JENNY HSIEH, PH.D.

SEMMES FOUNDATION CHAIR IN CELL BIOLOGY; DIRECTOR, BRAIN HEALTH CONSORTIUM

SPECIALTY: Neurogenesis, Adult neurogenesis and epilepsy, Cancer stem cells, Epigenetic regulation, Neurogenic small molecules, Stem cell biology

Hsieh lab / Precision models of epilepsy using human induced pluripotent stem cells

Epilepsy is a debilitating neurological disorder, affecting over 3 million Americans and over 65 million people worldwide. About a third of patients live with uncontrolled seizures and suffer from memory and mood disorders.

Dr. Jenny Hsieh's research strives to understand the causes and mechanisms of epilepsy and other neurological disorders at the cellular, molecular, and circuit level. She is recruiting patients with genetic mutations in epilepsy and making individualized pluripotent stem cell lines. By creating three-dimensional brain-like structures (called organoids) from patient-derived stem cells, she is identifying the cause of their epilepsy and screening for drugs to treat their epilepsy.

EDWARD GOLOB, PH.D.

PSYCHOLOGY

SPECIALTY: Cognitive neuroscience, Partial cognition attention and working memory perception and action in the auditory system, Normal aging and age-related cognitive disorders

Dr. Edward Golob's lab studies how auditory processing is affected by attention, memory, and the relations between perception and action. He seeks to understand the cognitive and neurobiological differences that accompany normal aging, age-related neurological disorders such as Alzheimer's disease, and speech fluency disorders. In many studies, they monitor the brain's electrical activity using event-related potentials and EEG; in others, they use transcranial magnetic and electrical stimulation to transiently influence brain activity. The lab is expanding its work to include traumatic brain injury and risk of future cognitive impairments, as well as patient rehabilitation using advanced computing and brain-computer interface methods.

HYOUNG-GON LEE , PH.D.

CELL CYCLE AND NEURODEGENERATION BIOLOGY

SPECIALTY: Cell Cycle and neurodegeneration, Alzheimer's Disease, Neurobiology

Neurodegenerative diseases cause neuronal death, but how? Neurons are non-proliferative, meaning their cell-cycle is arrested; perhaps accidental activation of the cell-cycle sets them on a course to die.

Dr. Hyoung-gon Lee's research hypothesizes that cell cycle re-entry in the CNS is a key pathogenic mechanism in neurodegeneration. He is using transgenic mouse models to dissect and understand what might trigger cell cycle activation and whether this event bears any causal relationship with neurodegeneration like that observed in Alzheimer's disease.

ASIF MAROOF, PH.D.

CORTICAL INTERNEURON FATE AND FUNCTION IN DISEASE; BIOLOGY

SPECIALTY: Projection neurons transmit information between brain regions, but it's the local circuit interneurons that shape the signals being transmitted. The diversity of interneurons confers the powerful computational capacity of the CNS, and their dysfunction results in pathological states.

Dr. Asif Maroof is using cutting-edge transgenic technology and stem cells to study the differentiation of cortical interneurons. He is determining their diversity, how they connect, and serve information flow in the brain. His research is fundamental to building the next generation of cell-based therapies for a whole array of neurological disorders and diseases.

LINDSEY MACPHERSON, PH.D.

CHEMOSENSATION; BIOLOGY

SPECIALTY: Wiring and functional connections of peripheral sensory circuits

The Macpherson lab is interested in investigating the sense of taste and the molecules, cells, and circuits involved in chemosensation from the tongue and gut to the brain. Taste receptor cells on the tongue are specialized to be activated by only one of the five taste qualities, and signal that information to discrete populations of neurons in the gustatory ganglia through "labeled lines." This hard-wired, labeled line connectivity pattern is essential for our ability to correctly detect and discriminate tastes. The lab is interested in understanding how this gustatory circuit is organized at the cellular and molecular level.

Less well understood are chemosensory cells in the gut – which have many parallels to taste receptor cells – and may signal the presence of nutrients, toxins, and microbial metabolites to peripheral sensory neurons in the vagal ganglia. We aim to identify the cells and signaling mechanisms necessary for this gut-brain communication.

George Perry Named Chief Scientist, UTSA Brain Health Consortium

George Perry, a leading Alzheimer's researcher, was appointed the Chief Scientist in the newly established UTSA Brain Health Consortium, effective July 1, 2018.

Prior to joining UTSA as dean of the College of Sciences in 2006, Perry worked for more than 20 years at Case Western Reserve University, where he was professor of pathology and neurosciences and chair of the Department of Pathology. Perry earned a B.A. in zoology from the University of California, Santa Barbara and a Ph.D. in marine biology from the Scripps Institution of Oceanography. He received a postdoctoral fellowship in the Department of Cell Biology at Baylor College of Medicine.

Perry is recognized internationally as one of the top Alzheimer's disease researchers and has been cited over 80,000 times. He is editor for numerous journals and serves as editor-in-chief for the "Journal of Alzheimer's Disease."

"Dr. Perry is one of the leading Alzheimer's researchers in the world, particularly in the area of oxidative damage," said Jenny Hsieh, director of the Brain Health Consortium and Semmes Foundation Chair in Cell Biology. "We are incredibly fortunate that he will be devoting himself full time to continuing this critically important work and sharing his expertise with our consortium faculty."