



School Book

6th std – Term 2

The Cell

Professor Academy

Content

- **Cell**
- **Discovery**
- **Structural Organization**
- **Size**
- **Shapes**
- **Number**
- **Types**
- **Plant & Animal cell**
- **Cell Components**

Common Name: Rice

Scientific Name: *Oryza sativa*



Common Name: Wheat

Scientific Name: *Triticum aestivum*



Common Name: Sugarcane

Scientific Name: *Saccharum officinarum*





Common Name: Maize

Scientific Name: *Zea mays*

Common Name: Grass

Scientific Name: Poaceae

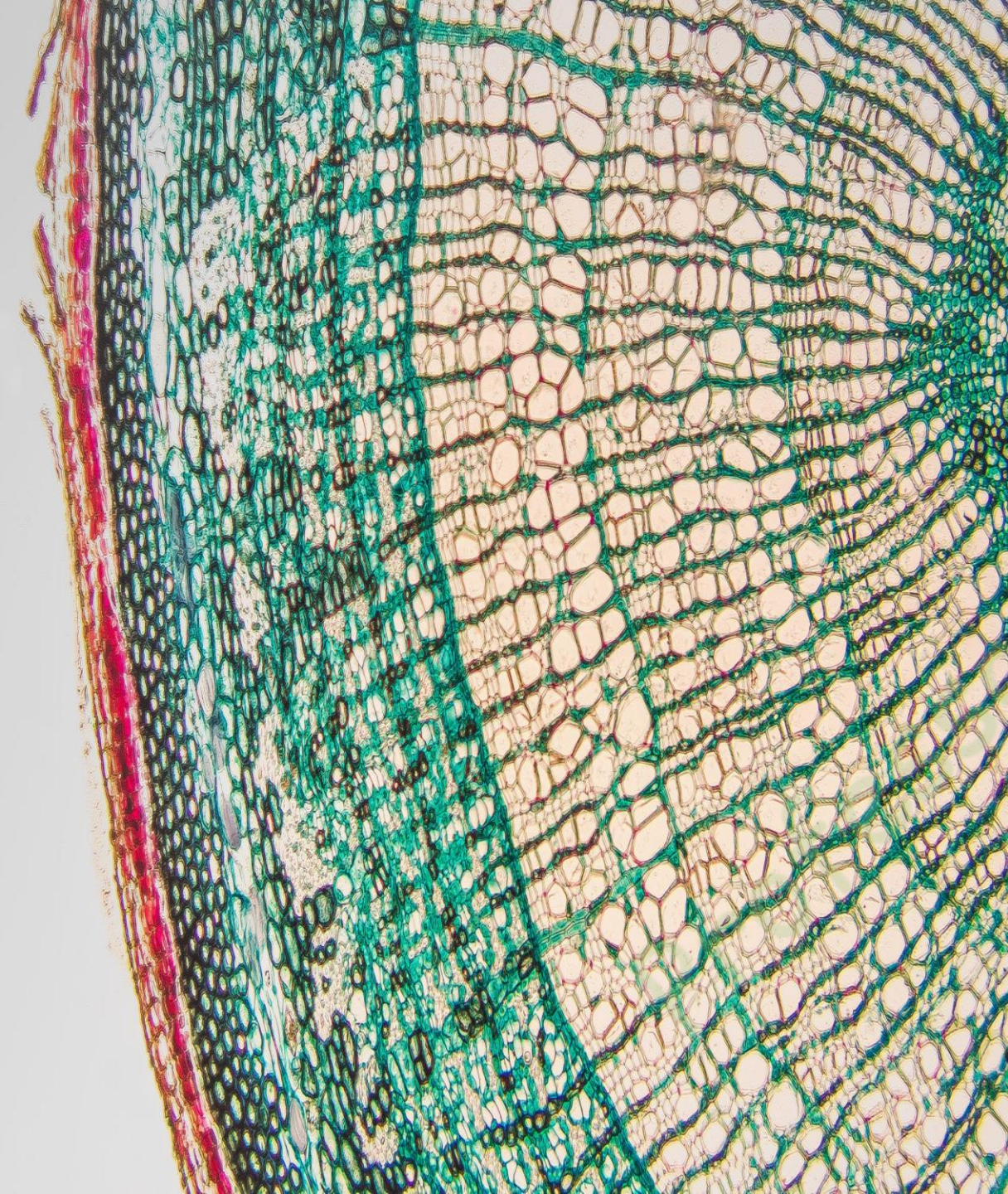


The background of the slide features a soft-focus image of green leaves, likely from a tree or shrub, with some leaves in sharp focus on the left and right edges. A diagonal watermark reading "Professor Academy" is visible across the center of the image.

The Cell

What is the basic building block of the wall?

