

MD Anderson Cancer Center UTHealth
Graduate School of Biomedical Sciences

Graduate Program in NEUROSCIENCE



THE UNIVERSITY OF TEXAS
MDAnderson
Cancer Center®

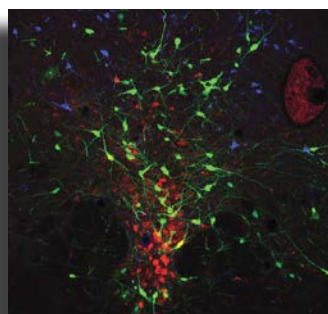
UTHealth®
The University of Texas
Health Science Center at Houston

Graduate School of Biomedical Sciences

neurograd.org

The MD Anderson Cancer Center UTHealth Graduate School of Biomedical Sciences (GSBS) is a joint venture of The University of Texas Health Science Center at Houston (UTHealth) and The University of Texas MD Anderson Cancer Center that offers Ph.D. and M.S. degrees in Neuroscience. Areas of research concentration include molecular, cellular, systems, cognitive, and translational neuroscience. There are more than 50 GSBS faculty members and more than 25 graduate students representing sixteen departments of UTHealth and MD Anderson currently in the Neuroscience Graduate Program.

All Ph.D. students receive full financial support throughout their training, which includes tuition, fees, stipend, and benefits. Annual competitive awards are available for outstanding research projects and posters, and to support student travel to scientific meetings.



Transsynaptic labelling of dorsal raphe neurons (green) from crfr2+ serotonin neurons (red)

doctoral requirements

Students must complete the following requirements to obtain the degree of Doctor of Philosophy with a specialization in Neuroscience:

Research Rotations:

First-year students obtain hands-on research experience by participating in three research tutorials.

Coursework:

All students in Neuroscience are required to take two Program Core Courses (Molecular and Cellular Neuroscience, Systems Neuroscience) and two advanced elective courses. Also required are the Ethical Dimensions of Biomedical Science, Scientific Writing, and Biostatistics for Life Scientists. Core Courses must be taken for credit and a grade of "B" or better must be earned.



Annual Retreat

Candidacy Exam:

To advance to candidacy, all students need to defend an NRSA-style proposal as part of a candidacy exam. This exam will take place by the end of the 2nd year.

Dissertation Defense:

Students defend their dissertation research in a public presentation (followed by public discussion) and an oral defense (in a closed session with the student's Advisory Committee).

To graduate with a PhD, students must have at least one first-author paper accepted in a peer-reviewed journal.

Our students have the opportunity to receive training and to conduct research in all areas of modern neuroscience.

Cellular & Molecular Neuroscience

Research in Cellular and Molecular Neuroscience enables students to understand neuronal function by integrating biochemical, physiological, cellular, and molecular biological approaches. Areas of focus include: intracellular signaling cascades, synaptic transmission, different forms of synaptic plasticity which underlie learning and memory, and information processing in neuronal circuits.

Systems & Cognitive Neuroscience

Research in Systems and Cognitive Neuroscience seeks to understand how networks of neurons or specific brain areas encode or decode information about the external world or internal states, and ultimately give rise to a wide variety of behaviors, including sensory perception, motor control, memory, attention, and language.

Theoretical & Computational Neuroscience

Research in Theoretical and Computational Neuroscience focuses on the broad range of computational and analytical skills essential to understand the organization and function of complex neural systems.

