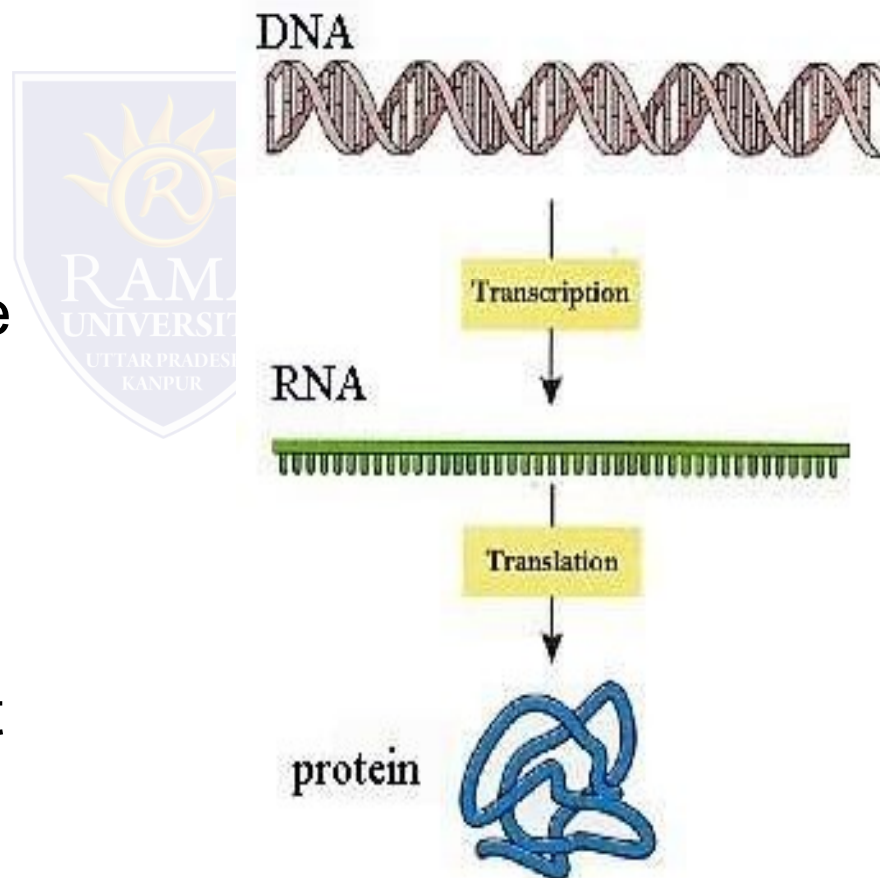




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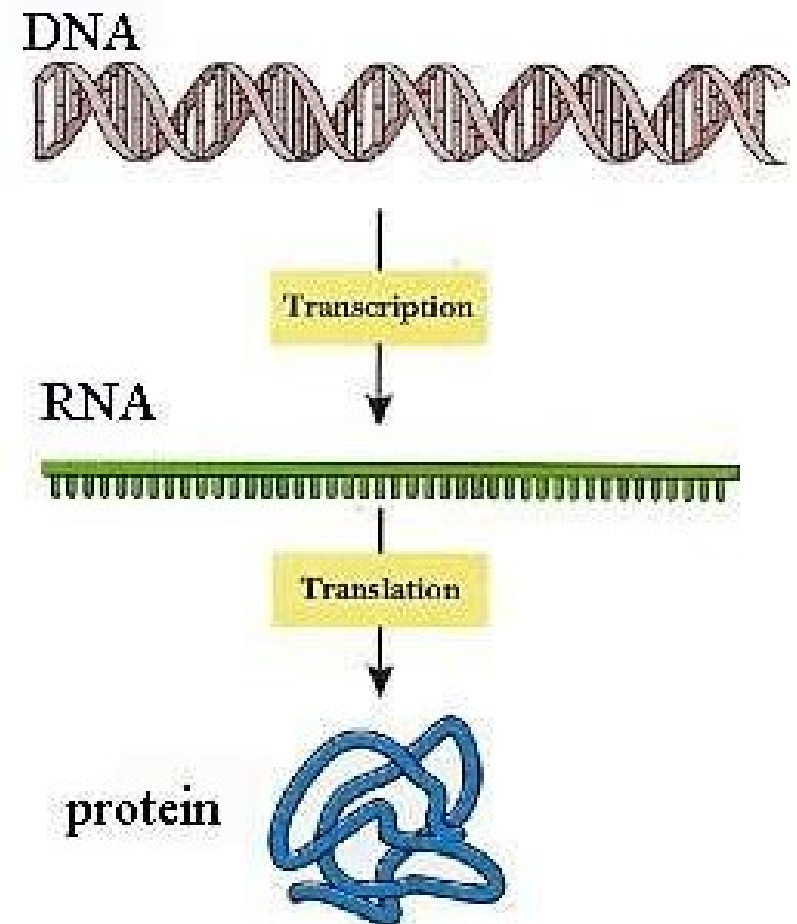
Protein synthesis

