

## **NORBIS: Genetic epidemiology and genome-wide association analyses**

COURSE PROGRAM per May 31, 2018

Lecturers: Håkon K. Gjessing, Anil Jugessur, Rolv Terje Lie, Miriam Gjerdevik, Øystein Ariansen Haaland, Øyvind Helgeland, Julia Romanowska, Jon Bohlin, Bjørn Olav Åsvold

### **Day I: Monday June 4**

10:00-11:30 Getting to know R better. Presentations/practicals. (MG, ØAH, JR)

[Using R: Brief introduction, data handling, R-packages in genetics. R-studio](#)

**NOTE:** Participants who are already very familiar with R may meet at 11:30.

11:30-12:00 Welcome & Introduction. Course overview. (HKG)

12:00-13:00 LUNCH

13:00-14:00 General introduction to genetic epidemiology Lect. I. (AJ)

14:00-17:00 R in genetics. Presentations/practicals. (MG, ØAH, JR)

[More on R, Read data into Haplin, PLINK \(only to produce ped-files\)](#)

### **Day II: Tuesday June 5**

09:00-11:00 General introduction to genetic epidemiology Lect II+III. (AJ)

11:00-12:00 Registry studies, familial clustering, recurrence risk. Lecture. (RTL)

12:00-13:00 LUNCH

13:00-17:00 Quality control, Imputations etc. PLINK. Presentations/practicals. (ØH)

### **Day III: Wednesday June 6**

09:00-09:30 Data preparation of GWAS family data with Haplin/ff package. Lectures/practicals. (MG, ØAH, JR)

09:30-12:00 Association analyses in Haplin. Lectures/practicals. (HKG, MG, JR)

[Models behind Haplin, Analyses in Haplin, Interpretations of results](#)

12:00-13:00 LUNCH

13:00-13:30 Sample size calculations for association analyses. (MG)

13:30-14:45 Using Haploview. Primer to meta-GWAS. (AJ)

14:45 -15:30 Using Hettionet (JR)

15:30-17:00 Post-processing of results. (ØAH) [Some topics: qq-plots, q-values \(from Bioconductor\), regional plots, volcano plots, multiple testing corrections.](#)

**19:00 COURSE DINNER!**

### **Day IV: Thursday June 7**

09:00-10:00 Special inheritance models in Haplin. X-chromosome, Parent-of-origin effects. Lecture. (HKG)

10:00-12:00 EWAS/Methylation data analyses (JB)

12:00-13:00 LUNCH

13:00-14:00 Exercises EWAS/Methylation (JB)

14:00-15:00 Mendelian randomization (BOÅ)

15:00-16:00 Start group work/exercises

**Day V: Friday June 8**

09:00-11:00 Group work/exercises continued.

11-11:15 Presentation from NORBIS (Christine Stansberg)

11:15-12:00 Brief presentations by participants.

12:00-13:00 LUNCH

13:00-14:30 Orofacial clefts case study (RTL)

14:30-16:00 Wrap-up/summary, prepare take-home project, course evaluation

Return take-home project within June 22