

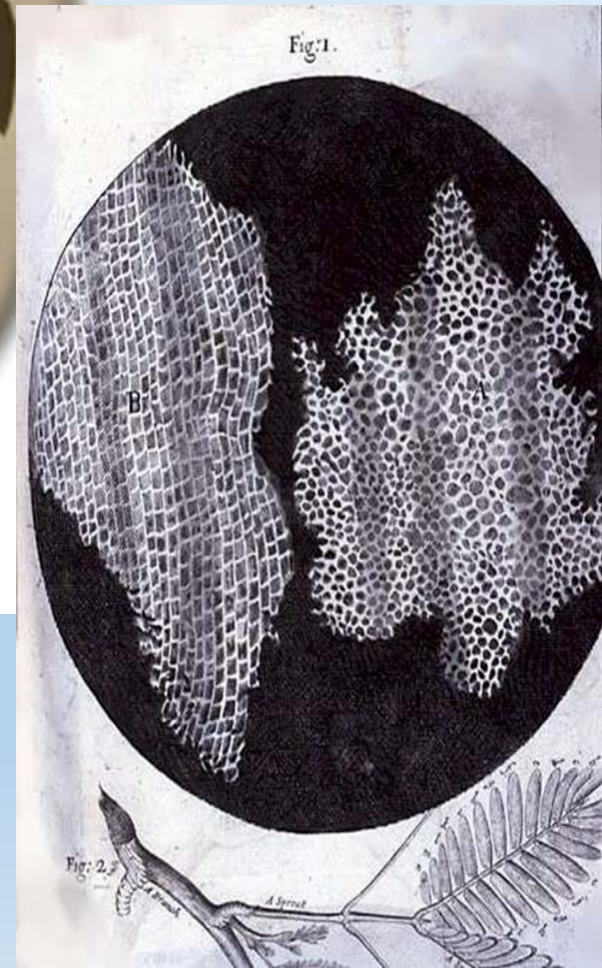
The Discovery of Cells

The invention of the microscope led to the first observations of cells.

Anton Van Leeuwenhoek (1632-1723) is considered the “father of microscopy.”



- Robert Hooke (1635-1703) observed cork under a microscope.
- The tiny chambers which made up the cork reminded him of the rooms in a monastery.
- These rooms were called cells.



How big is a cell?

