Dates: June 17 – 21, 2019
Location:
Institute for Social Research, Room 1430
University of Michigan

Before you arrive in Ann Arbor…

Module 1: What is a server (3:45)
Module 2: Computing Hardware (4:31)
Module 3: Concepts of Command Line (4:14)
Module 4: Introduction to R concepts (7:38)

MONDAY, June 17

8:30 - 9:00 Light breakfast and coffee served

9:00 - 9:30 Introduction to the Workshop
Jessica Faul & Colter Mitchell

9:30 - 10:15 Introduction to biology and genetics – understanding genomic data in populations
Kelly Bakulski

10:15 - 11:00 Collecting, extraction, and storing genetic material; cost and coverage of different platforms/chips
Jessica Faul

11:00 - 11:15 Break

11:15 - 12:00 Population stratification and admixture – avoiding the pitfalls and utilizing the strength of ancestry and admixture
Jennifer Smith

12:00 - 1:00 Lunch Provided

1:00 - 1:30 Online genomic resources
Jessica Faul

1:30 - 4:30 Lab:
Linux Mini and Computing
Understanding genetic file types and the content of the files
Viewing and exploring Genome-wide data
Erin Ware
5:00  
*Social Event at ISR*

**TUESDAY, June 18**

8:00 - 8:30  Light breakfast and coffee served

8:30 - 9:00  Recap of the previous day and questions

9:00 - 9:45  *Quality control – estimating and interpreting minor allele frequency, understanding strands, Hardy-Weinberg equilibrium, heterozygosity, linkage disequilibrium,*  
Jennifer Smith

9:45 - 10:30  *Imputation – basic explanation of genotype imputation, inputs and outputs, using online reference panels HapMap and 1000 Genomes Project*  
Jennifer Smith

10:30 - 10:45  Break

10:45 - 11:15  *GWAS and meta analyses - alleles, effects, models, p-values, SNP-based heritability*  
Jennifer Smith

11:15 - 12:00  *Statistical Power issues - multiple testing and replication*  
Colter Mitchell

12:00 - 1:00  Lunch (on your own)

1:00 - 4:00  *Lab: Understanding and working with different genomic coding schemes*  
*Assessing genomic data quality control*  
Erin Ware

**WEDNESDAY, June 19**

8:00 - 8:30  Light breakfast and coffee served

8:30 - 9:00  Recap of the previous day and questions

9:00 - 9:45  *Structural and rare variants*  
Jennifer Smith

9:45 - 10:30  *Polygenic scores: construction, utility, use in research*  
Colter Mitchell

10:30 - 10:45  Break

10:45 - 11:45  *Genomic SEM*  
Andrew Grotzinger, University of Texas at Austin

11:45 - 12:15  *Telomeres*
THURSDAY, June 20

8:00 - 8:30 Light breakfast and coffee served
8:30 - 9:00 Recap of the previous day and questions
9:00 - 9:45 Gene-environment interaction models – from candidate genes to GWAS data-based models, formal testing GxE
   Colter Mitchell
9:45 – 10:00 Break
10:00 – 11:00 Examining the Dynamic Gene: Epigenetics
   Colter Mitchell
11:00 - 12:00 The Epigenetic Clock
   Morgan Levine, Yale University
12:00 - 1:00 Lunch (on your own) – Sonic Lunch downtown Ann Arbor
1:00 - 2:15 Longitudinal Study of SES and Telomeres in Costa Rica
   David Rehkopf, Stanford
2:15 - 4:30 Lab: Genomic SEM
   Erin Ware and Andrew Grotzinger
5:00 Social Event at the Pretzel Bell, Captain’s Room, Main St Ann Arbor

FRIDAY, June 21

8:00 - 8:30 Light breakfast and coffee served
8:30 - 9:00 Recap of the previous day and questions
9:00 - 9:45 Collaborating – working with labs and consortia and finding a collaborator
   Jessica Faul
9:45 - 10:15 Data Sources – HRS/HRS Sister Studies, AddHealth, Fragile Families, UKBiobank,
MESA

10:15 - 10:30 Break

10:30 - 12:00 Student Presentations I
Students and Faculty Panel

12:00 - 1:00 Lunch Provided

1:00 - 3:00 Student Presentations II
Students and Faculty Panel

3:00 - 3:15 Break

3:15 - 3:45 Pitching your ideas and publishing your work - How to justify your work in a grant application, common review complaints, journals and funding Ethics
Faculty Panel

3:45 - 4:00 Final Remarks and Evaluation of Course