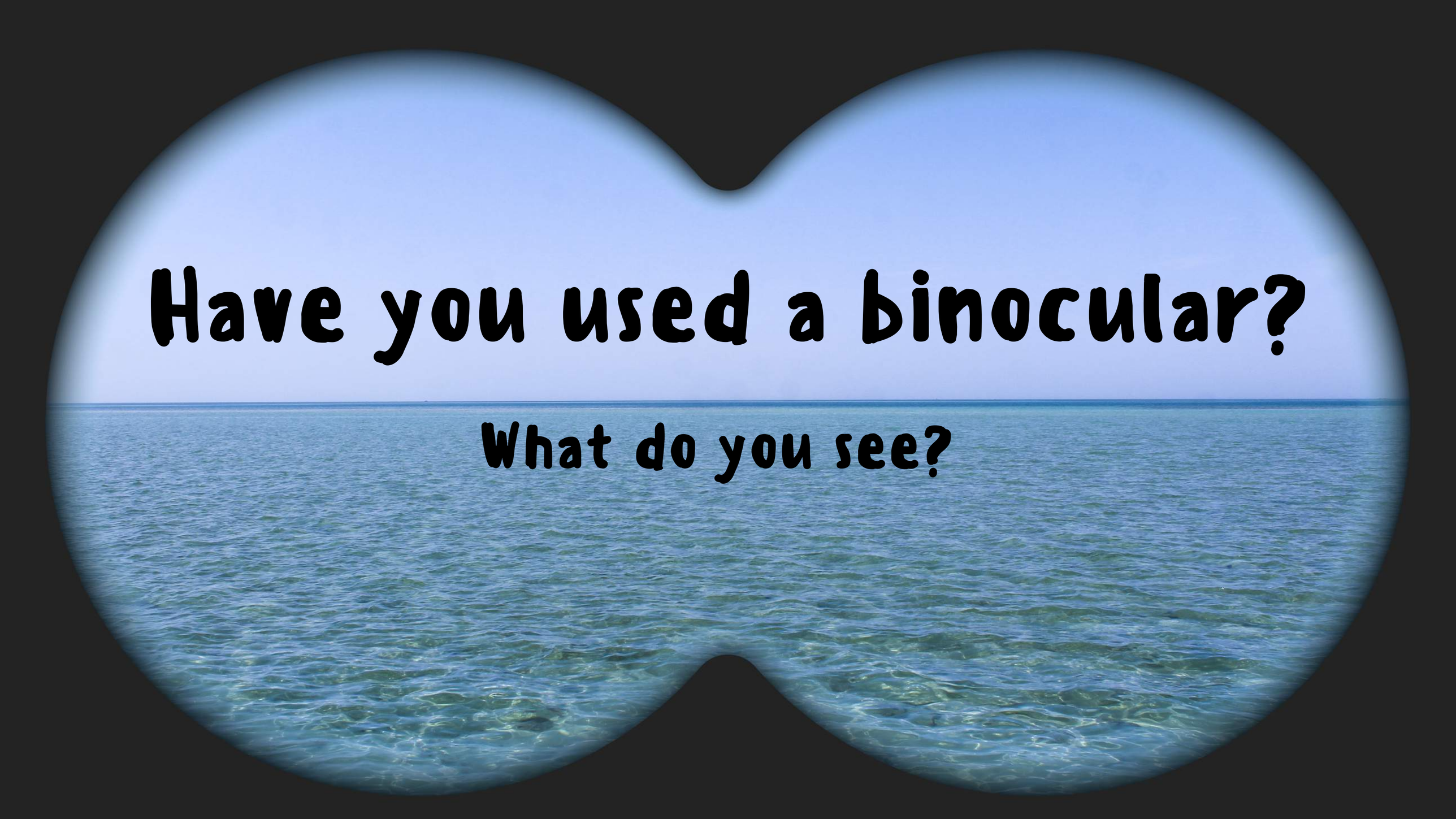
IISER TVM

iGEM

Online SciBio Camp

SESSION 1 Part 1
What is a Cell?

