

## Agenda 2026

**Dates:** January 20 – 23, 2026

**Location:** Virtual!

### TUESDAY, January 20<sup>th</sup>

#### *Topics covered in video or live lectures*

- Introductions
- Motivation for epigenetics in social and behavioral research
  - *Videos to watch beforehand:*
    - Part I and Part II
- Biology of epigenetics
  - *Videos to watch beforehand*
    - Overview, DNA modifications
    - Histone modifications, regulatory RNA, cells and tissues
    - Timing, genes and the environment
- Strategies for collection and measurement of DNA methylation
  - *Videos to watch beforehand:*
    - Part I and Part II
- **Live lecture and discussion**
  - EPIC2 vs EPIC1 vs 450K (Trey Smith)
  - If time allows: Consortia and studies with epigenetic data (Jessica Faul)

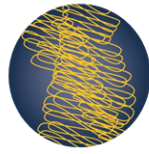
*Lab 1: 2:30 PM – 5:00 PM (ET)*

- *RStudio Cloud info*
- *Introduction to R*
- *Importing/exploring the data*

### WEDNESDAY, January 21<sup>st</sup>

#### *Topics covered in video or live lectures*

- DNA methylation quality control I
  - *Videos to watch beforehand*
    - Illumina array technology
    - Data cleaning pipeline
    - Sources of errors
- Fundamental epigenetic analyses
  - *Videos to watch beforehand:*
    - Part I and Part II



- **Live lecture and discussion**
  - Gene enrichment (Trey Smith)
  - Structured life-course modeling approach: SLCMA (Josh Goode)

*Lab 2: 2:30 PM – 5:00 PM (ET)*

- *Intensity analysis*
- *Bisulfite quality*
- *Hybridization quality*
- *Detection p*
- *Red/green probe quality*
- *Cross-reactive probes*
- *Gap probe identification*

## **THURSDAY, January 22nd**

*Topics covered in video or live lectures*

- Online resources for epigenetic data and analyses
  - *Videos to watch beforehand*
    - Part I and Part II
- Genetics and methylation
  - *Videos to watch beforehand*
    - Part I and Part II
- **Live lecture and discussion**
  - Mediation methods in epigenetics (Jen Smith)
  - Measurement and Reliability (Colter Mitchell)

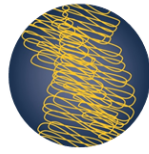
*Lab 3: 2:30 PM – 5:00 PM (ET)*

- *Background Correction*
- *Sample normalization (not recommended)*
- *Contamination checks*
- *Sex and Ancestry checks*
- *Batch examination and adjustments*
- *Cell type estimation*

## **FRIDAY, January 23rd**

*Topics covered in video or live lectures*

- Data reduction in epigenetic data
  - *Videos to watch beforehand*
    - Global methylation, somatic epimutations, polyepigenetic scores



- **Live lecture and discussion**

- Data reduction in epigenetic data - Epigenetic surrogates: What have we learned (Colter Mitchell)
- Data reduction in epigenetic data - Clocks (Jessica Faul)

*Lab 4:* 2:30 PM – 5:00 PM (ET) \*If needed, we often get to this material in Lab 3

- *Global analysis*
- *Single site analysis, EWAS*
- *DMR*
- *Pathway analysis*
- *Data visualization*
- *meQTL*
- *Finding code/pipelines online*
- *Finding data online*



# Genomics for Social Scientists

*Epigenetics*  
NATIONAL INSTITUTE ON AGING

**Dates:** June 16 – 20, 2025  
**Location:** Institute for Social Research  
426 Thompson St, Room 1430  
University of Michigan

## MONDAY, June 16

9:15 Light breakfast and coffee served  
9:30 – 10:30 *Introduction to the Workshop, Student Introductions*  
Colter Mitchell & Jessica Faul  
10:30 – 11:30 *Biology of epigenetics*  
Colter Mitchell  
11:30 – 1:00 Social Activity and Boxed Lunch Provided  
1:00 – 1:45 *Collection, Storage, and Stability of DNA methylation*  
Jessica Faul  
1:45 – 2:00 Break  
2:00 – 4:45 *Lab:*  
*Intro R/R Studio*  
*R Markdown*  
*Importing/Exploring the Data*  
Erin Ware  
5:00 *Social Event at ISR*