- Process starts from DNA through “transcription”
- “Translation” is where ribosome comes in. Translation occurs when protein formed from code on mRNA
- Ribosome carries out the translation of the nucleotide triplets



Protein synthesis

- Chart - visual image of transcription and translation in protein synthesizing
- DNA and RNA have nucleotides that determine kind of protein
- 3 nucleotides = 1 amino acid of a protein

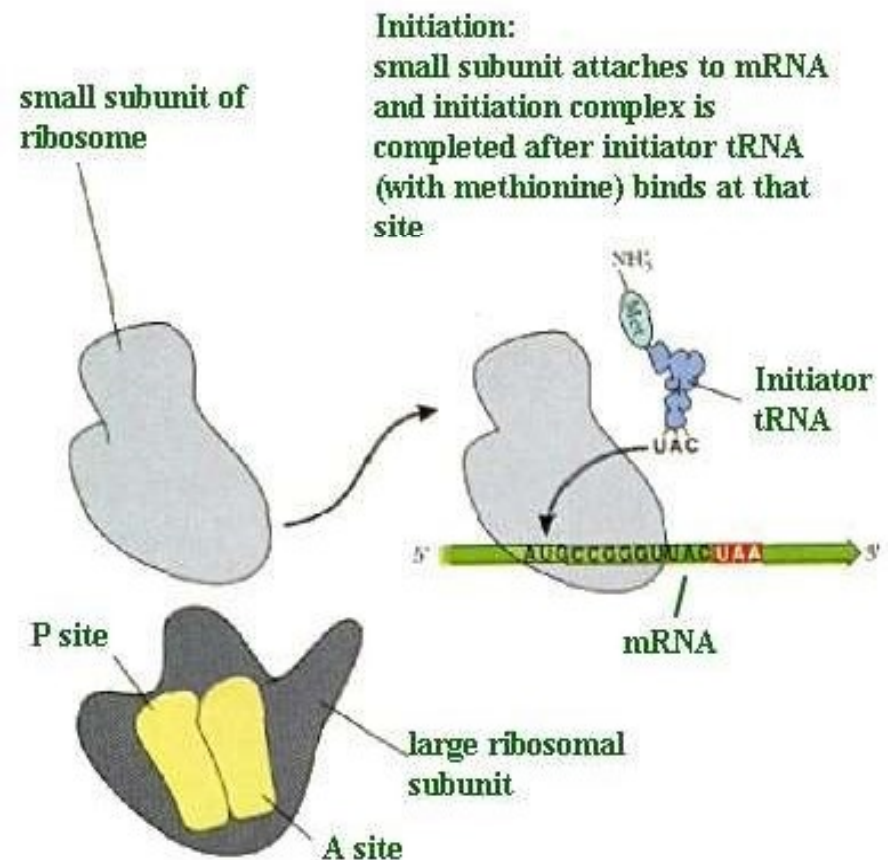


Ribosome and RNA

- mRNA with code for proteins located at 30S subunit
- tRNAs responsible for carrying amino acids to mRNA. Each tRNA has own nucleotide triplet which binds to matching triplet on mRNA, ex., tRNA with code AAA (triple adenine) would match up with mRNA that has code UUU (triple uracil)