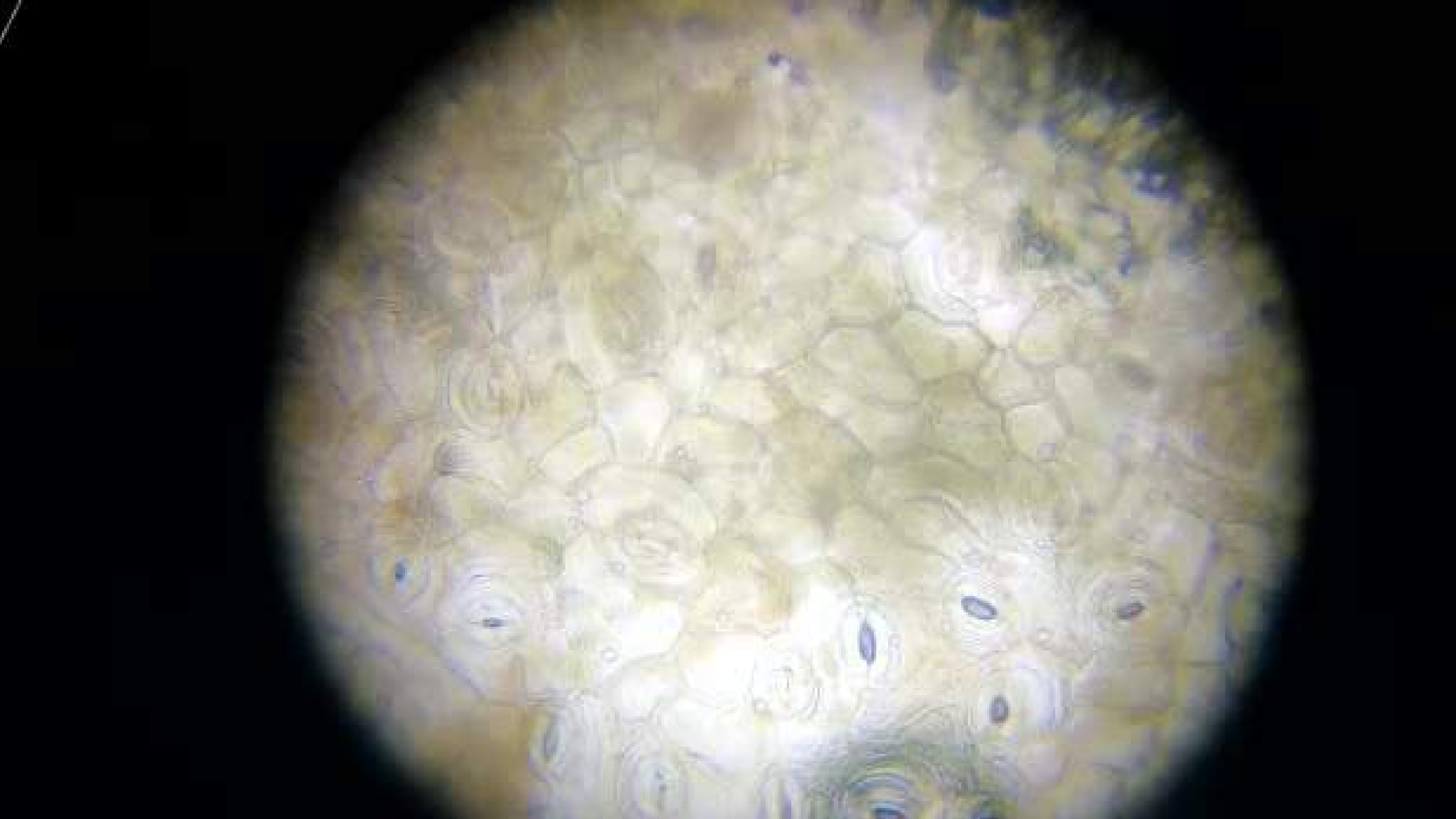
What do you see around you?


Have you used a binocular?
What do you see?

A microscope does the same job !

Do you wanna see how a leaf looks under microscope?

What are cells



ONION CELLS

CHEEK CELLS

What is cell?

Cells are the basic building blocks of all organisms.

