

Genetics 305: QTL Analysis

An Exploration of Olfactory Bulb Volume Variation in the Mouse

This section of the course is participatory in nature. Half of the learning outcomes will be achieved by actually working through and understanding each step in the QTL analysis, thus class attendance will be part of the points allocated to each day's activity. The following section lists all of the pieces of the project you will be required to hand in. The specific information that you will be responsible for each day is listed at the end of each day's handout. This is the information that must be handed in at the end of the project. Most of the analysis will be done in class and handing in the final analysis should not be a problem if you have kept up.

Parts I and II: Measuring Brain Olfactory Bulb and Brain Volume

- Attendance
- One paragraph that describes how we converted the measured area of the olfactory bulb into the final Unshrunk Olfactory Bulb Volume.
- Typed out results from the Brain Measurement Sheets

Part III: Multiple Regression Analysis and QTL Mapping

- Attendance
- One paragraph that describes: (1) what extraneous variable contributes most to the variation we observed in the olfactory bulb and how we know this and (2) what the residual values represent after multiple regression analysis.
- Linkage Region Information that you identify in class

Part IV Candidate Gene Identification and Microarrays

- Attendance
- 2 Candidate Genes and Expression data that you identify in class

Part V Allen Brain Atlas Expression Data

- Attendance
- Brain Expression Analysis for 1 Candidate Gene that you identify in class

At the end of the project you will put together the analysis information from each part of the project and hand them *in the order* that they were done. *This will be done on an individual basis and not as a group. Although you are working with people in class, the final product must be written in your own words and put together individually.* The total points will be determined by:

- Attendance in class
- A clear and well-organized presentation of the information you found.
- The information identified in each section.
- The individual final packet will be due at the beginning of your class time on the last day of class, April 25th. There will be a 5-point deduction for each day it is late.

I want to reiterate that you make sure to actively participate in the analysis. A significant portion of the final exam will be on the QTL analysis and how it was done.