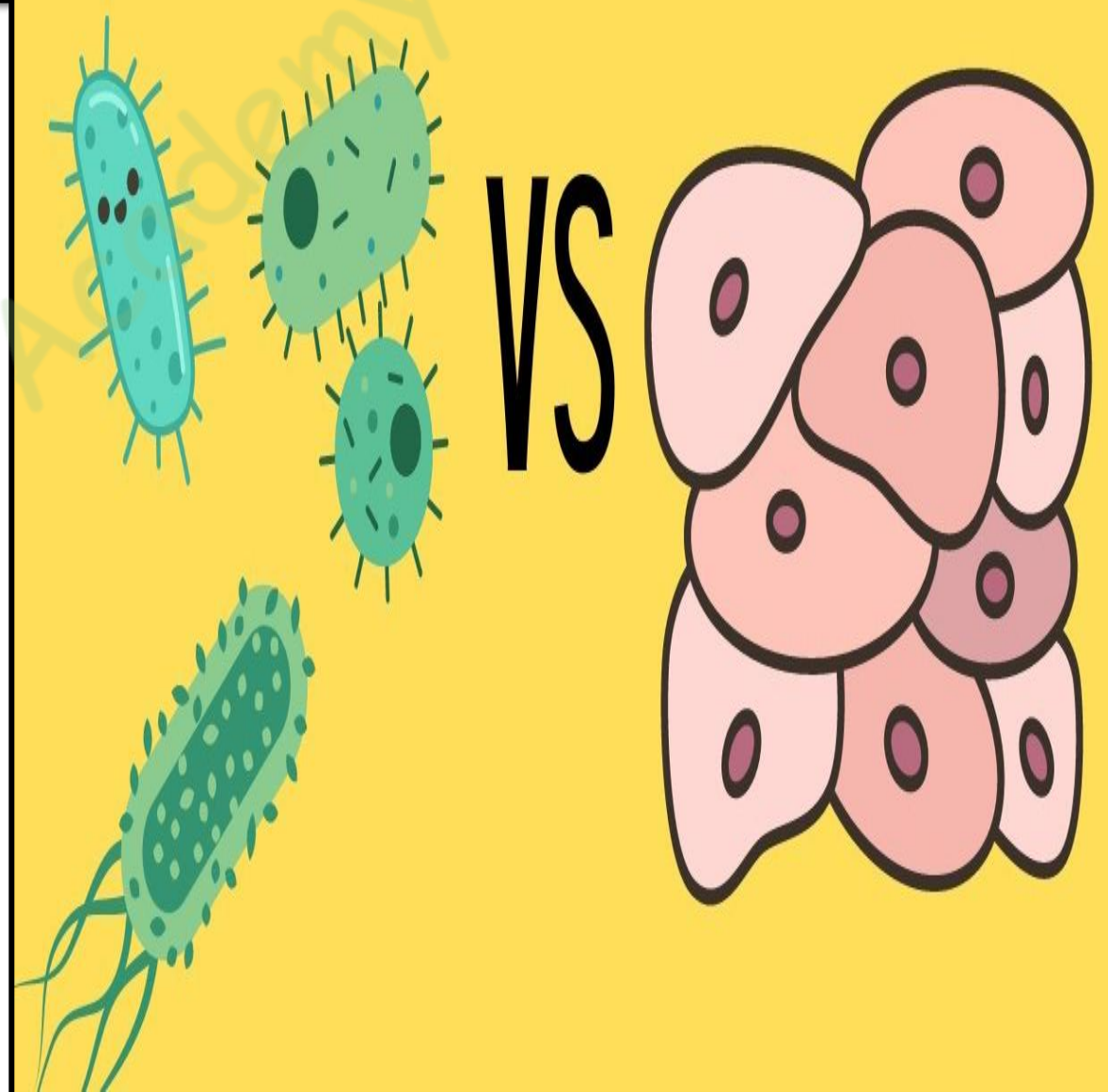




- Body - **building blocks** → “**Cells**”
- Basic structural & functional unit - living organism

The Cell

- All living things - made - **one / more cells**
- Variety of cell types - **common features**



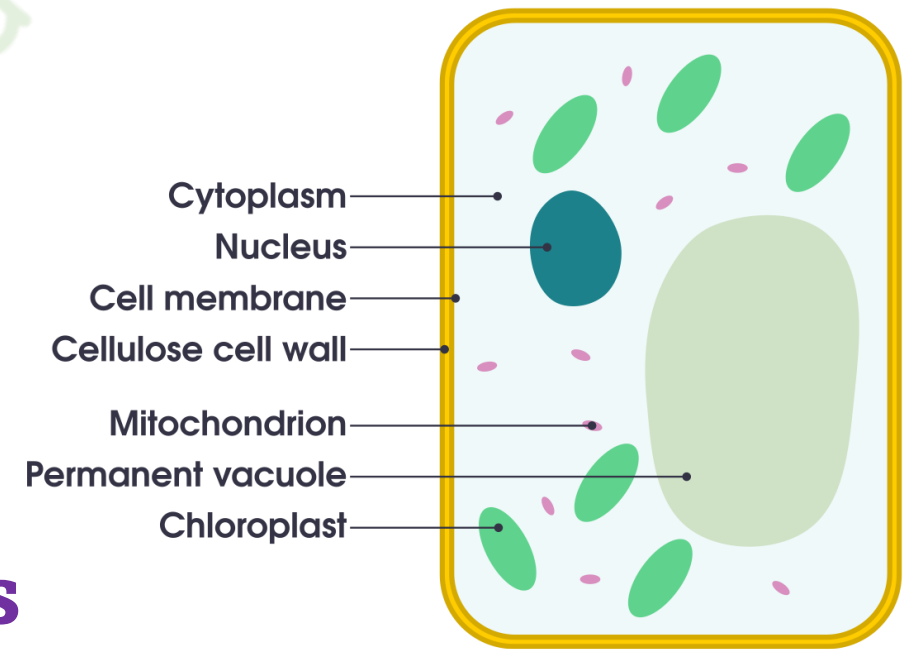
Discovery of the cell



- **Robert hooke** - built - **compound microscope**
- **Water lens** - focus light - oil-lamp
- Identical chambers - hexagonal
- Published book → **Micrographia** - 1665
- First used - term - **cell**
- Latin → '**cellua**' - chamber

The Structural Organization Of The Cell

- Three major parts:
 1. **An outer cell membrane**
 2. **A liquid cytoplasm**
 3. **A nucleus**
- Many distinct structures → **Organelles**



Size of the cell

- Size of cells - **micrometer to centimeters**
- **Smallest size** of cell - **Bacteria**
- **0.01 micrometer - 0.5 micrometer**





Size of the cell

- **Largest cell** - egg of an ostrich
- **170 millimeter** - width
- **Nerve cells** → longest cells

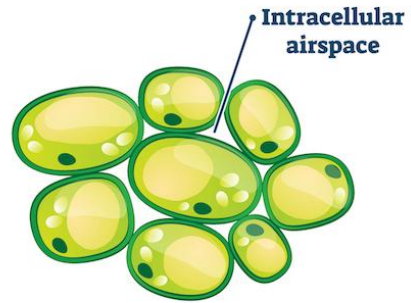


Does Cell size has any relation to the size of an organism?

