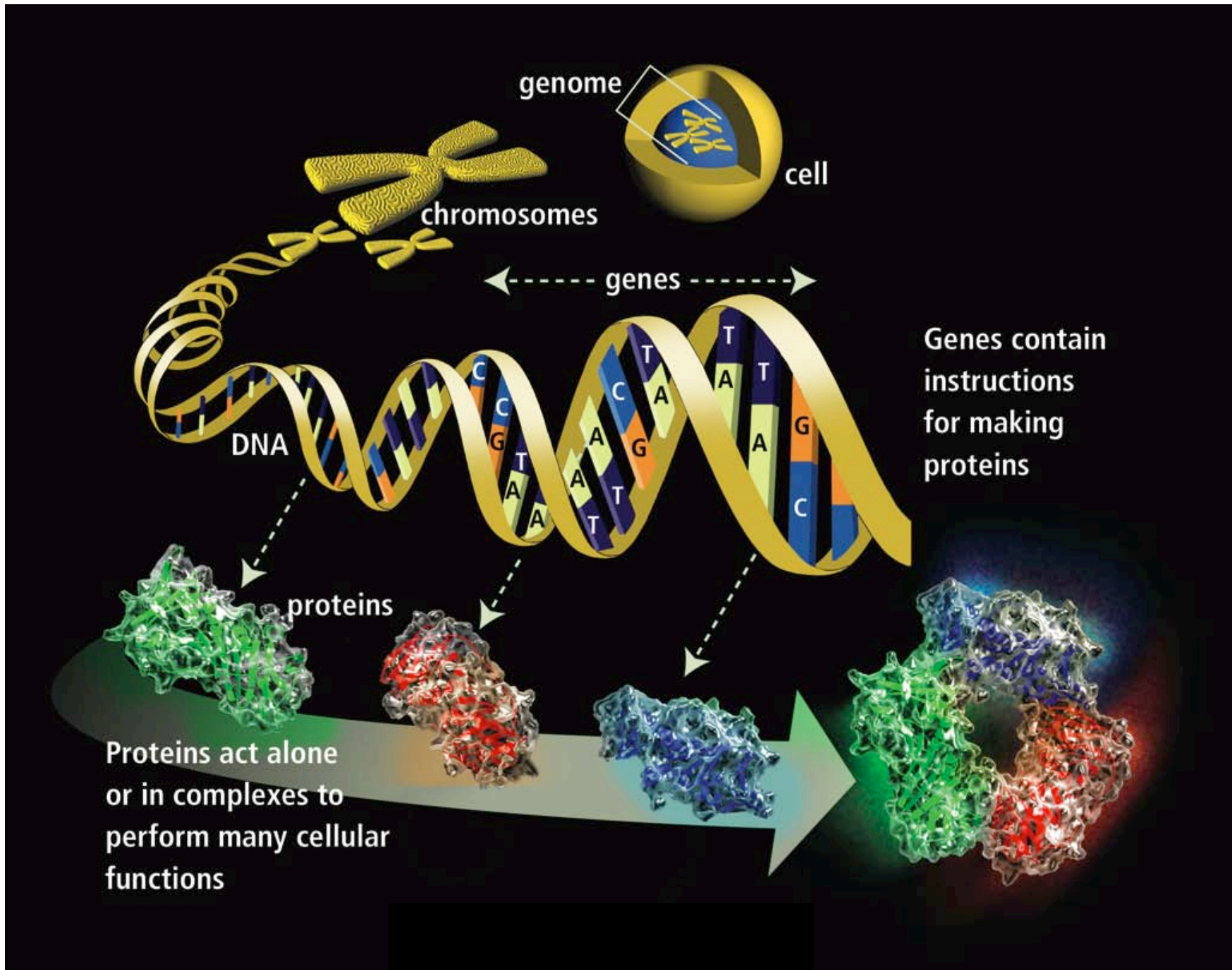
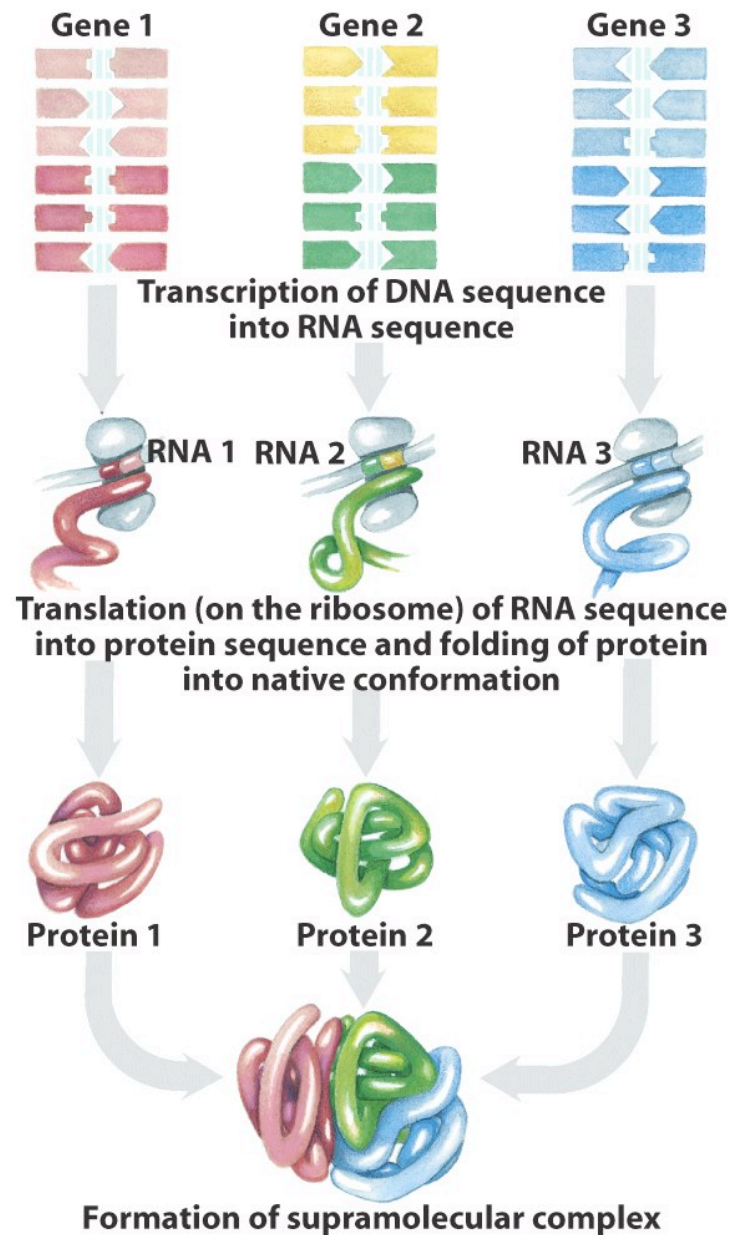


