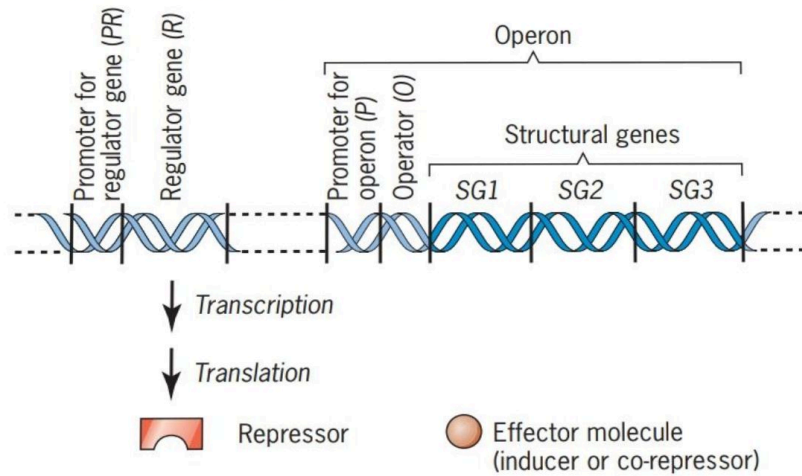
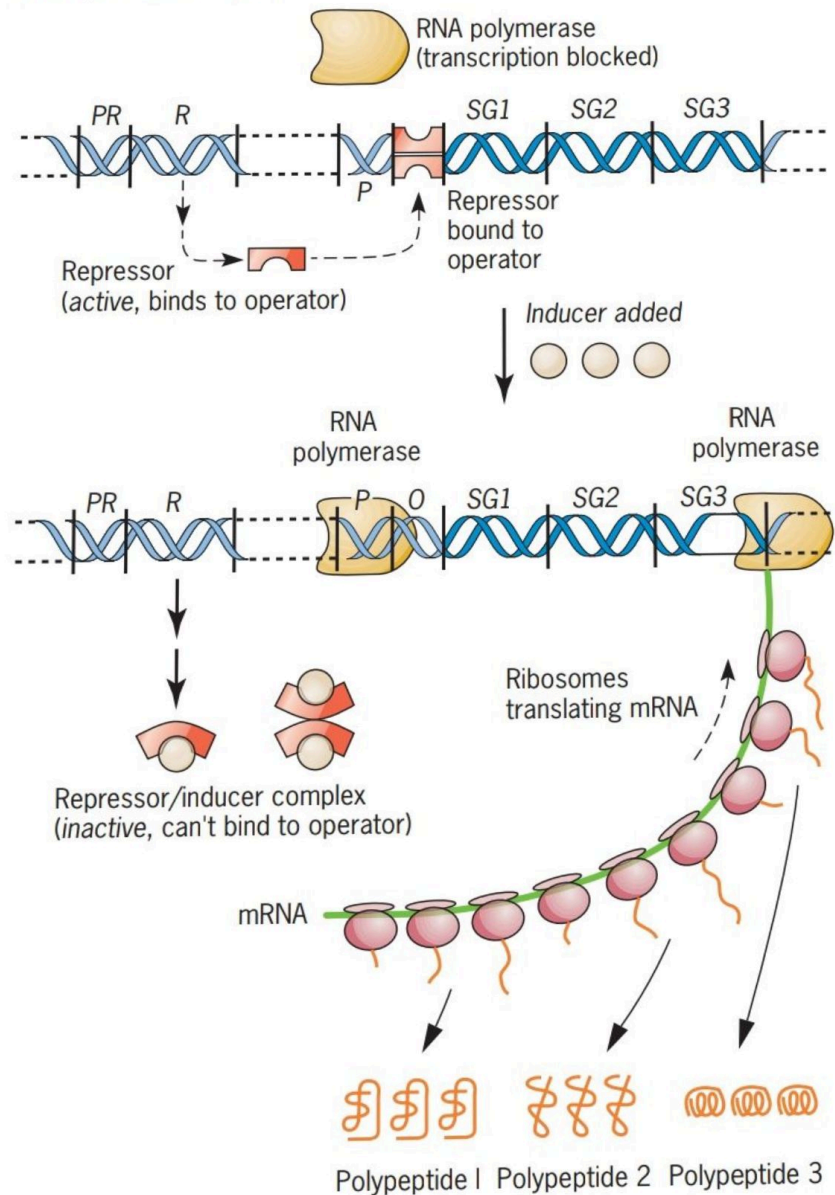


