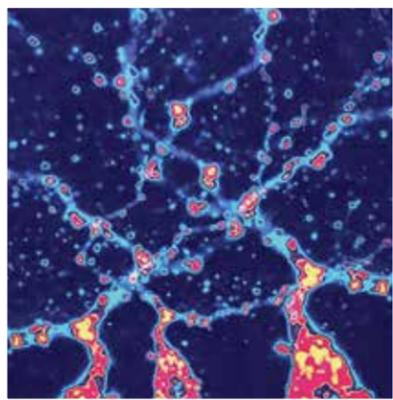


# The DIETRICH School of Arts & Sciences

FALL 2013  
VOLUME 10, ISSUE 2

## DEPARTMENT OF NEUROSCIENCE:

### *On the Frontier of Discovery*



The field of neuroscience has emerged during the past three decades as part of the explosive growth of research and interest in the neural sciences. The University of Pittsburgh Department of Neuroscience has been a trailblazer in this relatively new field. The department's undergraduate and graduate programs were some of the first of their kind, and they now

are among the largest and most successful programs in the United States.

The neuroscience department's mission is threefold: to promote outstanding programs where research drives the department, to provide exemplary instruction and training in neuroscience to students at the undergraduate and graduate levels, and to accept responsibility to provide services within the University community and to the public at large on matters that concern the function of the nervous system.

Developed in 1983, the undergraduate major is among the largest undergraduate neuroscience programs in the country, with approximately 400 students as majors. Students receive an undergraduate education with a well-rounded curriculum, innovative independent and collaborative research opportunities, and a seminar series led by some of the world's most renowned leaders in the field of neuroscience.

"The primary strengths of the neuroscience department are its personnel—faculty, graduate students, research associates, and staff—and their commitment to excellence in teaching, training, and research," says Alan Sved, professor and chair of the department. "In this department, there is strong sense of respect for one another's talents, accomplishments, and personal integrity; a sense of communal mission with regard to our aspirations and goals in research and teaching; and a sense of confidence that we know what has to be done and can get it done."

A rigorous curriculum provides students with a challenging sequence of courses in biological sciences, chemistry, mathematics, and physics in addition to introductory and advanced courses in neuroscience. Students enrolled in this 59-credit program develop strong analytical, mathematical, and scientific skills. Students also have the opportunity to build meaningful relationships with faculty members, take independent research classes to learn laboratory procedures, become familiar with laboratory equipment, and read scientific journals

related to their area of interest. The relatively small size of the upper-level courses, excellence of teaching, and opportunities for research are especially attractive features of the major.

Neuroscience majors have use of state-of-the-art laboratory facilities located in a four-building complex on Pitt's campus in addition to the use of laboratory facilities located nearby at Carnegie Mellon University. Students also have the opportunity to work in faculty research labs through the campuswide Center for Neuroscience at the University of Pittsburgh (CNUP), an organization that serves the entire community of neuroscientists at Pitt.

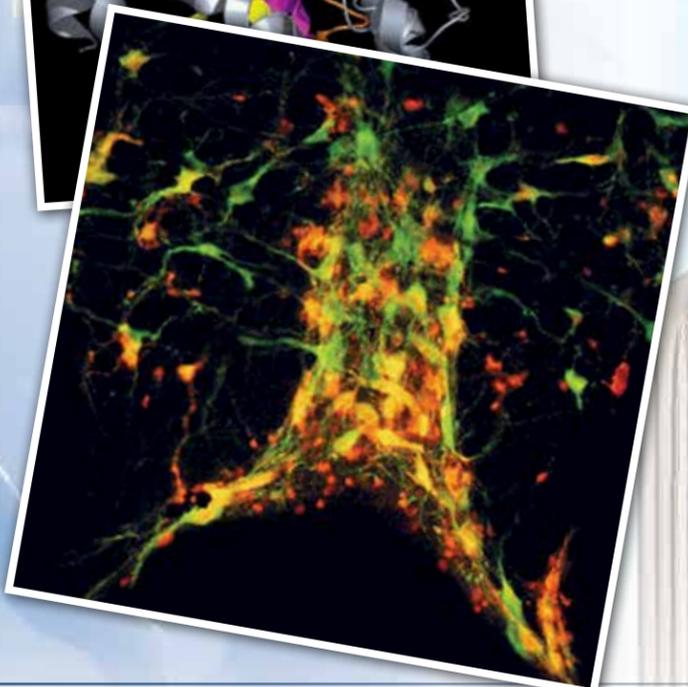
"The department's faculty represent not only a group of dedicated instructors and mentors but also world-class scientists through their work at CNUP," says Sved. "Active faculty labs provide students with a vibrant research environment. A remarkable number of our undergraduates participate actively in the laboratory research programs of our faculty and present their findings at national meetings, with some students listed as coauthors on the research."

