Protein synthesis II
Biochemistry 302

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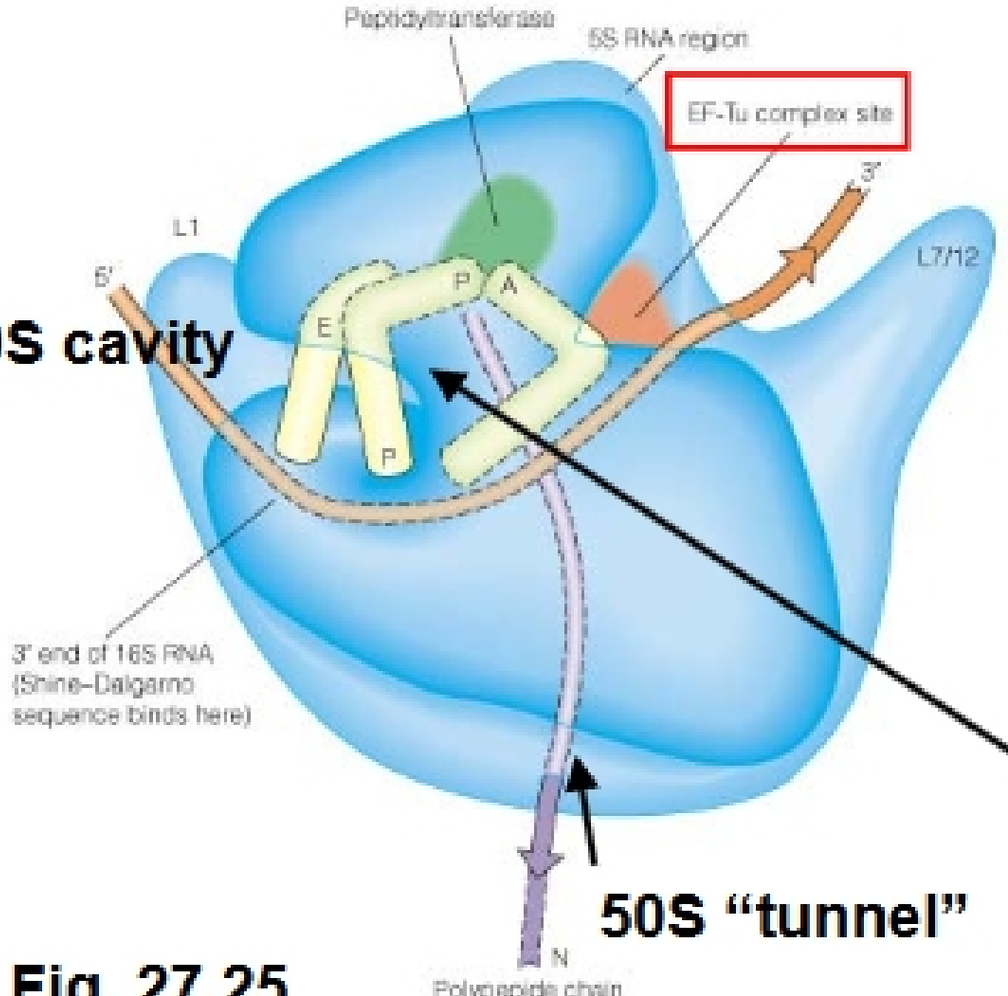
Two idealized views of the 70S ribosomal complex during translation

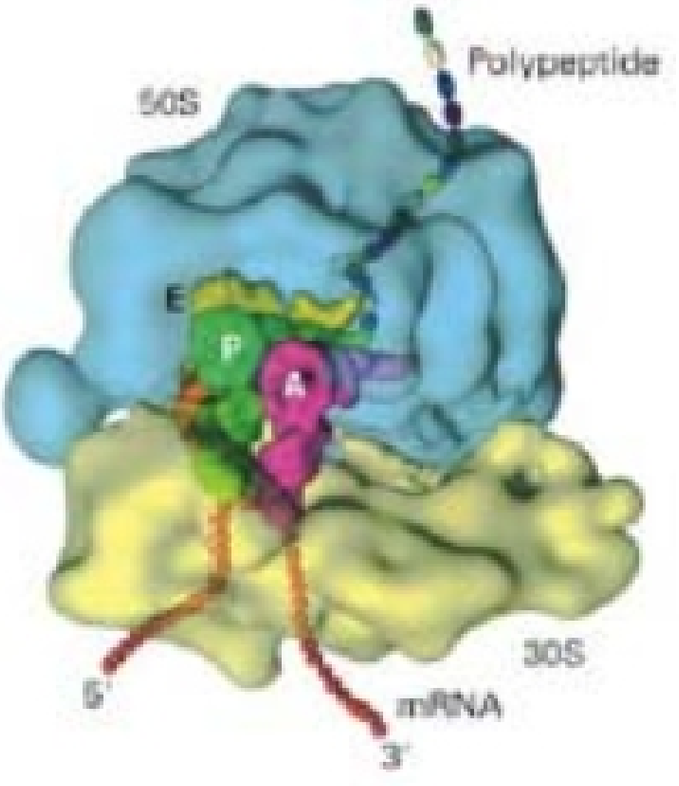


70S cavity

50S "tunnel"

Fig. 27.25

View with 30S subunit in front, 50S subunit behind



These models show all three sites (A, P, E) occupied by tRNAs. This would never occur during protein synthesis.

Prokaryotic translation: Cyclic nature of chain elongation

- A site (AA-tRNA binding, EF-Tu-GTP hydrolysis)
  - Loading of new AA-tRNA joined to EF-Tu-GTP
  - Codon positioning of AA-tRNA assisted by GTP hydrolysis
  - Dissociation of EF-Tu-GDP and reloading of "free" EF-Tu with GTP via EF-Ts exchange factor
- A,P sites (transpeptidation)
  - α-amino group from A site AA- tRNA attacks the carbonyl carbon of P-site bound peptidyl-tRNA
  - Formation of new peptide bond at A/P hybrid-site
  - P-site tRNA (w/o peptide) - leaving group
- A, P, E site (translocation, EF-G-GTP hydrolysis)
  - Transfer of uncharged tRNA to E site and ejection
  - Translocation of peptidyl-(3′OH) tRNA from A site to P site
  - Ribosome movement 3′ to the next codon