeting) brought together over 90 researchers working on cell and molecular biology of yeast and other fungi for a two-day conference of talks and poster presentations. This is the first time the conference has been held in Memphis. This year's meeting was organized by Professors **Mary Miller** (committee chair), **Terry Hill**, and Darlene Loprete, all of whom also presented poster reports with their students (**Katie Jameson '05** and **Lauren Fay '05**) and colleagues (Dr. Zhumei He). In addition, students Katie Jameson and **Alison Groeger '04** helped in logistics during the conference.

Titles of Rhodes presentations were:

Lauren M. Fay '05, **Terry W. Hill**, and Darlene M. Loprete. Identification of a gene affecting branching and septal placement in *Aspergillus nidulans*.

Zhumei He, **Terry W. Hill**, and Darlene M. Loprete. Identification of a gene affecting Calcofluor resistance and nuclear division in *Aspergillus nidulans*.

Katherine L. Jameson '05 and **Mary E. Miller**. High copy suppression analysis of mis-localized G1 cyclin *Cln3* in the budding yeast *Saccharomyces cerevisiae*.



Curricular Evolution: Course Changes and Announcements

Comparative Vertebrate Morphology Bio-350

Comparative will again be offered with two lecture meetings from 9:00 – 9:50 most weeks. This course requires two (but unequal) formal lab meetings a week. One is Tue lab which will meet from 12:30-3:30 pm. The second meeting each week is for a minimum of one hour each Friday, either from about 1-2 pm or 2-3 pm. Two additional hours of lab are required, but these may be at other times during the week. The variable Friday meeting time will allow students to enroll during registration in an a class that meets at 1:00 or at 2:00 on Fridays. Before the tree runs the registrar will remove the Friday lab compo-

nent from the program to allow Banner to add the Friday class. Following registration, the registrar will add the Friday lab back to Comparative students' schedules. See Dr. A. Jaslow if you have any questions.

Shifts in Biology Classes During '04-'05

Next year, Dr. Hill will be on sabbatical for the entire year, and Dr. Miller will be absent during the spring semester. With these personnel changes, there will be some class rearrangements. Please note the following courses that will either be offered during a different semester, or by a different professor:

'04-'05 Fall Courses (teachers)

Genetics (Dr. Miller)

Cell Biology (visiting professor Dr. Lisa Kadlec)

Neuroscience (Drs. Blundon and Fenster)

Virology/Immunology (visiting professor Dr. Paula Arnold, who is currently teaching Genetics. Dr. Arnold will place more emphasis on the Immunology component of the class)

'04-'5 Spring Courses (teachers)

Animal Physiology (Dr. Blundon)

Mechanisms of Development (visiting professor Dr. Lisa Kadlec)

Plant Physiology (Dr. Stinemetz)

Mycology (not offered)

Microbiology (may be offered)

Embryology (probably offered) (Dr. C. Jaslow)

Note that these are not all the courses to be offered, just the ones that have changes in timing or who is teaching. For the times of our Fall lectures and labs, see the table of course offerings on p. 4.

Also note that **Dr. Carolyn Jaslow** will be applying for a sabbatical leave in '05-'06. Most likely Histology and Embryology will not be offered during that year.

SENIOR SEMINAR LOTTERY Thursday March 25th

Next year, the Biology Department will again offer multiple sections of Senior Seminar (topics are described below), including the special interdisciplinary section taught in collaboration with faculty from St. Jude Children's Research Hospital. **Rising seniors must reserve a slot in a senior seminar section.** If you want to enroll in the St. Jude Interdisciplinary seminar, you must speak as soon as possible to Dr. Robert Strandburg, director of Rhodes CARES in 201 Clough (x3169 or e-mail strandburg@rhodes.edu). These opportunities are "first-come, first-served," and only 8 students total will be enrolled from Psychology, Chemistry and Physics as well as from Biology. **Stu-**

dents who wish to enroll in one of the other four seminars must do so via lottery to be held in the Biology Library at 12:15 on Thursday, March 25. If you cannot attend the lottery, you must send a representative prepared with an ordered list of your choices. Once you have signed up, either with an acknowledgement from Dr. Strandburg, or through the lottery, your reserved senior seminar section should be listed on the preregistration tree under the category of "Other Courses." Students will not be allowed to enroll in a seminar section other than the one which they reserved. If you have questions about the lottery, speak to Dr. Lindquister.