Many neuroscience majors plan to pursue advanced degrees that specialize in their field of interest and present opportunities for work in medicine, research, education, and public health. Graduates with a Bachelor of Science degree in neuroscience find opportunities in health care, academic research and education, public health departments, state and federal government agencies, nonprofit organizations, law firms, and large corporations.

Majors are encouraged to join the Neuroscience Club, professional associations, and community organizations to stay abreast of current issues in the field and to develop networking contacts.

For more information on the Department of Neuroscience, visit [www.neuroscience.pitt.edu](http://www.neuroscience.pitt.edu).

**Top image:** Pseudocolor image of cerebellar Purkinje neurons  
**Below, top:** Structural model of human glutamate transporter core domains  
**Below, bottom:** Fluorescent image of rat brain stem neurons



## DID YOU KNOW?

- Matthew Schaff (BA '13) was named a 2012 Barry M. Goldwater Scholarship winner for his exceptional independent research in the natural sciences.
- The department's external research funding for the fiscal year that ended in June 2010 totaled more than \$4.6 million and included support from the National Institutes of Health, National Science Foundation, Brain & Behavior Research Foundation, and Ri.MED Foundation.
- The majority of the department's primary faculty have won funding related to their research, including Distinguished Professor Anthony A. Grace and Professor Bitu Moghaddam, recent recipients of R37 MERIT awards from the National Institutes of Health, and Assistant Professor Marlene Cohen, recipient of the prestigious Eppendorf & Science Prize for Neurobiology.

# THE PITT PRIDE

## MESSAGE FROM THE ASSOCIATE DEAN

# Gateway to Academic Excellence

The Kenneth P. Dietrich School of Arts and Sciences offers students a strong infrastructure of programs and services to assist them in their pursuit of academic excellence. One key component is the Academic Resource Center (ARC), which supplements classroom instruction by offering all Pittsburgh campus undergraduates academic coaching, consultations, and individual and group tutoring services as well as study skills workshops. Whether students are looking to improve a course grade, check their understanding of a topic, or review assignments, ARC's small group and individualized learning environments can assist them.

ARC collaborates with units across the University of Pittsburgh, including the Math Assistance Center and the Writing Center, to provide students with the most effective, most relevant programs and workshops to help them succeed. Through its services, ARC provides students with a multitude of resources that are designed to help them navigate the transition to college life; better acclimate themselves to the academic rigors of the University; and continue to strive for academic, personal, and professional growth throughout their college experience.

ARC offers individual and group tutoring in a variety of subject areas. Students can meet with a peer tutor for one-on-one tutoring or attend peer-led study sessions, a successful group tutoring program that consistently demonstrates that attendees outperform their classmates on every exam and final course grade. ARC also offers free drop-in tutoring during evening hours at the O'Hara Student Center. Working hand in hand with the tutoring program, ARC's study skills workshops teach lifelong strategies on how to improve study habits, manage time, prepare for exams, read texts, and reduce test anxiety.

Other programs under the ARC umbrella include Student Support Services (SSS), which serves first-generation and low-income college students. SSS is a TRIO program funded by the U.S. Department of Education that provides a unique program of advising and consulting to help ensure student success. Founded in 1993, FOCUS is a first-year peer mentoring program for underrepresented students that promotes academic excellence by providing freshmen with the tools to make a successful transition from high school to college. Students who participate in four or more FOCUS activities are 90 percent more likely to persist into their second year of education. Partners in Progress is a first-year retention program for underrepresented scholarship recipients who are required to maintain a cumulative GPA of 3.0 to retain their scholarships.