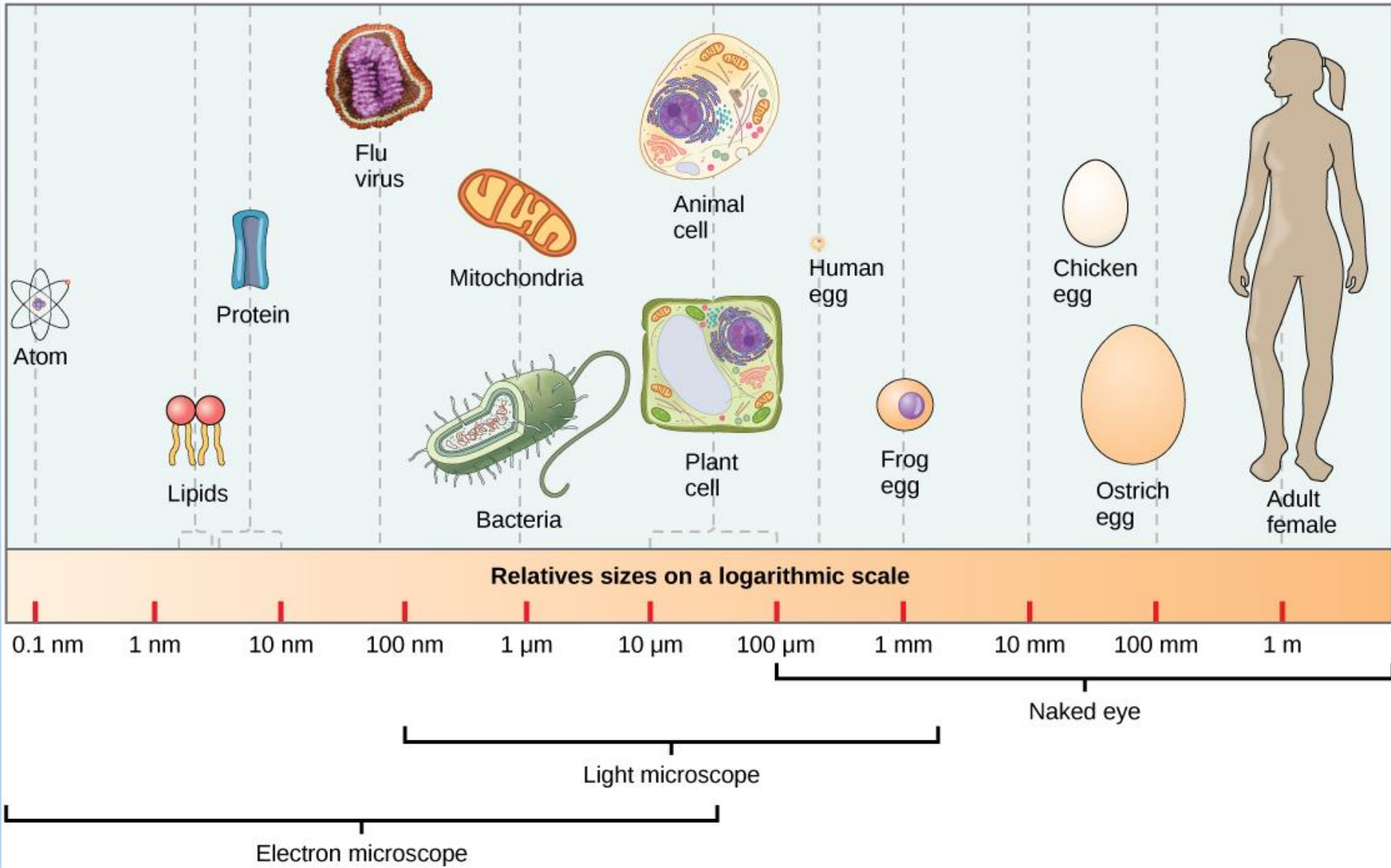
- The smallest cells are only about 0.2 micrometers wide! (0.0002mm)

Larger cells such as Ameba can be 1000 micrometers.

Or, even larger...the yolks of bird eggs!

Average cell size is only about 5-50 micrometers.

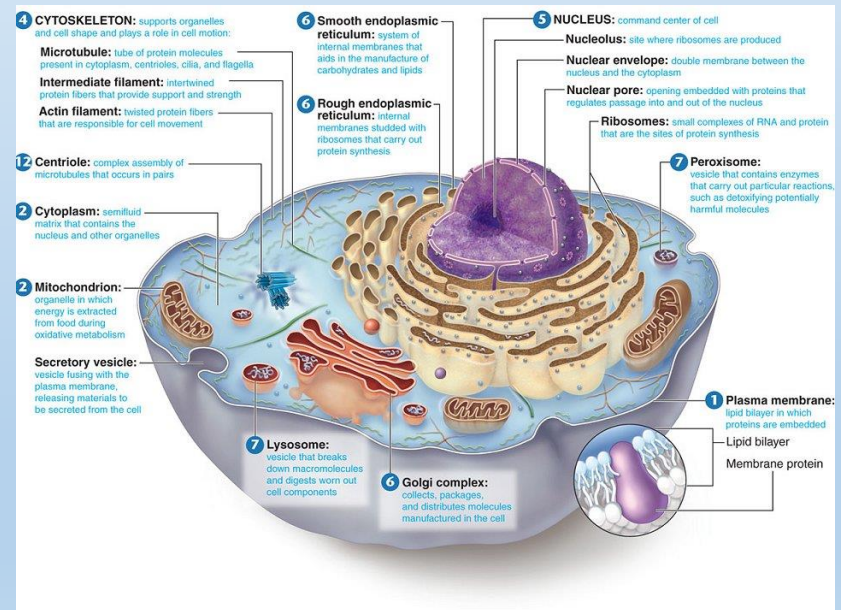
(0.005 mm - 0.05mm)