The operon: components



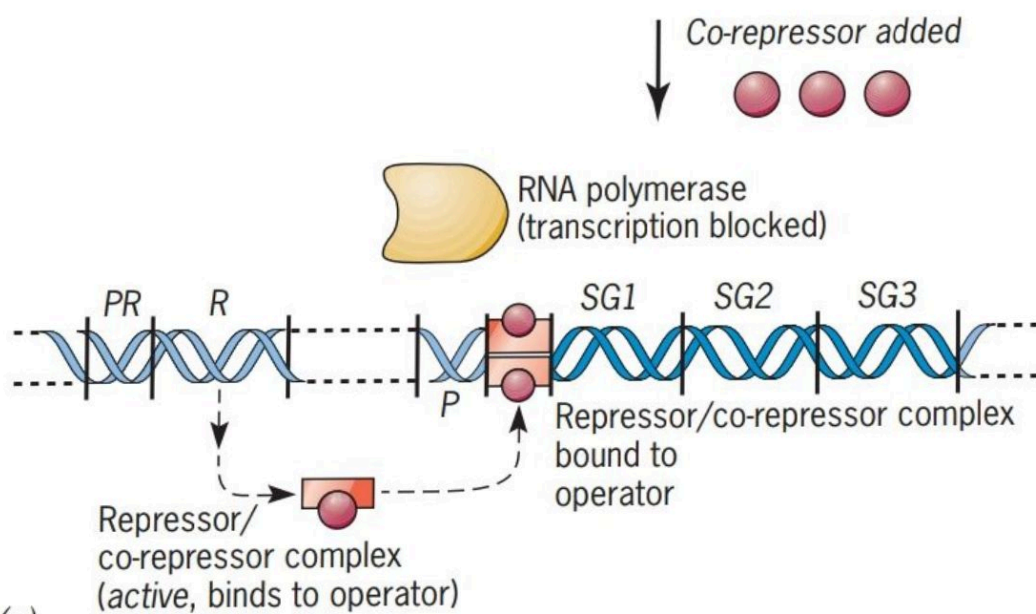
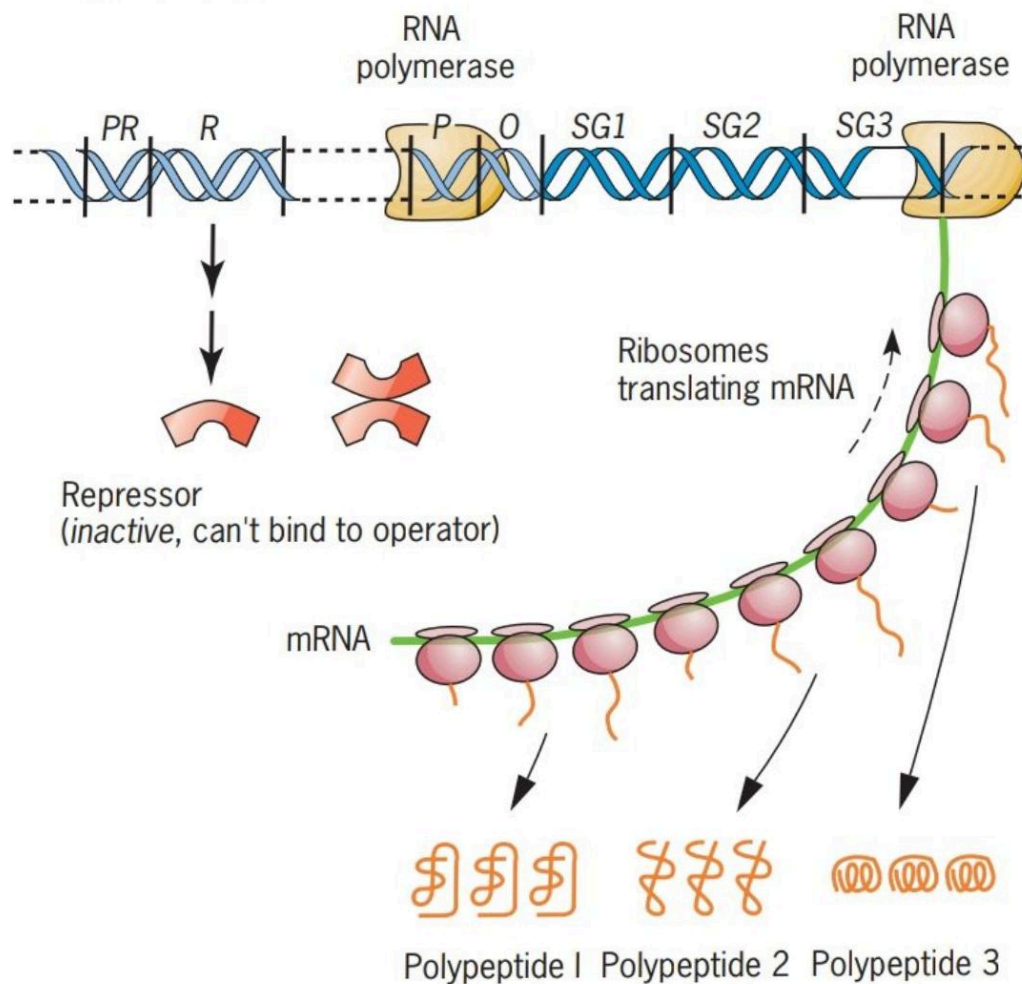
(a)