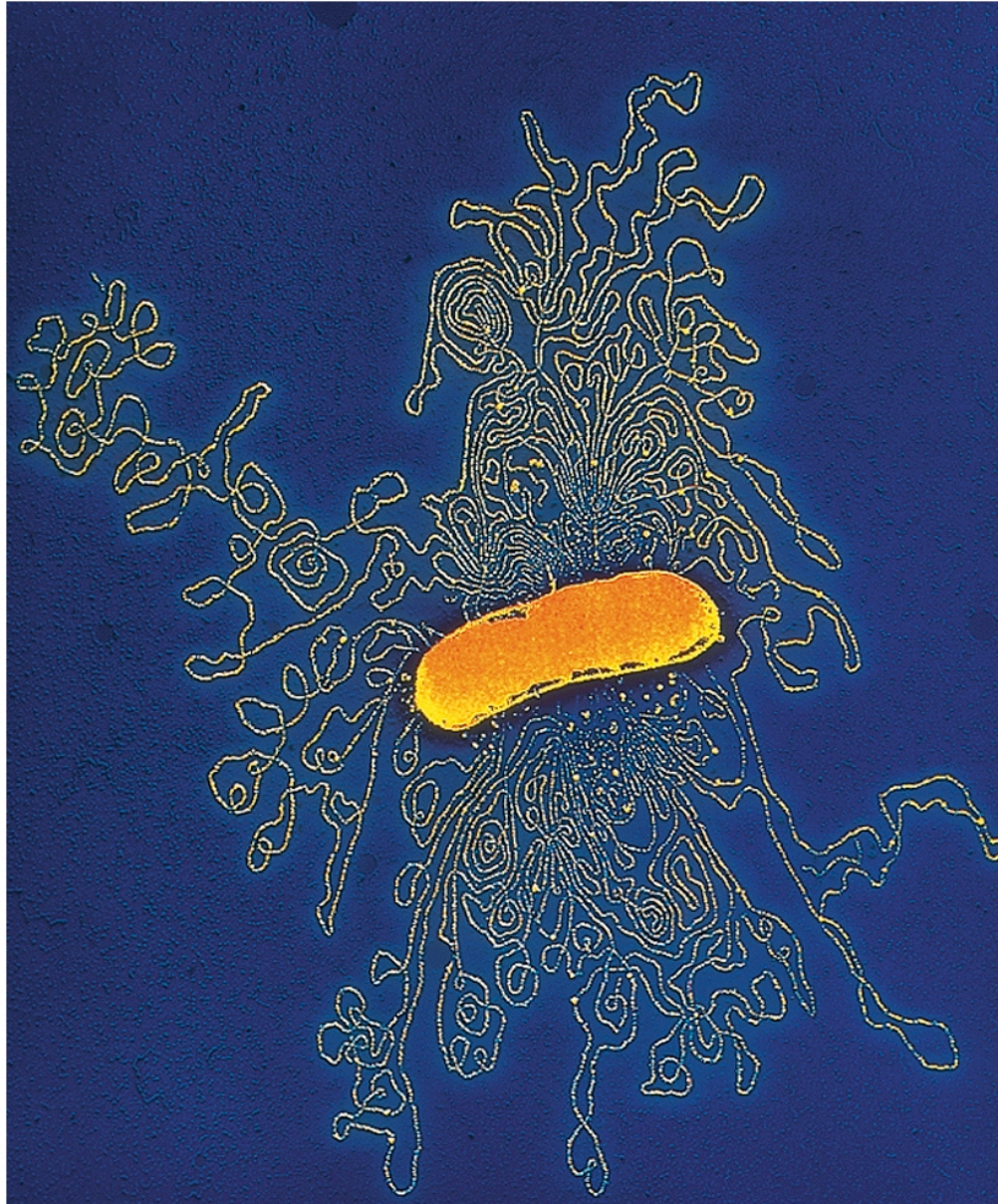
Protein-DNA Interactions



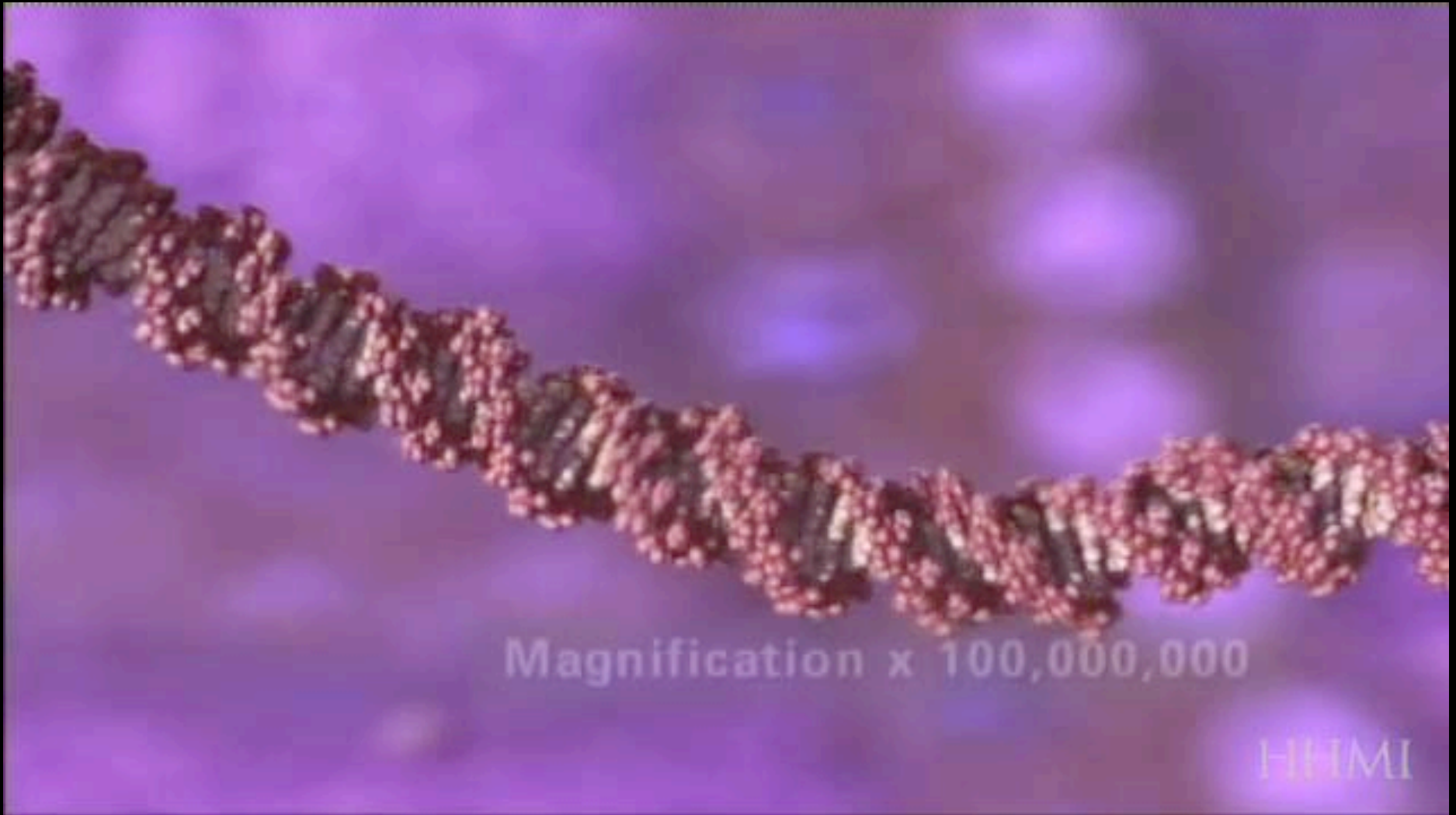
The central dogma of biology



Genomic DNA

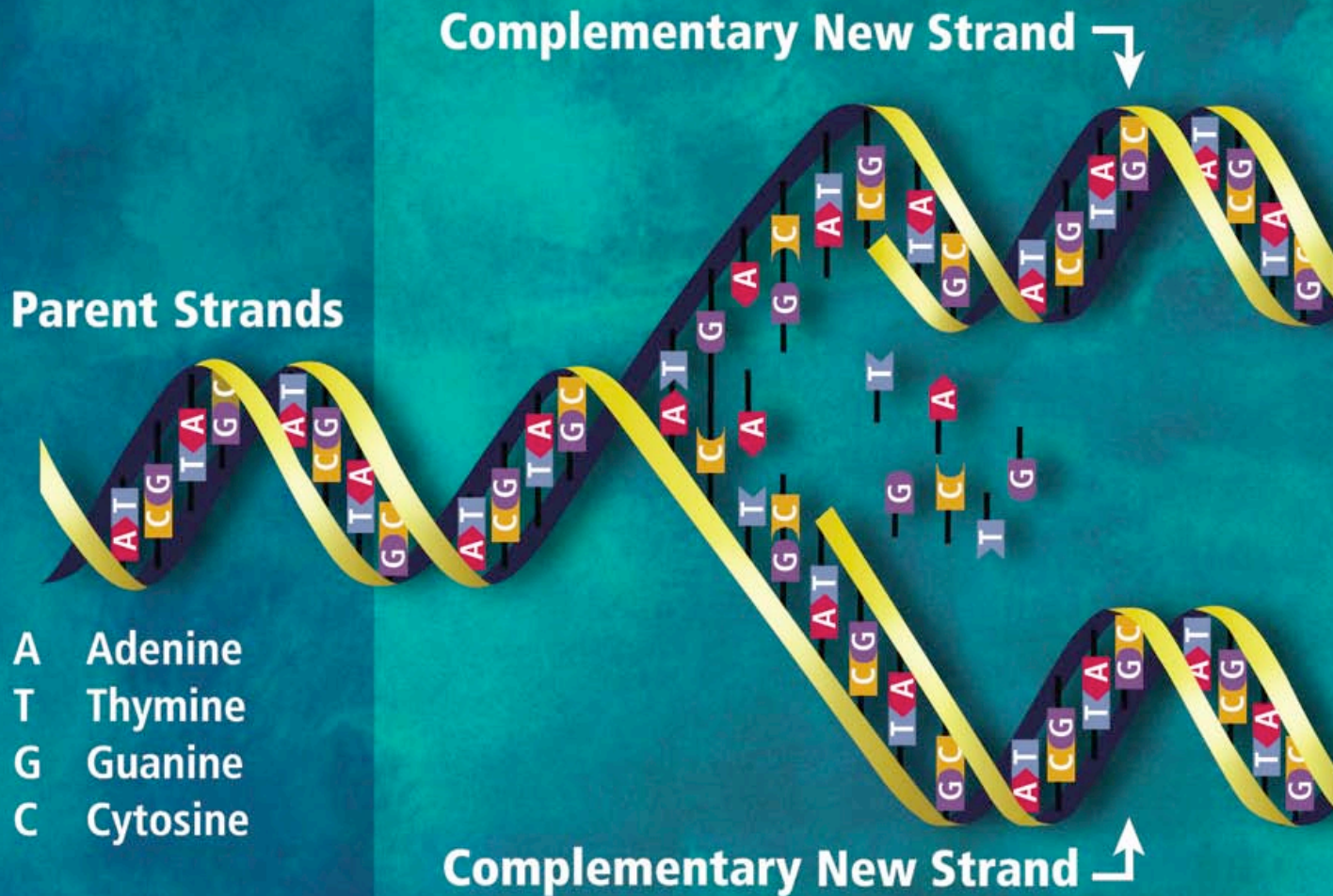


DNA packaging

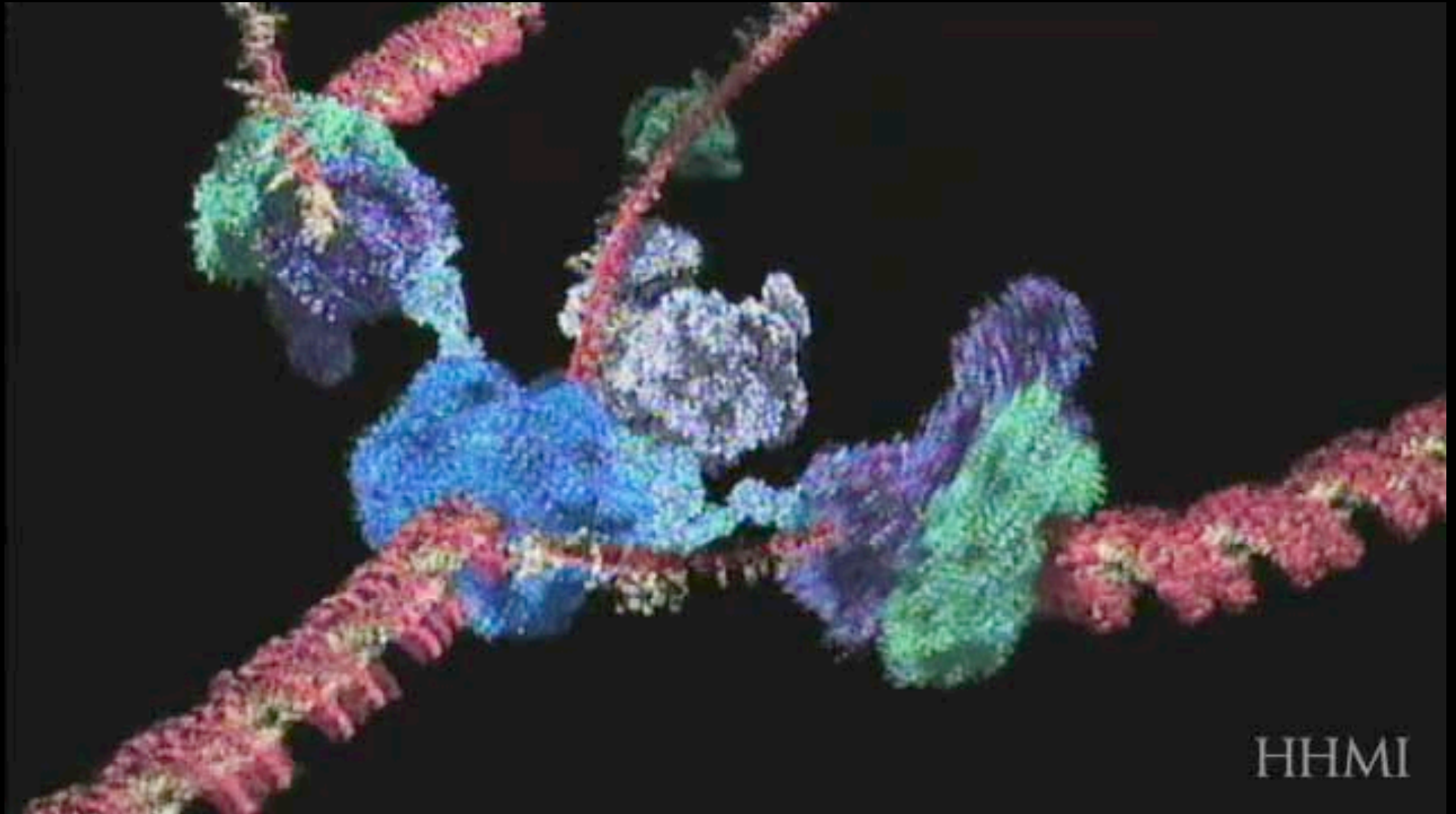


DNA replication

DNA Replication Prior to Cell Division



DNA replication



The genetic code

DNA Genetic Code Dictates Amino Acid Identity and Order



*DNA
Sequence*

Is

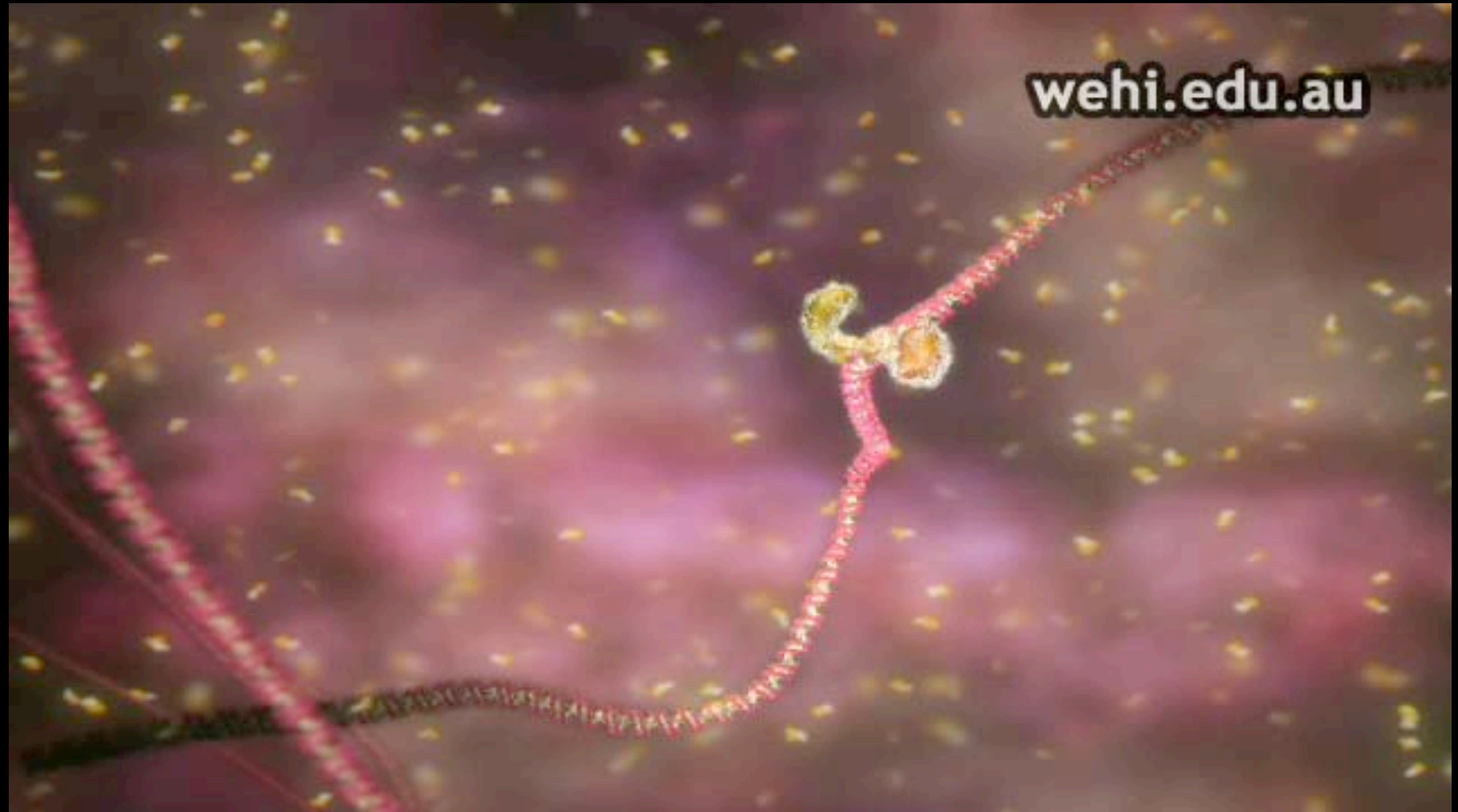
*the
Genetic
Code.*

GCA AGA GAT AAT TGT...

