

*Pre-Lab, Skills, and Standards Alignments*

**BACTERIA & ANTIBIOTICS**

In this lab, two different strains of harmless bacteria are treated with two different antibiotics. After a day of growth, observation of the presence or absence of growth inhibition zones is used to determine if either of the bacterial strains is antibiotic resistant.

**Lab Length:** 1 hour

**Suggested Pre-Lab Teaching**

- Although most are harmless, some bacteria can cause infection.
- Antibiotics are prescribed to treat bacterial infections.

**Lab Skills**

- Conduct a controlled experiment to determine antibiotic sensitivity.
- Use a transfer pipette or micropipette to measure small volumes of liquid.
- Use sterile technique to culture bacteria in Petri dishes.

**Conceptual Knowledge/Skills**

- Use experimental results to determine antibiotic sensitivity.
- Describe how experimental results support a claim about antibiotic resistance.
- Explain how bacteria develop antibiotic resistance in nature.

**New York State Science Learning Standards/NGSS**

Science and Engineering Practices	Disciplinary Core Ideas	Cross Cutting Concepts
<p><u>Analyzing and Interpreting Data</u> Analyze and interpret data to determine similarities and differences in findings.</p> <p><u>Constructing Explanations and Designing Solutions</u> Apply scientific ideas to construct an explanation for real-world phenomena, examples, or events. Construct an explanation that includes qualitative or quantitative relationships between variables that describe phenomena.</p>	<p><u>LS4.B Natural Selection</u> Natural Selection can lead to an increase in the frequency of some traits and the decrease in the frequency of other traits. (MS-LS4-4)</p> <p><u>LS4.C Adaptation</u> Adaptation by natural selection acting over generation is one important process by which species change over time in response to changes in environmental conditions. (MS-LS4-6)</p>	<p><u>Patterns</u> Patterns can be used to identify cause and effect relationships.</p> <p><u>Cause and Effect</u> Cause and effect relationships may be used to predict phenomena in natural or designed systems.</p>