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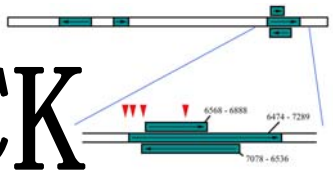
BIOFEEDBACK



Ca^{2+} Na^{2+} The Newsletter of the Biology Department at Rhodes

Volume 20 | 1 November 2005 | 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:

I really love Autumn. Not because I like dressing up as something different for Halloween (which I do), or because college football season fills my Saturdays (which it does), or not even because I know that it means I soon will receive a flood of well-intended birthday and holiday presents (which sort of happens).

No, I like the Fall because wherever I look I see biological happenings. It is guaranteed that during this time period I will pull at least one person aside and give an impromptu lecture on chlorophyll content and the changing colors of the leaves. I find that my children really like this. If I visit the zoo, I'll see some biology students from Animal Behavior filming giraffes that appear to simply be standing their doing nothing. I always wonder if the students know that others are observing them, observe the giraffes!. During early morning hours, I'll run into Dr. Armacost who will insure that I am aware of what new birds were spotted at some remote site that I didn't even know existed. Becky Cook will provide me with updates on how her friends mold problem in her room is progressing while she quickly spreads another yeast culture on her Petri dish.

Yes, I like Autumn because life is changing all around me. I can see it, smell it, and even taste it in the pumpkin pie. I hope you can take just a little time this semester to appreciate the changes occurring around you.

---- *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, 2003.

Honors and Awards:

CONGRATULATIONS TO ...

……**Chip Hartigan '05,** who won the Outstanding Biology Senior Award for the '04-'05 academic year. Additionally, **Lauren Fay '05 and Katie Jameson '05** were named the co-recipients of the 2005 Award for Outstanding Student Research in Biology. Finally, **Sarah Mercer '08** won the Award for Excellence in First Year Biology.

…**Danny Heine '05**, who won an NCAA post graduate fellowship.

…..the following students who won awards at URCAS in April. **Ross Hilliard '07** won 1st place, Oral Session 2. **Aaron Creek '07** and **Sini Nwaobi '07** won 1st place in the Natural Sciencs Poster Session. **Jessica Devitt '06** won 2nd place in Oral Session 2. **Mark Stratton '06** won 2nd place in Oral Session 3.

…….the Phi Beta Kappa initiates of the class of '05**: Stacie Beverly '05, Daniel Heine '05, and Jonathan Whaley '05.**

……the following students were elected as officers of ODK. **Lydia Vincent '06** –President, **Liz Nabors '06** - Secretary and **Sonia Singh '06 -**Membership Chair. Congratulations to these students.

.....the new officers of Rhodes' chapter of βββ: **Sonia Singh '06** (President), **Jessica Devitt '06** (Vice-President), **Aaron Creek '07** (Secretary), **Rachel Pigg '06** (Treasurer), and **Jessica Graham '06** (Historian). For more information about βββ, see p. 6.

…..**Sarah Mercer '08** received the Jack U. Russell Award in Mathematics, 1st Year.

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

Grants and Fellowships

Dr. Rosanna Cappellato received a W.M. Keck Foundation grant from the Associated Colleges of the South to develop field laboratories for the Introduction to Environmental Sciences course to be taught in the fall of 2006. **Adam Bohnert '07** is assisting in sampling and designing the laboratories.

Kate Key '07 received a grant from Rhodes CARES to work as a Student Research Assistant with Dr. Cappellato on a new project designed to establish Greenspaces in the Hollywood-Springdale community.

Publications:

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

Dr. Alan Jaslow had photographs published in two books: Serpientes de Costa Rica" by Alejandro Solarzano, 2004. and Amphibians & Reptiles of the Bay Islands and Cayos Cochinos, Honduras by James McCranie, Larry David Wilson and Gunther Kohler, 2005.

Mary E. Miller, F.R. Cross, **A.L. Groeger**, and **K. L. Jameson**, 2005. Identification of novel and conserved functional and structural elements of the G1 cyclin Cln3 important for interactions with the CDK Cdc28 in *Saccharomyces cerevisae. Yeast* 22: 1021-1036.

Meetings:

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

Matthew Cain '07, Rachel Bowden, Vishal Lamba, Masashi Adachi, Mark Leslie and John Schuetz. "Role of MRP4 in testosterone transport."

