

NORBIS: Genetic epidemiology and genome-wide association analyses

COURSE PROGRAM 2022

Course Home Page:

https://folk.uib.no/gjessing/genetics/software/haplin/other/NORBIS_2022/intro/

Lecturers:

Håkon K. Gjessing (HKG), Anil Jugessur (AJ), Rolv Terje Lie (RTL), Øystein Ariansen Haaland (ØAH), Julia Romanowska (JR), Jon Bohlin (JB), Yunsung Lee (YL), Miriam Gjerdevik (MG), Bjørn Olav Åsvold (BOÅ), Siri Skodvin (SS), Marc Vaudel (MV), Gemma Sharp (GS)

Note: There may be minor changes to the program/schedule during the course

Note: There will typically be 15 minutes for break/questions between lectures

Note: You'll find a list of the lecture rooms at the end of this program

Day I: Monday, May 30 (All day in Borgaskaret)

09:30-10:00

- *Welcome & Introduction. Course overview. (HKG)*
- *Introduction round!*

10:00-11:00 (Lecture)

- *General introduction to genetic epidemiology Lecture I, part I (AJ)*

11:00 - 11:15 - *BREAK*

11:15-12:00 (Lecture)

- *General introduction to genetic epidemiology Lecture I, part II (AJ)*

12:00-13:00 LUNCH

13:00-16:00 (Individual work, with breaks)

- *Practicals and presentations (ØAH + JR + MG + SS):*
- *R in genetics. More on R, PLINK (to produce ped-files)*

Day II: Tuesday, May 31 (All day in Lateralen)

08:15-09:15 (Lecture)

- *General introduction to genetic epidemiology Lect II (AJ)*

09:30-10:15 (Lecture)

- *General introduction to genetic epidemiology Lect III (AJ)*

10:15 - 11:30

- *GWAS Quality control, Imputations etc., using PLINK and other software. (MV)*

11:30-12:30 LUNCH

12:30-14:00 (Lectures and individual work, with breaks)

- *GWAS Quality control, Imputations etc., using PLINK and other software. (MV)*

14:00-15:00

- *Data preparation of GWAS family data with the Haplin package. (ØAH + JR + MG)*

Day III: Wednesday, June 1 (Edda before lunch, Midgard after lunch)

08:15-9:15 (Lectures/practicals)

- *EWAS/Methylation data analyses. (JB)*

09:30-10:30 (Exercises)

- *EWAS/Methylation (JB)*

10:40-12:00 (Lecture)

- *Case study: Methylation age clocks (YL)*

12:00-13:00 LUNCH

13:00-14:00 (Exercises/group work)

- *EWAS (YL)*

14:00-15:00 (Lecture/practicals)

- *Polygenic risk scores (YL)*

19- CONFERENCE DINNER at restaurant

Day IV: Thursday, June 2 (All day in Edda)

08:15-09:15 (Lecture)

- *Association analyses in Haplin. (HKG + JR)*
- *Models behind Haplin, Analyses in Haplin, Interpretations of results*

09:15-09:30 BREAK

09:30-10:30

- *Special inheritance models in Haplin. X-chromosome, Parent-of-origin effects. (HKG)*

10:30-11:30 (Lectures/practicals)

- *Sample size calculations + power for association analyses. (HKG + MG)*

11:30-12:30 LUNCH

12:30-13:30 (Lectures/practicals)

- *Mendelian randomization (BOÅ)*

13:30-13:45 BREAK

13:45-15:45 (Lectures/practicals)

- *Post-processing of results. (ØAH + MV)*

Day V: Friday, June 3 (All day in Lateralen)

08:15-09:15

Multiple testing and GxE w/Haplin (HKG) + GxMe (JR)

09:30-10:30 (Lecture)

- *Registry studies, familial clustering, recurrence risk. Lecture (RTL)*

10:45-11:30

- *Epigenetics/PACE consortium (GS)*

11:30-12:30 LUNCH

12:30-13:30 (Lecture)

- *Orofacial clefts case study. (RTL)*

13:30-14:30 (Lecture/practicals)

- *Bioinformatics services and databases (JR)*

14:45-15:10

- Wrap-up/summary, prepare take-home project, course evaluation
- *Return take-home project. Deadline to be announced*

Lecture rooms

Borgarskaret

Description: <https://rom.app.uib.no/romInfo/q.php/401/3F15>

Map:

<https://use.mazemap.com/#v=1&config=uib&zlevel=3¢er=5.358203,60.381743&zoom=18&sharepoitype=poi&sharepoi=1000701350&campusid=35>)

Lateralen

Description: <https://rom.app.uib.no/romInfo/q.php/411/G01.002>

Map:

<https://use.mazemap.com/#v=1&config=uib&zlevel=1¢er=5.359333,60.380577&zoom=18&sharepoitype=poi&sharepoi=1000698270&campusid=35>

Midgard

Description: <https://rom.app.uib.no/romInfo/q.php/401/0B20>

Map:

<https://use.mazemap.com/#v=1&config=uib&zlevel=-1¢er=5.358592,60.381605&zoom=18&sharepoitype=poi&sharepoi=1000701856&campusid=35>

Hugin

Description: <https://rom.app.uib.no/romInfo/q.php/401/0A15>

Map:

<https://use.mazemap.com/#v=1&config=uib&zlevel=-1¢er=5.358656.60.381825&zoom=18&sharepoitype=poi&sharepoi=1000701930&campusid=35>

Edda

Description: <https://rom.app.uib.no/romInfo/q.php/401/0H17>

Map:

<https://use.mazemap.com/#v=1&config=uib&zlevel=-1¢er=5.358063.60.381650&zoom=18&sharepoitype=poi&sharepoi=1000701872&campusid=35>