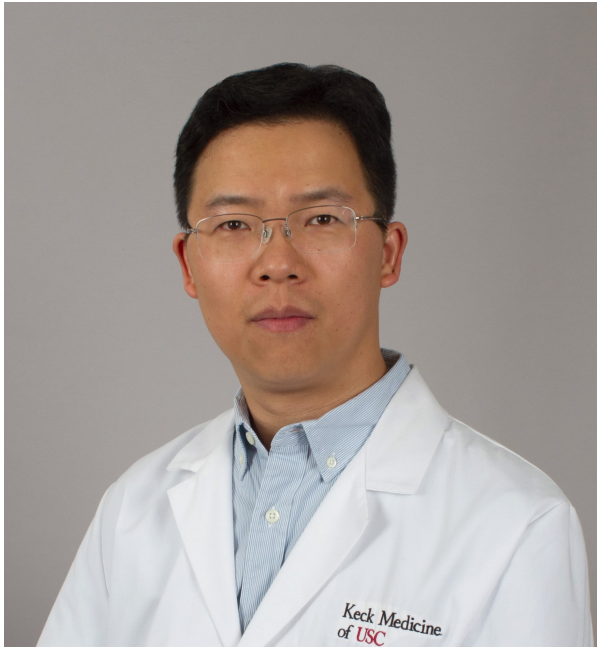




TULANE UNIVERSITY
SCHOOL of MEDICINE



Tulane University Center for Biomedical Informatics & Genomics

Research Seminar

Dr. Zhen Zhao

Assistant Professor

University of Southern California (USC)

Microvascular impairment in Alzheimer's disease and traumatic brain injury

2:00PM – 3:30PM, January 23rd, 2023

Hutchinson Bldg. 6th Floor - RM. 6065

On Zoom: <https://tulanehipaa.zoom.us/j/5497360913>

Abstract

Alzheimer's disease, the most common form of dementia in the elderly, has become the world's most expensive disease. Genome-wide association studies and whole genome sequencing projects under worldwide collaborations have identified key genetic variants and mutations underpinning the heritability of the disease, such as APOE and PICALM. As the vast majority of cases are sporadic late-onset (LOAD), a major research challenge is to understand how exactly genetic risks influence AD pathogenesis in a cell-type specific manner. Recently advancements in human iPSC models and CRISPR/Cas9 mediated genomic editing, as well as single cell multiomics and spatial transcriptomics, have brought new and unbiased approaches to this challenge; and new findings consistently pointed to non-neuronal dysfunctions as key driving forces towards neurodegeneration and dementia. Our work focuses on the neurovascular unit and the interaction of different brain cell types including neurons, glial and vascular cells in brain injury, aging and AD. We explore the fluence of AD risk genes on A β clearance, vascular impairment, neuroinflammation using iPSC and animal models, and identify new therapeutic opportunities and targets using genetic approaches.

Biography

Dr. Zhao received his Ph.D. training in neuroscience at USC on the topic of brain wiring and signaling mechanisms that control axonal branching. He was later trained with Dr. Zlokovic at USC on vascular contributions to neurodegenerative diseases, and became Assistant Professor in the Department of Physiology and Neuroscience at USC in 2017. His research team is keen to understand the microvascular injuries in Alzheimer's disease and other neurodegenerative disorders, as well as explore the crosstalk between the components of the neurovascular unit in health and diseases, and the interplay between genetic risk factors of Alzheimer's disease and environmental risk factors such as traumatic brain injury.