

Unit 2: Life Sciences



https://www.youtube.com/watch?v=GK_vRtHJZu4

Topic 1: Cells

Students will:

- explain that all organisms are made of cells
- define the word “cell” as the smallest living thing
- use a microscope to see cells
- label the different parts (organelles) of a cell
- describe the job of each cell organelle

Introduction

- How do babies get **bigger**?



by adding more LEGO “bricks”!



Introduction



- Bricks = Cells
- The “bricks” that make all living things grow bigger are called cells

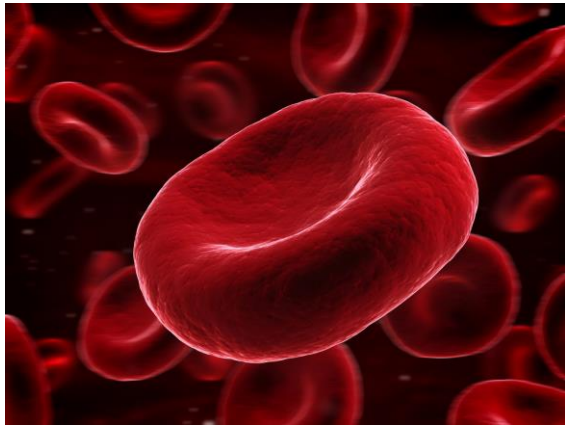


Your body is
made of
trillions of cells

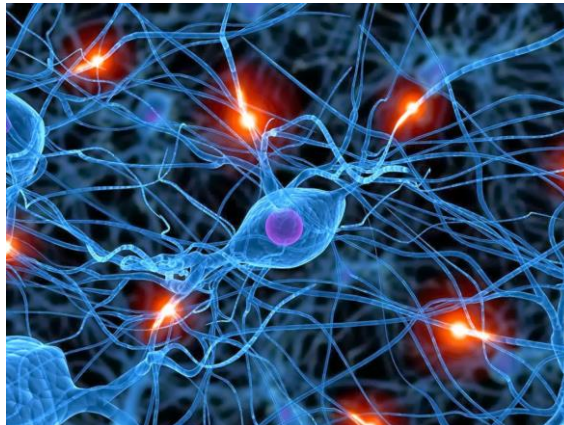
Cells

- What do cells look like?

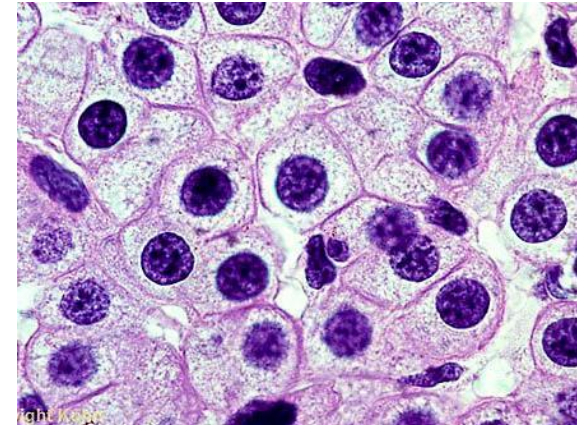
<https://youtu.be/gFuEo2ccTPA>



red blood cell



brain cells

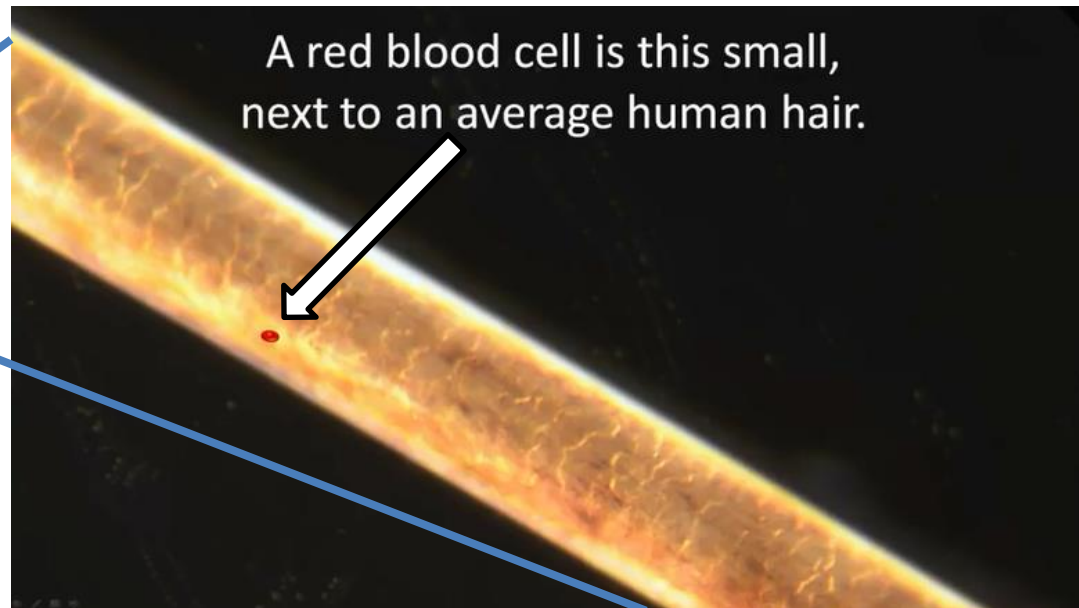


skin cells

Cells

- Cells are very small, and we cannot see them with our eyes.

<https://www.youtube.com/watch?v=Tfy1mOT-gEQ>



Microscopes

- We can use a microscope to see cells.
- A **microscope** is a machine that lets us see very small things.



