Dates: June 15 – 19, 2020
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 15

8:30 – 9:15 Light breakfast and coffee served
9:15 – 9:45 Introduction to the Workshop
Jessica Faul & Colter Mitchell
9:45 – 10:45 Introduction to biology and genetics – understanding genomic data in populations
Kelly Bakulski
10:45 – 11:00 Break
11:00 – 11:45 Collecting, extraction, and storing genetic material; cost and coverage of different platforms/chips
Jessica Faul
11:45 - 12:45 Boxed Lunch Provided
12:45 – 1:30 Quality control – estimating and interpreting minor allele frequency, understanding strands, Hardy-Weinberg equilibrium, heterozygosity, linkage disequilibrium,
Jennifer Smith
1:30 – 2:00 Imputation – basic explanation of genotype imputation, inputs and outputs, using online reference panels HapMap and 1000 Genomes Project
Jennifer Smith
2:00 – 4:45 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 16

8:00 – 8:30 Light breakfast and coffee served
8:30 – 9:00 Recap of the previous day and questions
9:00 – 10:00 *The Health and Retirement Study*  
Simulcast to Oxford University  
David Weir
10:00 – 10:15 Break
10:15 – 11:00 *Population stratification and admixture – avoiding the pitfalls and utilizing the strength of ancestry and admixture*  
Jennifer Smith
11:00 – 11:45 *GWAS and meta analyses - alleles, effects, models, p-values, SNP-based heritability*  
Jennifer Smith
11:45 – 12:45 Lunch (on your own)
12:45 – 1:15 *Online genomic resources*  
Jessica Faul
1:15 – 4:00 *Lab: Understanding and working with different genomic coding schemes*  
Assessing genomic data quality control  
Erin Ware

WEDNESDAY, June 17

8:00 – 8:30 Light breakfast and coffee served
8:30 – 9:00 Recap of the previous day and questions
9:00 – 10:00 *Beyond ancestry: the many factors influencing the portability of polygenic scores*  
Simulcast from Oxford University  
Molly Przeworski
10:00 – 10:15 Break
10:15 – 11:00 *Structural and rare variants*  
Jennifer Smith
11:00 – 11:15 Break
11:15 – 12:00 *Polygenic scores: construction, utility, use in research*  
Colter Mitchell
12:00 – 1:00 Lunch (on your own)
1:00 – 1:45 *Statistical Power issues - multiple testing and replication*  
Colter Mitchell
1:45 – 2:00 Break
2:00 – 4:00 *Lab: Extracting genetic data for analysis and using extracted data; Constructing Polygenic Scores*  
Erin Ware
THURSDAY, June 18
8:00 – 8:30 Light breakfast and coffee served
8:30 – 9:00 Recap of the previous day and questions
9:00 – 10:00 TBD
Simulcast from Oxford University
Dalton Conley
10:00 – 10:15 Break
10:15 – 11:00 Gene-environment interaction models – from candidate genes to GWAS data-based models, formal testing GxE
Colter Mitchell
11:00 – 12:00 Examining the Dynamic Gene: Epigenetics
Colter Mitchell
12:00 – 1:00 Lunch (on your own)
1:00 – 1:30 Telomeres
Colter Mitchell
1:30 – 2:00 Data Sources – HRS/HRS Sister Studies, AddHealth, Fragile Families, UKBiobank, MESA
2:00 – 2:15 Break
2:15 – 4:30 Continuation of previous labs, lab tour (those interested), student presentation assistance
5:00 Social Event at the Pretzel Bell, Captain’s Room, Main St Ann Arbor
226 S Main St, Ann Arbor, MI 48104

FRIDAY, 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 Collaborating – working with labs and consortia and finding a collaborator
Jessica Faul
9:45 – 10:00 Break
10:00 – 12:00 Student Presentations I
12:00 – 1:00 Lunch (provided)
1:00 – 2:30 Student Presentations II
2:30 – 2:45 Break
2:45 – 3:15 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
3:15 – 3:30 Final Remarks and Evaluation of Course