

# GENE CONTROL

**Presented by :**

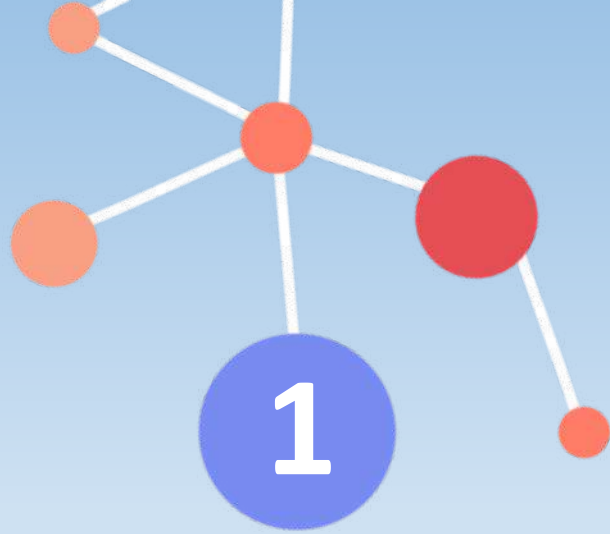
Mohammed Tarakhan

Doaa eloriby

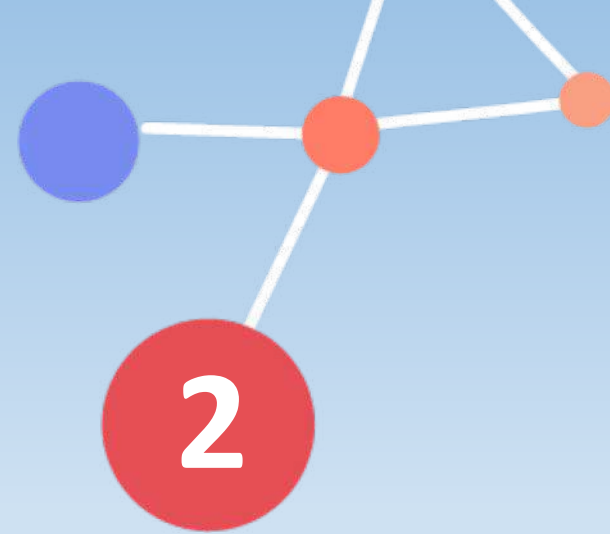
Shahed Alagory



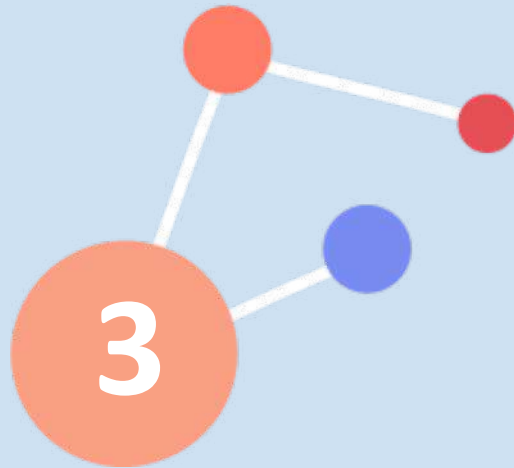
➤ ILOS:



