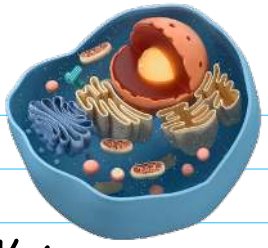
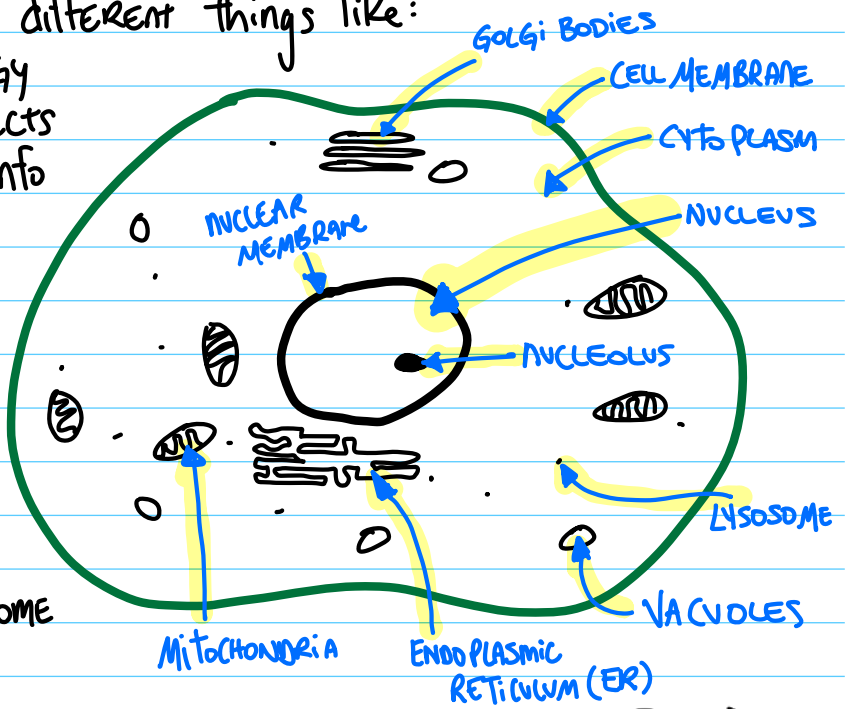
The Cell: Part 2



Cells are made of small parts called **organelles** that do different things like:

- Process/release energy
- Destroy/digest objects
- Replicate genetic info





Cell Membrane

- Outer layer of the cell
- Holds it together
- Controls flow of material in/out of the cell
- Can be **semipermeable** or **selectively permeable** (lets some things in but not everything

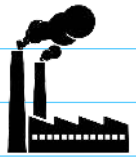
Cell Wall

- **Plant cells** have a cell wall and cell membrane
- Tough & rigged outer layer → gives cell its shape
- Many made of **cellulose**



Cytoplasm

- Jellylike substance inside walls, contains all structures & organelles

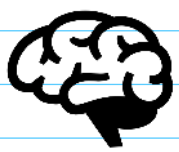


Ribosomes

- Protein making factories in cell.
  - Essential in all cells.

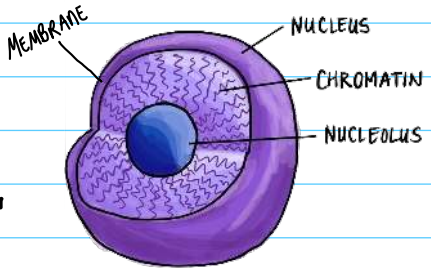
Cytoskeleton

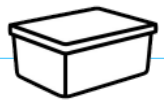
- Thin protein fibers & tubes, keeps structure & helps transport things through cell



Nucleus

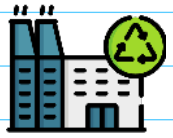
- Control center of cell → **cell's DNA**
- Contains the cells **chromosomes**
  - → **Nuclear membrane** → the "cell membrane" of the nucleus, protective layer
  - → **Nucleolus** → small structure that makes & transport **Ribosomes** into cytoplasm





VACUOLES

- TEMPORARY STORAGE BUBBLES for the CELL.
- Store FOOD, H_2O, WASTE for CELL to USE LATER
- in PLANT CELLS VACUOLES CAN BE **HUGE**



