

DNA Translation

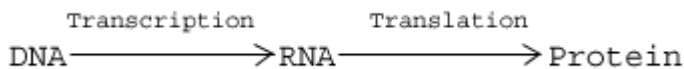
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What is a Translation?



In [molecular biology](#) and [genetics](#), translation is the third stage of [protein biosynthesis](#). Translation is the process where amino acids are linked by peptide bonds on m-RNA in ribosome complex, this is known as decoding. Translation process takes place in the cell cytoplasm, specifically where the cell organelle, [ribosome](#) is present.

The central dogma to molecular biology



Stages of Translation:

It occurs in three stages initiation, chain elongation and chain termination. It is similar in both prokaryotes and eukaryotes with minor changes

Deoxyribonucleic acid (DNA):

Occurrence: DNA found in all organisms except a few [viruses](#). The greatest amount of DNA is concentrated in the nucleus. It also occurs in cell organelles like mitochondria, plastids and centrioles.

DNA as the genetic material

Chromosomes mainly consist of nucleoproteins having two components nucleic acids and proteins. One of these should obviously constitute the [genetic material](#).

Chemical Composition

[Deoxyribonucleic acid](#) is a polynucleotide molecule consisting of a repeating sequence of monomeric nucleotides arranged in a linear polymeric chain. Each monomeric nucleotide is composed of three components.



- I) A five carbon (pentose) sugar – Deoxyribose
- II) A phosphoric acid group
- III) A nitrogenous base (either purine or pyrimidine)

Purine bases are adenine and guanine. Pyrimidine bases are thymine and cytosine. The pyrimidine uracil is absent.

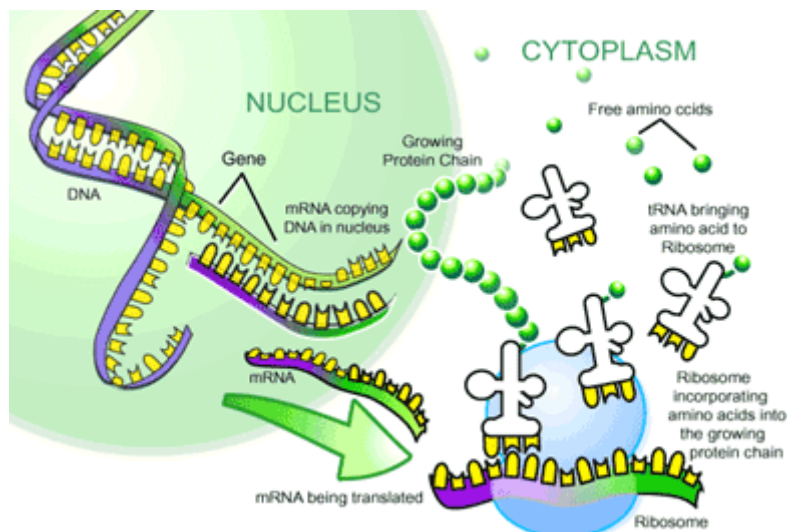
Adenine pairs with thymine by two hydrogen bonds. Cytosine pairs with guanine by three hydrogen bonds.

DNA Translation Process

The genetic information in DNA is transferred to RNA in [transcription](#).

This mRNA moves from nucleus to ribosomes in a cell.

The RNA gets attached to [ribosomes](#) and serves as template for synthesis of protein.



At the ribosome, the messenger RNA dictates the binding of specific transfer RNA molecules each of which is bonded with a particular amino acid.

Each t-RNA has a specific base sequence that binds only with the complementary sequence in messenger RNA.

The order in which the tRNA molecules get attached in mRNA, i.e., the sequence in which the amino acids are built into the polypeptide chain depends on the sequences of bases along the mRNA chain.

The base sequence of mRNA is determined by three nucleotide sequence (triplet) known as codons.

The protein synthesized is released from ribosome.

The ribosome moves from codon to codon along the mRNA. Amino acids are added one by one, translated into Polypeptide sequences dictated by DNA and represented by mRNA.

At the end, a release factor binds to the stop codon, terminating translation and releasing the complete polypeptide from the ribosome.

What is the difference between a transcription and translation?

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Reference Links:

- http://en.wikipedia.org/wiki/Translation_%28biology%29
- http://en.wikipedia.org/wiki/DNA_replication
- <http://en.wikipedia.org/wiki/TRNA>
- http://en.wikipedia.org/wiki/Genetic_code
- http://en.wikipedia.org/wiki/Prokaryotic_DNA_replication
- <http://www.youtube.com/watch?v=RZsoQPKvI2Y>

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