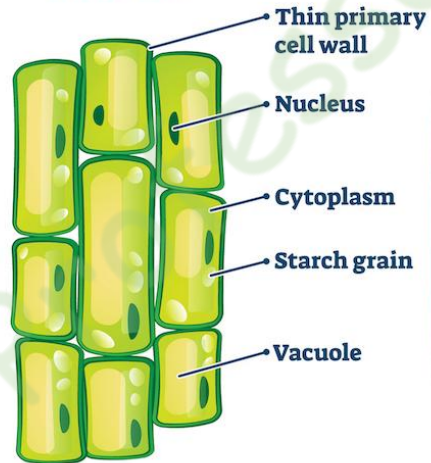


Shapes

Parenchyma tissue

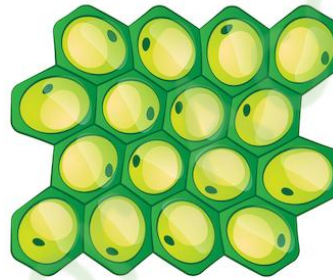


Cross section

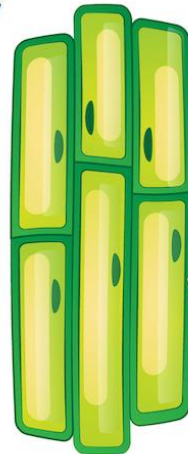


Longitudinal

Collenchyma tissue

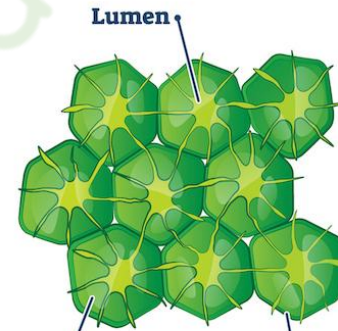


Cross section

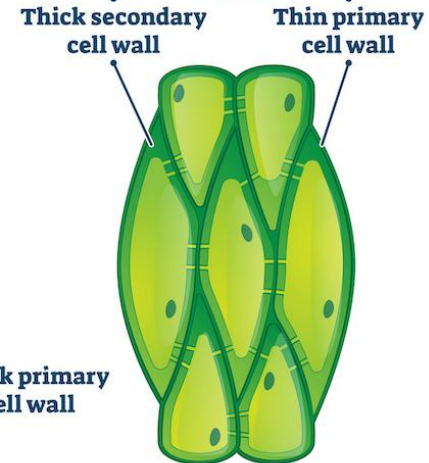


Longitudinal

Sclerenchyma tissue



Cross section

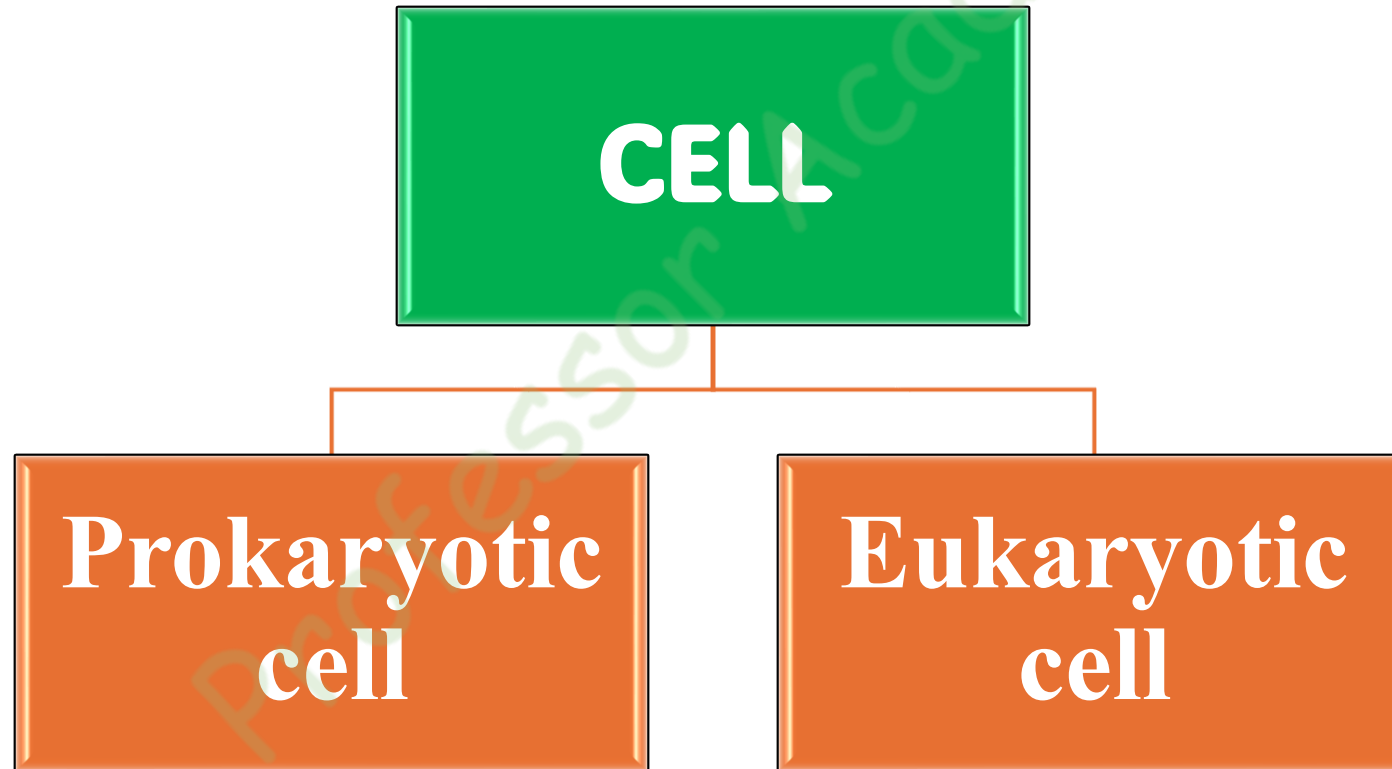


Longitudinal

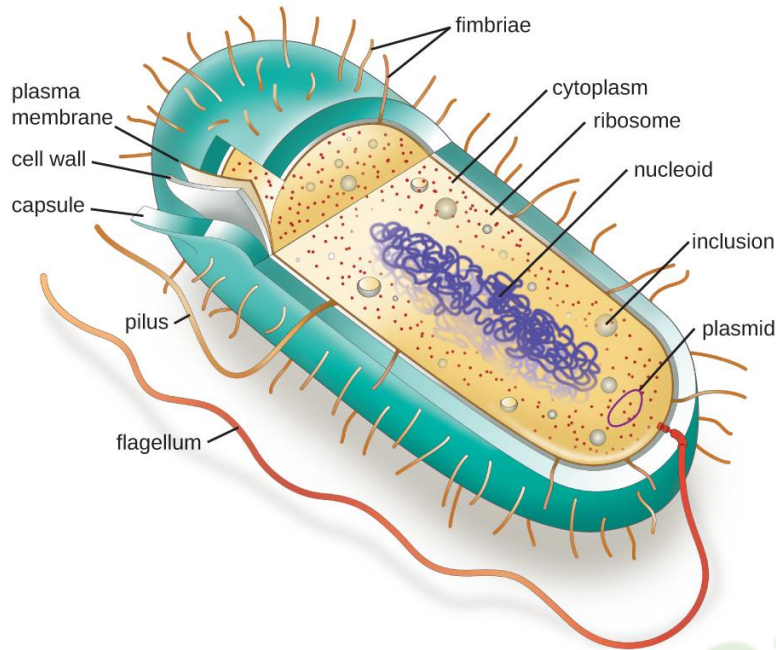