All the credits to these animations goes to McKenzie Tucker

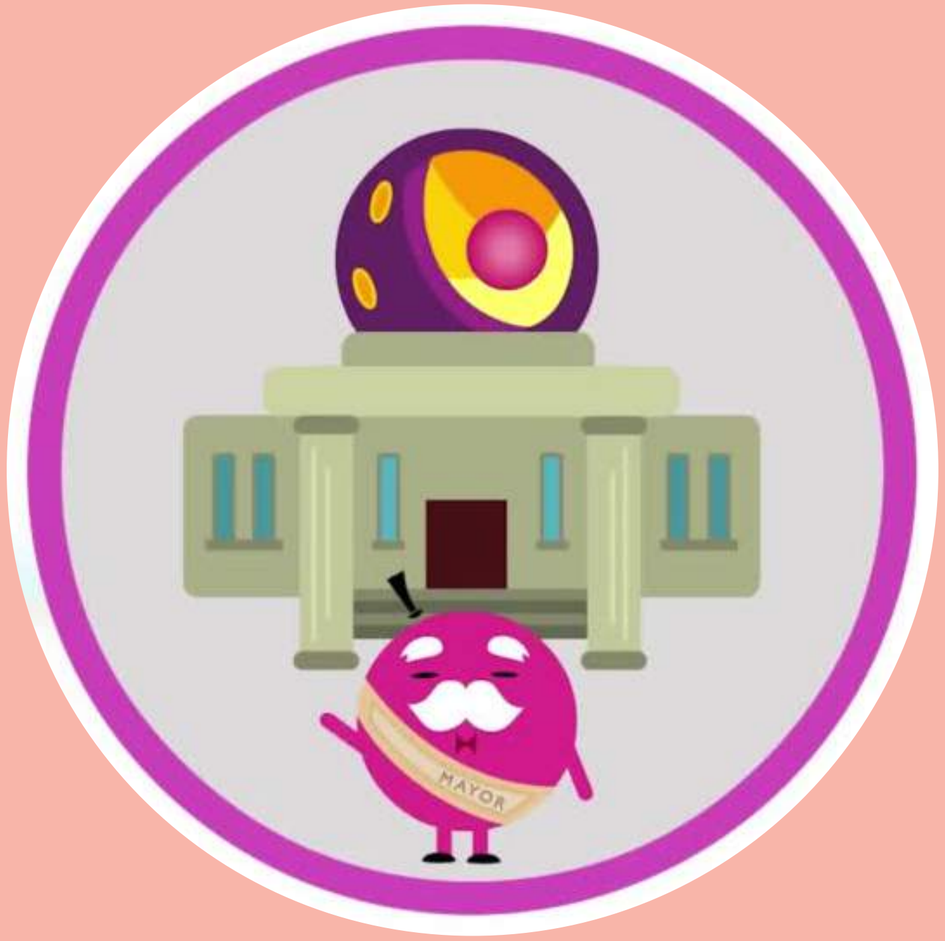

IN
OUT


IN
OUT

Think of a city

- How does the city work?
- Who protects the city?
- Who runs the city?
- How does it manage trash?
- How does the city gets its power?

Nucleus - Mayor of the city



It directs other organelles to carry out their functions.

Endoplasmic Reticulum - The Highway system of the cell

Helps in production and transport of proteins, fats and carbohydrates.

Golgi Apparatus - The post office of the cell

Sorts and sends out materials wherever needed within the cell.

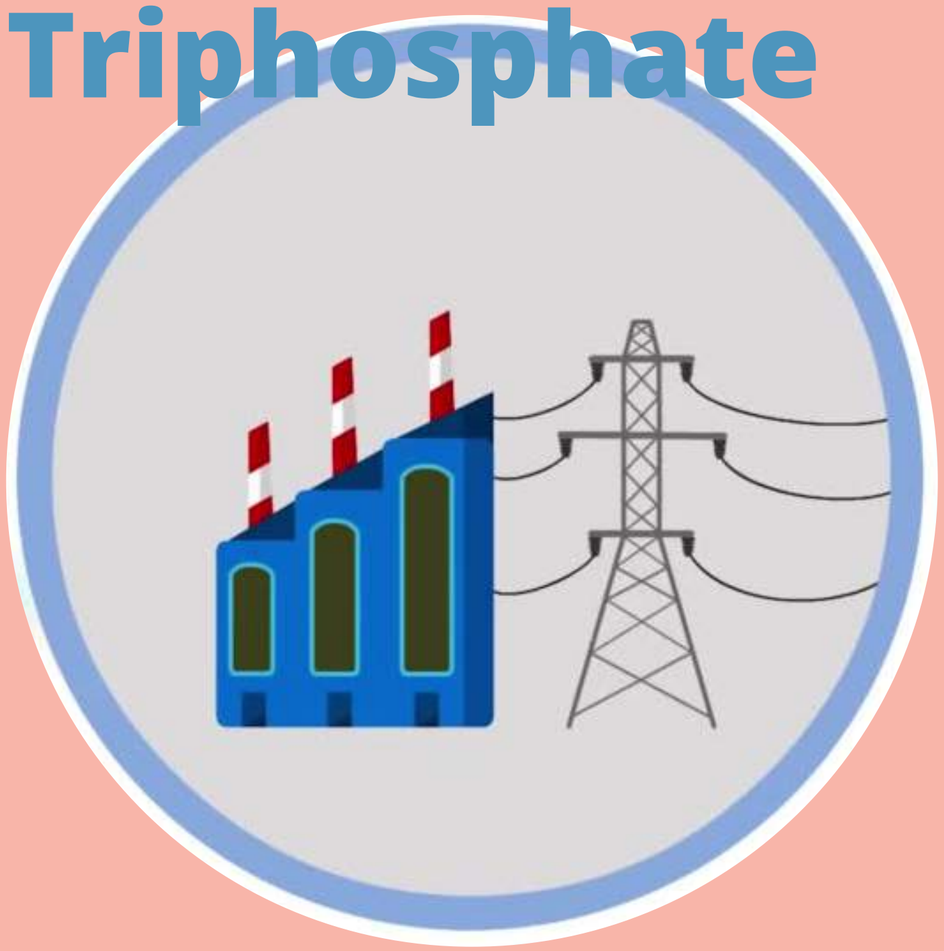
Lysosomes - The Recycle Centres of the cell