For more information on all ARC programs, please visit [www.as.pitt.edu/arc](http://www.as.pitt.edu/arc).

**John A. Twynning**  
Associate Dean for Undergraduate Studies



## FACULTY PROFILE

# Pushing the Boundaries of Neuroscience

During his undergraduate career, Steve Meriney, professor in the Department of Neuroscience, developed a driving curiosity in and wonderment for how nerve cells communicated with each other. He began his undergraduate education with a marine biology focus, but his passion for neuroscience was ignited after being exposed to the nervous system of marine animals during an undergraduate research experience. From that point on, discovering more about how two cells in the nervous system exchange information became his focus.

The thirst to find out more about the brain and how microscopic cells communicate (termed "synaptic transmission") intensified over the years and forged a career path that led him to the University of Pittsburgh. After 20 years of teaching and working in his lab, Meriney says that his excitement in and fascination for the neural sciences have never waned.

"Neuroscience is still in its infancy. We know less about how the brain functions than any other part of the body; neuroscience may be the last frontier in studying the body," says Meriney. "With the development of new experimental tools each year, this new frontier is ripe for exploration. It is an exciting time to push beyond the boundaries and work with the fine points of communication, the subtleties and details that give the nervous system its power."

Meriney's love of being in the classroom is evident in the core course he teaches on synaptic transmission. "What is so enjoyable about teaching neuroscience is that the research keeps evolving, so each term, I can update my lectures with fresh ideas and new hypotheses, keeping the material relevant and interesting for my students," he says.

Throughout his career, Meriney's research interests have revolved around the regulation and modulation of presynaptic ion channels and transmitter release in healthy and diseased synapses. His current research provides the building blocks to understanding how ion channels and chemical transmitter release mechanisms work together to fine-tune synaptic transmission and control synaptic plasticity. In addition, he is collaborating with Peter Wipf, Distinguished University Professor in the Department of Chemistry, to design new calcium channel drugs that increase the strength of communication between cells and may be useful in the treatment of diseased synapses.



Meriney advises students who are interested in working in a lab to begin engaging with faculty members as early as their freshman year. "Have conversations in the hallway after class or in the professor's office. It is important for students to introduce professors to their curiosity and demonstrate what excites and intrigues them about the topics they are studying in class. The earlier students can become involved in research, the sooner they will be able to sort out the various career paths they are considering. Further, if they begin laboratory research early, they have the opportunity to complete a really significant research project that may develop into an undergraduate thesis."

To help ensure that Pitt is the premier place for undergraduate research, Meriney is working with the Office of the Provost on a campuswide initiative to promote undergraduate research across every discipline. He also is involved in organizing the Meeting of the Minds research conference that will be hosted by Pitt in April 2014. This conference brings together students from all schools in the Atlantic Coast Conference to discuss undergraduate research and training.

"Doing research on the edge of the unknown can lead to a lot of failed experiments and requires a lot of creative thinking. However, it is a joy to get up every morning thinking about the next experiment we are planning that may push the frontier of understanding," says Meriney.

## Neuroscience Club

# Open to All Pitt Students

The Neuroscience Club provides an excellent opportunity for majors and nonmajors alike to learn more about the fascinating field of neuroscience. The group hosts a variety of events, including lectures by faculty members from across the University of Pittsburgh, presentations about neuroscience technology such as brain imaging, informative discussions about the application process for medical school and other graduate programs, and regular group study sessions.

Students reap many benefits by participating in the Neuroscience Club. First, it provides a way for students already involved in the Department of Neuroscience to network with faculty and learn about exciting research opportunities that are available within the research community at Pitt. Second, through its volunteer mentoring program, the club provides newly declared neuroscience majors with a way of making a smooth transition into the department. Students new to the department can request an upperclassman to work with them as a mentor. These mentors guide students through class registration, provide information about professors, and address other questions or concerns that students may have to ensure easy accessibility to the department and its resources.

