

Name: _____

Date: _____

Francesco Redi

Francesco Redi was an Italian medical doctor who performed an experiment that proved that maggots in rotting meat came from flies that laid eggs, not from the meat itself. His experiment was one of the first to show that living things do not come from nonliving things. His experiment was a good one because he used experimental controls, a practice scientists continue to use today.

Medical doctor to Grand Dukes



Francesco Redi was born February 18, 1626, in Arezzo, Italy. His father, Gregorio Redi, was a medical doctor for the Medici family. The Medici's were wealthy, important merchants in Florence, Italy. Francesco eventually became head physician to the Medici family. In this position he treated two Grand Dukes of Tuscany:

Ferdinand II and Cosimo III. To prepare for this job he studied medicine and philosophy at the University of Pisa. He graduated at age 21 and enrolled in the College of Medicine in Florence the next year.

Influenced by Renaissance

Francesco Redi was a doctor, a scientist, and a poet who was deeply influenced by the period of history called the *Renaissance*. The Renaissance, which lasted from the 1300s to the 1600s, began in Florence and introduced new ways of thinking and learning. Art, medicine, and literature flourished at this time. Ideas that had been held for centuries were being questioned and thought about in new ways. Many other famous people in Italy were affected by this new approach to medicine and science. Galileo Galilei (1564–1642) was a medical student who became a professor of mathematics and defended the view that the Earth revolved around the Sun. Leonardo Da Vinci (1452–1519) was one of the first artists to dissect bodies and draw detailed pictures of anatomy. English physician William Harvey (1578–1657) left England to study blood circulation in Padua, Italy, where surgery and anatomy were taught.

Designed a controlled experiment

Several of Harvey's writings, including "On the Circulation of the Blood" (1649) and "On the

Generation of Living Creatures" (1651), may have influenced Redi's work. In 1668, in his most famous experiment, Redi set out to test Harvey's idea that tiny organisms that grew from no visible living plant or animal actually arose from seeds or eggs too small to be seen. Redi placed meat samples in eight jars. Four of the jars were sealed so nothing could get in and four were left open to the air. Flies landed on the meat in the open jars. Over time it became clear that the meat in the open containers was the only meat that grew maggots. He repeated the experiment a second time by covering half of the jars with gauze, and leaving half open. Again, all the meat in all the jars rotted, but only the uncovered meat had maggots.

Life from microscopic eggs

Redi's work was important for several reasons. His experiment was designed to show that the commonly held belief in biogenesis, i.e., that life spontaneously generates from nonliving matter, was mistaken. His results were strong evidence that life (maggots) came from microscopic eggs and not from rotting meat itself. In his experiment, he introduced an important part of scientific study, the use of experimental controls. The control flasks were the ones left open to the air. A scientist can predict in advance what will happen with the control variable because it has already been reliably observed. Controls are an important part of science experiments today.

Studied language, snakes, parasites

Redi is most well-known for his experiment with rotting meat, but he pursued other interests as well. He was the first to suggest that snake venom came from glands behind the snake's fangs. He described over 100 parasitic worms collected from animals, mollusks, and crustaceans. As a writer, he studied Italian dialects and helped to write a dictionary. He wrote a famous poem in 1685, *Bacchus in Tuscany*. Francesco Redi is a good example of how the Renaissance revived an interest in the study of science and language. He died March 1, 1697.

Reading Reflection.

- Please highlight each question in a different color and then highlight where you found that answer with the same color highlighter in the reading. (We will do one together)

1. What is Francesco Redi most well-known for?

2. List three people besides Redi who were influenced by the Renaissance and tell what each of them studied.

3. Identify the experimental and control variables in Redi's maggot experiment.

4. Why do you think Redi repeated his experiment a second time under slightly different conditions? What hypothesis was he trying to test?

5. List the topics Redi researched. Explain why a medical doctor would be interested in these subjects.