Microscopes

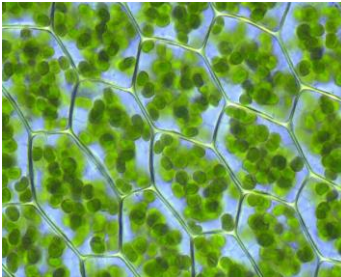
- Microscopes work by using magnification.
- **Magnification:** Making something look bigger



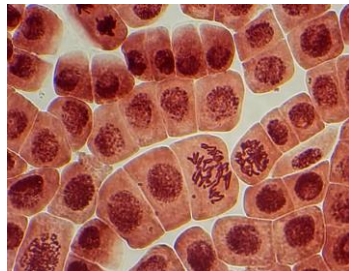
Microscopes

- Microscopes are responsible for our understanding of what cells look like.
- They allow us to see what is invisible to the naked eye, helping us understand how life works.

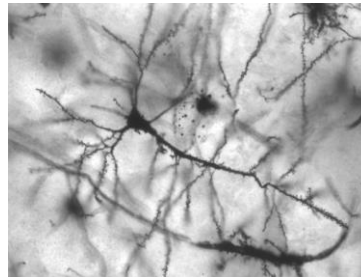
Chloroplasts in plant cells



Animal cells undergoing cell division



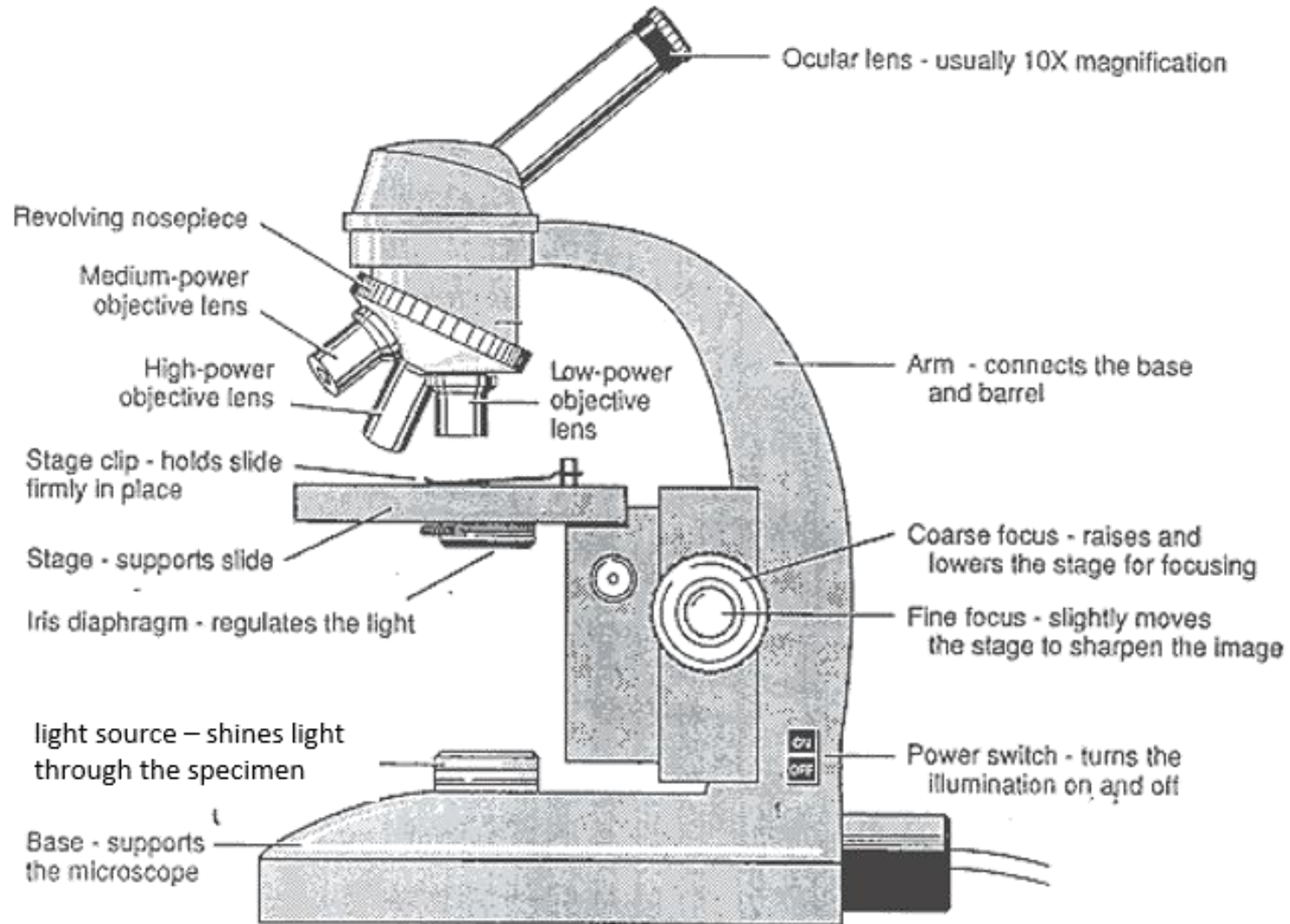
Neurons in the human brain



Sperm cells fertilizing an egg



Parts of a Light Microscope



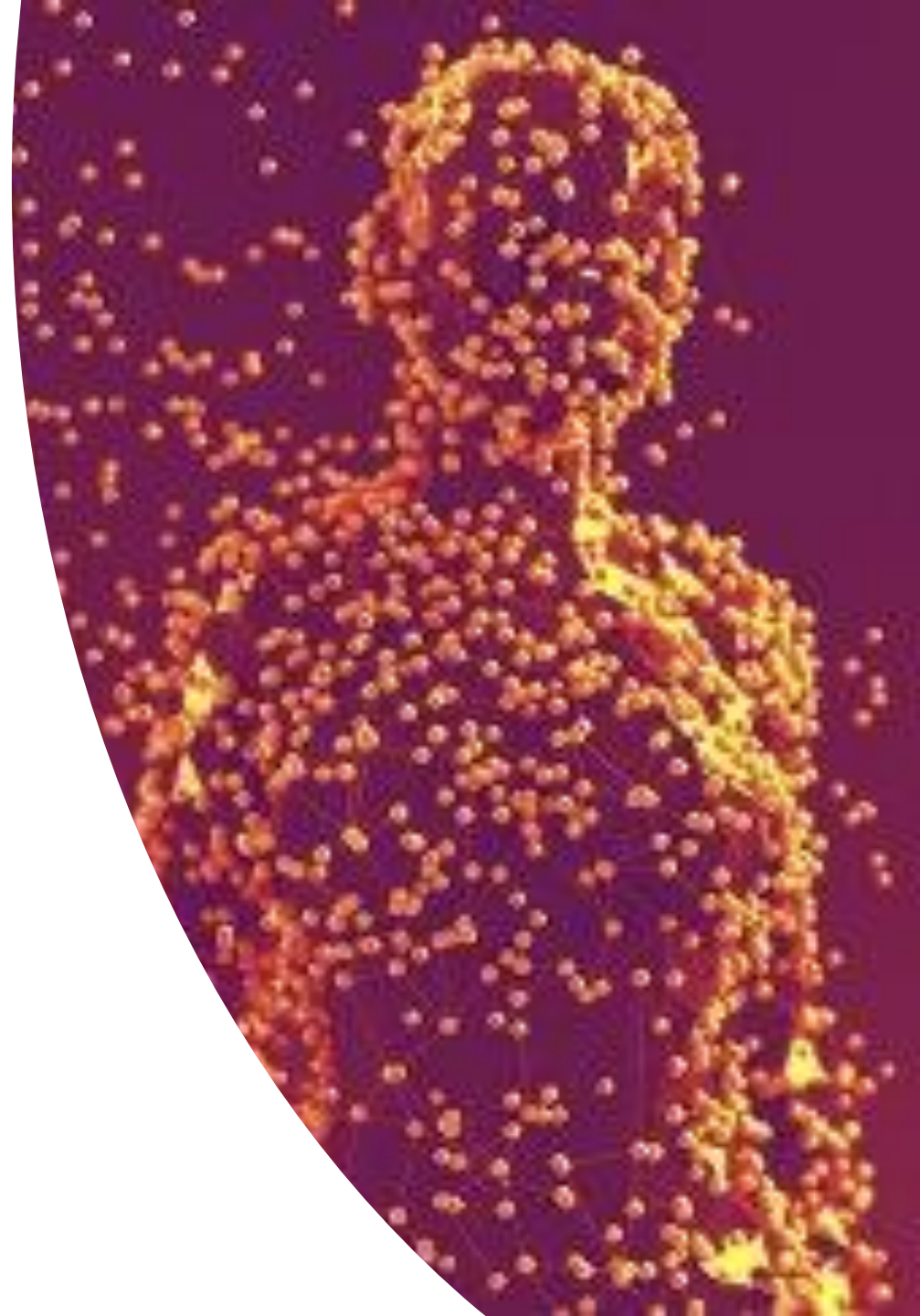
