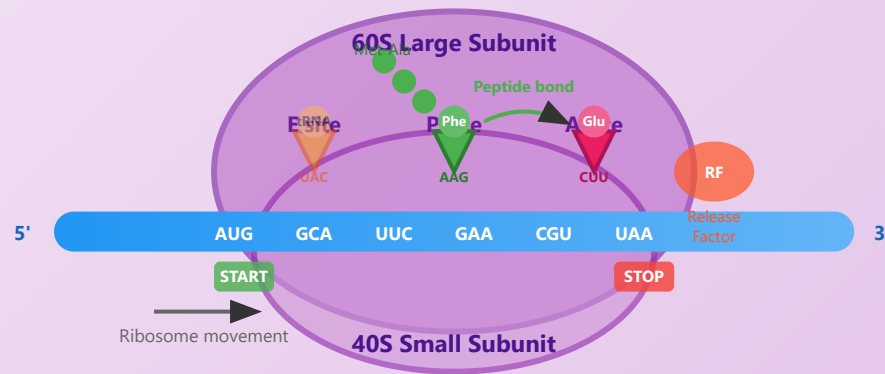


Translation and Genetic Code

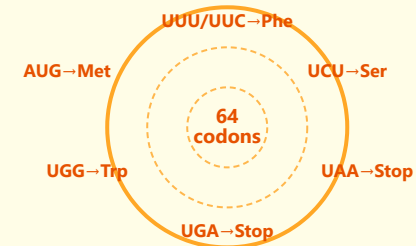
Translation Process



Steps:

1. Initiation: Ribosome assembles at AUG
2. Elongation: tRNAs bring amino acids
3. Peptide bonds form in P site
4. Ribosome translocates 3 nucleotides
5. Termination: Release at stop codon

Genetic Code



- 61 amino acid codons
- 3 stop codons
- Degenerate code

Ribosome Structure

- Large subunit (60S in eukaryotes)
- Small subunit (40S in eukaryotes)
- rRNA and ribosomal proteins
- Three tRNA sites: A, P, E

tRNA Function

- Anticodon pairs with codon
- Carries specific amino acid
- Wobble base pairing
- Aminoacyl-tRNA synthetases

Translation Steps

- **Initiation:** AUG start codon

- **Elongation:** peptide formation
- **Termination:** UAA, UAG, UGA
- Energy: 2 GTP per amino acid