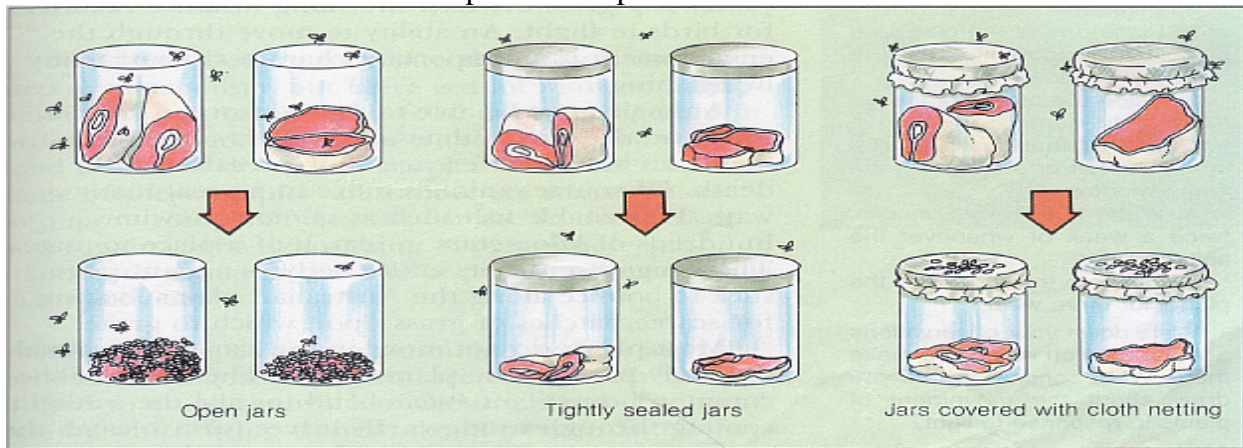


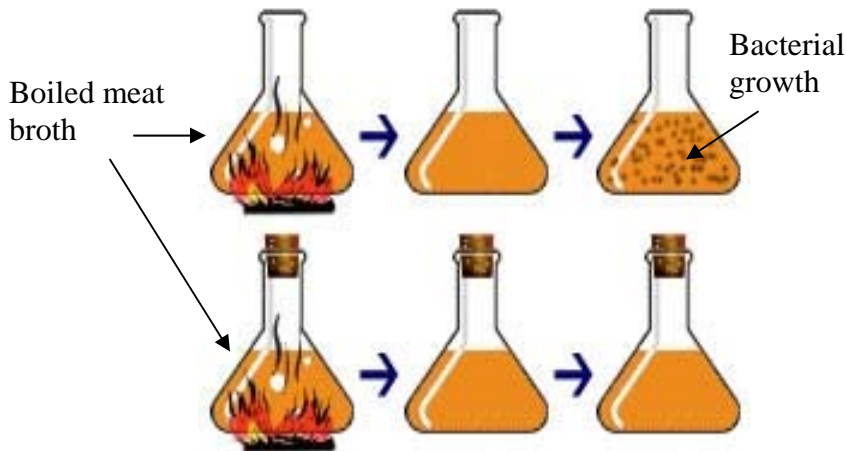
Spontaneous Generation

1. Without some preservative action, foods over time will become covered in maggots or fungal or bacterial growth. This is not really a new observation. People have been seeing their food go bad for as long as there have been people. Before microscopes however, people didn't really know where the maggots or mold came from. To them, these organisms had no "parents". The maggots and mold were *spontaneously generated* from the dead food material. Put yourself in the position of a 16th century researcher and write a hypothesis for spontaneous generation.
2. In 1668, Francesco Redi proposed a different hypothesis to explain the specific example of how maggots appear on spoiled food. He observed that maggots appear on meat a few days after flies have been seen on the food. The experiment is pictured here



What conclusion can you draw from the Redi's experiment?

3. In the late 18th century, Lazzaro Spallanzani designed a different experiment to show that life did not arise spontaneously from food. He inferred that some foods spoil because of growing populations of newly discovered microorganisms.



Independent variable:

Dependant variable:

Hypothesis:

4. Spallanzani's critics said that he showed only that organisms cannot live without air. In 1859 Louis Pasteur designed an experiment to address that criticism. His set up was the same as Spallanzani's with one exception. Instead of sealing one of the flasks he used a "swan-necked flask". Microorganisms in the air don't really fly – they drift on air currents. Without currents, they tend to drift downward. His experimental set up is shown below.

Draw arrows that show the path of drifting microbes into the openings of both flasks.



5. Label the flask(s) in which bacteria would grow.
6. What was the purpose of boiling the broth in the beginning of both Spallanzani and Pasteur's experiment?
7. Today, we use a process of heating liquids to prevent spoiling by bacteria. This process was pioneered and named after one of these three scientists. What is the process called and on what types of foods do we use it?