The operon: induction



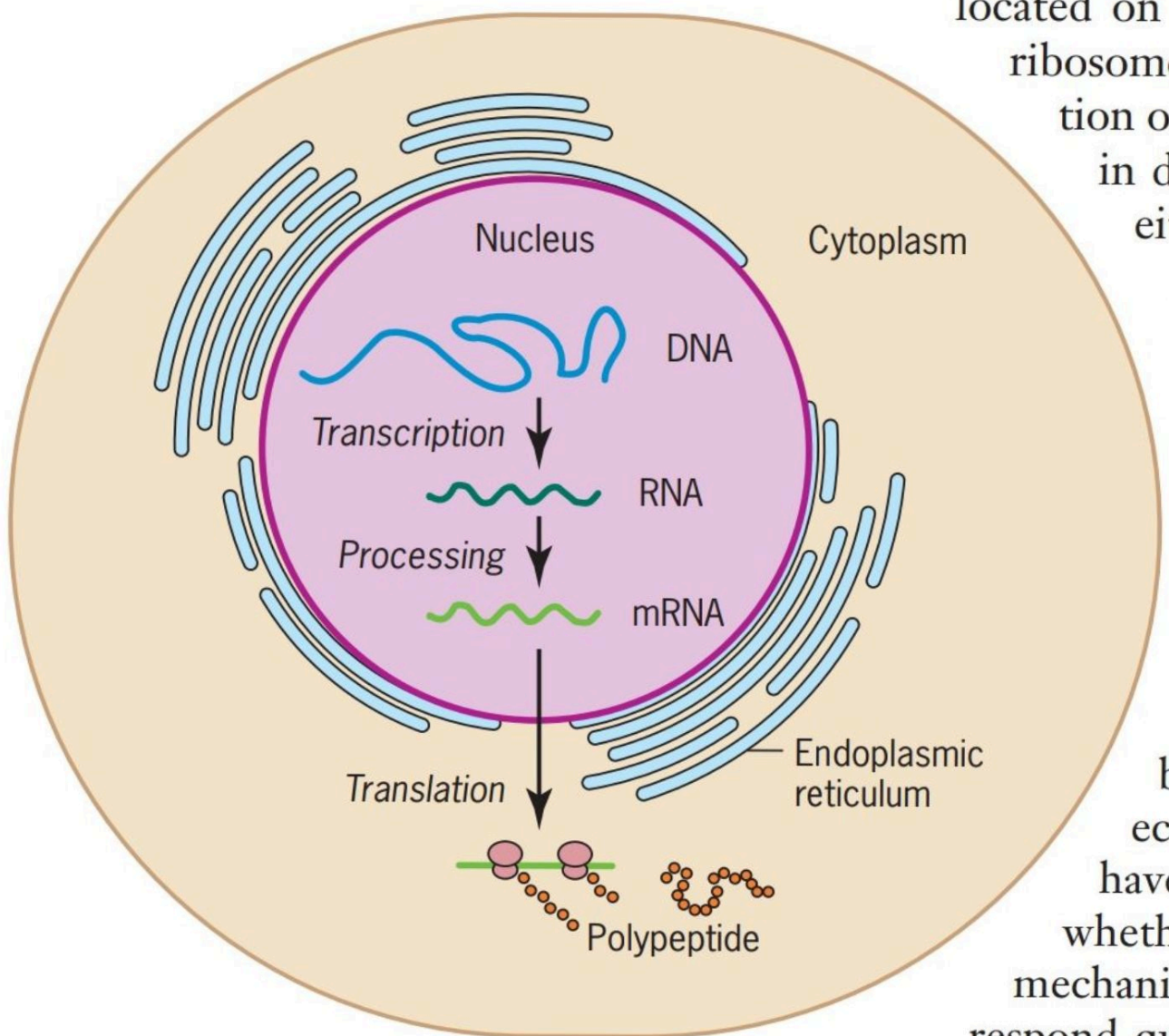
(b)

The operon: repression



- *In bacteria, genes with related functions frequently occur in coordinately regulated units called operons.*
 - *Each operon contains a set of contiguous structural genes, a promoter (the binding site for RNA polymerase), and an operator (the binding site for a regulatory protein called a repressor).*
 - *When a repressor is bound to the operator, RNA polymerase cannot transcribe the structural genes in the operon. When the operator is free of repressor, RNA polymerase can transcribe the operon.*
-

Eukaryotic gene expression is regulated during transcription and RNA processing, which take place in the nucleus, and during protein translation, which takes place in the cytoplasm. Further regulation may occur through post-translational modifications of proteins.



■ **FIGURE 19.1** Eukaryotic gene expression showing the stages at which expression can be regulated: transcription, processing, and translation.

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Regulation of Gene Expression in Eukaryotes

Gene expression is the combined process of :

1. the transcription of a gene into mRNA,
2. the processing of that mRNA, and
3. its translation into protein (for protein-encoding genes).

Levels of regulation of gene expression

