

DNA, genes and protein synthesis

Revision notes · The genome, genes and chromosomes: where DNA is found in a cell, and how each gene codes for a particular protein.

For Edexcel International GCSE Science (Double Award) 4SD0.

DNA, genes and protein synthesis Spec 3.14–3.18B

The genome, genes and chromosomes Spec 3.14, 3.15

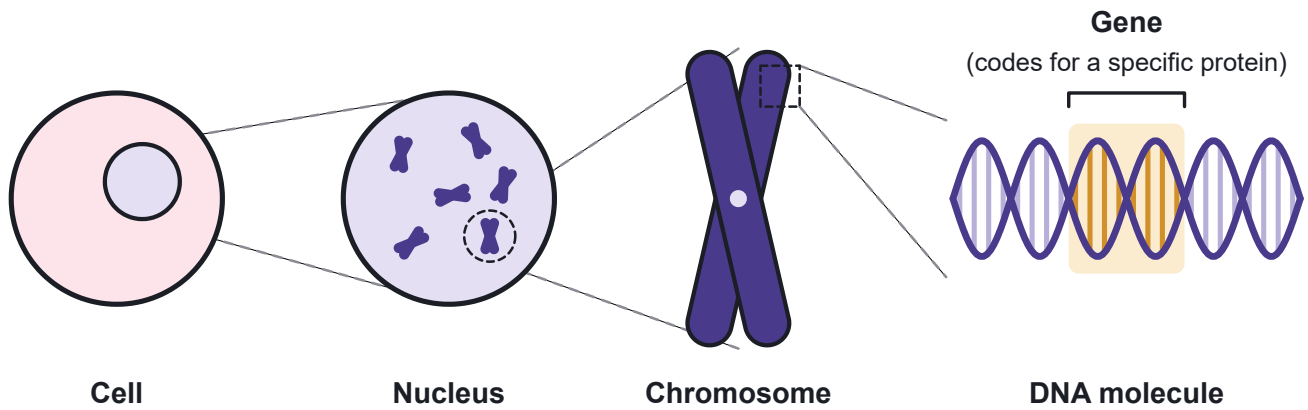
Genome	The entire DNA of an organism.
Gene	A section of a molecule of DNA that codes for a specific protein.
Chromosome	A long molecule of DNA, found in the nucleus, on which genes are located.

The **nucleus** of a cell contains **chromosomes**. Each chromosome is one very long DNA molecule, and many genes are located along it.

The genome includes all of the genes of an organism, as well as the rest of its DNA. A gene is a short section of the DNA. Each gene has a different sequence of bases, so each gene codes for a different protein.

Proteins do most of the work in a cell. Enzymes are proteins, for example. So the genes in a cell decide which proteins it can make, and that helps to decide the characteristics of the organism.

From nucleus to gene	
Structure	What it is
Nucleus	The part of the cell that contains the chromosomes
Chromosome	A long DNA molecule with many genes along it
Gene	A section of DNA that codes for one specific protein
Genome	All of the DNA of the organism



[\(opens full size in a new tab\)](#)

The **nucleus** contains **chromosomes**; each chromosome is a long DNA molecule, and a **gene** is a short section of it.

Exam tip: Use the exact wording. A gene codes for a specific protein, and the genome is the entire DNA, not just the genes.

Common mistake: Genes are located on chromosomes, which are in the nucleus. Do not say that chromosomes are found inside genes.

Quick check

1. What is a gene?
2. What is the genome?

Quick check answers

DNA, genes and protein synthesis

1. A section of a molecule of DNA that codes for a specific protein.
2. The entire DNA of an organism.