Synapse

SUMMER/FALL 2010 A quarterly publication of the CENTER FOR BEHAVIORAL NEUROSCIENCE

What's inside

BRAIN 2010 Receives Record Number of Applications

Nine years ago, the Center for Behavioral Neuroscience's "Introduction to Science Seminar" for undergraduate students began to morph into the BRAIN program by adding lab visits, demonstrations of research techniques, and broader neuroscience topics. Today, BRAIN is the Center's premiere undergraduate research program attracting top-tier students from across the nation.

The 2010 program received a record number of applications - 288 - up from 150 in 2009. Thirty-six undergraduate students, with home institutions ranging from California State University in Fullerton to Bowdoin College in Maine, were accepted, bringing the number of students who participated in the program over the years to more than 370.

BRAIN 2010 Fellow Khaliliah Smith of Agnes Scott College, uses a 32-channel electrode to measure event-related potentials (ERP) while working in the lab of her mentor, Patricia Bauer, Ph.D., of Emory University. Photo by Liz Weaver, Georgia State University.

"Through BRAIN, I learned the value of peer evaluation, how to better apply diverse concepts to my research, and how to examine experimental methods and results from different vantage points," said

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News? Story Ideas?
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Editor: Martha Koontz

NIH Grant to Benefit Local Undergraduates

CBN lays groundwork for new undergraduate neuroscience program

The National Institutes of Health awarded CBN member Kyle Frantz and collaborators with a nearly $1.7 million grant for the NET/work program designed to encourage and prepare students from diverse and underrepresented backgrounds to engage in their research and pursue neuroscience-related careers. The grant sponsored by the National Institute of General Medical Sciences is a part of the NIH's Blueprint for Enhancing Neuroscience Diversity through Undergraduate Research Education Experiences (BP-ENDURE).

The investigators include lead investigator Kyle Frantz of Georgia State University, Chris Goode of Georgia State, William Hopkins of Agnes Scott College, Karen Brakke of Spelman College, and Elizabeth Buffalo of Emory University. They will also be seeking a program coordinator to join their team.

This grant provides funding for NET/work - Atlanta's new program for Neuroscience Education and Training for underrepresented students from the collaborating institutions. The program is a two-year paid research assistantship that provides participants with local and national research opportunities from their sophomore year through graduation.

Each year, for the next five years, 14 students who apply for the BRAIN program will be chosen to participate in NET/work.

"NET/work provides an opportunity for BRAIN Fellows from underrepresented backgrounds to continue their education fully-funded and under the

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Exploring Reactions to Inequality

When primates don't get the same rewards as their peers, they often refuse them. A CBN member and Georgia State University researcher is exploring why this reaction happens, and how reactions to inequality have evolved in related species, including humans. This research will help to understand the function of this reaction in humans and other species, which may help in understanding how to improve the outcomes of cooperation.

Assistant Professor Sarah Brosnan has received a five-year, $677,462 grant for this research as part of the National Science Foundation's Faculty Early Career Development (CAREER) program, aimed at supporting junior

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CBN Continues to Promote Research and Education

H. Elliott Albers, Ph.D.

Thank you to our members, community partners, program volunteers and partner institutions for your involvement and enthusiasm.

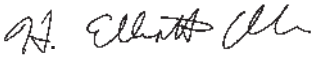
In May 2010, the Center for Behavioral Neuroscience stepped out from under the National Science Foundation umbrella as the 10-year Science and Technology Center grant came to a close. Since that time, the Center has continued to promote excellence in research and education.

On the research front, CBN members continue ground-breaking research in behavioral neuroscience, publishing nearly 300 scientific papers during the last year. Our members reported more than $7,117,734 in external funding seeded by the CBN this past year, bringing the grand total in new external funding leveraged by the CBN to $121, 690,981 since the Center's inception in 1999. These are reassuring signs that the CBN's legacy continues to thrive.

In addition to the Center's research advances, the CBN continues to provide a rich platform of institutional collaboration in neuroscience education and training. Over the past 10 years, the Center's neuroscience education programs have reached out to more than 28,000 students in the metro-Atlanta area. More than 370 of those students participated in the BRAIN program, our signature summer research program for undergraduate students, many of whom have gone on to pursue graduate degrees in science, with the highest percentage choosing neuroscience as their field of study.

