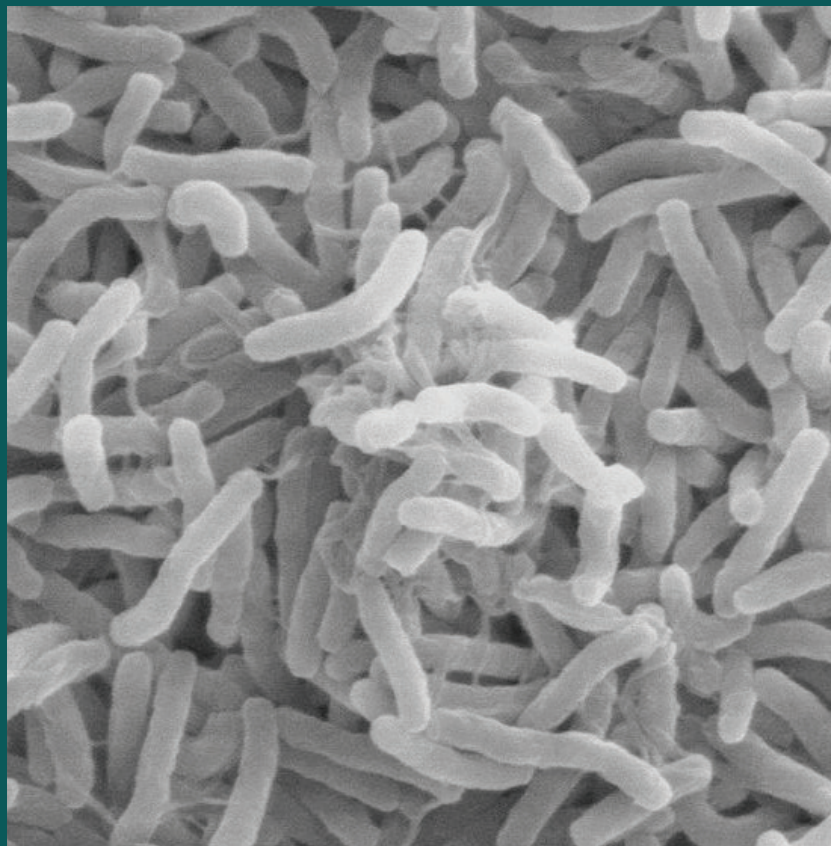


STEM *Sims*™

# Bacteria



# Bacteria

**Do you need an idea for a scientific study?  
Try out one of our ideas or create one of your own.**

**Start right now learning about bacteria basics and how you can keep your kitchen safe. Take the following brief quiz to see how much you already know about bacteria and contamination. See the bottom of page 4 to check your answers.**

1. About what percentage of bottled drinking water in the United States is contaminated with bacteria?
  - a. 1%
  - b. 10%
  - c. 33%
  - d. 50%
2. Which event is a person statistically most likely to encounter?
  - a. becoming infected with flesh-eating bacteria
  - b. being struck by lightning
  - c. being attacked by a shark while swimming in the ocean
  - d. all three events have the same probability of occurring
3. By how much does wearing headphones previously worn by another person increase the risk of contracting an ear infection?
  - a. 10%
  - b. 50%
  - c. 100%
  - d. 700%
4. A human body typically contains a greater number of bacteria than the total number of body cells in the human body.
  - a. true
  - b. false
5. Exposure to special bacteria can transform a sow bug from a male to a female.
  - a. true
  - b. false