- Cells must carry out 5 essential functions to survive

- These processes include

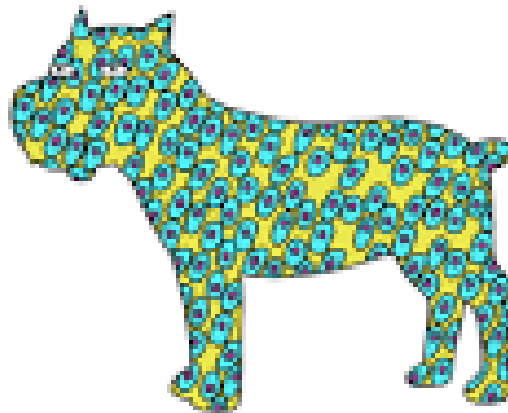
- Obtaining Energy (intake and storage of nutrients)
- Growth
- Waste removal
- Reproduction
- Response to stimuli



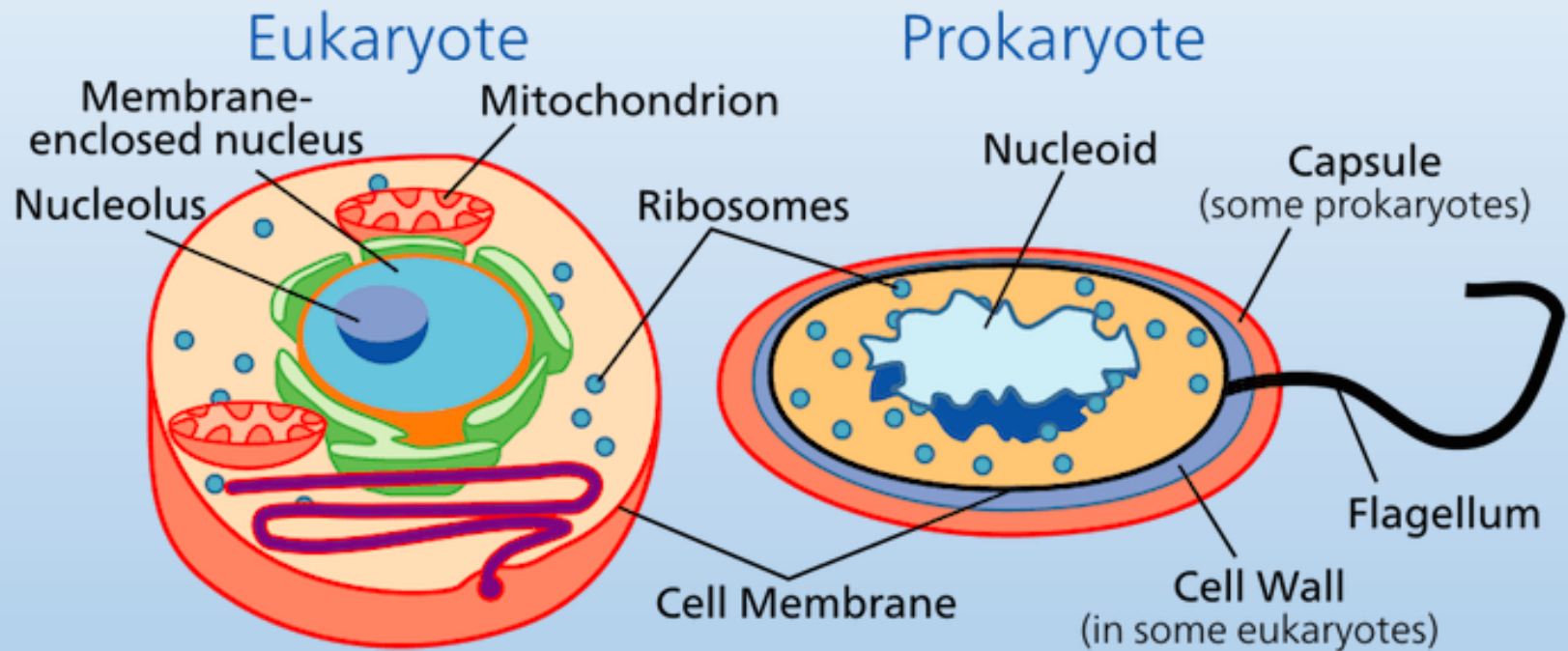
The Cell Theory

- There are 3 main parts to the cell theory:
 1. All living things are made up of one or more cells
 2. The cell is the basic unit of life
 3. All living cells come from pre-existing cells

