= Genetic code =

The genetic code is the set of rules by which information encoded within genetic material (DNA or mRNA sequences) is translated into proteins by living cells . Translation is accomplished by the ribosome , which links amino acids in an order specified by 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 . Because the vast majority of genes are encoded with exactly the same code (see the RNA codon table) , this particular code is often referred to as the canonical or standard genetic code , or simply the genetic code , though in fact some variant codes have evolved . For example , protein synthesis in human mitochondria relies on a genetic code that differs from the standard genetic code .

While the " genetic code " determines a protein 's amino acid sequence , other genomic regions determine when and where these proteins are produced according to a multitude of more complex " gene regulatory codes " .

= = Discovery = =