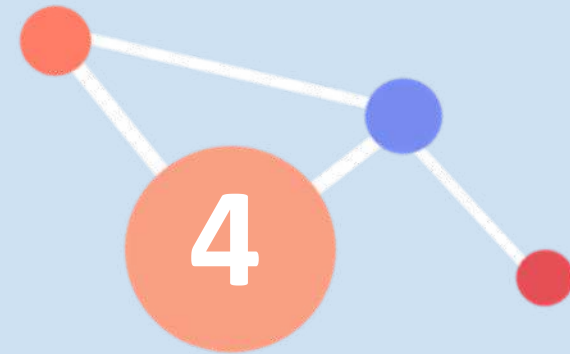
**Define  
gene control**



**Compare between  
eukaryotes and  
prokaryotes**



**Discuss gene control  
of prokaryotes**



**Outline regulation  
of gene control**

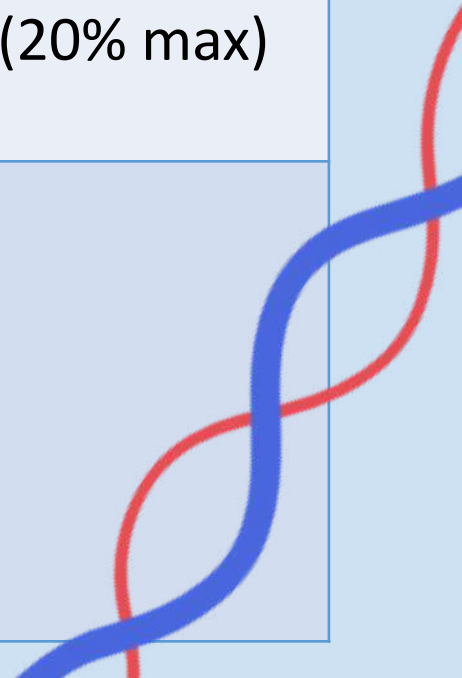
## ➤ **Gene Control:**

- ✓ **Gene regulation:** is the combined biological processes that contribute to the tight control of gene expression and ultimately defines cellular function and identity in all living organisms.
- ✓ **Gene expression:** we mean they transcription of a gene into mRNA and its subsequent translation into protein and can be controlled at any level of transcription.



## ➤ Comparison between gene regulation of prokaryotes and eukaryotes:

<b>Prokaryotes</b>	<b>Eukaryotes</b>
A. Small circular genome	A. Large genome
B. Unicellular	B. Multicellular
C. Most of the DNA codes for protein	C. Most DNA as "junk DNA"
D. Most of the genome is expressed	D. Little of genome is expressed (20% max)
E. Mechanism: The operon	E. Mechanisms: <ol style="list-style-type: none"><li>1. Chromosome Structure</li><li>2. Transcriptional Control</li><li>3. Post - Transcriptional Control</li><li>4. Translational Control</li><li>5. Post - Translational Control</li></ol>