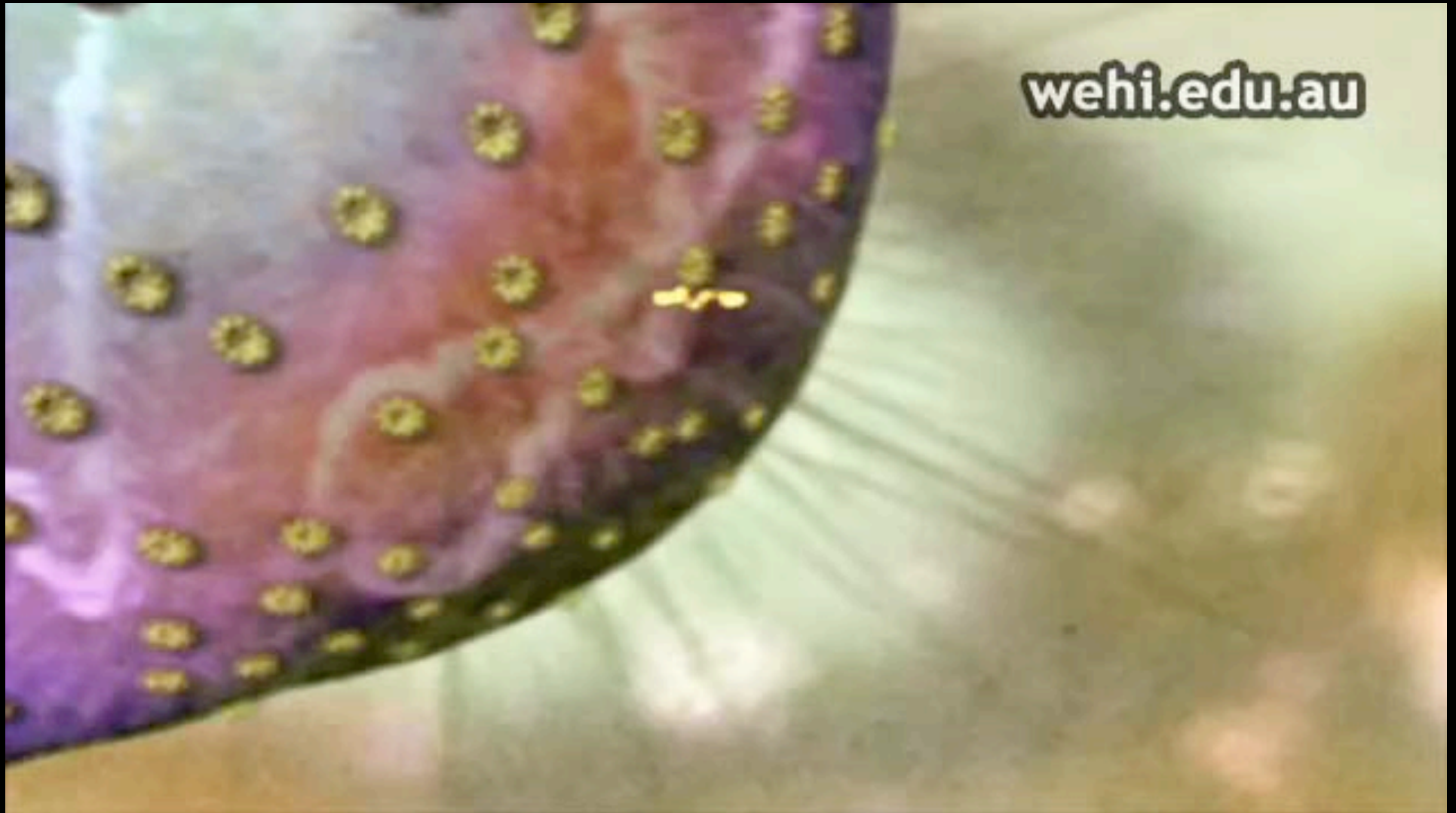


*... Growing
Protein
Chain*

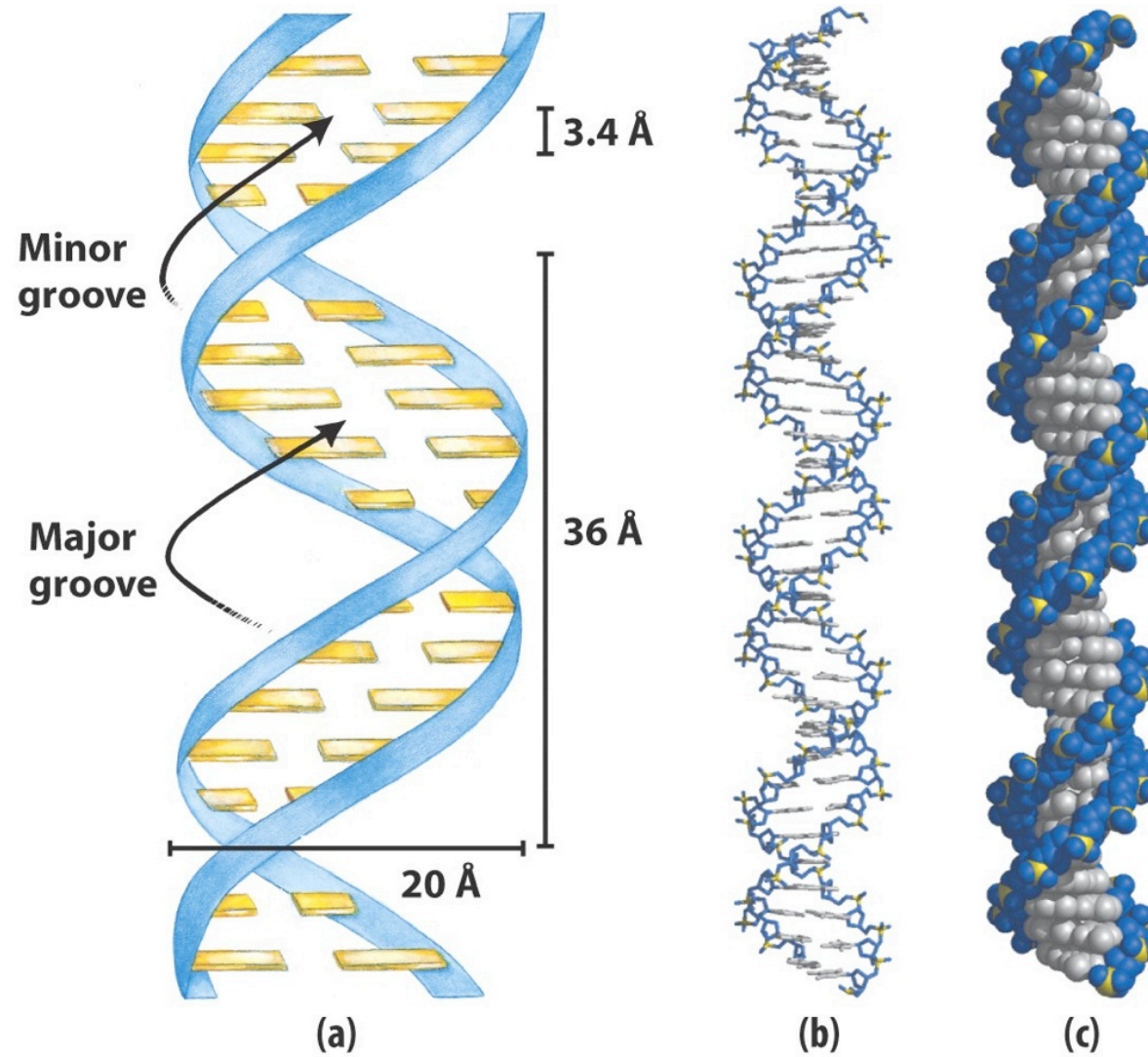
Transcription of DNA



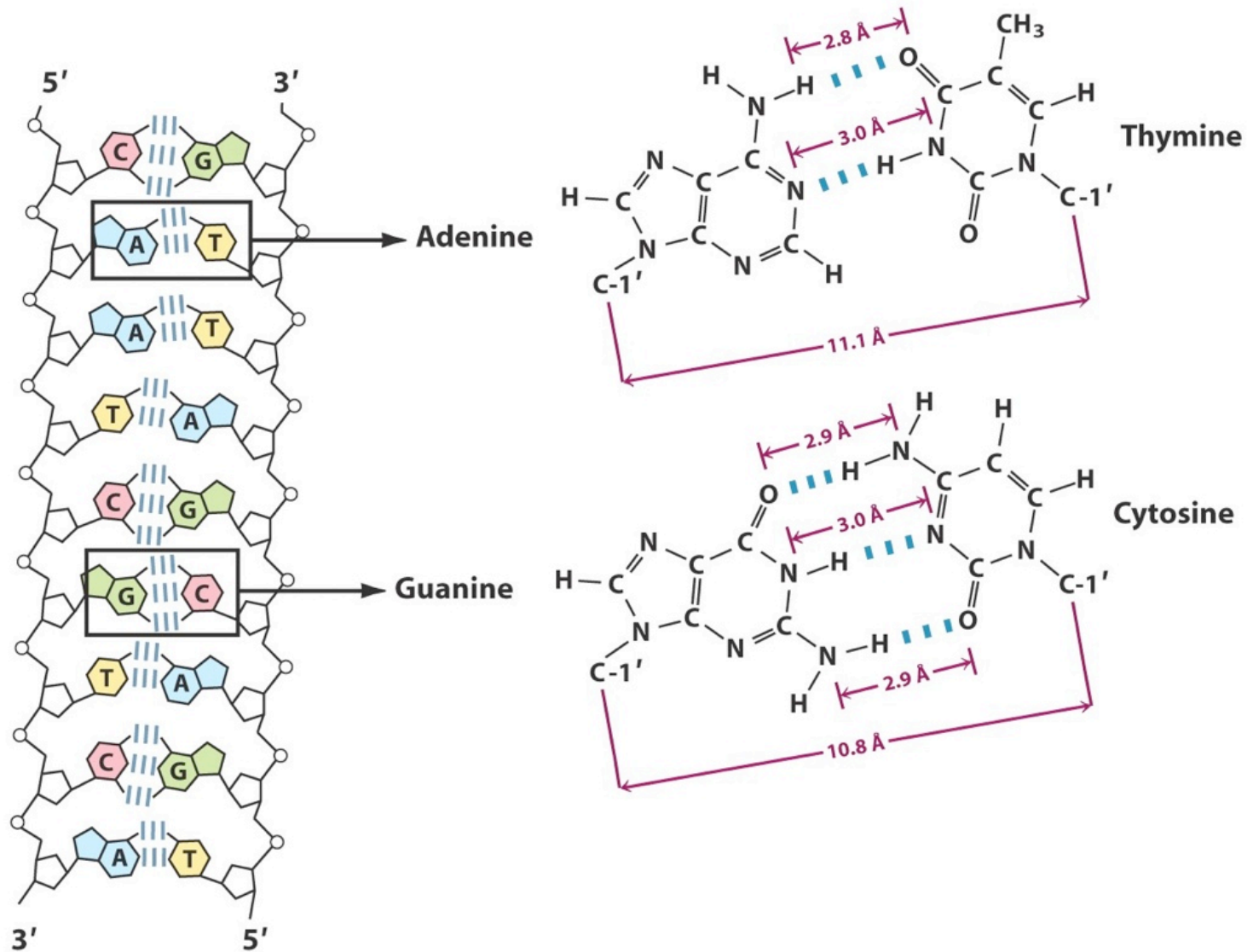
Translation of mRNA - Protein synthesis



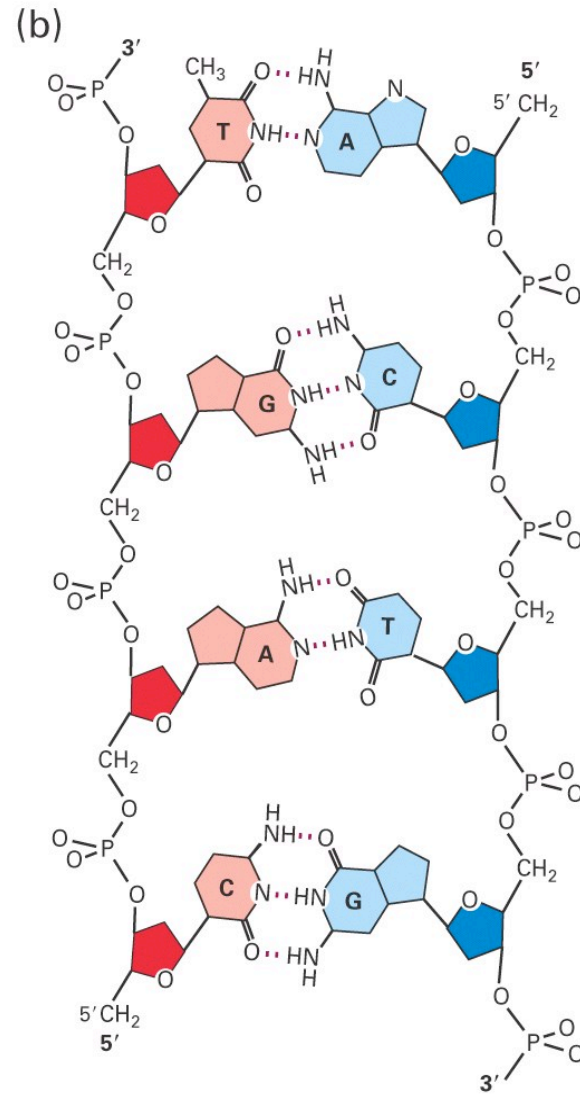
