Lecture 20 3/13/02 MCDB 3500

Figures: 18.10, 18.27, 18.35)
(1st Ed.: 18.9, 18.27. 18.34)

Polypeptides:

Made from Amino→ Carboxyl direction.
Exp.) Howard Dintzis, 1961

mRNA

Read from 5'→ 3'
Exp.) synthetic mRNA translation

The triplet code

Exp.) synthetic mRNA translation

64 codons
Degenerate
Wobble hypothesis

Translational Elongation

Ribosome

P (peptidyl) site--occupied by fMet-tRNA 1st
A (amonacyl) site-- occupied by incoming aminoacyl tRNA

1. EF-Tu and GTP--brings aminacyl-tRNA onto the A site
   Proofreading: Happens when incorrect codon-anticodon base pair occurs.

2. Peptidyl transferase (ribosome)--transfers aa from P to A
   By 23S rRNA in 50S particle.

3. Empty tRNA on the P site leaves.
   Via E site

4. Prokaryotic EF-G, Eukaryotic EF-2 and GTP-
   Translocates mRNA so that A site is available.
   GTP is used to release EF-G from the ribosome.

Structures of EF-Tu and EF-G

Molecular mimicry.

Translational Termination

Termination codons are recognized by the Release Factors (RFs).

RF-1: UAA, UAG
RF-2: UAA, UGA
RF-3: ribosome-dependent GTPase, binds GTP and helps the other RFs bind to the ribosome.

eRF: recognize all three stop codons. GTP-dependent.

Molecular mimicry.