



Genomics for Social Scientists

NATIONAL INSTITUTE ON AGING

Dates: June 15 – 19, 2026

Location: Institute for Social Research
426 Thompson ST, 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 – 9:05 Light breakfast and coffee served

9:05 – 9:45 *Introduction to the Workshop*
Jessica Faul & Colter Mitchell

9:45 – 10:45 *Introduction to biology and genetics – understanding genomic data in populations*
Jennifer Smith

10:45 – 11:00 Break

11:00 – 12:00 *Collecting, extraction, and storing genetic material; cost and coverage of different platforms/chips*
Jessica Faul

12:00 - 1:00 Boxed Lunch Provided

1:00 – 2:00 *Quality control – estimating and interpreting minor allele frequency, understanding strands, Hardy-Weinberg equilibrium, heterozygosity, linkage disequilibrium,*
Wei Zhao

2:00 – 2:45 *Statistical Power issues - multiple testing and replication*
Colter Mitchell

2:45 – 3:00 Break

3:00 – 5:00 *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 *Population stratification and admixture – avoiding the pitfalls and utilizing the strength of ancestry and admixture*
Jennifer Smith
- 10:00 – 10:15 Break
- 10:15 – 11:00 *Imputation – basic explanation of genotype imputation, inputs and outputs, using online reference panels HapMap and 1000 Genomes Project*
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 – 1:45 *Polygenic scores: construction, utility, use in research*
Colter Mitchell
- 1:45 – 4:15 *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 *Structural and rare variants*
Wei Zhao
- 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 *Online genomic resources & Group discussion of ethical issues related to genomics*
Jessica Faul
- 12:00 – 1:15 Lunch (on your own)
- 1:15 – 4:15 *Lab:*

Extracting genetic data for analysis and using extracted data

Constructing Polygenic Scores

Erin Ware

THURSDAY, June 18

***Bring or wear your GESS tee-shirt!**

- 8:00 – 8:30 Light breakfast and coffee served
- 8:30 – 9:00 Recap of the previous day and questions
- 9:00 – 9:15 GESS Cohort photo!
- 9:15 – 10:15 *Examining the Dynamic Gene: Epigenetics*
Colter Mitchell
- 10:15 – 10:45 *Telomeres*
Colter Mitchell
- 10:45 – 11:00 Break
- 11:00 – 11:45 *Data Sources – HRS/HRS Sister Studies, AddHealth, Future of Families, UKBiobank, MESA, PSID*
Jessica Faul
- 11:45 – 1:15 Lunch (on your own)
- 1:15 – 2:00 *Collaborating – working with labs and consortia, finding a collaborator*
Jessica Faul
- 2:00 – 4:00 *Lab:* Continuation of previous labs, student presentation assistance
- 5:30 Social Event at Bill's Beer Garden, Ashley St. Ann Arbor
210 S. Ashley St, Ann Arbor, MI 48104
Weather alternative: ISR lobby

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 – 10:15 Student Presentations I
- 10:15 – 10:30 Break
- 10:30 – 12:00 Student Presentations I
- 12:00 – 1:00 Lunch (provided)
- 1:00 – 2:00 Student Presentations II
- 2:00 – 2:15 Break

2:15 – 2:45 *Pitching your ideas and publishing your work - How to justify your work in a grant application, common review complaints, journals and funding*

Faculty Panel

2:45 – 3:00 Final Remarks and Course Evaluation



Genomics for Social Scientists

NATIONAL INSTITUTE ON AGING

Dates: June 10 – 14, 2024

Location: Institute for Social Research
426 Thompson ST, 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 10

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*
Jennifer Smith

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*
Wei Zhao

1:30 – 2:15 *Statistical Power issues - multiple testing and replication*
Colter Mitchell

2:15 – 2:30 Break

2:30 – 5:00 *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 11

- 8:00 – 8:30 Light breakfast and coffee served
- 8:30 – 9:00 Recap of the previous day and questions
- 9:00 – 10:00 *Population stratification and admixture – avoiding the pitfalls and utilizing the strength of ancestry and admixture*
Jennifer Smith
- 10:00 – 10:15 Break
- 10:15 – 11:00 *Imputation – basic explanation of genotype imputation, inputs and outputs, using online reference panels HapMap and 1000 Genomes Project*
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 – 1:30 *Polygenic scores: construction, utility, use in research*
Colter Mitchell
- 1:30 – 4:00 *Lab:*
Understanding and working with different genomic coding schemes
Assessing genomic data quality control
Erin Ware