Senior Seminar Choices for '04 -'05

Bio. 485(1): **Dr. C. Jaslow's** fall senior seminar is entitled "**Reproductive Biology**," and it will meet at 9:30-10:45 on Tuesdays and Thursdays. In the first half of the semester, this course will focus on human reproduction, with students reading and presenting background information and primary literature on pre-determined topics such as sperm maturation and hormonal control of egg development. During the second half of the semester, students will select a topic to research and present concerning any aspect of reproductive biology, from human issues (male contraceptives, immunology and the fetus) to more general topics (parthenogenesis, variation in placentas). All students will be responsible for submitting summaries and discussion questions from the assigned readings and for evaluating one another's work.

Bio. 485 (2) A second fall senior seminar will be offered on the topic of **Environmental Science**. It will meet on Tuesdays and Thursdays from 3:30 – 4:45, and will be taught by a new Environmental Science professor who will be hired this spring.

Interdisciplinary Senior Seminar 485: The topic for this year's Rhodes / St. Jude Interdisciplinary Senior Seminar will be **Behavioral Medicine**, which is concerned with the interface between mind, brain, behavior and health. The core of this course will be a close examination of the research of eight St. Jude scientists from the Division of Behavioral Medicine. Their work focuses primarily on two interrelated areas of clinical investigation, cognitive neuroscience and health promotion, but extends into areas as diverse as diagnostic imaging and pain management. This seminar will be open to 8 Rhodes students, majoring in either Biology, Psychology, Physics, Chemistry or the interdisciplinary Biology-Psychology Bridge major. The course will be filled on a first come, first served basis. Please contact Dr. Robert Strandburg (x3169) ASAP if you are interested in participating in this senior seminar.

Bio. 486 (1) (spring semester): **Dr. Lisa Kadlec**, who will be replacing Dr. Hill during his sabbatical next year, will offer a senior seminar on the topic of

Cellular Signaling. Dr. Kadlec anticipates that the course will focus on the conservation of signaling pathways, using examples from development and cancer biology. This class is scheduled for Tuesdays and Thursdays from 3:30-4:45.

Bio 486 (2) (spring semester): The second senior seminar to be offered next spring is titled "**Topics in Molecular Genetics.**" The meeting time and the person teaching the course are yet to be determined.



Signals and Displays (short communications)

SCIENCE MEETINGS ABOUND IN MEMPHIS!

This spring, three different scientific societies will be hosting their annual meetings in Memphis, including two here at Rhodes. Over the spring break, the South Eastern Regional Yeast Meeting was held in FJ, with talks and poster presentations by over 90 researchers. The next two meetings are:

TN ACADEMY OF SCIENCE MEETINGS

Have you ever thought about doing **research as an undergraduate**? How does one **present the results** of such research? Find out at the 2004 Tennessee Academy of Science Western Collegiate Division Meeting! This meeting will be hosted by Rhodes on Saturday, April 3, 2004! Science undergraduates from western Tennessee colleges and universities will give 15-minute oral presentations or posters of their research at this meeting. Details, registration information, etc. can be found at:

http://www.rhodes.edu/biology/tas/ta_scollegiate2004.html. There will be a great talk given in the morning about the world-wide disappearance of amphibians. Come find out what research other undergraduates have performed and how they present their results. You can come and go as you please and your support of your biology department will be ap-

preciated. If you have any questions, please feel free to contact **Dr. David Kesler** at Kesler@rhodes.edu.

ASB at U of M

On April 14th - 17th, the Association of Southeastern Biologists will hold their 65th annual meeting at University of Memphis. Some 600-700 biologists (professors, graduate students, and undergraduates) from the Southeast US will converge on Memphis for these meetings. There will also be a big regional meeting of $\beta\beta\beta$ that goes along with this meeting. Closer to the meeting date, there should be a call for help with projectors and other meeting duties.

For more general information look at:

<http://www.people.memphis.edu/~biology/asb/>

Optimal Foraging

The following courses will be offered next semester

For information and syllabi, and a tentative list of courses to be offered next spring, check out the Biology Dept. home page: <http://kesler.biology.rhodes.edu/biol.html>

NUMBER	COURSE TITLE	HOURS OFFERED
130	Biology I	8:00-9:15 or 11:00-12:15 TuTh
131	Biology I Lab	12:30-3:30 TuTh 1:00-4:00 W
200	Evolution	8:00-8:50 MWF
304	Genetics	10:00-10:50 MWF & Fri lab (1-4pm)
307	Cell Biology	12:00-12:50 MWF
310	Methods in Biochem & Cell	12:30-3:30 Th
315	Ecology	9:00-9:50 MWF & Tue lab (12:30-3:30)
330	Virology/Immunology	11:00-12:15 TuTh
350	Comp Vert Morphology	9:00-9:50 MWF & lab Tu 12:30-3:30, F 1-4
360	Histology	MWF 8:00-8:50 & Wed lab (1-4pm)
370	Neuroscience	9:30-10:45 TuTh & Mon lab (1-5pm)
FOR NON-MAJORS		
105-1	Environmental Science	9:00-9:50 MWF
105-2	Biology through Bees	9:30-10:45 TR & Thu lab (12:30-3:30)

JOBS, JOBS, JOBS!

