

## Voles Among Year's Top Science Stories

**C**BN research on the genetic basis for pair bond formation in animals captured the 97th place in *Discover* magazine's top 100 science stories of 2004. In an article headlined "Rakish Rodents Reformed," the magazine recognized the June 17 *Nature* study led by Larry Young, PhD, affiliation laboratory head, and CBN post-doctoral fellow Miranda Lim, PhD, of Emory University, who discovered transferring the vasopressin receptor gene into the brain's reward center made promiscuous male meadow voles monogamous. The story is believed to be one of Emory's most widely reported research findings. *Popular Science* also listed the study as one of the most important science stories of 2004. ■



Media superstars: voles

## Metabolite Mediates Stress, Anxiety in Females

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plus-progesterone group, however, CRF-enhanced startle was significantly lower than in the other groups.

In another set of experiments, the researchers discovered that lactating female rats with naturally high levels of progesterone had markedly lower CRF-enhanced startle responses compared to virgin females with intact ovaries. "Findings from these initial experiments pointed toward the conclusion that progesterone inhibits the effect of CRF on the acoustic startle response," said Toufexis.

To test this hypothesis, the researchers gave only progesterone to female rats lacking ovaries, then compared their acoustic startle responses to female rats without ovaries injected with corn oil. The progesterone group displayed significantly lower CRF-enhanced startle responses. When ovariectomized females were tested with allopregnanolone alone, it also reduced CRF-enhanced startle.

In a final experiment, the scientists compared the behavior of females that received progesterone with those that

received medroxy-progesterone, an artificial progestin that binds to progesterone receptors but does not metabolize into the progesterone metabolite allopregnanolone. Only natural progesterone reduced CRF-enhanced startle.

Previous studies have determined that allopregnanolone enhances the activity of GABA, the main inhibitory neurotransmitter in the central nervous system, at its receptors throughout the brain. This mechanism, Toufexis said, likely accounts for progesterone's blunting effect on the brain's stress system.

Findings from the study correlate with clinical evidence that some people suffering from depression or anxiety have low allopregnanolone levels that normalize after treatment with anti-depressant medications.

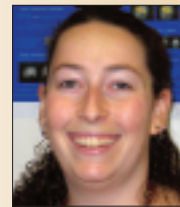
"New drugs could potentially be developed that mimic the effect of allopregnanolone on the GABA receptor, providing a new approach for controlling mood disorders in women," said Toufexis. "The next step is to determine where exactly allopregnanolone is working in the brain to reduce the effect of CRF." ■

## Be on the lookout for...

**DIANA ROBINS,**

PhD, who recently joined the affiliation laboratory, is an assistant professor of psychology at

Georgia State University, in both the neuropsychology and behavioral neuroscience and clinical psychology programs. A clinical neuropsychologist, Robins studies the neurobiological mechanisms underlying social deficits in autism spectrum disorders (ASD). Currently, she is conducting a series of functional MRI studies examining the neural systems involved in the perception of emotion during the integration of facial expression and voice tone, both in normally developing and ASD individuals. Robins has written numerous journal articles and book chapters on neuropsychology.



Robins

**DANIEL SAAL,** MD,

PhD, is an assistant professor of psychiatry and behavioral science at Emory University and a

researcher in the Yerkes Division of Neuroscience. Saal's research focuses on the dopamine producing cells in the rodent midbrain and how exposure to cocaine and stress affects the activity of these cells and behavior. Through CBN, Saal hopes to examine the role of dopamine cells in the processes underlying fear conditioned startle and extinction. ■



Saal

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Voles: 2004 Media Superstars

## Brain Bee Champ Crowned

**S**aranya Selvaraj, a senior at Parkview High School in Gwinnett County, bested more than 60 of her peers on Feb. 5 to claim the 2005 Atlanta Brain Bee title. Selvaraj will go on to compete in the International Brain Bee in March at the University of Maryland.

The Brain Bee consisted of two rounds of written and oral neuroscience questions. The program also included an opportunity for students to learn about neuroscience career paths from four scientists. The panel included

Joanne Chu, PhD, of Spelman College; Michael

Mallory, MD, MPH, of Children's Healthcare of Atlanta; Pam

Maras, a doctoral student in the Department of Psychology at Georgia State University; and

Tara Stoinski, PhD, of Zoo Atlanta. Turnout for the Brain Bee, which was held at the Fernbank Museum of Natural History, was the largest in the six-year history of the annual competition. ■



Brain Bee champion Saranya Selvaraj (center) with third-place winner Paul Ginart (left), a junior at Cobb County's Walton High School, and second-place winner Andrew Wilmont, a Parkview High School sophomore.

