

Principles in Genetics & Epigenetics

Syllabus - Spring 2021

Online meeting, Tuesday/Thursday, 10:30 am - noon.

Date, Day	Lecture Topic	Lecturer
January 12, T	The structure of the genome	Sen
January 14, Th	Chromosomes and aneuploidy	Cole
January 19, T	Genetic screens	Mattox
January 21, Th	RNA interference	Arur
January 26, T	Transgenic animals	Behringer
January 28, Th	Conditional genetic manipulations	Wang
February 2, T	Molecular basis of disease phenotype-genotype	Hixson
February 4, Th	Next generation DNA sequencing	Fornage/ Krahe
February 9, T	Current human genetic approaches to gene discovery for multifactorial disorders	Fornage
February 11, Th	Applications of genetic information to health outcomes in multifactorial disorders	Fornage
February 16, T	Medical genetics services & clinical risk assessment	Singletary
February 18, Th	Genetic basis of cancer	Huff/Krahe
February 23, T	Case study: Cancer genetics	Huff/Krahe
February 25, Th	Functional validation of Variants in Disease Candidate Genes	Karras
March 2, T	RNA-Seq Workshop	Liu
March 4, Th	RNA-Seq Workshop	Liu
March 9, T	RNA-Seq Workshop	Liu
March 11, Th	RNA-Seq Workshop	Liu
March 15-19	Spring Break – No class	
March 23, T	Gene precision therapies and stem cell therapeutics	McDonnell
March 25, Th	The microbiome in human disease	Hanis
March 30, T	Epigenetics & expression of the genome	Cheng
April 1, Th	Epigenetics techniques: bench skills	Jain
April 6, T	Histone code (writers & erasers)	Lee
April 8, Th	Histone code (readers)	Bedford
April 13, T	DNA methylation	Huang
April 15, Th	Imprinting & X inactivation	Chen
April 20, T	Histone variants	Bartholomew
April 22, Th	ATP-dependent chromatin remodelers	Bartholomew
April 27, T	Non-coding RNAs	Calin
April 29, Th	Epigenetics and cancer therapeutics	Santos
May 3- 7	Final Exams	

Course Description

The course is organized into three general sections: 1. Experimental Genetics, 2. Human Genetics, and 3. Epigenetics. There will also be a hands-on bioinformatics workshop to learn how to process and analyze RNA-seq data.

This course fulfills a requirement of the Genetics and Epigenetics Graduate Program.

RNA-Seq Workshop

This hands-on workshop will teach you how to process and analyze sequence data to assess and compare transcriptomes. You can use your own sequence data, use datasets in public repositories, or we will provide sequence datasets.

Course Directors

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