I. ALL ORGANISMS ARE COMPOSED
OF ONE OR MORE CELLS



Prokaryote vs Eukaryote



Types of Cells

Prokaryotic Cells

- First cell type on earth
- Cell type of Bacteria and Archaea
- No membrane bound nucleus
- Nucleoid = region of DNA concentration
- Organelles not bound by membranes

Eukaryotic Cells

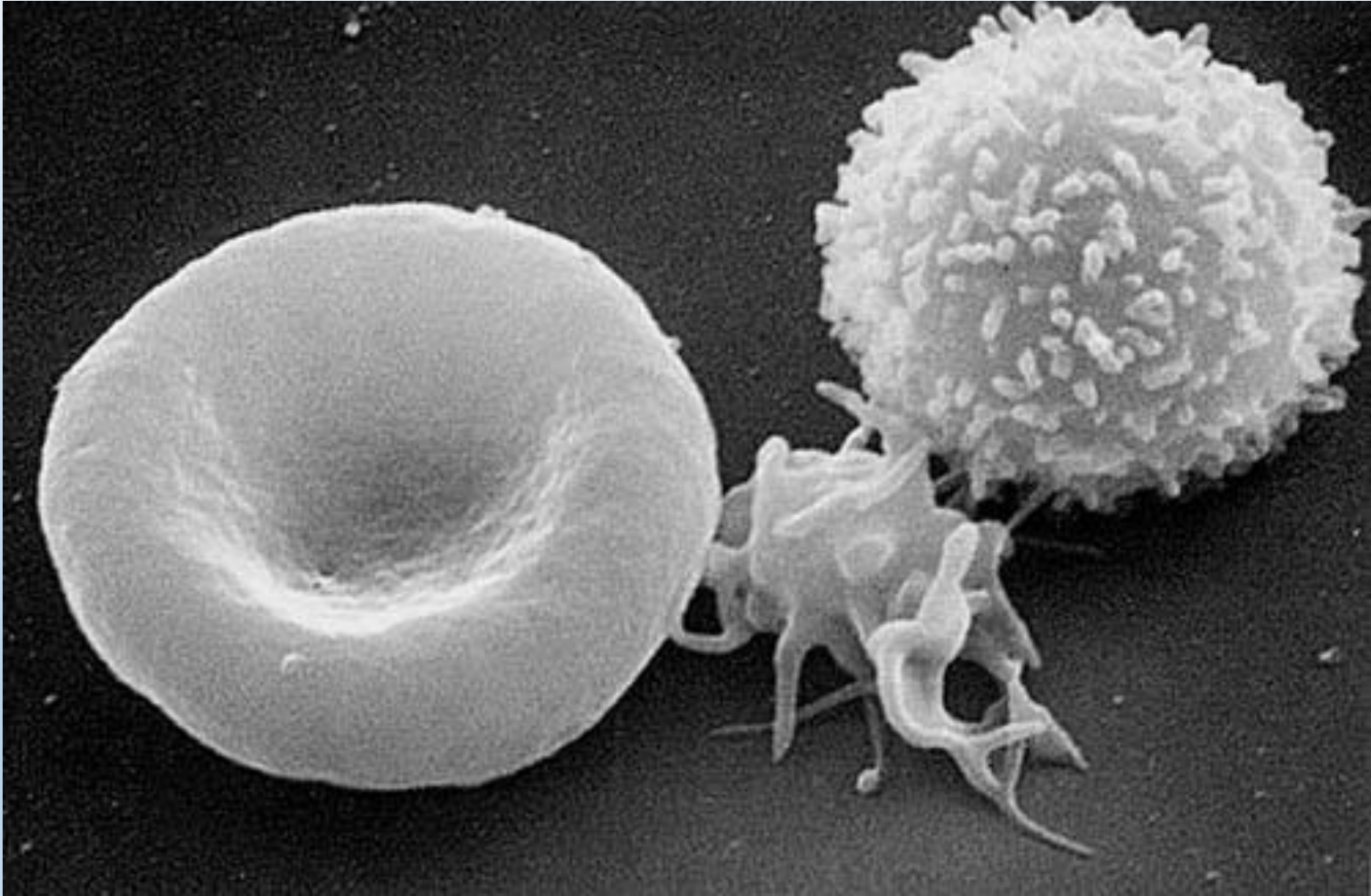
- Nucleus bound by membrane
- Include fungi, protists, plant, and animal cells
- Possess many organelles

