

# What are Cells?

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## How Were Cells Discovered?

- \_\_\_\_\_ are so small that they remained hidden until the invention of the microscope about 400 years ago.
- English scientist Robert Hooke used a microscope to look at a slice of \_\_\_\_\_.
- Observed that cork contained tiny \_\_\_\_\_.
- The matter in cork is \_\_\_\_\_, its cells are empty.
- They look like little boxes filled with \_\_\_\_\_.
- Hooke named the holes “\_\_\_\_\_”.
- Anton van Leeuwenhoek
  - Dutch \_\_\_\_\_ maker
  - Was the first person to study \_\_\_\_\_ cells
- Leeuwenhoek looked at \_\_\_\_\_ with his microscope and saw it was filled with tiny living things.
- He called these living things “\_\_\_\_\_”.

## Modern Cell Theory

- Credit for developing the cell theory belongs to \_\_\_\_\_ German scientists:
  - \_\_\_\_\_ Matthias Schleiden
    - Identified that all \_\_\_\_\_ are made up of cells
  - \_\_\_\_\_ Theodor Schwann
    - Identified that all \_\_\_\_\_ are made up of cells
  - \_\_\_\_\_ Rudolf Virchow
    - Cells come from \_\_\_\_\_ cells
- During the Middle Ages, it was commonly believed that living organisms could come from \_\_\_\_\_ things.
- Many scientists believed in this idea of \_\_\_\_\_ generation
- However, \_\_\_\_\_ felt that there was another explanation.
- He heated meat broth in special flasks that had long necks bent in the shape of an \_\_\_\_\_.
- He designed the necks this way so air could enter the flask but living things would be \_\_\_\_\_ in the bend of the neck and never reach the broth.

- He left the flasks \_\_\_\_\_ and waited to see what would happen.
- Months later, no living things had grown in the \_\_\_\_\_.
- When the flasks were \_\_\_\_\_, living organisms did begin to grow in the broth.
- Pasteur concluded that when living organisms grew in the broth it was because they had gotten in the broth from the \_\_\_\_\_.
- Principles of Cell Theory
  - All living organisms are composed of \_\_\_\_\_ or \_\_\_\_\_ cells.
  - The cell is the basic unit of \_\_\_\_\_ in all organisms
  - All cells come from \_\_\_\_\_ cells
- Since the development of the cell theory, scientists have learned much more about cells, their complexities, and their \_\_\_\_\_.
- \_\_\_\_\_ helps scientists as they continue to study the cell and its connection to life.

### Origin of the Cell

- The Bible describes the creation of all life by an all-wise and all-powerful \_\_\_\_\_.
- For \_\_\_\_\_ of years most people believed that life came from some intelligent, higher being.
- Christians, Jews, and Muslims believe that the Creator was the God of the \_\_\_\_\_.
- Many people today still accept the Bible story as a \_\_\_\_\_ account of the origin of life.
- In the \_\_\_\_\_ while scientists were working to disprove the theory of spontaneous generation.
- Charles Darwin's theory of \_\_\_\_\_ was becoming popular.
- His theory was focused mostly on the origin of different \_\_\_\_\_.
- However, scientists who did not believe in God created life took the concept of evolution \_\_\_\_\_.
- Alexander Oparin suggested that living cells arose gradually from nonliving matter \_\_\_\_\_ of years ago.
- This idea is called \_\_\_\_\_.
- In 19<sup>th</sup> century microscopes showed a cell as a simple looking \_\_\_\_\_.
- To believe a simple blob could have come from something \_\_\_\_\_ was not too hard to believe since people have been believing in spontaneous generation for years.
- Today with powerful \_\_\_\_\_ we can see the amazing complexities of the cell.

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- Scientist now know that what once looked like a simple blob is a highly-sophisticated system of parts that work together to \_\_\_\_\_ life.