

Translation and Genetic Code

Ribosome Structure

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

tRNA and Anticodon

- Cloverleaf secondary structure
- Anticodon pairs with mRNA codon
- Carries specific amino acid
- Aminoacyl-tRNA synthetases

Genetic Code

- 64 codons (4^3 combinations)
- 20 amino acids encoded
- Redundant/degenerate code
- Universal across species

Translation Steps

- Initiation: AUG start codon
- Elongation: peptide bond formation
- Termination: UAA, UAG, UGA
- Release factors dissociate ribosome