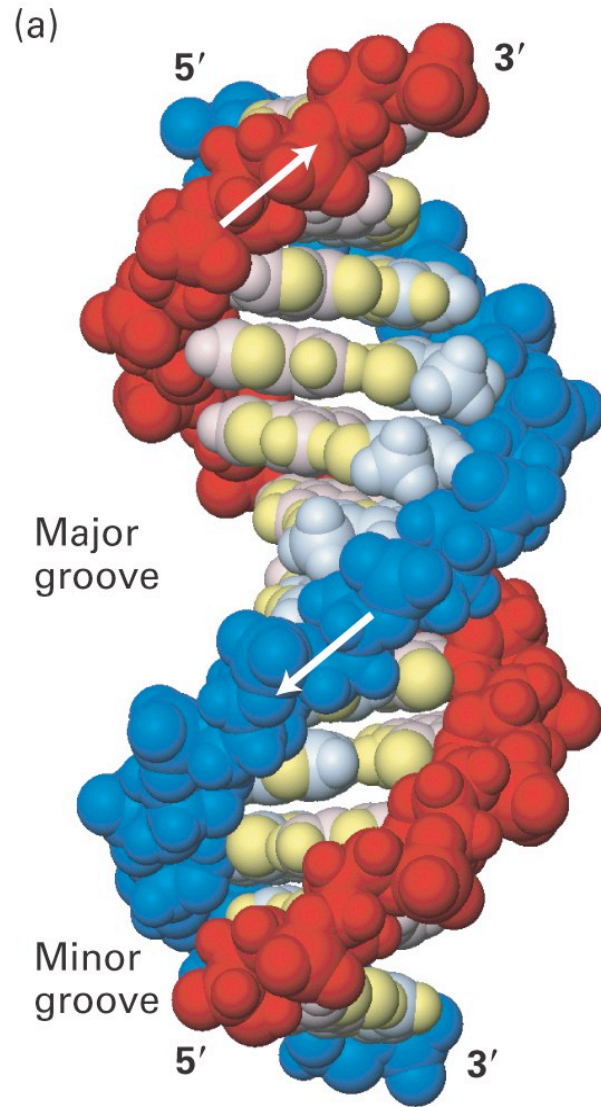
DNA structure



DNA structure

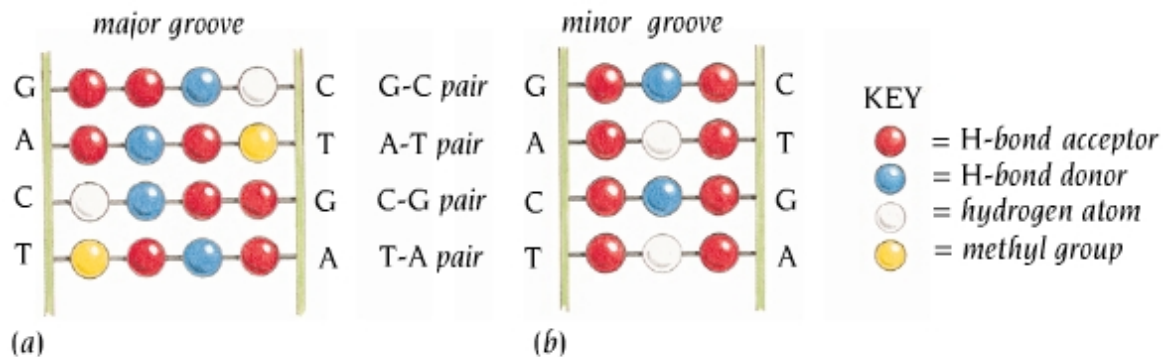
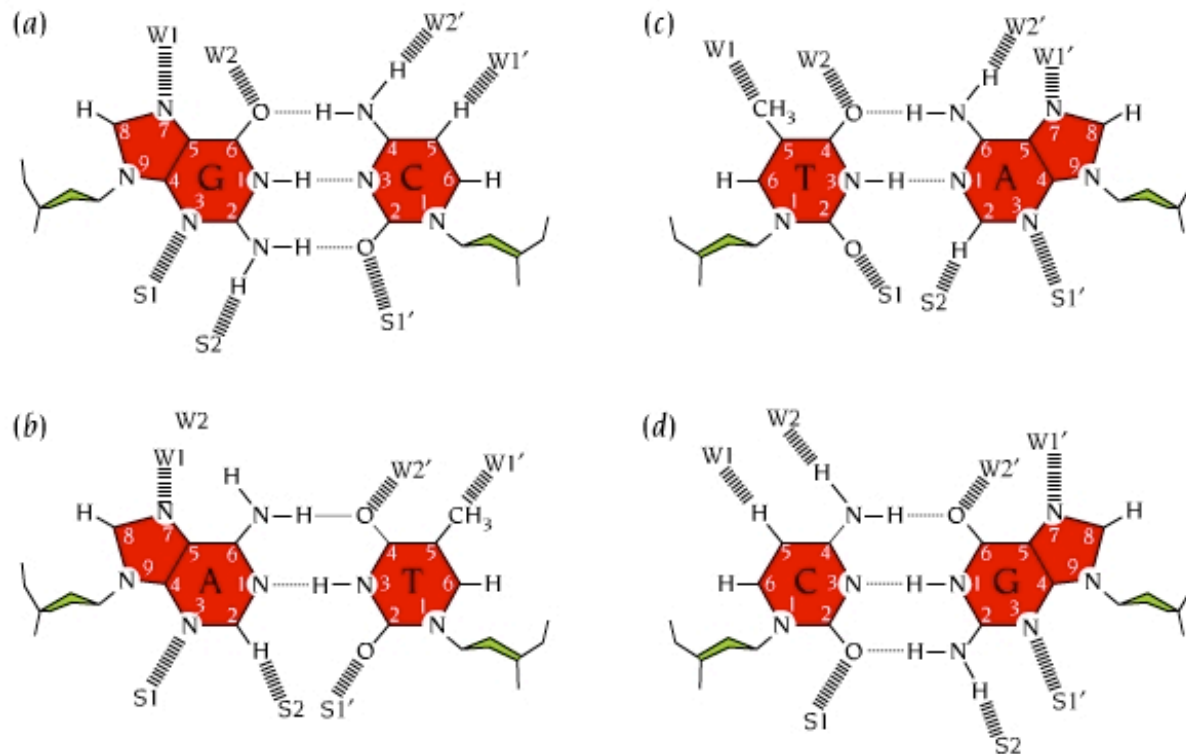


DNA structure



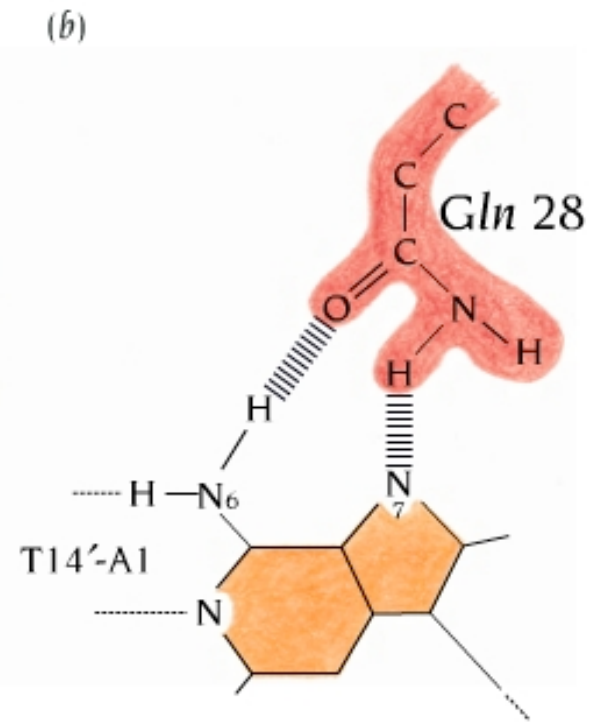
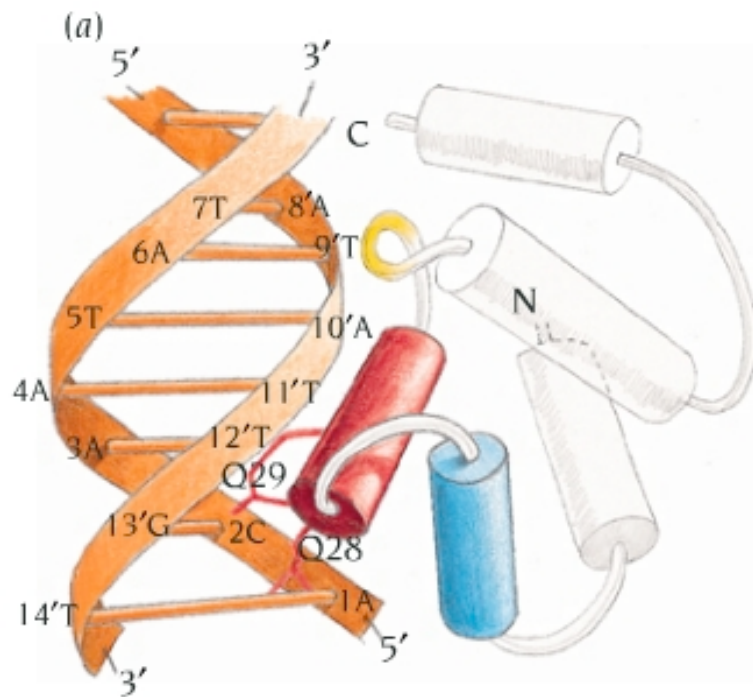
Protein-DNA interactions