For more information on the Neuroscience Club, visit [www.facebook.com/groups/pittneuroscience](http://www.facebook.com/groups/pittneuroscience).

## FUTURE LEADERS LEARN TODAY

### Game, Set, Match, Lab?

A typical day for senior Jocelyn Lu normally begins even before the sun comes up. As an outstanding Division I singles and doubles tennis player, Lu takes balancing athletics and academics in stride. A neuroscience major with minors in studio arts and chemistry, Lu is well versed in stretching her day to fit in long hours of practice and tennis matches as well as spending many hours studying and conducting research.

In her three years at Pitt, Lu's extraordinary talent on the court has put her on the road to a career-winning record. Her accomplishments are many, including being the number two singles player and number one doubles player on Pitt's tennis team, making the Big East All-Academic Team for three consecutive years, and being named an Intercollegiate Tennis Association Scholar-Athlete in 2012. In addition, she was named the team's most valuable player following a stellar freshman year.

As driven as she is on the court, this premed major also makes time to focus on her education, having made the Dean's List six terms in a row. Lu is a self-proclaimed "science nerd," and her experiences at Pitt have heightened her interest in neuroscience. "One of my good friends was a neuroscience major and convinced me to take Professor Edward Stricker's introductory course, and I thought it was so interesting," says Lu. "I really enjoyed learning about the functions and biological systems pertaining to the human body. It is so much more than just reading about the brain."

Her research experience includes working in the neurobiology department on a project studying the behavioral and biochemical effects of uncontrolled mild stress on adolescent and adult rodents. Lu says that the study aims to answer questions about clinical depression in humans and explore new ways to treat depression in the future.

In addition to academics and tennis, Lu takes time out of her busy schedule to volunteer as the social media relations coordinator for the Student-Athlete Advisory Committee, which serves as the liaison between Pitt's student-athletes and the Atlantic Coast Conference. She also is an aspiring amateur photographer, using her Canon DSLR to document the graffiti, buildings, and alleyways around Pittsburgh.

For students thinking about majoring in neuroscience, Lu offers this advice: "If you have an interest in science, specifically the mechanisms behind how the human body works, neuroscience is definitely a major to consider. The classes are challenging and require a good amount of work, but the professors are so knowledgeable and extraordinary at their jobs that you learn so much!

"By far, the most important lessons I have learned are how to apply facts and knowledge to the real world, to think critically, and to solve problems. Through my classes and research, I have learned how to find a solution, no matter how big the obstacle. This definitely helps me on or off the court."

Lu is currently applying to medical school and plans to begin her studies after graduating in April 2014.



## Research Labs Offer Invaluable Experience

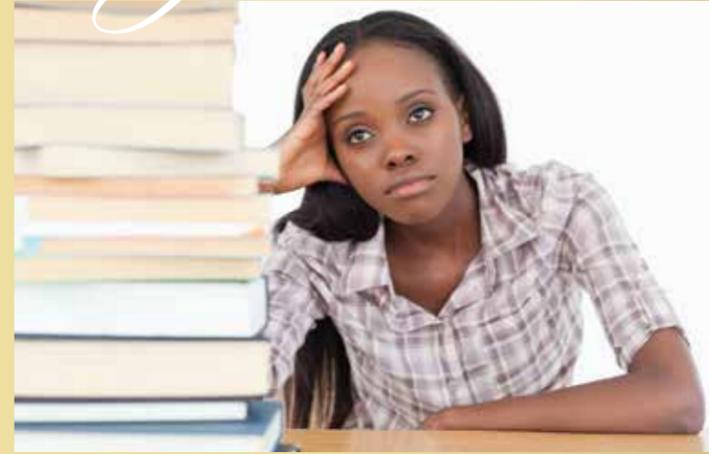
The Department of Neuroscience is a world-class research department committed to high-quality research and sharing the excitement of scientific exploration with students. Neuroscience majors are encouraged to take full advantage of the opportunity to participate in meaningful neuroscience research during their undergraduate years at Pitt.

