



BEHAVIORAL  
NEUROSCIENCE  
PSYCHOLOGY  
GRADUATE  
PROGRAM

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DEPARTMENT OF PSYCHOLOGY



# WELCOME

Welcome to the UAB Behavioral Neuroscience Ph.D. Psychology Program. Behavioral Neuroscience emphasizes the neural underpinnings of behavior. The mission of the Behavioral Neuroscience Ph.D. program is to produce outstanding junior scientists capable of pursuing successful teaching and research careers. This goal is achieved by having each student obtain firm academic and research training in both psychology and neuroscience-based domains. A major strength of the program is that it is an interdisciplinary program that includes programmatic research and training under the supervision of any faculty member within any department at UAB who has research interests that lie in the area of behavioral neuroscience. Current training and mentorship are provided by faculty in the departments of Anesthesiology, Biostatistics, Neurobiology, Physiology and Biophysics, Psychiatry and Behavioral Biology, Psychology, and Vision Sciences.

This system gives our students an advantage over other programs because it enables them not only to obtain faculty positions in psychology, but also in many other neuroscience-related departments within university settings, medical schools, research institutions, and private industry. We encourage you to investigate our training page on our website ([www.uab.edu/cas/psychology/graduate/behavioral-neuroscience](http://www.uab.edu/cas/psychology/graduate/behavioral-neuroscience)) that provides a brief glimpse into the facilities and faculty that make up our program, the department, and the university. We encourage and welcome you to learn more about our program through the links on our website. You can also directly contact faculty members whose research intrigues you. We all look forward to hearing from you!

Sincerely,  
David Knight, Ph.D.  
Director, Behavioral Neuroscience Doctoral Program



# Inside

- 04 ABOUT // MISSION // HISTORY
- 05 RESEARCH EXPERIENCE & OPPORTUNITIES
- 06 RESEARCH AREAS OF FOCUS
- 08 COURSE OF STUDY
- 09 ADMISSIONS
- 10 FACULTY
- 11 QUICK FACTS // UNIQUELY UAB
- 12 CAMPUS LIFE







## ABOUT

The Behavioral Neuroscience Graduate Program at the University of Alabama at Birmingham (UAB) is one of three Ph.D. granting programs (i.e. Behavioral Neuroscience, Lifespan Developmental Psychology, and Medical/Clinical Psychology) within UAB's Department of Psychology. Behavioral Neuroscience at UAB is focused on elucidating the biological bases of behavior and cognition.

## MISSION

The mission of the Behavioral Neuroscience Program in Psychology is to provide students with the knowledge and skills required for successful scientific research and teaching careers. It is the philosophy of our program that this mission is best achieved by having each student obtain a firm academic foundation in both psychology and neuroscience curricula, and to engage students in systematic research under the supervision of one of the program faculty. Graduates of the Behavioral Neuroscience Ph.D. program have shown excellence in their work and have successfully obtained positions in institutions of higher learning, medical schools, research institutions, and private industry.

## History

The field of behavioral neuroscience evolved from several traditional sub-disciplines within psychology (physiological psychology, experimental psychology, sensation and perception, conditioning and learning, motivation, cognition, and regulatory biology) to interface with the emerging field of neuroscience. In this manner, the behavioral neuroscientist provides a vital contribution to the field of neuroscience by emphasizing behavioral, cognitive, and functional endpoints in their research.

The Behavioral Neuroscience program at UAB is viewed as a campus-wide training program supported by faculty from the College of Arts and Sciences and the School of Medicine. This program was approved by the Board of Regents in 1980. Research in Behavioral Neuroscience at UAB occurs within an interdisciplinary context that provides a rich and diverse experience for graduate students. Faculty in the Behavioral Neuroscience Ph.D. program hold primary appointments in the Departments of Psychology, Vision Sciences, Ophthalmology, Cell Biology, Neurobiology, Physiology, and the Behavioral Neurobiology Division of Psychiatry. This breadth of perspective is reflected both in the courses offered by the program and the research pursued by Behavioral Neuroscience students. In this spirit, students study core areas of psychology including statistics, behavioral neuroscience, learning, cognitive neuroscience, and neurorehabilitation.