LYSOSOME

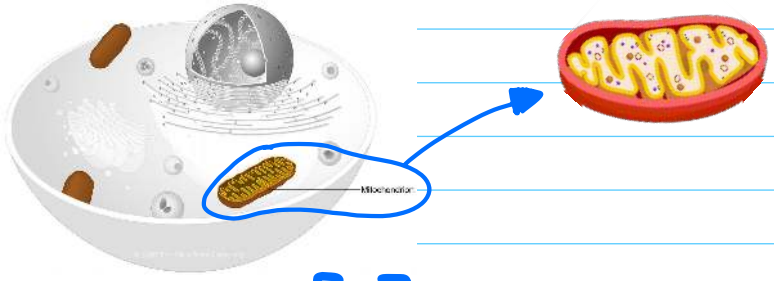
BREAKS DOWN FOOD, CELL WASTE, BACTERIA

- GARBAGE/RECYCLING CENTER
- digests/destroys OLD CELLS or OLD CELL PARTS to MAKE NEW CELLS.

MITOCHONDRIA



- A CELL'S POWERHOUSE → RELEASE ENERGY in FOOD by CARRYING OUT REACTIONS (w/ OXYGEN)
- CELLS that NEED MORE ENERGY (like MUSCLE CELLS) HAVE MORE MITOCHONDRIA



ENDOPLASMIC RETICULUM [ER]



- TRANSPORT FACILITY FOR CELL
- MADE of FOLDED MEMBRANE → PROCESSES/MOVES MATERIAL AROUND CELL
- 2 TYPES → SMOOTH ER → MAKES LIPIDS/FAT
  → ROUGH ER → MAKES PROTEIN

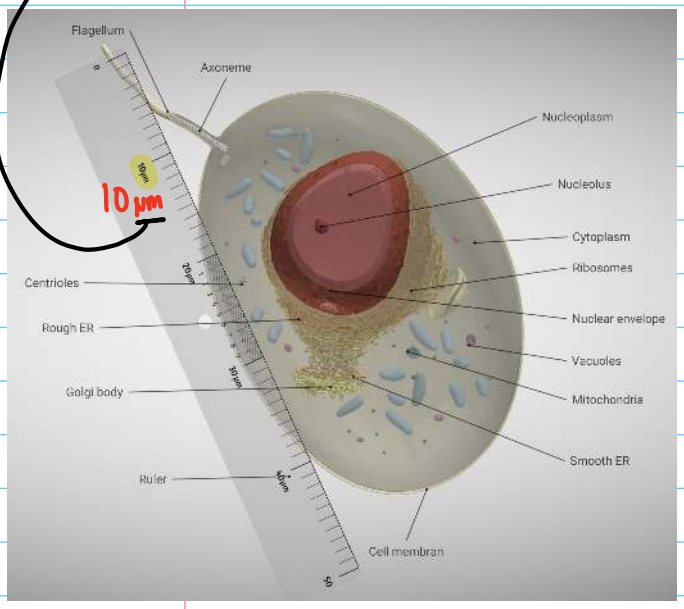
GOLGI BODIES

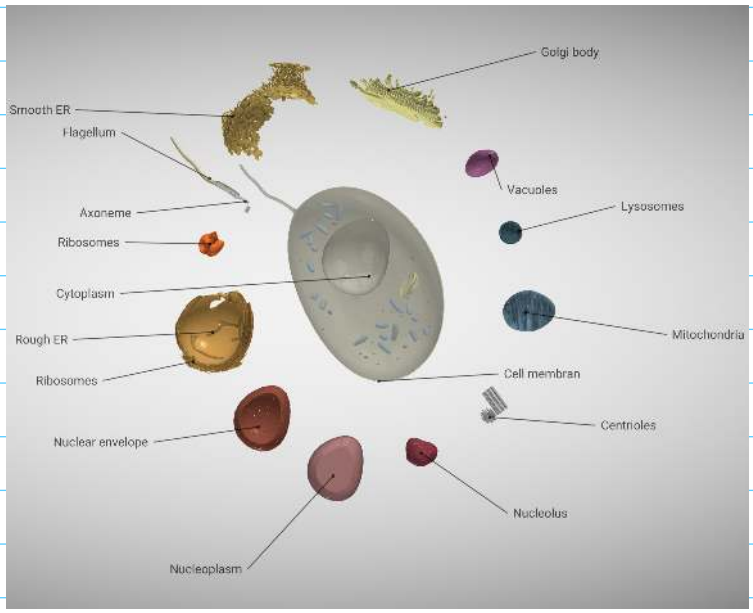
- PACKING/SORTING/DISTRIBUTING FACILITIES
- MOVE PROTEINS FROM ER to OTHER PARTS of CELL

