



Let's
study!

The Cell Theory

Prepared by:



Lesson Objectives

At the end of the lesson, students are be able to:

01

Define cell theory and its basic principle

02

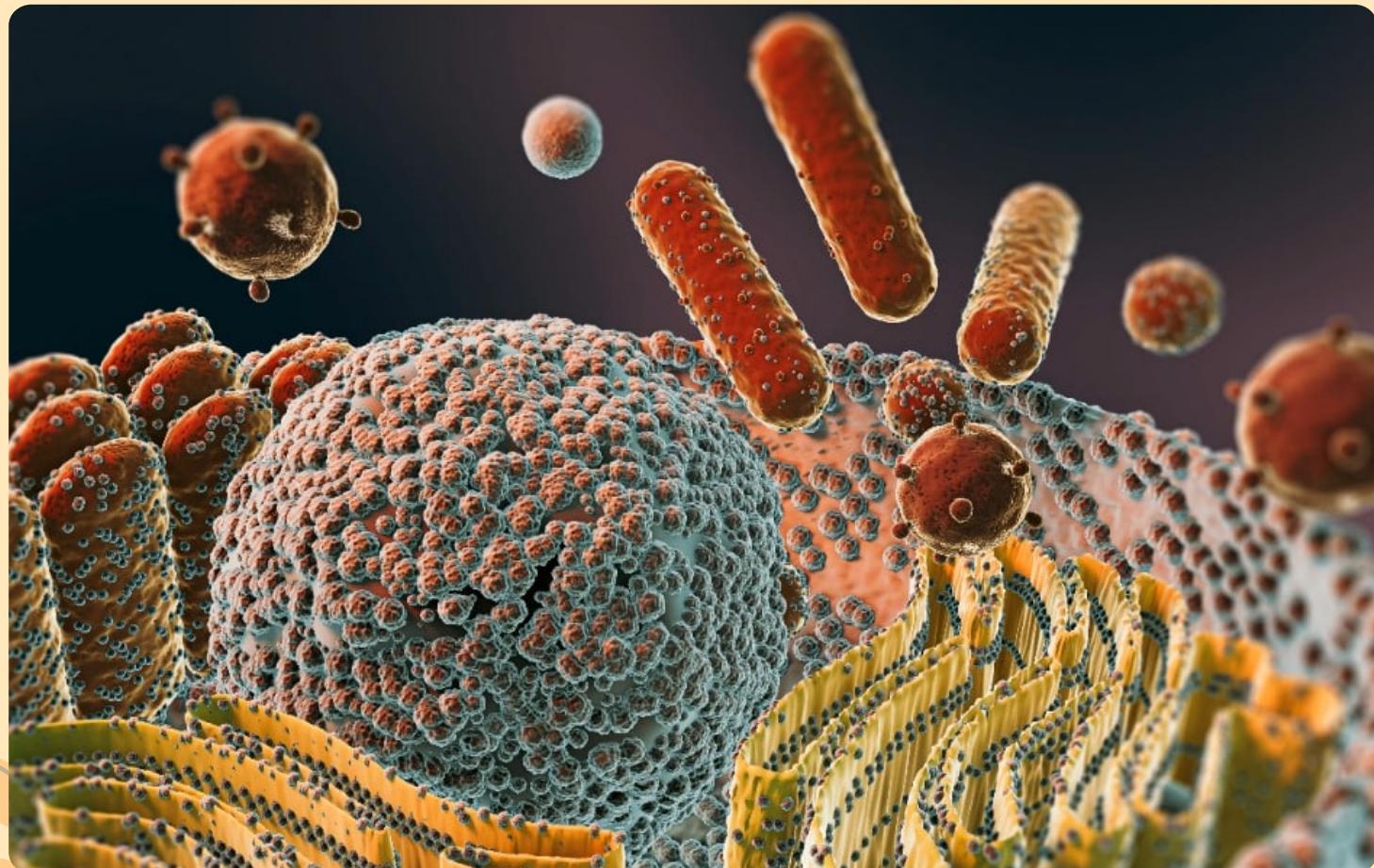
Explain the fundamental concepts of cell theory and their importance in understanding the structure of living organisms.

