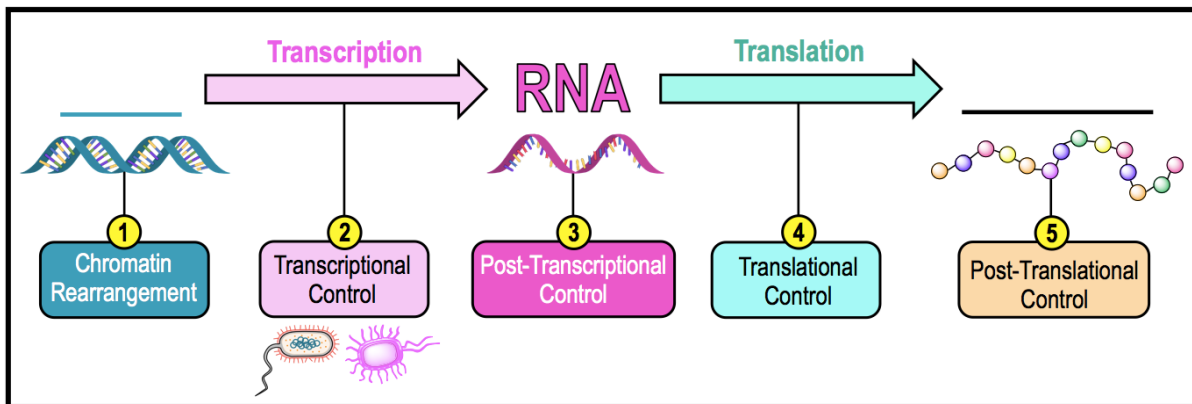


CONCEPT: INTRODUCTION TO REGULATION OF GENE EXPRESSION

- Prokaryotic & eukaryotic cells both have the ability to *regulate* (or *control*) their **gene** _____.
- Gene expression can be controlled at any of _____ stages:
 - 1 **_____ Rearrangements:** regulates chromatin conformation & DNA's accessibility for transcription.
 - 2 **_____ Control:** regulates RNA polymerase binding to a promoter & initiation of transcription.
 - Most _____ gene regulation occurs via *transcriptional control*.
 - 3 **_____ -Transcriptional Control:** regulates modifications to RNA *after* transcription.
 - 4 **_____ Control:** regulates initiation & elongation steps of translation.
 - 5 **_____ -Translational Control:** regulates modifications to proteins *after* translation.

EXAMPLE: 5 Stages Regulating Gene Expression.

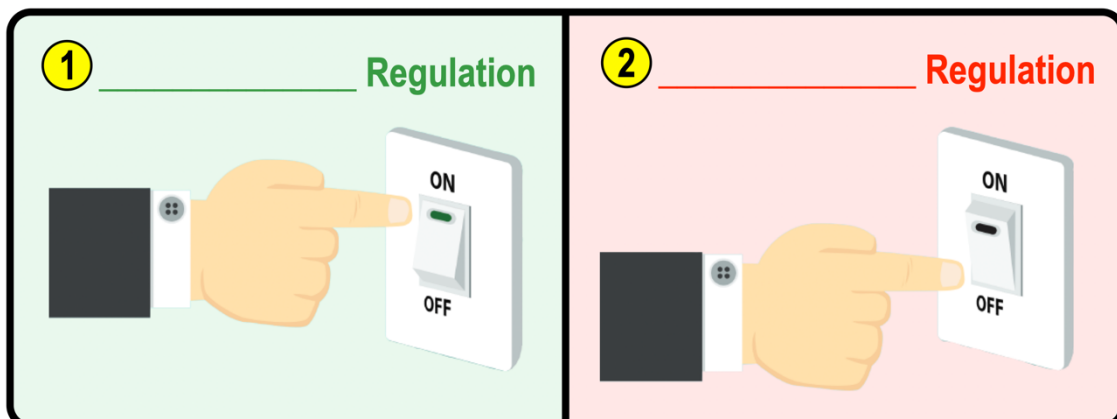


- _____ gene regulation can occur at any of these 5 stages.

Positive vs Negative Gene Regulation

- Cells regulate gene expression in _____ ways:
 - 1 **Positive Regulation:** stimulates gene expression by turning "_____" the gene.
 - 2 **Negative Regulation:** prevents gene expression by turning "_____" the gene.

EXAMPLE: Positive & Negative Regulation of a Gene Resembles a "Light Switch."



CONCEPT: INTRODUCTION TO REGULATION OF GENE EXPRESSION

PRACTICE: Post-translational control refers to:

- a) Regulation of gene expression after transcription.
- b) Regulation of gene expression after translation.
- c) Control of epigenetic activation.
- d) Period between transcription and translation.

PRACTICE: Which of the following is an example of positive regulation of gene expression?

- a) Transcription is halted on a specific gene to limit the amount of protein being created by the gene's expression.
- b) The protein that is translated is immediately degraded by the cell before it can serve its function.
- c) Elongation of translation comes to a stop and the ribosome dissociates when a regulatory protein binds.
- d) A protein binds to DNA and then stimulates the initiation of transcription of a specific gene.

PRACTICE: In prokaryotes, control of gene expression usually occurs at the

- a) Splicing of pre-mRNA into mature mRNA.
- b) Post-translational control level.
- c) Transcriptional control level.
- d) All of the above.