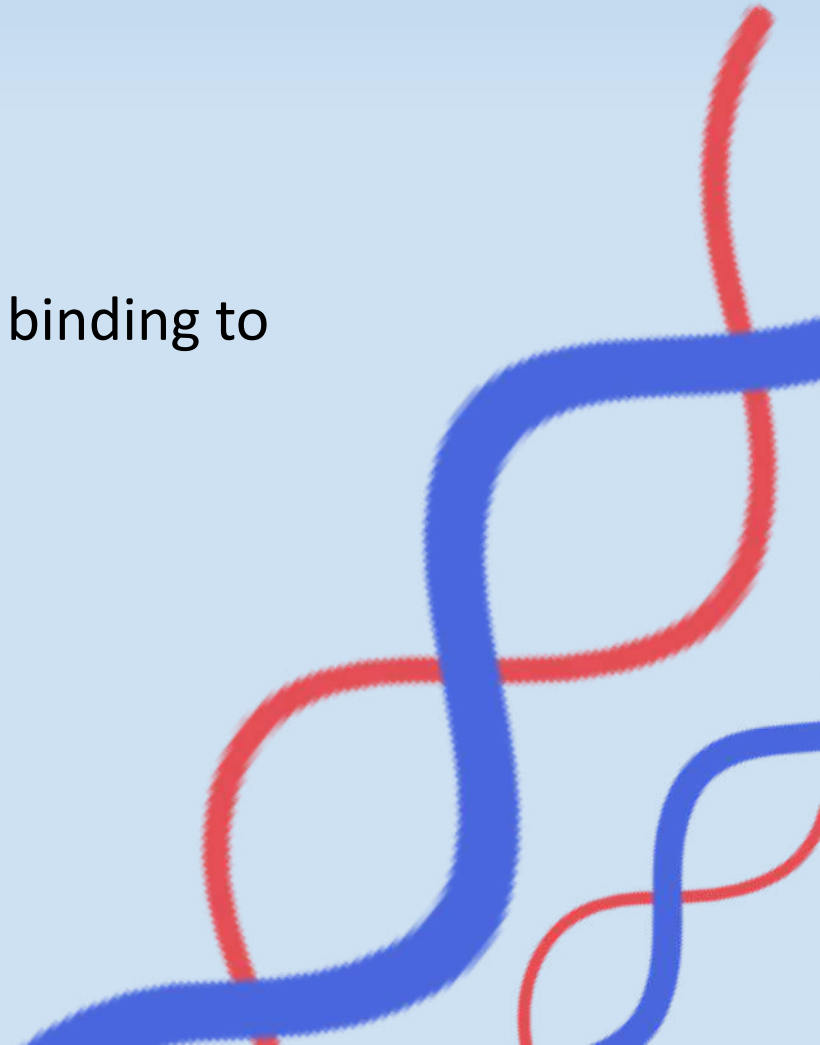


## ➤ Gene Control of Prokaryotes:

- ✓ In prokaryotes, protein synthesis or gene expression is controlled at transcription level.
- ✓ An operon is a cluster of genes that are transcribed together to give a single messenger RNA (mRNA) molecule, which therefore encodes multiple proteins

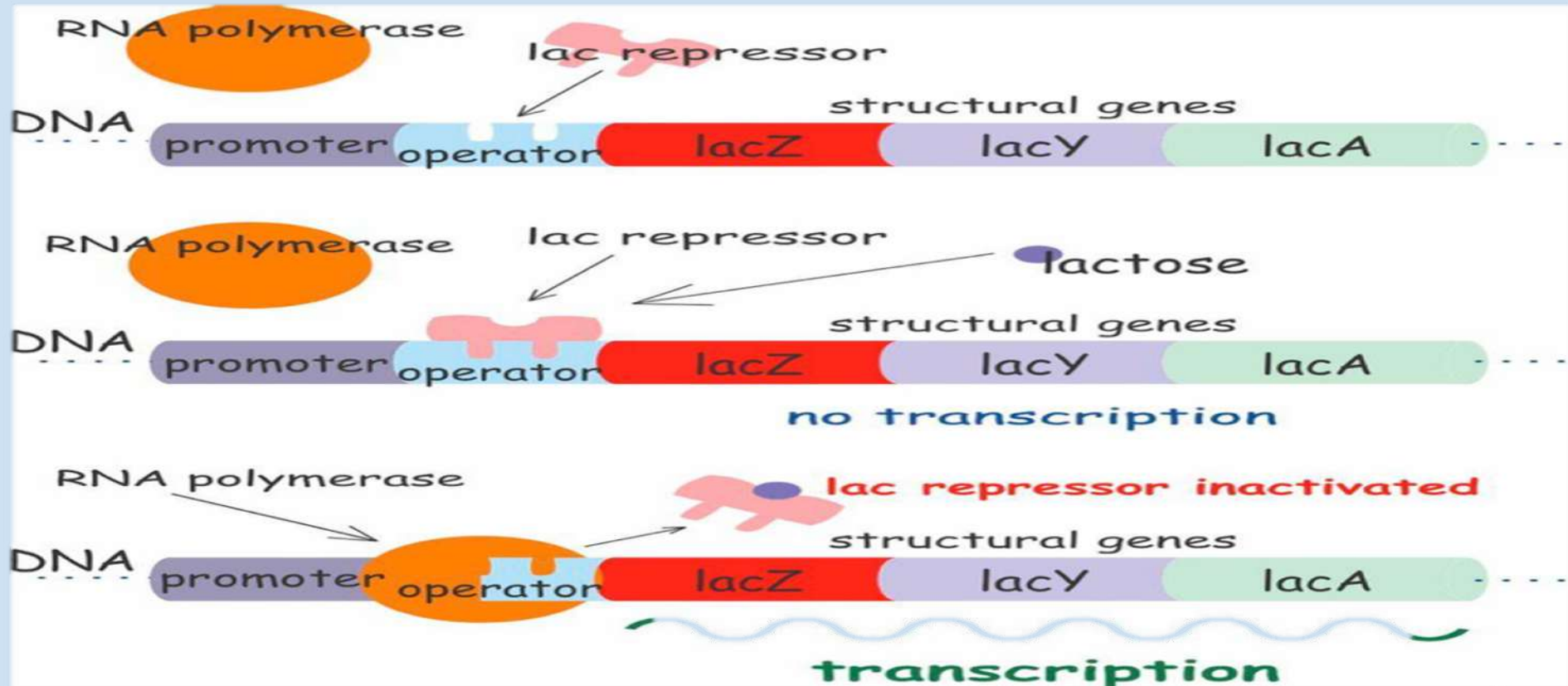


- ✓ There are three types of regulatory molecules that can affect the expression of operons (inducers , activators ,repressors )
- ✓ Both repressors and activators regulate gene expression by binding to specific DNA sites adjacent to the genes they control.