As part of the CBN's continued educational legacy, CBN Educator, GSU Associate Professor of Neuroscience and BRAIN Director Kyle Frantz, Ph.D., led a collaborative effort to bring additional neuroscience research opportunities to underrepresented undergraduate students in the Atlanta area, and I am proud to announce the effort known as the Atlanta NET/work program recently received a $1.7 million grant from the NIH's National Institutes of General Medical Sciences. Through NET/work, 14 underrepresented BRAIN Fellows (annually) will be awarded a paid assistantship that provides them with local and national research opportunities from their sophomore year through graduation. *See cover for complete story.*

In closing, I would like to take this opportunity to thank the NSF staff who provided support and guidance to us through the years helping us to build a solid foundation on which to continue reaching our goals. I would also like thank all of our members, community partners, program volunteers and partner institutions for your involvement and enthusiasm. It is due to all of you that the CBN continues to thrive.



Atlanta NET/work

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guidance of mentors from collaborating Atlanta universities," said Kyle Frantz, Ph.D., BRAIN Director and a Professor of Neuroscience at Georgia State University.

A unique feature of the program is its efforts to broaden the diversity of neuroscience professionals. Students eligible to apply include: students with documented disabilities, first-generation college students, Pell grant-eligible students, racial and ethnic minorities currently underrepresented in neuroscience: African-American, Alaskan Native, Hispanic, Native American, and Pacific Islander.

The program will introduce participants to a variety of research areas including molecular biology, cellular communication, neural systems analysis, behavioral investigations, comparative studies, clinical and biomedical applications and computer modeling.

In addition, the program will help students develop strong research skills, improve scientific thinking, gain experience with cutting-edge research techniques, become comfortable in a research environment, benefit from attentive monitoring, and earn a competitive edge for graduate programs.

NET/work will officially begin with the 2011 BRAIN program. All students interested in NET/work must apply via the 2011 BRAIN application.

More information on the program and BRAIN applications are available on the CBN website: www.cbn-atl.org/education/NETwork.shtml.

NET/work Application Deadline: January 24, 2011

NET/work Research Format:

Summer 1: Participate in BRAIN.

Junior Year: Research in Atlanta - part-time research apprenticeship at Georgia State or Emory.

Summer 2: Research internship - mentored research at one of 14 sites nationwide.

Senior Year: Capstone research assistantship - return to junior year lab, opportunity to write a senior thesis, and potential to present at a national conference.

Inequality

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faculty contributions to research and education.

Brosnan has researched how primates respond when receiving a less valuable reward than their partners. The CAREER award is helping Brosnan follow up on this research in several ways.

"I'm really interested in the factors that lead to the development of their responses," she said. "For instance, do the responses require personal interaction, or do they respond similarly when a machine gives the rewards?"

There are fundamental differences in whether a primate's expectations of rewards are based on what a partner or someone else in their group received, or if those expectations happen because of a non-social reason. The research will also look at social and individual factors affecting responses, including individuals' personalities and relationships.

"We're also interested in how social group behavior affects responses; for instance whether responses vary depending on whether the group fights a lot or grooms a lot," she said. "We will also try to test everyone in a group with everyone else to see whether the primates respond differently to different individuals."

The research will hopefully answer questions about the evolution of responses to reward inequality - including those responses in humans.

"This behavior has been demonstrated in capuchins and chimpanzees, which might indicate that there is a long evolutionary history," Brosnan said. "But it also might indicate that species that live in tolerant social groups, and cooperate - like capuchins, chimpanzees and humans - develop these behaviors because of environmental or social constraints, and not because a common ancestor shared them."

An open question which researchers are trying to answer is whether humans' cooperative and social behaviors emerged due to the complexities of society and the brain, or if there are evolutionary similarities between humans and other species, including non-human primates.

"These behaviors did emerge through the process of evolution, as all traits do, but the question is whether or not there are precursors to these behaviors present in other species," she said. "By looking at other species, we can begin to address this question."

Undergraduate and graduate students and postdoctoral fellows have an opportunity to work in Brosnan's lab on the research project. The award is funded under the American Recovery and Reinvestment Act of 2009.

