



# BIOFEEDBACK



The Newsletter of the Biology Department at Rhodes

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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:

In the recent Rhodes magazine it was proclaimed that "Rhodes is on a roll" and the department of biology is helping to lead the way as evidenced in work of both the students and faculty in our department. The opportunity for student research has been recently enhanced at Rhodes by the creation of the St. Jude Summer Plus program. This program allows students to conduct research in collaboration with research faculty at St. Jude during the summer and also to continue their work throughout the next academic year. Look for some of this student work in future publications of Biofeedback.

The landscape of the biology department has also changed somewhat over the last year. Dr. Bob Jones retired and was replaced by Dr. Mary Miller. Dr. Miller brings with her a strong familiarity with numerous techniques in genetics and cell biology, and she is eager to mentor student research projects. We have also added the new position of teaching/research fellow to the department. This is a position that will change every two years allowing us to bring in new faculty with different expertise. Dr. Romi Burks has filled this position and will work with Dr. Kesler to offer students some new research opportunities in aquatic ecology. Frazier-Jelke C was redone this summer to improve the acoustics and provide a more comfortable classroom experience.

The department has also been trying to address the problem of providing additional upper level courses and/or increasing course enrollments. Toward this end, we have made a request of the college to add a faculty

position to the department. The faculty have also re-examined the maximum course enrollments in all our upper levels and have (where possible without affecting the quality of the student experience) raised those enrollments. This spring we are offering two more upper level classes than usual, and we have a significant number of additional upper level slots. We are hopeful that this will help make the course registration process easier for our majors.

---- Dr. Chuck Stinemetz

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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, 2001.

### Honors and Awards:

CONGRATULATIONS TO ...

.....**Heidi Rine** and **Dorothy Kenyon**, who were co-winners of the Outstanding Biology Senior Award for the '00-'01 academic year. Additionally, **Heidi Rine** was named the recipient of the 2001 Award for Outstanding Student Research in Biology. For more information about this research award, see "Signals and Displays" on page 6.

.....**Trey Aquadro '02** for receiving the Michael E. Hendrick Award for Excellence in Organic Chemistry.

.....two recipients of scholarships for British Studies. **Lisa Jain '02** received the John Henry Davis Scholarship, and **Kelley Savage '03** received an Elizabeth Henley Scholarship.

.....**Jennifer Joe '02**, who was awarded the Margaret Hyde Council Scholarship and **Evgueni Krynetski '02**, who received one of the Lemaster Scholarships, both awarded for study abroad.

.....the co-winner of the Omicron Delta Kappa Sophomore Man of the Year, **Stuart Johnston '03**.

.....**Amit Mirchandani '01**, who was selected for inclusion in the Rhodes Hall of Fame.

.....the Phi Beta Kappa initiates of the class of '01: **Julie Auwarter, Elizabeth Brallier, Ruth Finley, Will Haven, Seth Jones, Heidi Rine, Michael Smith, and Lorien Young**. Also invited to join was **Forrest Busler, '02**.

.....**Raven Babcock '01, Bess Elliott '02, John Goss '02, Chris Huff '02, Ruchir Patel '01, and Sam Weems '02**, who were inducted into the Phi Circle of ODK.

.....**Geoff Miller '02**, who was a recipient of the The National Sojourners award at the ROTC awards ceremony held this past April.

.....the following students for being inducted into the  $\beta\beta\beta$  Biological Honor Society this past April 24<sup>th</sup>. Regular members inducted were: **Emily Cunningham '03, Ashley Harmon '02, Erin Cook '02, Trey Aquadro '02, Chris Huff '02, Zach Wilson '02, John Bienvenu '03, Brock Lanier '02, Ann Young '03, James Lyles '01 and Robert Hardister '01**. The upgrades from Associate Membership to Regular Membership included: **Ross Cascio '02, Ellen Barton '02, Annie Glover '02, Shawna Miller '01, Elizabeth Brallier '01, and Amit Mirchandani '01**, and the following students were inducted as Associates: **Amir Paydar, Kathryn Taylor '03, Jeremy Murdock, and Lisa Jain '02**.

