

Cells

¹ On our planet Earth, life comes in a variety of forms. We have about 2 million species of animals (such as elephants), 270,000 types of plants (such as sunflowers), 4,000 kinds of bacteria (such as *E. coli*), 80,000 different protists (such as algae), and 72,000 assorted fungi (such as mushrooms). What do all these organisms or living things have in common? As hard to believe as it is, they are made of the same thing - the cell. Some like animals and plants consist of many or even billions of cells, while others like protists and bacteria live on a single cell.

² Robert Hooke was the first scientist to solve this great mystery of life. When he observed a thin slice of cork under a microscope in 1663, he noted that the cork looked like hundreds of tiny boxes or a honeycomb. Hooke called these tiny boxes "cells", which means "little rooms" in Latin. What Hooke did not realize at the time is that he was actually looking at the walls or outer layers of cells, not inside cells themselves. Nearly two hundred years had elapsed before any scientist made any new, significant break-through. The hard work put in by scientists of the 19th century derived the so-called Cell Theory:

- All living things are made of one or more cells.
- Cells are the basic units of life.
- All cells come from existing cells.

³ Today, we know that a thin sheet, called a cell membrane, separates one cell from another. We also know that there are two types of cells: prokaryotic (pronounced "proh-KAR-ee-AH-tik") cells and eukaryotic (pronounced "yoo-KAR-ee-AH-tik") cells. Two important factors set these two groups of cells apart. The first is the existence of a nucleus, and the second is an organelle surrounded by a membrane. A nucleus is a special membrane-covered organelle inside a cell where the cell's DNA or genetic material resides, and an organelle is a structure inside a cell that enables the cell to grow, live, and reproduce. Some organelles have membranes around them, but others do not.

⁴ A prokaryotic cell has neither a nucleus nor any membrane-covered organelle. In other words, its DNA and organelles have no individual membranes surrounding them. Of all the living things, only bacteria are prokaryotic cells. A eukaryotic cell, on the contrary, has a nucleus to protect its DNA. Furthermore, all the organelles inside a eukaryotic cell are walled in by their own membranes. Animals, plants, protists, and fungi are eukaryotic cells.

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<p>1. How many types of organisms are there on Earth?</p> <p><input type="radio"/> A Two hundred thousand</p> <p><input type="radio"/> B Approximately four thousand</p> <p><input type="radio"/> C Five</p> <p><input type="radio"/> D Over two million</p>	<p>2. Which of the following is not considered a living thing?</p> <p><input type="radio"/> A Pandas</p> <p><input type="radio"/> B Oak trees</p> <p><input type="radio"/> C Soil</p> <p><input type="radio"/> D Sharks</p>
<p>3. Robert Hooke discovered the existence of cells in the 18th century.</p> <p><input type="radio"/> A True</p> <p><input type="radio"/> B False</p>	<p>4. Which of the following about the Cell Theory is correct?</p> <p><input type="radio"/> A The Cell Theory says that a cell membrane separates one cell from another.</p> <p><input type="radio"/> B The Cell Theory was established in 1665 by Robert Hooke.</p> <p><input type="radio"/> C The Cell Theory states that all cells contain a nucleus.</p> <p><input type="radio"/> D The Cell Theory asserts that all cells come from existing cells.</p>
<p>5. Which of the following about a nucleus is true?</p> <p><input type="radio"/> A A nucleus is a cell's DNA.</p> <p><input type="radio"/> B A nucleus is a membrane-covered organelle inside a prokaryotic cell where its DNA resides.</p> <p><input type="radio"/> C A nucleus is a membrane-covered organelle inside a eukaryotic cell where its DNA resides.</p> <p><input type="radio"/> D A nucleus is also known as a cell membrane.</p> <p>7. Which of the following organisms have prokaryotic cells?</p> <p><input type="radio"/> A Rose</p> <p><input type="radio"/> B Butterfly</p> <p><input type="radio"/> C Portabella mushroom</p> <p><input type="radio"/> D E. Coli</p> <p>9. Which of the following best describes a eukaryotic cell?</p> <p><input type="radio"/> A It does not have a nucleus.</p> <p><input type="radio"/> B It does not have any membrane-covered organelle.</p> <p><input type="radio"/> C It can be found in our bodies.</p> <p><input type="radio"/> D It does not have DNA.</p>	<p>6. All organelles have membranes around them.</p> <p><input type="radio"/> A True</p> <p><input type="radio"/> B False</p> <p>8. What does the word "cell" mean in Latin?</p> <p><input type="radio"/> A A nucleus</p> <p><input type="radio"/> B A honeycomb</p> <p><input type="radio"/> C A membrane</p> <p><input type="radio"/> D A little room</p> <p>10. Cells are the basic units of life.</p> <p><input type="radio"/> A True</p> <p><input type="radio"/> B False</p>