## TUESDAY, June 17

8:45 Light breakfast and coffee served  
9:00 – 9:30 Recap of the previous day and questions  
9:30 – 11:00 *DNA methylation quality control and array versions*  
Colter Mitchell  
11:00 – 11:15 Break  
11:15 – 12:00 *Epigenetics and physical activity*  
Farah Ammous  
12:00 – 1:00 Lunch (on your own)  
1:00 – 2:15 *Fundamental epigenetic analysis*  
Jennifer Smith

2:15 – 2:30 Break  
2:30 – 5:00 *Lab:*  
*Intensity analysis*  
*Bisulfite quality*  
*Hybridization quality*  
*Detection p-values*  
*Red/green dye bias*  
*Probe types I and II*  
*Cross-reactive probes*  
*Gap probe identification*  
Erin Ware

### **WEDNESDAY, June 18**

8:45 Light breakfast and coffee served  
9:00 – 9:30 Recap of the previous day and questions  
10:00 – 11:00 *Data reduction, epigenetic surrogates in epigenetic data*  
Colter Mitchell  
11:00 – 11:15 Break  
11:15 – 12:00 *Epigenetic Clocks*  
Jessica Faul  
12:00 – 1:00 Lunch (on your own)  
1:00 – 2:30 *Genetics and Methylation*  
Jennifer Smith  
2:30 – 2:45 Break  
2:45 – 4:45 *Lab:*  
*Background Correction*  
*Between sample normalization (not recommended)*  
*Contamination checks*  
*Sex and Ancestry checks*  
*Batch examination and adjustments*  
*Cell type estimation*  
Erin Ware

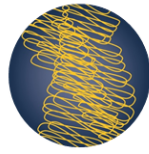
### **THURSDAY, June 19**

8:45 Light breakfast and coffee served  
9:00 – 9:30 Recap of the previous day and questions  
9:30 – 10:15 *Mediation methods*  
Jennifer Smith  
10:15 – 10:45 *Measurement and Reliability of DNA methylation*  
Colter Mitchell  
10:45 – 11:00 Break  
11:00 – 11:30 *Structured Life Course Modeling Approach (SLCMA)*  
Josh Goode  
11:30 – 12:00 *Studies with DNA methylation*  
Jessica Faul

- 12:15 – 1:15 Lunch (on your own)
- 1:15 – 1:45 *Conversation: Epigenetics for health disparities*  
Workshop Faculty
- 1:45 – 3:45 *Lab:*  
*Global analysis*  
*Single site analysis, EWAS*  
*DMR*  
*Pathway analysis*  
*Data visualization*  
*meQTL*  
*Finding code/pipelines online*  
*Finding data online*  
Erin Ware
- 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 20**

- 8:45 Light breakfast and coffee served
- 9:00 – 9:30 Recap of the previous day and questions
- 9:30 – 10:30 *Student Presentations Group A*
- 10:30 – 10:45 Break
- 10:45 – 11:45 *Student Presentations Group B*
- 11:45 – 12:45 Lunch (provided)
- 12:45 – 1:45 *Student Presentations Group C*
- 1:45 – 2:15 ISR & lab tour



## Agenda 2025

**Dates:** January 6 - 9, 2025

**Location:** Virtual!

### MONDAY, January 6<sup>th</sup>

#### *Topics covered in video or live lectures*

- Introductions
- Motivation for epigenetics in social and behavioral research
  - *Videos to watch beforehand:*
    - Part I and Part II
- Biology of epigenetics
  - *Videos to watch beforehand*
    - Overview, DNA modifications
    - Histone modifications, regulatory RNA, cells and tissues
    - Timing, genes and the environment
- Strategies for collection and measurement of DNA methylation
  - *Videos to watch beforehand:*
    - Part I and Part II
- Live lecture
  - EPIC2 vs EPIC1 vs 450K (Trey Smith)
  - If time allows: Consortia and studies with epigenetic data (Jessica Faul)

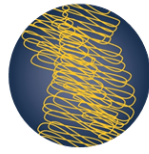
#### *Lab 1: 2:30 PM – 5:00 PM (ET)*

- *RStudio Cloud info*
- *Introduction to R*
- *Importing/exploring the data*

### TUESDAY, January 7<sup>th</sup>

#### *Topics covered in video or live lectures*

- DNA methylation quality control I
  - *Videos to watch beforehand*
    - Illumina array technology
    - Data cleaning pipeline
    - Sources of errors
- Fundamental epigenetic analyses
  - *Videos to watch beforehand:*
    - Part I and Part II



- Live lecture
  - Gene enrichment (Trey Smith)
  - Structured life-course modeling approach: SLCMA (Josh Goode)