WEDNESDAY, June 12

- 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*
Wei Zhao
- 9:45 – 10:00 Break
- 10:00 – 10:45 *Gene-environment interaction models – from candidate genes to GWAS data-based models, formal testing GxE*
Colter Mitchell
- 10:45 – 11:15 *Online genomic resources*
Jessica Faul
- 11:15 – 12:00 *Group discussion of ethical issues related to genomics*
Jessica Faul

12:00– 1:00 Lunch (on your own)

1:00 – 4:00 *Lab:*
Extracting genetic data for analysis and using extracted data
Constructing Polygenic Scores
 Erin Ware

THURSDAY, June 13

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

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

9:00 – 10:00 *Examining the Dynamic Gene: Epigenetics*
 Colter Mitchell

10:00 – 10:30 *Telomeres*
 Colter Mitchell

10:30 – 10:45 Break

10:45 – 12:00 *Genetic Data and Research Using the National Longitudinal Study of Adolescent to Adult Health (Add Health)*
 Lauren Gaydos

12:00 – 1:15 Lunch (on your own)

1:15 – 2:00 *Data Sources – HRS/HRS Sister Studies, Fragile Families, UKBiobank, MESA*
 Jessica Faul

2:00 – 2:15 Break

2:15 – 4:30 *Lab:* Continuation of previous labs, tour of the ISR Biospecimen Lab (those interested), student presentation assistance

5:30 Social Event at Bill’s Beer Garden, Ashley St. Ann Arbor
 210 S. Ashley St, Ann Arbor, MI 48104
 Weather alternative: ISR lobby

FRIDAY, June 14

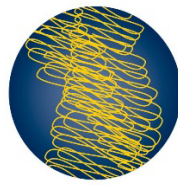
8:00 – 8:30 Light breakfast and coffee served

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

9:00 – 9:45 *Collaborating – working with labs and consortia, 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	<i>Pitching your ideas and publishing your work - How to justify your work in a grant application, common review complaints, journals and funding</i>
	Faculty Panel
3:15 – 3:30	Final Remarks and Course Evaluation



Genomics for Social Scientists

NATIONAL INSTITUTE ON AGING

Dates: July 31- August 4, 2023

Location:
VIRTUAL!

Pre-workshop videos

- [Course introduction! \(22:05\) Links to an external site.](#)
- [Links to an external site. Navigating Canvas \(and Slack\) Links to an external site.](#) (4:42)
- [Checking your remote desktop connection Links to an external site.](#) (4:58)
- **Computing concepts**
 - [What is a server? \(3:45\) Links to an external site.](#)
 - [Computing hardware \(4:31\) Links to an external site.](#)
 - [Concepts of command line \(4:14\) Links to an external site.](#)
 - [Introduction to R concepts \(7:38\) Links to an external site.](#)

Schedule at a glance

Live discussion:

Ann Arbor, New York (EST): 12:00 PM – 2:00 PM

Los Angeles, Portland (PST): 9:00 AM – 11:00 AM

London: 5:00 PM – 7:00 PM

Lab:

2:30 PM – 5:00 PM (EST)

MONDAY, July 31

- Introduction to biology and genetics – understanding genomic data in populations
- Collecting, extraction, and storing genetic material; cost and coverage of different platforms/chips
- Population stratification and admixture – avoiding the pitfalls and utilizing the strength of ancestry and admixture
- Quality control – estimating and interpreting minor allele frequency, understanding strands, Hardy-Weinberg equilibrium, heterozygosity, linkage disequilibrium

TUESDAY, August 1

- Imputation – basic explanation of genotype imputation, inputs and outputs, using online reference panels HapMap and 1000 Genomes Project
- GWAS and meta analyses - alleles, effects, models, p-values, SNP-based heritability
- Online genomic resources