phagosomes

Breaks down wastes in the cell and helps create new building materials.

Mitochondria -the Powerhouse of the cell

ATP - Adenosine Triphosphate



Uses cellular respiration to break nutrients and create energy.

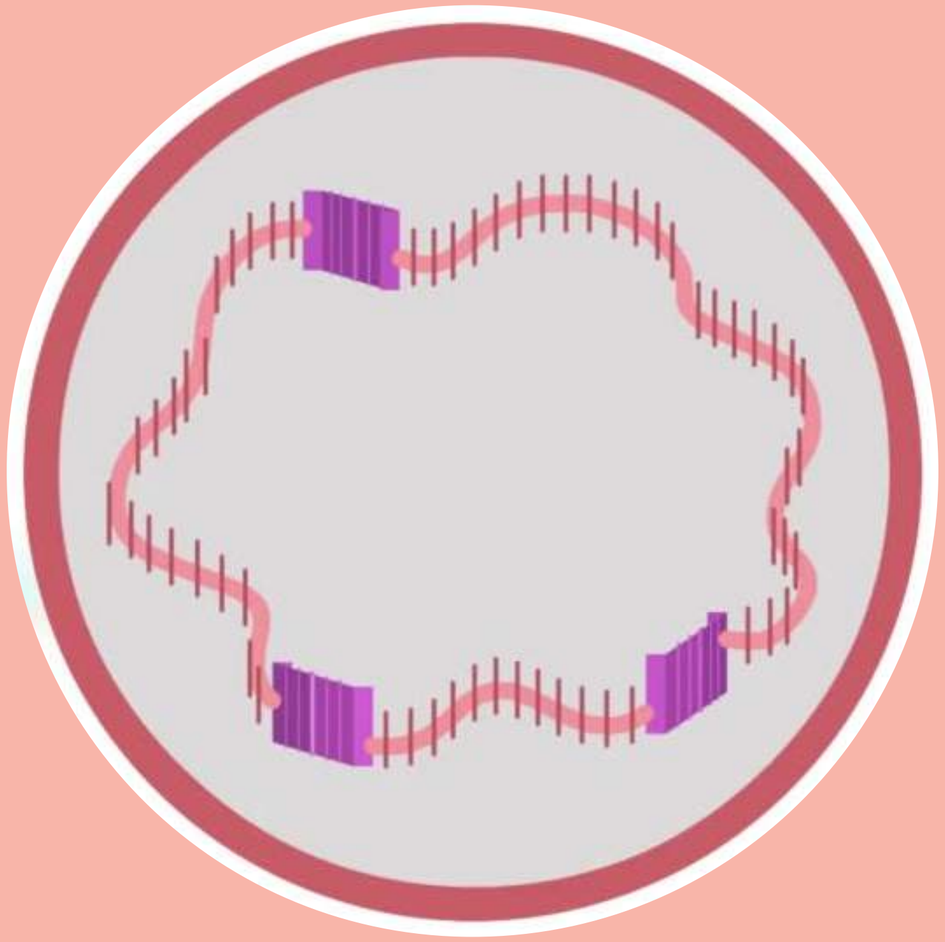
Ribosomes - Factory workers of the cell

Make proteins that the cell needs to carry out functions.

