

The screenshot shows the AccessScience website interface with several callout boxes highlighting key features:

- Browse available content types:** Points to the top navigation bar containing links for Home, Articles, Briefings, News, Biographies, Media, Projects, For Faculty, and For Admins.
- Enter a search term or browse for articles by topic:** Points to the search bar and the list of scientific topics below it.
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## Article

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Biology & Biomedicine » Genetics » Genetics

### Genetics

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**Content**

- Study and analysis
- Links to Primary Literature
- Additional Readings
- Molecular genetics

### Key Concepts

- Genetics, the study of biological inheritance, is concerned with the nature and behavior of genes.
- 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 described by the central dogma of molecular biology.
- A major goal of molecular genetics is to learn how DNA sequence determines the regulation of gene expression.

**The science of biological inheritance.** Genetics is responsible for the resemblances and differences among related organisms and individuals. As such, it occupies a central position in biology, and the same principles apply to all animals and plants. Moreover, understanding of inheritance is essential for the improvement of cultivated plants and animals. The science that deals with the nature and behavior of genes is genetics. From this point of view, evolution is seen as the change in the frequency of genes in a population, whereas embryology is the study of the effects of genes on development. In general, genetics has much to contribute to the study of developmental biology, and other subjects. *See also:* [Animal evolution](#);

### Test Your Understanding

- Name the genetic material in most organisms. Describe this material as a molecular geneticist might.
- Briefly explain the central dogma of molecular biology.
- Describe two ways in which the specific sequence of nucleotides (A, T, G, and C) in DNA specifies gene function.
- Critical Thinking: A DNA sequence is transcribed into messenger RNA, which then translates the sequence into a protein.

### 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>

### Additional Readings

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

[Genetics Home Reference: Help Me Understand Genetics](#)

[University of Utah, Genetic Science Learning Center, Learn.Genetics: Basic Genetics](#)

Author information and date reviewed

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