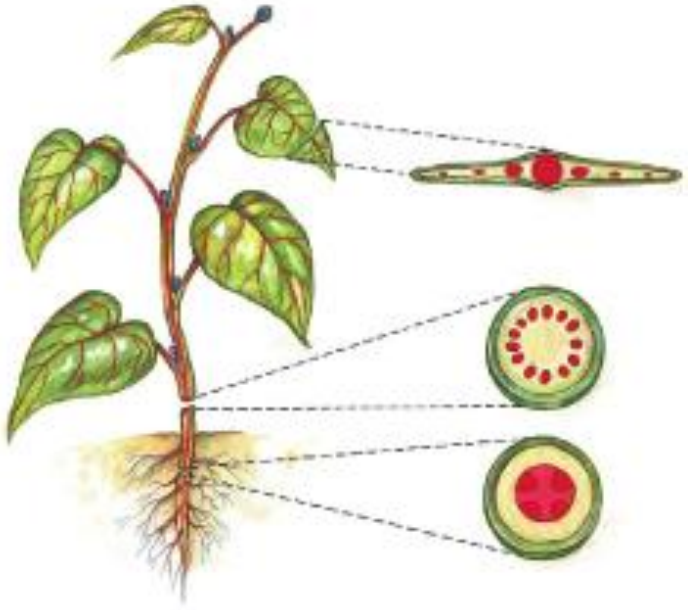
Plant Tissues

Plant Tissues

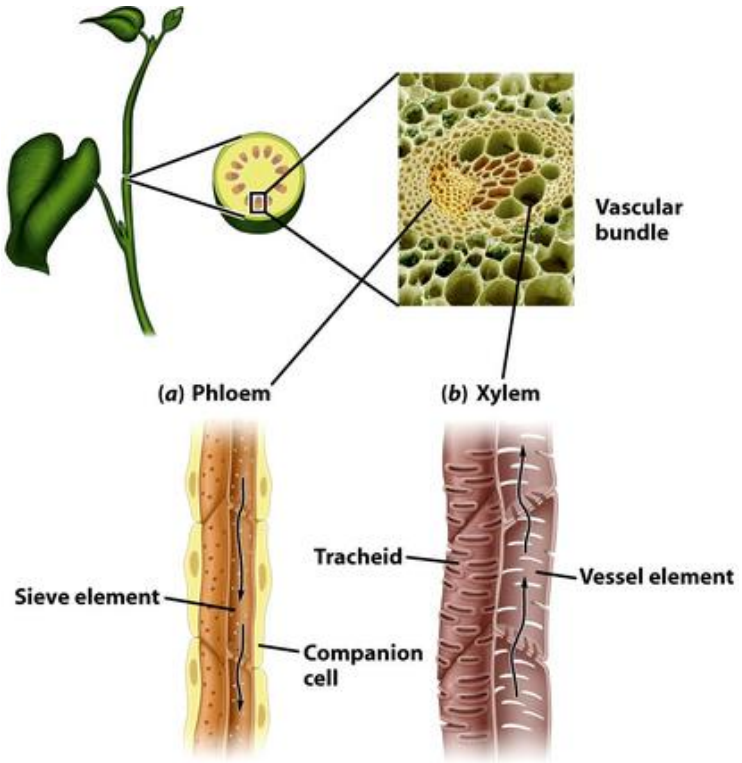
- Tissues are a group of cells, usually identical, that act together to carry out a specific function

- A plant has four main tissues
  - Vascular
  - Ground
  - Meristematic
  - Protective



Vascular Tissue

- This is **Xylem** and **Phloem**
- Xylem is divided into:
  - Vessel Elements
  - Tracheids



