

Section 12.4

# Gene Regulation and Mutation

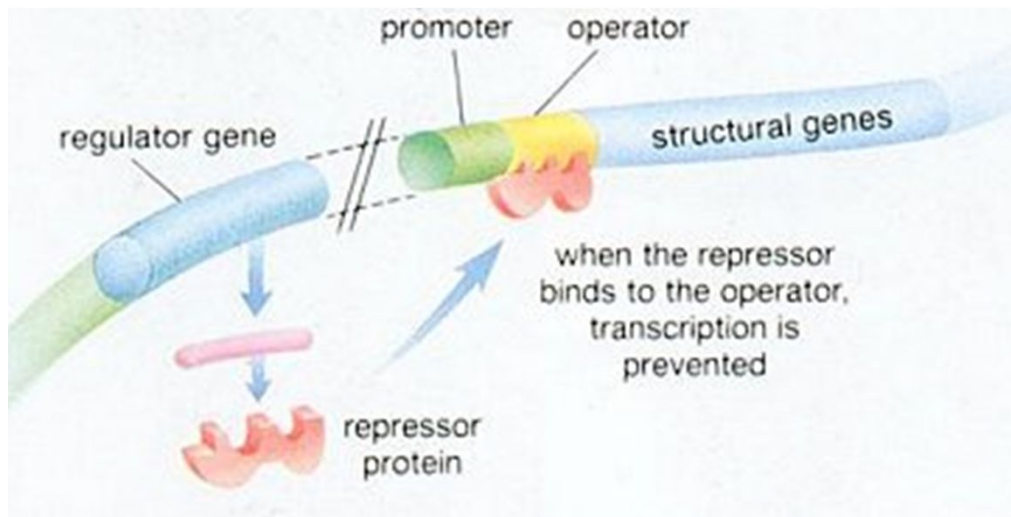
# Prokaryote Gene Regulation

- Remember that there are two main types of living cells:
  - Prokaryote
    - Nucleus and DNA
    - No organelles
    - Example- Bacteria
  - Eukaryote
    - Nucleus and DNA
    - Membrane bound organelles
    - Example –YOU!

# Prokaryote Gene Regulation

- Prokaryotes control which genes are transcribed
  - They do this in response to their environment
  - Usually controlled by something called an **operon**
- Operon is a section of DNA
  - Contains the genes for a specific protein
  - The protein will be used in a specific metabolic pathway

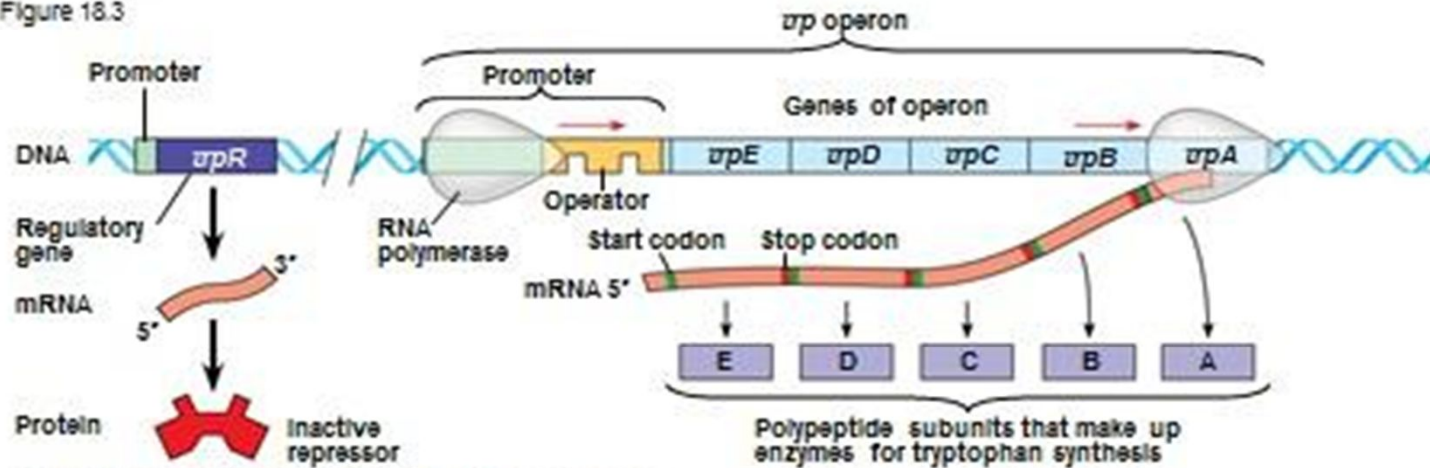
# Prokaryote Gene Regulation



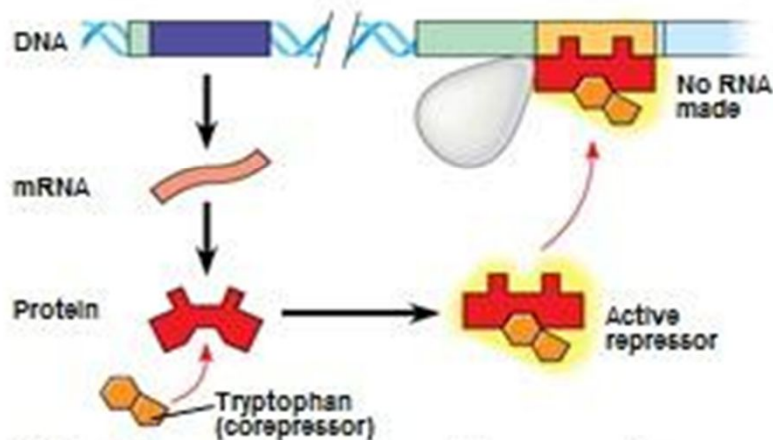
- Parts of an operon:
  - Operator
    - DNA segment that turns transcription on/off
  - Promoter
    - DNA segment that binds with RNA polymerase

# Prokaryote Gene Regulation

Figure 18.3



(a) Tryptophan absent, repressor inactive, operon on



(b) Tryptophan present, repressor active, operon off

# Prokaryote Gene Regulation

