

PROTEIN SYNTHESIS STAGE 1:

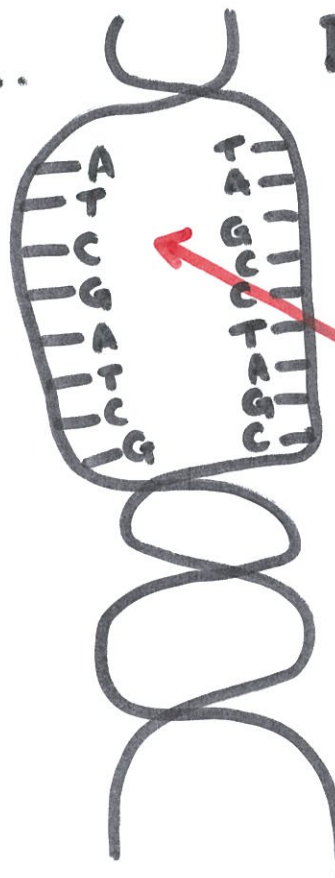
TRANSCRIPTION

1. DNA WOUND UP IN THE NUCLEUS OF A CELL



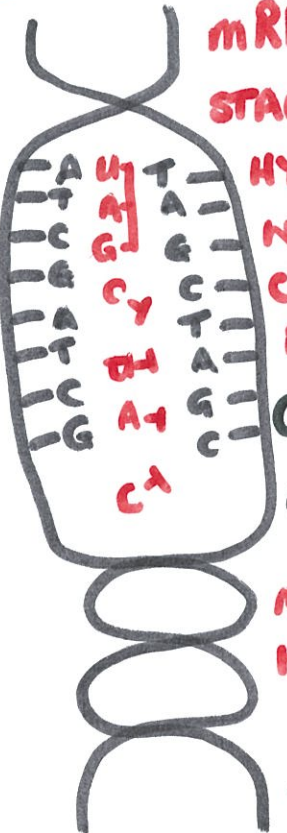
GENE THAT CODES FOR A SPECIFIC PROTEIN IDENTIFIED

2. DNA UNWINDS & UNZIPS AT GENE TO BE TRANSCRIBED



HYDROGEN BONDS BETWEEN BASES BREAK - BASES ARE EXPOSED

3. mRNA NUCLEOTIDES START TO FORM WITH THEIR COMPLEMENTARY BASE ON DNA

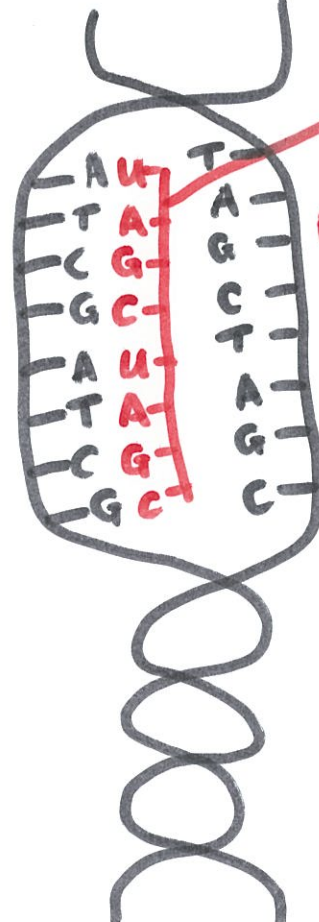


ONLY ONE SIDE OF DNA IS COPIED

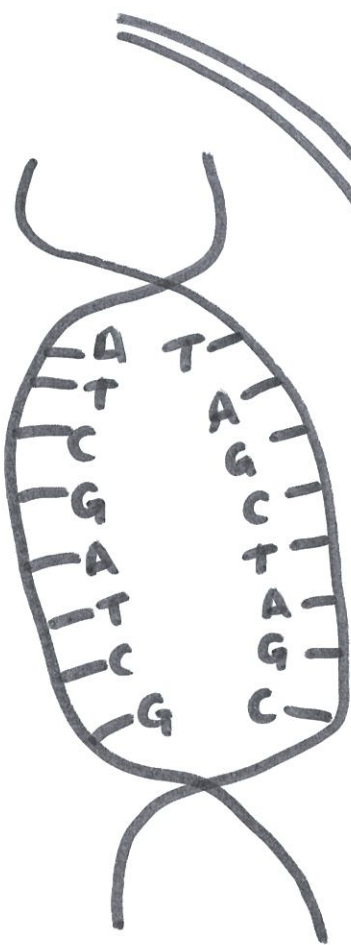
mRNA MOLECULES HAVE BASES

- ADENINE
- URACIL (REPLACES T)
- GUANINE
- CYTOSINE

4. STRONG COVALENT BONDS FORM BETWEEN SUGAR & PHOSPHATE OF ADJACENT RNA MOLECULES



THE mRNA STRAND HAS NOW BEEN SYNTHESISED



DNA WILL NOW ZIP & WIND BACK UP

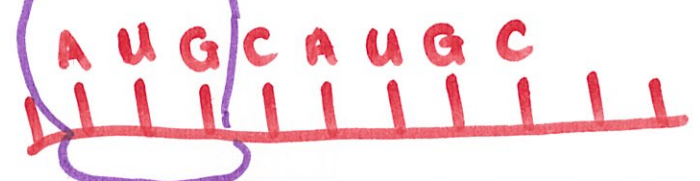
mRNA BREAKS HYDROGEN BONDS WITH DNA & LEAVES THE NUCLEUS VIA A NUCLEAR PORE TO GO INTO THE CYTOPLASM

