Faculty of Life
Sciences
Systems Genetics 2025

Final Project -
Causality analysis

Please note: This assignment should be submitted in **pairs**. Each pair should solve the assignment independently, although general discussion between students is allowed. Copying code and solutions is forbidden.

Causality analysis:

- Data: mention the data you're using, and write a short summary of the previous assignments HW2 and HW3 (QTL and eQTL analysis, with combined results).
- Apply the causality test on the results from previous parts. Run causality test on each pair of gene and phenotype where both the QTL and the eQTL are located in a nearby genomic position (or, of course, have the same position).
- Report the predicted relations among the QTL, associated gene, and phenotype.
- Apply permutation test to get statistical significance for one or a few specific causality hypotheses.
- Run the test on 10 triplets and explain the choice you made and the design of permutation test in detail.

Submission Guidelines:

1) Submit a zip file named hw4_<your_id1>_< your_id2>.
2) Provide your code, report and everything you find necessary.
3) Add the results of your code to the report, don't make us run it.
4) Elaborate about the decisions you're making throughout the way.
5) We advise you to submit a clean and organized code. In case of wrong answers, it will assist us in finding the cause and reduce points deduction.