Number

- Number of cells - vary - different organisms
- Either **unicellular** / **multicellular**
- Spirogyra, mango, & human beings - multicellular
- Hundreds to millions of cells

TYPES OF CELL



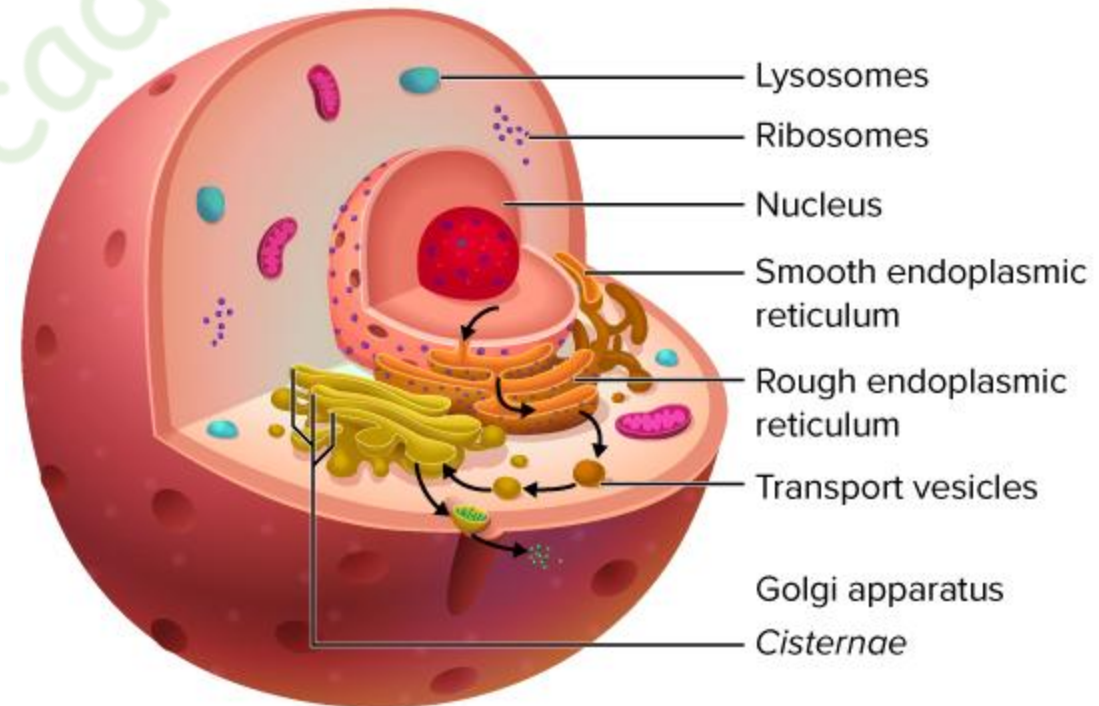
Prokaryotic cell



- **Unicellular organisms** - bacteria
- **No true nucleus**
- Nucleus → **nucleoid**
- No nuclear membrane - around - nucleoid
- **0.003 - 2.0** micrometer - diameter

