

# 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 \_\_\_\_\_