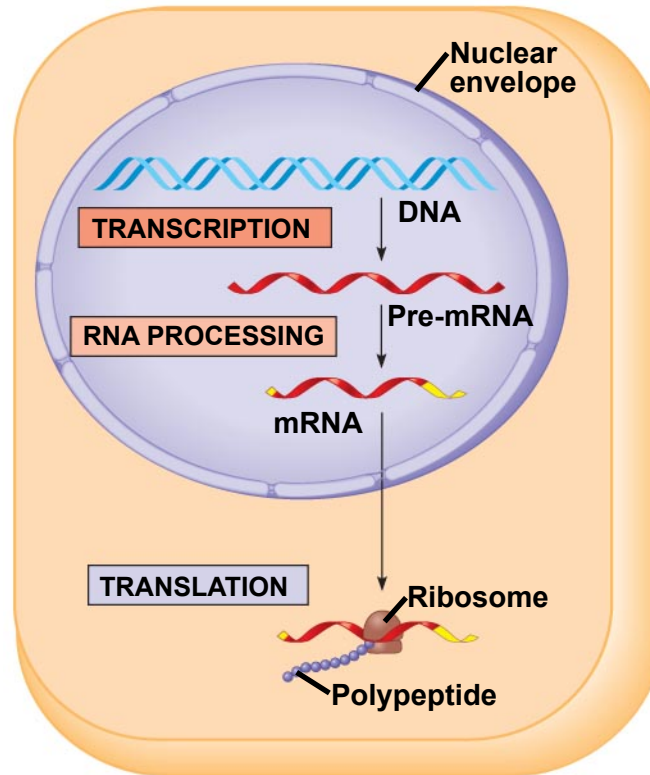
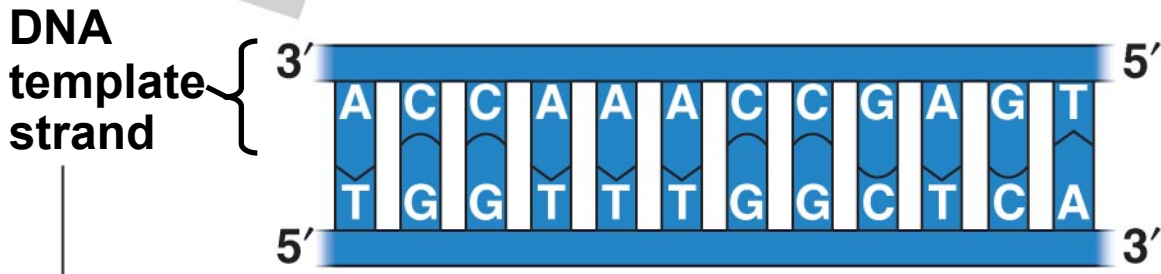
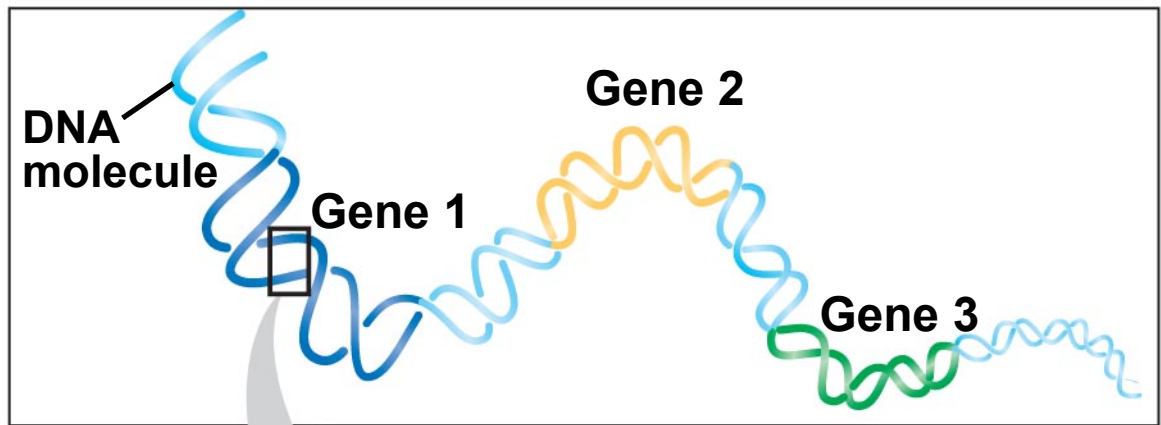


(a) Bacterial cell



(b) Eukaryotic cell

Copyright © 2008 Pearson Education, Inc., publishing as Pearson Benjamin Cummings.



