

Tabitha Tcheau
INFO W18
Project Proposal

Analyzing endurance of KO vs WT mice

This project was inspired by research conducted in the lab I was working in at UC Berkeley, as a Molecular and Cell Biology student.

The purpose of this code is to help automate the lab procedure of measuring endurance of KO versus WT mice for a particular gene. KO stands for knockout; KO mice have a non-functional version of the gene (hence, the term knockout). WT stands for wild type; these mice have the functional gene. The research objective was to determine if/how lack of the gene affected the organism's fitness. The laboratory procedure entailed having the mice run on treadmills, and measuring their endurance, which is defined as time before fatigue (i.e. when the mice gave up running).

The user will be prompted to select mouse type (KO or WT), to enter mouse weight, to enter endurance, etc. All information will be inserted into a dictionary, and a graph will be generated from the inserted data.

Class: mouse

Attributes-

Weight- we will determine if there is a correlation between endurance, and if it is a positive or negative one

Sex - affects endurance (general trend is that males endurance is greater than females)

Mouse_type - KO or WT

Endurance - time before mice cannot run anymore

Class: treadmill_speed

Attributes-

Velocity - the velocity (mph) of the treadmill

After the user is prompted to input all these variables, data will be plotted on a graph. Code will entail importing a package like ggplot (but I will explore further ways to generate graphs using python). I'm still figuring out how I will organize the data. I think I will have one graph with x-variable as weight, y-variable as endurance for each of the mouse types, or I will have both curves on a single graph. I am thinking also of generating a bar graph to see how sex might be related to endurance, or if the gene might be affecting one sex more than the other, by having four bars: endurance of the WT males, WT females, KO males, and KO females. I will also need to have a graph that relates intensity (velocity) of the treadmill and endurance of each mouse type.