WORK IN THE BIOLOGY DEPARTMENT!

The Biology Department is looking for one student to work this summer in the department. The summer position is full time, 37.5 hours per week with weekends and holidays off. The position will start June 1st and will go until August 13th, 2004. The department is also looking for students to work as lab TA's for the core biology classes next fall and spring. These TA positions will consist of approximately 8 hours a week of work. We prefer someone who has an interest in Biology and has taken Bio I and II for both jobs. Pay and further details concerning the jobs will be discussed on an individual basis. Please feel free to contact Christian Hardin at 843-3561 (email: Hardin@Rhodes.edu) for additional information or an application. The deadline for the summer and fall/spring positions is April 16, 2004.

ZOO BIODIVERSITY FELLOWSHIP

Interested in the study of Animal Nutrition, Behavior, Reproductive Physiology, or Ecology? Apply for a Fall semester Biodiversity Fellowship at the Memphis Zoo and Aquarium. Fellowships are paid internships with minimum of 10-hour weeks. Individual projects are encouraged, in addition to assigned duties, and experience with a variety of species is possible. To apply, submit a letter, resume, and unofficial transcript to Dr. Alan Jaslow by April 12th. This is the first of three Fellowships (Fall, Spring and Summer) that will be offered next year.

BIOLOGY RESEARCH AWARD

This spring, the Biology Department will again be presenting the "**Award for Outstanding Student Research in Biology**". Any student who has completed research at Rhodes or elsewhere is eligible for this award and cash prize. To be considered, a student must submit a three to five page research paper, plus a recommendation from the research supervisor, to Dr. C. Jaslow by Thursday April 1. Copies of the recommendation form may be obtained from Dr. Jaslow. Announcement of the award winner will be made at spring awards ceremony on Wednesday, April 28th.

BIOLOGY SEMINAR SERIES

Our next scheduled seminar is coming up quickly. On Monday, March 22nd Dr. Peter Sharp from the University of Louisiana at Lafayette will be speaking

on weighty matters: "Novel Approaches to Understanding the Gravidresponsiveness of Organisms." Next month, on Monday April 12th, Dr. Gary Lindquester will be telling us about those sneaky viruses he studied on his sabbatical last year, "Calm Under Fire, Viral Evasion of the Immune Response." Both seminars seminar will begin in FJ-B at 4:15. Refreshments, and an opportunity to meet and speak to the presenters, will be available in the Biology Library at 4:00.

TRI-BETA NEWS

Beta Beta Beta (βββ) is the biological honor society for the Rhodes Biology Department. βββ has a two-fold purpose at Rhodes. The first is to provide a club where individuals with a shared interest in biology can get together, in a setting free of classroom pressures, and have a little social interaction and fun. This semester we plan to go off campus to the IMAX, river rafting, and we will be participating in Rites to Play. The other purpose is that of an honor society. βββ is a national honor society and is dedicated to the enrichment of its members' scientific experiences and to the sharing and dissemination of information gleaned from those experiences. Some members will be attending the regional βββ meeting April 14-17, and some will be attending the West Tennessee Collegiate Division of the Tennessee Academy of Science. Also some members have been working on boards providing information for careers in Biology. βββ also provides a forum to recognize those students, with biology as their undergraduate major, who excel academically. Invitations will be sent to those meeting requirements for regular membership. Any student interested in becoming an assistant member should email Carolyn Westfall (wescj).