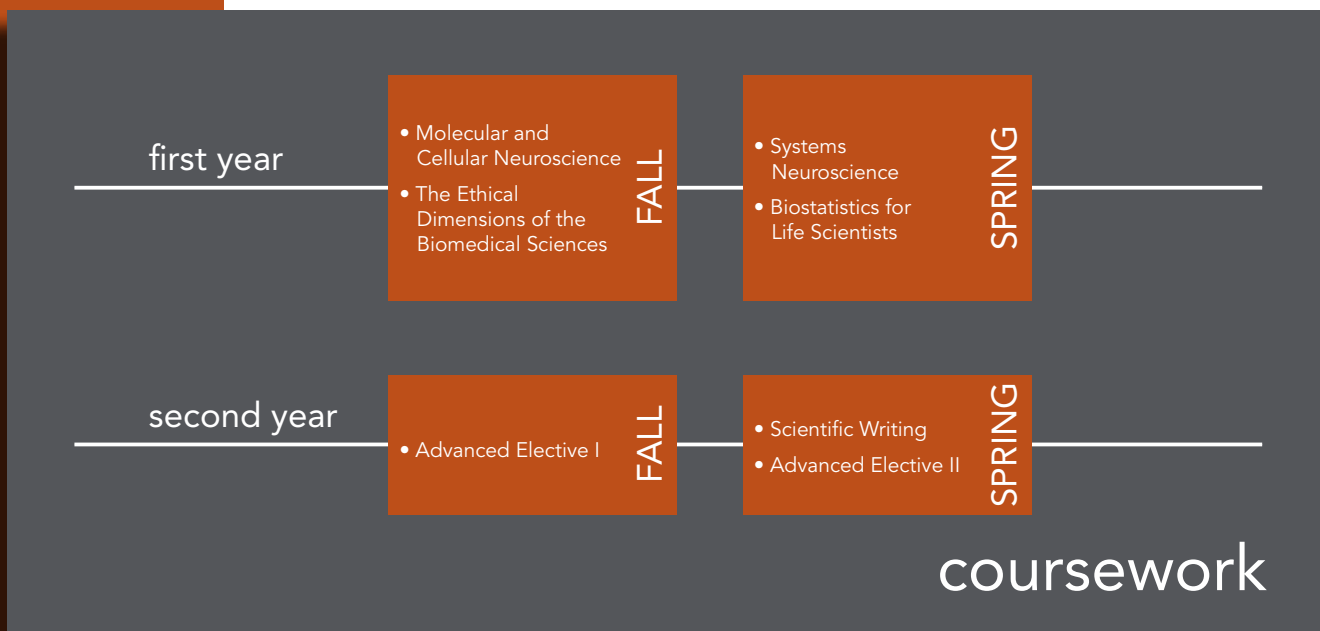
Translational & Clinical Neuroscience

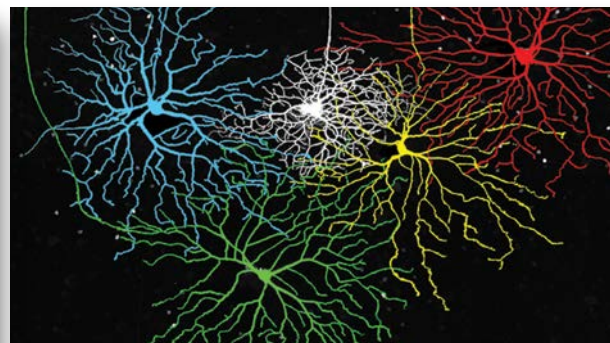
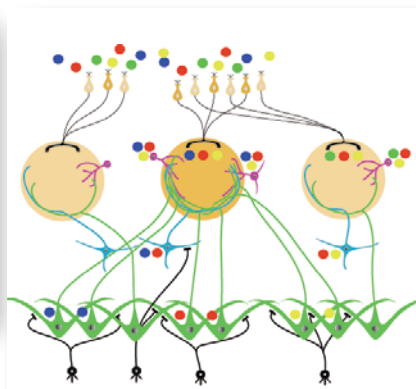
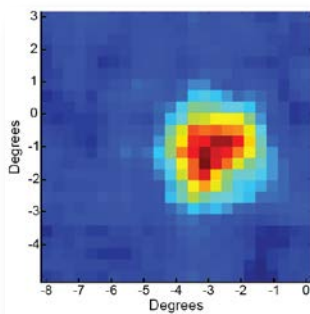
Research in Translational and Clinical Neuroscience employs experimental models in order to discover basic mechanisms, biomarkers, pathogenesis or treatments of nervous system disorders such as Alzheimer disease, Parkinson's, epilepsy, stroke, or pain. In addition, more clinical research provides the foundation for developing or directly testing novel therapeutic strategies for humans with nervous system disorders.



