

# University of Houston - Biomedical Engineering Seminar

Friday, September 3, 2021, 12 noon

Via Zoom: <https://uh-edu-cougarnet.zoom.us/j/93512038041>

## Genes to Solutions:

### Genome Wide Association Studies in Ischemic Stroke and Ischemic White Matter Disease



**Paul A. Nyquist MD/MPH**

#### Abstract

This talk outlines a successful use of a genome wide association study (GWAS) involving collaboration with large international consortia. I will outline the history of the use of GWAS to identify candidate genes, study biological systems and then incorporate these findings into drug discovery. The present study explored the individual genetic architecture unique to both dementia and stroke for the first time identifying 33 candidate genes. These genes characterize pathways in biological systems that affect the brains response to chronic injury in the setting of small vessel disease. These genetic loci represent potential drug targets for prevention or treatment of dementia, stroke and other forms of brain injury related to ischemia. It is my research goal to further characterize their biological activity using a systems biology. This is the future of reverse translation and identifying new drug targets within affected populations particularly in complex disease.

#### Biosketch

Dr. Paul Nyquist is a professor of neurology, anesthesiology & critical care medicine at Johns Hopkins. He is a recognized clinical leader in neurocritical care and stroke. He also has a unique expertise in military operational medicine and diving medicine. Dr. Nyquist is a translational researcher focused on brain injury and systems biology related to ischemic white matter disease and cerebrovascular conditions. He is a member of international genomic research consortiums including the NEUROCHARGE, the International Stroke Genetics Consortium, and TOPMED. He has had held leadership positions in national and international societies including the board of directors of the Neurocritical Care. Dr. Nyquist has received numerous awards and recognition for his clinical and scientific efforts. These include a United Nations Community Service award, Navy commendations, and a young investigator award.