Part of a series on

Genetics

Key components

- Chromosome
  - DNA
  - RNA
- Genome
- Heredity
- Mutation
- Nucleotide
- Variation

- Outline
- Index

History and topics

- Introduction
- History

- Evolution (molecular)
- Population genetics
- Mendelian inheritance
- Quantitative genetics
- Molecular genetics

Research

- DNA sequencing
- Genetic engineering
- Genomics (template)

- Medical genetics

- Branches of genetics

Personalized medicine

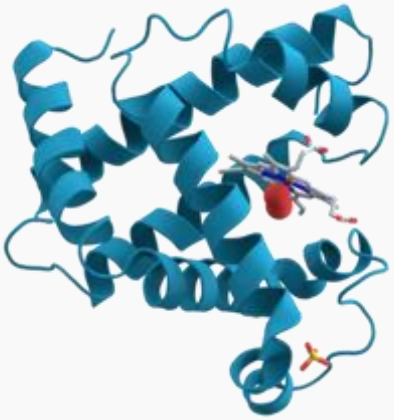
Personalized medicine

- **Biology portal**
- **Molecular and cellular biology portal**

- v
- t
- e

Part of a series on

Biochemistry



Key components

- Biomolecules
- Metabolism

- Index
- Outline

History and topics

- History

- Biochemistry
- Cell biology
- Bioinformatics
- Enzymology
- Genetics
- Immunology
- Molecular biology
- Plant biochemistry
- Structural biology

- Branches of biochemistry

- List of biochemists

Glossaries

- Glossary of biology
- Glossary of chemistry

Portals: Biology, MCB

- v
- t
- e

Genetics is a branch of biology concerned with the study of genes, genetic variation, and heredity in living organisms.[1][2][3]

The discoverer of genetics is Gregor Mendel, a late 19th-century scientist and Augustinianfriar. Mendel studied "trait inheritance", patterns in the way traits are handed down from parents to offspring. He observed that organisms (pea plants) inherit traits by way of discrete "units of inheritance". This term, still used today, is a somewhat ambiguous definition of what is referred to as a gene.

Trait inheritance and molecular inheritance mechanisms of genes are still primary principles of genetics in the 21st century, but modern genetics has expanded beyond inheritance to studying the function and behavior of genes. Gene structure and function, variation, and distribution are studied within the context of the cell, the organism (e.g. dominance), and within the context of a population. Genetics has given rise to a number of subfields, including epigenetics and population genetics. Organisms studied within the broad field span the domains of life (archaea, bacteria, and eukarya).

Genetic processes work in combination with an organism's environment and experiences to influence development and behavior, often referred to as nature versus nurture.
The intracellular or extracellular environment of a cell or organism may switch gene transcription on or off. A classic example is two seeds of genetically identical corn, one placed in a temperate climate and one in an arid climate. While the average height of the two corn stalks may be genetically determined to be equal, the one in the arid climate only grows to half the height of the one in the temperate climate due to lack of water and nutrients in its environment.