

Name: **Simranpreet Dhadha**

SFU faculty/major: Science/Behavioral Neuroscience

**Title of presentation:** Establishing behavioral assessments of epilepsy in zebrafish to study phenotypic consequences of human K<sup>+</sup> channel mutations

### **Abstract**

Genome sequencing of individuals with intellectual disability, epilepsy disorders and other neurological abnormalities has revealed mutations in the KCNQ5 potassium channel gene. These mutations were hypothesized to contribute to neuronal hyperexcitability and consequential seizure activity. The KCNQ5 gene encodes the voltage-gated potassium channel, Kv7.5, which is widely expressed in the brain. This channel prevents hyperexcitability by impeding repetitive firing. Zebrafish (*Danio rerio*) have previously been used as a model organism to study genetic epilepsies. This study intended to establish a behaviour assay to screen for disease-relevant phenotypes (i.e., locomotion, seizure activity) with reproducible tests that allow for high-throughput screening. Thus, behavioural responses from wild type zebrafish were collected as preliminary data using the Touch-Evoked Response and the Open-Field tests. This assay was designed to serve as a screening method for zebrafish that will have the KCNQ5 gene mutations that were previously identified through sequencing.