Story courtesy Jeremy Craig, Georgia State

BRAIN Program

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Eric James, a psychology and biology major from St. John's University in New York City.

BRAIN consists of a 10-week research and education experience. Benefits include: an orientation course in basic neuroscience; an intensive, first-class research opportunity in the biomedical or behavioral sciences; mentoring from eminent scientists at CBN member institutions; weekly seminars on special topics to prepare students for success in research programs; and the skills necessary for the successful pursuit of a doctorate degree.

BRAIN is funded in part by a major grant from the NIH's National Institute of General Medical Sciences, along with continuing support from the Center for Behavioral Neuroscience, the National Science Foundation, Yerkes National Primate Research Center, the NIH's National Center for Research Resources, and the Emory University Division of Education Studies.

"An overarching goal of the CBN has always been to foster the next generation of behavioral neuroscientists by introducing students to innovative approaches to interdisciplinary investigation early in their academic careers," said Kyle Frantz, Ph.D., BRAIN Director and an Associate Professor of Neuroscience at Georgia State University. "The Center's collaborative nature has helped BRAIN to offer first-class research experiences in the labs of prominent Atlanta neuroscientists."

While in-depth assessments are still in progress, results are showing many Fellows have gone on to pursue graduate degrees in science.

"One of the most successful ways to recruit students into careers in science is to get them involved in research early in their education," said Robert DeHaan, Ph.D., the C.H. Candler Professor of Cell Biology Emeritus at Emory University.

Courtesy: Georgia State University

Eric James, a 2010 BRAIN Fellow and St. John's University undergraduate student works in the lab of Georgia State University Professor of Neuroscience, Don Edwards, Ph.D.

"The traditional way to do this is with an 'apprenticeship' model in which a student spends several months or more in the laboratory of a scientist helping with whatever investigation that scientist is doing. But there are far fewer scientists in most university departments than students who could be recruited, and oftentimes a student never has an opportunity to originate a project. The BRAIN program is testing a model (the 'collaborative research' model) that can allow a small group of faculty members to lead the research of many more students simultaneously, and students are encouraged to design investigations that interest them. The results of the BRAIN project could have a major impact on science education nationally."

Working in a neuroscience laboratory has proven to be a popular draw for BRAIN Fellows.

"This (BRAIN) was my first experience working in a lab, and it was a *great* first experience," said Khaliliah Smith, a 2010 BRAIN Fellow and neuroscience major at Agnes Scott College in Atlanta.

"My favorite part of BRAIN was interacting with my mentors in the lab and creating a wonderful mentor/BRAIN Fellow relationship," Smith said. "Dr. Bob DeHaan (Emory University) was one of the instructors that positively affected my experience."

In addition to the benefits Fellows receive from the program, CBN partner institution faculty members who serve as mentors also benefit from the program. Dr. DeHaan said there are three reasons he enjoys working as a BRAIN mentor.

"I love to teach, and 1-on-1 or small group teaching is the most fun; I always learn a great deal from preparing for teaching and from the students; the BRAIN program is both a mentoring opportunity and a research project designed to test how best to engage undergraduate students in lab research. I helped design the project and am committed to seeing the results as they emerge."

The BRAIN 2011 program is fast approaching. If you are interested in becoming a sponsor, mentor, or applying for a BRAIN Fellowship visit www.cbn-atl.org/education/brain.shtml.

The deadline to apply for the BRAIN program is January 24, 2011.

BRAIN Seeking Instructors and Mentors for the 2011 Summer Program

Do you need teaching experience?

Consider applying for an Instructor Position with the Behavioral Research Advancements in Neuroscience (BRAIN) 2011 program. We are looking for senior-level graduate students, post-doctoral fellows, research associates, and lecturers who are enthusiastic, knowledgeable, hard working, and who want to spark interest in neuroscience among undergraduate students in a summer research program. Some instructors are needed for short periods of classroom teaching; some are needed for one-to-three weeks, and a few are needed for a full eight-week commitment. Teaching could include day or evening work. Be a part of an exciting summer research program!

- Approximately six positions are available. Time commitments range from one-to-eight weeks in summer 2011. Responsibilities range from lab technique consultant to full-time lab coordinator.

- Familiarity with research techniques, experimental questions, and current literature in one or more of the following areas is required: neuroanatomy and behavior of invertebrate animals, pharmacology, electrophysiology, or molecular biology.

