Homework assignment, April 2019
Report on analysis of population genomics data from a paper

Description of homework assignment

Our part of the course will be assessed with a homework assignment (courtesy of Vitor Sousa). For this exercise, we are providing you with a subset of data from de Manuel *et al.* (2016 *Science*) (https://science.sciencemag.org/content/354/6311/477) – see the data file "Chimp data" (genotype matrix) and the details of the population samples (especially the map) in dropbox.

Your task is to analyze this dataset in order to characterize one of the following:

1. Genetic diversity of populations/species

2. Population structure of populations/species with F_{ST} and PCA

3. Perform a *D* statistical analysis to detect introgression between Bonobo and 1 subspecies of common chimpanzees (assume that humans are fixed for the ancestral state).

You can choose to answer a minimum of **1 question** from the list (1-3) above; if you would like to do more, e.g. answer 2 or all 3 questions, we encourage you to do so.

Report format and requirements

- You are expected to write a brief report in English. The report should be 1-2 pages max. if you answer 1 question but can of course be longer if you to choose to answer more / all questions.
- Please use (ont size 12 of Arial or Times New Roman, single spaced.
- Your report should:
    - follow the following structure: Methods + Results + Discussion
    - describe the data and methods and settings you used
    - describe the results you obtained and discuss the results.
- Your report can also contain figures and tables.

Your report won't be formally graded – the exercise it's a simple fail/pass assignment. The point is not really about giving you a grade but to give you the opportunity to practice your skills and evolutionary genetic thinking by solving a practical problem in *R*. Upon request we would be happy to provide you with feedback on your report via e-mail or skype if you wish. If you have any questions or problems during your work please contact Margot at margot.paris@unifr.ch.

Submission deadline

Please submit your report in word or pdf format by e-mail to margot.paris@unifr.ch by **5 May 2020, 6 PM** the latest.

Thomas Flatt & Margot Paris, April 2020