# Plant Histology

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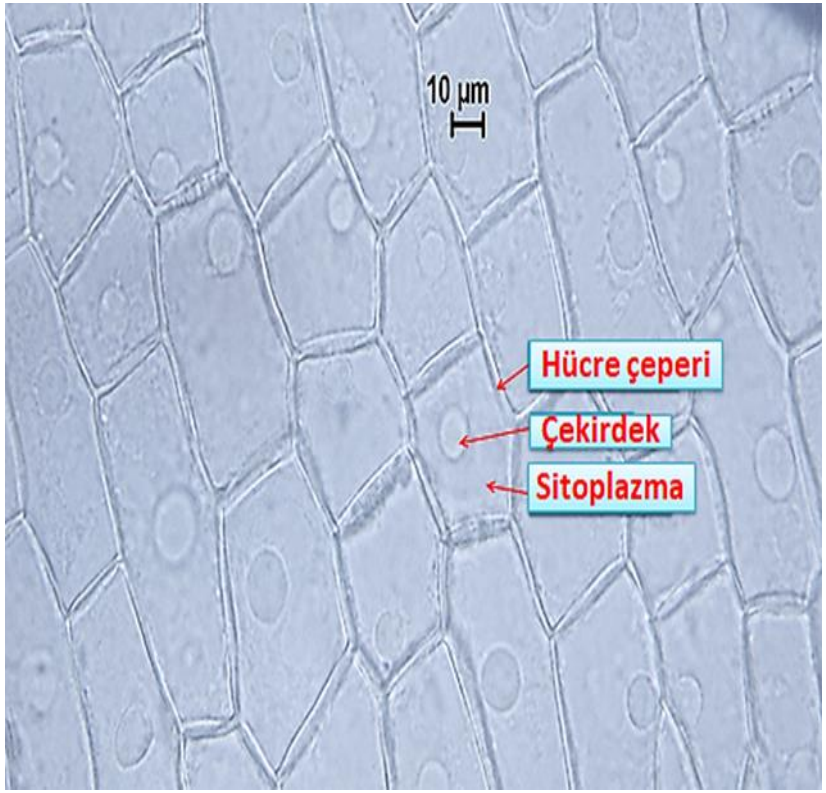
(1)

- Botany is the branch of biology concerned with the scientific study of plants. The disciplines of botanical science, the plants of which have studied their structures, are divided into three parts:

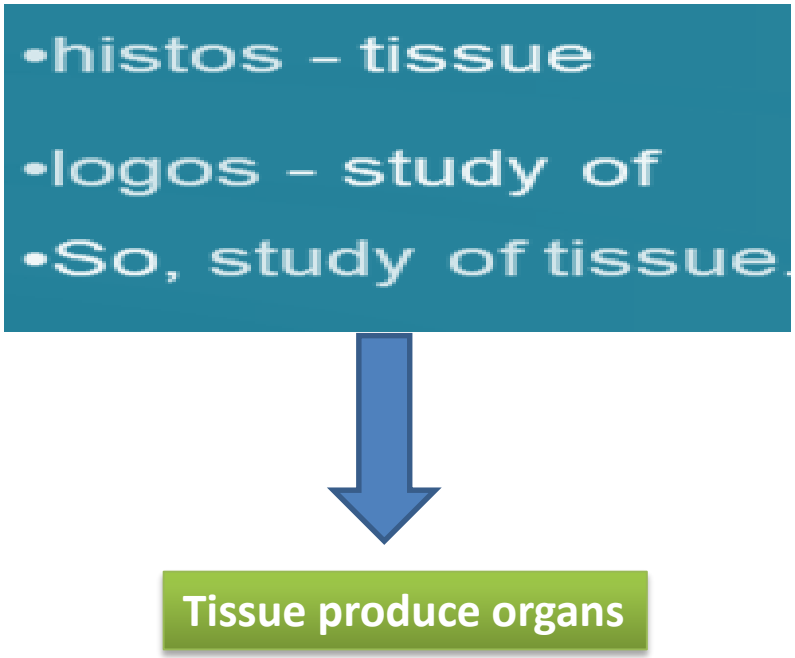
**1. CYTOLOGY i**s the study of cells. Cytology word into two parts. The suffix -logy, or -ology means the 'study of. cyto, which means “cell” and is derived from the Greek word kytos, meaning “hollow vessel” or “container”. Put these two together, and we have our definition: cytology is the study of cells.




**Cell produce tissues**

## 2. **HİSTOLOGY** (Tissue Science)

***Histology*** is the study of tissues and cells under a microscope. Histology is obviously related to Cell Biology (Cytology) and to Anatomy.



