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:

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

Live discussion:

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

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

TUESDAY, June 8th

Videos to watch before live discussion:

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

Live discussion:

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

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

WEDNESDAY, June 9th

Videos to watch before live discussion:

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

Live discussion:

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

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

THURSDAY, June 10th

Videos to watch before live discussion:

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

Live discussion:
o Ann Arbor, New York (EST):   12:00 PM – 2:00 PM
o Los Angeles, Portland (PST):   9:00 AM – 11:00 AM
o 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)

o Continuation of previous labs
o Working on student presentation slide

FRIDAY, June 11th

Videos to watch before live discussion:

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

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

Agenda 2020

Dates: December 7-11, 2020
Location:

<div align="center">Virtual!</div>

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:

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

Live discussion:

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

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

TUESDAY, December 8th

Videos to watch before live discussion:

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

Live discussion:

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

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

WEDNESDAY, December 9th

Videos to watch before live discussion:

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

Live discussion:

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

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

THURSDAY, December 10th

Videos to watch before live discussion:

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

Live discussion:

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

Lab 4:

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

o   Continuation of previous labs
o   Working on student presentation slide

FRIDAY, December 11th

Videos to watch before live discussion:

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

Live discussion:

o   Ann Arbor, New York (EST):   12:00 PM – **3:00 PM**
o   Los Angeles, Portland (PST):   9:00 AM – **12:00 PM**
o   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 *Quality control – estimating and interpreting minor allele frequency, understanding strands, Hardy-Weinberg equilibrium, heterozygosity, linkage disequilibrium,*
Jennifer Smith

9:45 - 10:15 *Imputation – basic explanation of genotype imputation, inputs and outputs, using online reference panels HapMap and 1000 Genomes Project*
Jennifer Smith

10:15 - 10:30 Break

10:30 - 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*
Colter Mitchell

12:15 - 1:15 Lunch (on your own)

1:15 - 4:00 *Lab:*
Extracting genetic data for analysis and using extracted data; Constructing Polygenic Scores
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 *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)
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	*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	*Population stratification and admixture – avoiding the pitfalls and utilizing the strength of ancestry and admixture* Jennifer Smith
11:00 - 11:15	Break
11:15 - 12:00	*Quality control – estimating and interpreting minor allele frequency, understanding strands, Hardy-Weinberg equilibrium, heterozygosity, linkage disequilibrium,* Jennifer Smith
12:00 - 1:00	Lunch Provided
1:00 - 1:45	*Collecting, extraction, and storing genetic material; cost and coverage of different platforms/chips* Jessica Faul
1:45 - 4:45	*Lab*: *Linux Mini* *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 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

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