Students who enroll in research for credit also may be interested in completing an independent project that results in an undergraduate thesis. Many students present their research at national scientific meetings or have their research published in scientific journals. While the research experience itself has strong benefits, it also is a means of interacting more closely and establishing relationships with faculty members as well as enhancing one's preparation for graduate or medical school.

Before students begin the process of finding a research lab, it is highly recommended that they first identify the specific area of neuroscience that is of greatest interest to them. To help with this process, students may find it beneficial to attend Neuroscience Club meetings and talk with fellow students and presenters; participate in research projects through the Office of Undergraduate Research, Scholarship, and Creative Activity's First Experiences in Research class; visit the Office of Career Development and Placement Assistance; and talk with their instructors.

After narrowing down their specific area of interest, students are encouraged to visit the Center for Neuroscience's Web site at [cnp.neurobio.pitt.edu](http://cnp.neurobio.pitt.edu) and review the list of approximately 100 active faculty labs. It is important that students read the research descriptions of the particular research labs that interest them as well as review a sampling of the journal articles that faculty have published. In doing this, students can accurately assess whether they can see themselves doing the experiments listed.

# F I



## DEALING WITH HOMESICKNESS

by Mary Koch Ruiz, University Counseling Center

Adjusting to college life can be a time of heightened anxiety for incoming students. Starting college represents change and, coupled with homesickness, can be very overwhelming for many students. Homesickness, or separation anxiety, can be thought of as a preoccupation with thoughts of home or what is familiar. It is completely normal, and the majority of college students (researchers estimate up to 70 percent) experience it at some point.

### What are some common symptoms of homesickness?

- Sense of loss or longing for what is familiar or secure
- Thinking no one else has homesick feelings
- Crying for no reason
- Feeling overwhelmed about minor upsets
- Physical symptoms, including stomachaches and headaches
- Thinking about what family and friends are doing back home

### Changes and fears accompany the start of college and often can exacerbate homesickness. Some common changes include:

- initial feelings of disappointment regarding school and the new environment;
- sudden dramatic changes in lifestyle;
- challenges making new friends;
- unmet expectations of roommates, classes, and social situations;
- academic workload; and
- additional stressors, such as a divorce or death in the family or the breakup of a relationship.

### How can you help your student to cope with change and homesickness?

- Normalize expressed and unexpressed feelings of missing home and sadness.
- Keep in touch via phone calls, e-mails, and text messages.
- Encourage involvement in campus activities to meet other students and have a distraction from feeling homesick.
- Encourage the exploration of campus. More familiarity with new surroundings helps to increase a sense of control.
- Suggest talking with someone, such as a resident assistant or a counselor in the University Counseling Center.

### RESOURCES

University Counseling Center  
Wellness Center  
Mark A. Nordenberg Hall  
111 University Place  
412-648-7930  
[www.counseling.pitt.edu](http://www.counseling.pitt.edu)

*U.S. News & World Report*  
"9 Ways to Handle Homesickness"  
[www.usnews.com/education/blogs/twice-the-college-advice/2011/09/06/9-ways-to-handle-homesickness](http://www.usnews.com/education/blogs/twice-the-college-advice/2011/09/06/9-ways-to-handle-homesickness)

## IMPORTANT CONTACTS

Advising Center .....	412-624-6444
Academic Resource Center .....	412-648-7920
Office of the Associate Dean for Undergraduate Studies .....	412-624-6480
Office of Undergraduate Research, Scholarship, and Creative Activity .....	412-624-6828
Office of Freshman Programs .....	412-624-6844
Office of Student Records .....	412-624-6776
<a href="http://www.as.pitt.edu/undergraduate">www.as.pitt.edu/undergraduate</a>	

Questions or concerns? E-mail us at [pittpride@as.pitt.edu](mailto:pittpride@as.pitt.edu).



## University of Pittsburgh

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# Neuroscience Center Provides Unique Collaboration

The Center for Neuroscience at the University of Pittsburgh (CNUP) is a multidisciplinary center with 107 training faculty members whose primary appointments are in 24 different departments at the University of Pittsburgh and Carnegie Mellon University. Their research interests span the breadth of neuroscience, and a number of concentration areas involve diverse groups of scientists.