# RESEARCH

## EXPERIENCE

Students begin laboratory research upon entry into the program by completing two or three laboratory rotations during their first year. Based on these rotations, students select a mentor and laboratory in which to conduct their pre-dissertation and dissertation research. A unique aspect of the Behavioral Neuroscience program is the ability to choose a mentor that is engaged in behavioral neuroscience research from virtually any department at UAB. Thus, although the Ph.D. is awarded in Psychology, the program is truly interdisciplinary in terms of classroom and laboratory experience.

## OPPORTUNITIES

Research is one of the department's strongest traditions. Since 1999, our program has been ranked by National Science Foundation (NSF) as one of the top 100 recipients of federally financed R&D expenditures at universities and colleges.

The department is home to several of UAB's centers, research programs, laboratories, and teaching and training sites. As part of UAB's emphasis on multidisciplinary centers, the department also encourages and supports collaboration with various departments and centers within the university.

## Dauphin Island Sea Lab

One of the best experiences described by our Behavioral Neuroscience students is their visit to the Dauphin Island Sea Lab. Prior to starting the first semester of courses at UAB, students attend a three-week (end of July to middle of August) course held at the Dauphin Island research facility on the gulf coast of Alabama. This unique course is taught by an interdisciplinary team of UAB faculty and introduces incoming students to many of the basic techniques and issues in the field of neuroscience via didactic coursework, extensive laboratory activities, and a final student research project. Students and faculty live in the Sea Lab housing and eat together in the cafeteria. Students from a number of UAB graduate programs visit Dauphin Island at the same time and become a tightly knit, interdisciplinary group that provides a strong social infrastructure once they return to Birmingham and begin their graduate studies.





## Health Disparities

Research in the area of health disparities aims to study the causes of, and reduce the prevalence of, the unequal effects of certain social, mental and physical health challenges upon vulnerable populations. Among the many factors that are studied are race, age, HIV, mental illness, education, and socioeconomic status.

*Faculty: Karlene Ball (Psychology); Burel Goodin (Psychology); Bulent Turan (Psychology)*



## Language

The study of mental and neural mechanisms of comprehension and production of language. A major focus of Language research is on individual differences in language ability, particularly neurodevelopmental and acquired language deficits such as aphasia and autism spectrum disorders. Research areas include the organization of semantic knowledge, the neural basis of language processing, narrative comprehension and pragmatic communication, reading comprehension, and the diagnosis and treatment of language deficits.

*Faculty: Jerzy Szaflarski (Neurology); Edward Taub (Psychology)*



## Neurodevelopment

Neurodevelopment is mediated by both biological and environmental factors. Among the many factors/influences that are studied by faculty and their students are violence exposure, child abuse and neglect, neighborhood disadvantage, Autism Spectrum Disorders, emotion, memory, and language development. The goal of these studies is to produce translational research that benefits society.

*Faculty: David Knight (Psychology); Adrienne Lahti (Psychiatry & Behavioral Neurobiology); Kristina Visscher (Neurobiology)*



## HIV

In the current era of effective HIV prevention and treatment tools, treatment adherence has become of utmost importance. Psycho-social factors such as stigma, social support, and mental health not only affect the emotional well-being of people living with HIV, they are also among the most important determinants of adherence to treatment. The interplay between chronic pain and HIV infection is also a rich area of inquiry for our research.

*Faculty: Burel Goodin (Psychology); Bulent Turan (Psychology)*



## Neural Structure & Function, Neuromodulation

The study of neural structure and function includes the organization, connectivity, plasticity, and neurochemistry of the billions of neurons that compose the central nervous system. Research in this area focuses on the functional organization of neural systems for high-level functions such as perception, action, emotion, and cognition. We also study how pharmacological and electrical modulation of these systems affects their function.