*Lab 2: 2:30 PM – 5:00 PM (ET)*

- *Intensity analysis*
- *Bisulfite quality*
- *Hybridization quality*
- *Detection p*
- *Red/green probe quality*
- *Cross-reactive probes*
- *Gap probe identification*

### **WEDNESDAY, January 8th**

*Topics covered in video or live lectures*

- Online resources for epigenetic data and analyses
  - *Videos to watch beforehand*
    - Part I and Part II
- Genetics and methylation
  - *Videos to watch beforehand*
    - Part I and Part II
- Live lecture
  - Mediation methods in epigenetics (Jen Smith)
  - Measurement and Reliability (Colter Mitchell)

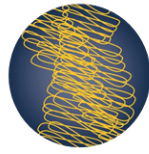
*Lab 3: 2:30 PM – 5:00 PM (ET)*

- *Background Correction*
- *Sample normalization (not recommended)*
- *Contamination checks*
- *Sex and Ancestry checks*
- *Batch examination and adjustments*
- *Cell type estimation*

### **THURSDAY, January 9th**

*Topics covered in video or live lectures*

- Data reduction in epigenetic data
  - *Videos to watch beforehand*
    - Global methylation, somatic epimutations, polyepigenetic scores



# Genomics for Social Scientists

*Epigenetics*  
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- Live lecture
  - Data reduction in epigenetic data - Epigenetic surrogates: What have we learned (Colter Mitchell)
  - Data reduction in epigenetic data - Clocks (Jessica Faul)

*Lab 4: 2:30 PM – 5:00 PM (ET)*

- *Global analysis*
- *Single site analysis, EWAS*
- *DMR*
- *Pathway analysis*
- *Data visualization*
- *meQTL*
- *Finding code/pipelines online*
- *Finding data online*



# Genomics for Social Scientists

*Epigenetics*  
NATIONAL INSTITUTE ON AGING

**Dates:** June 12 – 16, 2023  
**Location:** Institute for Social Research  
426 Thompson St, Room 1430  
University of Michigan

## **MONDAY, June 12**

9:15 Light breakfast and coffee served  
9:30 – 10:30 *Introduction to the Workshop, Student Introductions*  
Colter Mitchell & Jessica Faul  
10:30 – 12:00 *Biology of Epigenetics*  
Dan Notterman  
12:00 – 1:00 Boxed Lunch Provided  
1:00 – 1:45 *Collection, Storage, and Stability of DNA methylation*  
Jessica Faul  
1:45 – 2:00 Break  
2:00 – 4:45 *Lab:*  
*Intro R/R Studio*  
*R Markdown*  
*Importing/Exploring the Data*  
Erin Ware  
5:00 *Social Event at ISR*

## **TUESDAY, June 13**

8:45 Light breakfast and coffee served  
9:00 – 9:30 Recap of the previous day and questions  
9:30 – 11:00 *DNA methylation quality control*  
Colter Mitchell  
11:00 – 11:15 Break  
11:15 – 12:00 *Clinical and Biological Perspectives*  
Dan Notterman  
12:00 – 1:00 Lunch (on your own)  
1:00 – 2:15 *Fundamental epigenetic analysis*

Jennifer Smith

2:15 – 2:30 Break  
2:30 – 5:00 *Lab:*  
*Intensity analysis*  
*Bisulfite quality*  
*Hybridization quality*  
*Detection p-values*  
*Red/green dye bias*  
*Probe types I and II*  
*Cross-reactive probes*  
*Gap probe identification*  
Erin Ware

### **WEDNESDAY, June 14**

8:45 Light breakfast and coffee served  
9:00 – 9:30 Recap of the previous day and questions  
10:00 – 10:30 *Data reduction in epigenetic data*  
Colter Mitchell  
10:30 – 11:00 *Online resources for epigenetic data and analyses*  
Erin Ware  
11:00 – 11:15 Break  
11:15 – 12:00 *Mediation methods*  
Jennifer Smith  
12:00 – 1:00 Lunch (on your own)  
1:00 – 2:30 *Genetics and Methylation*  
Jennifer Smith  
2:30 – 2:45 Break  
2:45 – 4:45 *Lab:*  
*Background Correction*  
*Between sample normalization (not recommended)*  
*Contamination checks*  
*Sex and Ancestry checks*  
*Batch examination and adjustments*  
*Cell type estimation*  
Erin Ware

