

Keratin

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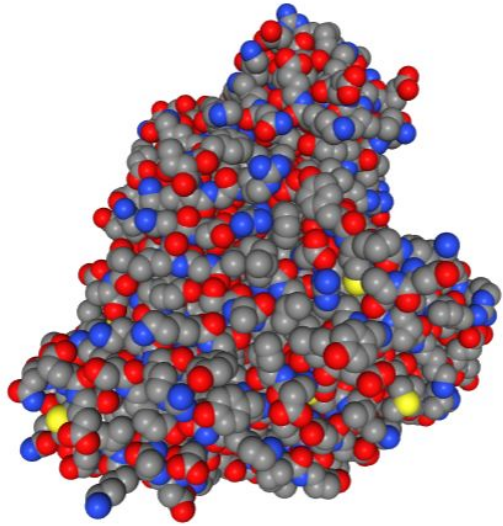
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What Is Keratin?



- Tough, fibrous protein found in skin
- Hair mainly comprised of keratin-associated proteins
- structural protein of hair, nails, horn, hoofs, wool, feathers, and of the epithelial cells in the outermost layers of the skin

3D Model



DNA Sequence

TTAACTGAAATTGATAACAACATTGAACAAATTTCTTCTTA
TAAATCTGAAATTACTGAATTACGTCGTAACGTTCAAGCT
TTAGAAATTGAATTACAATCTCAATTAGCTTTAAAACAATC
TTTAGAAGCTGAAACTGAAGGCCGTTATTGTGTTCAATTA
TCTCAA

cytosine(C) thymine (T) adenine (A) guanine (G)