***Do you know how to conduct a science project or investigation on bacteria?***

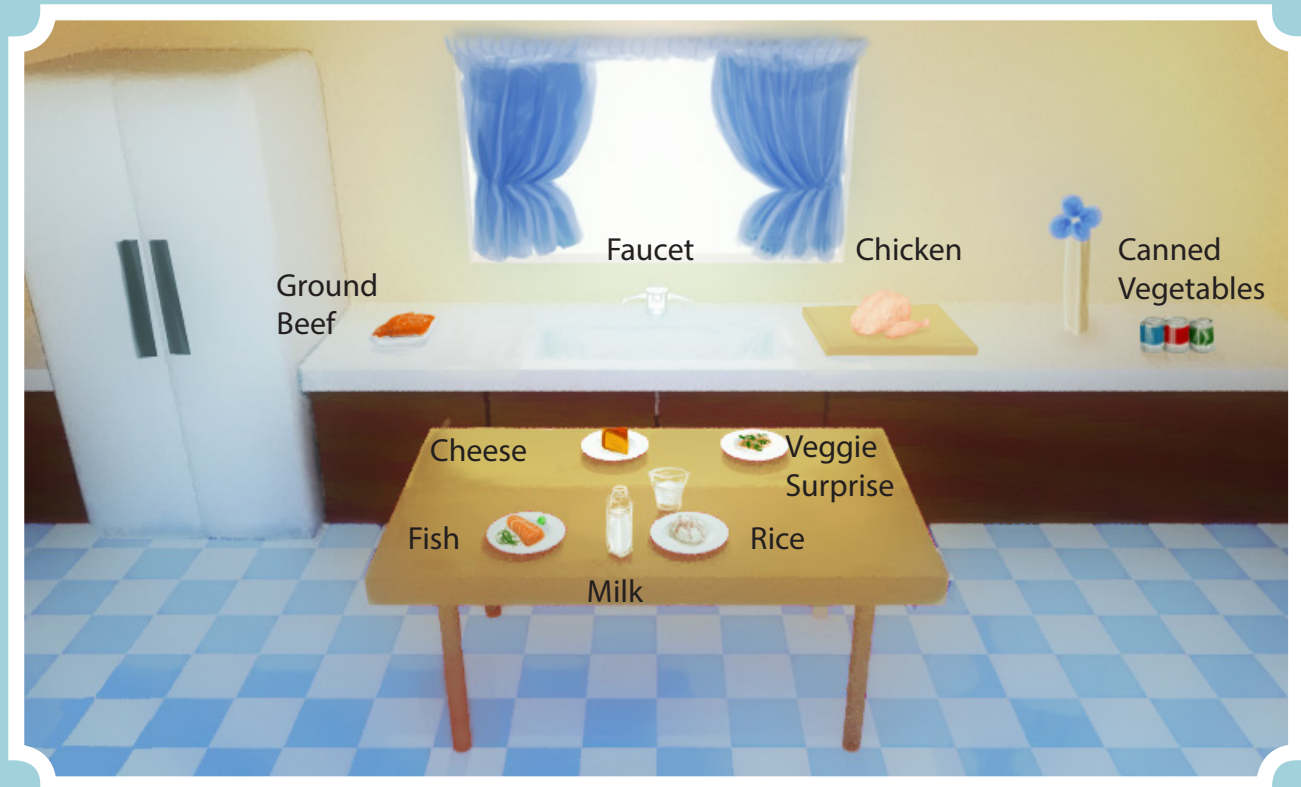
Begin by accessing the following web site: **STEMsims.com**

**It's a great place to start!**



**Look at the kitchen below. Which locations do you think are the “hot spots” for finding the largest number of bacteria that could cause you to become ill?**

See the bottom of page 4 to check your choices.



**Do you know that Centers for Disease Control and Prevention estimates that each year roughly 1 in 6 Americans (or 48 million people) gets sick, 128,000 are hospitalized, and 3,000 die of foodborne diseases?**



**Be careful about** getting too “Back to Nature” in your milk purchases. Raw milk is not significantly healthier for you than pasteurized milk. Before the invention of pasteurization, raw milk was a common source of the bacteria that cause tuberculosis, diphtheria, severe streptococcal infections, typhoid fever, and other foodborne illnesses.