Cytoplasm - the Landscape of the cell

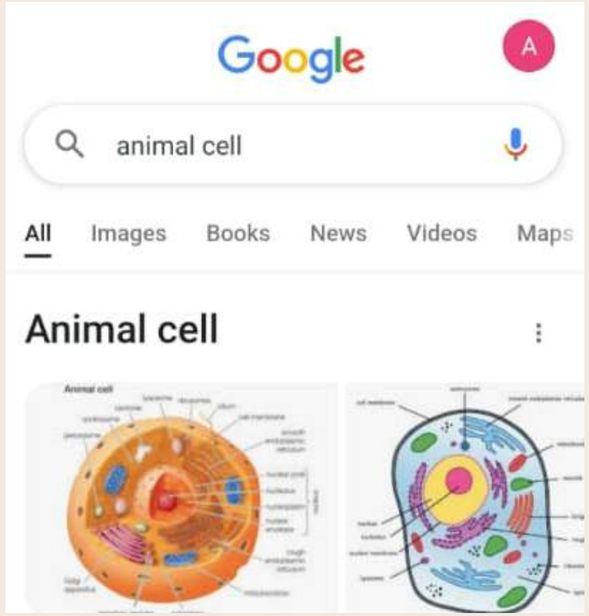
Has water and nutrients, and surrounds all cell organelles.

Cell membrane - The City limits



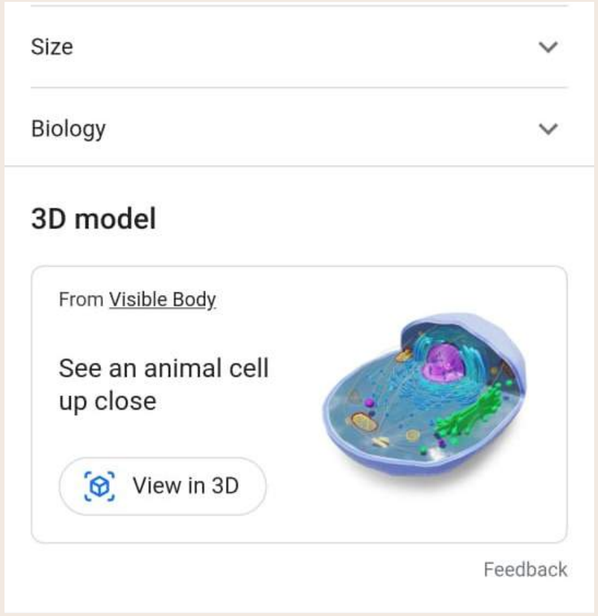
Surrounds and protects the inside of the cell.

AUGMENTED REALITY



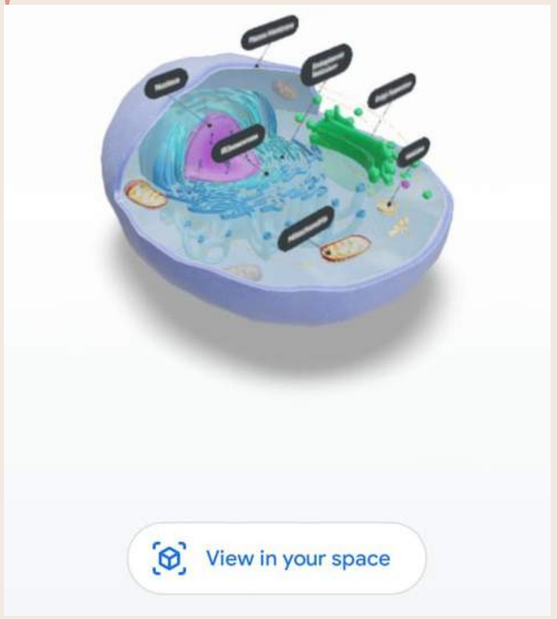
STEP 1

Type Animal cell in google search



STEP 2

Scroll and selsct view in 3D



STEP 3

Select View in your space

The three principles of cell theory are:

1

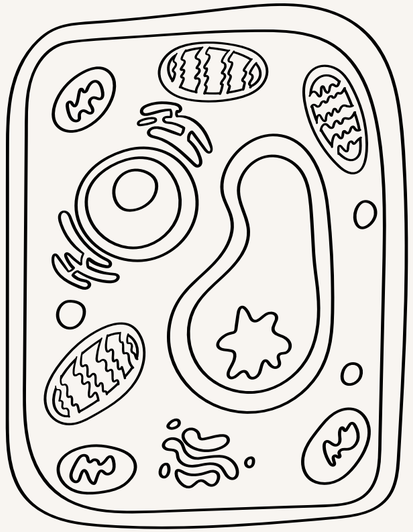
All living organisms are composed of one or more cells.

2

Cell is the basic structural and functional unit of living organisms.

