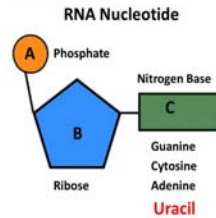


DNA to Protein via RNA

- Sequence of nucleotides in DNA contain info to make proteins
 - Each gene contains info for assembling an amino acid chain
 - Human cells contain ~20,000 - 40,000 genes
- RNA "reads" DNA to create amino acid sequence to create proteins

- RNA Nucleotide (single helix)
 - Ribose Sugar (5 -C)
 - N Bases: A, U (uracil), G, C
 - Phosphate



3 Types of RNA:

1. Messenger RNA (mRNA)

- Reads DNA sequence in the nucleus & goes to the cell's cytoplasm
- Carries info (message) to make a protein

2. Ribosomal RNA (rRNA)

- Clamps onto the mRNA and uses the message to assemble amino acids in the correct order (to form a protein)

3. Transfer RNA (tRNA)

- Transfers amino acids to the ribosome to be assembled into a protein

DNA to Protein

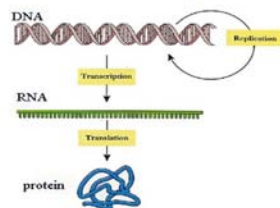
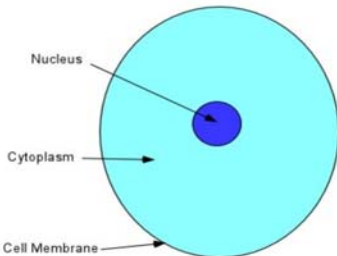
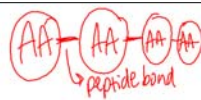
2 Steps:

1. Transcription (in the nucleus)

DNA → mRNA

2. Translation (in the cytoplasm of the cell)

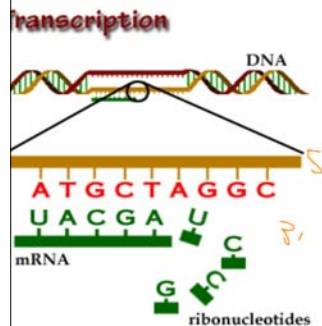
mRNA → polypeptide → protein



TRANSCRIPTION:

DNA → mRNA

nucleus → cytoplasm



1. Helicase unzips DNA
2. Free RNA nucleotides pair with complimentary DNA nucleotides with RNA Polymerase to create mRNA 5' → 3'
3. DNA strands recoil, mRNA leaves the nucleus and enters the cytoplasm (through nuclear pores)