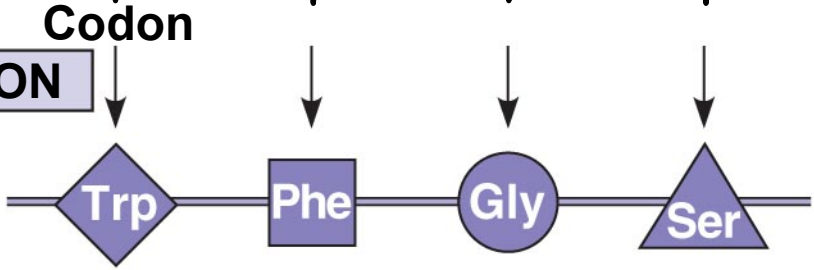
TRANSCRIPTION

mRNA



TRANSLATION

Protein



Amino acid

Copyright © 2008 Pearson Education, Inc., publishing as Pearson Benjamin Cummings.

| | | Second mRNA base | | | | |
|---|-----------------------------------|-----------------------------------|-----|----------|------------------|------------------|
| | | U | C | A | G | |
| U | First mRNA base (5' end of codon) | UUU | UCU | UAU | UGU | U C A G |
| | | UUC | UCC | UAC | UGC | |
| | | UUA | UCA | UAA Stop | UGA Stop | |
| | | UUG | UCG | UAG Stop | UGG Trp | |
| C | CUU | CCU | CAU | CGU | U C A G | |
| | CUC | CCC | CAC | CGC | | |
| | CUA | CCA | CAA | CGA | | |
| | CUG | CCG | CAG | CGG | | |
| A | AUU | ACU | AAU | AGU | U C A G | |
| | AUC | ACC | AAC | AGC | | |
| | AUA | ACA | AAA | AGA | | |
| | AUG Met or start | ACG | AAG | AGG | | |
| G | GUU | GCU | GAU | GGU | U C A G | |
| | GUC | GCC | GAC | GGC | | |
| | GUA | GCA | GAA | GGA | | |
| | GUG | GCG | GAG | GGG | | |
| | | Third mRNA base (3' end of codon) | | | | |

Copyright © 2008 Pearson Education, Inc., publishing as Pearson Benjamin Cummings.