*Faculty: Frank Amthor (Psychology); Mary Boggiano (Psychology); Jennifer DeBerry (Anesthesiology); David Knight (Psychology); Adrienne Lahti (Psychiatry & Behavioral Neurobiology); Ron Lazar (Neurology); Lori McMahon (Cellular, Developmental and Integrative Biology); Rosalind Roberts (Psychiatry & Behavioral Neurobiology); Robert Sorge (Psychology); Jerzy Szaflarski (Neurology); Edward Taub (Psychology); Kristina Visscher (Neurobiology); Jarred Younger (Psychology)*

BEHAVIORAL NEUROSCIENCE DEPARTMENTS  
Faculty from multiple departments across the UAB  
campus mentor our graduate students.

Psychology, Radiology, Cell Biology, Anesthesiology,  
Ophthalmology, Neurobiology, Neurology,  
Physiology, Psychiatry and Behavioral Neurobiology,  
Physical Medicine and Rehabilitation, Vision Sciences



### Obesity and Eating Behavior

Diet has a major effect on health. Drs. Boggiano and Sorge use human patients and preclinical animal models to investigate the impact of diet and eating patterns on obesity, eating disorders, neural responses, inflammation, and immune system activation. Their work is directed at using diet to promote better health and to treat/understand eating disorders. They are both members of UAB's [Nutrition Obesity Research Center](#).

Faculty: Mary Boggiano (Psychology); Robert Sorge (Psychology)

### Psychophysiology, Stress

The term psychophysiology refers to research that links psychological and physiological processes. For example, we study the effects of psychosocial stress on the physiological stress response, as measured by skin conductance, release of cortisol, and changes in blood pressure and heart rate.

Faculty: David Knight (Psychology); Lori McMahon (Cellular, Developmental and Integrative Biology); Bulent Turan (Psychology); Jerzy Szaflarski (Neurology)

### Pain

The PAIN Collective aims to study and discover methods of relieving and managing chronic pain through both basic and clinical research. This area of study has been of particular concern in recent years due to the opioid abuse crisis and the aging population.

Faculty: Jennifer DeBerry (Anesthesiology); Burel Goodin (Psychology); Tim Ness (Anesthesiology); Robert Sorge (Psychology); Jarred Younger (Psychology)

### Rehabilitation

Rehabilitation aims to restore function to people with physical or cognitive disabilities due to an injury to the nervous system, musculoskeletal system, or chronic illness. Psychologists study cognitive, behavioral, and affective factors, as well as characteristics of the nervous system, that contribute to the development and amelioration of disabilities. Areas of study in our Department include neuroplasticity, behavioral factors that contribute to physical disabilities and their rehabilitation, the application of virtual reality to rehabilitation, back pain, mobility limitations, visual attention, and speed of processing. Conditions of interest include stroke, cerebral palsy, traumatic brain injury, multiple sclerosis, spinal cord injury, aphasia, and mild cognitive impairment.

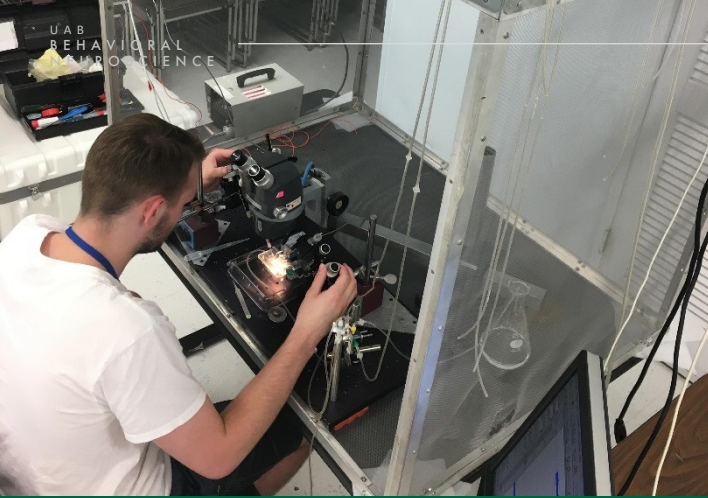
Faculty: Edward Taub (Psychology)

### Vision

Some of our faculty are engaged in basic and applied vision research, including the topics of retinal anatomy and function, glaucoma, age-related diseases such as macular degeneration and Alzheimer's Disease, the effects of CNS diseases such as Parkinson's, neural prosthesis and sensory substitution aids, driving safety, brain training, and many other topics.