Aaron Creek '07, Sini Nwaobi '07, Jay Blundon and Cate Fenster. "Reducing expression of neuronal interleukin-16 using small interfering RNA."

Jessica Devitt '06, Jay Blundon and Cate Fenster. "Electrophysiological investigation of the effects of NIL-16 on long term potentiation in mouse hippocampal slices."

G. Moss Driscoll '05 and Alan Jaslow. "The Gut-reactor theory and giant pandas: internal digesta mixing as a complication for intake modeling."

Emily Furlow '05 and Linda Hendershot. "Monitoring unfolded protein response activation in solid tumors."

Jennifer Herrold '05 and Tony Becker. "Grooming behaviors of captive bonobos."

Ross Hilliard '07 and Richard Kriwacki. "Structural studies of the N-terminal region of choline binding protein A, the major adhesin of *Streptococcus pneumoniae*.

Monica Huerta '07, Elisabeth Adderson and Glen Ulett. "Group B streptococcus (GBS) induces caspase-mediated apoptosis of respiratory epithelial cells."

Daniel Keedy '06, Terry Hill, Annette Teepe and Darlene Loprete. "Complementation of cell wall defects in a mutant of the filamentous fungus *Aspergillus nidulans.*"

Katie Jamson '05 and Mary Miller. "High copy suppression analysis of mis-localized G1 cyclin *CLN3* in the budding yeast *Saccharomyces cerevisiae*."

Justin Marlar '06 and Linda Harris. "Analysis of proteins that interact with common Mdm2 splice variants."

Sinifunanya Nwaobi '07, Aaron Creek '07, Jay Blundon and Cate Fenster. "Reducing expression of neuronal interleukin-16 using small interfering RNA."

Bradley Petrovich '07, Jay Blundon and Cate Fenster. "The role of interleukin-16 in motor learning."

Caroline Sartain '07, Terry Hill, Annette Teepe and Darlene Loprete. "A broad spectrum high-copy suppressor of Calcofluor hypersensitivity in *Aspergillus nidulans*."

Desiree Steimer '05 and Gary Lindquester. "Generation of a recombinant murine herpesvirus containing the Epstein-Barr virus viral interleukin-10 (vIL-10) gene."

Mark Stratton '06 and David Kesler. "The role of light and oxygen in *Chaoborus puntipennis* diel vertical migration."

Melanie Woods '05 and Tony Becker. "Analysis of courtship behavior of *Giraffa camelopardalis reticulata*."

Ross Hilliard '07 won 1st place, Oral Session 2. **Aaron Creek '07** and **Sini Nwaobi '07** won 1st place in the Natural Sciencs Poster Session. **Jessica Devitt '06** won 2nd place in Oral Session 2. **Mark Stratton '06** won 2nd place in Oral Session 3.

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

Matthew Cain '07. Role of MRP4 in testosterone transport.

Jessica Devitt '06. Electrophysiological investigation of the effects of NIL-16 on long term potentiation in mouse hippocampal slices

Ross Hilliard '07. Structural studies of the N-terminal region of choline binding protein A, the major adhesin of *Streptococcus pneumoniae*.

Monica Huerta '07. Group B streptococcus (GBS) induces caspase-mediated apoptosis of respiratory epithelial cells.

Sini Nwaobi '07. Determining NIL-16 and KV4.2 interaction and reducing NIL-16 via sirna.

Brad Petkovich '06. The role of interleukin-16 in motor learning.

Monica Huerta won 1st place in her section and Sini Nwaobi won 2nd place in her section at TAS.

Rhodes College was also well represented at the South Eastern Regional Yeast Meeting (SERYM) which was held in Atlanta this spring. The meeting had over 100 attendees from Universities and Colleges throughout the South.

The following students participated in the meeting:

Katherine Jameson '05 - who gave an oral presentation
Carolyn Westfall '05 - who attended
Lauren Fay '05- who gave a poster presentation
Carolyn Sartain '07 - who gave a poster presentation.

Katherine won an award for outstanding presentation by an undergraduate student! Drs. Loretta Jackson-Hayes (Chemistry), Mary Miller, and Annette Teepe attended the meeting with the students.

