

Genetic code

The genetic [code](#) is the set of rules used by living [cells](#) to translate information encoded within genetic material ([DNA](#) or [mRNA](#) sequences) into [proteins](#). [Translation](#) is accomplished by the [ribosome](#), which links [amino acids](#) in an order specified by messenger RNA (mRNA), using transfer RNA (tRNA) molecules to carry amino acids and to read the mRNA three nucleotides at a time. The genetic code is highly similar among all organisms and can be expressed in a simple table with 64 entries.

The code defines how sequences of [nucleotide](#) triplets, called [codons](#), specify which amino acid will be added next during protein synthesis. With some exceptions, a three-nucleotide codon in a nucleic acid sequence specifies a single amino acid. The vast majority of genes are encoded with a single scheme (see the RNA codon table). That scheme is often referred to as the canonical or standard genetic code, or simply the genetic code, though variant codes (such as in human mitochondria) exist.

While the “genetic code” determines a protein's amino acid sequence, other genomic regions determine when and where these proteins are produced according to various “gene regulatory codes”.

[Direct sequencing](#) means that the letters of the genetic [code](#) are read directly, as if with a magnifying glass.

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