Variation

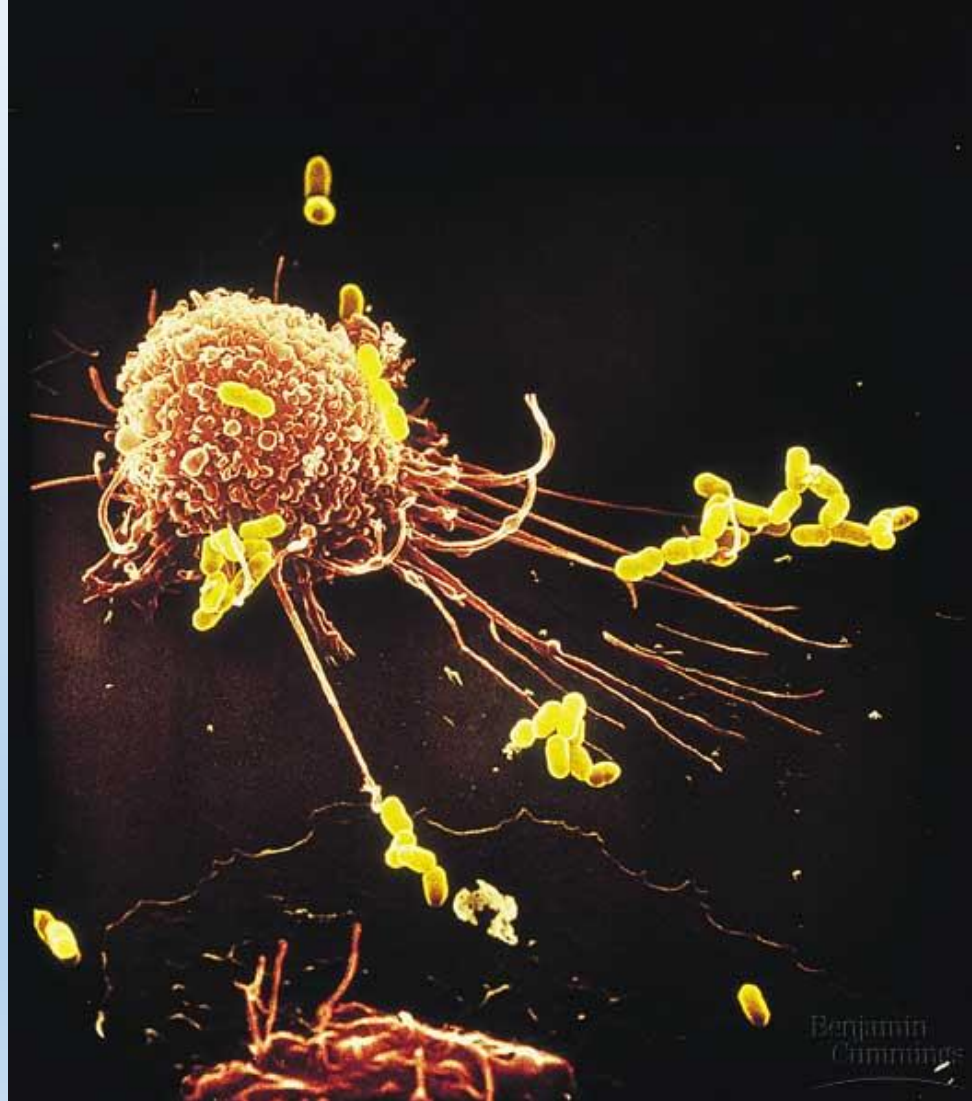


- Cells come in numerous shapes and sizes. Their shape is usually somehow related to their function.
- Some organisms like plankton, amoeba and bacteria are composed of a single cell.