Established in 1984, CNUP encourages the development of a neuroscience community to enhance communication and collaboration among investigators. CNUP's primary goals are to encourage and coordinate research and academic programs in neuroscience; develop and coordinate academic training programs in neuroscience at the undergraduate, graduate, and postdoctoral levels; foster collaborative research between and among basic and clinical neuroscientists; and provide a resource to the local community on neuroscience-related issues.

CNUP research covers the full range of neuroscience and falls within the thematic areas of behavioral/systems/cognitive, cell and molecular, development/plasticity/repair, and neurobiology of disease. Many CNUP scientists work on interdisciplinary projects

that span two or more thematic areas and often entail formal or informal collaboration among center members. This unique blend of faculty members promotes frequent and sometimes unusual opportunities for research collaborations within many disciplines and enables the same problem to be viewed from multiple perspectives.

Each summer, CNUP sponsors a 10-week program in which selected undergraduate students conduct research investigating diverse aspects of nervous system function under the guidance of individual CNUP training faculty members. The goal of the summer program is threefold: to provide qualified students with the opportunity to experience the challenges and rewards of intensive hypothesis-driven laboratory research in neuroscience; to teach the technical features of a research project, which may include neuroanatomy, neurophysiology, molecular biology, brain imaging, computer simulations, neuropsychology, or behavioral assessment; and for students interested in clinical medicine to incorporate a vision that includes a potential role for laboratory-based neuroscience research.

For more information on CNUP, visit [cnup.neurobio.pitt.edu](http://cnup.neurobio.pitt.edu).

## CALENDAR OF EVENTS

### November 2013

- 27–December 1** Thanksgiving recess for students (no classes)
- 28–29** Thanksgiving recess for faculty and staff (University closed)

### December 2013

- 2** Last day to withdraw from all classes in the dean's office
- 6** Last day for undergraduate day classes; spring term deadline for continuing students to register without a penalty fee
- 9–14** Final examination period for undergraduate day classes
- 14** Fall term ends; official date for degrees awarded in fall term
- 15** Residence halls close
- 15–January 5, 2014** Winter recess for students (no classes)
- 19** Fall term grades available online
- 24–January 1, 2014** Winter recess for faculty and staff

### January 2014

- 2** University reopens
- 6** Spring term classes begin
- 20** Martin Luther King Jr.'s birthday observed (University closed)

### February 2014

- 17** Summer term enrollment period begins
- 28** Honors Convocation

For the online academic calendar, go to [www.provost.pitt.edu/information-on/calendar.html](http://www.provost.pitt.edu/information-on/calendar.html).

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DIETRICH SCHOOL OF ARTS AND SCIENCES  
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The University of Pittsburgh, as an educational institution and as an employer, values equality of opportunity, human dignity, and racial/ethnic and cultural diversity. Accordingly, as fully explained in Policy 07-01-03, the University prohibits and will not engage in discrimination or harassment on the basis of race, color, religion, national origin, ancestry, sex, age, marital status, familial status, sexual orientation, gender identity and expression, genetic information, disability, or status as a veteran. The University also prohibits and will not engage in retaliation against any person who makes a claim of discrimination or harassment or who provides information in such an investigation. Further, the University will continue to take affirmative steps to support and advance these values consistent with the University's mission. This policy applies to admissions, employment, and access to and treatment in University programs and activities\*. This is a commitment made by the University and is in accordance with federal, state, and/or local laws and regulations.

For information on University equal opportunity and affirmative action programs, please contact: University of Pittsburgh; Office of Affirmative Action, Diversity, and Inclusion; Carol W. Mohamed, Director (and Title IX, 504 and ADA Coordinator); 412 Bellefield Hall; 315 South Bellefield Avenue; Pittsburgh, PA 15260; 412-648-7860.

For complete details on the University's Nondiscrimination Policy, please refer to Policy 07-01-03. For information on how to file a complaint under this policy, please refer to Procedure 07-01-03.

\*Except where exempt by federal or state laws.

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