

## **SCHOLARLY CONCENTRATION in the NEUROSCIENCES**

### **Neuroscience Co-Directors and Administrative Coordinators**

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### **Goals for the Scholarly Concentrations Program**

The concentrations program overall is designed to enrich the student experience through learning and scholarly activities specific to an interdisciplinary health-related topic. Goals are to:

- Complement and enhance the required curriculum
- Provide role models, mentorship, and guidance for students' academic and personal development
- Increase interdisciplinary interactions
- Provide a longitudinal educational experience through structured and experiential learning activities
- Support student scholarship

Program activities encourage the student acquisition of expertise in an interdisciplinary, health-related area, the development of critical thinking and analytical skills, the improvement of oral and written communication skills, the enhancement of self-directed learning skills, and the production of a scholarly product.

### **Scholarly Projects**

Students participating in a Scholarly Concentration will engage in an independent, scholarly project under the guidance of a faculty mentor. Examples of possible scholarly projects include, but are not limited to, the following:

- Development of a new clinical protocol
- Original basic or clinical research
- Development of a new curriculum component or module
- Evaluation of an outreach program
- Creation of a bioengineering tool or biomedical software
- Creative medical writing

Students who successfully fulfill the concentration requirements will receive a certificate of completion and will be recognized at commencement.

### **Mission of the Scholarly Concentration in the Neurosciences Program**

This scholarly concentration in the medical school curriculum is designed to enhance the knowledge and training of medical students interested in basic or translational research and current issues in the neurosciences. The concentration combines neuroscience research, teaching, and scientific presentations with enhanced lectures, grand rounds and seminar series.

### **Timeline for Student Participation and Completion of Neuroscience Concentration Requirements**

Most students interested in the neuroscience concentration submit their application in the spring of Year 1. If accepted, they begin the program with the start of the Summer Research Program (see below).

Participation in the neuroscience concentration continues through second semester of Year 4.

## **Application Guidelines for the Neuroscience Concentration**

### **Eligibility**

Note that students interested in the neuroscience concentration are required to complete the Medical School's "Summer Research Project (SRP)" the summer after the first year of medical school. (As described below, in exceptional cases, equivalent research experiences can be acceptable with approval of the program directors.) The SRP is separate from the scholarly concentration program and has its own application, but the SRP project provides the basis for the activities in the neuroscience concentration. Thus, once students have chosen a mentor, planned their summer research, and applied to the SRP, their application to the neuroscience concentration is simple. Contact the [Office of Educational Programs](#) for current information about the SRP and its application deadline, which is well before that of the neuroscience concentration.

In some unusual cases, students may apply and be accepted into the neuroscience concentration on the basis of a research project that they organize (with a mentor) and conduct separately from the SRP. Please contact the administrative coordinators or the directors of the neuroscience concentration if you are unable to participate in the SRP and are thinking of an independent research project. If you are interested in the neuroscience concentration, you will need to discuss your research plan or interests with one or both of the concentration co-directors before you apply. They may offer helpful suggestions.

### **Application Deadline**

The deadline for the neuroscience concentration application is usually mid-April. For individual circumstances and needs, please contact an administrative coordinator or co-director. The application is available online at <https://med.uth.edu/oep/scholarly-concentrations-program>.

### **Overview of the Neuroscience Concentration Application**

Be sure to answer all sections, or the application will be returned to you for completion. You will need to describe your background, experiences, and interest in the neurosciences -- and the concentration topics of interest to you. You will also be asked to explain how your participation in the concentration fits in with your goals for medical school and the future. You will need to provide an overview of your proposed summer research project and the names of your mentor and advisory committee members.

### **Preparing to Apply**

If, like many first-year students, you have not yet identified a neuroscience topic you are interested in studying, you should begin exploring the many opportunities at McGovern Medical School as a first step in preparing your application for the concentration (and the SRP). Meeting with faculty members to discuss your interests and the research they are conducting may lead to an idea for your research project. Check the list of neuroscience faculty at the end of this overview of the neuroscience concentration. Each listed faculty member is open to serving as a mentor (or an advisory committee member) for students in the neuroscience concentration. Their general areas of research are listed with their names (which are clickable and will open their individual faculty page). You may also identify faculty members who are not on the list and contact them to explore possibilities for your research. Many faculty members throughout UTHealth who conduct research in the neurosciences are listed on the website of the Neuroscience Research Center (<https://med.uth.edu/nrc/>). Clicking the "Research" tab at the top of the page will open a list of neuroscience research topics. The "Faculty" tab has a list of neuroscience faculty throughout

UTHealth.

### **Application Review Process**

The neuroscience concentration co-directors and coordinators will review applications, following an initial screening by the Office of Education. Applicants will receive a notice of the decision through the online system as quickly as possible, usually within three weeks to a month after submittal.

### **Requirements of the Neuroscience Concentration**

The neuroscience concentration is individualized to the needs of each student, and there is flexibility in some requirements, depending on the student's unique focus. Requirements that are essential to the student's satisfactory completion of the program are summarized below.

- Completion of a research project the summer after MS1. The research project is the springboard for the student's activities throughout the concentration program.
- Attendance at the seminar course, "Current Topics in the Neurobiology of Disease," during the fall semester of Year 2. One or more additional courses over Years 2 through 4 that are relevant to the student's program should be considered with guidance from your mentor and advisory committee.
- Joining (as a student) a local, regional, or national scientific society in area of interest.
- Presentation of research project at the Neuroscience Research Center's Annual Poster Session, held in December.