Practice Using the Microscope

- DAY 1: Look at
 - Your hair
 - Newspaper letter “e”
- DAY 2: Look at cells from:
 - Onion
 - The inside of your cheek!!



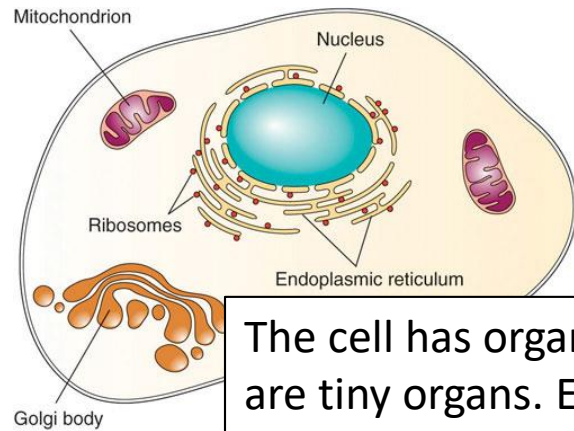
Cells

- A cell is the smallest living thing
- A cell can perform all functions of life:
 1. Take in nutrients (food)
 2. Get energy
 3. Grow
 4. Reproduce
 5. Remove waste

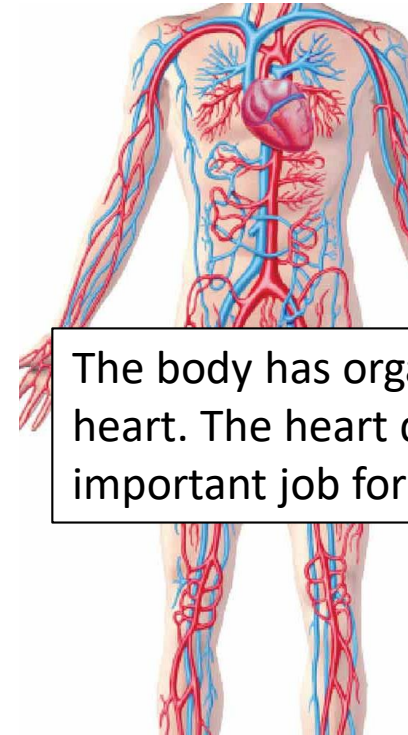


Cell Parts

- Each cell has different parts and each part has its own job to do.
- The parts of the cell are called organelles.
 - Your heart is an organ that moves blood around your body.
 - Organelles are tiny organs.



