
MOLECULAR GENETICS

adenine (A)

cytosine (C)

guanine (G)

thymine (T)

A-T, G-C

A nucleotide consists of a:

- 1) (deoxyribose) sugar molecule
 - 2) phosphate group
 - 3) nitrogenous base
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STRUCTURE OF DNA

- Made up of two anti-parallel polynucleotide strands.
- Bases from one strand form weak hydrogen bonds with bases on the other strand according to rule of complementary base pairing.

> Two hydrogen bonds are formed between adenine and thymine whereas three hydrogen bonds are formed between guanine and cytosine.

- Uncoiled DNA molecule: structure looks like a "ladder"
 - Coiled DNA molecule - Double helix
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If adenine forms 35% of the nitrogenous bases in a particular DNA molecule, what percentage of the bases would be guanine?

Solution

According to the rule of base pairing, adenine (A) always bonds with thymine (T), while cytosine (C) always bonds with guanine (G).

The ratios of A:T and C:G are 1:1.

$$\begin{aligned}\text{Percentage of T + A} &= 35\% + 35\% \\ &= 70\%\end{aligned}$$

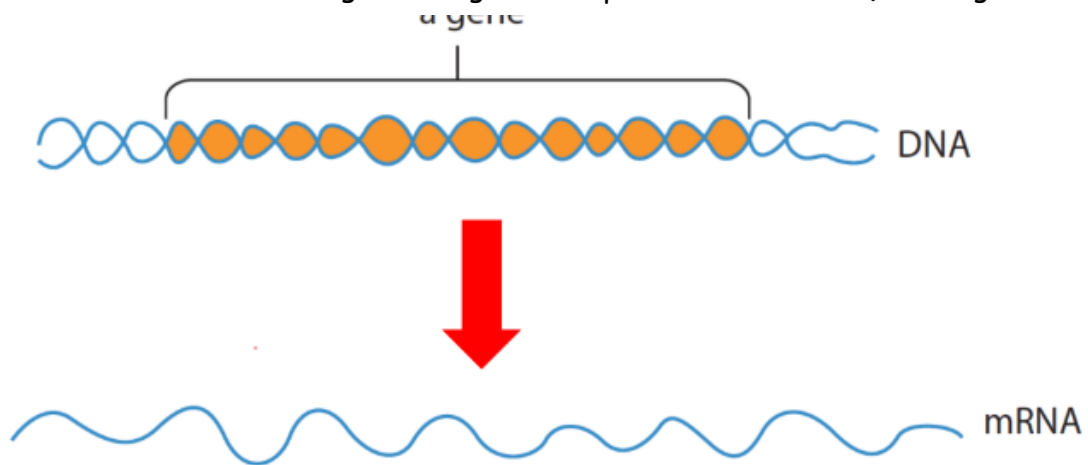
$$\begin{aligned}\text{Percentage of C + G} &= 100\% - 70\% \\ &= 30\%\end{aligned}$$

$$\begin{aligned}\text{Hence, percentage of G} &= \frac{30\%}{2} \\ &= 15\%\end{aligned}$$

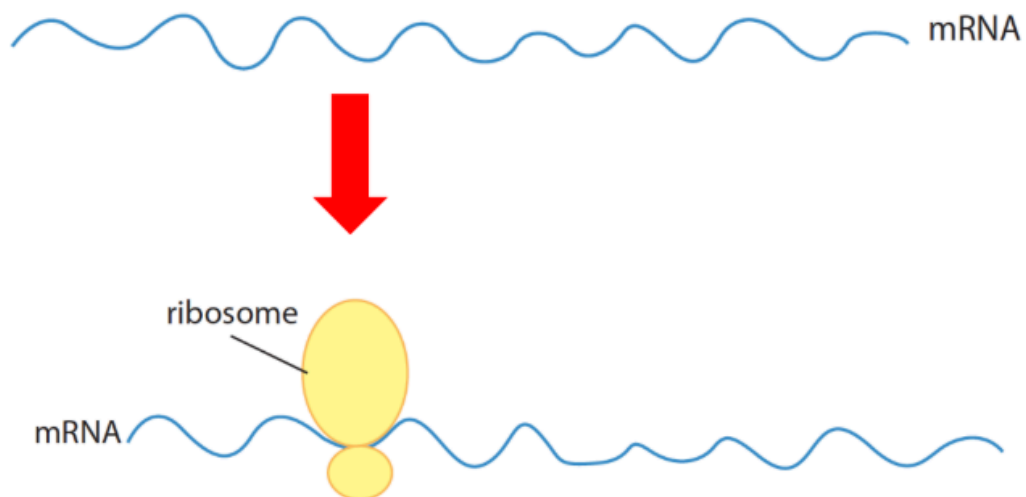


How is a protein / polypeptide made?

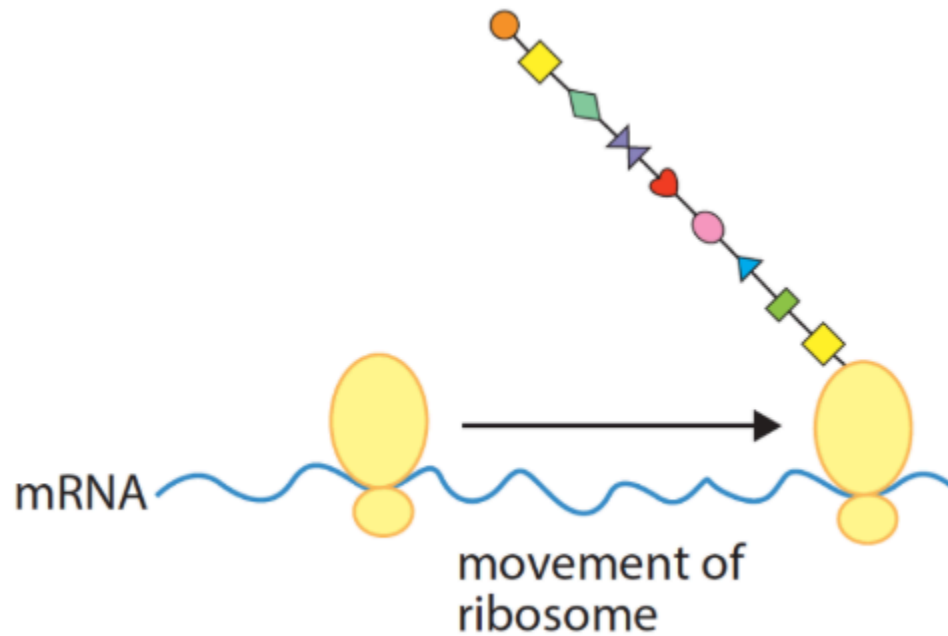
1. In the nucleus, the message in the gene is copied into an mRNA (messenger RNA).



2. The mRNA travels to the cytoplasm and attaches to a ribosome.



3. As the ribosome moves along the mRNA, it synthesises a polypeptide.



4. When the ribosome leaves the mRNA, The polypeptide is released.