Eukaryotic cell

- **True nucleus**
- Membrane bound organelles
- Nucleus - **nuclear membrane**
- Bigger than prokaryotic cell
- **10 – 100 micrometer**



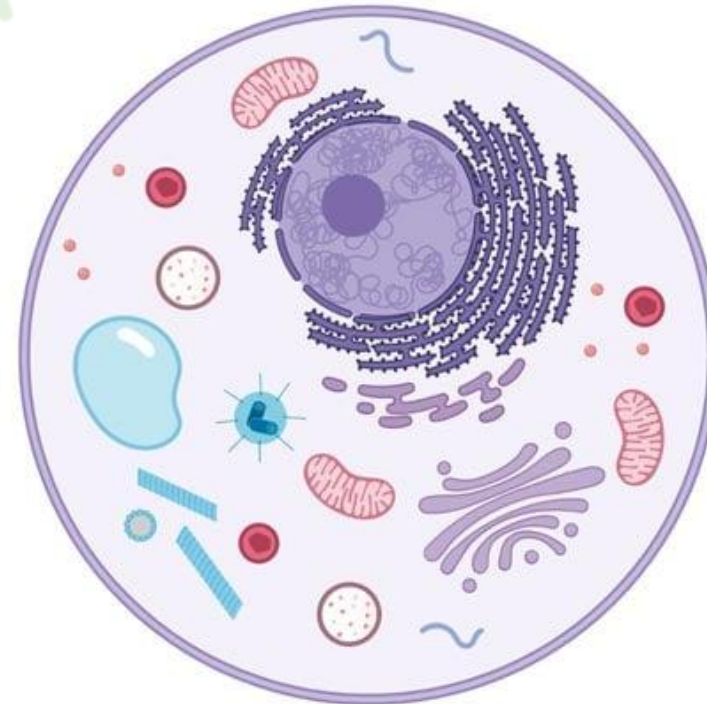
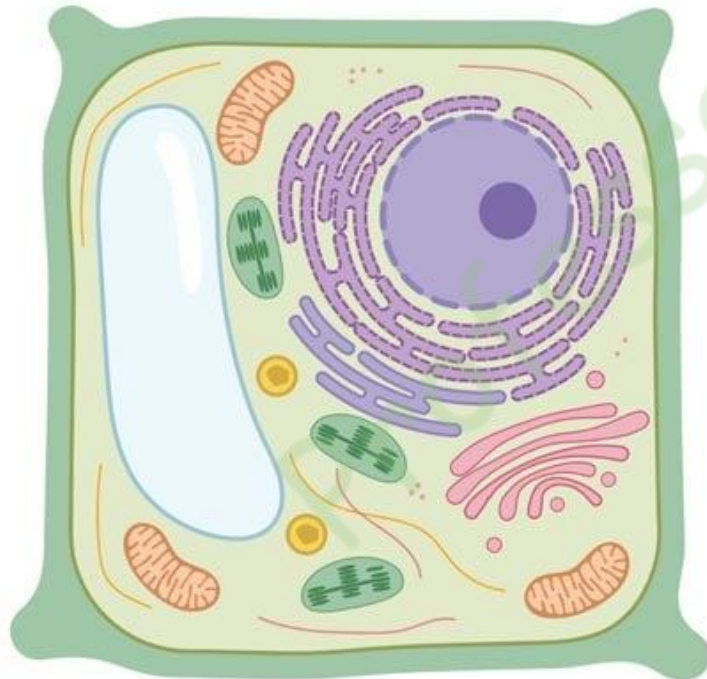
Plant cell & Animal cell