03

Identify the major contributors to the development of cell theory and describe their experiments or observations.

The Basic Unit of Life

CELL



A Cell is the basic unit of life. All living things are made up of one or more cells. Living things that are made of one cell only are called unicellular organism, whereas those that are made up of many cells are called multicellular organism.

STUDY OF CELL

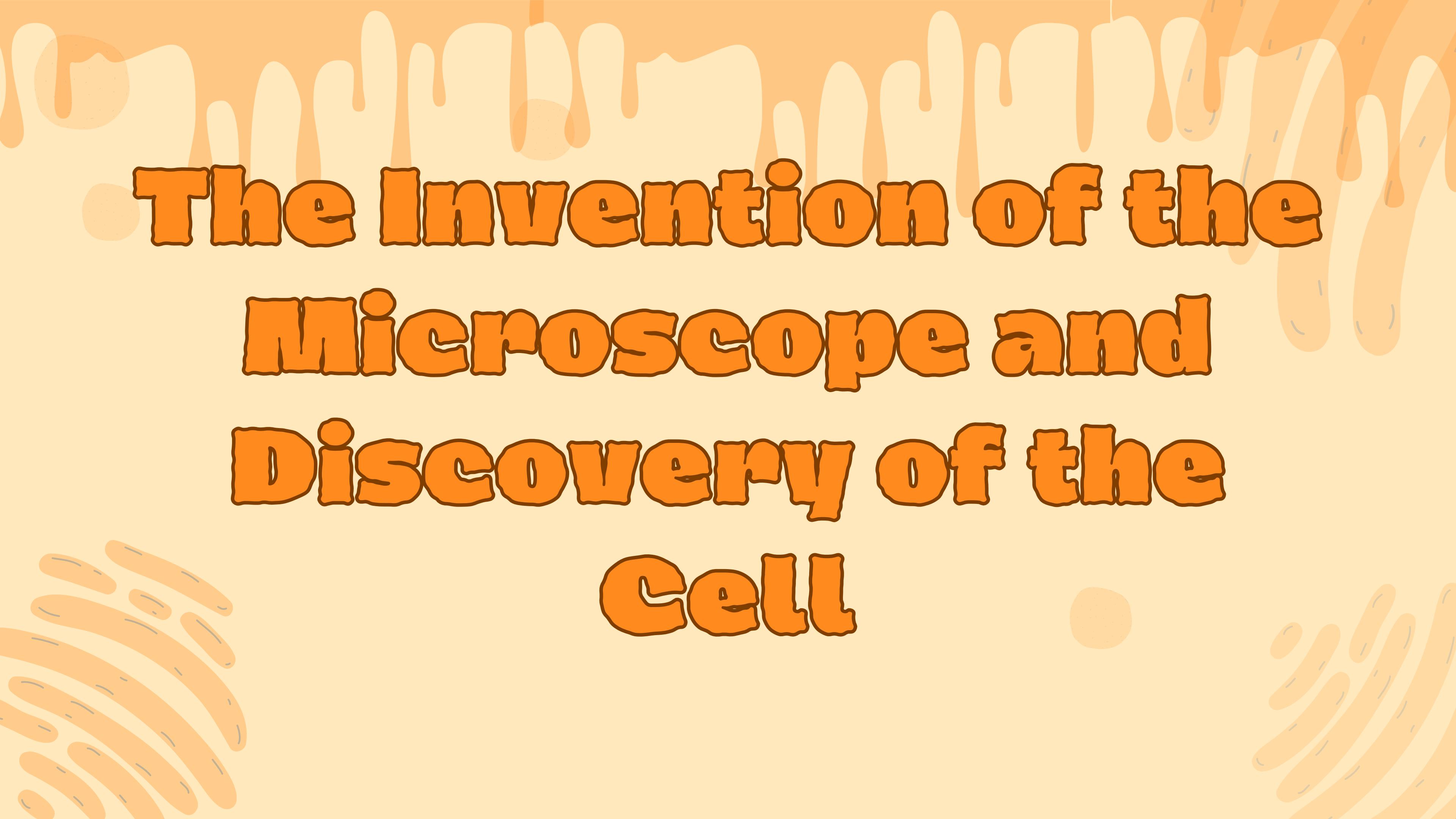


The study of cells, known as **Cell Biology**, investigates cells' structure, functions, and interactions within organisms, examining how they contribute to tissue and organ formation and their significance in health and disease.

MICROSCOPE



The microscope is an instrument used to view objects that cannot be seen by the unaided eye. It can magnify the size of very small objects



The Invention of the
Microscope and
Discovery of the
Cell

- Romans had already invented and experimented with glasses during the first century.
- They discovered that small objects become larger when viewed through this glass sample.
- This became the earliest form of a lens



The word lens is derived from the Latin word lentil, because it closely resembled the shape of the lentil bean.

- Around 1595, the first compound microscope was invented by Zacharias Janssen (1580–1638)