WEDNESDAY, August 2

- Structural and rare variants
- Statistical Power issues - multiple testing and replication
- Polygenic scores: construction, utility, use in research

THURSDAY, August 3

- Gene-environment interaction models – from candidate genes to GWAS data-based models, formal testing GxE
- Examining the Dynamic Gene: Epigenetics
- Telomeres
- Data Sources – HRS/HRS Sister Studies, AddHealth, Future of Families and Child Wellbeing, UKBiobank, MESA, etc
- Collaborating – working with labs and consortia and finding a collaborator

FRIDAY, August 4

- Get feedback on your ideas! ([see example slide here](#))



Genomics for Social Scientists

NATIONAL INSTITUTE ON AGING

Dates: June 13 – 17, 2022

Location:

Institute for Social Research
426 Thompson ST, 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 13

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*
Sharon Kardia
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 - 12:30 Boxed Lunch Provided
12:30 – 1:15 *Population stratification and admixture – avoiding the pitfalls and utilizing the strength of ancestry and admixture*
Jennifer Smith
1:15 – 1:30 Break
1:30 – 2:15 *Quality control – estimating and interpreting minor allele frequency, understanding strands, Hardy-Weinberg equilibrium, heterozygosity, linkage disequilibrium,*
Jennifer Smith
2:15 – 4:50 *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 14

- 8:00 – 8:30 Light breakfast and coffee served
- 8:30 – 9:00 Recap of the previous day and questions
- 9:00 – 10:00 *Longitudinal Ageing Study in India (LASI)*
Sharon Kardia
- 10:00 – 10:15 Break
- 10:15 – 11:00 *Ethics in Genomics*
Sharon Kardia, GeSS Faculty
- 11:00 – 11:30 *Imputation – basic explanation of genotype imputation, inputs and outputs, using online reference panels HapMap and 1000 Genomes Project*
Jennifer Smith
- 11:30 – 12:45 Lunch (on your own)
- 12:45 – 1:30 *GWAS and meta analyses - alleles, effects, models, p-values, SNP-based heritability*
Jennifer Smith
- 1:30 – 1:45 Break
- 1:45 – 4:00 *Lab: Understanding and working with different genomic coding schemes*
Assessing genomic data quality control
Erin Ware

WEDNESDAY, June 15

- 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 – 10:00 Break
- 10:00 – 10:45 *Polygenic scores: construction, utility, use in research*
Colter Mitchell
- 10:45 – 11:00 Break
- 11:00 – 11:45 *Statistical Power issues - multiple testing and replication*
Colter Mitchell
- 11:45 – 1:00 Lunch (on your own)
- 1:00 – 2:00 *Applications of Social Science Genetics using the Health and Retirement Study, English Longitudinal Study of Ageing, Wisconsin Longitudinal Study, and UK Biobank*
Titus Galama, Senior Economist, CESR; Director, Center for Study of Inequality,
University of Southern California
- 2:00 – 2:15 Break
- 2:15 – 4:00 *Lab:*
Extracting genetic data for analysis and using extracted data; Constructing Polygenic Scores
Erin Ware

THURSDAY, June 16

- 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 – 11:30 *Online genomic resources*
Jessica Faul
- 11:30 – 12:00 *Telomeres*
Colter Mitchell
- 12:00 – 1:15 Lunch (on your own)
- 1:15 – 2:00 *Data Sources – HRS/HRS Sister Studies, AddHealth, Fragile Families, UKBiobank, MESA*
Jessica Faul
- 2:00 – 2:15 Break
- 2:15 – 4:30 *Continuation of previous labs, lab tour (those interested), student presentation assistance*
- 5:30 *Social Event at Bill's Beer Garden, Ashley St. Ann Arbor*
210 S. Ashley St, Ann Arbor, MI 48104
Weather alternative: ISR lobby

FRIDAY, June 17

- 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*
Faculty Panel
- 3:15 – 3:30 Final Remarks and Evaluation of Course



June 2021

Dates: June 7-11, 2021

Location:

Virtual!

Before you begin the course...

