**Essentials of Genetics**

The physical and behavioral traits of all living organisms are shaped by the genetic information that they inherit from their parents. The eighth collection in the JoVE Science Education series focuses on genetics, the study of how genes build traits and how they are passed down from generation to generation. The collection is divided into five modules covering broad subdisciplines: the genetics of individuals and populations, genetics and disease, gene expression, epigenetics, and genetic engineering. These videos briefly overview important discoveries and basic concepts of each field, introduce key questions being asked by geneticists today, and discuss common tools and experimental approaches used to study and manipulate genes.

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| 5540  Genetics of Individuals and Populations | 5541  Genetic Crosses | 5542  Genetic Screens |
| 5543  Genetics and Disease | 5544  SNP Genotyping | 5545  Cytogenetics |
| 5546  Introduction to Gene Expression | 5547  Expression Profiling with Microarrays | 5548  RNA-Seq |
| 5549  Introduction to Epigenetics | 5550  DNA Methylation Analysis | 5551  Chromatin Immunoprecipitation |
| 5552  Introduction to Genetic Engineering | 5553  Recombineering and Gene Targeting | 5554  Genome Editing |