The cell has organelles, which are tiny organs. Each one has an important job

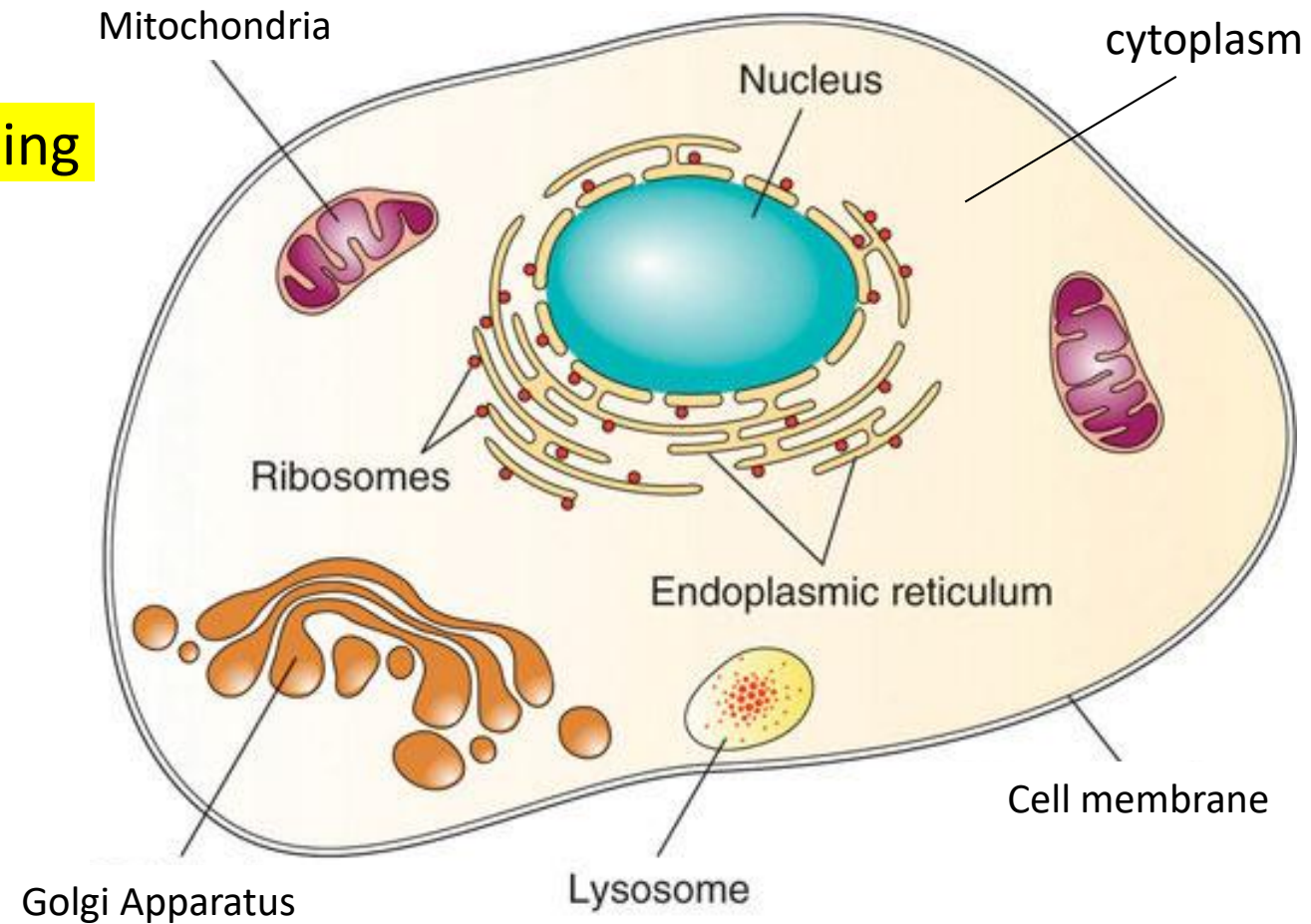


The body has organs, like your heart. The heart does an important job for your body.

Cell Parts

- There are 8 main organelles.

Which organelle is missing from your picture?

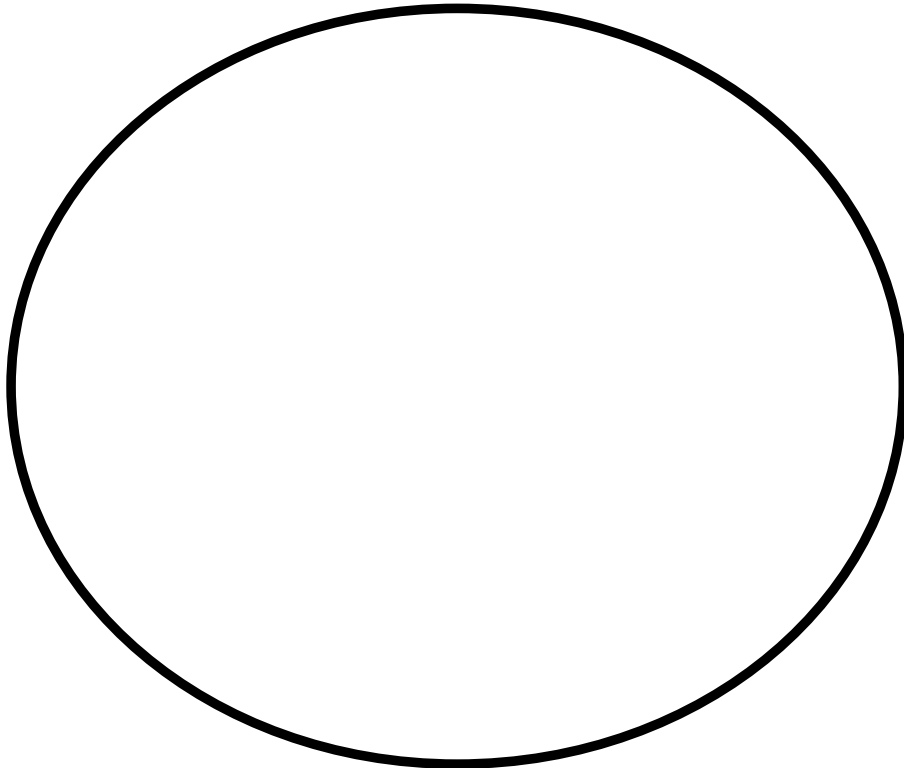


Take a Tour of the Cell

- Watch this video to learn about each organelle:
<https://youtu.be/8llzKri08kk?t=187> (start at 3:05)

Cell Parts (organelles):

