## From fly to mammal: targeting ion channels in brain tumor

Xi Huang, Ph.D. (xi.huang@sickkids.ca)

Canada Research Chair in Cancer Biophysics Scientist, Developmental & Stem Cell Biology Program, The Hospital for Sick Children Principal Investigator, Arthur and Sonia Labatt Brain Tumour Research Centre Assistant Professor, Department of Molecular Genetics, University of Toronto

Ion channels are transmembrane proteins that regulate ion flow across cell membrane and accessible for pharmacological intervention. However, the role of ion channels in brain tumor is largely unexplored. We use multi-disciplinary approaches including *Drosophila* and mouse genetics, xenograft modeling, cell biology and electrophysiology to define the mechanisms by which ion channels regulate brain development and tumorigenesis, and develop ion channel drugs to treat brain cancer. I will discuss our recent *Drosophila* genetic screening that has led to the identification of multiple ion channels that critically regulates the growth of fly brain tumor. Our functional studies using patient-derived cells and preclinical mouse models show that these ion channels play evolutionarily conserved functions to promote malignancy in mammalian medulloblastoma and glioma. Since ion channels represent a large class of drug targets with historic success to treat human diseases, we leverage brain tumor-specific dependency of specific ion channels to develop precision therapy.