Diasynou Fioravante, Ph.D.
2006 NGP graduate (Byrne Lab)
and Assistant Professor at UC Davis

"Through solid class offerings, opportunities for research distinctions and travel awards, the Neuroscience program at UT-Houston provided me with a strong foundation for a successful academic career."





Left: Receptive field map of neuron in monkey visual cortex. Middle: Processing of odor information in olfactory bulb glomeruli. Right: Retinal ganglion cells specialized to detect object motion in a particular direction.

Jaroslav Aronowski, Ph.D. • Neurology • Neuropharmacology/models of ischemic stroke and intracerebral hemorrhage

Tatiana Barichello, Ph.D. • Psychiatry & Behavioral Sciences • Neuroinfection, host immune response, memory impairment, behavioral changes

Michael Beierlein, Ph.D. • Neurobiology & Anatomy • Synaptic and local circuit dynamics in the thalamocortical system

Mark Burish, Ph.D. • Neurosurgery • Circadian & neurophysiologic aspects of headaches using patient tissue

John Byrne, Ph.D. • Neurobiology & Anatomy • Neural and molecular bases of learning and memory

Qi Lin Cao, M.D. • Neurosurgery • Transplantation of neural stem cells (NSCs)

Robert Dantzer, Ph.D. • Symptom Biology • Behavioral and psychopathological consequences of the effects of cancer therapy on the brain

Pramod Dash, Ph.D. • Neurobiology & Anatomy • Mechanisms of memory formation and memory dysfunction

Joao De Quevedo, MD, Ph.D. • Psychiatry & Behavioral Sciences • Neurobiological basis of psychiatric disorders

Fabricio Do Monte, D.V.M., Ph.D. • Neurobiology & Anatomy • Neural mechanisms of innate fear and reward and their interactions

Patrick Dougherty, Ph.D. • Anesthesiology & Pain Management • Neurobiology, neurophysiology, and pharmacology of the spinal dorsal horn

Valentin Dragoi, Ph.D. • Neurobiology & Anatomy • Cortical mechanisms of visual behavior

Daniel Felleman, Ph.D. Neurobiology & Anatomy • Organization, function, and plasticity of primate cerebral cortex

Gabriel Fries • Psychiatry & Behavioral Sciences • Epigenetic mechanisms of psychiatric disorders

Michael Galko, Ph.D. • Biochemistry & Molecular Biology • Drosophila genetics, molecular genetics of tissue repair, cell migration, signaling and signal transduction, pain sensitization

Peter Grace • Symptom Research • Neuroinflammatory mechanisms of persistent pain

David Grosshans, M.D., Ph.D. • Radiation Oncology • Cellular mechanisms of radiation induced cognitive decline

Ruth Heidelberger, M.D., Ph.D. • Neurobiology & Anatomy • Mechanisms of neurotransmitter release

Cobi Heijnen, Ph.D. • Symptom Research • Mechanisms and therapeutic approaches of cancer treatment-induced neurotoxicities

Diane Hickson-Bick, Ph.D. • Pathology and Laboratory Medicine • Cardiac metabolism in health and disease

Mohammad Hossain, Ph.D. • Neuro-Oncology • Improved treatments for glioblastoma patients

Jian Hu, Ph.D. • Cancer Biology • Identification of target genes downstream of QKI that mediate the endolysosome-dependent degradation of Frizzled and Notch1

Roger Janz, Ph.D. • Neurobiology & Anatomy • Synaptic vesicle proteins as regulators of neurotransmitter release

Vasanthi Jayaraman, Ph.D. • Biochemistry & Molecular Biology • Regulation of the structure of membrane proteins

