**Operons Activity**

Begin by color-coding the handout that you’ve been given for the *lac operon* (right-hand side of the diagram).

Next, watch the video at: <https://www.youtube.com/watch?v=wi_ZYE1h0oI>. As you watch, use the diagrams that you color-coded to understand how the operon works and why the presence or absence of lactose makes a difference in function.

Answer the following:

1. Define the following terms: Promoter, Operator, Structural Gene, Regulator Gene, Repressor protein
2. Explain how a repressor protein works and how it’s impacted by the presence of lactose.
3. Where is the information for how to make a repressor?
4. Is this operon inducible or repressible? Explain your answer.

Next, locate all similar portions on the *trp operon* (left-hand side of the diagram on your handout). Find items such as promoter, repressor. No need to color unless you would like to!

Watch the video at: <https://www.youtube.com/watch?v=BzcI0RydbB8>. As you watch, use the diagrams that your color-coded to understand how the operon works and why the presence or absence of tryptophan makes a difference in function.

Answer the following:

1. Contrast the function of the repressor in *trp* and *lac operons.*
2. Is this operon inducible or repressible? Explain your answer.

General follow-up questions:

1. What is an operon? What is its purpose?
2. Are these operons in prokaryotic or eukaryotic cells?
3. What are the differences between prokaryotic and eukaryotic operons?
4. How does an operon use the concept of feedback regulation?

Simulations to play with if you have a computer:

<https://phet.colorado.edu/en/simulation/legacy/gene-machine-lac-operon>

<https://www.dnalc.org/view/15884-the-lac-operon.html>

<http://www.uiweb.uidaho.edu/isee/studystudio/>