- Other, more complex organisms, are composed of huge numbers of different cells. Humans are made up of about 300 trillion cells.

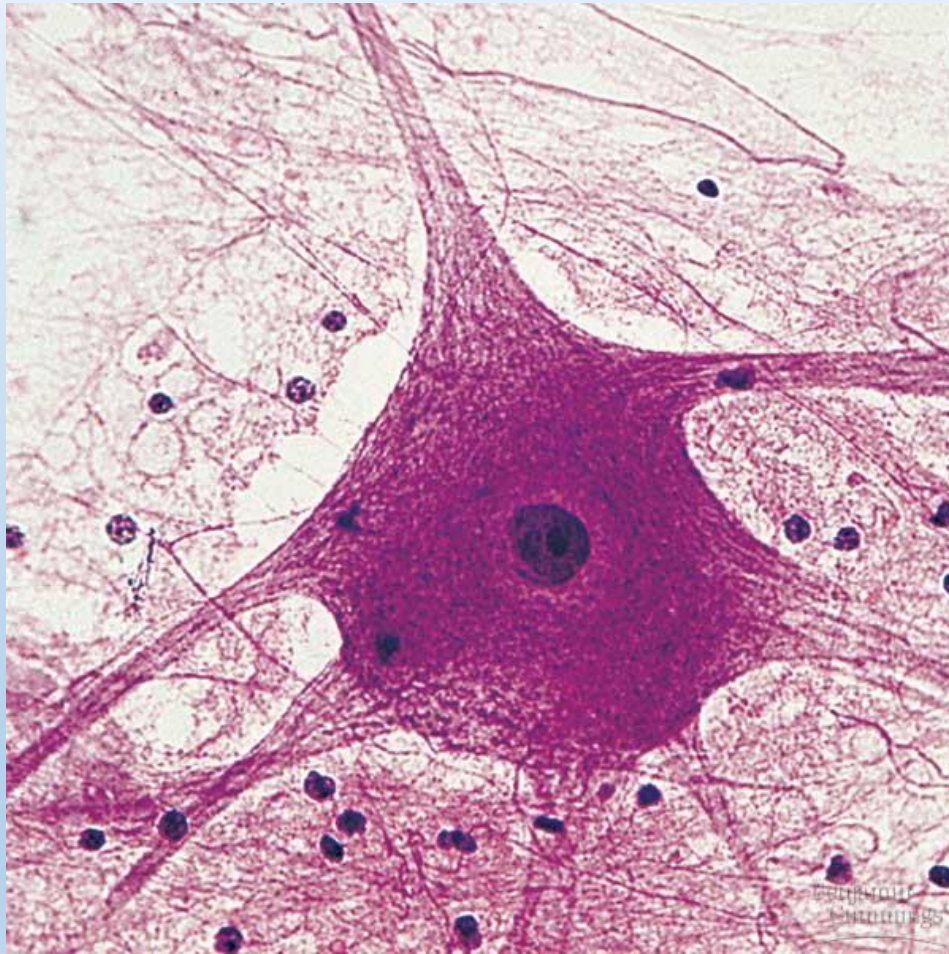
Blood Cells (Red, Platelet and White)



