

AP Biology 031 – Gene Regulation

Video Review Sheet

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A. Introduction:

- a. Gene regulation is how we express ...
- b. Terminology:
 - i. Regulatory Gene: secretes (codes for the formation of) a _____ that regulates
 - ii. Regulatory sequence: an example is a _____
- c. For gene regulation: it starts with DNA that makes _____ which codes for _____
- d. Though we can regulate a gene in any step along the way, most of the regulation is going to be from _____
- e. An example in us, is the TATA Box, a regulatory sequence that allows RNA polymerase to _____

B. The lac Operon:

- a. How many genes code for proteins to digest the lactose?
- b. What happens at the promoter?
- c. The operator sits right between _____
- d. The repressor protein binds to the _____
- e. If the repressor is attached operator then RNA polymerase _____
- f. The lactose fits into the _____ and it changes the shape of the protein.
- g. Now RNA polymerase can transcribe the genes so that the lactose gets _____
- h. If lactose is now all gone, the repressor will bind back on the _____

C. The trp operon:

- a. How many genes?
- b. When tryptophan (amino acid) is present, it fits into the repressor who then binds to the _____
- c. If you have no tryptophan, the repressor changes its shape, and it no longer binds to the _____

D. In eukaryotes, we primarily use transcription factors:

- a. Transcription factors can:
 - i. Allow RNA polymerase to _____
 - ii. Some TFs will actually hold RNA polymerase in _____
- b. When the DNA folds back, with more TFs, it then activates the _____