Name: \_\_\_\_\_\_\_\_\_\_\_

**Main Ideas Title: Eukaryote Gene Expression** Period: \_\_\_ Seat:\_\_

Why do eukaryotes 1) Conserve \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

regulate their 2) Conserve \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

genes?

Levels of Three major ways eukaryote genes are regulated:

eukaryote gene -At the chromatin level -\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ -Post Transcription

regulation

Differential gene \*\*\*Every cell in an organisms body has the same copy of DNA instructions (genome) but…

Expression \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(In humans **only** 20-40% of genes are expressed in each cell)

This makes cells look and behave different

Chromatin -The genes location of its promotor relative to the nucleosome

structure affects determines if it can be transcribed

gene expression -\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

-\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Histone -Addition of an acetyl (-COCH3) to a histone tail amino acid \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Acetylation \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

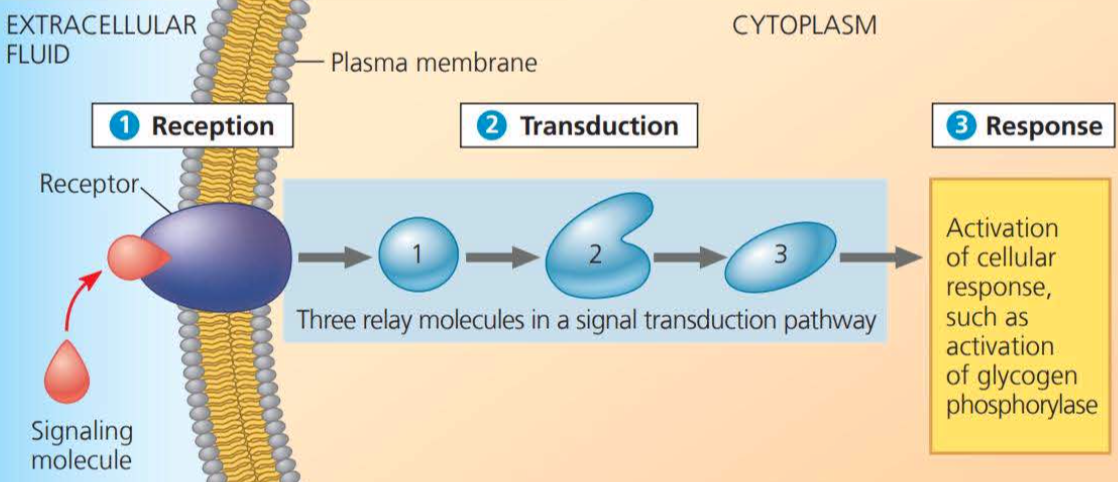
DNA methylation Addition of methyl group (-CH3) to DNA bases (usually cytosine) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

- Few methyl groups means gene is transcribed less

-Heavy methylation means genes are not expressed

- Removal of methyl groups can resume expression

Transcription In most organisms, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ by signals sent from the outside of the cell



Gene Regulation BIG IDEA!!!

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in response to signals from internal and external environments

-Hormones

-Death of surrounding cells (growth factors)

-Eating

-Temperature Changes

- Cyclins/CDKS

Components of -\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- DNA segments that are binding sites for transcription factors

Transcription \*Enhancer- control elements upstream of the gene that must be bound for transcription to

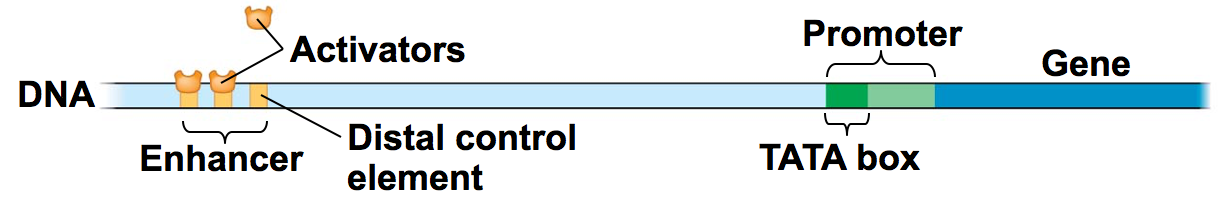
occur

-\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- proteins that must bind to control elements and the promoter in order for RNA Polymerase to bind

\*\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

-\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- Additional group of proteins that must be present to interact with the promoter.

Activation of 1) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Transcription

2) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

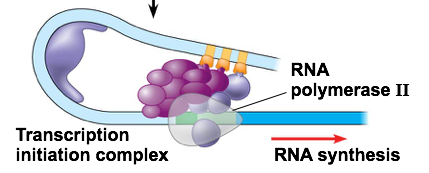
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A screenshot of a cell phone

Description automatically generated

3)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Repressors in \_\_\_\_\_\_\_\_\_\_\_\_\_ bind to enhancer which blocks activators from binding…stopping transcription

Eukaryotes

Alternative

Splicing