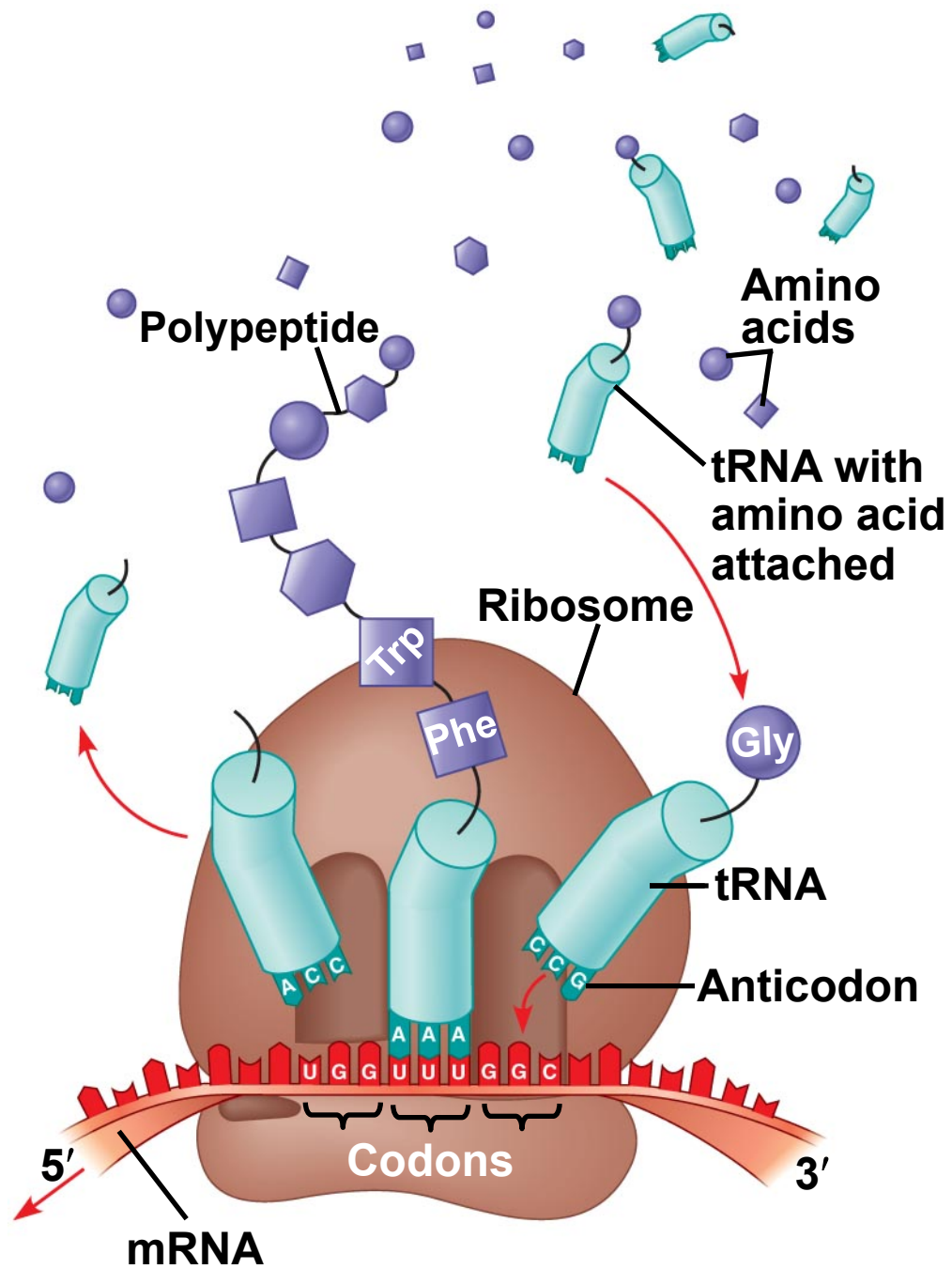


(a) Tobacco plant expressing a firefly gene

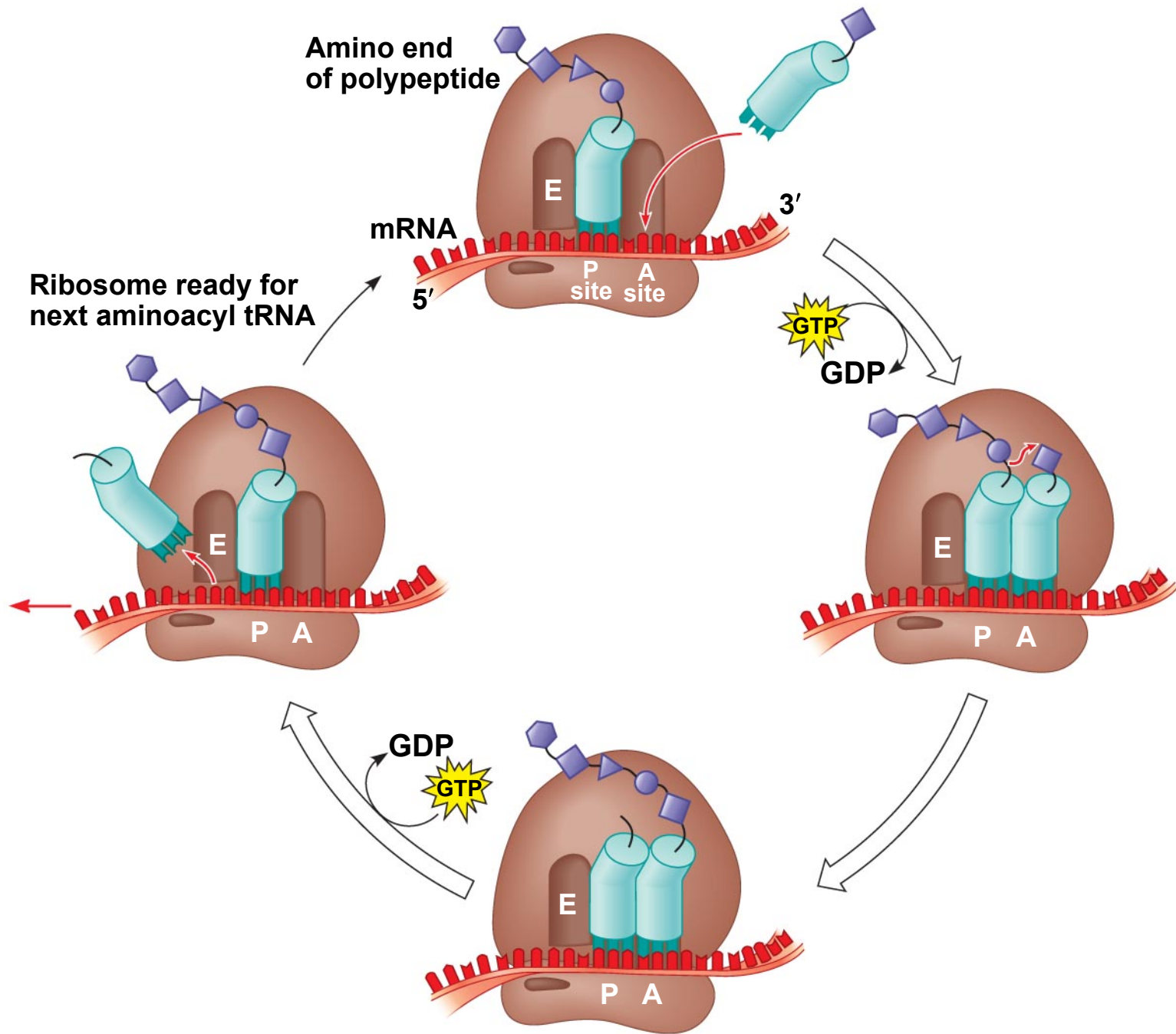
Copyright © 2008 Pearson Education, Inc., publishing as Pearson Benjamin Cummings.