Minor & Major grooves- Recognition patterns



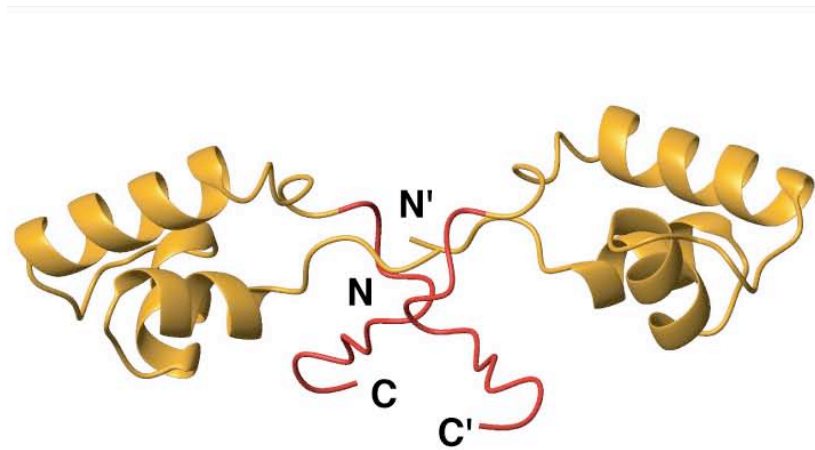
Protein-DNA interactions

Minor & Major grooves- Recognition patterns

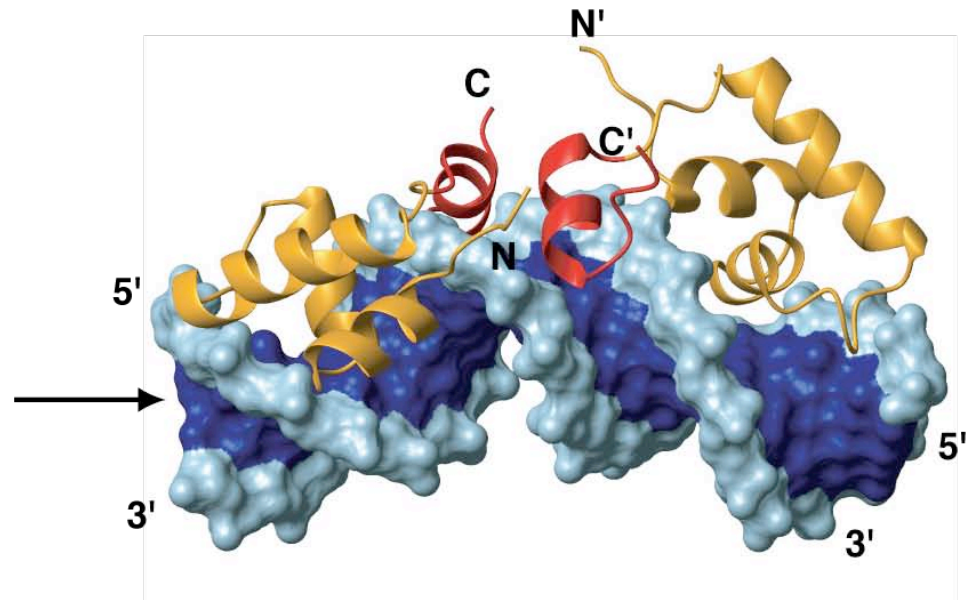


Protein-DNA interactions

Minor & Major grooves- Recognition patterns



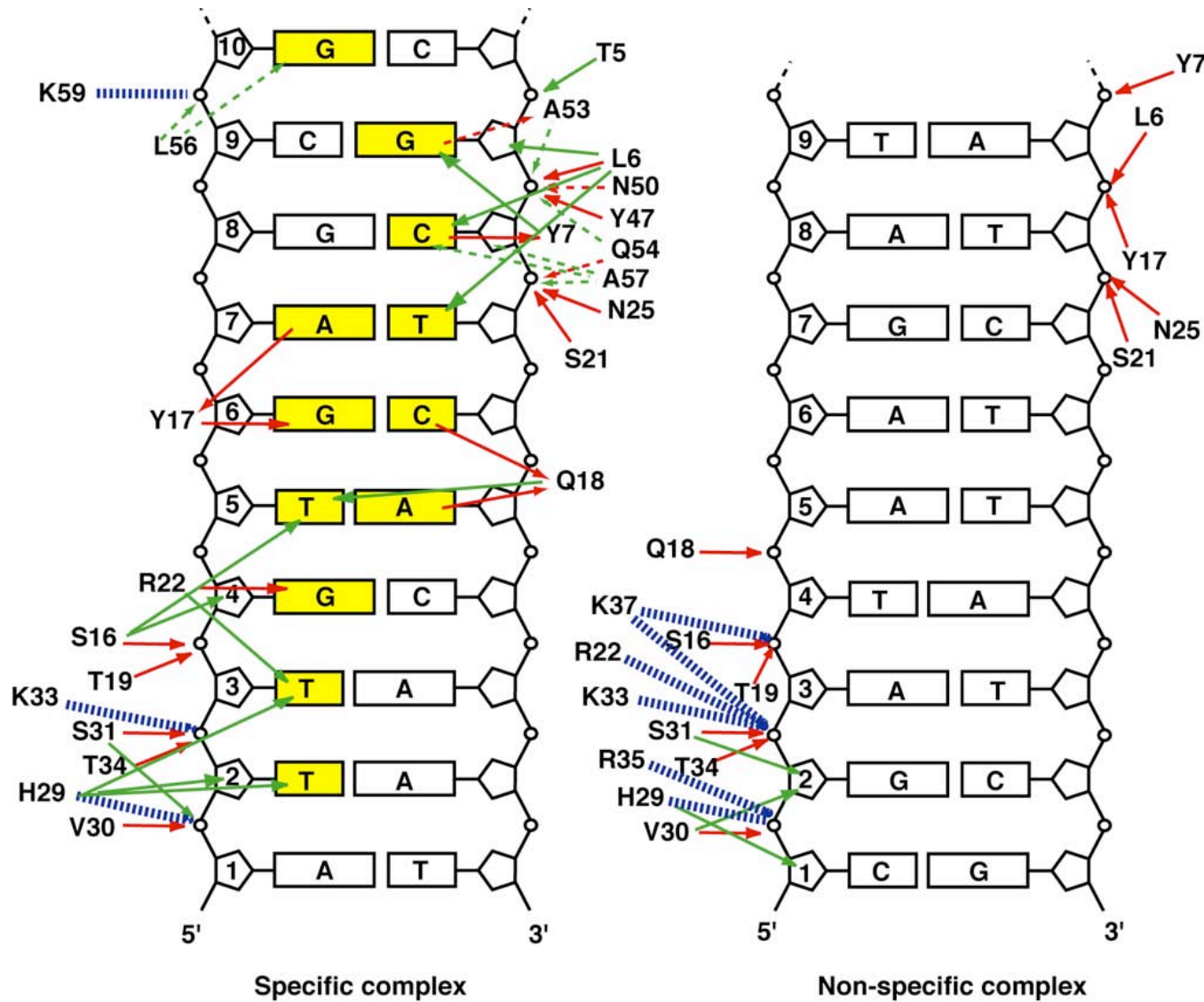
free protein DBD



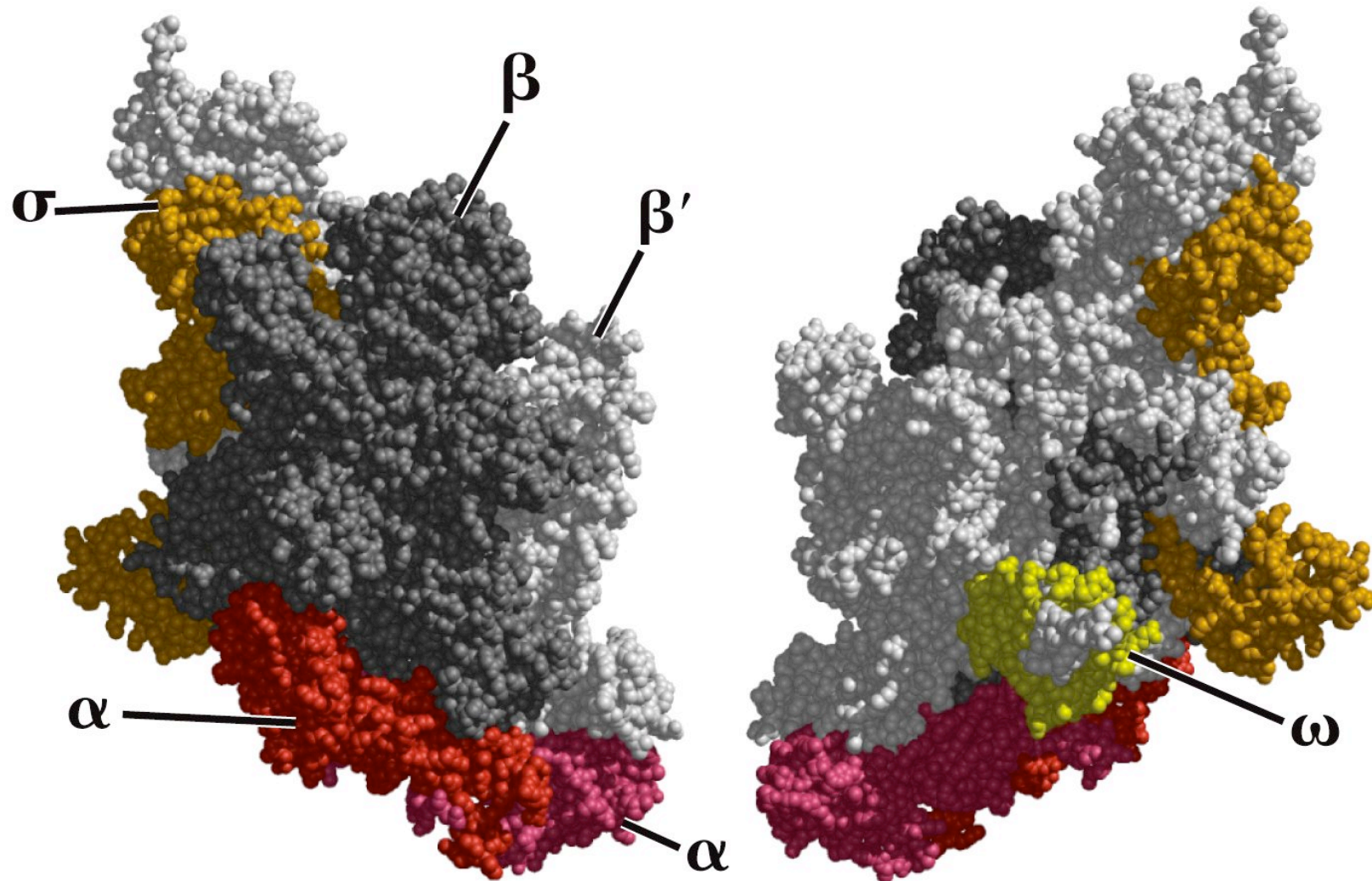
Protein-DNA complex

Protein-DNA interactions

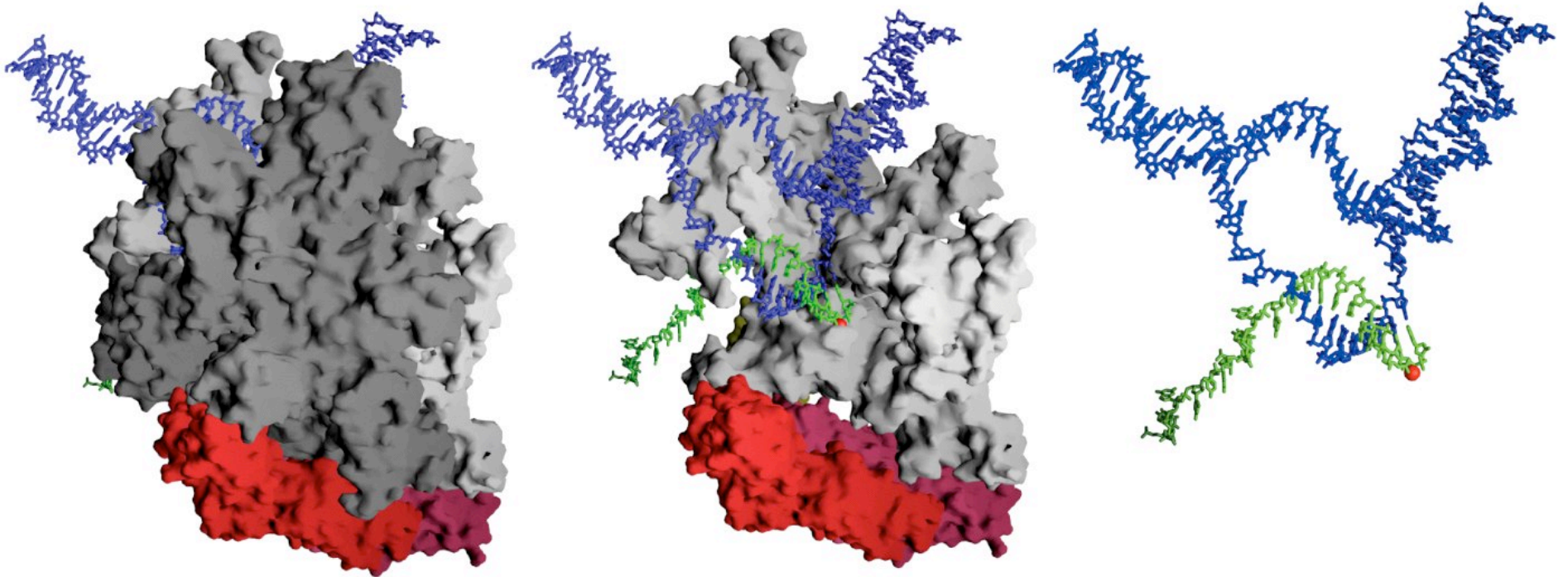
Sequence specific vs. non-specific recognition



