

BIOLOGY DEPARTMENT

# DOUBLE HELIX



Spring 2008

Volume 3

Issue 2

## *Notes from the (Rocking) Chair*

**T**he Spring Semester in any given year always starts out tough: cold, forbidding weather; for biology freshmen the challenge of dealing with unfamiliar faculty and the concept of linked courses; for sophomores frequently the difficulty of three (maybe four) lab classes; for juniors the difficulty of writing a research proposal for the first time and maybe MCATS, GREs, or DATs; and for seniors writing the final paper on the research and preparing to present it publically. But somehow, it all turns out well: courses are completed, examinations passed, presentations made, and acceptances and awards granted. Faculty sense those same emotions on behalf of their students and sometimes, those milestones passed are their own. This year Drs. Darlene Panvini and Jennifer Thomas were promoted to Associate Professor and granted tenure at Belmont. I congratulate all students and faculty alike for a year well spent and jobs well done.

*Robert T. Hammer*

## **Graduating Seniors Wow'em at BURS!**

From zebrafish to worms to streptococcus to invasive plants to mosquitoes to Swan Lake (not the Tchaikovsky version!), senior biology majors presented the results of their research projects at the Spring 2008 Belmont Undergraduate Research Symposium. Oral presentations from 19 seniors highlighted the Biology session of the BURS event. Students are graded on the presentations and on the work presented, so it is an interesting time, but it is also a celebration of work accomplished, skills perfected, and relationships developed. The papers are published in the Journal of Proceedings of BURS, Volume XVI. Congratulations to these students on work well done!

## **Niedzwiecki Presents Research Talks at Regional Universities**

Dr. John Niedzwiecki gave two talks this spring relating to his research on the geographic influences on migration in Darwin's Finches as revealed by genetic markers. In March, he gave an hour long invited seminar entitled "Migration Patterns Revealed through Genetic Markers in Darwin's Finches" to Austin Peay University's Center of Excellence for Field Biology, and in May he presented a shorter talk, "Geographic Influences on Migration in Darwin's Finches" at the University of Kentucky's Center for the study of Ecology, Evolution and Behavior's Spring Research Symposium.



## Tennessee Academy of Sciences: Middle Tennessee Collegiate Division TAS Spring 2008

On April 12<sup>th</sup>, 2008 the School of Sciences hosted the Tennessee Academy of Sciences Middle Collegiate Division Meeting. This spring collegiate meeting of the TAS provides an opportunity to focus on undergraduate research. On the morning of the 12<sup>th</sup>, forty-three students representing eight universities and colleges in the Middle Tennessee District presented research in the following academic areas: ecology/botany, chemistry/physics, cellular/molecular biology, immunology, and microbiology. The number and breadth of these presentations doubled that seen in previous meetings and in other collegiate divisions. More importantly the quality of these presentations speaks to the outstanding research being accomplished not only at Belmont but at our neighboring institutions. All of the graduating senior Biology majors presented their senior research projects. Despite the high quality of work, several of the Belmont students were able to place first or second within the friendly sectional competition. The Belmont winners included:

### Ecology/Botany

1<sup>st</sup> Jill Neblett **“Examining the Impact of Human Activity on Swan Lake”**

### Immunology

1<sup>st</sup> Dale Carter **“T-Cell Cytokines Associated with Inflammatory Bowel Disease in *mdr* Knockout and Chimera Models”**

2<sup>nd</sup> Stephen May **“*Caenorhabditis elegans* Immune Pathways in Defense Against *Streptococcus pneumoniae*”**

### Microbiology

1<sup>st</sup> Sarah Brandt **“Studying DNA Polymerase Complex of Smallpox Virus”**

### Behavioral/Zoology

1<sup>st</sup> Rebecca Repasky **“Nicotine Facilitates Learning in Zebrafish, *Danio rerio*.”**

2<sup>nd</sup> Bethany Woodward **“Characterization of “Shrinker” Mutants in *Caenorhabditis Elegans*.”**

The School of Sciences will be hosting the 2009 Tennessee Academy of Sciences Middle Collegiate Division Meeting in early April.

## SYNAPSE 2008

SYNAPSE 2008 (Symposium for Young Neuroscientists And Professors of the SouthEast) was held at the College of Charleston in Charleston, SC on March 15, 2008. Becky Repasky and Zach Caro attended the conference accompanied by Dr. Lori McGrew. Becky presented a poster entitled “Effects of Acute and Chronic Nicotine Exposure on Learning in Zebrafish”. Both Zach and Becky were members of Dr. McGrew’s 2007-2008 research team. Becky reflected on her experience at SYNAPSE after her return:

“Attending the SYNAPSE conference in March, 2008 was an excellent educational opportunity for me in many different ways. The conference itself allowed me to travel to a new area and experience meeting other people interested in my field from other schools in my region and allowing me to present to strangers who were truly interested in my work. My poster presentation was a dissemination of information that I have gathered and the methods by which I gathered them and those who listened to me truly wanted to hear of my project and gather information from it. They also provided me with feedback that was relevant. Rather than judge the performance of my delivery (as the purpose for all my other presentations for school have been for my professors) they gave me truly helpful advice for ways that I can further my project and directions I can take with it.”



