

How Quickly Can Bacteria Multiply?

By Susanne Johnston, Germantown Academy, Ft. Washington, PA

Purpose: To determine how quickly bacteria can multiply and how many will be present after a short amount of time.

Background: Bacteria reproduce by using fission. They make copies of their DNA and then divide in half using mitosis. Bacteria reproduce every twenty seconds if their living conditions are optimal (perfect).

Materials: Eight paper cups, bag of kidney beans

Procedure:

1. Number the cups 1 through 8.
2. Each bean will represent a bacterial cell
3. Put one bean into cup 1 to represent the first generation of bacteria.
4. Put two beans into cup 2 to represent the second generation of bacteria.
5. Calculate how many bacteria there would be in the third generation if each cell in cup 2 divided into two cells. Place the correct number of beans in cup 3.
6. Repeat Step 3 until all the cups contain beans.

Think It Over:

1. How many cells are in the eighth generation?
2. How much time has elapsed since the first generation?
3. Based on this activity, explain why the number of bacteria can increase rapidly in a short period of time.
4. Sometimes when you come to school you feel well but by the end of the day you may feel ill. Explain how you could feel so differently in such a short period of time?
5. What are some ways that bacteria could be spread at school?