## ➤ Regulation of Gene Control:

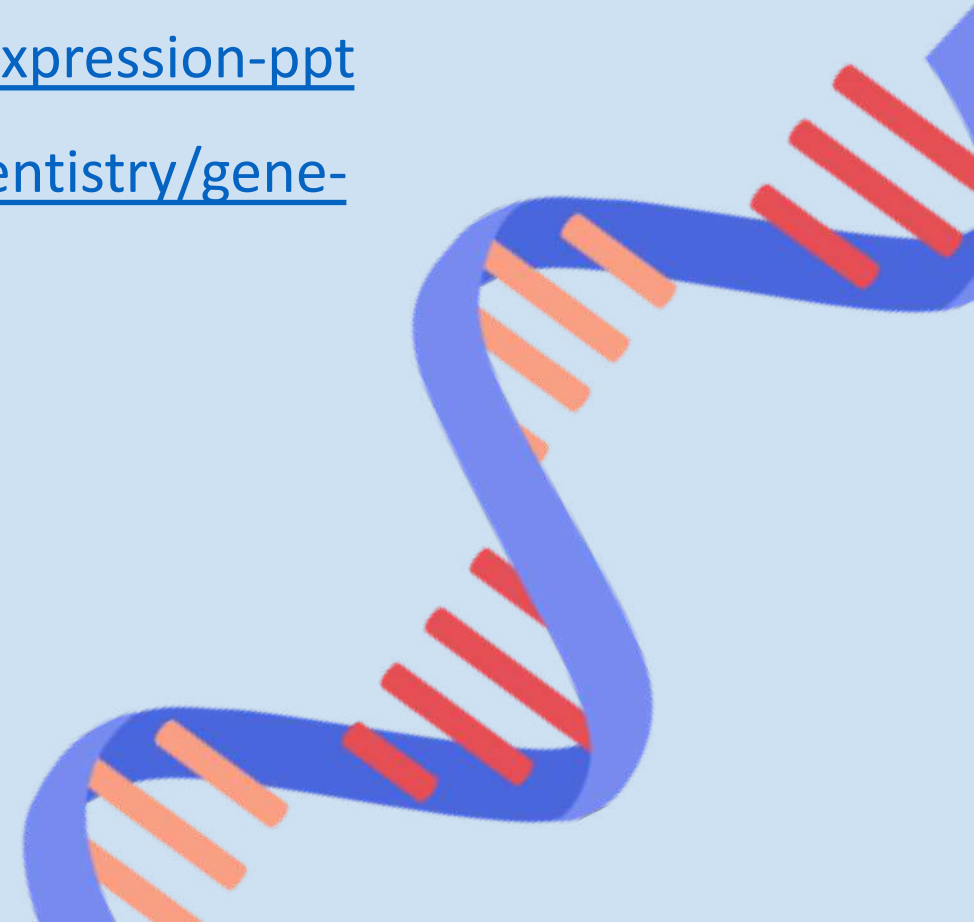
- ✓ **Positive regulation** an inducer (**Activator**) molecule activates the promoter, which promotes transcription of mRNA. Most activators are DNA binding proteins that bind to promoter (Activator site )
- ✓ **Negative regulation** an inhibitor (**Repressor**) is present in the cell, The binding of inhibitor prevents or suppresses transcription of relevant gene





## ➤ REFERENCES:

- <https://www.slideshare.net/namarta28/regulation-of-gene-expression-in-eukaryotes-44779699>
- <https://www.slideshare.net/ibadali14/control-of-gene-expression-ppt>
- <https://www.sciencedirect.com/topics/medicine-and-dentistry/gene-control>







**THANK YOU  
FOR  
LISTENING**