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# Synapse

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## Sex Hormone Metabolite Reduces Stress in Females

*Could provide new drug target for treating anxiety and depression*

**A**steroid hormone released during the metabolism of progesterone, the female sex hormone, reduces the brain's response to stress, according to a study by CBN scientists. The researchers found evidence that the progesterone metabolite allopregnanolone reduces the brain's response to corticotropin-releasing factor (CRF), a

peptide hormone that plays an important role in the stress response in animals. The finding, which was reported in the Nov. 10, 2004 edition of the *Journal of Neuroscience*, could provide a new drug target for treating anxiety and depression in women.

In the study, CBN post-doctoral fellow Donna Toufexis, PhD, lab technician Carrie

Davis, Fear Collaboratory Head Michael Davis, PhD, all of Emory University, and Spelman College undergraduate Alexis Hammond, compared how female rats with different levels of the sex hormones, estrogen and progesterone, reacted to loud noises after injections of CRF into the brain's lateral ventricles. CRF injections usually increase the "acoustic startle response" in this test used to gauge stress and anxiety, a phenomenon called CRF-enhanced startle.

In the first experiment, the scientists compared acoustic startle responses after CRF injection in an estrogen-only group, an estrogen-plus-progesterone group and a control group that did not receive any sex hormones. All the rats lacked ovaries and the ability to produce sex hormones naturally. Acoustic startle response was unaffected in the estrogen-only group and the control group. In the estrogen-

*Continued on page 6*

## Wilczynski Named Co-Director for Research

**W**alter Wilczynski, PhD, professor of psychology at the University of Texas at Austin and former program director for behavioral neuroscience at the National Science Foundation, has been

named CBN co-director for research. Wilczynski, who will administer the center's four collaboratories and six technology cores, also will coordinate the allocation of research funding and participate in the acquisition of new sources of external research support. He assumes the position full-time on Aug. 15.



Wilczynski

*Continued on page 2*

## Sharing the Wonders of the Brain

In addition to research, one of CBN's central missions is public education. This March, in conjunction with Brain Awareness Month (BAM), CBN educators are planning what promises to be another exciting series of programs designed to raise awareness of neuroscience and its importance to everyday life. The month's signature event will be a neuroscience exposition at Zoo Atlanta. If last year's stellar turnout is any indication, we can expect thousands of Atlantans to visit our interactive information booths. Other BAM events include a series of lectures, most notably a March 21 public showing of the movie *Memento* followed by a lecture on the neurobiology of memory and amnesia led by Stuart Zola. I encourage all members of the CBN community to rally their family, friends and colleagues to attend as many of these events as possible.

BAM would not be possible without the support of our community partners, including the zoo and Fernbank Museum of Natural History. I would like to thank them and all CBN educators, faculty and students for their tireless efforts in support of neuroscience literacy. ■



Albers

*Elliott Albers*

## New External Advisory Board Members Appointed

The CBN management team recently welcomed five new members to its external advisory board: chair Anne Etgen, PhD, of the Department of Neuroscience at Albert Einstein College of Medicine; Darcy Kelley, PhD, of the Department of Biological Sciences at Columbia University; Margaret (Peg) McCarthy, PhD, of the Department of Physiology at the University of Maryland School of Medicine; Rae Silver, PhD, of the Department of Psychology at Columbia; Thomas Callaway, MD/MBA, president of Atlanta Life Science Partner, Inc.

The new members replace Gene Block, Errol de Souza, Eve Marder, Klaus Miczek and Phil Skolnick, PhDs, whose four-year terms recently expired.

The board consists of experts in behavior, neuroscience and education from academic institutions, government and industry. The board provides guidance and advice to CBN to ensure its activities are consistent with the Center's vision, goals and objectives.

"The external advisory board has been instrumental from the beginning in guiding the development of our programs and ensuring the renewal of the NSF grant," said Elliott Albers, PhD, CBN director. "I am deeply grateful to the outgoing members for their contributions and the willingness of the new members to help take the Center to its next level of success." ■

## Robinson Elected AAAS Fellow

Gene Robinson, PhD, a member of CBN's external advisory board and G. William Arends Professor of Integrative Biology in the Department of Entomology and director of the neuroscience program at the University of Illinois at Urbana-Champaign, was recently elected a fellow of the American Academy of Arts and Sciences. Robinson studies behavioral mechanisms in social insects such as honey bees. ■



Robinson

## Wilczynski Named Research Co-Director

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"Dr. Wilczynski is an outstanding and highly regarded neuroscientist whose distinguished record of scholarship and leadership in the field will be instrumental in taking CBN to the next level," said Elliott Albers, PhD, CBN director.