.....the new officers of Rhodes' chapter of  $\beta\beta\beta$ : seniors **Ellen Barton** (President), **Erin Cook** (Vice-President), **Allison Gratzer** (Secretary), **Forrest Busler** (Treasurer), and **Evgueni Krynetski** (Historian). For more information about  $\beta\beta\beta$ , see p. 6.

.....**Hannah Miller '01**, recipient of the Rebecca Rish Gay Award for the female athlete of the year.

.....**Ross Cascio '02 (baseball), Jessie Hunt '02 (women's track), Chad Hones '03 (men's swimming), and Hannah Miller '01 (women's basketball)**, who were each named Most Valuable Player in their respective sports this past April.

.....the following sophomores who were elected to the Search Advisory Council: **Aditya Bagrodia, Daniel Dunnivant, Seth Gilpin, Megan Jessee, Austin Lutz, Elaine Odle, and Catherine VanDerwerker**.

.....**Monica Lewis '01, Amit Mirchandani '01 and Daniela Seminara '01** who were listed in *Who's Who*

*Among Students in American Universities and Colleges*.

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

## Grants and Fellowships:

**Dr. Gary Lindquenter** received two grants this June. "Fostering Information Fluency in the Introductory Biology Laboratory" was an Associated Colleges of the South Information Fluency Grant for \$4300, and "Initiation of the Lynx Genome Project" was a \$5212 award from the Rhodes Hill President's Discretionary Fund.

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

**Burks, R.L.**, E. Jeppesen and D.M. Lodge. Littoral zone structure as refugia for *Daphnia* against fish predation. *Limnology and Oceanography* 46: 230-237.

**Hill, T.W.** and E. Kafer. 2001 Improved protocols for *Aspergillus* minimal medium: trace element and minimal medium salt stock solutions. *Fungal Genetics Newsletter* 48:20-21.

**Kesler, D.H.** and N. Van Tol. 2000. Growth of the freshwater mussel *Pyganodon grandis* (Unionidae) in two west Tennessee burrow pits. *J. Tenn. Acad. Sci.* 75:1-75

**Kesler, D.H.**, D.Manning, N. Van Tol, L. Smith, and B. Sepanski. 2001. Freshwater mussels (Unionidae) of the Wolf River in western Tennessee and Mississippi. *J. of Tennessee Acad. Sci.* 76:38-46.

**Miller, M.E.** and F.R. Cross. 2001. Mechanisms controlling subcellular localization of the G1 cyclins CLN2 and CLN3 in budding yeast. *Molecular and Cellular Biology*. 21(18): 6292-6311.

**Miller, M.E.** and F.R. Cross. 2001. Cyclin specificity: how many wheels do you need on a unicycle? *Journal of Cell Science*. 114(Pt 10): 1811-1820.

**Rine, H.E. '01 and D.H. Kesler.** 2001 A long-term study of larval *Chaoborus punctipennis* (Diptera: Insecta) vertical migration and the role of critical oxygen concentration. *J. Freshwater Ecology*. 16:145-150.

Viano, A.M., **J. Auwarter '01**, J.Y. Rho, B.K. Hoffmeister. 2001. Ultrasonic characterization of the curing process of hydroxyapatite-modified bone cement. *J. Biomed Mater. Res.* 56:593-599.

## Meetings:

**Dr. C. Jaslow** gave a poster presentation on June 18, 2001 at the annual meeting of the American Society of Mammalogists, in Missoula, Montana. The research, co-authored with **Brock Lanier '02**, was entitled, "Early Development of Rat Cranial Suture Morphology."

In August, **Dr. Miller** gave a platform presentation at the Yeast Cell Biology Meeting at Cold Spring Harbor Laboratories, NY. Her talk was entitled "Distinct mechanisms for regulated localization of G1 cyclins," and describes her recent work establishing the role of protein phosphorylation in the regulated transport of the G1 cyclin CLN2p.

Dr. Burks, with A.C. Haines and D.M. Lodge, gave a poster presentation at the North American Benthological Society meeting in La Crosse, WI. The research was entitled, "Impact of chemical cues from odonates fed different diets on daphnid growth and reproduction." Dr. Burks also attended the Society for Wetland Scientists Meeting in Chicago Illinois in May.