The RNA polymerase

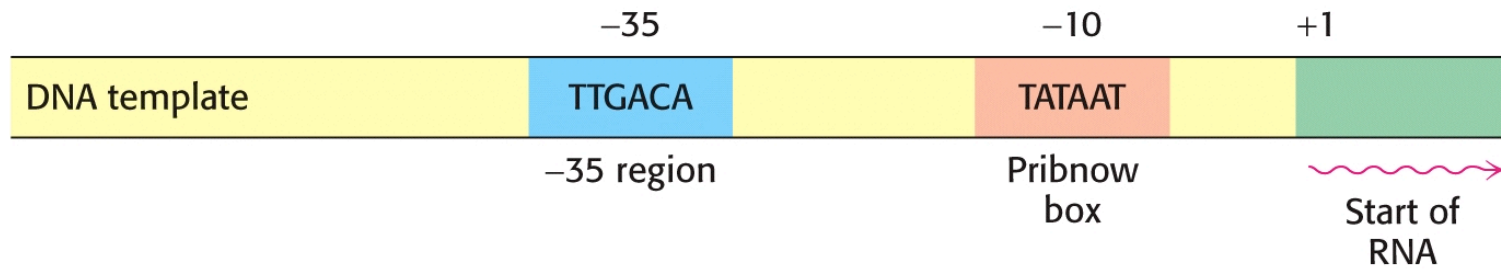


The RNA polymerase



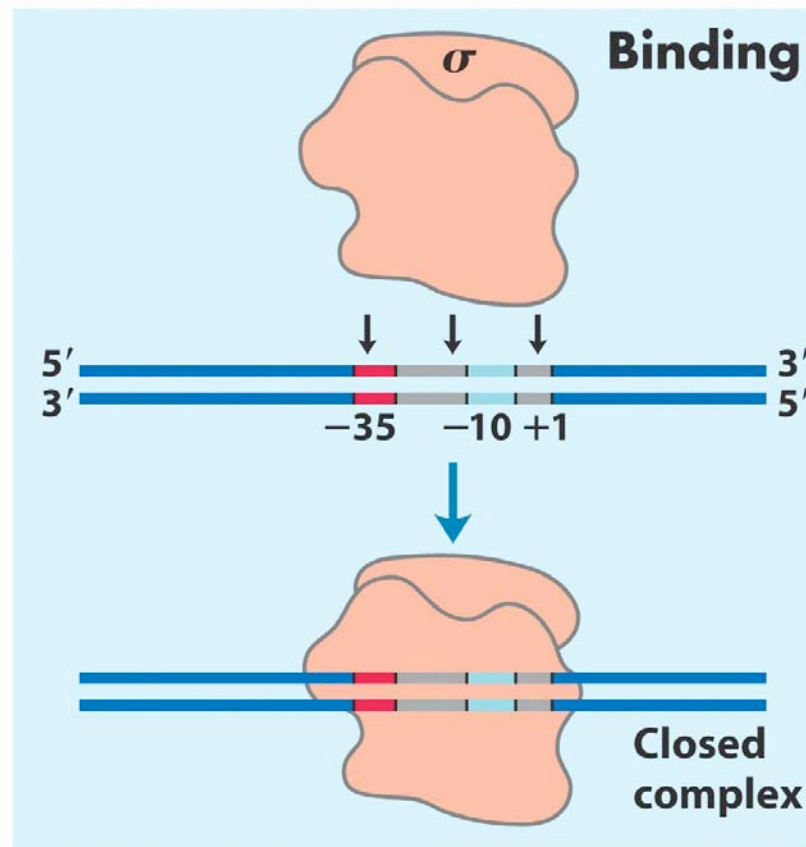
The RNA polymerase

RNA synthesis begins at promoter sites



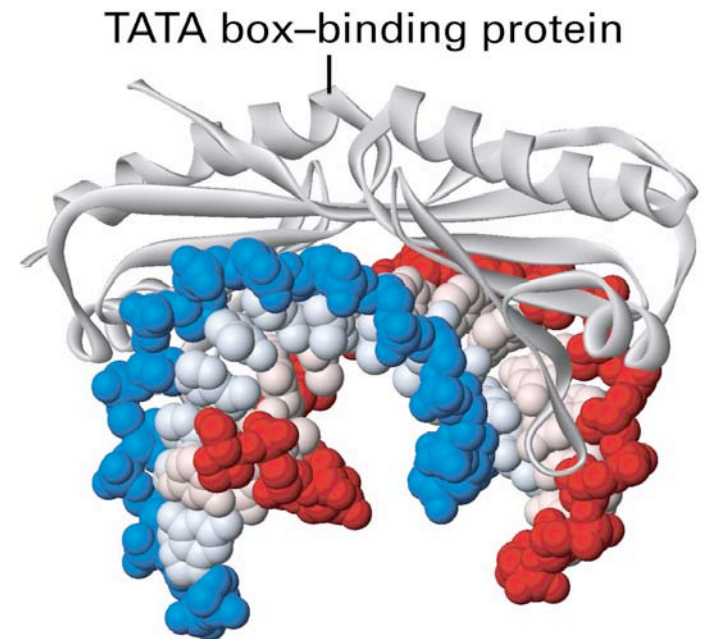
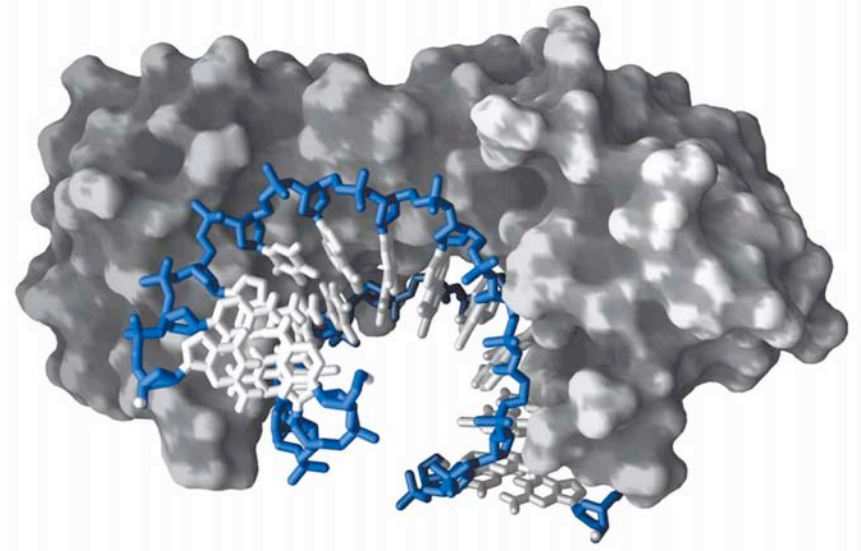
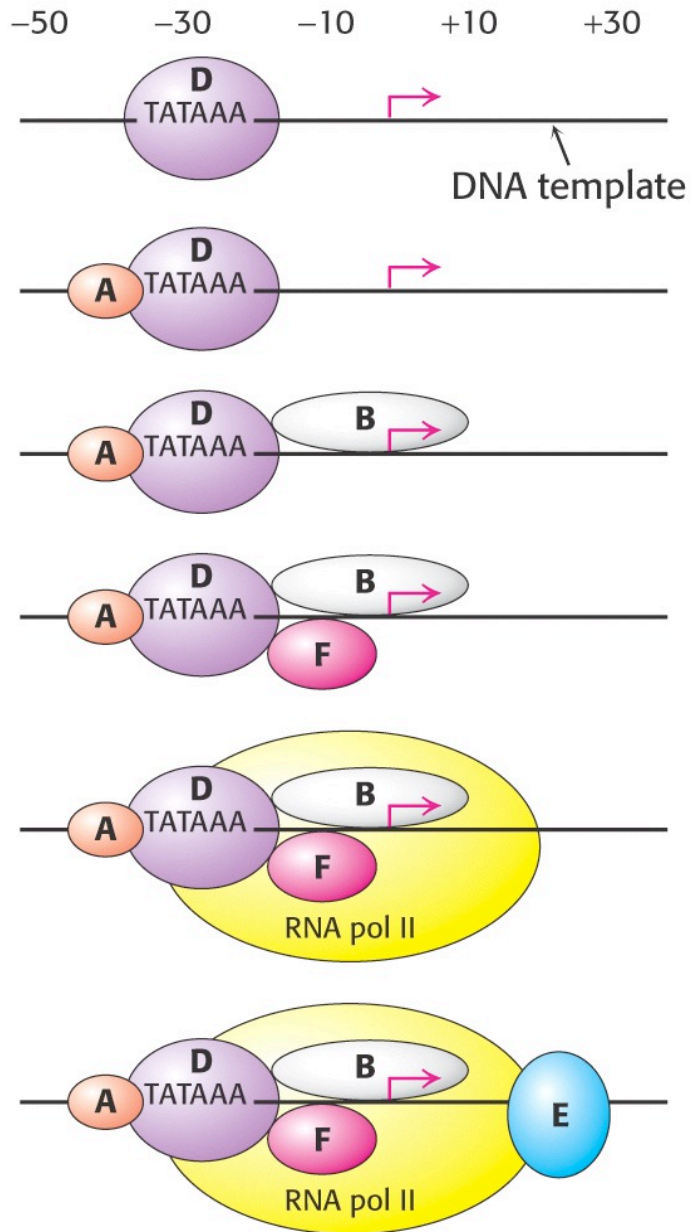
(A)