Both cells are eukaryotic

Plant Cell

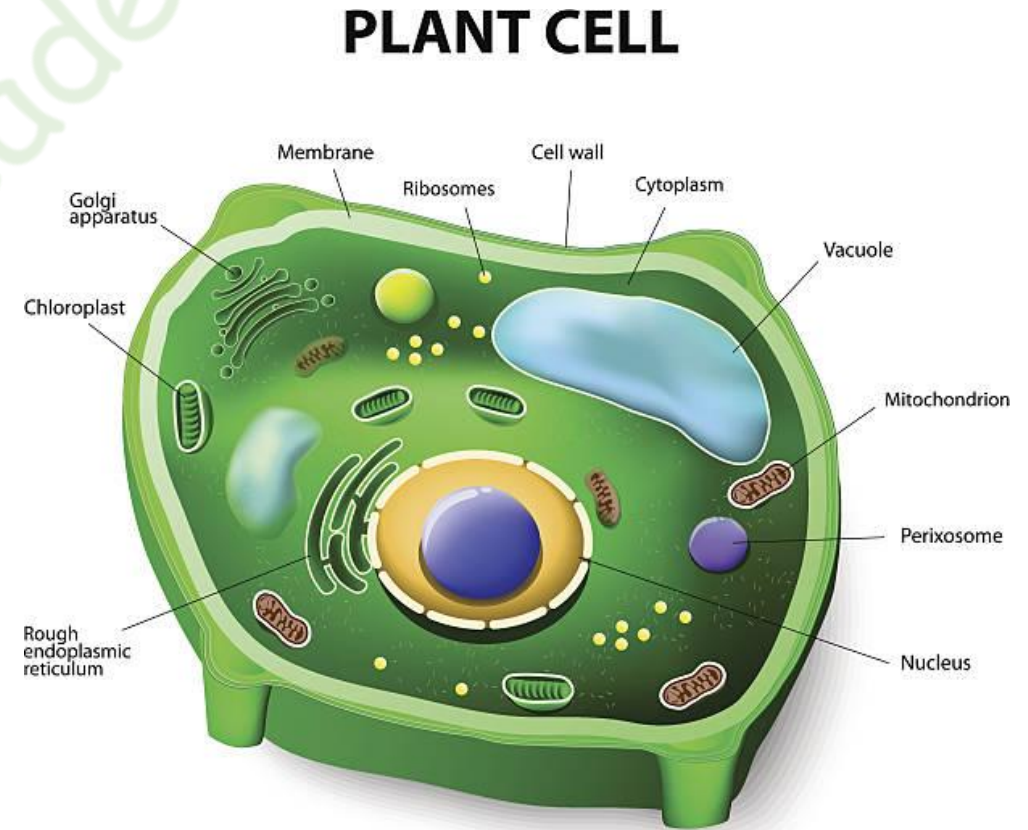
VS

Animal Cell

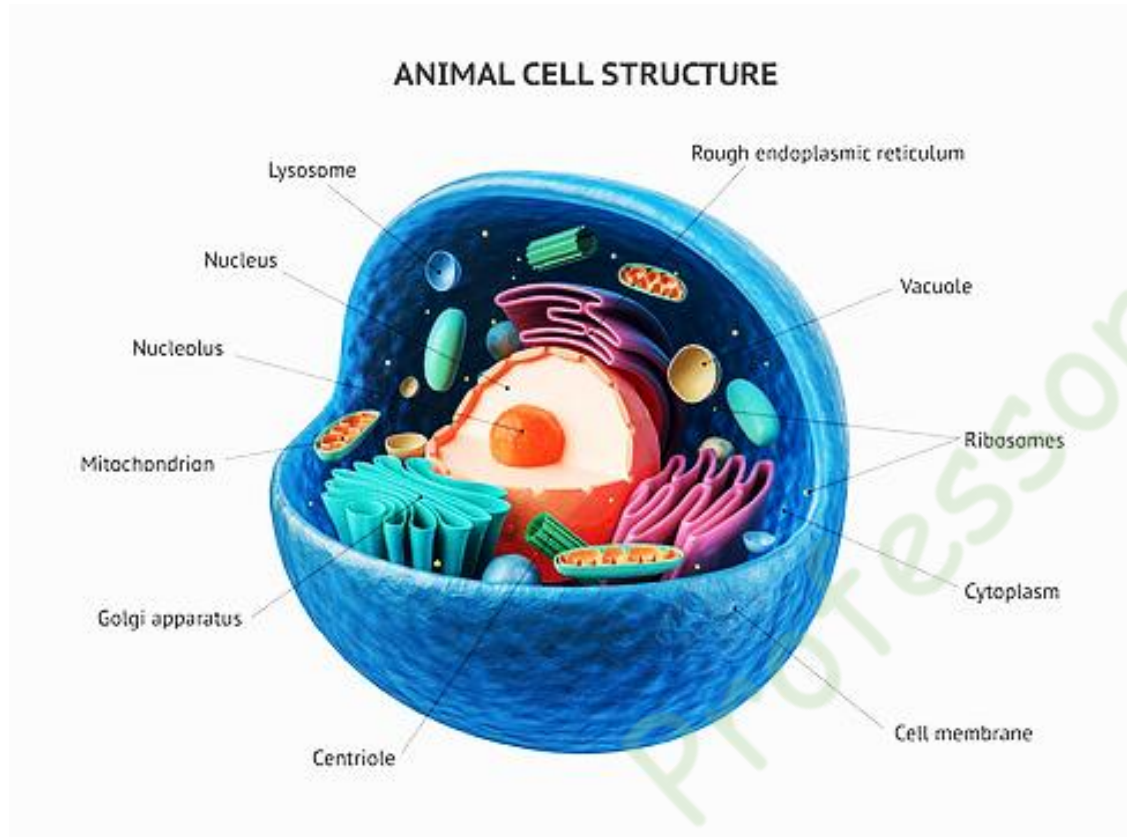


Plant cell

- **Larger** in size
- **Hard** in nature
- Cell wall + Cell membrane
- Chloroplast contain **chlorophyll**
- Large **vacuoles**
- **Centrioles** - absent