Faculty: Frank Amthor (Psychology); Paul Gamlin (Ophthalmology); Kent Keyser (Optometry); Christianne Strang (Psychology); Kristina Visscher (Neurobiology)

UNIVERSITY-WIDE INTERDISCIPLINARY  
RESEARCH CENTERS  
Comprehensive Neuroscience Center, Civitan  
International Research Center, McKnight Brain Institute,  
Comprehensive Center for Healthy Aging, Center for  
Clinical and Translational Science, Spain Rehabilitation  
Center, Epilepsy Center, Center for Exercise Medicine,  
Center for Glial Biology in Medicine, Heflin Center for  
Genomic Science, Injury Control Research Center,  
Intellectual and Developmental Disabilities Research  
Center



# Course Of Study

## CURRICULUM AND REQUIREMENTS

The first year Behavioral Neuroscience program requirements include two to three laboratory rotations and course work in Behavioral Neuroscience and Statistics. In the second year, students complete, write, and present a 2nd Year Project and select an additional four courses that are germane to their own research interests. In the third year, students complete the Qualifying Examination, which typically takes the form of a comprehensive, integrative review paper and oral defense in an area of the student's choice. In the fourth year, students complete the Dissertation Proposal, a research grant in the form of a National Institutes of Health (NIH) F31 proposal. In the fifth year, the Dissertation is defended and the doctoral degree is awarded. In years three through five, students are encouraged to select additional coursework, with advice from their mentor, that will further develop their background in areas related to their research. Students also participate in journal clubs, workshops, colloquia, and seminar programs throughout all years across a number of departments at UAB.

## TYPICAL BEHAVIORAL NEUROSCIENCE REQUIREMENTS & COURSEWORK

### Year 1

#### LABORATORY ROTATIONS

Core curriculum in neuroscience and psychology

### Year 2

#### 2<sup>nd</sup> YEAR RESEARCH PROJECT

Core curriculum in student's research area

### Year 3

#### QUALIFYING EXAMINATION

Elective curriculum

### Year 4

#### DISSERTATION RESEARCH PROPOSAL

Begin dissertation research, elective curriculum

### Year 5

#### COMPLETE DISSERTATION RESEARCH

Formal presentation of dissertation research, elective curriculum

## PARTIAL PROGRAM REQUIREMENTS

### 2<sup>ND</sup> YEAR RESEARCH REQUIREMENT

Students complete a research project under the direction of their mentor. A copy of a manuscript or a written research report is submitted for evaluation and approval by the Behavioral Neuroscience Director to satisfy the 2nd Year Research Requirement.

### QUALIFYING EXAMINATION

Students complete a comprehensive review paper for the Qualifying Examination requirement of the Graduate School. The student's review paper is developed in consultation with the research mentor and assessed by the Qualifying Examination Committee.

### DISSERTATION PROPOSAL

The dissertation proposal is prepared in the format of an NIH F31 grant proposal. After the proposal is approved by the dissertation committee, the student is admitted to candidacy.

### DOCTORAL DEGREE

The doctoral degree is awarded after successful defense of the dissertation and submission of a final copy to the Graduate School.



### COMMUNITY INVOLVEMENT

Students in the Behavioral Neuroscience program regularly connect with the local community through service learning and other volunteer activities. This type of student involvement offers a number of opportunities for students to connect with each other and with the greater Birmingham community. For example, students typically support Brain Awareness Week activities each year at the McWane Science Center. Brain Awareness Week is the global campaign to increase public awareness of the benefits of brain research. UAB faculty, students, and other trainees share their knowledge of the brain, cognition, and behavior with the children of Birmingham during Brain Awareness Week via demonstrations that include sheep brain and cow eye dissections, protecting the brain, illusions, and other activities that are both fun and educational.