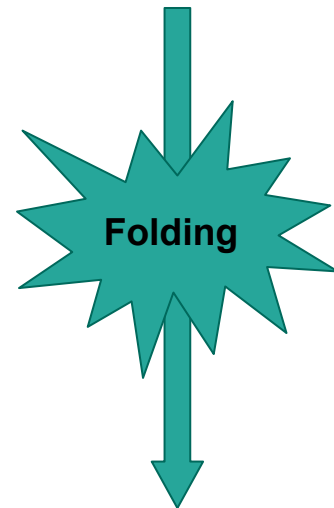
DNA → mRNA → Polypeptide Chain



Transcription



Translation



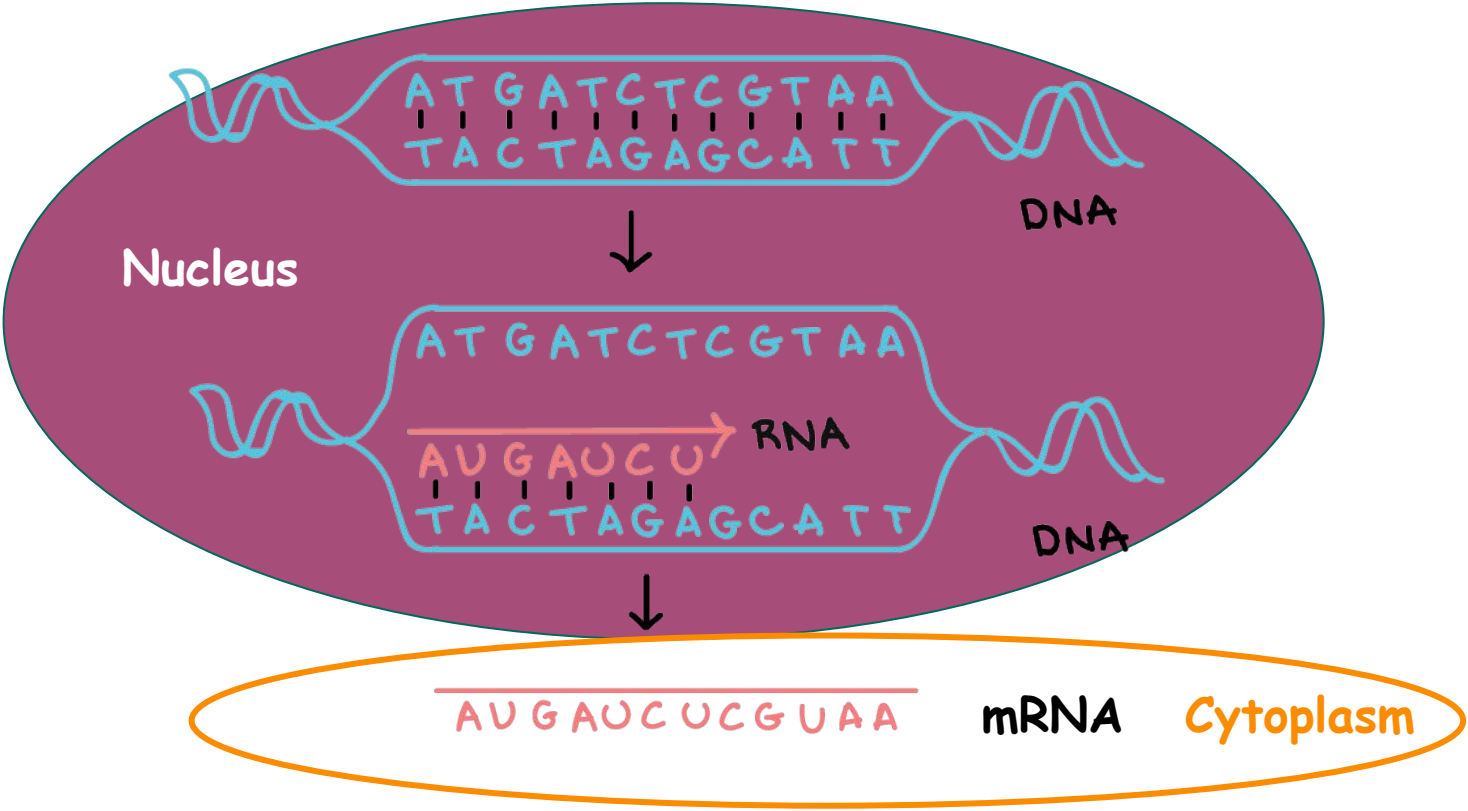
Folding

Protein

Transcription - 1st Step

1. RNA polymerase splits DNA in half
2. pre-RNA attaches to one half of DNA
3. DNA encodes pre-RNA with necessary info.
4. pre-RNA becomes mRNA
5. mRNA detaches from DNA half and moves out of nucleus and into cytoplasm

Transcription



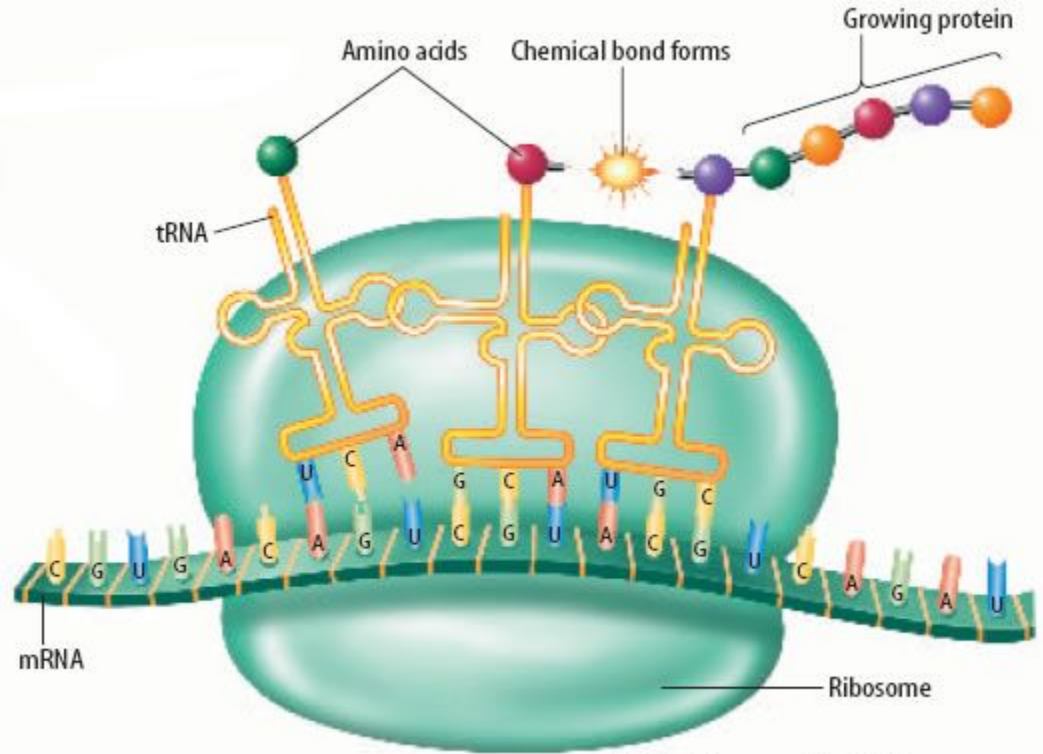
Translation - 2nd Step

1. mRNA moves out of nucleus and into the cytoplasm.
2. mRNA attaches to a ribosome.
3. tRNA brings an amino acid
4. tRNA links to mRNA.
5. tRNA brings in another amino acid according to mRNA codon.
6. The amino acids combine.

Translation Continued

1. The first tRNA moves into the cytoplasm to collect another amino acid
2. The ribosome moves along the mRNA, which exposes the next codon
3. tRNA brings in another amino acid and extends the protein chain
4. The process continues as the ribosome moves along mRNA exposing the next codon
5. Continues until all the needed amino acids are present
6. Finally the ribosome and mRNA separates
7. A polypeptide chain has been formed

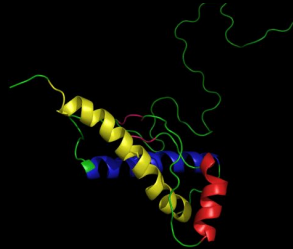
Translation



At the ribosome, the RNA's message is translated into a specific protein.

Folding

- After translation, there is a polypeptide chain
- Polypeptide chain is not a protein
- Folds up to 4 times, then is considered a protein
- Needs to fold in order to perform its biological function



Folding