Cameron Jeter, Ph.D. • Diagnostic and Biomedical Sciences • Identification of molecules indicative of disease status, progression or outcome in patients with traumatic brain injury

Nicholas Justice, Ph.D. • Institute of Molecular Medicine • Mechanisms of CRF system perturbation in Alzheimer's Disease

Balveen Kaur, Ph.D. • Neurosurgery • Brain tumors and their interactions with the extracellular matrix and tumor microenvironment

Annemieke Kavelaars, Ph.D. • Symptom Research CAO • Pathophysiology of cancer therapy-induced physiological/behavioral toxicity

Eunhee Kim • Neurosurgery • Genetic and molecular mechanisms of stroke

Scott Lane, Ph.D. • Psychiatry & Behavioral Sciences • Substance Use Disorders, Antisocial Personality Disorder

Fudong Liu, M.D. • Neurology • Innate immune responses to cerebral ischemia

Yin Liu, Ph.D. • Neurobiology & Anatomy • Computational biology and bioinformatics

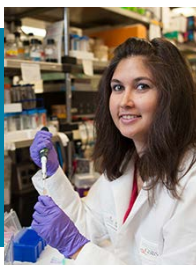
Ying Liu, M.D., Ph.D. • Neurosurgery & Center for Stem Cell and Regenerative Medicine/IMM • Genetic engineering of pluripotent stem cells, neural differentiation, disease modeling of CNS

Sadhan Majumder, Ph.D. • Genetics • Differentiation of neural stem/progenitor cells into neuronal pathway

Chai An Mao Ph.D. • Ophthalmology and Visual Science • Combining mouse genetics, anatomical studies, and behavioral and physiological analyses to study retinal ganglion cells

Monica Gireud, Ph.D.
2017 NGP graduate (Bean Lab)

"There's so much that is unknown. There are very few cures and often little understanding of why diseases affect the brain. It's fascinating. It's exciting."



Russell Milton, Ph.D. student

"The Neuroscience Program provides a uniquely collaborative environment that leads to impactful and multifaceted research."

Sean Marelli • Neurology • Control of cerebrovascular tone by endothelial cells

David Marshak, Ph.D. • Neurobiology & Anatomy • Structure and function of primate retinal neurons

Stephen Massey, Ph.D. • Ophthalmology & Visual Sciences • Neuronal circuitry of the retina

Pierre D. McCrea, Ph.D. • Genetics • Catenin contributions in cell and developmental biology

Louise D. McCullough, M.D., Ph.D. • Neurology • Sex differences in cell death, stroke, and aging

Stephen Mills, Ph.D. • Ophthalmology & Visual Science • Retinal circuit physiology and function

Rodrigo Morales, Ph.D. • Neurosurgery • Transmissibility of A β aggregation *in vivo* & pathological features that these events cause

Shin Nagayama, Ph.D. • Neurobiology & Anatomy • Neuronal and network dynamics in the olfactory system

John O'Brien, Ph.D. • Ophthalmology & Visual Science • Molecular mechanisms that control network adaptation in the retina

Scott Olson, Ph.D. • Pediatric Surgery • Adult stem cells and their potential for the treatment of Traumatic Brain Injury

Christophe Ribelayga, Ph.D. • Ophthalmology & Visual Sciences • Retinal image processing and light/dark adaptation

Dawid Schellingerhout • Diagnostic Radiology & Cancer Systems Imaging • Efficacy of novel therapy targeted at glycolysis in brain tumors by means of hyperpolarized MR imaging

Paul Schultz, Ph.D. • Neurology • Neurocognitive Disorders

Harel Shouval, Ph.D. • Neurobiology & Anatomy • Theoretical/computational approaches to understanding synaptic plasticity and its role in learning, memory and development

Laura Smith Callahan, Ph.D. • Neurosurgery • Development of advanced hybrid systems for cartilage, spinal cord and brain tissue engineering

Jair Soares, M.D. • Psychiatry & Behavioral Sciences • Clinical research in the field of mood disorders