Behavioral Neuroscience students also support CORD (Community Outreach Development), which offers children and teachers in grades K-12 in-depth and hands-on science experiences at local area schools, McWane Science Center, and UAB classrooms. Students also give back to the community through education and service projects, associated with the Civitan International Research Center, that benefit children and adults with developmental disabilities. Students in the Behavioral Neuroscience program regularly share information about scientific findings and local resources at annual charity events like the Multiple Sclerosis and Autism Walks.



### STUDENT SUPPORT

Graduate students in the Behavioral Neuroscience Program are supported by university fellowships in their first year. Faculty members in the Behavioral Neuroscience Ph.D. program typically have extramural funding sources that are used to support graduate students in their second year and beyond. Most students select mentors that have funding to support research assistantships. However, students are also supported through university fellowships, training grant fellowships, and teaching assistantships. Students are also encouraged to write grant proposals for externally funded pre-doctoral fellowships to provide support during their dissertation research.

Tuition and stipends are virtually always provided for the duration of the graduate student's tenure in the Behavioral Neuroscience program. Students may apply for travel funds available both through the Psychology Department and the Graduate School to present findings at scientific meetings.



## Admissions

Application materials for graduate study in Behavioral Neuroscience are submitted to the UAB Graduate School by November 30 of the year preceding admission. Students are typically invited for interviews in February. Notification of acceptance in the program is typically made by the end of March. Students admitted to the Behavioral Neuroscience Graduate Program must have demonstrated excellence in academic performance typically by:



ONE  
Outstanding Undergraduate Academic Performance (including courses in experimental psychology, biology, chemistry, and mathematics)



TWO  
Outstanding Graduate Record Examination Scores



THREE  
Undergraduate Research Experience

The Behavioral Neuroscience faculty strongly encourages applications from students of diverse ethnic backgrounds. More information on UAB's Behavioral Neuroscience program is available at: [www.uab.edu/cas/psychology/graduate/behavioral-neuroscience](http://www.uab.edu/cas/psychology/graduate/behavioral-neuroscience)

Application material is available at:  
[www.uab.edu/graduate](http://www.uab.edu/graduate)

- Choose Psychology (PhD) Concentration: Behavioral Neuroscience

# FACULTY

A critical feature in our training program is that each student has a faculty mentor, who is responsible for both funding and guiding the student through the program and teaching the student how to function as a behavioral neuroscientist. The faculty mentor-doctoral student relationship is formed by mutual consent in the second year of training. Therefore it is important that a student can identify a faculty member whose research is of significant interest to him or her at the time of applying to our program. Consult the faculty descriptions at <http://www.uab.edu/cas/psychology/graduate/behavioral-neuroscience/core-program-faculty> for more information about current research. The doctoral student develops a systematic line of research in collaboration with one (or more) faculty mentors, and in the process completes the research requirements for the Ph.D. Students are actively engaged in research every semester, including summers.

Frank Amthor, Ph.D.

Mary Boggiano, Ph.D.

Rita M. Cowell, Ph.D.

Jennifer DeBerry, Ph.D.

Yogesh Dwivedi, Ph.D.

Karen Gamble, Ph.D.

Paul Gamlin, Ph.D.

Burel Goodin, Ph.D.

Andrew Hardaway, Ph.D.

David Knight, Ph.D.

Nina Kraguljac, M.D.

Adrienne Lahti, M.D.

Ronald Lazar, Ph.D.

Junghee Lee, Ph.D.

Matthew Nelson, Ph.D.

Minae Niwa, Ph.D.

Rosalinda Roberts, Ph.D.

Robert Sorge, Ph.D.

Christianne Strang, Ph.D.

Jerzy Szaflarski, M.D., Ph.D.

Edward Taub, Ph.D.

Kristina Visscher, Ph.D.

Jarred Younger, Ph.D.



## QUICK FACTS

### RECORD ENROLLMENT

UAB has experienced record enrollment, with a student body exceeding 21,000 who can select from 137 degree programs in arts and sciences, business, dentistry, education, engineering, health professions, medicine, nursing, optometry, and public health.

### DIVERSITY

UAB is regularly ranked among Princeton Review's top 10 universities for diversity. More than 35 percent of students are minorities and nearly 61 percent are female; they hail from every region of the country and more than 110 nations.