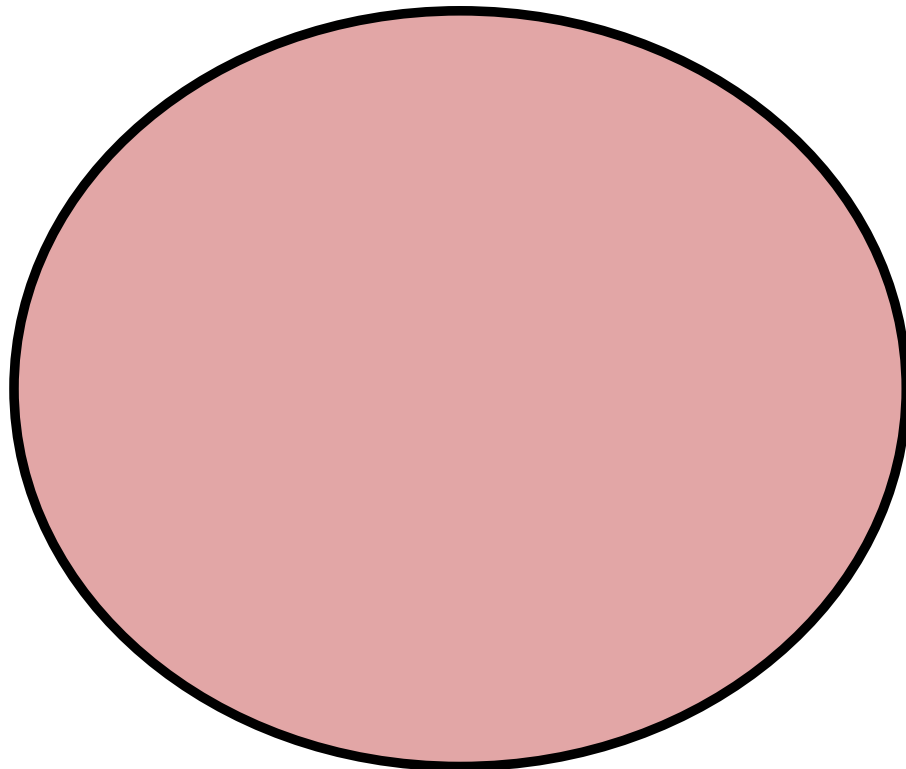
Cell Membrane – a thin stretchy layer around the cell that controls what goes in and out of the cell.



The cell membrane is like a fence with a guard.

Cell Parts (organelles):

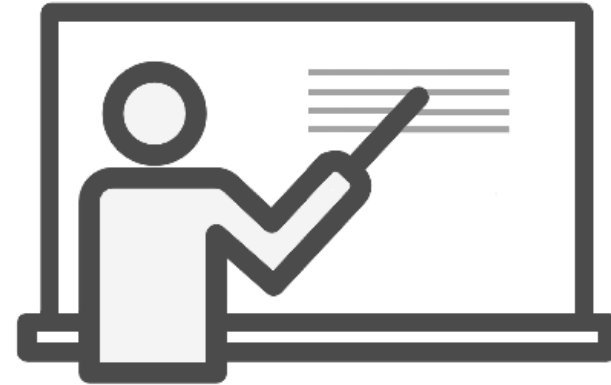
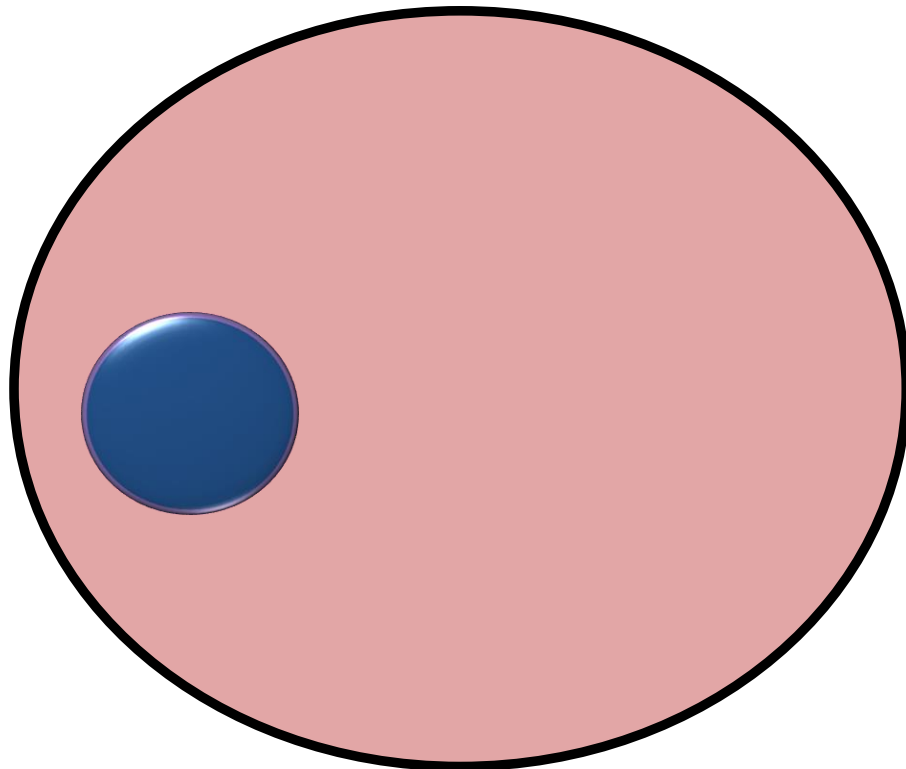
Cytoplasm - a gel-like material inside the cell that holds other organelles in place, like jello.