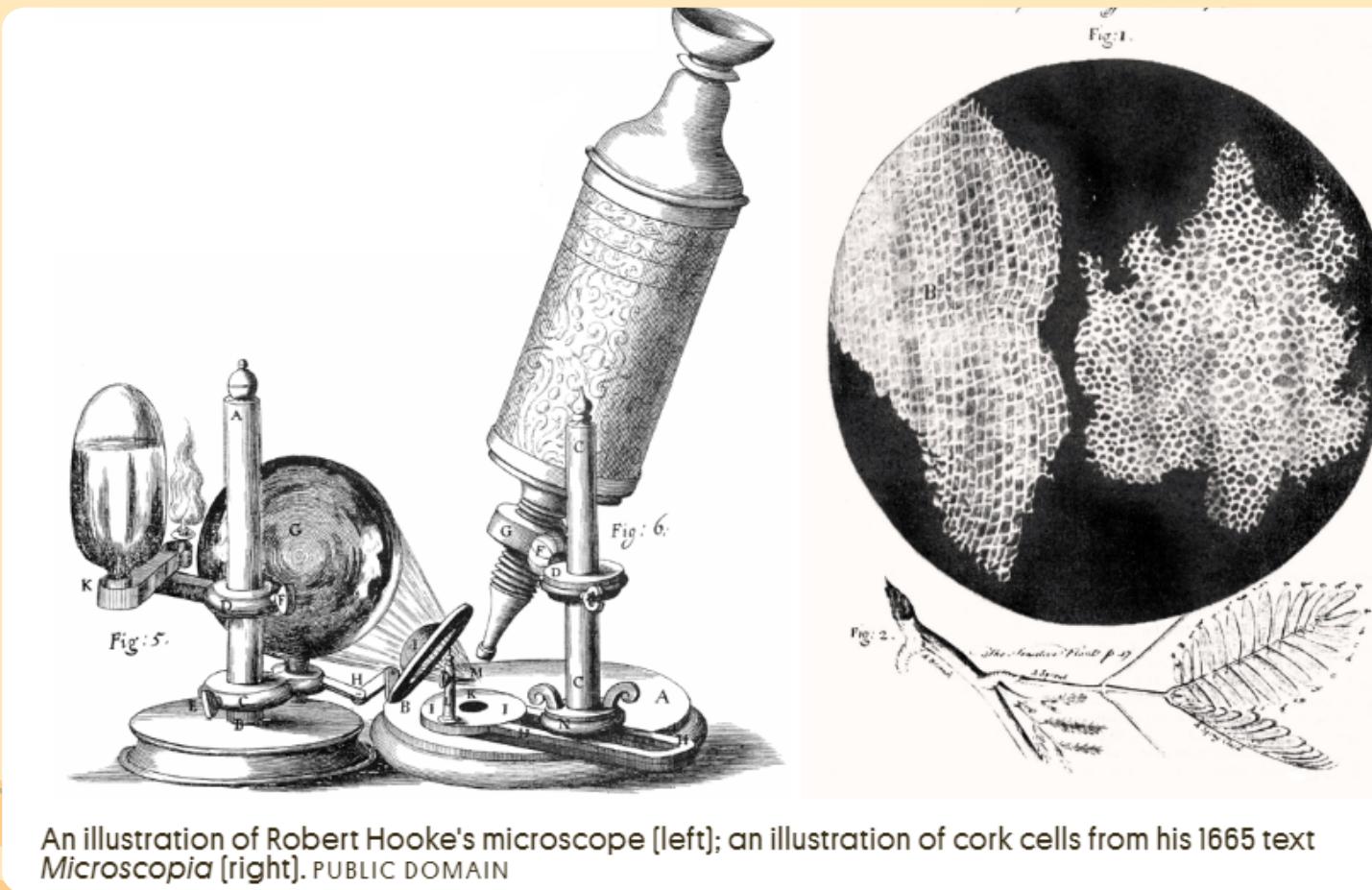


- They made these microscopes by placing several lenses together, and discovered that objects were further enlarged upon viewing.