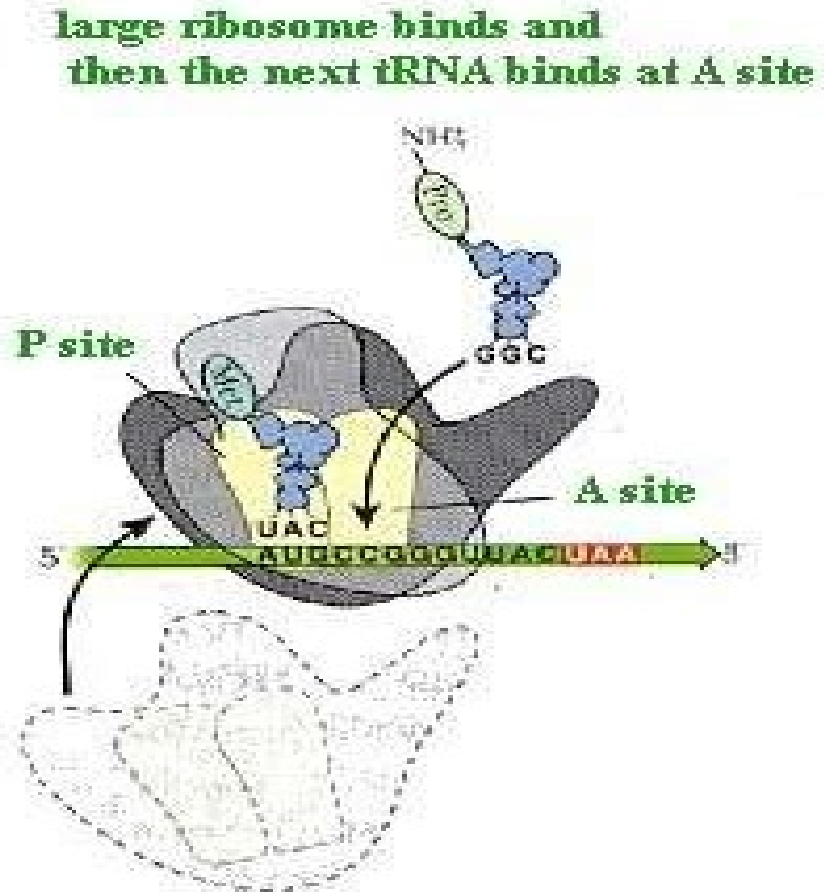
Initiation: The first phase of translation

- Translation begins when mRNA attaches to the 30S
- tRNA comes and binds to mRNA where nucleotide code matches
- This triggers 50S binding to 30S. 50S is where all tRNAs will bind. Now we move on to elongation



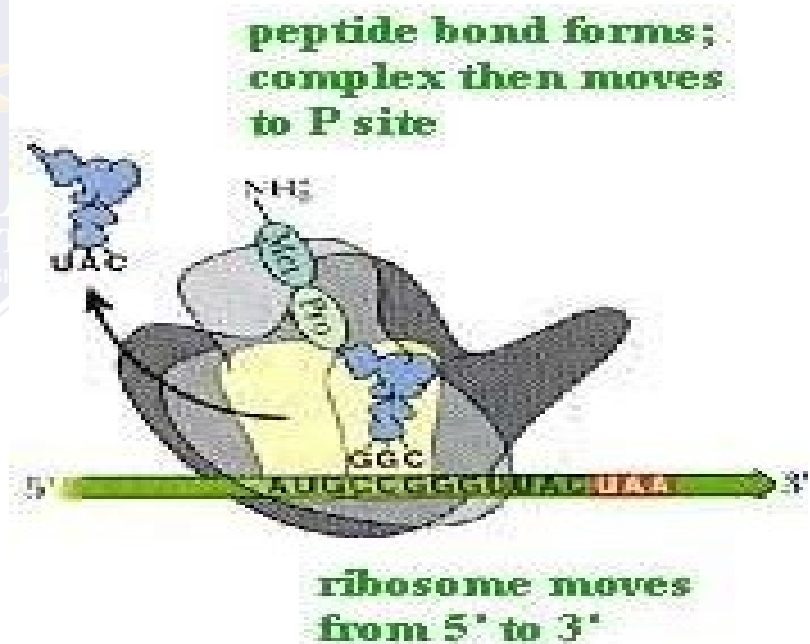
Elongation: The second phase

- Two binding sites on 50S: A site and P site, which aid in continuing translation
- First tRNA connected at A site. Now moves to P site as another tRNA approaches
- Second tRNA binds to A site



