File Overview

My analysis tutorial focused on developing a functional code to plot data to determine the effect of paraquat, rotenone, and a combination of paraquat and rotenone on the morphology of zebrafish, particularly looking at the ocular distance and length of zebrafish. I collected this data in a lab I was in 3 years ago. In this lab, we raised zebrafish larvae until 12 days post fertilization. To collect data, each zebrafish larva was placed in individual wells of a 96-well well plate. Photos were taken of each zebrafish so that ocular distance and length could be measured using ImageJ. Length is a standard parameter for zebrafish toxicology studies in general, while ocular distance is a standard parameter for zebrafish neurotoxicology studies. Ocular distance was particularly significant for this research, as the goal was to determine if paraquat, rotenone, or a combination of paraquat and rotenone has a significant impact on neurodegeneration in zebrafish.

My goal for this analysis tutorial was to create a functional code that would visualize zebrafish ocular distance and length when treated with paraquat, rotenone, and a combination of paraquat and rotenone. These plots should indicate whether paraquat, rotenone, or a combination of paraquat and rotenone would produce the greatest effect on zebrafish ocular distance and length. Ultimately, my plots indicate that rotenone was noticeably less toxic than paraquat or the combination of paraquat and rotenone.

I wanted to develop two types of codes – one to depict the ocular distance and length data represented in a scatter plot and another to represent the averages of the ocular distance and length data in a bar graph with error bars of the standard deviations. We focused largely on scatter plots in this course, so I was excited to learn both how to create bar diagrams and how to add error bars. Adding error bars was probably the most challenging aspect of this code, as it was more difficult to find helpful sources to learn how to do this.

References:

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