There are two forms of membership with the following requirements:

Associate Membership:

- ☞ 1 completed course of a natural science class
- ☞ An interest in biology
- ☞ One time \$20 initiation fee

Regular Membership:

- ☞ Must be a Biology Undergraduate
- ☞ 3 completed semesters of Biology at Rhodes
- ☞ At least a 3.0 average in Biology at Rhodes
- ☞ General good academic standing at the college
- ☞ One time \$30 initiation fee

Student Research 2003-04 sponsored by Programs at Rhodes

- Kimberly Bartmess '04.** *The effect of glycosylation on the virulence of influenza A virus.* Honors Bio 451 with Dr. Jon McCullers at St. Jude Children's Research Hospital and Dr. Terry Hill.
- Adam Brewer '05.** *Genetic analysis of calcofluor-hypersensitive mutants of Aspergillus nidulans.* BIO 451 with Drs. Terry Hill & Darlene Loprete.
- Emily Bryson '05.** *Research on the protein Mdm2, associated with the inhibition of the p53 cell cycle arrest pathway.* Bio 451 with Dr. Richard Kriwacki of St. Jude Children's Research Hospital & Dr. Terry Hill.
- Drew Burk '04.** *Mechanisms of Immune Evasion: Development of Murine Gammaherpesvirus as a Model for Human Epstein Barr Virus Infection.* Bio 452 with Dr. Gary Lindquister.
- Bethany Drehman '06.** *Reproductive physiology and captive management at the zoo.* Bio 452 with Dr. Alan Jaslow.
- Natalie DuMont '04.** *Protein binding assays of ZD1839 and SN38.* Bio 452 with Dr. Burgess Freeman at St Jude Children's Research Hospital & Dr. Carolyn Jaslow.
- Daniel Dunnavant '04.** *Molecular Characterization of a calcofluor hypersensitive mutant of Aspergillus nidulans.* Merck Foundation Fellow with Drs. Terry Hill & Darlene Loprete.
- Lauren Fay '05.** *Genetic analysis of calcofluor-hypersensitive mutants of Aspergillus nidulans.* BIO 451 with Drs. Terry Hill & Darlene Loprete.
- Tyler Gamble '06.** *The effects of varying oxygen levels on crayfish aggressiveness.* Bio. 451 with Dr. Carolyn Jaslow.
- Lisa Harsch '05.** *Genetic analysis of calcofluor-hypersensitive mutants of Aspergillus nidulans.* Merck Foundation Fellow with Drs. Terry Hill and Darlene Loprete.
- Hartigan, Chip '05.** Bio. 452 with Drs. Brent Hoffmeister & Gary Lindquister.
- Becky Heineke '04.** *Microhabitat use by the giant panda for use in management decisions.* Bio 452 with Dr. Alan Jaslow.
- Lauren Jackson '05.** *Mechanisms of Immune Evasion: Development of Murine Gammaherpesvirus as a Model for Human Epstein Barr Virus Infection.* Bio 452 with Dr. Gary Lindquister.
- Katie Jameson '05.** *High copy suppression of mis-localized Cln3.* Bio 451 with Dr. Mary Miller.
- Jeshenna Johnson '04.** *Determination of "handedness" in the giant panda.* Bio 451 with Dr. Tony Becker.
- Michael Lyerly '04.** *Electron microscopy of sperm.* Bio. 451 with Dr. Carolyn Jaslow.
- Forrest McCullough '04.** *Condition indices of Corbicula fluminea in the Wolf River.* Bio. 451 & 452 with Dr. David Kesler.
- Rupal Patel '05.** *Social dominance in the reticulated giraffe.* Bio 451 with Dr. Tony Becker.
- Leslie Patterson '05.** *Courtship behavior in the reticulated giraffe.* Bio 451 with Dr. Tony Becker.
- Caroline Sartain '07.** *Fluorescence microscopy characterization of spore germination in Aspergillus nidulans.* Bio 452 with Drs. Terry Hill & Darlene Loprete.
- Ethan Stranch '06:** *Maze performance in a CD4 knock-out mouse: Studying the effects of neuronal interleukin-16 on learning and memory.* Bio 451 & 452 with Dr. Jay Blundon.
- Chris Talley '04.** *Vertebrate-oak interactions and forest recruitment* Bio. 451 & 452 with Dr. Steven Brewer.
- Stanley Vance '05.** *Genetic analysis of calcofluor-hypersensitive mutants of Aspergillus nidulans.* CHEM 451 with Drs. Terry Hill & Darlene Loprete.
- Stanley Vance '05.** *Fluorescence microscopy characterization of spore germination in Aspergillus nidulans.* Bio 452 with Drs. Terry Hill & Darlene Loprete.

Cover Page Figures:

At left: "*Tetrafolium hybridum*" (almost alsike clover). Modified from Peterson/McKenny. 1968. *A Field Guide to Wildflowers*. Boston: Houghton Mifflin Co.

At right: *Lampropeltis triangulum* (Milk snake). By Summers Scholl (2001) Wyoming Diversity Database. <http://uwadmnweb.uwyo.edu/wyndd/Herps/herp.htm>.