3

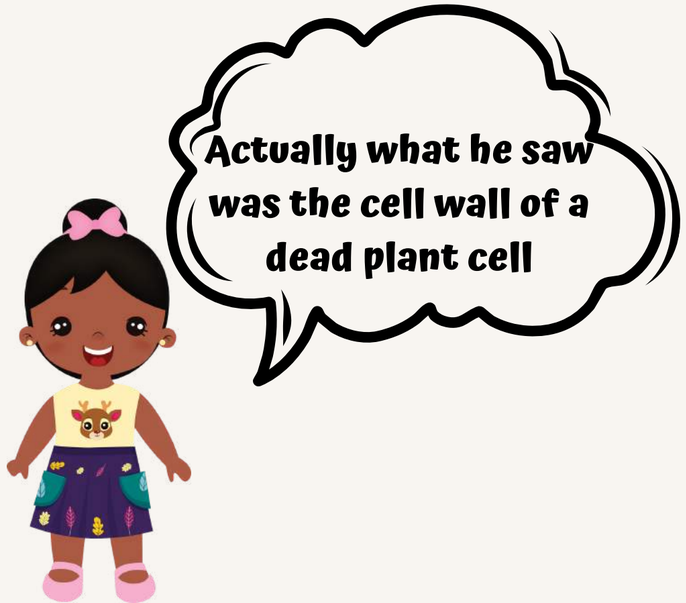
All cells arise from pre-existing cells.

