

Foundations of Biomedical Research 2021

Week 2: Principles of Genetics and Modern Genomics - Swathi Arur

Time	Monday September 6	Tuesday September 7	Wednesday September 8	Thursday September 9	Friday September 10
8:30	Labor Day Holiday No classes today	Lecture 1: Mutations, Gene Function, Mapping (ML)	Biostats Exercise: binomial test and one-sample t-test (John Magnotti)	Breakout: Epistasis: problem solving (TA)	Lecture 4: Mouse genetics, fundamentals (RB)
9:15		Lecture 2: Forward and Reverse Genetics (ML)		Genomics and genetics in Undiagnosed Disease Network (SY)	Breakout: Transgenic mouse workshop (RB)
10:00		Break	Lecture 4, breakout (combined): Genetic Epistasis	Break	Break
10:15		Lecture 3: Genetics in the era of genomics (NN)	With some examples that the students will solve. (SA) □	Breakout continues	Breakout continues

SA – Swathi Arur

JM – John Magnotti

ML – Mike Lorenz

SY – Shinya Yamamoto

RB – Richard Behringer

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Learning objectives:

1. Understand the concept of gene, variant, allele
2. Understand the concept of genetic screens and their role in discovery of major genetic pathways
3. Genomics and how it relates to genetics and how can we integrate the knowledge of genetics using genomics
4. Application of genetics to diagnosing rare diseases
5. Designing a transgenic mouse