Translation: Elongation & Termination

Translation is elongated by the movement of tRNA and peptides within the ribosome complex. It begins with mRNA, which is the template for translation and contains the necessary codons. A new amino acid-tRNA molecule enters the A site of the ribosome, assisted by GTP and elongation factors. While that molecule is bound to the A site, the existing peptide chain binds to the new amino acid. The peptide chain-tRNA complex moves to the P site, and tRNA disengages from the peptide attached to its 3' end. The free tRNA located in the P site then moves to the E site, and is kicked out when a new tRNA complex enters the P site. This cyclic process occurs until a stop codon is read, signaling translation termination. Stop codons are not recognized by tRNA, but rather by release factors. When the stop codon is encountered, these release factors work to disassociate the ribosomal complex from the mRNA it is bound to, and thereafter the ribosomal complex falls apart



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Translation: Elongation

Amino Acid Chain Is Created
Amigo Lemon Chain
After the start codon is seen on the mRNA, met-tRNA binds to the P site. Next, a peptide chain-tRNA binds to the A site, and the neighboring amino acids connect, forming a peptide chain.

New Amino Acid-tRNA Enters A Site
New Amigo Lemon with transformer-Rhino enter (A) Apple
A new amino acid-tRNA molecule enters the A site and binds with its anti-codon region matching the mRNA.

GTP and Elongation Factors Help tRNA Enter A Site
Gold-TP and Long-john Flagger holding transformer-Rhino to (A) Apple
GTP and elongation factors help hold the tRNA at the A-site until the amino acids are linked.

Peptide Chain Binds to New Amino Acid
Pimp-tie Chain binding to New Amigo Lemon
While the new amino acid-tRNA molecule is at the A-site, the existing peptide chain binds the amino acid.

Peptide Chain-tRNA Moves to P Site
Pimp-tie Chain-Transformer-Rhino moving to P site
The peptide chain-tRNA molecule now moves to the P-site, after which tRNA breaks off from the peptide chain.

Free tRNA in P Site Moves to E Site
Free transformer-Rhino at (E) Exit-sign
The free tRNA in the P-site moves to the E-site, where it is kicked off when a new tRNA brings in the next amino acid.

Translation: Termination

Stop Codon at A Site Causes Termination
Stop-sign Condom with (A) Apple and Terminator
When the stop codon is encountered, termination is prompted. This codon is recognized by release factors, which then work to disassemble the ribosomal complex, which is bound to mRNA.

Release Factors Help Complex Disassociate
Release Flaggers help Disconnect from Complex-building
Stop codons are not recognized by tRNA, but rather by release factors. When the stop codon is encountered, these release factors work to disassociate the ribosomal complex from the mRNA it is bound to.

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Complex Falls Apart

Complex-building Falls Apart

Shortly after disassociating from the mRNA, the ribosomal complex falls apart.

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