PROTEIN SYNTHESIS STAGE 2: TRANSLATION



RIBOSOME

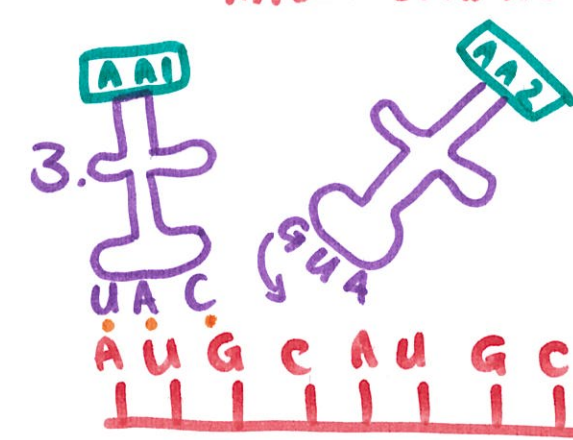
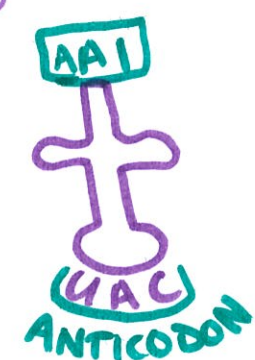
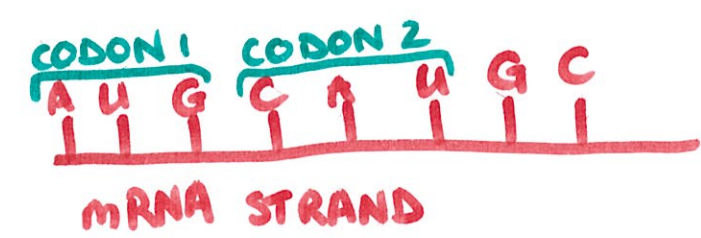
1.



MRNA LEAVES THE NUCLEUS & BECOMES ATTACHED TO A RIBOSOME (FREE OR ATTACHED TO ROUGH E. R.)

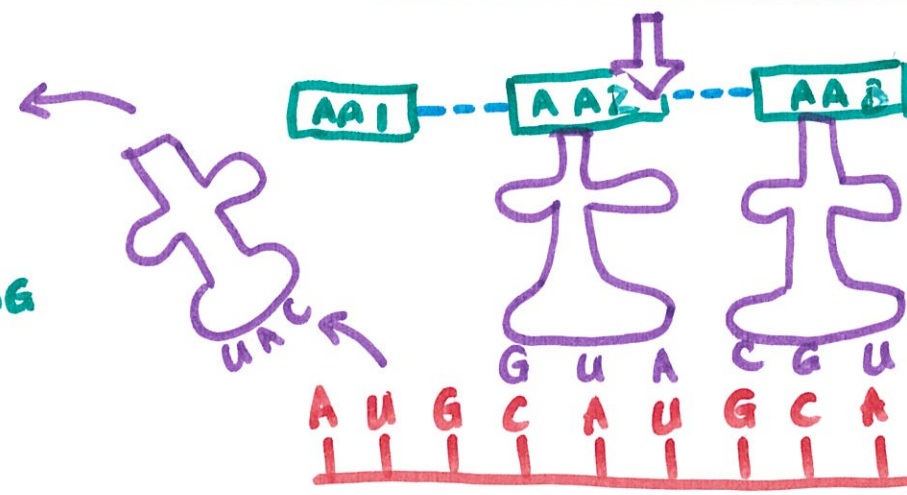
2. CODONS IN mRNA ARE COMPLEMENTARY TO ANTI-CODONS IN tRNA.

tRNA MOLECULES HAVE 2 REGIONS OF INTEREST: 1. WHERE ANTI-CODON SEQUENCE IS FOUND 2. AMINO ACID ATTACHMENT SITE WHERE CORRESPONDING AMINO ACIDS JOIN



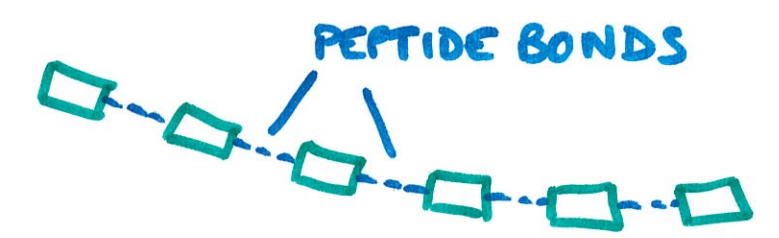
tRNA MOLECULES FORM H-BONDS WITH CODONS ON mRNA AS THEY MOVE ALONG THE RIBOSOME

"EMPTY" tRNA MOLECULE COLLECTS ITS CORRESPONDING AMINO ACID



ADJACENT tRNA MOLECULES FORM PEPTIDE BONDS AT THE CORRESPONDING AMINO ACID.

4. ONCE THE ENTIRE AMINO ACID CHAIN HAS BEEN SYNTHESISED, IT MOVES TO THE GOLGI APPARATUS TO BE PROCESSED & PACKAGED INTO A FUNCTIONAL PROTEIN.



LONG CHAIN OF AMINO ACIDS IS CALLED A POLYPEPTIDE