Claudio Soto, Ph.D. • Neurology • Molecular basis of neurodegenerative diseases associated to misfolding and brain accumulation of proteins, particularly in Alzheimer's and prion-related disorders

Nitin Tandon, M.D. • Neurosurgery • Study of language, learning and memory, and executive control using imaging and invasive electrophysiology

Qingchun Tong, Ph.D. • Center for Obesity and Diabetes • Neurocircuitry in the brain controls feeding, energy expenditure and glucose homeostasis

Andrey S. Tsvetkov, Ph.D. • Neurobiology and Anatomy • Molecular Mechanisms Of Neuronal Autophagy

Akihiko Urayama, Ph.D. • Neurology • Physiology of the BBB & therapeutic solutions to manipulate pathological brain environments in diseases

Kartik Venkatachalam, Ph.D. • Integrative Biology & Pharmacology • Signal transduction in the nervous system

Venugopal Reddy Venna, Ph.D. • Neurology • Ischemic stroke

Francesco Versace, Ph.D. • Behavioral Science • Investigating the neurobiological underpinnings of nicotine addiction and smoking behavior

Consuelo Walss-Bass, Ph.D. • Psychiatry & Behavioral Sciences • Genetic underpinnings of psychiatric disorders, gene-environment interactions, correlation of genetic variants with cellular function, antipsychotic-induced metabolic syndrome

Edgar Walters, Ph.D. • Integrative Biology & Pharmacology • Nociceptor memory and chronic pain

M. Neal Waxham, Ph.D. • Neurobiology & Anatomy • Molecules responsible for the formulation and storage of memories

Jack Waymire, Ph.D. • Neurobiology & Anatomy • Plasticity of neurotransmitter biosynthesis

Anthony Wright, Ph.D. • Neurobiology & Anatomy • Learning and cognition

Jiaqian Wu, Ph.D. • Neurosurgery • Gene transcription and regulatory mechanisms governing neural differentiation

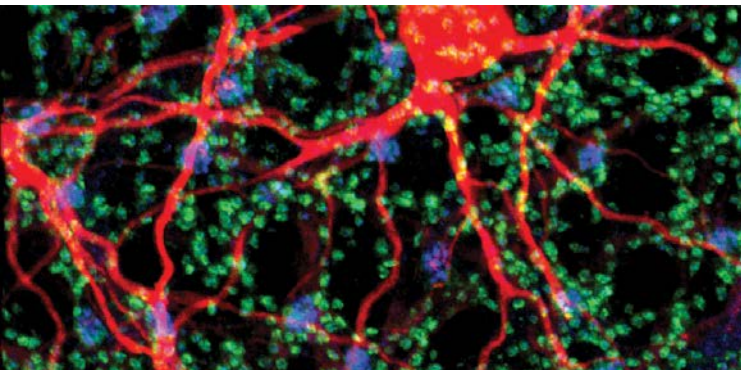
Yang Xia, M.D., Ph.D. • Biochemistry and Molecular Biology • Angiotensin receptors, autoimmunity and preeclampsia

Jiusheng Yan, Ph.D. • Anesthesiology and Perioperative Medicine • Structure, function and regulation of mammalian ion channels

Sheng Zhang, Ph.D. • Institute of Molecular Medicine • Mechanisms underlying neurodegenerative disorders

Xiurong Zhao, M.D. • Neurology • Intracerebral hemorrhagic stroke (ICH) and ischemic stroke

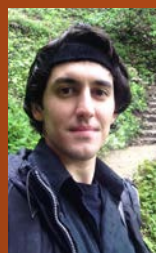
Michael Zhu, Ph.D. • Integrative Biology and Pharmacology • Mechanisms regulating stimulus-evoked intracellular Ca²⁺ increases and their physiological implications



Localization of SAP102 and Syntaxin 3B (Syn3B) in the outer plexiform layer (OPL). A single B-type horizontal cell (HC) was dye injected with Neurobiotin (red). A horizontal section showing SAP102 immunoreactivity (blue) was localized to tips of B-type HCs. Syn3B-positive (green) photoreceptor terminals exist in precise register with SAP102 immunoreactive B-type HC processes.

