

## Plant Anatomy

**Plant anatomy** or **phytotomy** is the general term for the study of the internal structure of plants. Originally it included plant morphology, the description of the physical form and external structure of plants.

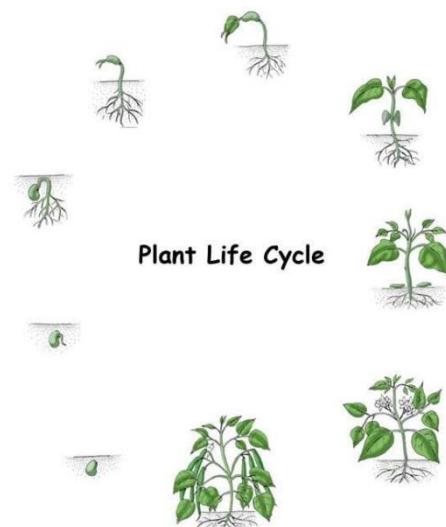
While many plants can grow from bulbs, cuttings or divisions, the majority of them are grown from seeds.

All seeds contain new plants, called embryos. Most seeds have an outer cover, or seed coat, which protects and nourishes the embryo. There are of various types of seeds, which come in many shapes and sizes.

Seeds remain dormant, or sleep, until certain growing conditions are met. If kept cool and dry, this can sometimes take years.

### Seed Life Cycle:

Germination Depending on the type of seed, it may or may not require soil or light to germinate. However, most all plants need water in order for this process to occur. As water is absorbed by the seed, it begins to expand or swell, eventually cracking or splitting the seed coat. Once germination occurs, the new plant will gradually begin to emerge. The root, which anchors the plant to the soil, grows downward. This also enables the plant to take up water and nutrients required for growth. The shoot then grows upward as it reaches for light. Once the shoot reaches the surface, it becomes a sprout. The sprout will eventually take on a green color (chlorophyll) upon developing its first leaves, at which time the plant becomes a seedling.



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**Basic Plant Life Cycle: Seedlings, Flowers, & Pollination** Once the seedling develops these first leaves, it is able to make its own food through photosynthesis. Light is important for this process to occur, as this is where the plant gets its energy. As it grows and becomes stronger, the seedling changes into a young adult plant, with many leaves. Over time, the young plant will begin to produce buds at the growing tips.

These will eventually open up into flowers. Pollination must occur in order for fertilization to happen, which creates new seeds.

The flowers transform into fruiting bodies, which protect the numerous seeds that are inside. As the seeds mature or ripen, the flowers will eventually fade away or drop. Once the seeds have dried, they are ready to be planted (or stored), repeating the life cycle of a flowering plant all over again.

### **The Cell:**

Cell is a unit of biological structure and activity. It consists of an organized mass of protoplasm surrounded by a protective and selectively permeable covering called plasma membrane.

Protoplasm of a cell is called protoplast. It is made of plasma-lamma, cytoplasm, vacuoles and nucleus. In plant cells, fungi, bacteria and cyanobacteria, a cell is also surrounded by a cell wall.

### **Cell Membrane Function and Structure**

The cell membrane (plasma membrane) is a thin semi-permeable membrane that surrounds the cytoplasm of a cell. Its function is to protect the integrity of the interior of the cell by allowing certain substances into the cell while keeping other substances out. It also serves as a base of attachment for the cytoskeleton in some organisms and the cell wall in others. Thus the cell membrane also serves to help support the cell and help maintain its shape.

Another function of the membrane is to regulate cell growth through the balance of endocytosis and exocytosis. In endocytosis, lipids and proteins are removed from the cell membrane as substances are internalized. In exocytosis, vesicles containing lipids and proteins fuse with the cell membrane increasing cell size. Animal cells, plant cells, prokaryotic cells, and fungal cells have plasma membranes. Internal organelles are also encased by membranes.

The cell membrane is primarily composed of a mix of proteins and lipids. Depending on the membrane's location and role in the body, lipids can make up anywhere from 20 to 80 percent of the membrane, with the remainder being proteins. While lipids help to give membranes their flexibility, proteins monitor and maintain the cell's chemical climate and assist in the transfer of molecules across the membrane.