Wilczynski has spent most of his 22-year career at the University of Texas where he is a member of university's Institute for Neuroscience and holds a joint appointment in the Section of Neurobiology in the Division of Biological Sciences.

From 1996 to 1997, Wilczynski served as program director for behavioral neuroscience in NSF's Division of Integrative Biology and Neuroscience.

Wilczynski currently serves as editor-in-chief of the scholarly journal *Brain, Behavior and Evolution*. He has written more than 90 published papers and 60 abstracts on social behavior, animal communication and the neural mechanisms of behavior, among other topics.

"I am honored to be part of an already stellar research program," said Wilczynski, "and am excited about joining the CBN community."

In addition to his CBN position, Wilczynski will hold a professorship in the Department of Psychology at Georgia State University.

Wilczynski earned his doctorate degree from the University of Michigan and bachelor's degrees from Lehigh University.

Wilczynski replaces Kim Huhman, PhD, associate professor of psychology at Georgia State, who served as interim co-director for research since October 2002.

"Kim did an outstanding job as interim co-director," said Albers. "She has made major contributions to CBN since the very beginning. We are all thankful for her continuing involvement in so many aspects of the Center." ■

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## A Memento for Brain Awareness Month

Think you accurately remember a conversation from a few days ago? What about events from several years ago? Just how good is your memory, and how do you know if you are having memory problems?

Stuart Zola, PhD, director of the Yerkes National Primate Research Center of Emory University, will use the critically acclaimed movie *Memento* to illustrate what neuroscience has revealed about memory and amnesia.

You won't forget this film or lecture!

**Monday, March 21  
6:45-10 p.m.  
Fernbank Museum of Natural History  
767 Clifton Rd.  
Admission is FREE, but advanced reservations are required.  
To reserve, call 404.929.6400.**

*The film is rated R for violence, language and some drug content. Patrons under age 17 must be accompanied by a parent or guardian. The lecture and film are most appropriate for an adult audience.*



## Research Apprenticeship vs. Team-Driven Laboratory Experience

*Study to compare models for recruiting and retaining women, minorities in neuroscience*

The National Science Foundation Science and Technology Center program has awarded Kyle Frantz, PhD, CBN undergraduate committee co-chair, a \$149,000 grant to compare two educational models for recruiting and retaining undergraduate women and minorities in neuroscience: the traditional research apprenticeship and an alternative teaching laboratory experience.

The study will follow two groups of undergraduates, principally women and underrepresented minorities, who will be recruited to take part in 10-week summer research experiences in consortium laboratories through CBN's

Behavioral Research Advancements in Neuroscience (BRAIN) program. Students who participate in the traditional research apprenticeship will work with individual faculty mentors, while those in alternative teaching laboratory experiences will collaborate with one another to design and conduct their own independent experiments.

"Our goal is to determine which model has the best outcome for promoting interest, achievement and retention in science programs," said Frantz.

The study's findings will be reviewed at a fall conference of STC educators.

### BRAIN Seeks Students

BRAIN, CBN's undergraduate program, is recruiting students to participate in the 10-week summer research program. This year, a total of 46 student slots are available. Students earn \$3,000 stipends and are eligible for up to \$1,200 in housing support. CBN faculty, graduate students and post-doctoral fellows are encouraged to publicize BRAIN to their students. Application deadline is Feb. 28.

For more information, contact Kyle Frantz via e-mail at [kfrantz@gsu.edu](mailto:kfrantz@gsu.edu). ■

### Mentors Needed for BRAIN, ION

Faculty mentors are needed this summer to host BRAIN students in their laboratories. The 10-week program, which targets rising sophomores and juniors, consists of research immersions in CBN laboratories. Faculty, post-doctoral fellows and graduate students also are needed to mentor high school juniors and seniors for eight weeks through the Institute on Neuroscience (ION) summer program. For more information, contact Kyle Frantz, PhD, via e-mail at [kfrantz@gsu.edu](mailto:kfrantz@gsu.edu). ■



Brenda Allison, PhD (right), a faculty member in Georgia State's computer information systems department, attaches electrodes to ION student Lenny Hsiao to demonstrate the electroencephalogram.

# Brains Rule! Neuroscience Exposition

Bring the entire family for a fun-filled day of activities and games about the brain.

**Saturday, March 19**  
**10 a.m.-4 p.m.**  
**Zoo Atlanta**

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