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 7th

Videos to watch before live discussion:

- Introduction to biology and genetics – understanding genomic data in populations
- Collecting, extraction, and storing genetic material; cost and coverage of different platforms/chips
- Quality control – estimating and interpreting minor allele frequency, understanding strands, Hardy-Weinberg equilibrium, heterozygosity, linkage disequilibrium
- Imputation – basic explanation of genotype imputation, inputs and outputs, using online reference panels HapMap and 1000 Genomes Project

Live discussion:

- Ann Arbor, New York (EST): 12:00 PM – 2:00 PM
- Los Angeles, Portland (PST): 9:00 AM – 11:00 AM
- London: 5:00 PM – 7:00 PM

Lab 1:

2:30 PM – 5:00 PM (EST) **OR** Watch recording June 8th 9:00 AM – 11:30 AM (EST)

- Linux Mini and Computing
- Understanding genetic file types and the content of the files
- Viewing and exploring Genome-wide data

TUESDAY, June 8th

Videos to watch before live discussion:

- Population stratification and admixture – avoiding the pitfalls and utilizing the strength of ancestry and admixture
- GWAS and meta analyses - alleles, effects, models, p-values, SNP-based heritability
- Online genomic resources



Live discussion:

- Ann Arbor, New York (EST): 12:00 PM – 2:00 PM
- Los Angeles, Portland (PST): 9:00 AM – 11:00 AM
- London: 5:00 PM – 7:00 PM

Lab 2:

2:30 PM – 5:00 PM (EST) **OR** Watch recording June 9th 9:00 AM – 11:30 AM (EST)

- Understanding and working with different genomic coding schemes
- Assessing genomic data quality control

WEDNESDAY, June 9th

Videos to watch before live discussion:

- Structural and rare variants
- Statistical Power issues - multiple testing and replication
- Polygenic scores: construction, utility, use in research

Live discussion:

- Ann Arbor, New York (EST): 12:00 PM – 2:00 PM
- Los Angeles, Portland (PST): 9:00 AM – 11:00 AM
- London: 5:00 PM – 7:00 PM

Lab 3:

2:30 PM – 4:30 PM (EST) **OR** Watch recording June 10th 9:00 AM – 11:00 AM (EST)

- Extracting genetic data for analysis and using extracted data
- Constructing Polygenic Scores

THURSDAY, June 10th

Videos to watch before live discussion:

- Gene-environment interaction models – from candidate genes to GWAS data-based models, formal testing GxE
- Examining the Dynamic Gene: Epigenetics
- Telomeres
- Data Sources – HRS/HRS Sister Studies, AddHealth, Fragile Families, UKBiobank, MESA
- Guest Lecture: Sean Curran, PhD Associate Dean of Research and Associate Professor of Gerontology, Molecular and Computational Biology, University of Southern California

Live discussion:

- Ann Arbor, New York (EST): 12:00 PM – 2:00 PM
- Los Angeles, Portland (PST): 9:00 AM – 11:00 AM
- London: 5:00 PM – 7:00 PM



Lab 4:

2:30 PM – 4:30 PM (EST) **OR** Watch recording June 11th 9:00 AM – 11:00 AM (EST)

- Continuation of previous labs
- Working on student presentation slide

FRIDAY, June 11th

Videos to watch before live discussion:

- *Collaborating – working with labs and consortia and finding a collaborator*
- Guest Lecture: Eric J. Tchetgen Tchetgen, Professor of Statistics, University of Pennsylvania. "Mendelian Randomization"

Live discussion:

- Ann Arbor, New York (EST): 12:00 PM – **3:00 PM**
- Los Angeles, Portland (PST): 9:00 AM – **12:00 PM**
- London: 5:00 PM – **8:00 PM**



Agenda 2020

Dates: December 7-11, 2020

Location:

Virtual!

Before you begin the course...

