

**Title:** Dr. Patrie receives “BRAIN” grant.

**Summary:** A multi-discipline team directed by Steven M. Patrie, Ph.D., has received a \$100,000 grant from the UT System



Institute for Neuroscience and Neuro-technology research. In 2013, the Obama administration unveiled the [U.S. Brain Research through Advancing Innovative Neuro-technologies \(BRAIN\) Initiative](#) which endeavors to understand one of the most fundamental assets in existence, the human brain and mind. To meet this goal the U.T. Board of Regents authorized in 2014 the [U.T. BRAIN initiative](#) which funds a virtual U.T. System Neuroscience and Neuro-technology Research Institute with the purpose of promoting trans-disciplinary, multi-institutional research projects focused on neuroscience and neuro-technology challenges that will transform the fields of imaging, neuro-computation, and molecular mapping; the development of neuro-devices; and basic/translational/clinical investigations in intractable neurological diseases.

An immediate goal of the BRAIN initiative is to drive “blue-sky technologies and tools necessary to take current neuroscience research into a period of transformative breakthroughs”. To meet this goal, Dr. Patrie’s multidisciplinary team, with expertise ranging from bioanalytical chemistry, bioengineering, clinical sciences, and computational/statistical sciences, will create proteomics tools to address one of the most complex problems facing proteome research—extreme protein-level heterogeneity related to protein N-linked glycosylation. Glycosylation in the endoplasmic reticulum (ER) and GOLGI apparatus is an essential determinant of protein function in diverse cellular processes. Since the ER and GOLGI sense and respond via the secretory pathway to complex sets of inter- and intra-cellular information (genomic, environmental, metabolic, and other disease signals); the team hypothesizes that specific glycoproteome changes will derive from changes distinct to each brain-based disorders (Alzheimer’s disease, Parkinson’s disease, Multiple Sclerosis, etc.). Their molecular imaging tools will rapidly quantify glycosylation events on intact glycoproteins by a multidimensional proteomics workflow under development in the Patrie Lab that includes techniques such as isoelectric focusing, high performance liquid chromatography, and Fourier Transform Mass Spectrometry (FTMS).

We would like to thank the UT System Neuroscience Institute and Council for their support!

For more information on the UT BRAIN fund please see:

**WEB** <http://www.utsystem.edu/sites/neuroscience/ut-system-neuroscience>

For more information on the US Brain Research initiatives:

<http://braininitiative.nih.gov/>

For more information on Dr. Patrie and The Patrie Lab:

<http://www.utsouthwestern.edu/labs/patrie/>