Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Chapter 18 Warm-up**

1. What are the three basic shapes of bacteria?
2. Match the following prokaryotic sources of variation with their correct description:

|  |  |
| --- | --- |
| **Sources of Variation** | **Description** |
| \_\_\_\_ Spontaneous Mutation | A) Bacteriophages transfer genes into bacteria |
| ­­­\_\_\_\_ Transformation | B) Incorporating naked foreign DNA  |
| \_\_\_\_ Transduction | C) Small pieces of DNA that can hop from DNA to DNA |
| \_\_\_\_ Conjugation | D) Random mutations that occur in rapidly dividing bacteria |
| \_\_\_\_ Transposons | E) Direct transfer of DNA between 2 bacterial cells |

1. Why do scientists use bacteria as their model for studying gene expression?
2. What are two ways prokaryotic cells can regulate metabolism?
3. What are the three parts of an operon?
4. *Fill in the missing words*: Gene expression consists of two types of control: negative and positive. Negative control uses a \_\_\_\_\_\_\_\_\_\_\_\_\_ to control gene expression. Positive control uses a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to control gene expression.
5. Complete the table below:

|  |  |  |
| --- | --- | --- |
|  | **Repressible** | **Inducible** |
| Trp operon |  |  |
| Lac operon |  |  |
| Used in anabolic pathways |  |  |
| Used in catabolic pathways |  |  |
| Usually on and get turned off |  |  |
| Usually off and get turned on |  |  |

1. *Fill in the missing words:* Eukaryotic cells have very complex ways of regulating their genome. One way is via DNA packing and unpacking. Methylation involves turning genes \_\_\_\_\_ by attaching a \_\_\_\_\_\_ group to inactivate the genes. Acetylation involves turning genes \_\_\_\_ by attaching a \_\_\_\_\_\_ group to activate the genes. Along the DNA, any histones that are tightly packed is referred to as \_\_\_\_\_\_\_chromatin; any histones that are not packed tightly and available for transcription are called \_\_\_\_\_chromatin.
2. *Fill in the missing words:* Proto-oncogenes code for proteins that stimulate normal cell \_\_\_\_\_\_\_\_\_\_ and division. Tumor suppressor genes encode proteins that \_\_\_\_\_\_\_\_\_ abnormal cell division. Tumor suppressor genes also repair damaged DNA, control \_\_\_\_\_\_\_\_\_\_\_ of cells to each other, and inhibit the cell \_\_\_\_\_\_\_\_\_\_\_.
3. Match the following:
4. Ras gene \_\_\_ 1) encodes a tumor suppressor protein, inhibits cell cycle
5. P53 gene \_\_\_ 2) protein that codes for an activator that signals growth factors