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, December 7th

Videos to watch before live discussion:

- Introduction to biology and genetics – understanding genomic data in populations
- Collecting, extraction, and storing genetic material; cost and coverage of different platforms/chips
- Quality control – estimating and interpreting minor allele frequency, understanding strands, Hardy-Weinberg equilibrium, heterozygosity, linkage disequilibrium
- Imputation – basic explanation of genotype imputation, inputs and outputs, using online reference panels HapMap and 1000 Genomes Project

Live discussion:

- Ann Arbor, New York (EST): 12:00 PM – 2:00 PM
- Los Angeles, Portland (PST): 9:00 AM – 11:00 AM
- London: 5:00 PM – 7:00 PM

Lab 1:

2:30 PM – 5:00 PM (EST) **OR** Tuesday, December 8th 9:00 AM – 11:30 AM (EST)

- Linux Mini and Computing
- Understanding genetic file types and the content of the files
- Viewing and exploring Genome-wide data

TUESDAY, December 8th

Videos to watch before live discussion:

- Population stratification and admixture – avoiding the pitfalls and utilizing the strength of ancestry and admixture
- GWAS and meta analyses - alleles, effects, models, p-values, SNP-based heritability
- Online genomic resources



Live discussion:

- Ann Arbor, New York (EST): 12:00 PM – 2:00 PM
- Los Angeles, Portland (PST): 9:00 AM – 11:00 AM
- London: 5:00 PM – 7:00 PM

Lab 2:

2:30 PM – 5:00 PM (EST) **OR** Wednesday, December 9th 9:00 AM – 11:30 AM (EST)

- Understanding and working with different genomic coding schemes
- Assessing genomic data quality control

WEDNESDAY, December 9th

Videos to watch before live discussion:

- Structural and rare variants
- Statistical Power issues - multiple testing and replication
- Polygenic scores: construction, utility, use in research

Live discussion:

- Ann Arbor, New York (EST): 12:00 PM – 2:00 PM
- Los Angeles, Portland (PST): 9:00 AM – 11:00 AM
- London: 5:00 PM – 7:00 PM

Lab 3:

2:30 PM – 4:30 PM (EST) **OR** Thursday, December 10th 9:00 AM – 11:00 AM (EST)

- Extracting genetic data for analysis and using extracted data
- Constructing Polygenic Scores

THURSDAY, December 10th

Videos to watch before live discussion:

- Gene-environment interaction models – from candidate genes to GWAS data-based models, formal testing GxE
- Examining the Dynamic Gene: Epigenetics
- Telomeres
- Data Sources – HRS/HRS Sister Studies, AddHealth, Fragile Families, UKBiobank, MESA

Live discussion:

- Ann Arbor, New York (EST): 12:00 PM – 2:00 PM
- Los Angeles, Portland (PST): 9:00 AM – 11:00 AM
- London: 5:00 PM – 7:00 PM



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Lab 4:

2:30 PM – 4:30 PM (EST) **OR** Friday, December 11th 9:00 AM – 11:00 AM (EST)

- Continuation of previous labs
- Working on student presentation slide

FRIDAY, December 11th

Videos to watch before live discussion:

- *Collaborating – working with labs and consortia and finding a collaborator*

Live discussion:

- Ann Arbor, New York (EST): 12:00 PM – **3:00 PM**
- Los Angeles, Portland (PST): 9:00 AM – **12:00 PM**
- London: 5:00 PM – **8:00 PM**



Genomics for Social Scientists

NATIONAL INSTITUTE ON AGING

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 Boxed 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	<i>Quality control – estimating and interpreting minor allele frequency, understanding strands, Hardy-Weinberg equilibrium, heterozygosity, linkage disequilibrium,</i> Jennifer Smith
9:45 - 10:15	<i>Imputation – basic explanation of genotype imputation, inputs and outputs, using online reference panels HapMap and 1000 Genomes Project</i> Jennifer Smith
10:15 - 10:30	Break
10:30 - 11:15	<i>GWAS and meta analyses - alleles, effects, models, p-values, SNP-based heritability</i> Jennifer Smith
11:15 - 12:00	<i>Statistical Power issues - multiple testing and replication</i> Colter Mitchell
12:00 - 1:00	Lunch (on your own)
1:00 - 4:00	<i>Lab: Understanding and working with different genomic coding schemes</i> <i>Assessing genomic data quality control</i> 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	<i>Structural and rare variants</i> Jennifer Smith
9:45 - 10:30	<i>Polygenic scores: construction, utility, use in research</i> Colter Mitchell
10:30 - 10:45	Break
10:45 - 11:45	<i>Genomic SEM</i> Andrew Grotzinger, University of Texas at Austin
11:45 - 12:15	<i>Telomeres</i> Colter Mitchell
12:15 - 1:15	Lunch (on your own)
1:15 - 4:00	<i>Lab:</i> <i>Extracting genetic data for analysis and using extracted data; Constructing Polygenic Scores</i> Erin Ware