Prokaryotic promoter site



The RNA polymerase

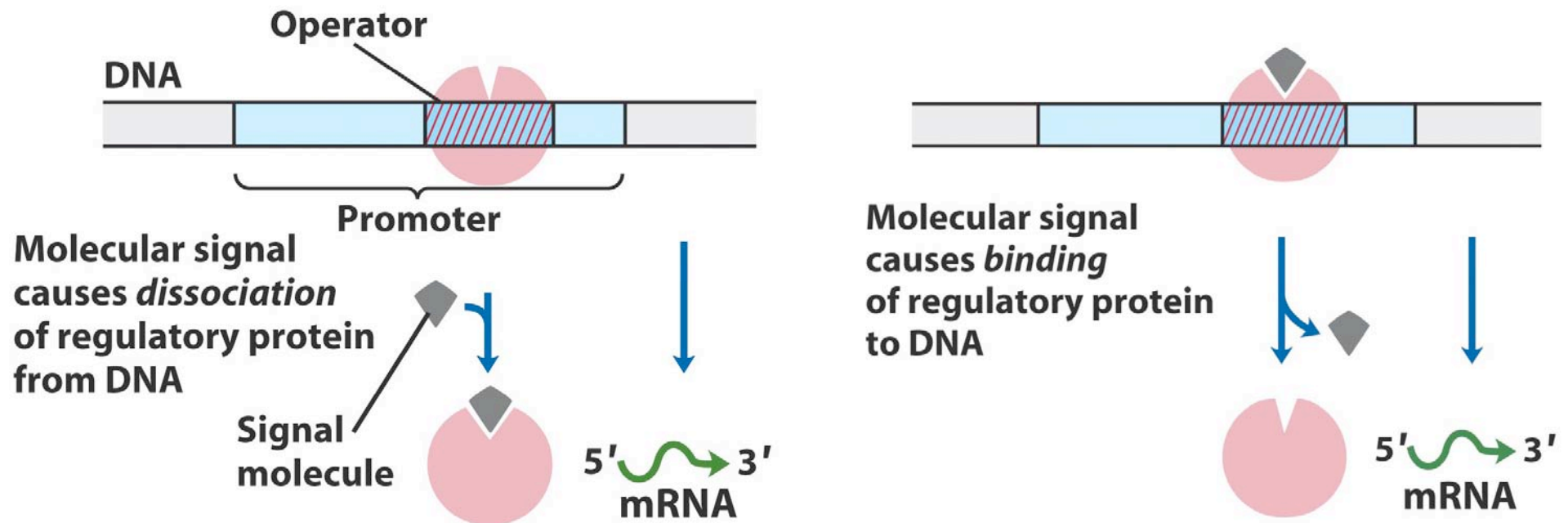
RNA synthesis begins at promoter sites



Gene regulation

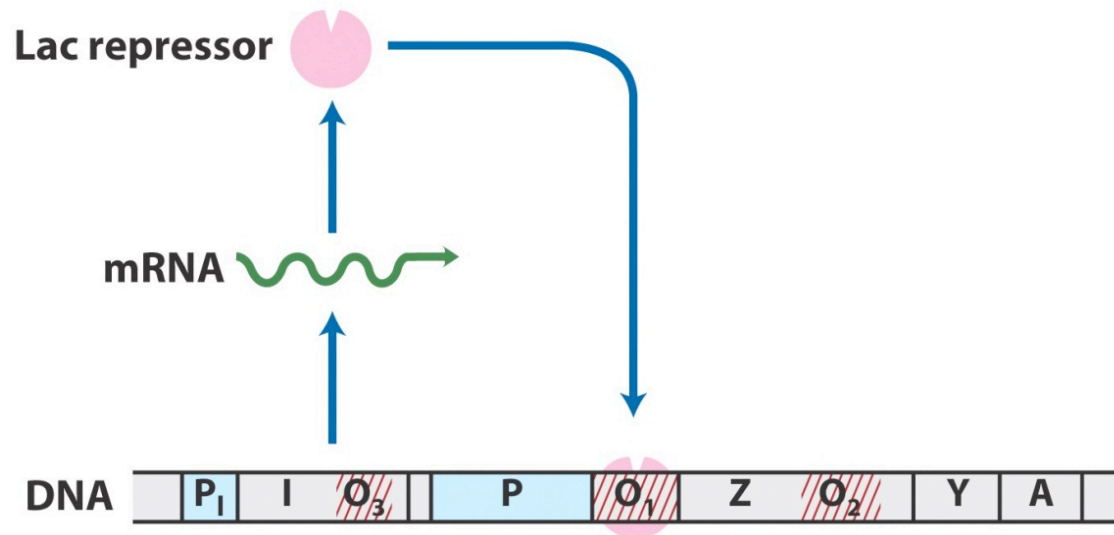
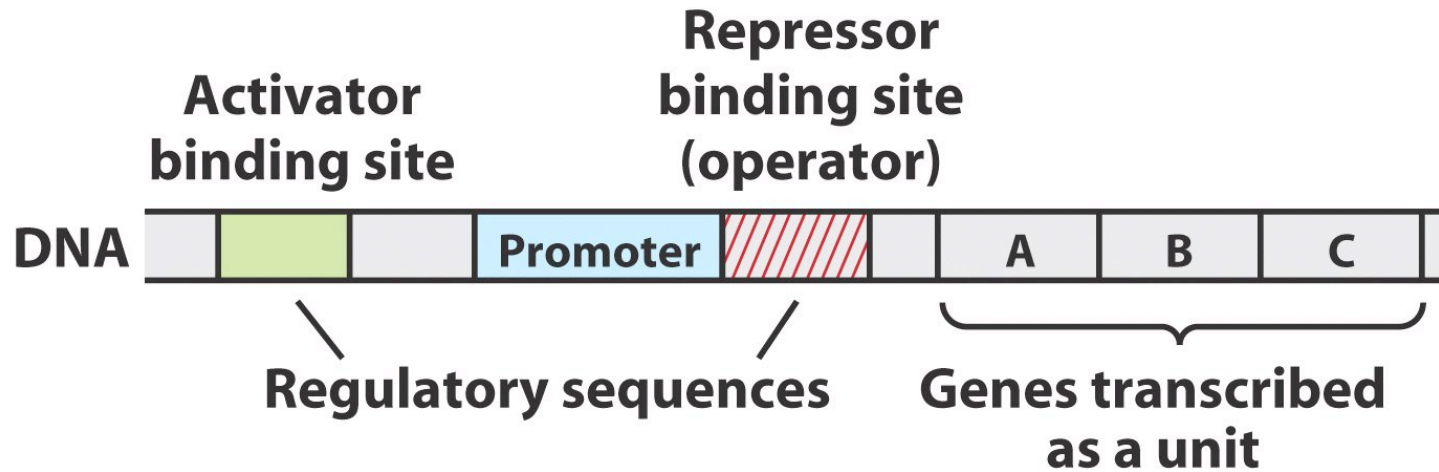
Negative regulation

Negative regulation
(bound repressor inhibits transcription)



Gene regulation

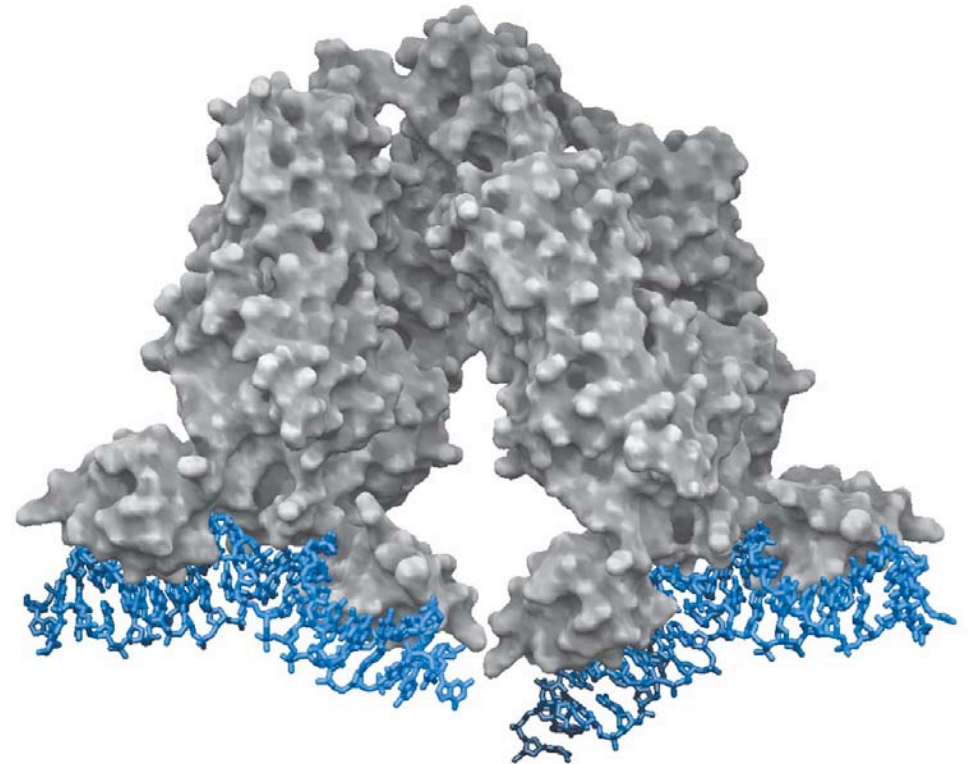
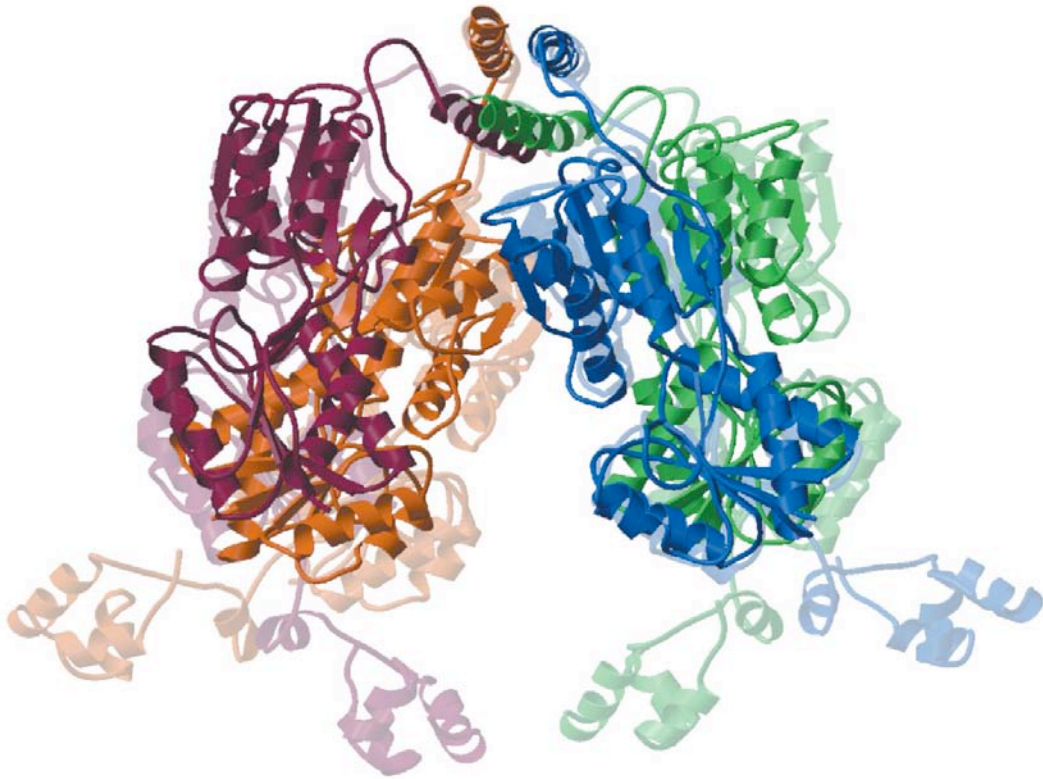
Negative regulation