The cytoplasm is like jello

Cell Parts (organelles):

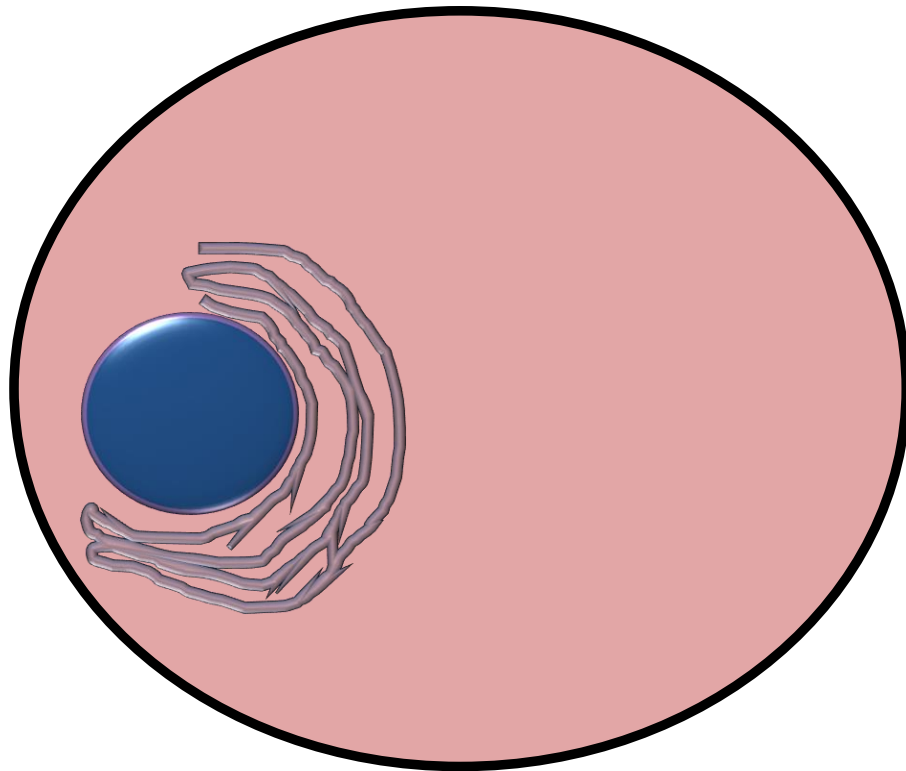
Nucleus – Holds the DNA. The DNA is like a set of instructions that tell the cell what to do.



The nucleus is like a teacher or boss who gives instructions on what to do.

Cell Parts (organelles):

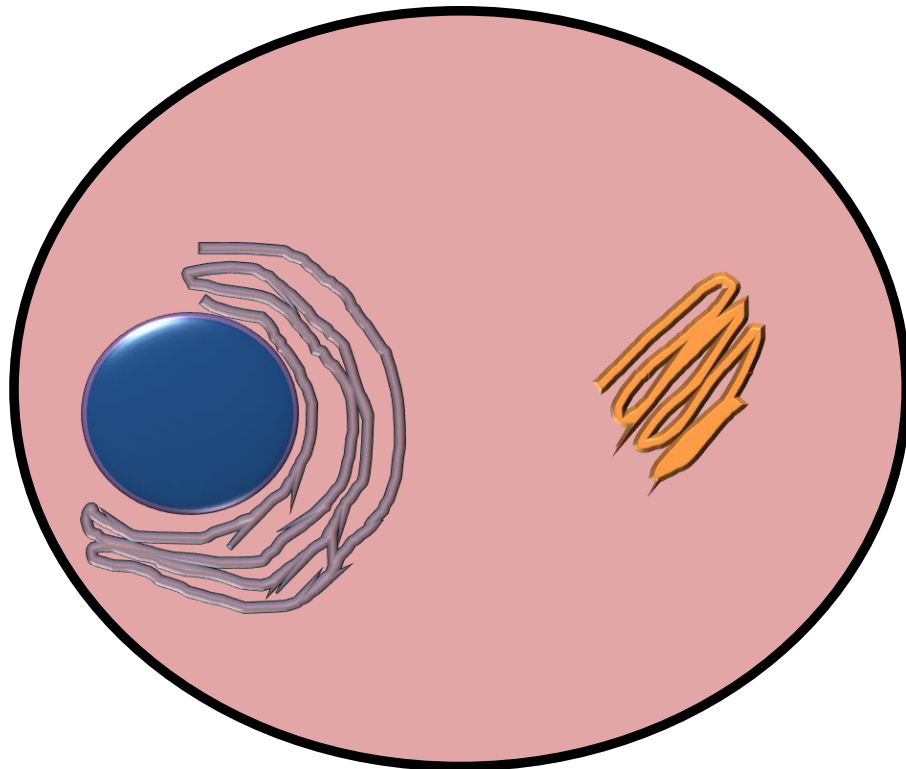
Endoplasmic Reticulum – moves materials around the cell, like a road.



The endoplasmic reticulum is like the roads.

Cell Parts (organelles):

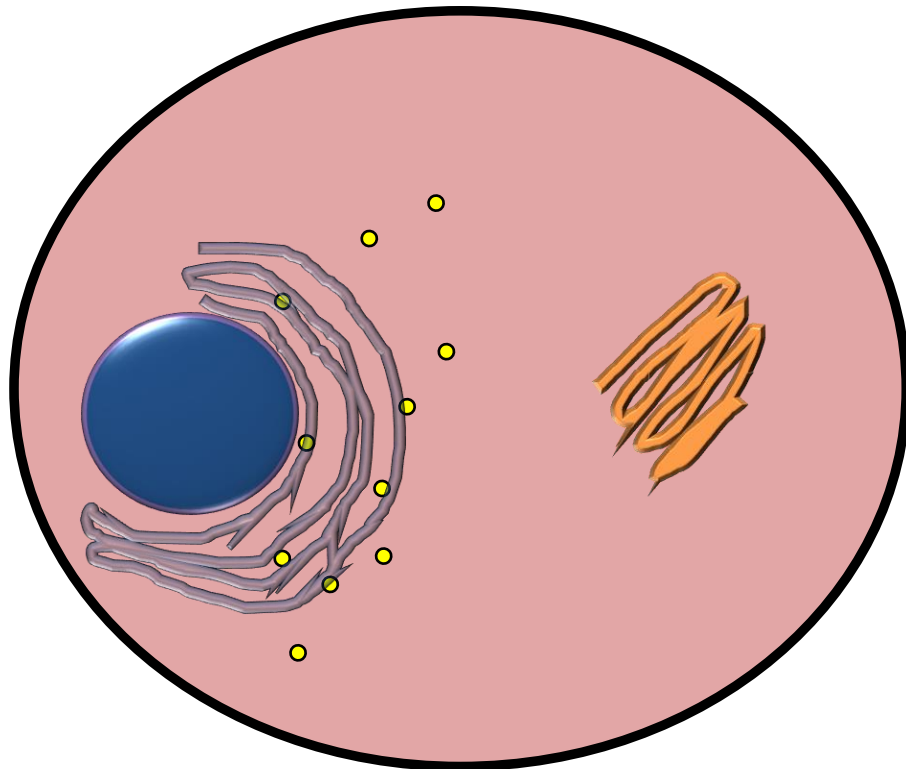
Golgi Apparatus - are used to sort, package, and deliver proteins and energy, like a post office.



