Regulation of Gene Expression –

Gene expression / Regulation – It is the mechanism of switching off and switching on of the Genes Depending upon the requirement of the cell.

* House Keeping gene (constitutive) – are the Genes which are continuously expressing themselves in all cell of the body as their product is always required eg – Genes of Glycolysis.
* Luxury genes / Nonconstitutive – Genes which are not expressing their effect all the time in all cells as they are not always required thus their activity is regulated. Such Genes are called Regulated Genes.

Types of Gene Regulation –

(i) +ve Gene Regulation → Regulation in which genes remain non expressed unless & until they are induced to do it. It is therefore called inducible regulation
Since they express their effect through enzyme, their enzymes are called Inducible enzyme.

(ii) –ve Regulation – Regulation in which gene continue expressing their effects till their activity is suppressed. It is there fore called repressible Regulation and their enzymes are called Reppo-sible enzyme.

Gene Regulation is exerted at 4 Levels – In eukaryotes

(1) – Transcriptional level (when 1° Transcript is formed)

(2) — ve Regulation - Regulation in which gene continue expressing
+ill their activity is suppressed. It is there fore called
repressible Regulation and their enzymes are called
Reppresible enzyme.

Gene Regulation is exerted at 4 Levels — In eukaryotes

(1) - Transcriptional level. (when no Transcript is formed)
(2) — processing level (when procesing & Terminal addition are made)
(3) - Transport of M-RNA from Nucleus to cytoplasm
(4) - Translational level.

* while in prokaryotes regulation takes place mostly at the site of Transcriptional Initiation.

Operon - Group of Genes controlled by single promoter is called operon.
eg - Lac operon, trp operon, his operon, val operon.

An operon consist of Minimum 4 Types of Gene -

(1) - Regulator — Gene that form Biochemical that suppress the activity of operator gene.
(2) Potmoter — Gene that provide sit for attachment of RNA pol.
(2) - Operator — Gene that receive the product of regulator
(3) - Structural — " " " transcribe m-RNA for (Polypeptide) synthesis

→ may become - Str
enzyme
- Harmone
antibodies
Transport protein