The following student presentations were given at Rhodes' Sixth Annual Undergraduate Research Symposium in April:

**Julie Auwarter '01**, "Dependence of ultrasonic properties on marrow in bovine cancellous bone."

**Seth Jones '01 & Ross Cascio '02**, "Glycogen concentrations in freshwater mussels."

**Stephanie Martin '02 & Jared Castagna '02**, "Isolation of *Aspergillus nidulans* mutants showing hypersensitivity to calcofluor."

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## Curricular Evolution: Course Changes and Announcements

If you are interested in the Coral Reef Ecology courses (Biology 252-254), please see Dr. Kesler. This year's trip will be from May 25-June 9, 2002 and will be to the Roatan Institute of Marine Sciences, Roatan Island, Honduras. By taking these four hours, two during the spring term and two in May-June, you will receive credit for one upper-level biology course with a lab.

For more information and course syllabi, check out the biology department local home page either through the Rhodes home page or via:

<http://kesler.biology.rhodes.edu/biol.html>

## Signals and Displays (short communications)

### DR. BURKS KICKS OFF THE '01-'02 BIOLOGY SEMINAR SERIES!

On September 17, many of you were introduced to our new Postdoctoral Research/Teaching Fellow, **Dr. Romi Burks**, who began our seminar series with a presentation of her research: "Freshwater Flips – How food webs shift water clarity in shallow lakes." Dr.



Dr. Burks

Burks grew up not far from Memphis in Little Rock, Arkansas. In high school, she moved to Chicago, where she later attended Loyola University. Dr. Burks then pursued her Ph.D. at the

University of Notre, and

did postdoctoral work at The Ohio State University. Dr. Burks is married to a very supportive husband named Clint and spends her leisure time reading, traveling and keeping in contact with her younger brother. Other hobbies include playing tennis and SCUBA diving when possible. Dr. Burks is currently doing research with two students, **Chris Tolleson '01** and **Kathy Llewellyn '01**. You may have noticed evidence of their activity in the west courtyard, where large black tubs are holding different freshwater communities of plants and animals.

The next seminar in our '01-'02 series is coming up soon. **Dr. Ken Cameron**, a Rhodes alumnus from the class of '89, will be speaking on his research, "What does DNA tell us about the evolution of Vanilla and related orchids?" Dr. Cameron is currently the acting chair of the Molecular Systematics Program at the New York Botanical Garden. He will be speaking in FJ-B at 4:15 on Monday, October 29. Refreshments will be served in the Biology Library at 4:00.



Dr. Cameron  
circa 1985

### GRADUATE SCHOOL REGISTRY!

If you've done research and are considering graduate school, take advantage of the CUR Undergraduate Researcher's Graduate School

Registry. The purpose of this registry is to facilitate matchmaking between undergraduates with research experience and a desire to pursue an advanced degree, and graduate schools seeking high quality students who are well prepared to research. Got to [www.cur.org/ugreg/](http://www.cur.org/ugreg/) to fill out a simple vitae form. There is no charge to you. Student information records will be made available to bona fide graduate schools that contract with CUR for this service. Organizations or companies seeking the students' information for other marketing purposes will not be granted access.

## RESEARCH OPPORTUNITIES

Do you like figuring out how and why some things happen? Did you wander around outside as a kid and explore nature? Are you drawn to environmental issues? Want to get some hands-on experience with research? If you answered yes to any of the above questions, consider doing an undergraduate research project in aquatic ecology. Contact Dr. Burks for more details ([burksr@rhodes.edu](mailto:burksr@rhodes.edu) or 843-3558).

## RHODES BIOLOGY JOURNAL

The Rhodes Journal of Biological Sciences is interested in welcoming a new staff to help publish the journal, and is looking for submissions of research papers. This is a great resume booster! Contact Ellen Barton at [bareh@rhodes.edu](mailto:bareh@rhodes.edu) for more information.

