LIAM MCKENNA
STUDENT, BIOLOGY

DR. MARIOLA JANOWICZ
ASSOCIATE PROFESSOR, BIOLOGICAL AND ENVIRONMENTAL SCIENCES

DR. CARLA SALVADO
ADJUNT PROFESSOR, BIOLOGICAL AND ENVIRONMENTAL SCIENCES

THE POTENTIAL INHIBITORY EFFECTS OF ACETAMINOPHEN ON HUMAN COX-1 ENZYME UNDER VARYING HUMAN BODY TEMPERATURE EXTREMES (32,37,42*C)

Acetaminophen is one of the top selling analgesic and antipyretic over the counter medications in Canada, with an estimated 4 billion doses sold annually. Acetaminophen has been attributed to approximately 4500 annual hospitalizations, due to intentional and unintentional acetaminophen-associated liver injury. Despite its liver injury risk and rate of sale, acetaminophen's true mechanism of action remains unknown. Acetaminophen's action has been partially attributed to human COX enzyme inhibition, the inhibitory effects of acetaminophen on COX enzymes in varying temperatures has not been tested, despite clear antipyretic mechanism discrepancies in hypothermia vs. hyperthermia case studies. To test the potential inhibitory effects of acetaminophen on human COX-1 enzyme at varying temperatures, I ran a COX-1 inhibitor screening assay kit incubated under representative hypothermic, hyperthermic and normal body temperatures, with acetaminophen acting as the inhibitory agent. I hypothesized that acetaminophen will have profound inhibitory effects on COX-1 enzyme through all temperatures, with 32*C being the most effective inhibitory temperature with statistical significance. As of current data analysis, the data is pointing to consistency with my hypothesis.

Research Advisor: Dr. John Walsh