Title: **Melatonin’s effect on circadian and developmental gene expression in *Danio rerio***

**Abstract**: Melatonin (*N*-acetyl-5-methoxytryptamine) is a hormone synthesized in the pineal gland that has broad functionality in vertebrates and a wide range of potential clinical applications. We use zebrafish (*Danio rerio*) as a model system to determine the effects of melatonin on circadian and developmental gene expression in early development. Circadian rhythms are driven by a transcriptional-translational feedback loop called the circadian clock. These intracellular circadian clocks can be found in all major organs systems and tissues in zebrafish. We tested the hypothesis that pineal secreted melatonin is coordinating these peripheral clocks in zebrafish, much like the Suprachiasmatic Nucleus (SCN) of the hypothalamus coordinates peripheral clocks in humans. Using whole-mount RNA *in situ* hybridization (WISH) to evaluate gene expression, we tested the ability of melatonin or a melatonin receptor antagonist to alter circadian gene expression. Our data suggest that melatonin does not impact expression of circadian genes. In addition to studying circadian rhythms, we began to investigate melatonin’s ability to accelerate the onset of gene expression in developing zebrafish using RT-qPCR and WISH. Our preliminary work suggests that melatonin can accelerate the initiation of gene expression in zebrafish. Together, these projects further our understanding of the role of melatonin in developing zebrafish and vertebrates.