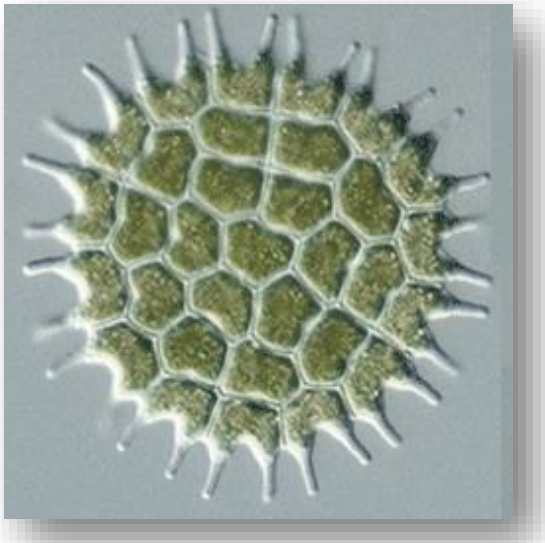

Plants do have a higher level of structure called **plant tissue systems**. A plant tissue system can be defined as a functional unit, which connects all organs of a plant.

## 3. **MORPHOLOGY** (ORGANOGRAPHİES OR ORGAN SCIENCE)

Scientific branch  name of investigation of organs i s morphology

# HİSTOLOGY

**Groups of cells, usually of the same shape and structure, which form a collective system for a given task, are called tissue. The science branch that studies these tissues is called Histology derived from the Greek word Histos.** The tissue occurs as a result of cell division. Unicellular organism in dividing cells, although they constitute a new members separated from one another, dividing cells in multicellular organisms, together with a new cell wall are formed adjacent to each other. These membranes have passageways and protoplasmic structures called plasmadesmata, which pass matter and stimulus between two protoplasms through these passages. This is how the adjacent cell groups formed a tight relationship between the protoplasts occur tissues. Some primitive plant groups, in particular cells which are united independently combine together and give subsequently side view of a tissue. For example; *Pediastrum* ve *Gloeocapsa*. There is no cytoplasmic relationship between these cells. This is called **a pseudo-tissue** or **cell colony**.



***Pediastrum***

# The basic shape and relationships of Cells

As the cell expands in volume in the meristematic area, the primer cell wall takes on the shape of the lowest surface. So after mitosis, the pups want to get a shape close to the spherical shape. But there is no intercellular space between intensely co-existing cells. The cell therefore has a very superficial shape. **The base of the cell is a 14-faced polyhedron.** The number of faces can be 12-16 or more. The surfaces are pentagonal. But they can also be tetragonal and hexagonal. We will see something similar in soap bubbles. The increase in cell volume during growth leads to a further increase in cell surface. This makes it impossible for all surfaces to become contact with the surfaces of neighboring cells. Therefore, the intercellular space system starts to form. In some tissues, intercellular spaces reach very large sizes and form air gaps and secretory channels.