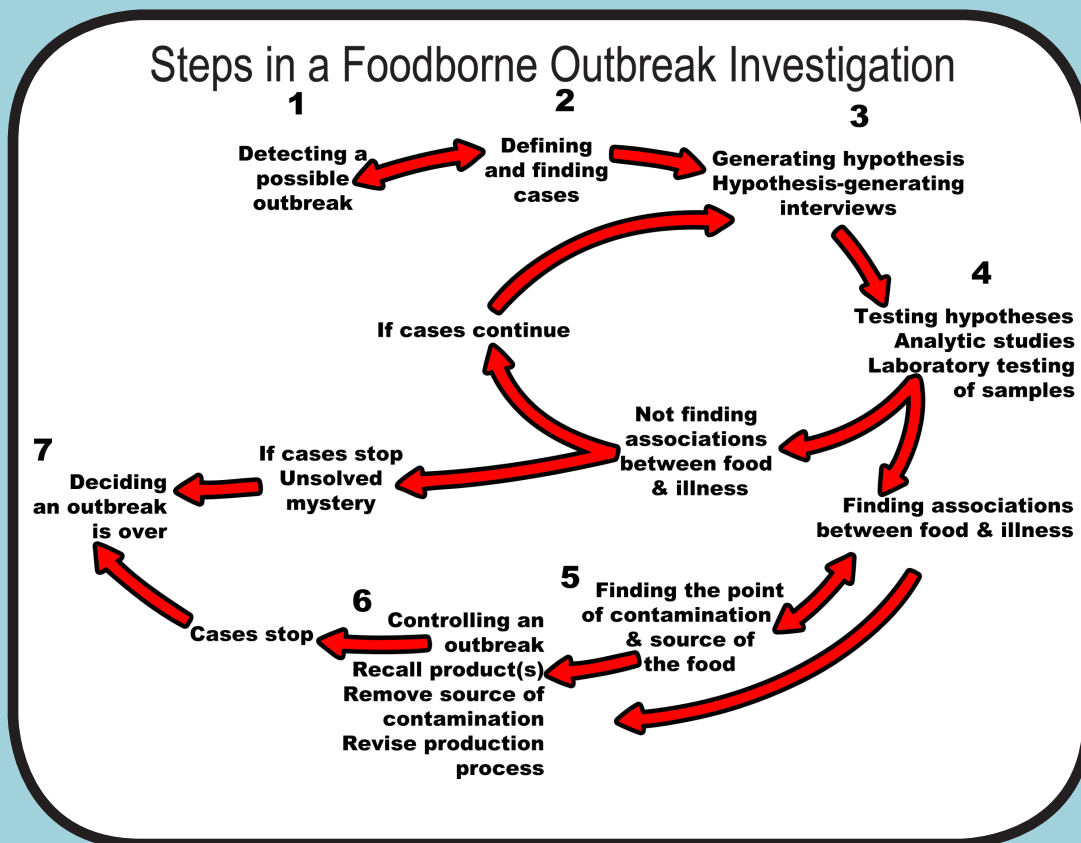
# Bacteria

## Outbreak!

The diagram below is the Centers for Disease Control and Prevention's flowchart for investigating foodborne outbreaks. A complete description of the process appears on their web site:

<http://www.cdc.gov/foodsafety/outbreaks/investigating-outbreaks/investigations/index.html>

According to the diagram, describe what action the scientists should take after step 4 if their proposed hypothesis was not supported by their experimental results. See the bottom of this page for possible answers.



Page 2 Answers: 1) c (Yuck!) 2) a (being infected by flesh-eating bacteria is more likely than being attacked by a shark while swimming) 3) d (Double yuck! The warm moist environment of the ear canal is an ideal breeding ground for bacteria, which can easily be placed on the ear buds or earphones;) 4) a (The human body has about 75 trillion cells, while a normal body contains over 100 trillion bacteria.) 5) a (The Wolbachia bacteria can change a male sow bug into a female.) Page 3 Answers: Bacteria hot spots - 1) cutting board with raw chicken 2) countertop with raw ground beef 3) sink faucet handle 4) sink area 5) refrigerator door handle 6) tabletop 7) raw vegetables 8) unrefrigerated food 9) raw milk Page 4 Answers: If the hypothesis was not supported and no new cases emerge, then the scientists should consider the outbreak over. However, if new cases continue to appear or existing cases worsen, then the scientists need to revise their hypothesis or create a new one.

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