Attention: Neuroscience PIs

BRAIN seeks lab research mentors for summer 2011 program.

- Faculty mentors for approximately 20 summer apprenticeships needed.

- Research apprentices will be selected from a nationwide applicant pool, complete an introductory neuroscience curriculum at Emory University, and be available for at least 35 hours/week of lab research from early June to early August.

- Mentors are requested to submit a brief summary of research opportunities in their labs, attend a "Meet-the-Mentors Luncheon," and provide an authentic research experience culminating in student presentations of relevant data in a closing Research Symposium.

Dr. Duane Jackson of Morehouse College, mentors two students in his lab.

For more information on becoming a BRAIN instructor or mentor, contact Dr. Kyle Frantz, kfrantz@gsu.edu

Teacher Workshop Returns to Zoo Atlanta

Laura Canepa, a 2010 CBN Teacher Professional Development Workshop participant, feeds Slasher, the Komodo Dragon, during the Workshop's Dec. 4, follow-up seminar at Zoo Atlanta. Photo: Laura Carruth, Ph.D.

The CBN Teacher Professional Development Workshop, Animal Behavior and the Brain, took place in June at Zoo Atlanta under the leadership of Dr. Laura Carruth, Associate Professor of Neuroscience, Georgia State University.

A follow-up workshop took place at the zoo on Dec. 4.

"While there, we focused on amphibian and reptile behavior and had a behind-the-scenes tour of the Reptile House and got to feed Slasher, the Komodo Dragon," Dr. Carruth said. "The teaching focus of the follow-up workshop was on teaching science to ESOL (English as a Second Language) and the special needs of those students. We also discussed using animal behavior as a 'hook' for getting students interested in research, and teaching about the scientific method. It was a great follow-up and all of the participants reviewed their lesson plans for the group."

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Celebrating CBN Member Achievement

CBN Graduate Students

Erin Hech
Wenner-Gren Foundation Dissertation Fieldwork Grant & Osmundsen Initiative Grant, and National Institute of Mental HealthPredoctoral National Research Service Award

James Doherty
GSU University Research Dissertation Grant award

CBN Postdocs

Lisa McGraw
Schinazi International Exchange Programme Postdoctoral Fellowship

CBN Faculty

Barbara Rothbaum
International Society for Traumatic Stress Studies (ISTSS) Robert S. Laufer Award for Outstanding Scientific Achievement

American Psychological Association (APA), Division of Trauma Psychology (Division 56) "Award for Outstanding Contributions to the Practice of Trauma Psychology."

Mark M. Goodman
Michael J. Welch Award, Society of Nuclear Medicine (SNM).

Gretchen Neigh
Collegium Internationale Neuro-Psychopharmacologicum Travel Fellow American College of Neuropsychopharmacology Young Investigator Travel Award

Helen Mayberg
Roche Senior Award for Translational Neuroscience

Hang Lu
NSF CAREER Award in January, 2010

Celebrating academic achievement:

If you or your student has recently been recognized for outstanding academic achievement, we would like to post an announcement in the *Synapse*. To submit an announcement, please send: name, collegiate affiliation, and a brief award/honor description to Martha Koontz at: mkoontz@gsu.edu.

CBN Member Teaches Others About the Brain

CBN member Michael Black, Ph.D., a visiting lecturer in the Georgia State Biology Department and a researcher in Georgia State's Neuroscience Institute, shared the wonders of the brain with GeorgiaBio's Annual Life Sciences Summit attendees at AmericasMart on Oct. 28, 2010. Special thank you to Emory University for lending a real human brain.

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Follow the latest news bites from the Center for Behavioral Neuroscience on our new Twitter page:
www.twitter.com/cbnatlanta

Be sure to visit the CBN's website for more detailed news and events:
www.cbn-atl.org

Upcoming Events

January 11, 2011

Brains & Behavior Program Distinguished Lecture Series
"Oscillations organize cell assemblies"
György Buzáki, Ph.D.
Board of Governors Professor, Center for Molecular and Behavioral Neuroscience, Rutgers University
Time: 10:00-11:00 a.m.
Location: 124 Petit Science Center

January 24, 2011

BRAIN Application Due