The Golgi Apparatus is like the post office.

Cell Parts (organelles):

Ribosomes - make proteins for the cell, like a little factory.

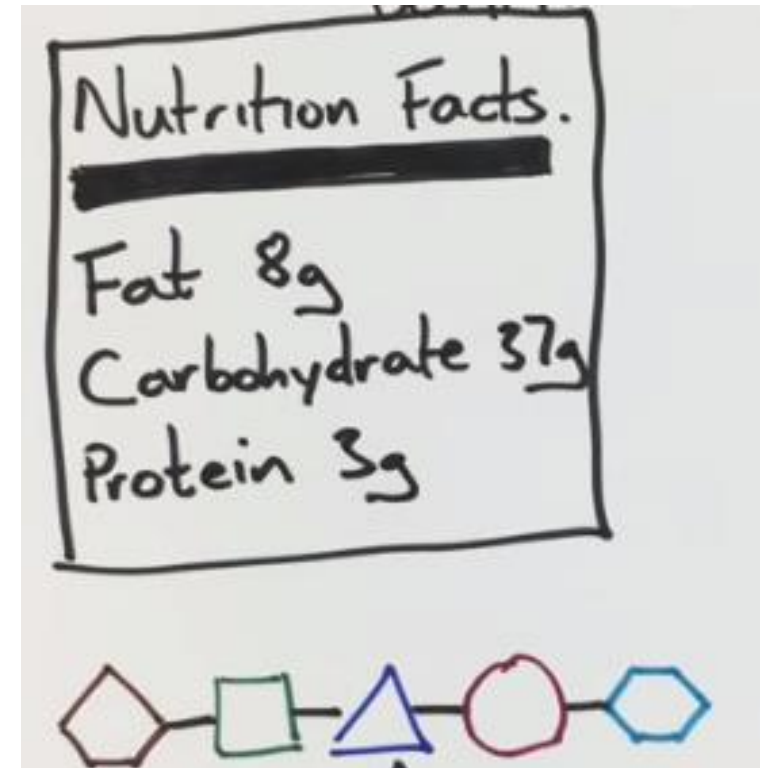


The ribosomes are like a factory that makes important things but does not make pollution.



What is a protein?

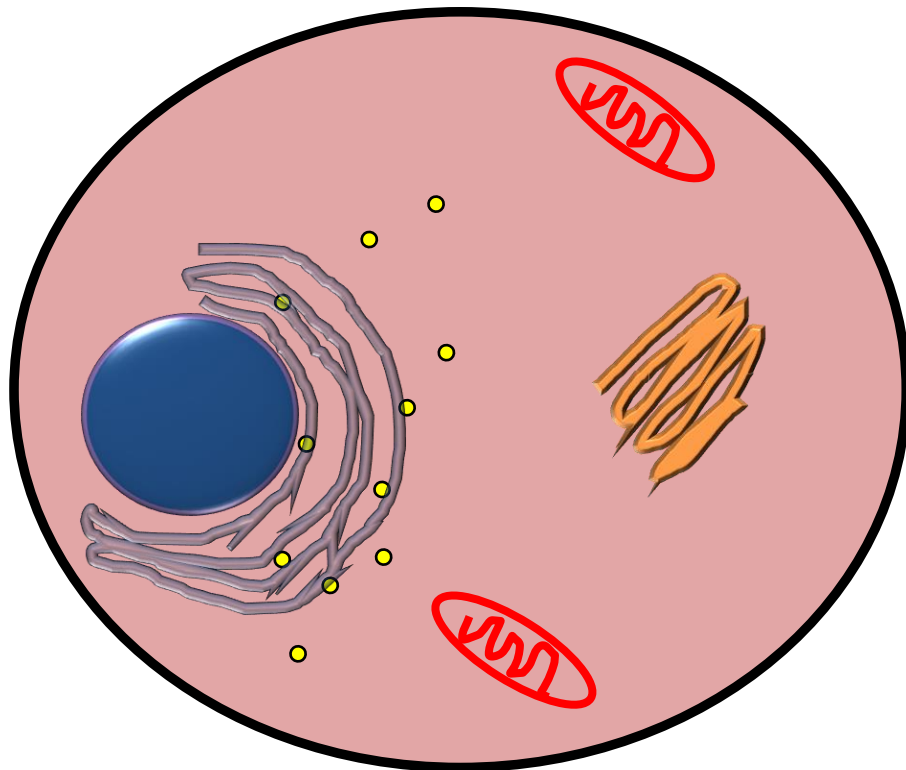
- A protein is a chemical made by the cell that may have any of the following jobs:
 - Talking to other cells
 - Building your muscles so you can move
 - Helping your body heal when it is sick or hurt
 - Making new cells
 - Giving energy



<https://youtu.be/NbLdAho694A>

Cell Parts (organelles):