## TALES FROM THE FRONT

This summer, six Rhodes students began the first "Summer Plus" research program at St. Jude Children's Research Hospital. In this program, students continue their summer's work on a part-time basis through the academic year, giving them an incredible opportunity to participate in the long range projects of the faculty at this world-famous research center. Here are some comments from a few of the students in this program.

**Forrest Busler** is a senior biology major who is planning on attending medical school after graduation. "I have been working in the genetics department under Dr. Peter McKinnon. My project is a study of the alternative splicing of Scythe, a recently discovered gene that regulates apoptosis (cell death). Scythe has dozens of splice forms, each of which supposedly

plays a slightly different functional role. Starting with mRNA from various human tissues, I amplify portions of Scythe transcripts using PCR then clone and sequence the fragments to determine what splice forms are present in what tissues. I will also attempt to assay the functional differences of some of the alternative splices. St. Jude is an ideal environment in which to conduct research; dozens of the greatest talents in biomedical research are working on fascinating projects at St. Jude. I have learned about an entire world of cutting-edge research of which I was previously unaware."



Forrest Busler

**Christine Dietz** is also a senior biology major who has not worked in a research lab before. "This summer I spent working under the mentorship of Linda Hendershot, Ph.D. I was informed of my project and its goals but informed that it would be a while before I would be able to see the connection between the work that I was going to be doing in lab and my project itself. The ultimate goal of my project is to investigate Dr. Hendershot's hypothesis with regards to antibody (Ab) folding of the



Christine Dietz

## Optimal Foraging

The following courses will be offered next semester

NUMBER	COURSE TITLE	HOURS OFFERED
121	Zoology	A, C, or L
200	Evolution	A
201	Mycology	B and R
204	Mech's. of Development	M and U
207	Animal Behavior	L and S
209	Embryology	M
252	Coral Reef Ecology (lit.)	TBA
253	Coral Reef Ecology	G (Mon3-4pm)
304	Genetics	N and T
330	Virology and Immunology	C
370	Neuroscience	N and Q
486(1)	Sr. Sem. Cancer Biology	H
486(2)	Sr.Sem. Med. Imp. Fungi	T. Th. 4:00-5:30
FOR NON-MAJORS		
105(1)	Animal Comm. w/ lab	L and S
105(3)	Freshwater & Soc. w/ lab	B and R

variable and constant regions of both the heavy and light chains. However, my first goal has been to produce functional heavy and light chains through the use of bacterial plasmids and tissue culture lines. This unfortunately has not been the most successful of projects. Despite the relative simplicity of the initial task, there have been a number of other problems associated with the DNA in the process of producing the light chain protein in a cell line. Even though I have indeed suffered a number of setbacks along the way, this experience has been amazing. I have been given the opportunity to learn a number of techniques that one might only get to dabble in on campus due to funding and limited resources. Along with this, I have been able to work alongside and attend lectures of some absolutely brilliant people. Over the summer we were provided many of the benefits of P.O.E. (pediatric oncology education) students. This allowed us to see the work that other students our age were involved in over the summer as well as become friends with these people. Ultimately, many of them have returned to their respective schools and I along with the other summer plus students are continuing to progress with our projects, and hopefully I will find results that can be used in part with the research of Dr. Hendershot.”

**Marian Butcher** is a junior biology major. She describes her experience, “Working at St. Jude’s Children’s Hospital and being a part of this program has been such an amazing experience. This summer I



Marian Butcher

worked in the Virology and Molecular Biology Department under Dr. Jeff Sample. The focus of his lab is to explain the contribution of the Epstein-Barr virus to the human B-cell tumor called Burkitt lymphoma. I learned techniques such as PCR, cloning, gene sequencing, tissue culture, and western blots. This program has offered me the best learning experience at

Rhodes so far. The most difficult aspect of continuing the work during the school year has been adjusting to the fact that I cannot work full days and move forward in my research as quickly.”

