



E Coli Detection

STEM Sims

Lesson 2: Multiple Samples

In order for an antibiotic to be used in medical treatments and clinical trials, the antibiotic has to be tested numerous times. Antibiotics have to be tested repeatedly to show their effectiveness. There could be adverse effects or other more effective antibiotics to treat a given infection. Researchers spend many hours finding, testing, and evaluating antibiotics. Are you up for the researching challenge?

Doing the Science

1. Start the *E. coli* Simulation by clicking on the “Sim” tab.
2. Click on the “New Sample” button.
3. Click and drag the swab to the bacteria test tube and unclick.
4. Drag the swab from the bacteria test tube to the petri dish. Move the swab around the petri dish to fill all four quadrants with bacteria.
5. When the petri dish is filled, dispose of the swab by dragging the swab over the trash.
6. Place the small round tablet of Antibiotic A into one of the quadrants of the petri dish.
7. Repeat step 6 for Antibiotics B, C, and D.
8. Move the petri dish into the incubator by dragging the petri dish to the white box on the left.
9. To start the incubation process, click on the “Start Timer” button.
10. Click on the “Analysis” button to look at the bacteria.
11. Click and drag the ruler to each of the quadrants and measure the area where the antibiotic has inhibited the growth of the bacteria. This will be the white spot in the middle of the bacterial growth. Record the size into Table 1 below.
12. Type the measurements for each of these inhibited growth areas into the correct slot and click on “Update Table”.
13. Click on “Testing Center” and repeat steps 2-12 for each of the 9 remaining bacteria samples. After the third sample click on “Statistics” and record the *F* statistics given.

Table 1.

Sample	Antibiotic A	Antibiotic B	Antibiotic C	Antibiotic D	F Value
1					-----
2					-----
3					
4					
5					
6					
7					
8					
9					
10					

Do You Understand?

1. Did you notice a pattern throughout the ten samples of the antibiotics? Was the size of the areas where the antibiotic worked consistent between every sample?