## Neuroscience Concentration Requirements (Didactic and Experiential)

### Year 1

#### **Required**

Prepare to apply to the concentration: Identify a mentor, form advisory committee of 2-3 faculty members in area of interest, and plan summer research project.

Perform summer research project with mentor between Year 1 and Year 2.

#### **Optional**

Apply for stipend for summer research program.

“Shadow” mentor or clinicians.

Attend Grand Rounds.

### Year 2

#### **Required**

Continue research with mentor.

Join a scientific society (as student) in area of interest.

Attend GS14 1021 "Current Topics in the Neurobiology of Disease," a seminar course offered every fall semester. Topics change each year.

#### **Optional**

Attend Grand Rounds.

One or more additional courses relevant to your program should be considered, over yrs. 2 – 4, with guidance from mentor.

### Year 3

#### **Required**

Present research at NRC Annual Poster Session; held annually on the first Saturday in December.

Required clinical rotations should be performed in neuroscience-related field.

#### **Optional**

Attend Grand Rounds.

Attend GS14 1021 "Current Topics in the Neurobiology of Disease," a seminar course during fall semester.

One or more additional courses relevant to your program should be considered, over yrs. 2 – 4, with guidance from mentor.

### Year 4

#### **Required**

Senior elective should be in neuroscience-related area (for example: Adult Neurology, Pediatric Neurology, Adult Neurosurgery, Pediatric Neurosurgery, Neuroradiology, Neurobiology, Adult Psychiatry, Pediatric Psychiatry, Clinical Neuroscience).

Submit final version of neuroscience research project to Advisory Committee for approval.

#### **Optional**

Attend Grand Rounds.

Submit paper to appropriate scientific or clinical journal.

One or more additional courses relevant to your program should be considered, over yrs. 2 – 4, with guidance from mentor.

Attend GS14 1021 "Current Topics in the Neurobiology of Disease," a seminar course during fall semester.

## Scholarly Concentration Faculty\*

\* Neuroscience faculty members who are not listed may also be considered

### FACULTY NAME/DEPARTMENT

### CONTRIBUTION(S) TO CONCENTRATION

#### **Brown Foundation Institute of Molecular Medicine for the Prevention of Human Diseases (IMM)**

Qingchun Tong, Ph.D.  
Sheng Zhang, Ph.D.

Emotional control of feeding  
Modeling and mechanisms of neurodegenerative diseases

#### **Neurobiology and Anatomy**

John Byrne, Ph.D.  
Pramod Dash, Ph.D.  
Fabricio H. Do Monte, D.V.M., Ph.D.  
Valentin Dragoi, Ph.D.  
Nachum Dafny, Ph.D.  
Daniel Felleman, Ph.D.  
Ruth Heidelberger, M.D., Ph.D.  
David Marshak, Ph.D.  
Anthony Wright, Ph.D.

Mechanisms of learning and memory  
Neurobiology of head trauma  
Fear and rewarding memories, neural circuits, rats  
Vision in nonhuman primates  
Drugs and behavior, rodents  
Imaging, nonhuman primates  
Transmitter release  
Neurobiology of the retina  
Cognition and learning in monkeys and pigeons

#### **Neurology**

##### **Adult Neurology**

Louise D. McCullough, M.D., Ph.D.  
Kazim Sheikh, M.D.  
Mya Schiess, M.D.  
J. William Lindsey, M.D.  
Sean Savitz, M.D.  
Suur Biliciler, M.D.

Cerebral vascular disease  
Peripheral nerve disorders, imaging nerves  
Spasticity, movement disorders  
Autoimmune disease  
Stroke, stem cells  
Muscular dystrophy

#### **Neurosurgery**

Daniel H. Kim, M.D.  
Nitin Tandon, M.D.  
  
Jiaqian Wu, Ph.D.  
John P. Hagan, Ph.D.

Robotic surgery, neuromodulation, radiographic nerve imaging  
Brain mapping with functional MRI, electrical stimulation and  
diffusion tractography  
Stem cell biology, spinal cord injury, glia biology  
MicroRNAs, nerve cell function

#### **Ophthalmology and Vision Science**

Steven Massey, Ph.D.  
Christophe Ribelayga, Ph.D.

Retina, neuronal circuitry  
Retina, circadian rhythm, visual adaptation, rodent, fish

#### **Pediatric Surgery**

##### **Pediatric Neurosurgery**

Stephen Fletcher, DO

brain tumors, animal models

## **Pediatrics**

### **Pediatric Neurology**

Mary Kay Koenig, M.D.

Gretchen Von Allmen, M.D.

Pauline Filipek, M.D.

Hope Northrup, M.D.

Mitochondrial, neurometabolic and  
neurocutaneous disorders

Pediatric epilepsy

Autistic spectrum disorder

Genetics, neural tube disorders, tuberous sclerosis

### **Children's Learning Institute**

Linda Ewing-Cobbs, Ph.D.

Susan Landry, Ph.D.

Jenifer Juranek, Ph.D.

Head trauma and functional neuroimaging

Brain development and prematurity

Neuroimaging

### **Psychiatry and Behavioral Sciences**

Joao L. de Quevedo, M.D., Ph.D.

Jair Soares, M.D.

Scott Lane, Ph.D.

Deborah Pearson, Ph.D.

Neurobiological basis of psychiatric disorders

Imaging, mood disorders

Substance abuse, aggression

Autism spectrum disorder, tuberous  
sclerosis, developmental  
psychopathology

Developmental psychopathology

Kate Loveland, Ph.D.