

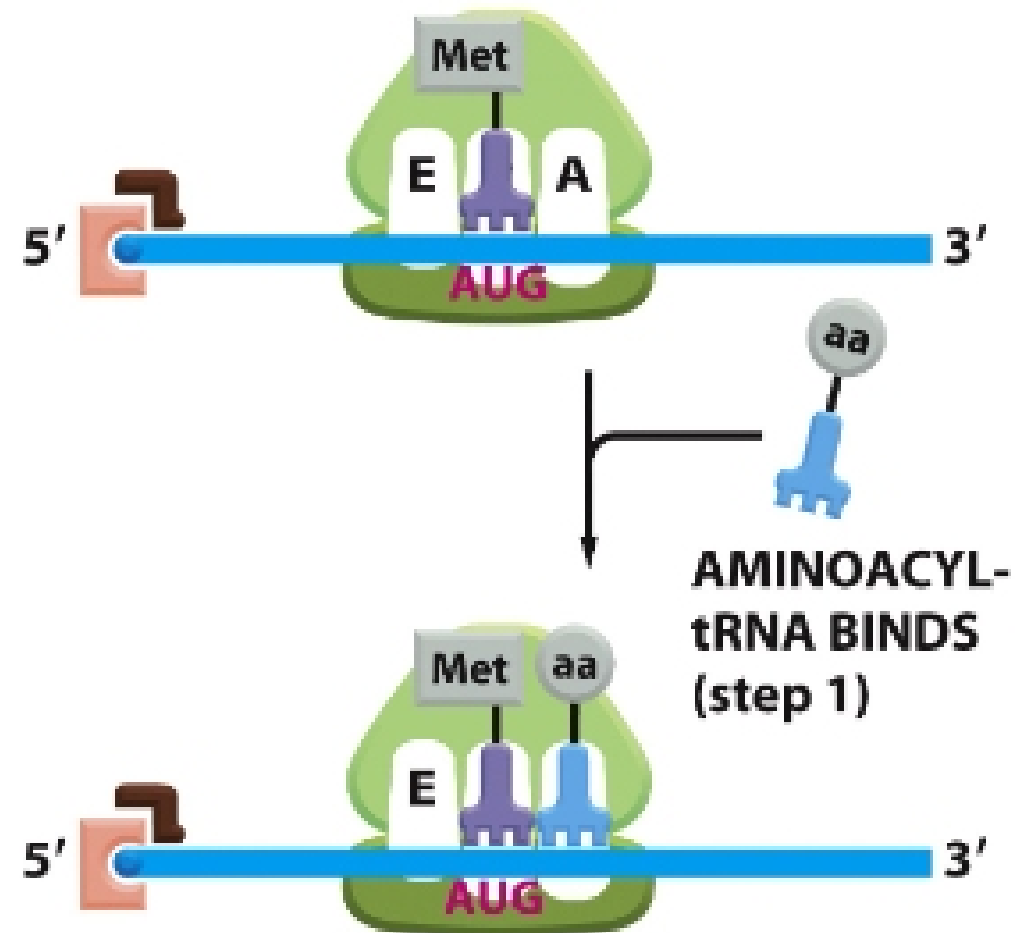


**Protein Synthesis II:  
Elongation, Termination, &  
Post-Transcriptional Regulation**

Lecture 7

# ELONGATION

- 4 steps:
  1. AA activation (*see previous lecture on initiation*).
  2. Aminoacyl-tRNA (aa-tRNA) binds A-site.
  3. eEF-1 (Elongation Factor 1) “escorts” aa-tRNA to A-site.
    - eEF-1 = G-protein
  4. Ribosome accepts aa-tRNAs @ 2 sites:
    - A-site (Aminoacyl-tRNA site)
    - P-site (Peptidyl-tRNA site)
- A-site is only filled by aa-tRNA *if* P-site has a peptidyl-tRNA!





eEF-1A &  
eEF-1β

- eEF-1A

- eEF-1A•GTP = *active* w/affinity for ribosome & aa-tRNA
- bp'ing b/tw tRNA & mRNA codon triggers GTPase (GAP activity!)
- eEF-1A•GDP = releases so peptide bond can form
- eEF-1A•GTP = regenerate to *sustain* translation

- eEF-1β = GNEF for eEF-1A

## eEF-1A (Euk. Elongation Factor 1A)

- **eEF-1A•GTP** is active:
  - high affinity for ribosome & aa-tRNA
  - base-pairing b/tw tRNA & mRNA codon triggers GTPase (GAP! hydrolysis!)
    - *ribosome or some elongation factor has a GAP activity*
- **eEF-1A•GDP** *must be released* from ribosome *before* a peptide bond forms
- **eEF-1A•GTP** *must be regenerated* to SUSTAIN translation

## eEF-1β (Euk. Elongation Factor 1β)

- **eEF-1β** = GNEF for **eEF-1A**