### **THURSDAY, June 15**

8:45 Light breakfast and coffee served  
9:00 – 9:30 Recap of the previous day and questions  
9:30 – 10:15 *Epigenetic Clocks*  
Jessica Faul  
10:15 – 10:45 *Measurement and Reliability of DNA methylation*  
Colter Mitchell  
10:45 – 11:00 Break

- 11:00 – 11:45 *NICOLA*  
Claire Potter
- 11:45 – 12:15 *Studies with DNA methylation*  
Jessica Faul
- 12:15 – 1:15 Lunch (on your own)
- 1:15 – 1:45 *Conversation: Epigenetics for health disparities*  
Workshop Faculty
- 1:45 – 3:45 *Lab:*  
*Global analysis*  
*Single site analysis, EWAS*  
*DMR*  
*Pathway analysis*  
*Data visualization*  
*meQTL*  
*Finding code/pipelines online*  
*Finding data online*  
Erin Ware
- 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 16**

- 8:45 Light breakfast and coffee served
- 9:00 – 9:30 Recap of the previous day and questions
- 9:30 – 10:30 *Student Presentations Group A*
- 10:30 – 10:45 Break
- 10:45 – 11:45 *Student Presentations Group B*
- 11:45 – 12:45 Lunch (provided)
- 12:45 – 1:45 *Student Presentations Group C*
- 1:45 – 2:15 ISR & lab tour



## Agenda August 2022

**Dates:** August 8 - 11, 2022  
**Location:** Virtual!

### MONDAY, August 8th

*Topics covered in video or live lectures*

- Motivation for epigenetics in social and behavioral research
- Biology of epigenetics
  - Overview, DNA modifications
  - Histone modifications, regulatory RNA, cells and tissues
  - Timing, genes and the environment
- Strategies for collection and measurement of DNA methylation

*Office Hours:* 2:00 -2:30 PM (ET)

*Lab 1:* 2:30 PM – 5:00 PM (ET)

- RStudio Cloud info
- Introduction to R
- Importing/exploring the data

### TUESDAY, August 9th

*Lab 1 Help Desk:* 9:30 AM -11:30 AM (ET)

*Office Hours:* 11:00 AM -12:00 PM (ET)

*Topics covered in video or live lectures*

- DNA methylation quality control I
- Consortia and studies with epigenetic data (Live! lecture during discussion)
- Online resources for epigenetic data and analyses

*Office Hours:* 2:00 -2:30 PM (ET)

*Lab 2:* 2:30 PM – 5:00 PM (ET)

- Intensity analysis
- Bisulfite quality
- Hybridization quality
- Detection p
- Red/green probe quality



- Cross-reactive probes
- Gap probe identification

### **WEDNESDAY, August 10th**

*Lab 2 Help Desk:* 9:30 AM -11:30 AM (ET)

*Office Hours:* 11:00 AM -12:00 PM (ET)

*Topics covered in video or live lectures*

- Fundamental epigenetic analyses
- Data reduction in epigenetic data
- Data reduction in epigenetic data - Clocks (Live! lecture during discussion)
- Genetics and methylation

*Office Hours:* 2:00 -2:30 PM (ET)

*Lab 3:* 2:30 PM – 5:00 PM (ET)

- Background Correction
- Sample normalization (not recommended)
- Contamination checks
- Sex and Ancestry checks
- Batch examination and adjustments
- Cell type estimation

### **THURSDAY, August 11th**

*Lab 3 Help Desk:* 9:30 AM -11:30 AM (ET)

*Office Hours:* 11:00 AM -12:00 PM (ET)

*Topics covered in video or live lectures*

- Special analysis topics in epigenetics (Live! Lecture during discussion)
- Next steps (Live! lecture during discussion)

*Office Hours:* 2:00 -2:30 PM (ET)

*Lab 4:* 2:30 PM – 5:00 PM (ET)

- Epigenetic clocks
- Global analysis
- Single site analysis, EWAS
- DMR
- Pathway analysis
- Data visualization



# Genomics for Social Scientists

*Epigenetics*  
NATIONAL INSTITUTE ON AGING

- meQTL
- Finding code/pipelines online
- Finding data online

## **FRIDAY, August 12th**

*Lab 4 Help Desk: 9:30 AM -11:30 AM (ET)*



## Agenda August 2021

**Dates:** August 9-12, 2021

**Location:** Virtual!

### MONDAY, August 9th

*Topics covered in video or live lectures*

- Motivation for epigenetics in social and behavioral research
- Biology of epigenetics
  - Overview, DNA modifications
  - Histone modifications, regulatory RNA, cells and tissues
  - Timing, genes and the environment
- Strategies for collection and measurement of DNA methylation

