**Syllabus: BIOL 4545 “HUMAN GENETICS” Fall 2021**

**12:30 – 1:45 In Person, MASON 3133**

Tue Aug 24 Introductory Lecture

Thu Aug 26 Heritability and Genetic Models of Disease

Tue Aug 31 Structure and Content of the Human Genome – Ch 2

Thu Sep 2 Human Evolutionary Genetics – Ch 3

Tue Sep 7 Normal Human Variation – Ch 4

Thu Sep 9 Presentation 1: African genome sequencing informs migration and health

Tue Sep 14 Genome-Wide Association Studies – Ch 6

Thu Sep 16 GWAS Practical Exercise

Tue Sep 21 Whole Genome Sequencing – Ch 7

Thu Sep 23 Presentation 2: The TopMED 58,000 whole genome sequencing study

Tue Sep 28 Gene Expression Profiling – Ch 8

Thu Sep 30 Epigenetic Profiling – Ch 9

Tue Oct 5 Single Cell Genomics

Thu Oct 7 Presentation 3: The genetic architecture of the human face

**Tue Oct 12 *Fall Break***

Thu Oct 14 Integrative Genomics and the Microbiome – Ch 10

Tue Oct 19 Metabolic Syndrome – Ch 12

Thu Oct 21 Presentation 4: IRX3 mediates human obesity

Tue Oct 26 Type 2 Diabetes – Ch 12

Thu Oct 28 Inflammatory Disease - Ch 11

Tue Nov 2 Autoimmune Disease – Ch 11

Thu Nov 4 Presentation 5: Integrative genomics links enhancers to human disease

Tue Nov 9 Cardiovascular Disease – Ch 13

Thu Nov 11 Cancer single cell genomics special lecture – Manoj Bhasin, Emory

Tue Nov 16 Breast and Prostate Cancer – Ch 14

Thu Nov 18 Lymphoma, Lung, and Skin Cancer – Ch 14

Tue Nov 23 Presentation 6: Fecal Microbiome Transfer and Cancer Immunotherapy

**Thu Nov 25** ***Thanksgiving***

Tue Nov 30 Neuropsychiatric Genetics – Ch 15

Thu Dec 2 Cognitive Genetics and Social Genomics

Tue Dec 7 Aging – Ch 16

Final Term Paper due 5pm

Mon Dec 13 Final Take Home exam due 2pm

Current Literature for **Human Genetics**, BIOL 4545 Fall 2016

1. Choudhury et al *Nature* **586**: 741-748 Oct 29, 2020

“High-depth African genomes inform human migration and health”

**Natalie dos Santos, Baylor Reini, Hanna Terhaar**

2. Taliun et al *Nature* **590**: 290-299 Feb 11, 2021

“Sequencing of 53,831 diverse genomes from the NHLBI TOPMed Program”

**Sophia Babish, Clarke Britton, Vivian Cheng**

3. White et al *Nature Genetics* **53**: 43-53 January, 2021

“Insights into the genetic architecture of the human face”

**Neha Bhatia, Naomi Douglas**

4. Sobreira et al *Science* **372**: 1085-1091 Jun 4, 2021

“Extensive pleiotropism and allelic heterogeneity mediate metabolic effects of IRX3 and IRX5”

**McKenzie Gignilliat, Erik Heitshusen**

5. Nasser et al *Nature* **593**: 238-243 Apr 7, 2021

“Genome-wide enhancer maps link risk variants to disease genes”

**Ben Ahn, Jared Collins, Shu Luan**

6. Davar et al *Science* **371**: 595-601 Feb 5, 2021

“Fecal microbiota transplant overcomes resistance to anti–PD-1 therapy in melanoma patients”

**Ted Akberom, Octavio Calvo, Charlie Wood**