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Author information and date reviewed

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Article by:

Johnston, Mark Department of Genetics, Washington University Medical Center, School of Medicine, St. Louis, Missouri.

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Key Concepts

Key Concepts highlight major points in the article

- Genetics, the study of biological inheritance, is concerned with the nature and behavi...
- Molecular geneticists study inheritance at the molecular level, which typically involves deoxyribonucleic acid (DNA).
- Genes specify the structure and function of organisms according to a process describe central dogma of molecular biology.
- A major goal of molecular genetics is to learn how DNA sequence determines the regu gene expression.

The science of biological inheritance. Genetics is responsible for the resemblances and among related organisms and individuals. As such, it occupies a central position in biology, the same principles apply to all animals and plants. Moreover, understanding of inheritance ution and for the improvement of cultivated plants s the science that deals with the nature and behav ts. From this point of view, evolution is seen as the ulations, whereas embryology is the study of the effects of genes on eral, genetics has much to contribute to the study of developmental logy, and other subjects. *See also*: **Animal evolution**;

Molecular genetics describes the basis of inherita genetic material in most organisms is deoxyribon long polymer made up of four different nucleotide cytosine (C), and thymine (T). Two DNA strands a a double helix, and the double-stranded DNA mol are divided into thousands of different functional units called genes. (Credit: Andrey Prokhorov/Getty Images)

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1. Name the genetic material in most organisms. Describe this material as a molecular geneticist might.
2. Briefly explain the central dogma of molecular biology.
3. Describe two ways in which the specific sequence of nucleotides (A, T, G, and C) in DNA specifies gene function.
4. Critical Thinking: A DNA seq and transcribes the sequen

Self-assessment questions test basic comprehension and critical thinking skills

Links to Primary Literature

S. Das and M. Bansal, Variation of gene expression in plants is influenced by gene architecture and structural properties of promoters, *PLoS ONE*, 14(3):e0212678, 2019 DOI: https://doi.org/10.1371/journal.pone.0212678

M. W. Feldman and S. Ramachandran, Missing compared to what?: Revisiting heritability, genes and culture, *Philos. Trans. Royal Soc. B Biol. Sci.*, 373(1743):20170064, 2018 DOI: https://doi.org/10.1098/rstb.2017.0064

A. L. Van Eenennaam, Genetic modification of food animals, *Curr. Opin. Biotechnol.*, 44:27–34, 2017 https://doi.org/10.1016/j.copbio.2016.10.007

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Additional Readings

L. H. Hartwell et al., *Genetics: From Genes to Genomes*, 6th ed., McGraw-Hill Education, 2018

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University of Utah, Genetic Science Learning Center, Learn.Genetics: Basic Genetics