Macrophage killing bacteria



Nerve Cell



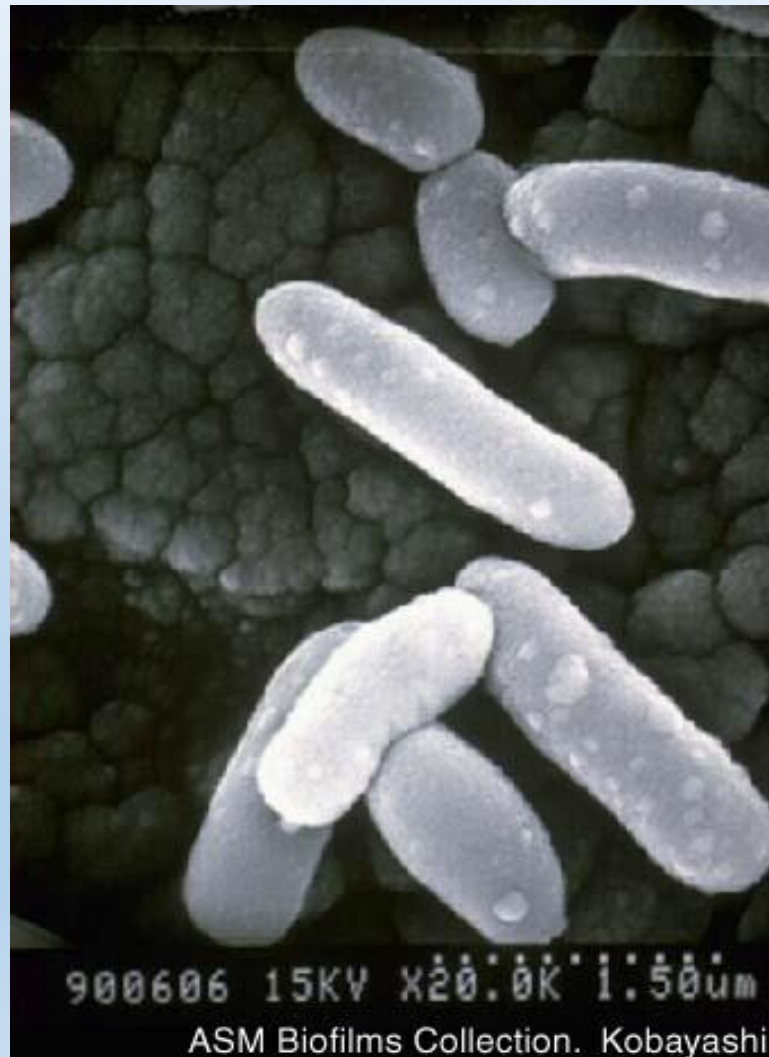
Human Cheek Cell



Elodea (plant) Cells



Bacteria Cells



Sperm and Egg Cells



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Caption: Human egg (oocyte) and sperm (spermatozoon).
File Name: 97990A
Category: Medical
Type of Image: SEM
Magnification: egg x260, sperm x560 (Based on an image size of 1 inch in the narrow dimension)

Paramecium (single celled organism)

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Amoeba (single celled organism)

