

## Operon Modeling Video/Claymation

In this activity, your group will use Play-Do, modeling clay, or other arts and crafts type of materials to model the *lac* or *trp* operons in prokaryotes. For the model that your group selects, make sure to incorporate the terms listed below. In your video, make sure that you explain the process in detail.

### **Trp operon**

Regulatory gene (*trp R*)

Repressor protein

Promoter

Operator

Genes of operon (*trpE*, *trpD*, *trpC*, *trpB*, *trpA*)

Tryptophan (corepressor)

RNA polymerase

mRNA

### **lac operon**

Regulatory gene (*lacI*)

Repressor protein

Promoter

Operator

Genes of operon (*lacZ*, *lacY*, *lacA*)

Lactose (inducer)

RNA polymerase

mRNA

CAP

cAMP



Thursday through Monday- there will be class time to work on this project.

DUE DATE: We will watch your video in class on Tuesday, April 21<sup>st</sup>.

## Operon Rubric

Name of group members:

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### Rubric

- |  |   |   |   |
|--|---|---|---|
| 1. Incorporated all of the correct terms listed.   | 5 | 3 | 1 |
| 2. All group members are in the video (pic or voice)   | 5 | 3 | 1 |
| 3. Information in video is accurate and aids in understanding how gene expression relates to cell communication.                   | 5 | 3 | 1 |
| 4. State whether the process is considered positive or negative control mechanism.   | 5 | 3 |   |
| Topic Specific Section (these will not apply to all videos, only the specific operon your group chose)                             |   |   |   |
| 5. Explained what happens to transcription at the <i>lac</i> operon when lactose is absent and why.                                | 5 | 3 | 1 |
| 6. Explained what happens to transcription at the <i>lac</i> operon when lactose is present and why.                               | 5 | 3 | 1 |
| 7. Explained what happens to the rate of transcription when glucose levels are high and lactose levels are low.                    | 5 | 3 | 1 |
| 8. Explained what happens to the rate of transcription when glucose levels are low and lactose levels are high.                    | 5 | 3 | 1 |
| 9. Explained what happens to transcription at the <i>trp</i> operon when tryptophan is absent and why.                             | 5 | 3 | 1 |
| 10. Explained what happens to transcription at the <i>trp</i> operon when tryptophan is present and why.                           | 5 | 3 | 1 |
| 11. Explained what happens when <i>trpE</i> , <i>trpD</i> , <i>trpC</i> , <i>trpB</i> , and <i>trpA</i> are present in low levels. | 5 | 3 | 1 |