

Homework 3

A world of interactions

Important dates:

- Presentation date: to be determined

Marks:

- 25 points for presentation
- 30 points for report

Instructions:

- Use PLINK and/or R to analyse the provided data and answer the following questions.
- Present and highlight your analysis results individually or in group (on your choice). In case of group presentation, the score will be equal for all members.
- Submit a report (introduction, discussion and conclusion sections), one report per student, to **kridsakorn.chaichoompu@ulg.ac.be within the presentation day.**

Questions

1. Quality control process:
 - What are the quality control steps that you should always carry out? Why? (motivate)
 - How many individuals and SNPs are there before and after each steps of the quality control process?
2. Population structure analysis:
 - Assess the absence/presence of population structure via principal component analysis (PCs)
 - Interpret the PC plots: PC1 vs PC2, PC1 vs PC3, PC2 vs PC3.
3. SNP interaction analysis:
 - Investigate whether SNPxSNP interactions exist using PLINK WITH/WITHOUT correction for potential population structure.
 - What is the overlap/difference between both approaches in terms of identified interactions? (compare with the Bessonov and Evans papers discussed before)