Prospectus

Guidelines:

Develop new, functional code that addresses at least one research question about biological or environmental systems. Your coding application should be documented in files that you share publicly on Github, with more specific requirements detailed below. You will give a short presentation summarizing the tutorial (5 to 10 minutes) at the end of the semester.

Prospectus - due by Tues Apr 1 at 12:30pm

Develop an outline of your analysis tutorial idea that includes the following (see example prospectus)...

1. An informative title
2. At least one explicitly stated research question that necessitates development of a coded procedure/analysis.
3. At least one objective stating what the code procedure is about and what the finished code will hopefully do.
4. A few statements about your intended approach/methods
5. At least 3 references from peer reviewed scientific journals related to your tutorial idea and research question(s)

My Prospectus Proposal:

1. Title

GGPlot analysis of morphological effects of paraquat and rotenone exposure on the zebrafish model, to determine both the individual and combined effects.

2. Research question(s)

Is the ocular distance of zebrafish negatively affected by exposure to rotenone, paraquat, or a combination of rotenone and paraquat? Is the length of zebrafish negatively affected by exposure to rotenone, paraquat, or a combination of rotenone and paraquat?

3. Objective(s)

The goals are to explain the methods and code used for designing a functional code to visualize various parameters of zebrafish exposed to paraquat, rotenone, and a combination of paraquat and rotenone.

4. Approach

I will be using various sources, including Geeks for Geeks and Wickham's R for Data Science, to develop a functional code for creating plots of the data collected.

5. Selected References

Dicey. (2022, May 1). Error in `check_aesthetics(). Posit Community. https://forum.posit.co/t/error-in-check-aesthetics/135885

GeeksforGeeks. (2021b, July 21). Plot mean and standard deviation using GGPLOT2 in R. https://www.geeksforgeeks.org/plot-mean-and-standard-deviation-using-ggplot2-in-r/

Hadley Wickham, M. Ç.-R. (n.d.). R for Data Science (2E). R for Data Science (2e). https://r4ds.hadley.nz/

Holtz, Y. (n.d.-b). *Data visualization with R and GGPLOT2: The R Graph Gallery*. Data visualization with R and ggplot2 | the R Graph Gallery. https://r-graph-gallery.com/ggplot2-package.html

OpenAI. (2025). ChatGPT (May 1 version) [Large language model]. https://chat.openai.com/chat

Robea, M.-A., Strungaru, Ștefan-A., Lenzi, C., Nicoară, M., & Ciobică, A. (2018). (PDF) the importance of rotenone in generating neurological and psychiatric features in zebrafish-relevance for a parkinson's disease model. https://www.researchgate.net/publication/325618749_The_Importance_of_Rotenone_in_Generating_Neurological_and_Psychiatric_Features_in_Zebrafish-Relevance_for_a_Parkinson's_Disease_Model

Robea, M.-A., Balmus, I.-M., Ciobica, A., Strungaru, S., Plavan, G., Gorgan, L. D., … Nicoara, M. (2020). Parkinson's Disease-Induced Zebrafish Models: Focusing on Oxidative Stress Implications and Sleep Processes. *Oxidative Medicine and Cellular Longevity*, *2020*, 1–15. https://doi.org/10.1155/2020/1370837