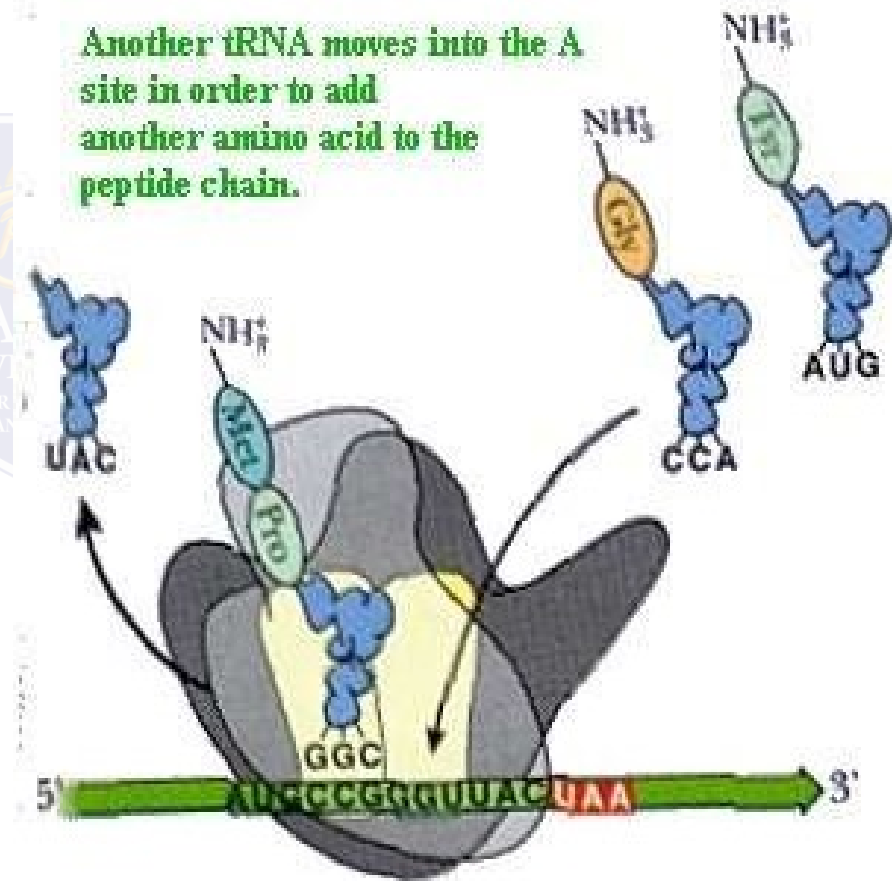
Elongation (continued)

- Peptide bond forms between amino acids of tRNAs (methionine and proline)
- First tRNA now detached from its amino acid, and it leaves ribosome. Second tRNA still has proline and methionine attached



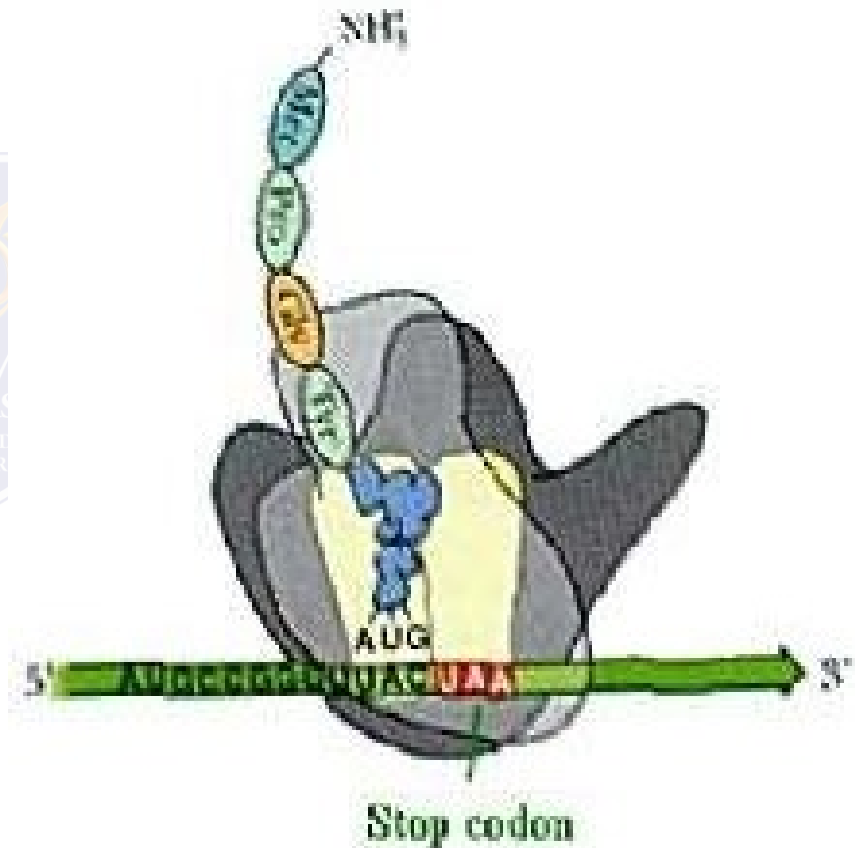
Elongation (continued)

- The tRNA left now moves to P site. Ribosome ready to accept another tRNA and continue process
- Each tRNA adds another amino acid to growing peptide chain (thus “elongation”)
- Eventually process has to finish, however



End of translation

- Ribosome was moving along nucleotide triplets one by one
- Ribosome reaches “stop codon,” peptide chain finished. Last tRNA leaves ribosome, leaving behind completed peptide



End of translation (continued)

- Ribosome separates from mRNA
- Ribosome subunits also separate, and will remain this way until another mRNA comes along to restart the process

