**Effects of Early Exposure of PFAS F53B on Zebrafish (*Danio rerio*) reproduction**

The presence of the “forever chemicals” per-and polyfluoroalkyl substances (PFAS) in Wisconsin drinking water is a growing concern for local regulatory agencies and scientists. “Legacy” PFAS such as PFOS and PFOA have been demonstrated to be capable of disrupting the endocrine system, leading to reproductive diseases in humans. PFOS and PFOA have been linked to several detrimental effects such as changes in sperm quality and fertility, anomalies in gonad development, increased estrogen levels and impacts on sex differentiation in zebrafish. As these legacy PFAS are phased out, little information is known about the toxicity of their replacements. A few studies show that replacement PFAS 6:2 chlorinated polyfluorinated ether sulfonate (F53B) causes reproductive toxicity and disrupt the endocrine system of adults, but we do not know if it could disrupt the early stages of gonad development, causing infertility later in life. This study is the first of my thesis work and aims at elucidating the effects of exposure to F53B during early development and reproduction later in life. I will test the hypotheses that exposure to F53B during critical stages of sex differentiation and development will shift sex ratios towards males; cause a reduction in egg production; reduce the proportion of eggs that are fertilized; impair quality of offspring; and have a larger impact on female fertility compared with males. Fertilized eggs will be randomly distributed into 4 experimental groups per dose, each consisting of 40-50 embryos. Fish will be exposed to different concentrations of F53B (0, 0.08, 8, or 80 µg/L) through the period of sex differentiation (0 to 35 days post fertilization) with approximately 100% of the dosing solution renewed daily.

Larvae from exposed groups recorded a significant number of physical deformities including pericardial edema (26.32%), bent spine (29.82%), no eyes (12.18%), yolk sac edema (29.82%) and tail malformation/bent tail (1.75%) in comparison to the control group.

Following exposure, juvenile zebrafish will be raised in an aquarium system in contaminant free water until they reach adulthood for reproduction assays. Data from these studies will lay the groundwork for future characterization of F53B as an endocrine disruptor and can be used to predict risk to wild fish species and human health.