**Kimberly Bartmess** was only a first-year student when she applied and was accepted into this program. “This summer I worked with Dr. Jon McCullers in the Infectious Disease department at St. Jude Children’s Research Hospital. I was given my own project on the effect of the neuraminidase inhibitor Oseltamivir on the lethal synergism between influenza and pneumonia. Oseltamivir is an anti-flu drug that reduces viral replication and severity of an influenza illness if given within 24 hours of the onset of the flu. If treated more

than two days after the onset of the infection, there is no observable effect. However, the relationship between oseltamivir and the lethal synergism between influenza and pneumonia had never before been studied. I found



Kimberly Bartmess

Oseltamivir to reduce the lethality in the synergism between influenza and pneumonia by 50%, even when administered two days after the onset of the flu infection. I think doing research this summer and continuing on this year is an invaluable experience. I have learned so much about research and lab techniques and the basics of virology and immunology from my experience. St. Jude is a first-rate research institution and Rhodes is lucky to have such a great opportunity as this to offer its students.”

Applications for next year’s Summer Plus Research Program will be available in the spring. Keep a lookout for notices, e-mails, or Biofeedback announcements informing you of the details. For additional information, contact Dr. Blundon.

## HELLO FROM OUR NEWEST FACULTY MEMBER

Dr. Mary Miller is teaching Botany this semester, and will be offering Genetics and a Senior Seminar on



Dr. Miller

Cancer Biology in the spring. When asked about herself and her experiences at Rhodes so far, she comments, “It is hard to believe that I have been at Rhodes for 2 months. Time can

truly go by quickly when there are so many things to do and people to get to know. My husband, David, and I came to Memphis this summer from New York City. Like most people, we were incredibly shocked by the terrorist attack on New York. I truly can’t imagine how the city (and our country) has changed in such a short time. We were very lucky and lost no family or friends in the tragedy, but our prayers are with those less fortunate than ourselves. While most recently from New York, both David and I did our undergraduate work at the University of Tennessee. We are happy to get back to Tennessee, where we can spend more time with our families.

While working in a post-doctoral position at The Rockefeller, I studied cell division and basic cancer

biology using budding yeast as a model system. No, yeast cells don't get cancer; but mechanisms that regulate cell division are highly conserved between yeast and man. When I think about cellular processes that are important for cellular growth, I am interested primarily in their spatial regulation. In other words, is "where" things are happening as important as "how" things are happening; or are these two concepts linked? I am continuing to ask these questions here at Rhodes with the help of some talented students this semester, Jennifer Riem and Leah Kaye. My interest in the cell cycle began during my graduate work at the University of Virginia. At UVA I used budding yeast to study an oncoprotein that is normally expressed by a virus. This protein was toxic in yeast, and I found that it was targeting the basic transcriptional machinery in the cell.

While most of my time is spent here at Rhodes, my spare time is spent with my husband, David, and my dog, Zira. The three of us love to go on long walks and chew on bones (well, we leave the bone chewing to Zira). I have really enjoyed interacting with students in the Botany class I am teaching this semester, and look forward to meeting more students next semester in my senior seminar class (cancer biology), in the genetics course, and in courses that will follow. If you find yourself interested in the work that I do, feel free to stop by and ask me about it.

## TRI-BETA

The date of the fall initiation for the Tri Beta (βββ) Biological Honor Society will be Tuesday, October 23 at

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Cover page figures:

At left: The cell cycle from <http://pingu.salk.edu/~forsburg/clecture.html#cell>

At right: *Daphnia* from [http://biodidac.bio.uottawa.ca/thumbnails/filedet.htm?File\\_name=CRUS028B&File\\_type=GIF](http://biodidac.bio.uottawa.ca/thumbnails/filedet.htm?File_name=CRUS028B&File_type=GIF)

7:00. All students who meet the requirements of regular or associate membership and are interested in initiation need to contact Allison Gratzer at [graal@rhodes.edu](mailto:graal@rhodes.edu). Requirements for membership can be found in the Rhodes handbook.

Current officers are as follows:

President: **Ellen Barton '02**  
Vice-President: **Erin Cook '02**  
Secretary: **Allison Gratzer '02**  
Treasurer: **Forrest Busler '02**  
Historian: **Evgeni Krynetski '02**

Tri Beta will also be sponsoring a lecture series for student research opportunities. Details to be announced.

## 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. Carolyn Jaslow**. The deadline for applications for this Research Award will be announced in the spring issue of Biofeedback.