

Changes Over Time • *Enrich***Two Theories of Evolution**

If you had been a biologist in the 1800s, you would have had to decide between two main theories about how evolution occurred. Consider the long neck of a giraffe. How did that evolve? Read the two explanations below, and then answer the questions that follow.

Theory 1

The ancestors of giraffes had short necks, and there was great competition for the plant food near the ground. Some of the giraffes kept trying to stretch their necks to reach leaves higher in the trees. As they stretched and stretched, their necks became longer. As their necks became longer, they were able to reach more food. Those ancestral giraffes survived to reproduce, while the giraffes that had not stretched their necks died. The offspring of giraffes with stretched necks inherited the longer necks. This process continued for generation after generation. In this way, giraffes evolved with longer and longer necks.

Theory 2

The ancestors of giraffes had short necks, and there was great competition for the plant food near the ground. Some of the ancestral giraffes naturally had slightly longer necks than others. The individuals with longer necks could reach leaves higher up in trees, and therefore could eat more food. Because those ancestral giraffes ate more food, they survived to produce offspring while the individuals with shorter necks did not. The offspring of giraffes with longer necks inherited the longer necks. This process continued for generation after generation. In this way, giraffes evolved with longer and longer necks.

Answer the following questions on a separate sheet of paper.

1. In Theory 1, what caused the giraffe neck to become longer?
2. In Theory 2, what caused the giraffe neck to become longer?
3. According to what scientists now know about genes, could the giraffes' offspring have inherited longer necks as described in Theory 1? As described in Theory 2? Explain.
4. Which of the two theories matches Darwin's theory of evolution? Explain.