Cheatography

Translation Cheat Sheet

by rhettbro via cheatography.com/133961/cs/27526/

Translation Facts

Proteins are synthesized from amino acids through the process of translation

tRNA carries amino acids to ribosome for protein synthesis. Amino acids not involved in decoding - fidelity of protein synthesis requires correct charging of tRNA

Properties of genetic code: triplet(codon), non-overlapping, unambiguous(clear), degenerate, universal

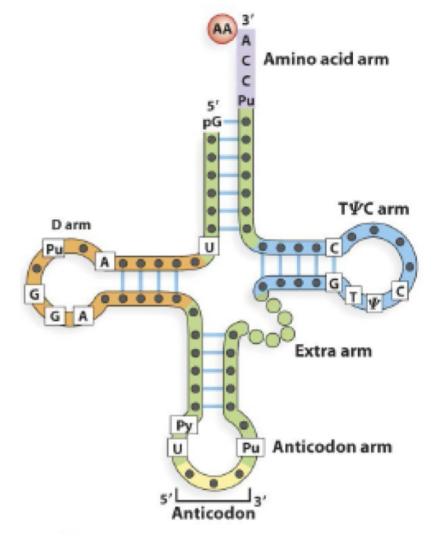
3 phases of translation: **initiation, elongation, termination**

- tRNA base-pairs with mRNA; wobble base pairing

- mRNA is read from 5' to 3', polypeptide extends from N- to C- terminus

Amino acid on tRNA is not involved in codon recognition

Structure of tRNA



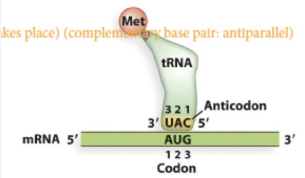
Structure of tRNA

The conformation (three-dimensional shape) of tRNA results from base pairing (hydrogen bonds) within the molecule.

The sequence on 3' end is always **CCA: the amino acid attachment site.**

Anticodon: site of base pairing with mRNA. Unique for each species of tRNA.

Anticodon



Charging a tRNA molecule

Aminoacyl-tRNA synthetases: for charging a transfer RNA with the correct amino acid

Each enzyme is specific for one amino acid

Properties of genetic code

3 bases made up a codon

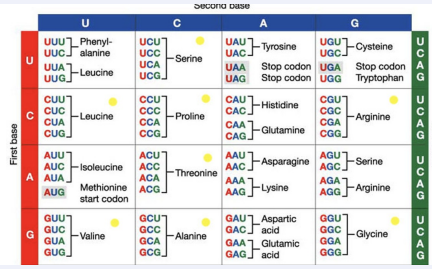
Non-overlapping

Each codon specify one amino acid

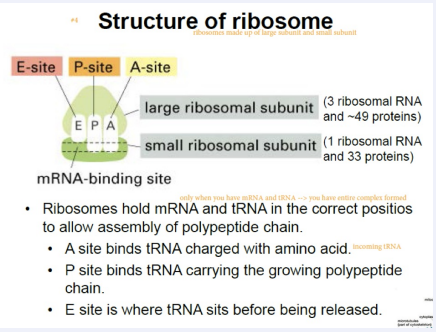
Degenerate: more than one codon for the same amino acid

Nearly universal

Codon table

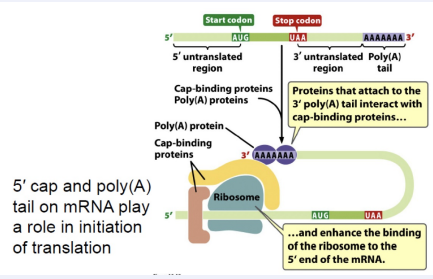


Structure of ribosome

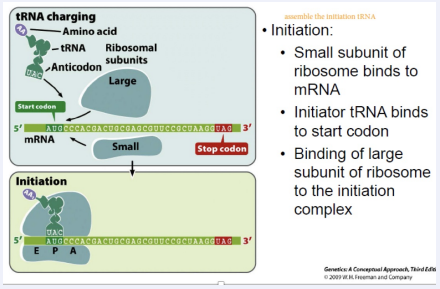


Three phases of translation

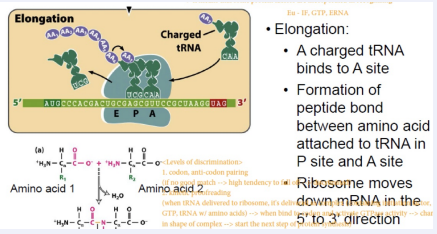
Ribosome



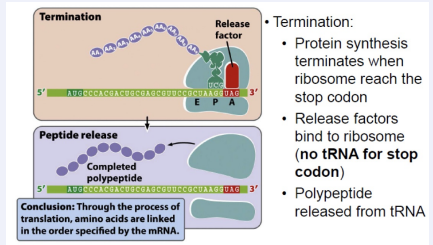
Initiation of translation



Elongation of translation



Termination of translation



Initiation
- Start codon: AUG
In eukaryotes, ribosome binds to 5' cap and moves along the mRNA to find the first start codon.
Elongation
- mRNA is read from 5' end to 3' end
- Proteins are synthesized from N-terminus to C-terminus
Termination
- Stop codons: UAA, UAG, UGA

By **rhettbro**
cheatography.com/rhettbro/

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