### NIH FUNDED

UAB ranks 23<sup>rd</sup> (top 4 percent) nationally and 8<sup>th</sup> (top 2 percent) among public institutions in funding from the National Institutes of Health

### RESEARCH

The Carnegie Foundation identifies UAB as one of a handful of institutions rated for "very high research activity" that also is a leader in "community engagement."

No. 1

The University of Alabama at Birmingham has been ranked the top young university in the United States and No. 10 worldwide in the Times Higher Education World University Rankings, 2018 Young University Rankings.

## UNIQUELY UAB

Birmingham is a growing, diverse, and progressive city located in the foothills of the Appalachians. The hospitality of the people and the temperate climate of the "Magic City" complement a wide variety of educational offerings, cultural and entertainment activities, and sporting events. Health care and education have replaced industry as Birmingham's economic base, and UAB is now the city's leading employer.

UAB is a comprehensive, urban research university with an enrollment of approximately 21,000 students. The university is a nationally and internationally respected center for educational, research, and service programs. The UAB campus encompasses more than 100 city blocks on Birmingham's Southside, offering all of the advantages of a university within a highly supportive city. A particular strength of the school is its many interdisciplinary programs, like the Behavioral Neuroscience Program, that cross departmental and school lines. UAB attracts over \$400 million annually in external research funding and ranks consistently in the top 25 nationally in funding from the National Institutes of Health. For graduate students, this funding status means availability of financial support, access to well-equipped research laboratories, and interaction with faculty members who have earned research support based on the favorable judgment of their colleagues nationwide.

UAB is regularly ranked in the top 10 best medical schools in the U.S. and offers a wide selection of research opportunities spanning cellular/molecular, behavioral, cognitive, genetic, and patient oriented studies. Researchers at UAB actively support and encourage students to explore questions beyond disciplinary boundaries. This collaborative atmosphere allows students to tailor educational and research experiences to individual research questions and career goals. In fact, UAB offers access to over 100 Core Facilities with cutting edge instruments and resources to support student research and career development. Further, UAB provides ongoing professional development and support to young scientists through the Comprehensive Neuroscience Center, Center for Clinical and Translational Science, the Office of Postdoctoral Education, and the Graduate Career Awareness and Trends programs which offer courses in grant writing, manuscript publication, lab management, translational science, and other professional development skills.





# CAMPUS LIFE

Campus life at UAB is characterized by the bustle and diversity of the university's urban setting. UAB has an active international community of students and faculty.

#### The Alys Stephens Performing Arts Center

provides an acoustically superb setting for a broad range of world-renowned performers who are brought to the UAB campus. Dance groups offer opportunities in ballet and jazz. Artwork is continuously exhibited in the Visual Arts Gallery and several other galleries on campus.

The Birmingham Civil Rights Institute exhibits a self-directed journey through the civil rights movement, as well as temporary exhibits which include interactive video and computer programs. The Institute also houses a resource gallery for teachers, students, and others seeking information on civil and human rights.

The Birmingham Museum of Art houses one of the most comprehensive permanent collections in the southeast with more than 24,000 paintings, sculptures, drawings, and prints.

Birmingham offers collegiate sports, such as basketball, soccer, baseball, and football, as well as minor league baseball. Birmingham is frequently selected as the site for college basketball tournament events, including various rounds of the NCAA Tournament. The UAB Blazers basketball team regularly earns a berth in the NCAA tournament. The state's largest park, located just 15 miles south of town at Oak Mountain, offers boating, swimming, camping, hiking, golf, tennis, and fishing.

Alabama Jazz Hall of Fame

Alabama Theatre

Birmingham Botanical Gardens

Birmingham Zoo

McWane Science Center

Railroad Park

Red Mountain Park

Rickwood Field

Sloss Furnaces

Vulcan Park



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## FOR MORE INFORMATION

WEB: [www.uab.edu/cas/psychology/graduate/behavioral-neuroscience](http://www.uab.edu/cas/psychology/graduate/behavioral-neuroscience)

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**DAVID KNIGHT, PH.D.**

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