

GS04 1253 -- Principles in Genetics & Epigenetics

Syllabus - Spring 2022

In-person Class (based on current announcements by MD Anderson and UTHealth)

Tuesday & Thursday, 10:30 am – 12:00 noon

BSRB S3. Large Classroom

Date, Day	Lecture Topic	Lecturer
January 11, Tu	<i>The structure of the genome</i>	Sen
January 13, Th	<i>Chromosomes and aneuploidy</i>	Cole
January 18, Tu	<i>Genetic screens</i>	Mattox
January 20, Th	<i>RNA interference</i>	Arur
January 25, Tu	<i>Transgenic animals</i>	Behringer
January 27, Th	<i>Conditional genetic manipulations</i>	Wang
February 1, Tu	<i>Molecular basis of disease phenotype-genotype</i>	Hixson
February 3, Th	<i>Next generation DNA sequencing</i>	Fornage/Krahe
February 8, Tu	<i>Current human genetic approaches to gene discovery for multifactorial disorders</i>	Fornage
February 10, Th	<i>Applications of genetic information to health outcomes in multifactorial disorders</i>	Fornage
February 15, Tu	<i>Medical genetics services & clinical risk assessment</i>	Singletary
February 17, Th	<i>Genetic basis of cancer</i>	Huff/Krahe
February 22, Tu	<i>Case study: Cancer genetics</i>	Huff/Krahe
February 24, Th	<i>Functional validation of Variants in Disease Candidate Genes</i>	Karras
March 1, Tu	<i>RNA-Seq Workshop</i>	Liu
March 3, Th	<i>RNA-Seq Workshop</i>	Liu
March 8, Tu	<i>RNA-Seq Workshop</i>	Liu
March 10, Th	<i>RNA-Seq Workshop</i>	Liu
March 14-18	Spring Break – No class	
March 22, Tu	<i>Gene precision therapies and stem cell therapeutics</i>	McDonnell
March 24, Th	<i>The microbiome in human disease</i>	Hanis
March 29, Tu	<i>Epigenetics & expression of the genome</i>	Cheng
March 31, Th	<i>Epigenetics techniques: bench skills</i>	Jain
April 5, Tu	<i>Histone code (writers & erasers)</i>	Lee
April 7, Th	<i>Histone code (readers)</i>	Bedford
April 12, Tu	<i>DNA methylation</i>	Huang
April 14, Th	<i>Imprinting & X inactivation</i>	Chen
April 19, Tu	<i>Histone variants</i>	Bartholomew
April 21, Th	<i>ATP-dependent chromatin remodelers</i>	Bartholomew
April 26, Tu	<i>Non-coding RNAs</i>	Calin
April 28, Th	<i>Epigenetics and cancer therapeutics</i>	Santos
May 2-6	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 & 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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