

Cell Cycle

- Cells need to divide for:
- So the entire organism can grow
- To replace any old dead cells
- To repair damaged cells

Somatic Cell Cycle

- **Somatic cells** are body cells like skin cells, bone cells, muscle cells, etc. (not egg or sperm cells). They have complete set of genetic information and can divide by themselves. When they divide, new cells are identical to the parent cell.
- **Mitosis:** is the division of the nucleus in Somatic Cells

3 Main Stages:

- Interphase

Cell grows, lives its regular life, and duplicate DNA in the future division.

Cells spend most of their time in this stage. Depending on cell type it divides more or less often. Some cells (like neurons in our spinal cord) divide once in 50 year (practically, you cannot get them replaced, if they are damaged). Other cells divide very often like hair, nails, they get replaced very quickly, in a month. In 5 year period, most of our body cells get replaced.

- Mitosis

Division of nucleus. This process consist of 4 separate phases abbreviated as PMAT. Prophase, Metaphase, Anaphase, Telophase

- Cytokinesis

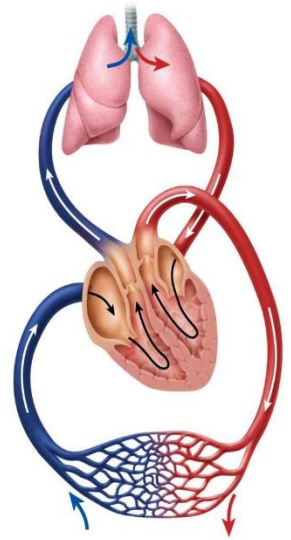
Division of cytoplasm, organelles, cell membrane and formation of two separate cells. Cysto- stands for cytoplasm; kinesis stands for Kinema, or cinema in English or moving (cinema stands for moving, cinema theater perform moving pictures)

The Heart

Why is the heart divided into 2 distinct halves?

Blood Vessels

<u>A</u> rteries	○ Thick walled blood vessels that carry blood away from the heart ○ Usually carry blood that is rich in O_2 - The main artery is called the aorta ○ Blood is under greater pressure because it is pumped away from the heart ○ Consists of 2 layers to accommodate this high pressure
<u>V</u> eins	○ Thin walled ○ Blood vessels that return blood into the heart ○ Usually carry blood that is rich in CO_2 ○ Many veins have valves - Valves function to stop blood from pooling in extremities
Capillaries	○ Arteries and veins are joined by capillaries ○ Thin walled blood vessel that enables the exchange of gases, nutrients, and wastes between blood and body tissues ○ Thin walled allows diffusion to occur ○ Every part of the body is supplied by a capillary action



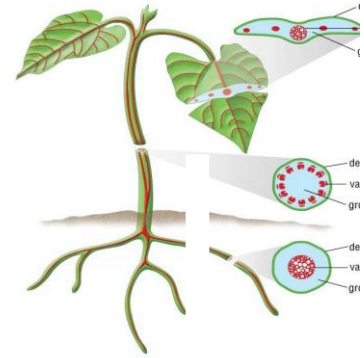
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Tissue Systems in Plants

Tissue is a group of specialized cells who work together

Meristematic cells are

Meristematic cells are located:



Plant Tissues:

Tissue Group and its general function	Tissue	Location, Special Features and Functions
Dermal Tissue – tissue found outside the plant	Epidermal tissue	○ Thin layer of cells which cover the non – woody parts or surfaces of a plant ○ Like the leaves
	Periderm tissue	○ Tissues that cover the woody parts of the plant ○ Like the bark, stems, and roots
Vascular tissue – it's a transportation system that moves water, minerals, and other chemicals round the plant	Xylem	○ Transports water and minerals from the roots to the leaves and stems ○ Only moves in a upward direction ○ Usually passive cells as they are dead ○ Are hollow so they can transport more water etc.
	Phloem	○ Transports dissolved food materials and hormones throughout the plant ○ Usually active cells
Ground tissue – is the filler between dermal and vascular tissue	Ground tissue	○ in green parts of plant, they provide nutrients ○ in roots, they store carbohydrates ○ in stems, they provide storage and support