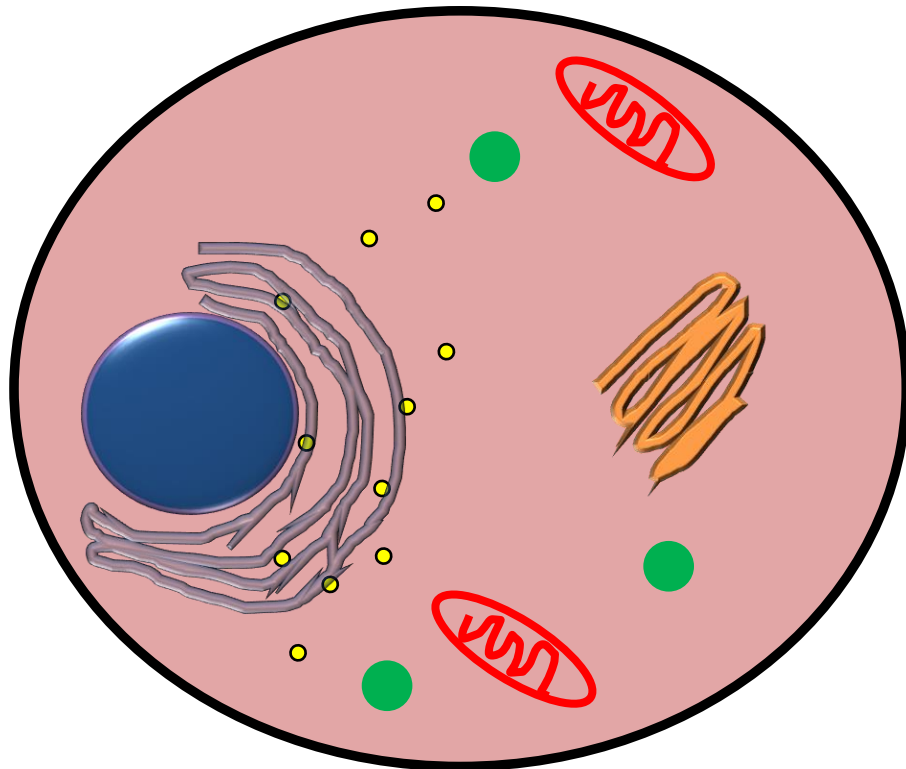
Mitochondria - break down food and release energy to the cell; sometimes called the “powerhouse of the cell”



The mitochondria is like a battery because it gives the cell energy.

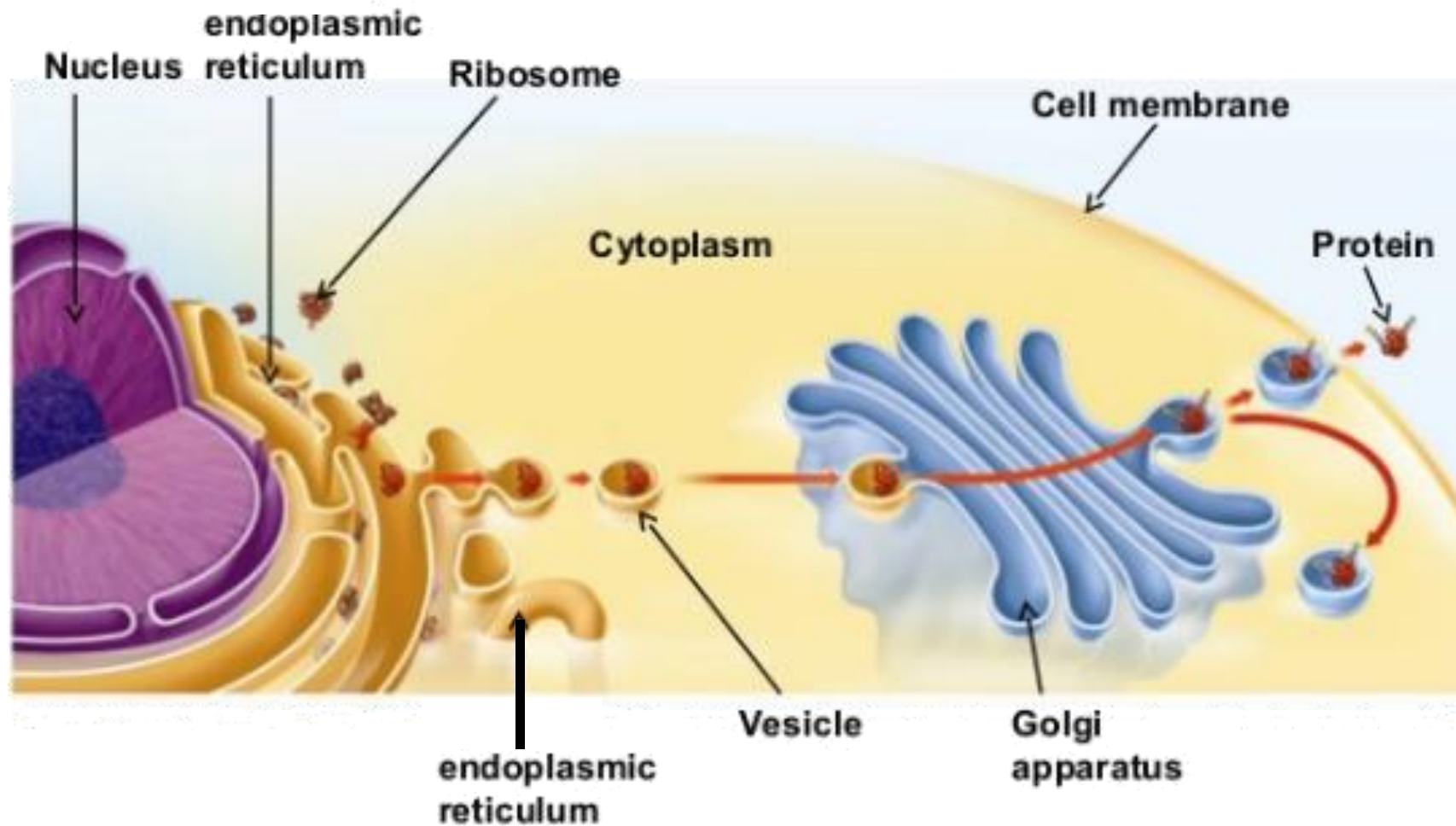
Cell Parts (organelles):

Lysosomes - are packages of chemicals used to digest waste.



The lysosomes are like the garbage and recycling bins.

How are proteins made?



Animal Cell:

