***Name and degree(s)*:**

Brian K. Martin, Ph.D.

Research Focus Areas:

Neuroinflammation, gene regulation, cell motility in the central nervous system (CNS), CNS histology

Current Research Projects:

Project 1: Transcriptional regulation of solute carrier genes.

Solute carrier (SLC) genes encode a diverse range of transporter proteins that function to move molecules from the extracellular environment into the cell. Genetic polymorphisms in SLC genes are associated with a number of diseases including inflammatory bowel disease, gout and diabetes, among others. Of particular interest is SLC1A4, which is known to be associated with mental disability and microcephaly. Despite this fact, little is known about how these genes are regulated. My laboratory will be using molecular techniques to understand the proximal genetic regulatory motifs responsible for SLC gene regulation. Our initial focus will be on expression of the SLC1A4 gene in cells of the nervous system, but we also plan to look at other genes that are involved in neuroinflammation and other CNS disorders.

Project 2: Control of cellular migration in disorders of the central nervous system.

There are many diseases in which the migration of central nervous system (CNS) cells is protective, however in some cases improper movement of cells can be pathological. We will identify key mediators of migration in microglia (macrophages of the brain) and astrocytes (support cells for the CNS). Our studies will examine how those mediators influence migration, the signaling pathways involved and how pharmacologic agents alter migration.

Project 3: Immunohistochemistry of pathology samples

Immunohistochemistry is a critical part of medicine. Tissue samples are available from a number of sources and can be used for common immunohistochemistry but can also be used for genetic analyses. We will obtain neurological samples (glioblastoma, hemangioma, ependymoma) and using standard staining and immunohistochemical techniques evaluate the quality of the samples. We will also examine how we can extract DNA from the samples.

Link to publications on PubMed:
https://www.ncbi.nlm.nih.gov/pubmed/?term=brian+k.+martin

Student Research Opportunities at ICOM:
No specific skills are required or expected.
Anyone enthusiastic to obtain hands-on research experience is welcome in the lab.
Dependability and ability to work well with others are required.