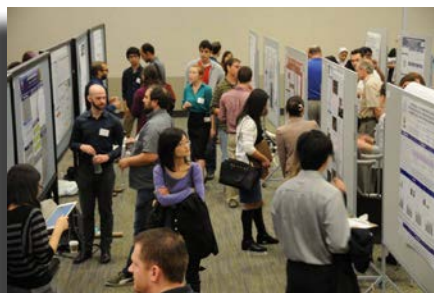
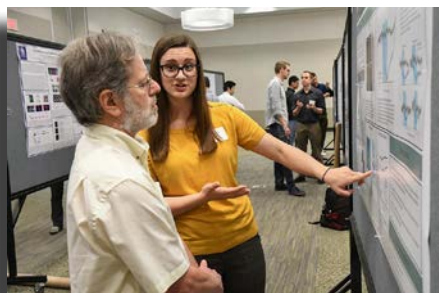
M.D./Ph.D. students affiliated with GSBS Neuroscience

M.D./Ph.D. students, in consultation with their advisory committee, will take one of the two core courses and two advanced electives best suited to their research focus.



Cihan Kadipasaoglu, M.D./Ph.D.
2015 NGP graduate (Tandon Lab)
Postdoctoral Fellow UTHealth

"Although I began as an outsider to both the M.D./Ph.D. and Ph.D. programs, I never once felt as such. Rather, it seemed to me that the students from both programs had formed a united 'research family,' into which I was immediately and unquestioningly welcomed."



Clockwise from top left: Neuroscience poster session: faculty, postdocs, and students; Commencement ceremony; White Coat Ceremony; Brain Night for Kids at the Houston Health Museum.



Seminars

Weekly seminars by world-class scientists from around the country are held at a number of Texas Medical Center institutions, including the McGovern Medical School and Baylor College of Medicine. Students can interact with seminar speakers over lunch.

Student Workshops and Poster Sessions

Program students have the opportunity to deliver full-length seminars on their research to fellow students and faculty in the program and to receive extensive feedback on their presentation. In addition, numerous poster sessions held throughout the year offer the chance to present research findings to different types of audiences.

Journal Clubs

Several Journal Clubs offer the chance to present current papers to fellow students, postdocs and faculty or to practice presentations for upcoming interviews and exams.

Annual Student Retreat

Our students organize an annual two-day retreat outside Houston to welcome new program students. The retreat offers a mix of lectures by students, faculty, and alumni, poster presentations, and various social activities.

Teaching

Students who want to get hands-on experience in the classroom or the lab have the opportunity to teach in various

undergraduate, graduate, or medical courses across campus or beyond.

Volunteering and Outreach

Many of our students are involved in outreach activities. This can involve working at a food bank, acting as a judge at science and engineering fairs, or explaining neuroscience concepts to local elementary students.

Social Events

We organize a number of social activities throughout the year, including picnics or potluck lunches, an Arts showcase, or end-of-semester receptions.

Leandra Mangieri, Ph.D. student

"The GSBS Neuroscience Program has been so supportive during the years of hard work, providing excellent guidance and an amicable atmosphere for making graduate training as rewarding as possible. The challenges we faced have made us highly competitive in this burgeoning field of science."



about the graduate school

The Graduate School is a unique partnership between the MD Anderson Cancer Center and UTHealth, institutions that are leading the fight against cancer and other major diseases that impact human health and quality of life. Graduate studies under a GSBS faculty mentor will provide students with training in the most significant areas of the biomedical sciences, including research to improve understanding of disease mechanisms at molecular, genetic, cellular and systems levels, and approaches to develop novel targeted therapies for human disease. The school is located in the Texas Medical Center. It is the world's largest biomedical education and research facilities. Visit gsbs.uth.edu for more information.

how to apply

For all U.S. Citizens, Permanent Residents and International Applicants:

The final deadline for all application materials to be submitted for the Ph.D. program is January 4. Early applications are encouraged.