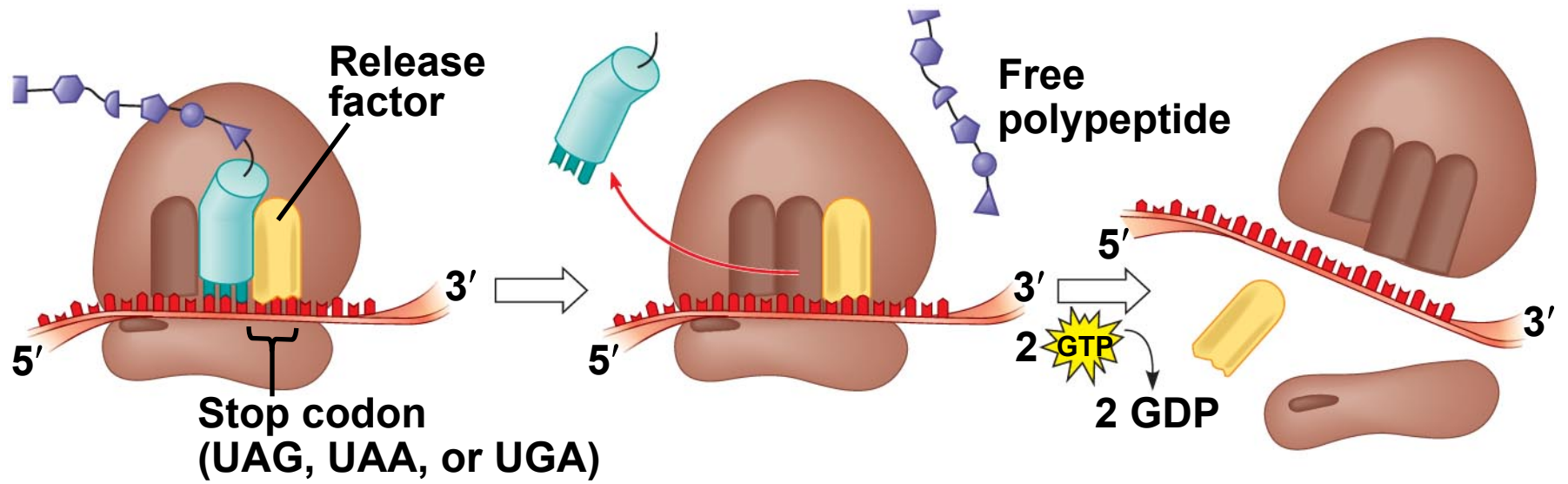


(b) Pig expressing a jellyfish gene



Copyright © 2008 Pearson Education, Inc., publishing as Pearson Benjamin Cummings.





Copyright © 2008 Pearson Education, Inc., publishing as Pearson Benjamin Cummings.

Wild-type hemoglobin DNA



mRNA



Normal hemoglobin



Mutant hemoglobin DNA



mRNA



Sickle-cell hemoglobin