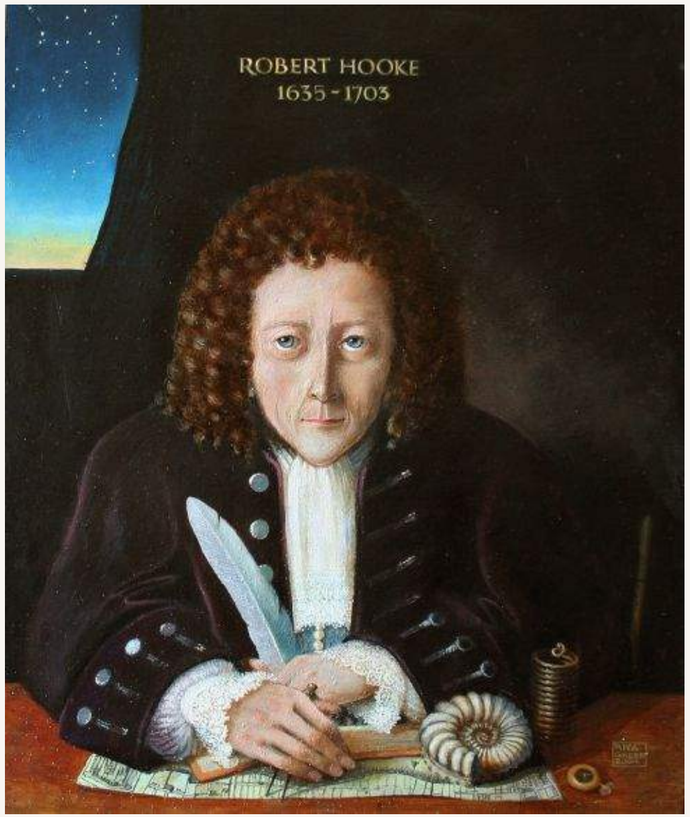


History of cells

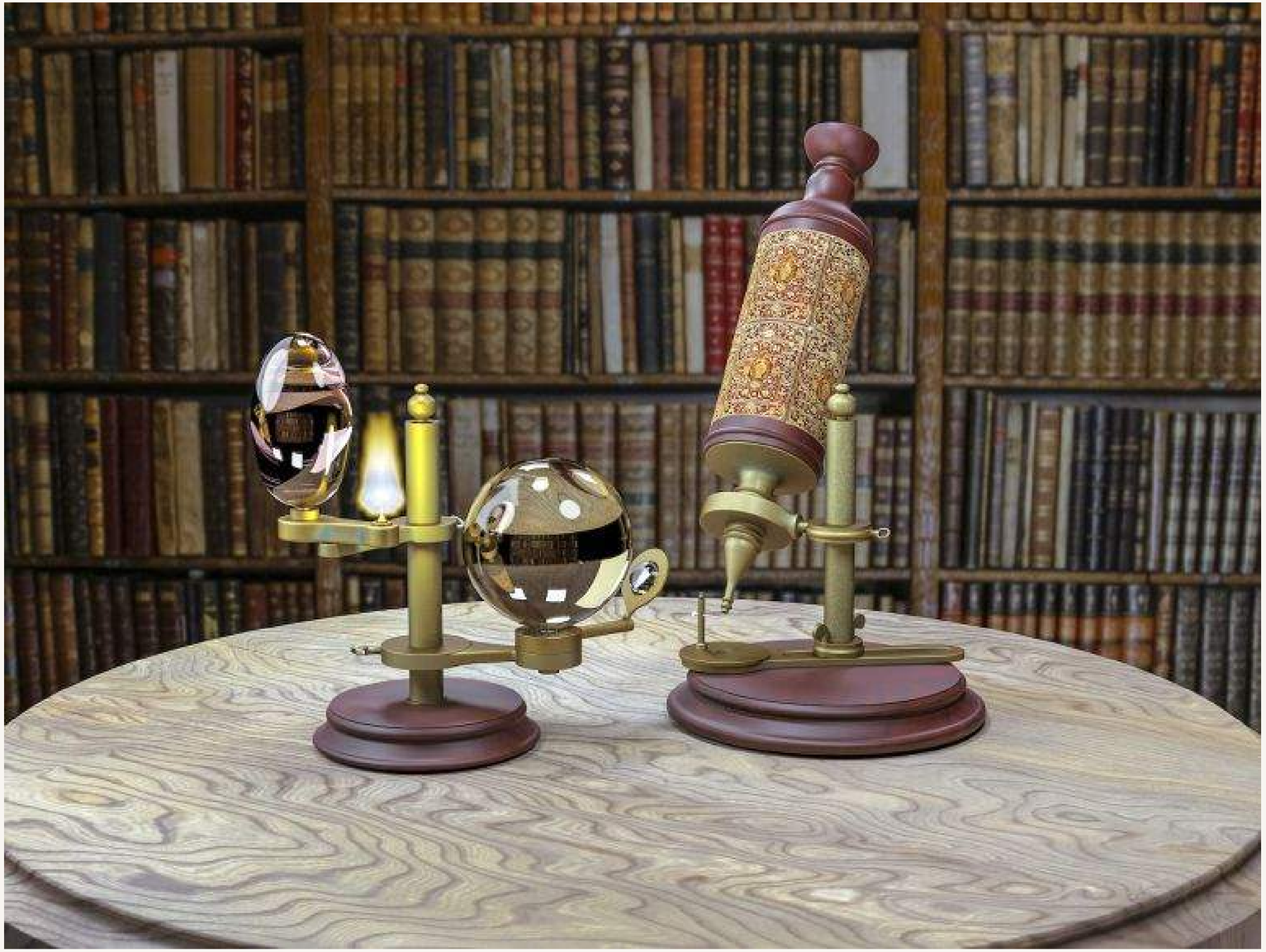
Robert Hooke

- He designed a compound microscope.
- He observed cork cells using that microscope.
- He saw box-shaped structures.
- He called those structures as "cells".