## Brain Awareness Week March 10-16, 2008

Brain Awareness Week (BAW) is an international initiative by the Dana Alliance to promote learning about the brain, scientific investigation of the brain, and public awareness of the current research and advances in neuroscience. Along with 2,200 institutes in 76 countries, the School of Sciences hosted BAW from March 10-16, 2008. Four events were scheduled throughout the week:

Peter R. Martin, MD (Professor of Psychiatry and Pharmacology at Vanderbilt University School of Medicine and Director of the Division of Addiction Medicine at Vanderbilt) discussed structural and functional changes in the brain that occur with addictive behaviors. Additionally, Dr. Martin mentioned a new approach to treating addiction that he outlined in his book "Healing Addiction: an Integrated Pharmacopsychosocial Approach."

Drs. McGrew and Ragsdale lead a discussion and demonstration of the structures of brains. Students from all types of backgrounds were invited to learn about the areas and functions of your cranial matter by dissecting a sheep's brain. Students were amazed by the complexity and similarities between the sheep and human brains.

Dr. Ford Ebner (Professor of Psychology and Cell & Developmental Biology at Vanderbilt University) focuses his research on brain development and structural changes associated with visual experiences. Dr. Ebner offered an advanced look at the changes in neuronal anatomy and function in the brain when learning occurs.

Dr. Gregory Mathews (Assistant Professor of Neurology and Pharmacology at Vanderbilt University) discussed the pathophysiology of epilepsy as well as current treatment strategies. Students learned that epilepsy is not an absence of neuronal activity but rather on overload of neuronal electrical interactions.



## Vaughn Science Lecture

On Nov. 13, 2007 The 2007-2008 Vaughn Science Lecture was presented by **Rev Dr. John Polkinghorne KBE FRS**, Cambridge University, England. Dr. Polkinghorne is a Fellow of the Royal Society and a Fellow and former President of Queens' College, Cambridge. He has published many papers on theoretical elementary particle physics in learned journals, as well as technical scientific books. In 1979 he resigned his Professorship to train for the Anglican Priesthood. In 1986 he was appointed Fellow, Dean and Chaplain Trinity Hall, Cambridge, and in 1989 he was appointed President of Queens' College, from which he retired in 1996. He was appointed KBE (Knight Commander of the order of the British Empire) in 1997. During the same period he has published a series of books exploring and developing aspects of the compatibility of religion and science. He was awarded the Templeton Prize for Science and Religion in 2002 and also in that year became the Founding President of the International Society for Science and Religion.

Dr. Polkinghorne met with students in an afternoon discussion of science, religion, and scientific careers, followed by a dinner with interested faculty. In the evening he presented the Vaughn Science Lecture entitled "Interpreting Quantum Theory" in which he explained in an engaging manner several of the more unexpected results predicted by quantum theoretical explanations of atomic behavior.

The Vaughn Science Lecture is sponsored by Dr. Tony Vaughn, a 1984 alumnus of the Department of Mathematics. The School of Sciences is very grateful for his continued support of this important annual event.



## BIOLOGY DEPARTMENT

*Dr. Robert T. Grammer, Professor and Chair*  
*Dr. C. Steven Murphree, Professor*  
*Dr. Lori L. McGrew, Assistant Professor and ICORD Fellow*  
*Dr. John Niedzwiecki, Assistant Professor and Gulf Coast Research Lab Coordinator*  
*Dr. Darlene Panvini, Associate Professor and ENV Coordinator*  
*Dr. D. Nicholas Ragsdale, Associate Professor and Pre-Health Advisor*  
*Dr. Jennifer T. Thomas, Associate Professor and BMB Coordinator*  
*Ms. Terri Templeman, Administrative Assistant*  
*Mr. Ray Seely, Laboratory Manager and Chemical Hygiene Officer*

## Contact Us

- Have any comments about the newsletter or the Department?
- An alum with an update on activities?
- Like further information about the Department, its offerings or activities?

Please contact us by one of the following e-mail address or by postal service.

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Also, please check the Departmental webpage at: [www.belmont.edu/biology](http://www.belmont.edu/biology)

## Belmont Alumni

We want to hear from you! Please take a moment to fill out the information below and send to us.

Alumni Update

Name \_\_\_\_\_ Graduation Year \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip Code \_\_\_\_\_ Phone \_\_\_\_\_

Email address \_\_\_\_\_

Employment \_\_\_\_\_ Title \_\_\_\_\_

Recent promotion, honor, award, family activity? \_\_\_\_\_