The deadline to apply for the M.S. program in Biomedical Sciences is April 1.



Annual Retreat



Ryan Cassidy, center, with Deans Michael Blackburn, Ph.D., left, and Michelle Barton, Ph.D. Cassidy received 1st place and People's Choice Award at the GSBS Student Research Day Elevator Speech Competition (Post-Candidacy).

ADMISSIONS



Cameron Jeter, Ph.D.
2011 NGP graduate
(Sereno Lab) and Assistant
Professor at UTHealth

"The Neuroscience program equipped me with skills I didn't fully appreciate until becoming a faculty member. Program faculty continue to foster my scientific and professional growth as mentors, collaborators, and advocates."

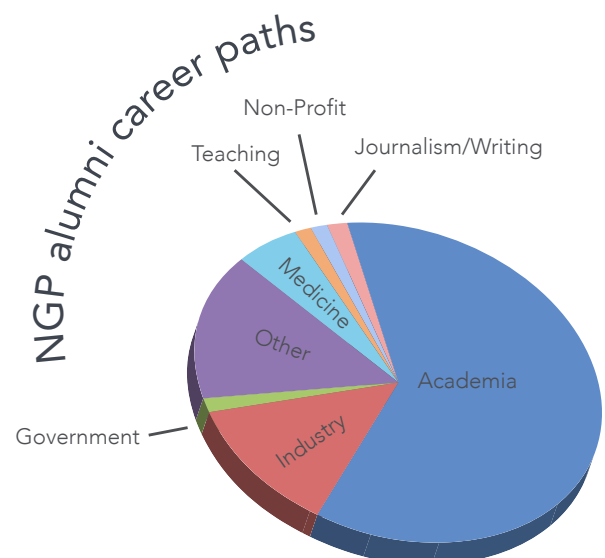
Samantha Debes, Ph.D. student

"The GSBS Neuroscience Program offers a unique environment, rich in diverse funding opportunities, renowned guest speakers, innovative collaborations and cutting edge research."



Curtis Neveu, Ph.D.
2017 NGP graduate
(Byrne Lab) Postdoctoral
Fellow, Northwestern
University

"I like that many faculty and students are eager to help each other succeed."



city of houston

Houston, the fourth largest city in the nation, is located on a coastal plain 50 miles from the Gulf of Mexico and has a southern climate. Houston is a modern, dynamic city, rich in cultural diversity that reflects its multiethnic mix.

Houston has emerged as a cultural center for the Southwestern United States. The seventeen-block Theater District is home to eight performing arts organizations, including the Houston Ballet Company, the Houston Symphony, the Houston Grand Opera, and the Alley Theater. The Museum of Fine Arts, the Contemporary Arts Museum, and the Houston Museum of Natural Science all offer outstanding exhibitions. Numerous smaller museums and art galleries can also be found in the Museum District, just one mile north of the Texas Medical Center. These notably include the Menil Collection and Rothko Chapel.

Sports enthusiasts can take advantage of professional sports action year-round. Houston is home to a number of professional sports teams: the Texans play at NRG stadium (NFL football), the Dynamo and Dash play at BBVA Compass Stadium (MLS and NWSL soccer), the Rockets play at Toyota Center (NBA basketball), and the Astros play at Minute Maid Park (MLB baseball). In addition, Houston's close proximity to the Gulf of Mexico, Galveston Bay (50 miles) and local lakes provides access to a full range of water sports.

Among major metropolitan areas of the country, Houston has one of the lowest costs of living. In addition, the diversity and breadth of the city's economy provides a wide array of job opportunities for spouses and family members. Low housing costs and friendly people combine to make this a desirable city in which to relocate.

Contact Information

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Amanda.J.Williamson@uth.tmc.edu

Dr. Qingchun Tong, Program Co-Director
Qingchun.Tong@uth.tmc.edu

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