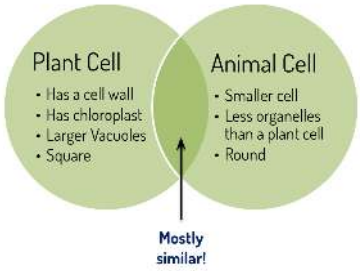
CHLOROPLAST

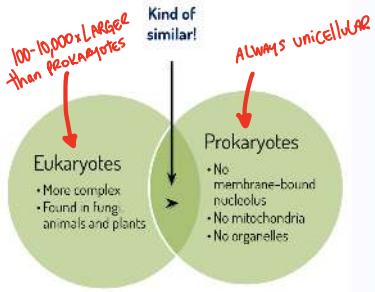
- only in PLANT CELLS
- FOOD PRODUCTION → contains CHLOROPHYLL → GREEN PIGMENT that MAKES PLANTS LOOK GREEN

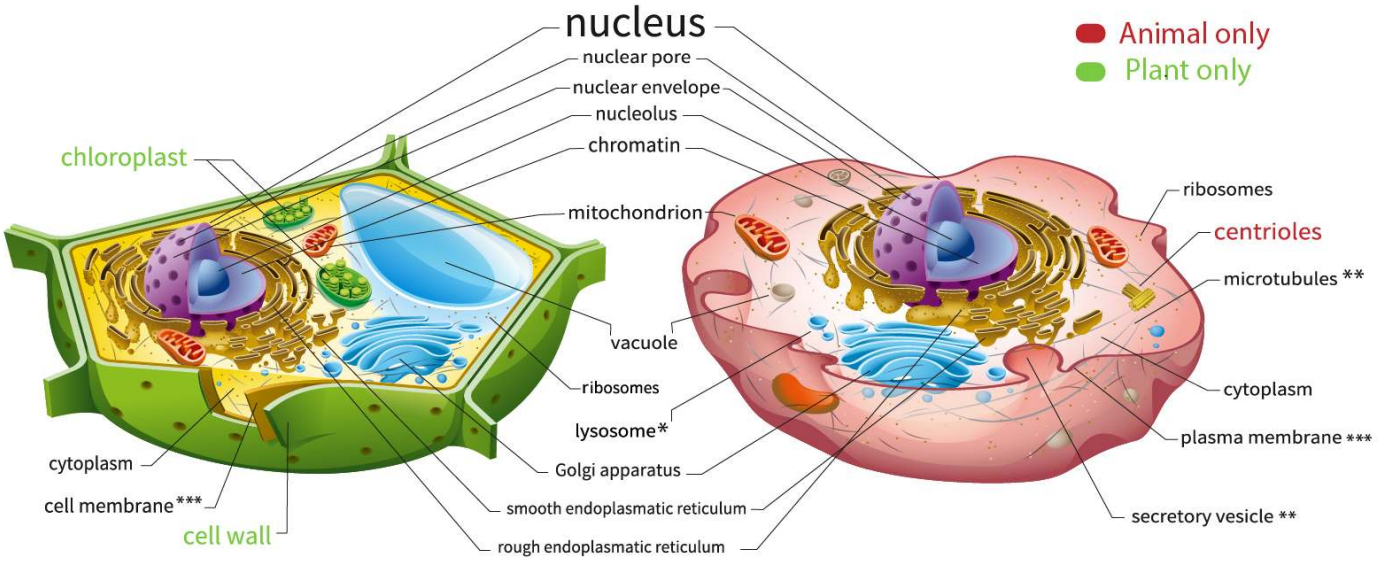
µm = Micrometre = one billionth of a meter











* Plants may have lytic vacuoles, which act like lysosomes in animal cells.
** Although they're not labelled here, plant cells have microtubules and secretory vesicles, too.
*** Cell membrane and plasma membrane are just different names for the same structure.



https://www.youtube.com/watch?v=JufLDxmCwB0

WATCH: THE OPERATING SYSTEM of LIFE



WATCH: THE CITY of ANIMAL CELLS



WATCH: PLANT CELLS

https://www.pbslearningmedia.org/resource/6279638b-2847-406c-9fac-816a15c927fd/plant-cells-crash-course-biology-6/

https://www.pbslearningmedia.org/resource/42d303b4-20cb-46e5-b21e-289e5168d3bf/eukaryopolis-the-city-of-animal-cells-crash-course-biology-4/