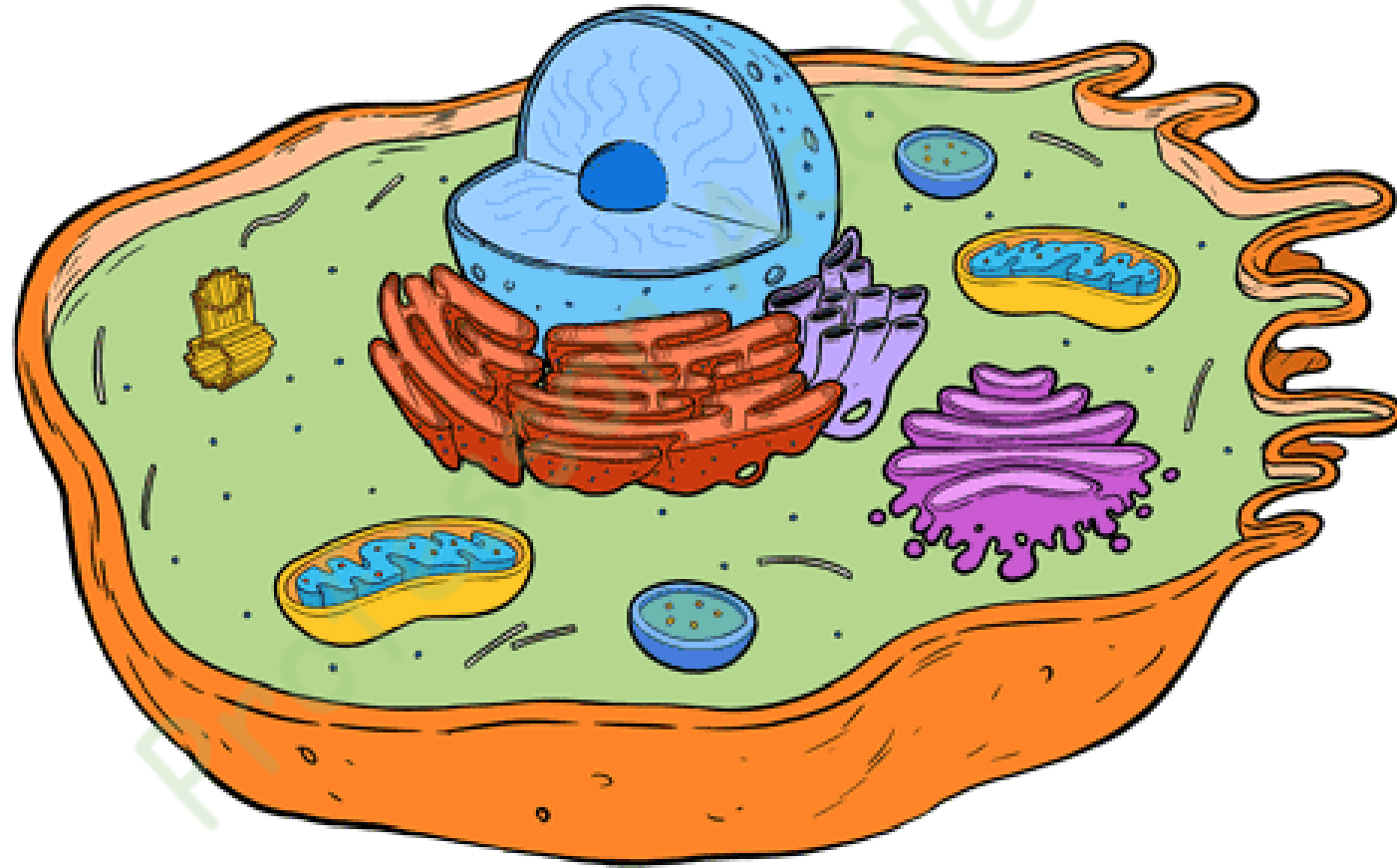


Animal cell



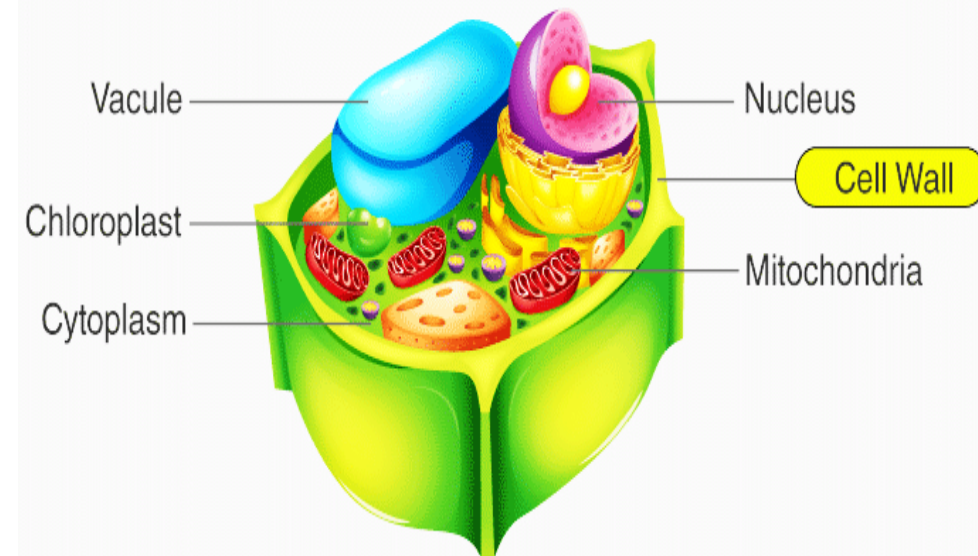
- Smaller than plant cells
- Not so hard
- **Cell wall** is **absent**
- **Chloroplast** is **absent**
- Many **small vacuoles**
- **Centrioles** **present**

Cell Components



Cell Wall

- **Special Name: Supporter & protector**
- **Surrounds & protects** - cell
- Make cell stiff & strong



Cell Membrane



- **Special Name: Gate of the cell**
- Holds the cell
- **Controls movement** - materials in & out

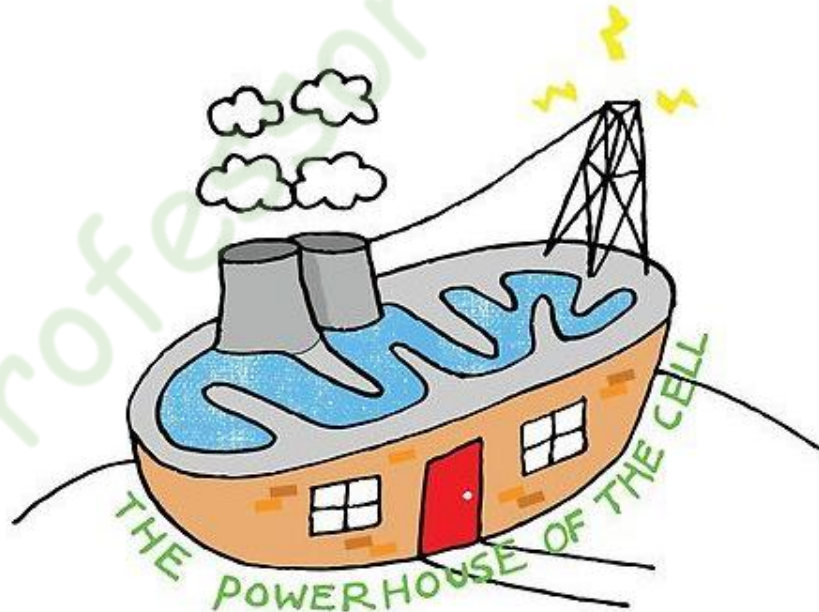
Cytoplasm

- **Special Name:** **Area of movement**
- **Watery, gel-like** material
- Cell parts move



