

# STUDENT RESEARCH WEEK

POSTERS - TALKS CREATIVE WORK

## **Fasting Fish: Does diet affect memory and brain cell density in zebrafish?**

**Talk:** Adrian Johnson

*Bachelor of Arts: Honors Psychology, MacEwan University*

**Faculty mentor:** Dr. Trevor Hamilton

*Arts & Science: Psychology, MacEwan University*

### **Abstract**

The relationship between the effect of diet alterations on cognition, behaviour and memory is not fully understood. Previous research has shown that high fat diets induce oxidative stress that may facilitate several cellular problems that leads to altered memory consolidation. This, however, may not portray the full picture as other research suggests that more nutritional content can allow more cellular capabilities to consolidate memories. Regardless, the areas of the brain that are most likely altered are the medial temporal lobe structures including the mammalian hippocampal formation, or the pallium in zebrafish. In the present study we altered the quantity and schedule of food that was fed to zebrafish (*Danio rerio*) then tested their anxiety-like behaviour and object recognition memory. Zebrafish were fed a normal (NF) diet, twice the amount of food daily (nutrition enhanced – NE), or normal feeding every second day (intermittent fasting - IF). After behavioural testing we also used immunohistochemistry to study neuronal density in regions of the zebrafish brain that are thought to mediate anxiety and memory. We found altered memory in the NE compared to NF groups. Analysis of neuronal density in the groups will also be discussed.

Co-Authors: Adrian Johnson, Carolyn Boychuk, Travis Johnston, Russell Powell, Gustavo Torino, Bradley Kerr, and Trevor J. Hamilton