

**Anesthetic Effects on Mitochondrial Localization During**

**Neural Development in Zebrafish**

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**Mentored Research Training Grant**

**(MRTG)**

**7/1/2020**

The medications used to put people under general anesthesia are small molecules that bind to many different proteins. How the drugs cause people to go off to sleep is largely unknown. In this study, we aim to use a five-day-old zebrafish as a model to identify genes important in the animal responding to the drug. To establish the zebrafish model, we will place the zebrafish in solution containing the drug at different concentrations and look for loss of movement to the anesthetic at doses similar to humans. Following establishment of the zebrafish model, we will look at the kinesin motor protein pathway to determine if the proteins are important in anesthetic response. We hypothesize that the motor proteins will be important in moving key structures, such as the mitochondria, along the nerve and without the proteins there will be a change in response to anesthetics. Finally, we will look at the mitochondria within the zebrafish to determine if there is a difference in where the mitochondria are located within the cell. This study will establish the zebrafish as a model for anesthesia and will begin to define how location of mitochondria within the cell influences response to anesthetic drugs.