# The importance of intercellular spaces system, formation mechanism and types

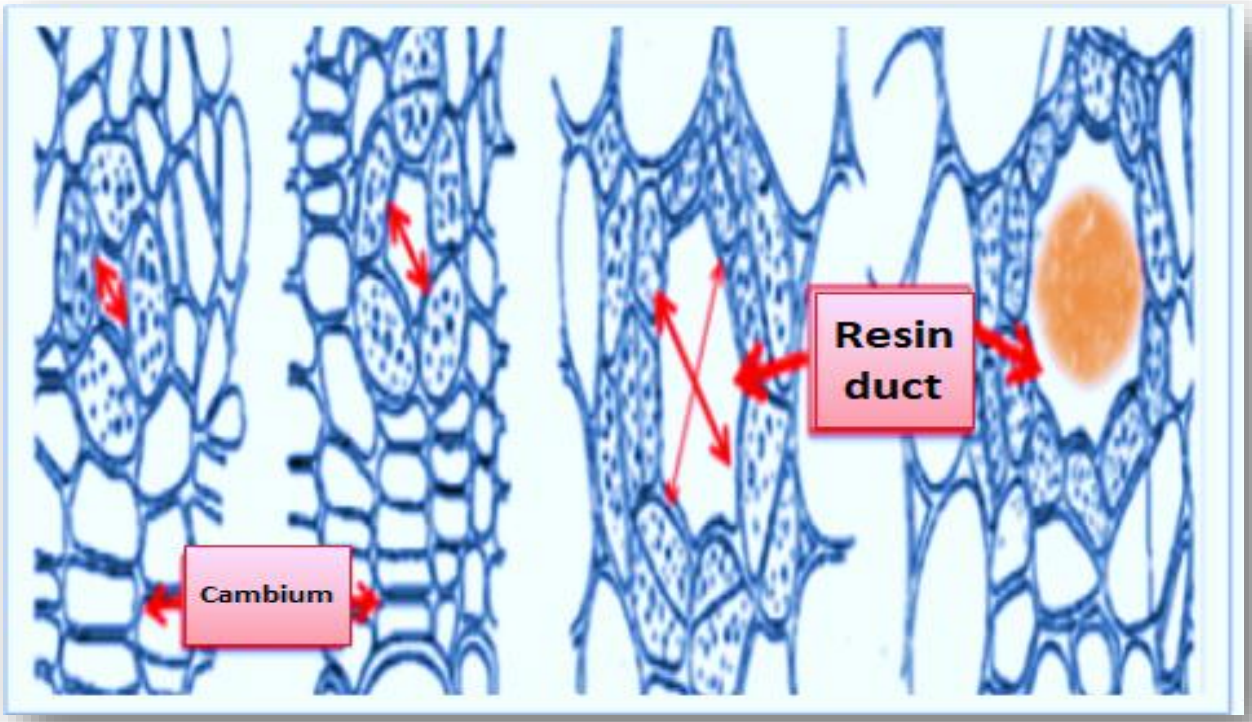
In mature tissues, spaces frequently occur between cells. These spaces are known as **intercellular spaces**. The spaces may be small, large as called **chambers** and elongated as called **canals**. The spaces may be considerably elongated in one plane as called **duct**.

**Based on the mode of formation, four types of intercellular spaces are distinguished.**

- **1. Schizogenous intercellular spaces,**
- **2. Lysigenous intercellular spaces,**
- **3. Schizo- Lysigenous intercellular spaces,**
- **4. Rhexigenic intercellular spaces.**