*Office Hours:* 2:00 -2:30 PM (ET)

*Lab 1:* 2:30 PM – 5:00 PM (ET)

- RStudio Cloud info
- Introduction to R
- Importing/exploring the data

### TUESDAY, August 10th

*Lab 1 Help Desk:* 9:30 AM -11:30 AM (ET)

*Office Hours:* 11:00 AM -12:00 PM (ET)

*Topics covered in video or live lectures*

- DNA methylation quality control I
- Consortia and studies with epigenetic data
- Online resources for epigenetic data and analyses

*Office Hours:* 2:00 -2:30 PM (ET)

*Lab 2:* 2:30 PM – 5:00 PM (ET)

- Intensity analysis
- Bisulfite quality
- Hybridization quality
- Detection p
- Red/green probe quality



- Cross-reactive probes
- Gap probe identification

### **WEDNESDAY, August 11th**

*Lab 2 Help Desk:* 9:30 AM -11:30 AM (ET)

*Office Hours:* 11:00 AM -12:00 PM (ET)

*Topics covered in video or live lectures*

- Fundamental epigenetic analyses
- Data reduction in epigenetic data
- Data reduction in epigenetic data - Clocks (Live! lecture during discussion)
- Genetics and methylation

*Office Hours:* 2:00 -2:30 PM (ET)

*Lab 3:* 2:30 PM – 5:00 PM (ET)

- Background Correction
- Sample normalization (not recommended)
- Contamination checks
- Sex and Ancestry checks
- Batch examination and adjustments
- Cell type estimation

### **THURSDAY, August 12th**

*Lab 3 Help Desk:* 9:30 AM -11:30 AM (ET)

*Office Hours:* 11:00 AM -12:00 PM (ET)

*Topics covered in video or live lectures*

- Special analysis topics in epigenetics
- Next steps (Live! lecture during discussion)

*Office Hours:* 2:00 -2:30 PM (ET)

*Lab 4:* 2:30 PM – 5:00 PM (ET)

- Epigenetic clocks
- Global analysis
- Single site analysis, EWAS
- DMR
- Pathway analysis
- Data visualization



Genomics for  
Social Scientists

*Epigenetics*  
NATIONAL INSTITUTE ON AGING

- meQTL
- Finding code/pipelines online
- Finding data online

**FRIDAY, August 13th**

*Lab 4 Help Desk: 9:30 AM -11:30 AM (ET)*

## Agenda January 2021

**Dates:** January 11-14, 2021

**Location:** Virtual!

### **MONDAY, January 11<sup>th</sup>**

*Topics covered in video or live lectures*

- Motivation for epigenetics in social and behavioral research
- Biology of epigenetics
  - Overview, DNA modifications
  - Histone modifications, regulatory RNA, cells and tissues
  - Timing, genes and the environment
- Strategies for collection and measurement of DNA methylation

*Lab 1:*

2:30 PM – 5:00 PM (EST)

- RStudio Cloud info
- Introduction to R
- Importing/exploring the data

### **TUESDAY, January 12<sup>th</sup>**

*Topics covered in video or live lectures*

- DNA methylation quality control I
- Consortia and studies with epigenetic data
- Online resources for epigenetic data and analyses

*Lab 2:*

2:30 PM – 5:00 PM (EST)

- Intensity analysis
- Bisulfite quality
- Hybridization quality
- Detection p
- Red/green probe quality
- Cross-reactive probes
- Gap probe identification



## WEDNESDAY, January 13<sup>th</sup>

### *Topics covered in video or live lectures*

- Fundamental epigenetic analyses
- Data reduction in epigenetic data
- Data reduction in epigenetic data - Clocks (Live! lecture during discussion)
- Genetics and methylation

### *Lab 3:*

2:30 PM – 5:00 PM (EST)

- Background Correction
- Sample normalization (not recommended)
- Contamination checks
- Sex and Ancestry checks
- Batch examination and adjustments
- Cell type estimation

## THURSDAY, January 14<sup>th</sup>

### *Topics covered in video or live lectures*

- Special analysis topics in epigenetics
- Next steps (Live! lecture during discussion)

### *Lab 4:*

2:30 PM – 5:00 PM (EST)

- Epigenetic clocks
- Global analysis
- Single site analysis, EWAS
- DMR
- Pathway analysis
- Data visualization
- meQTL
- Finding code/pipelines online
- Finding data online