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	<i>Gene-environment interaction models – from candidate genes to GWAS data-based models, formal testing GxE</i> 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)
- 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*
- 12:00 - 1:00 Lunch
- 1:00 - 3:00 *Student Presentations II*
- 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



Genomics for Social Scientists

NATIONAL INSTITUTE ON AGING

Dates: June 18 – 22, 2018

Location:

Institute for Social Research, Room 1430
University of Michigan

Before you arrive in Ann Arbor...

Online Introduction to R
Online Introduction to Linux

MONDAY, June 18

- | | |
|---------------|---|
| 8:30 - 9:00 | Light breakfast and coffee served |
| 9:00 - 9:30 | <i>Introduction to the Workshop</i>
Jessica Faul & Colter Mitchell |
| 9:30 - 10:15 | <i>Introduction to biology and genetics – understanding genomic data in populations</i>
Kelly Bakulski |
| 10:15 - 11:00 | <i>Population stratification and admixture – avoiding the pitfalls and utilizing the strength of ancestry and admixture</i>
Jennifer Smith |
| 11:00 - 11:15 | Break |
| 11:15 - 12:00 | <i>Quality control – estimating and interpreting minor allele frequency, understanding strands, Hardy-Weinberg equilibrium, heterozygosity, linkage disequilibrium,</i>
Jennifer Smith |
| 12:00 - 1:00 | Lunch Provided |
| 1:00 - 1:45 | <i>Collecting, extraction, and storing genetic material; cost and coverage of different platforms/chips</i>
Jessica Faul |
| 1:45 - 4:45 | <i>Lab:</i>
<i>Linux Mini</i>
<i>Understanding genetic file types and the content of the files</i>
<i>Viewing and exploring genome-wide data</i>
Erin Ware |
| 5:00 | <i>Social Event at ISR</i> |

TUESDAY, 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 *Intro to the Wisconsin Longitudinal Study*
Pam Herd, University of Wisconsin
- 9:45 - 10:15 *Exploring the Microbiome*
Pam Herd, University of Wisconsin
- 10:15 - 10:30 Break
- 10:30 - 11:00 *Imputation – basic explanation of genotype imputation, inputs and outputs, using online reference panels HapMap and 1000 Genomes Project*
Jennifer Smith
- 11:00 - 12:00 *GWAS and Heritability - alleles, effects, models, p-values, SNP-based heritability, MTAG*
Jennifer Smith
- 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 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 *Statistical power - multiple testing and replication*
Colter Mitchell
- 9:45 - 10:30 *Structural and rare variants*
Jennifer Smith
- 10:30 - 10:45 Break
- 10:45 - 11:30 *Gene-environment interaction models –candidate genes, polygenic scores, formal testing*
Colter Mitchell
- 11:30 - 12:00 *Online genomic resources*
Jessica Faul

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

1:00 - 4:00 *Lab:*
Extracting genetic data
Polygenic score construction and analysis
 Erin Ware

THURSDAY, June 21

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

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

9:00 - 10:00 *Examining the dynamic gene: epigenetics*
 Colter Mitchell

10:00 - 10:30 *Telomeres*
 Colter Mitchell

10:30 - 10:45 Break

10:45 - 11:30 *Constructing polygenic scores*
 Ben Domingue, Stanford University

11:30 - 12:00 *Conducting research using polygenic scores*
 Ben Domingue, Stanford University

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

1:00 - 4:00 *Lab:*
Epigenetic data-quality control and analysis
 Erin Ware and Kelly Bakulski

5:00 *Social Event at the Pretzel Bell, Captain's Room, Main St Ann Arbor*

FRIDAY, June 22

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

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

9:00 - 9:30 *Collaborating – working with labs and consortia and finding a collaborator*
 Jessica Faul