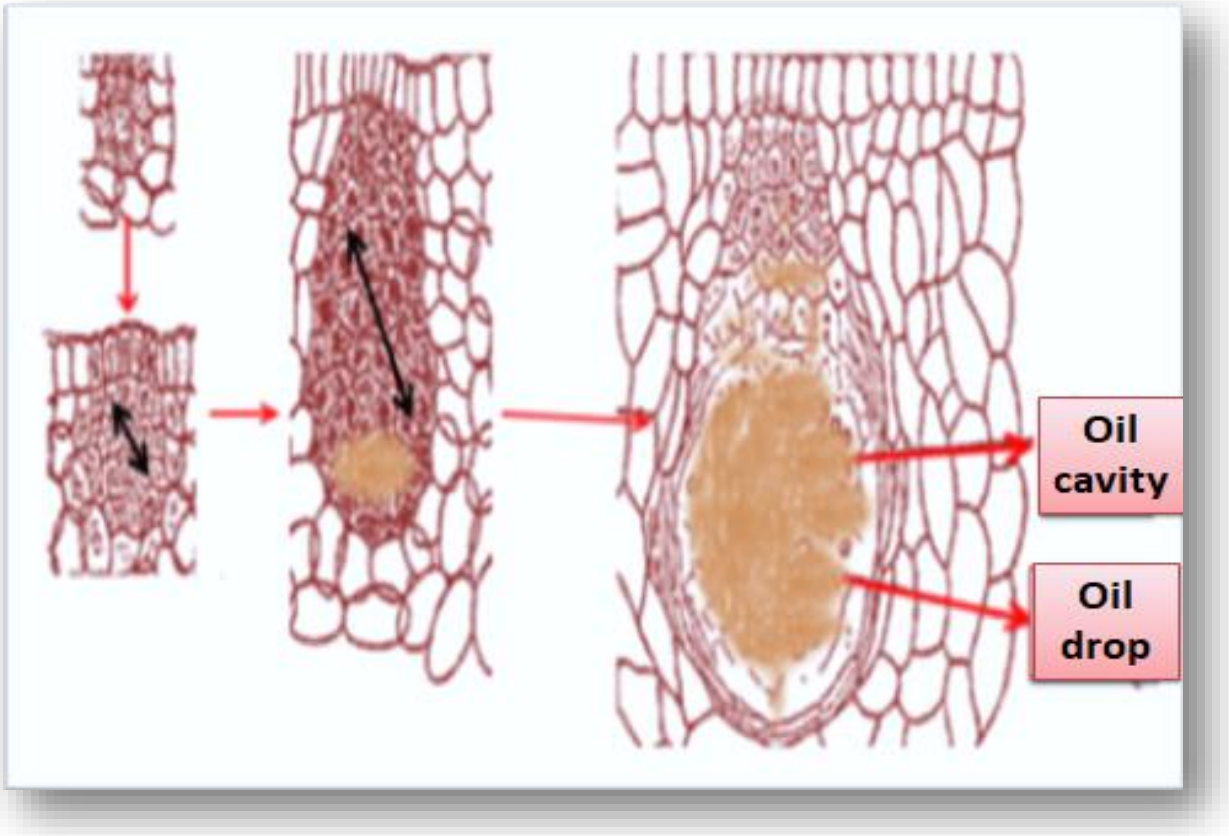
# 1. Schizogenous intercellular spaces

The most common intercellular spaces result from separation of cell walls from each other along more or less extended areas of their contact. The resin ducts in the Coniferales, and the secretory ducts in the Compositae and Umbelliferae are the typical examples.



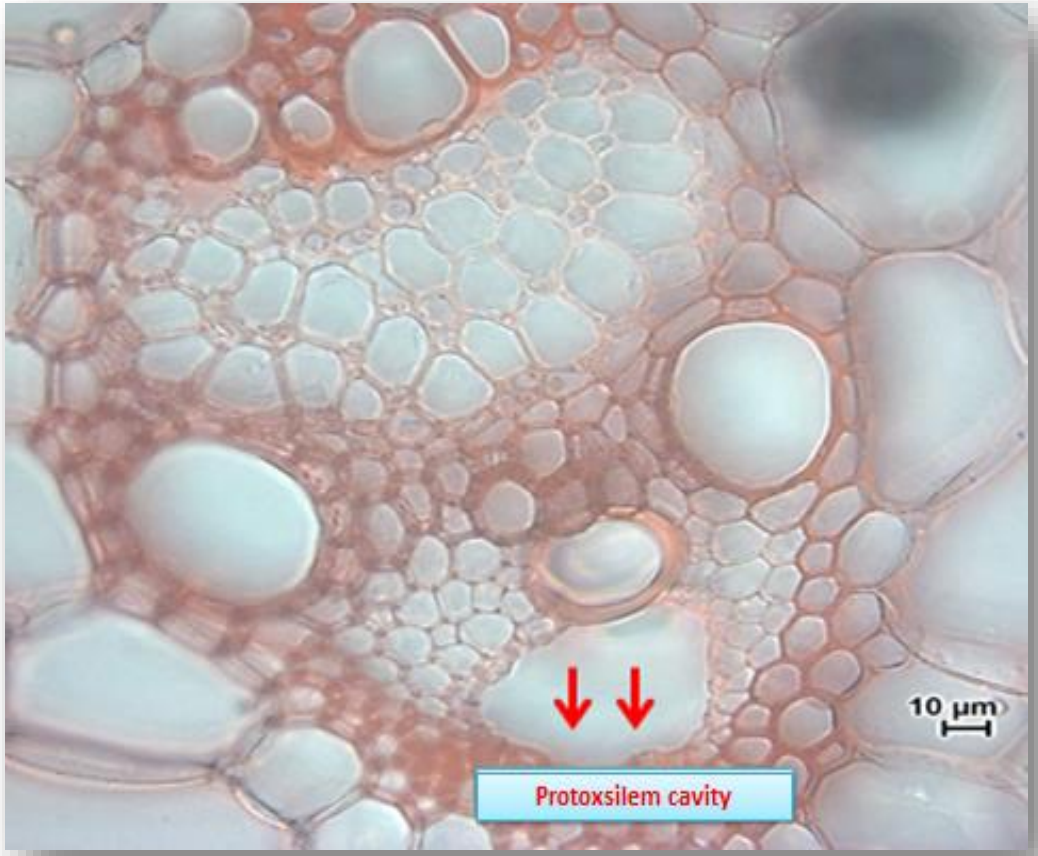
# 2. Lysigenous intercellular spaces:

This type of intercellular space arises through dissolution of entire cells, which are therefore called **lysigenous intercellular spaces**. *Citrus* and *Gossypium* are good examples.



# 3.Schizo- Lysigenous intercellular spaces

Schizo- Lysigenous intercellular has features between Schizogenous and Lysigenous intercellular spaces. For example protoxsilem cavity.



# 4.Rhexigenic intercellular spaces

- The large cavities in the internodes of stems in many Gramineae are formed by cellular rhexis.