The Discovery of Cells

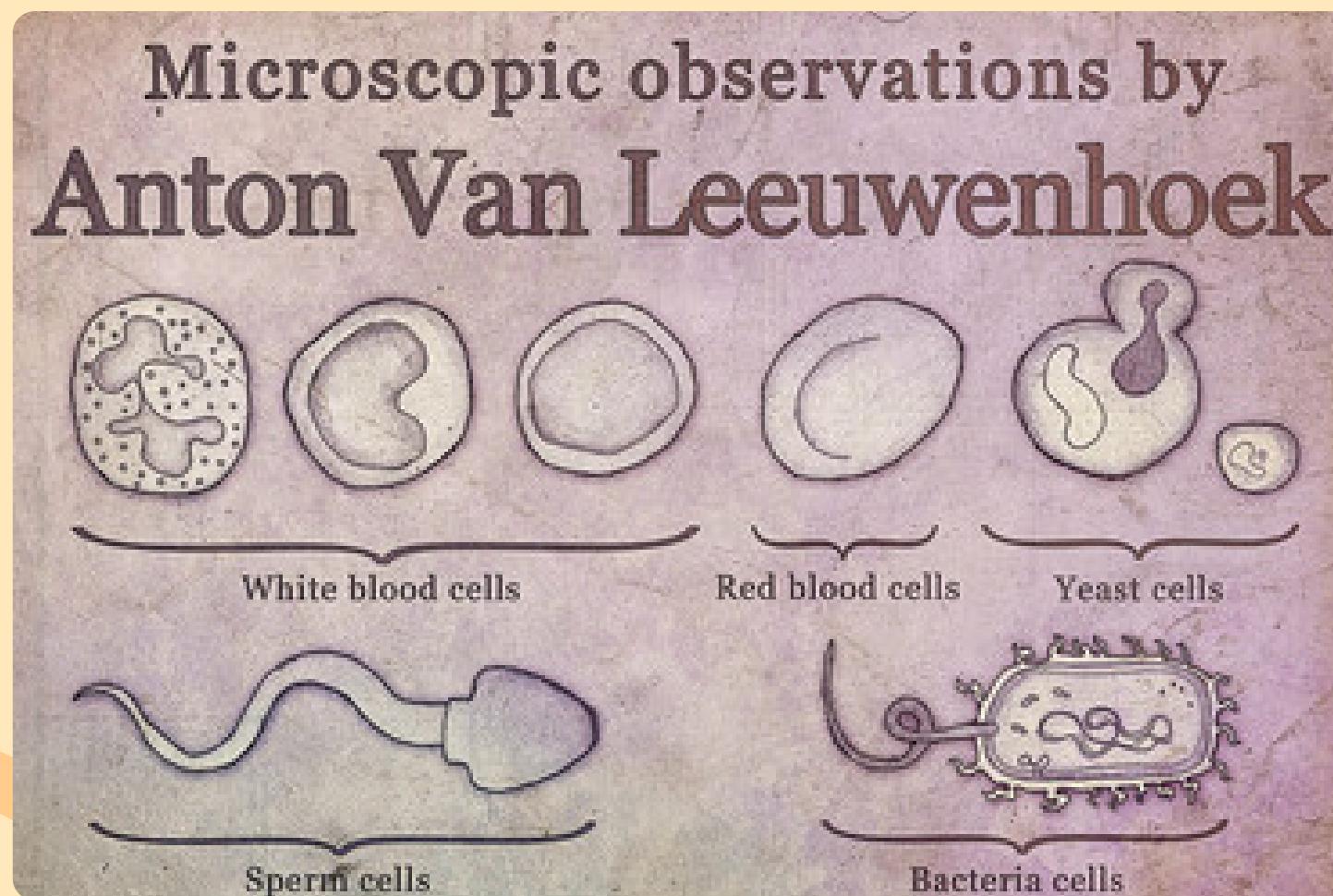
ROBERT HOOKE



An illustration of Robert Hooke's microscope [left]; an illustration of cork cells from his 1665 text *Microscopia* [right]. PUBLIC DOMAIN

In 1665, Robert Hooke examined a thin slice of cork under the microscope that he built. He observe small compartments of the cork. He named the small compartments cellula because they reminded him of the “little rooms” in the monastery.

ANTON VAN LEEUWENHOEK



Anton Van Leeuwenhoek created a microscope with a much higher magnification than the microscope that Hooke used. He used it to observe specimens such as bacteria, cells, and protist. He called them "animalcules."