9:30 - 10:15 *Data Sources – HRS/HRS Sister Studies, AddHealth, Fragile Families, UKBiobank, MESA*

10:15 - 10:30 Break



Genomics for Social Scientists

NATIONAL INSTITUTE ON AGING

Dates: June 12 – 16, 2017

Time & Location: 9:00 – 4:00

R0230 Ross School of Business

University of Michigan

MONDAY, June 12

- 8:30 - 9:00 Light breakfast and coffee served
- 9:00 - 9:15 *Introduction to the Workshop*
Jessica Faul & Colter Mitchell
- 9:15 - 10:00 *Introduction to biology and genetics – understanding genomic data in populations*
Sharon Kardia
- 10:00 - 10:30 *Collecting, extraction, and storing genetic material; cost and coverage of different platforms/chips*
Jessica Faul
- 10:30 - 10:45 Break
- 10:45 - 11:15 *Population stratification and admixture – avoiding the pitfalls and utilizing the strength of ancestry and admixture*
Jennifer Smith
- 11:15 - 12:00 *Quality control – estimating and interpreting minor allele frequency, Hardy-Weinberg equilibrium, heterozygosity, and linkage disequilibrium*
Wei Zhao & Sharon Kardia
- 12:00 - 1:00 Boxed Lunch Provided
- 1:00 - 4:00 *Lab: Understanding genetic file types and the content of the files*
Viewing and exploring Genome-wide data
Erin Ware
- 4:00 *Social Event at Ross*

TUESDAY, June 13

- 8:30 - 9:00 Light breakfast and coffee served
- 9:00 - 10:30 *Description of the National Study of Adolescent to Adult Health and Tips in Navigating*

the Social Science and Genomics World
Kathleen Mullan Harris

- 10:30 - 10:45 Break
- 10:45 - 11:15 *Imputation – basic explanation of genotype imputation, inputs and outputs, using online reference sources HapMap and 1000 Genomes Project*
Jennifer Smith
- 11:15 - 12:00 *GWAS and meta analyses - alleles, effects, models, p-values*
Jennifer Smith
- 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 14

- 8:30 - 9:00 Light breakfast and coffee served
- 9:00 - 9:45 *Statistical Power issues - multiple testing and replication*
Colter Mitchell
- 9:45 - 10:30 *Structural and rare variants*
Jennifer Smith
- 10:30 - 10:45 Break
- 10:45 - 11:30 *SNP-based heritability*
Wei Zhao
- 11:15 - 12:00 *Collaborating – working with labs and consortia and finding a collaborator*
Jessica Faul
Note – postponed until Friday morning!
- 12:00 - 1:00 Lunch (in small groups)
- 1:00 - 4:00 *Lab: Resources for determining genetic regions (external to data)*
Extracting genetic data for analysis
Erin Ware

THURSDAY, June 15

- 8:30 - 9:00 Light breakfast and coffee served
- 9:00 - 9:45 *Gene-environment interaction models – from candidate genes to GWAS data-based models, formal testing GxE*

Colter Mitchell

9:45 - 10:30 *Examining the Dynamic Gene: Telomeres and epigenetics*
Colter Mitchell

10:30 - 10:45 Break

10:45 - 12:00 *Constructing and Using Polygenic Scores*
Daniel Belsky, Duke University

12:00 - 1:00 Lunch on own

1:30 - 4:00 *Lab: Basic viewing of genetic data*
Genomic analyses primer
Constructing Polygenic Scores
Erin Ware

5:00 *Social Event at the Institute for Social Research*

FRIDAY, June 16

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

9:00 - 9:10 Introduction

9:10 - 9:45 *Collaborating – working with labs and consortia and finding a collaborator*
Jessica Faul

9:45 - 10:15 *Pitching your ideas and publishing your work - How to justify your work in a grant application, common review complaints, journals and funding*
Faculty Panel

10:15 - 10:30 Break

10:30 - 12:00 *Student Presentations I*

12:00 - 1:00 Lunch

1:00 - 3:00 *Student Presentations II*

3:00 - 3:15 Break

3:15 - 3:45 *Updates from the NIA and Future Training Opportunities*
Sharon Kardia
Prisca Fall and Laura Major, NIA

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