Dr. Chuck Stinemetz and G Stinemetz gave a mini-symposium presentation entitled "The Expansion of Genetically Modified Organism (GMO) Markets as a Model for Teaching Responsible Environmental Public Policy Formulation" at the American Society of Plant Biology, in Seattle, Washington this spring.

During the summer, **Dr. Mary Miller** attended the National American Society for Microbiology Meeting in Atlanta, GA. She was joined by **Katie Jameson '05** who presented her research on high copy suppression analysis of mis-localized G1 cyclins. Katie's poster presentation was an invited presentation to recognize her ASM award for undergraduate research during the summer of 2005.

Dr. Stinemetz attended the Council on Undergraduate Research Meeting in Wabash Indiana in June.

In October, **Dr. Stinemetz** participated in a Project Kaleidoscope meeting on "A Roadmap for Institutional Transformation" in Kansas City.

Curricular Evolution:
Course Changes and Announcements

Environmental Science

A new interdisciplinary science program offering a minor in Environmental Science was recently approved. Beginning in the 2006 fall semester, students can pursue a minor in the interdisciplinary field of environmental science. This minor is intended to complement current science majors (like Biology!). This would be a particularly attractive major for students interested in "green issues" or pursuing work in a field related to the environment such as: conservation biology, ecology, biodiversity, environmental health, environmental law, environmental engineering and hydrology.

The environmental science minor is supported by all the departments in the science division and can include coursework in Biology, Chemistry, Computer Science, Geology, Physics, and Math. In addition, courses outside of these departments can be counted toward this minor with approval of the program committee. Students satisfying the minor requirement are asked to integrate there coursework into an engagement activity which could be completed in a number of ways including: student research projects, directed inquiry, honors work, summer activity, and service experiences.

Initially, the requirements for a minor in environmental science will draw from courses already in the Rhodes Catalog (see the following list). However, plans are also underway to add further offerings to the program with the next few years. The requirements for this minor are below.

Environmental Science Minor Requirements

Required courses (8 credits)

Two introductory courses in environmental science – Physics (Soon to change to Geology) 103 Global Change or Geology 111-111L Introduction to Earth System Science, and Biology 105 Environmental Science

Electives (total of 16-20 credits, three science courses at the 200 or higher level, one environmen-

tally-oriented course, an environmentally-oriented experience based on experiential learning)

Three courses from the courses listed below:

Biology 212 and 214 (taken together) Environmental Issues in Southern Africa, Environmental Field Studies in Namibia and Botswana
Geology 214-214L Environmental Geology
Biology 254 Coral Reef Ecology
Biology 315 Ecology
Biology 375 Conservation Biology (course proposed for spring 2006)
Chemistry 406 Instrumental Analysis
Chemistry 422 Advanced Organic Chemistry

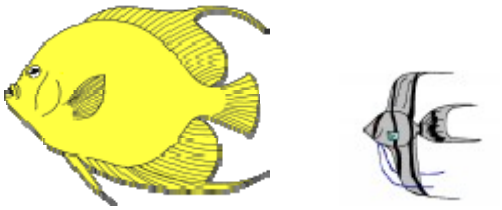
One additional environmentally-oriented course 200 or higher level approved by the program committee not necessarily offered through a natural science department. Departments that might have appropriate courses outside of the natural sciences include political science, economics and business administration, anthropology/sociology, history, etc.)

One additional environmentally-oriented experience based on experiential learning
These experiences will be approved by the environmental science committee but may include: Independent research, internships, service projects, summer experiences, international experiences

Students interested in pursuing an environmental science minor should consult with their advisor and/or talk with one of the members of the interdisciplinary Environmental Science Committee - Drs. Capellato, Gottlieb, Ekstrom, Russ, and Stinemetz.

A reminder: Environmental Issues in Southern Africa (Spring 2006, BIOL 212 - 2 credits) and the Environmental Field Trip to Namibia (Summer 2006, BIOL 214 - 2 credits + lab) will be offered again. The Summer 2005 trip was very successful. As one of the students wrote: "*Overall, this program was simply amazing."* If you want to know more about the past trip or the future one, email Dr. Cappellato (Cappellato_Rosanna), or the students that went to Namibia: Stephanie (Walters_Stephanie), Tara (Daniel_Tara), and Megan (McKenna_Megan).

Coral Reef Ecology



If you are planning on taking Biology 252 and 253 you must first see Dr. Kesler. Enrollment in this course is "by permission only."

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 Mark Stratton at strma@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.