MATTHIAS SCHLEIDEN



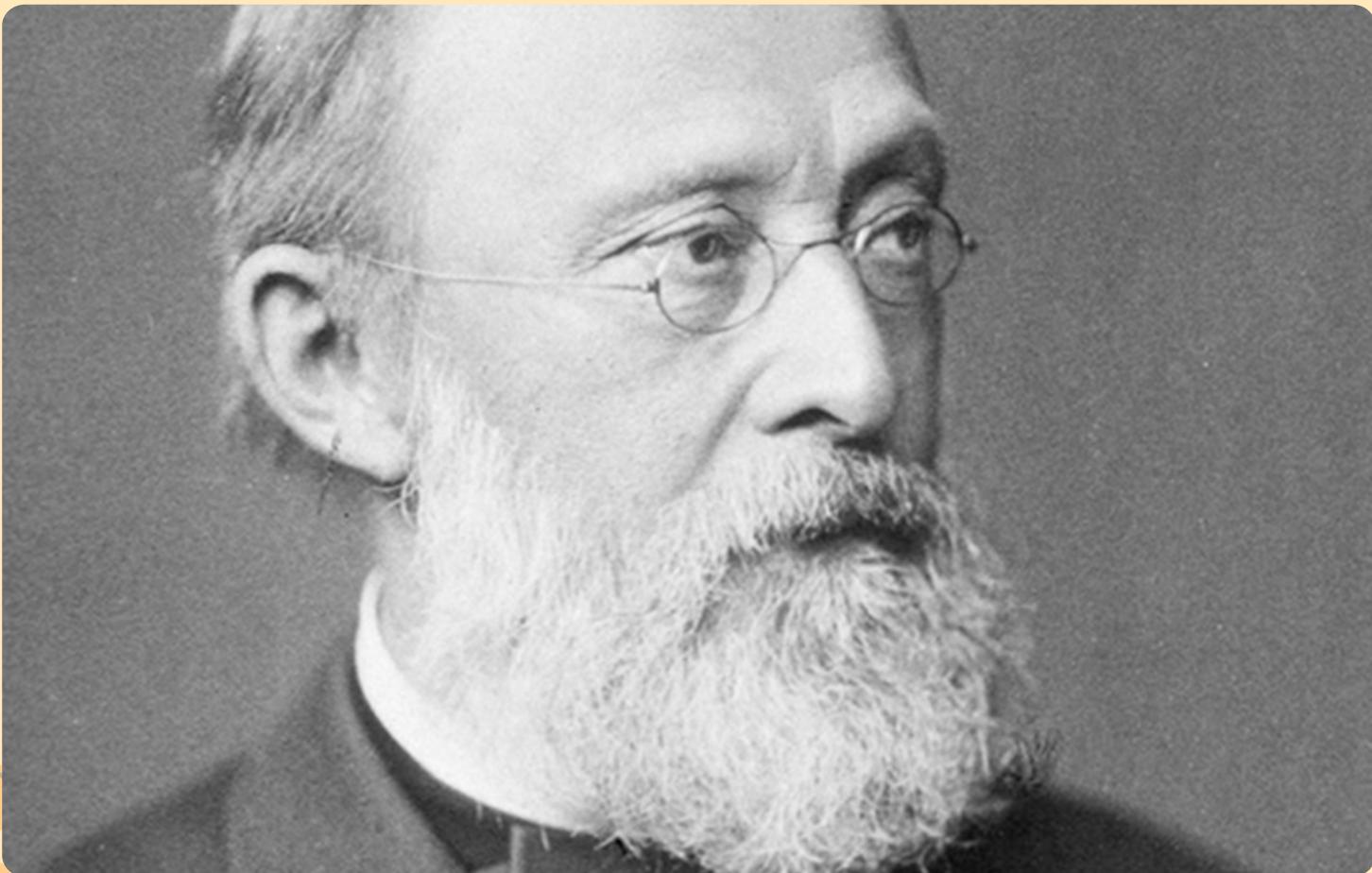
1838– German Botanist,
Matthias Schleiden,
concluded that all plant
parts are made of cells.

THEODOR SCHWANN



1839– German physiologist, Theodor Schwann, who was a close friend of Schleiden, stated that all animal tissues are composed of cells.

RUDOLF VIRCHOW



1858– Rudolf Virchow, German physician, he stated **Omnis cellula e cellula**, which means that all cell arise from preexisting cells.

ROBERT REMAK



**Prove the idea of cell
division by hardening the
cell membrane**

Cell Theory

THEIR RESEARCHES BECAME THE BASES OF THE CELL THEORY.

- ALL ORGANISMS ARE COMPOSED OF ONE OR MORE CELLS .
- CELL IS THE BASIC UNIT OF LIFE IN ALL LIVING THINGS.
- ALL CELLS COME FROM PRE-EXISTING CELLS THROUGH CELL DIVISION.

Modern Cell Theory

MODERN CELL THEORY CONTAINS FOUR STATEMENTS, IN ADDITION TO THE ORIGINAL CELL THEORY:

- **THE CELL CONTAINS HEREDITARY INFORMATION (DNA) WHICH IS PASSED ON FROM CELL TO CELL DURING CELL DIVISION.**
- **ALL CELLS ARE BASICALLY THE SAME IN CHEMICAL COMPOSITION AND METABOLIC ACTIVITIES.**
- **ALL BASIC CHEMICAL AND PHYSIOLOGICAL FUNCTIONS ARE CARRIED OUT INSIDE THE CELLS (MOVEMENT, DIGESTION ETC)**
- **CELL ACTIVITY DEPENDS ON THE ACTIVITIES OF SUB-CELLULAR STRUCTURES WITHIN THE CELL (ORGANELLES, NUCLEUS, PLASMA MEMBRANE ETC)**



That's All!