Redi's Experiment

The cell theory states that cells can come only from other living cells. Since living things are made up of cells, living things must come from other living things. You might be thinking, "Of course! Everybody knows that!" Yet, years ago, many people had a different idea.

About 300 years ago, the Italian scientist Francesco Redi wondered where maggots—small, wormlike organisms—came from. The popular belief at the time was that rotting meat turned into maggots. This idea, that living things could come from nonliving material, was called spontaneous generation. Redi designed an experiment to test this belief. He placed meat into two groups of jars. One group of jars was left open, and the other was sealed tightly. Diagram 1 shows what Redi observed.

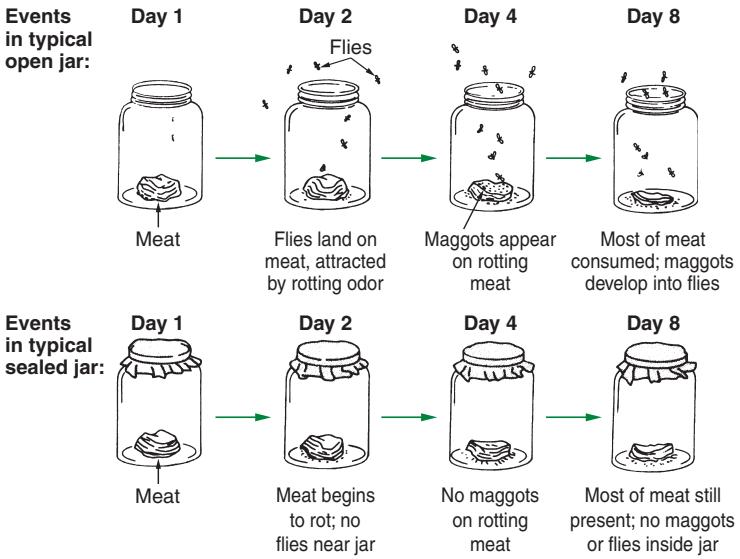

Diagram 1. Redi's first experiment: drawings show events in (top) a typical open jar; (bottom) a typical sealed jar.

Redi noted that no maggots appeared on the rotting meat in the sealed jars. However, not everyone was convinced that Redi's experiment had disproved spontaneous generation. Some people claimed that fresh air was needed for spontaneous generation to occur. Therefore, Redi performed a second experiment. He covered the jars with fine netting. The netting allowed fresh air into the jars but prevented flies from entering and landing on the meat. Diagram 2 shows what Redi observed in his second experiment.

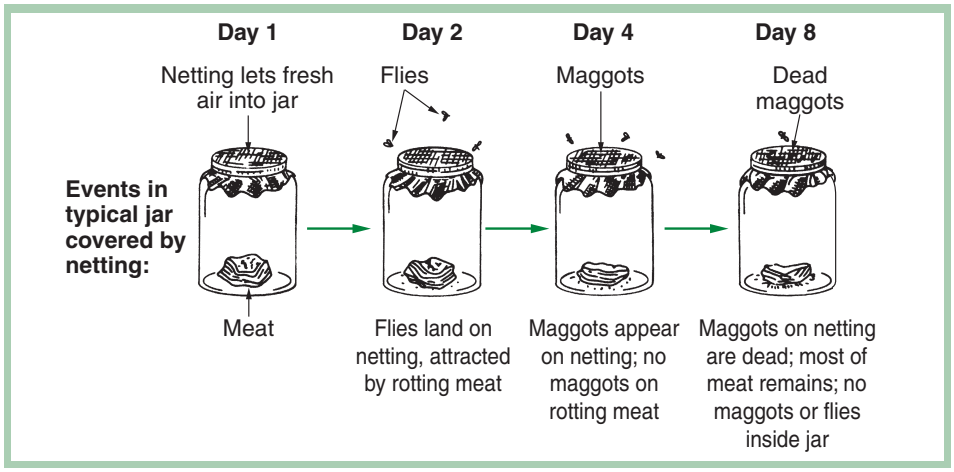

Diagram 2. Redi's second experiment.

Study both diagrams and then answer the following questions on the next page:

Questions

1. Based on Redi's experiments, where do the maggots come from?

2. What is spontaneous generation?

3. What conclusion about spontaneous generation can you draw from these experiments?

4. Why did Redi perform a second experiment?

5. What is an independent (manipulated) variable?

6. What is a dependent (responding) variable?

7. What was the independent (manipulated) variable in this experiment?

8. What was the dependent (responding) variable in this experiment?

9. Identify 3 different constants in this experiment.

10. What is a controlled experiment?

11. Why is this considered a controlled experiment?