HELLO FROM OUR NEWEST DEPARTMENT MEMBERS

DR. JIM ARMACOST

Dr. Jim Armacost, Jr. joins the Biology Department as Instructor. Mr. Armacost is a native Memphian. He received his B.S. in Zoology from Louisiana State University, his M.S. in Biology from Mississippi State University, and will receive his Ph.D. in Biology from Illinois State University. His dissertation is entitled, "Ecology and Conservation of Amazonian River Island Birds."

Prior to joining the Rhodes faculty, Mr. Armacost was a teaching assistant at Illinois State University. He was a National Science Foundation Fellow from 2001-2003 and has done extensive ecological fieldwork, most recently in Peru.

Mr. Armacost's research focuses on habitat use by birds, which is central to understanding avian ecology and to the management and conservation of birds. He is the author of several articles that have appeared in peer-reviewed journals and is a member of several ornithological and conservation societies.

DR. KEITH PECOR

Rhodes College and the Department of Biology welcome Dr. Keith Pecor as Biology Faculty Fellow. Dr. Pecor is interested in the ecology and evolutionary biology of amphibians and reptiles, and he is working in collaboration with Dr. Alan Jaslow. Dr. Pecor will also teach Vertebrate Life (Bio 202) in the spring 2006 semester.

Dr. Pecor is a native Memphian and familiar with both the natural and human communities surrounding Rhodes. He earned his B.S. at the University of Memphis, where he studied the foraging ecology of hatchling turtles. Dr. Pecor earned his M.S. and Ph.D. at the University of Michigan. His graduate work was a foray into crustacean biology, studying the chemical ecology of crayfish. At Michigan, Dr. Pecor taught a number of courses, such as evolution and herpetology, and he was recognized as an Outstanding Graduate Student Instructor. He also worked as a curatorial assistant in the Division of Reptiles and Amphibians at the University of Michigan Museum of Zoology.

Change in BS requirements for Biology and BMB majors

For students in the Class of 2007, the requirements for the BS degree will change. The College has dropped its overriding BS degree requirement for three courses in mathematics/computer science. This change will not affect the current Biology major requirements for the BA degree. However, it will remove the stipulation for a third math course from the Biology major requirements for the BS degree. This change will be reflected in the 2006-2007 catalogue. A rules change will also mean that students completing the current requirements for a major in Biochemistry and Molecular Biology will earn a BS degree starting in 2007.

St. Jude research program going strong

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

Optimal Foraging

The following courses will be offered next semester

NUMBER	COURSE TITLE	HOURS OFFERED
105-1	Disease and Immunity	MWF 1:00-5:00
105-2	Economic Botany	MWF 8:00-8:50
140	Biology II 4 lecture sections	MWF 9:00-9:50 TuTh 8:00-9:15 TuTh 9:30-10:45 TuTh 11:00-12:15
201	Mycology	TuTh 9:30-10:45, Wed lab
202	Vertebrate Life	TuTh 8:00-9:15
204	Mechanisms of Dev.	MWF 11:00-11:50, Thu lab
212	Env Issues in So. Africa	TuTh 11:00-12:15
252	Coral Reef Ecology (lit)	TBA
253	Coral Reef Ecology	Th 3:30 – 4:45
301	Microbiology	MWF 10:10:50, Tue lab
325	Molecular Biology	MWF 9:00-9:50, Thu lab
370	Neuroscience	TuTh 11:00 –12:15, Mon lab
486-1	Cancer Biology	T,Th 4-5:30

TRI-BETA

Students interested in associate membership in the Mu Rho chapter of Tri Beta (βββ) should contact Sonia Singh sinso@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 2005-2006 school year are as follows:

President: **Sonia Singh '06**

Vice-President: **Jessica Devitt '06**
Secretary: **Aaron Creek '07**
Treasurer: **Rachel Pigg '06**
Historian: **Jessica Graham '06**

This semester Tri Beta is offering many opportunities to get involved in the biology department at Rhodes. Details on all events will be posted on the Tri Beta bulletin board. Dr. Rosanna Cappellato is the faculty advisor for Tri Beta. She can be reached at cappellator@rhodes.edu

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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.

Coral Reef images:
At left: http://www.awalley2001.com/angelfish.gif
At right: http://www.kcff.net/artwork/1995/october/tnangel.jpg