Mitochondria

- **Special Name:** **Powerhouse of the cell**
- Produce & supply - **energy** - cell



Chloroplasts



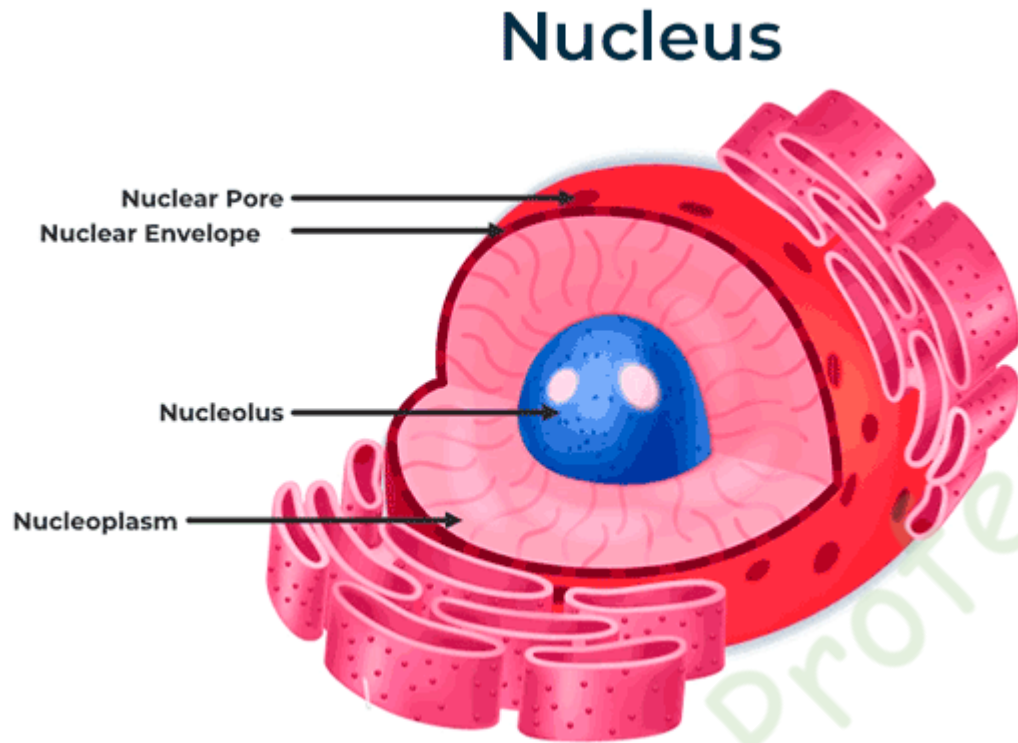
- **Special Name: Food producers**
- Green pigment **chlorophyll**
- Capture - **sunlight** - produce food
→ **photosynthesis**

Vacuoles

- **Special Name: Storage tanks**
- Store food, water, and chemicals



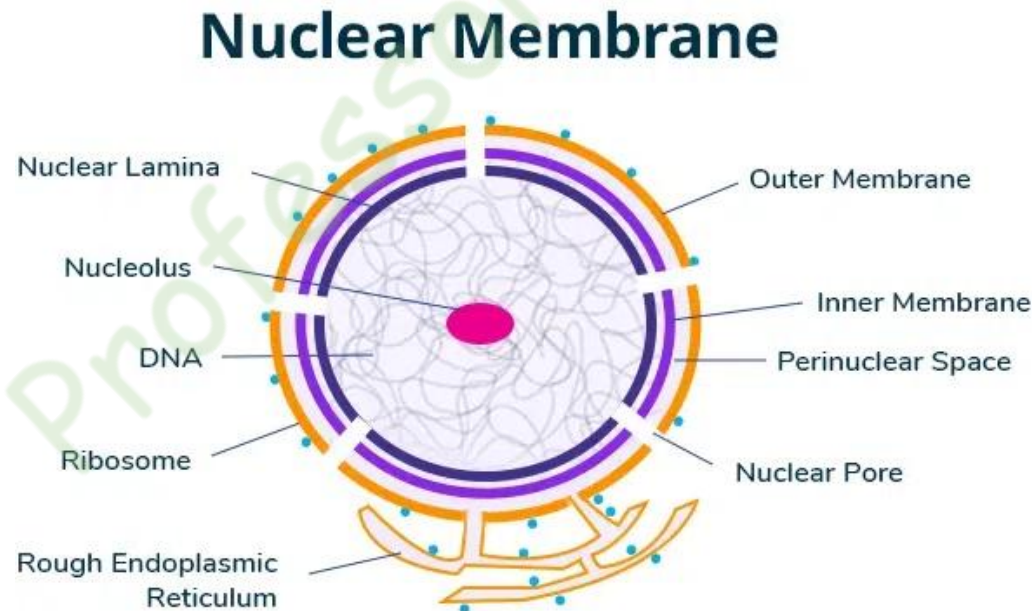
Nucleus



- **Special Name: Control centre**
- ‘**Brain**’ of the cell
- Regulates & controls - cell activities

Nucleus Membrane

- **Special Name:** Gate of the nucleus
- **Protects** the nucleus
- Control the movement of materials



Any Question



All the best!