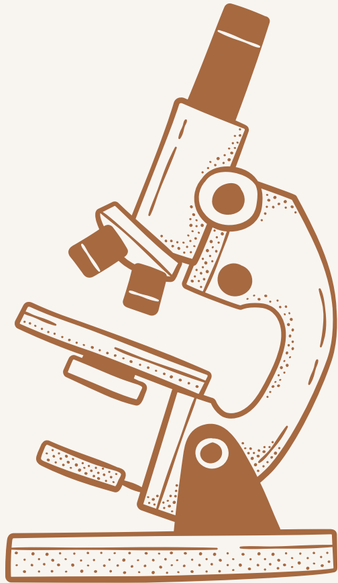


Compound microscope designed by Rober Hooke in 1665



Antonie van Leewenhoek

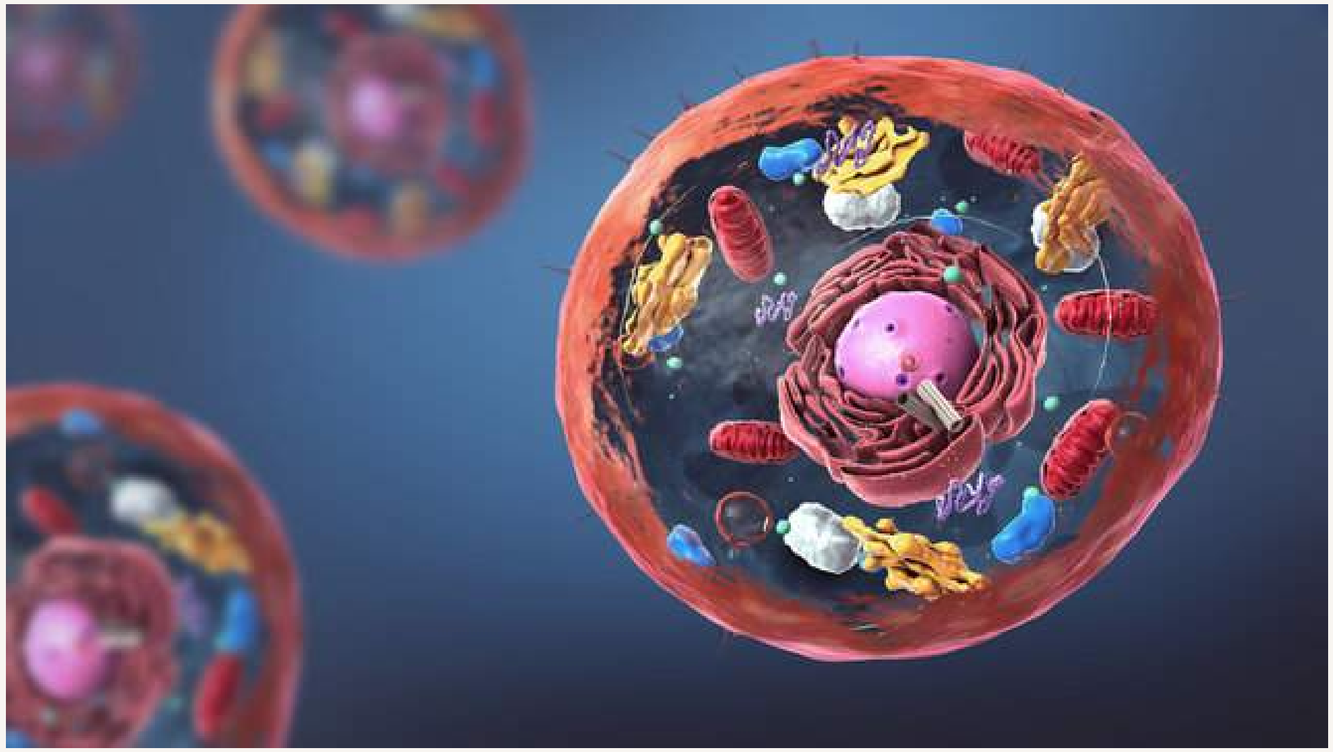
- He was a merchant.
- To access the quality of thread, he discovered special types of lenses.
- Through his lens, he could observed things big.
- He was the first to observe live cells.
- He was the first person to observe a bacterium.



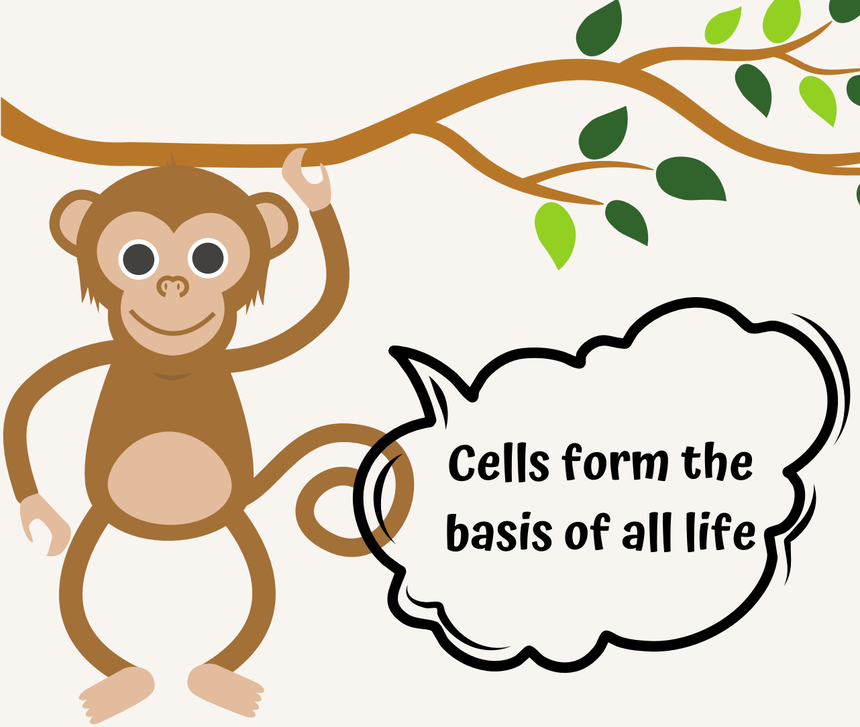
He made a microscope with a single lens.
That lens was embedded in a brass plate to which
the eyes was drawn like a peephole in a door.

Robert Brown

- He was studying fertilization in orchid plants.
- During his study, he observed opaque areas in cells.
- He called those area as nucleus.



- **Matthias Schleiden** discovered that plant tissues are made of cells.
- **Theodor Schwann** discovered that animal tissues are made of cells
- **Rudolf Virchow** discovered that new cells arise from pre-existing cell.



- Together they made cell theory. It states:

1. All living things are composed of cell
2. Cell is the basic unit of life
3. New cells arise from existing cell