**SISG 2018**

[**Module 6: Genetic Epidemiology**](https://www.biostat.washington.edu/suminst/sisg2016/modules/SM1609)

**Instructors: Alison Fohner and Sara Lindstrom**

**July 11th-13th**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Day** | **Time** | **Lead** | **Topics** | **Details** |
| **Wednesday** | 1:30-2:00 | **Alie/Sara** | Class Intro | \*Intro to class/Review Agenda and topics  \* Student introductions |
|  | 2:00-3:00 | **Sara** | Overview of Genetic Epi | \* Intro to Epidemiology and Genetic Epidemiology |
|  |  |  |  |  |
|  | 3:30-5:00 | **Alie** | Human genetic variation | Types of genetic variation, linkage disequilibrium. |
| **Thursday** | 8:30-10:00 | **Alie** | Population Genetics | Hardy-Weinberg Equilibrium, population structure, admixture mapping. |
|  |  |  |  |
|
| 10:30-12:00 | **Sara** | Family-based Studies | Linkage Analysis, family-based association studies. |
|
| 1:30-3:00 | **Alie** | Association Studies | Sequencing, genotyping, imputation, association analyses. |
|
| 3:30-5 | **Sara** | Association Studies | GWAS (including bias), rare variants. |
| **Friday** | 8:30-9:15 | **Sara/Alie** | Journal Club | Benonisdottir, S et al. "Epigenetic and genetic components of height regulation" |
| 9:15-10:00 | **Alie** | Bioethics and Implementation | PPV, NPV, sensitivity, specificity, principles of bioethics |
|
| 10:30-12:00 | **Sara** | Gene-Environment Interactions | Definitions, methods, practical issues |
|
| 1:30-2:15 | **Sara** | Mendelian Randomization | Concept, methods |
| 2:15-3:00 | **Alie** | Pharmacogenetics | Pathways and analysis |
|
| 3:30-4:30 | **Sara** | Risk prediction | Methods, applications |
| 4:30-5:00 | **Alie/Sara** | Wrap-up |  |