

B.M.A. College, Bāheri, Darbhanga

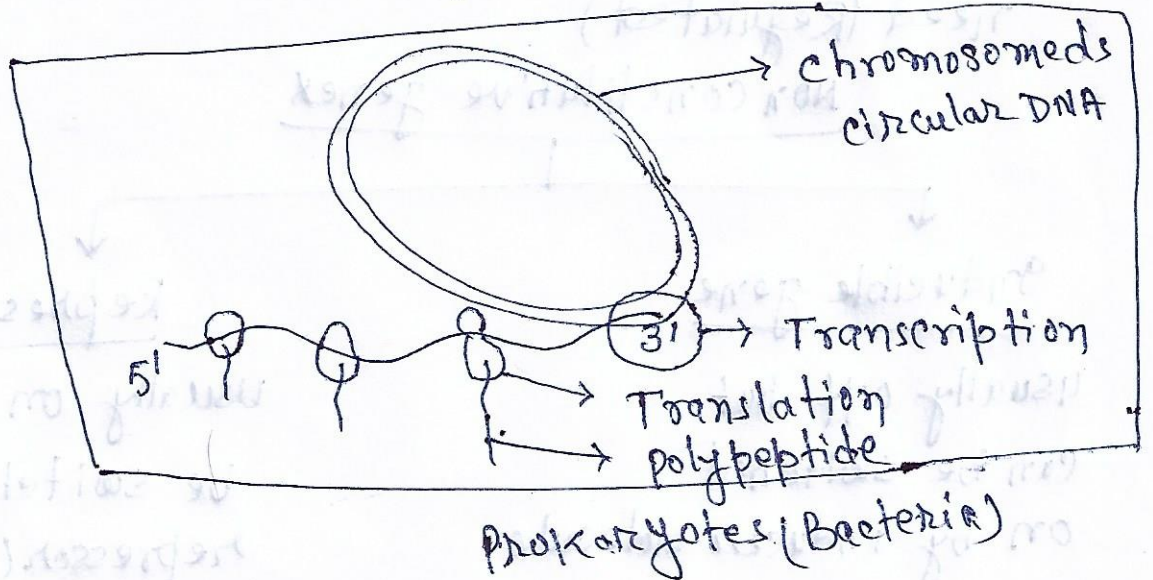
Date 12.08.2020

Dr. Mahesh Prasad Yadav
 Dept. of Zoology
 Class - XII
 Subject - Biology

Topic - Molecular basis of Inheritance

In Eukaryotes there are only two release factors

<u>Process</u>	<u>Prokaryotes</u>	<u>Eukaryotes</u>
Replication	Cytoplasm	Nucleus
Transcription	Cytoplasm	Nucleus
Translation	Cytoplasm	Cytoplasm



Transcription and Translation are Coupled in Bacteria (Prokaryotes)

Regulation of gene Expression

- In prokaryotes, gene can be regulated only at transcriptional level.

- But in Eukaryotes genes can be regulated at

(i) Transcriptional level

(ii) Processing level (regulation of splicing)

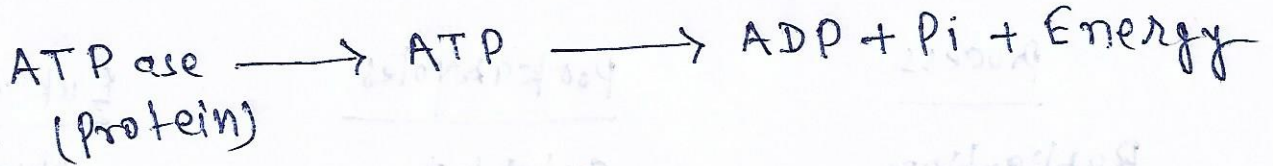
(iii) Transport level (transport of mRNA from Nucleus for cytoplasm)

Molecular basis of inheritance

Constitutive genes (House Keeping genes)

- These are continuously expressed in the cell

example - genes for enzymes of glycolysis



Non Constitutive genes (Luxury genes or smart genes)

These genes can be turned on and off according to need (Regulated)

Non Constitutive genes

Inducible gene

usually off but can be switched on by inducer molecule.

Repressible genes

usually on but can be switched off by a repressor (Co-repressor)

Feedback inhibition or feedback repression

Jacob and Monod explained Lac operon in E. coli

This lactose operon is usually switched off but is turned on if we provide only lactose as a substrate in the culture medium.

This operon is inducible and represents a catabolic process (Breakdown lactose into glucose + galactose)

Lac operon \Rightarrow In absence of lactose.