Lactose repressor

Gene regulation

Negative regulation

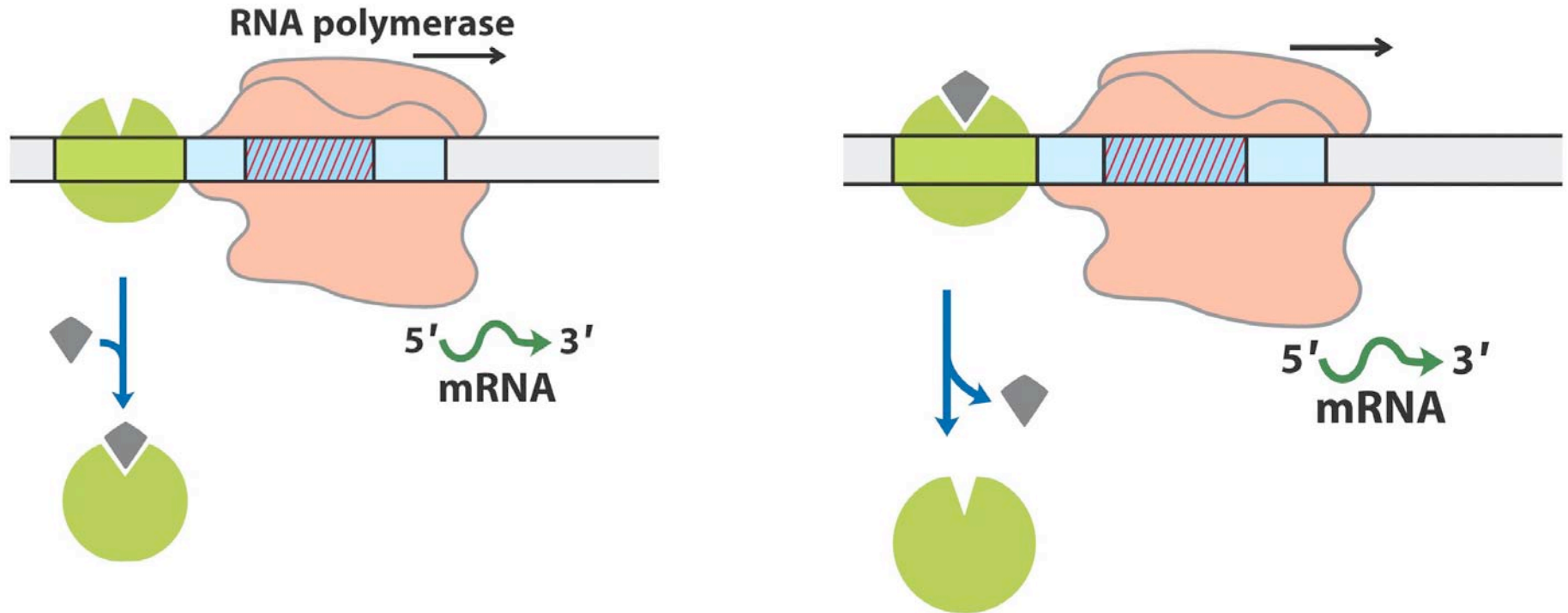


Lactose repressor

Gene regulation

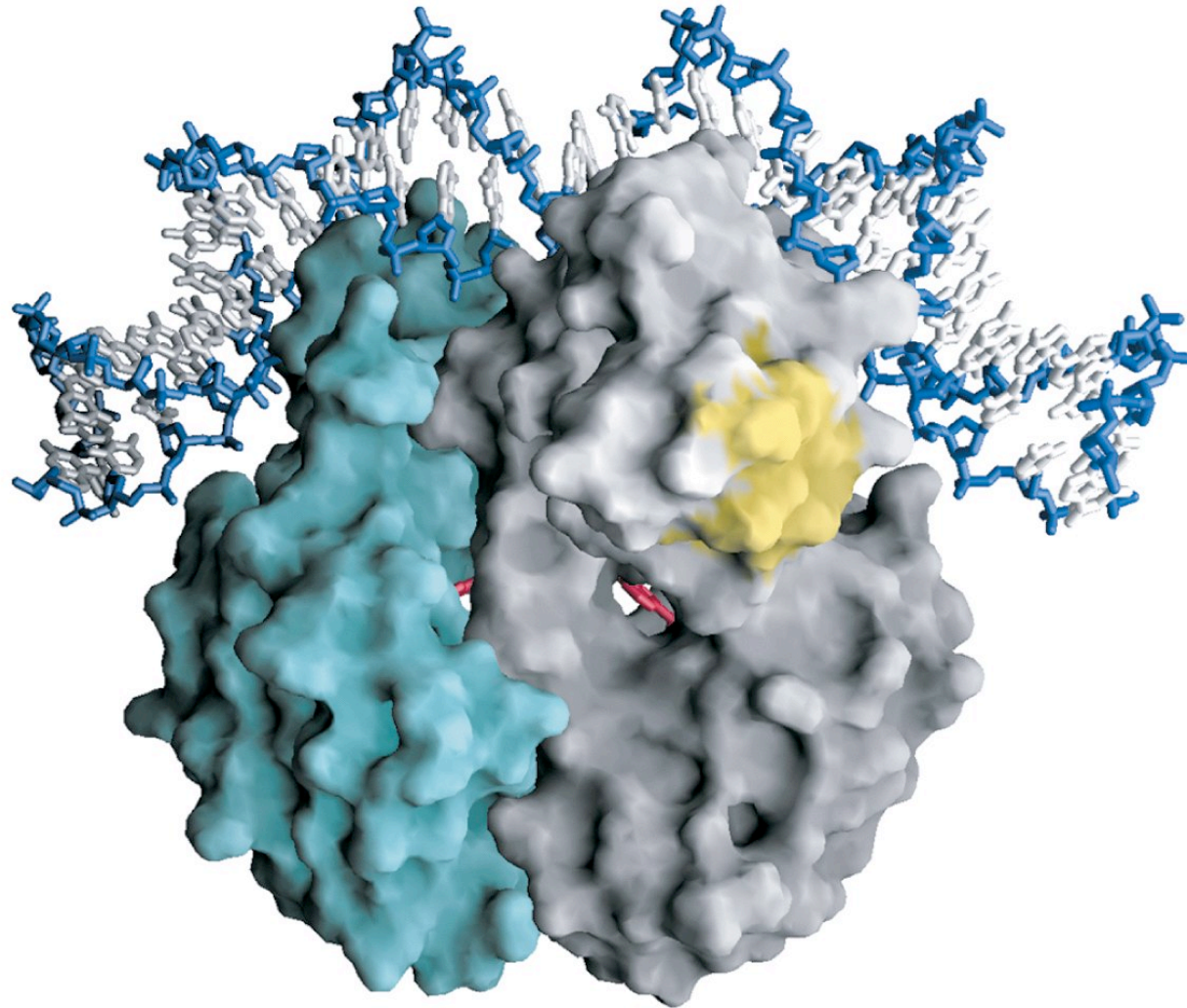
Positive regulation

Positive regulation
(bound activator facilitates transcription)



Gene regulation

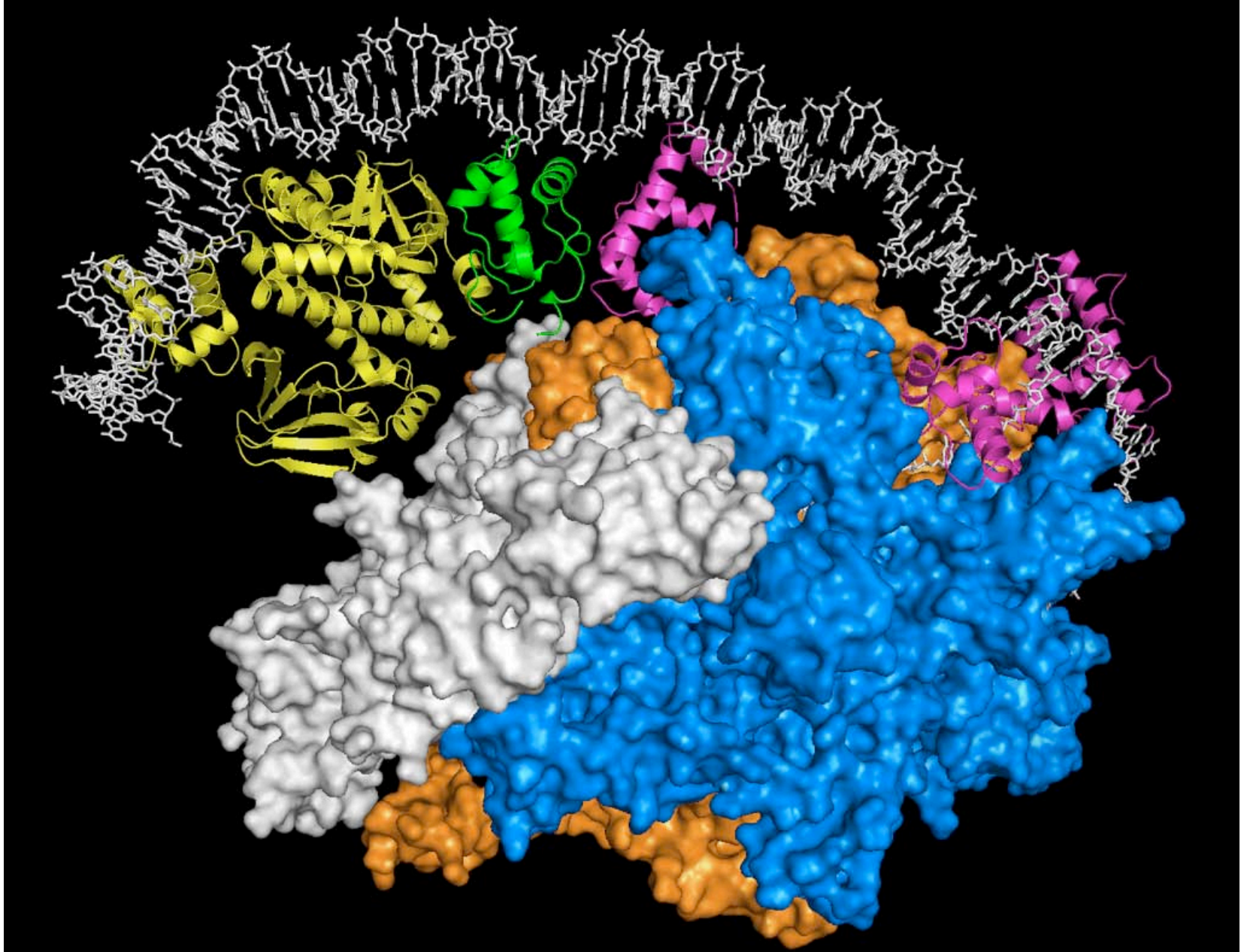
Positive regulation



cAMP Receptor Protein (CRP)

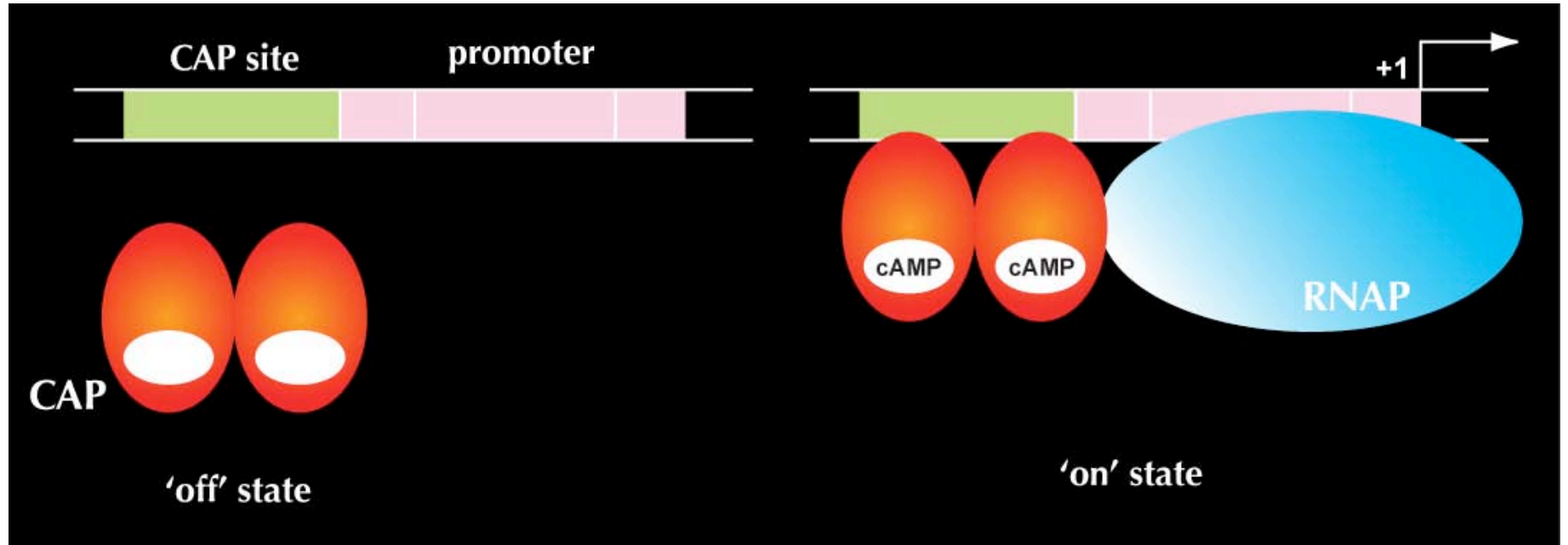
Gene regulation

Positive regulation



Gene regulation

Positive regulation



Gene regulation

Positive regulation