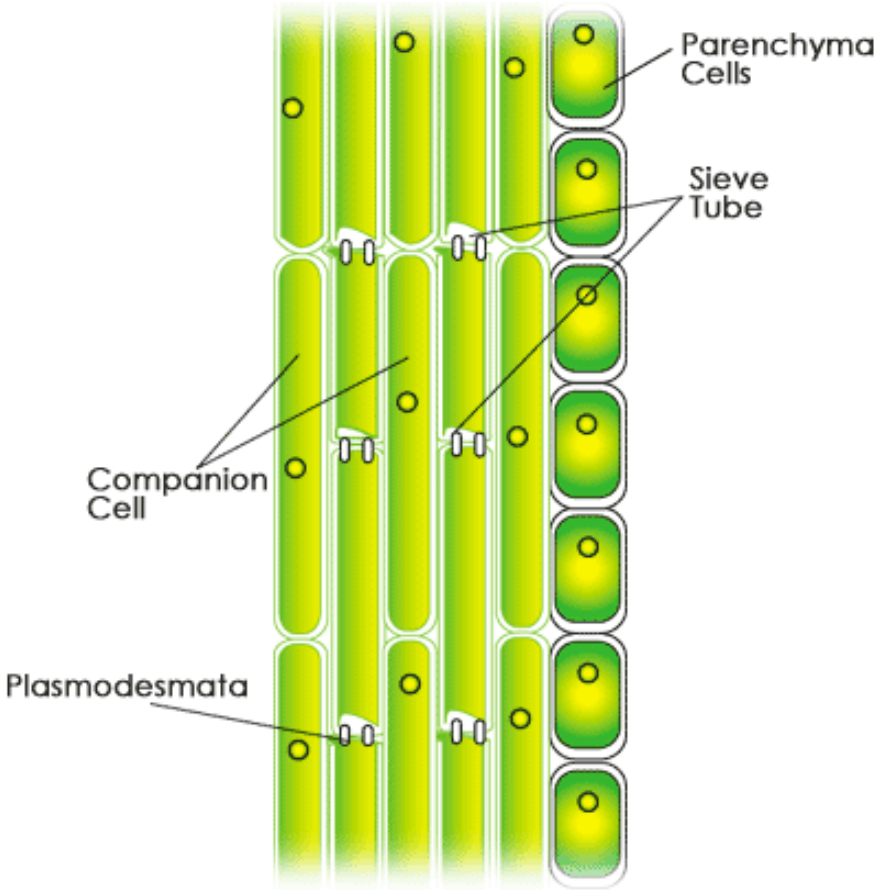
Vessel elements are like straws connected end to end (called perfora) and side by side (called a pit). *Found **only** in angiosperms.*

Tracheids are smaller versions of vessel elements. *Gymnosperms only have tracheids, but some angiosperms also have them.*

Vascular Tissue

Phloem

- Sieve tube
  - Interconnected with perforations
  - Lack nuclei
- Companion cells
  - Actively transports sugars into & out of sieve tubes



Ground Tissue

- There are 3 types:

1. **Parenchyma**

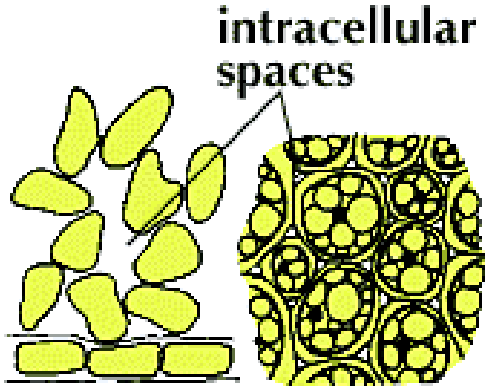
- most abundant
- provide support, store food and photosynthesize

2. **Collenchyma**

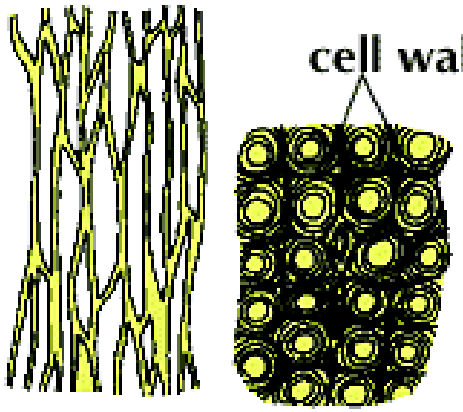
- rigid version of parenchyma

3. **Sclerenchyma**

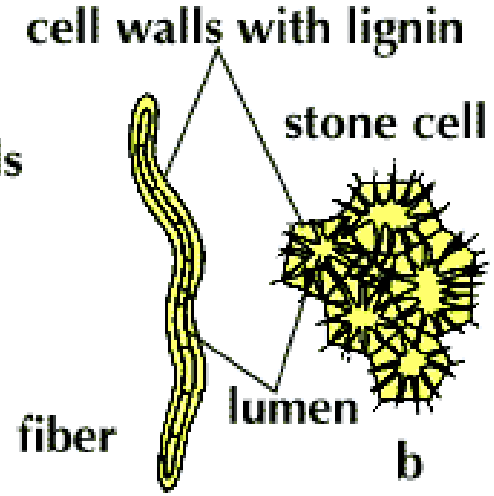
- dead parenchyma



Parenchyma Tissue



Collenchyma Tissue



Sclerenchyma Tissue

a lengthwise
b cross section

Meristematic Tissue

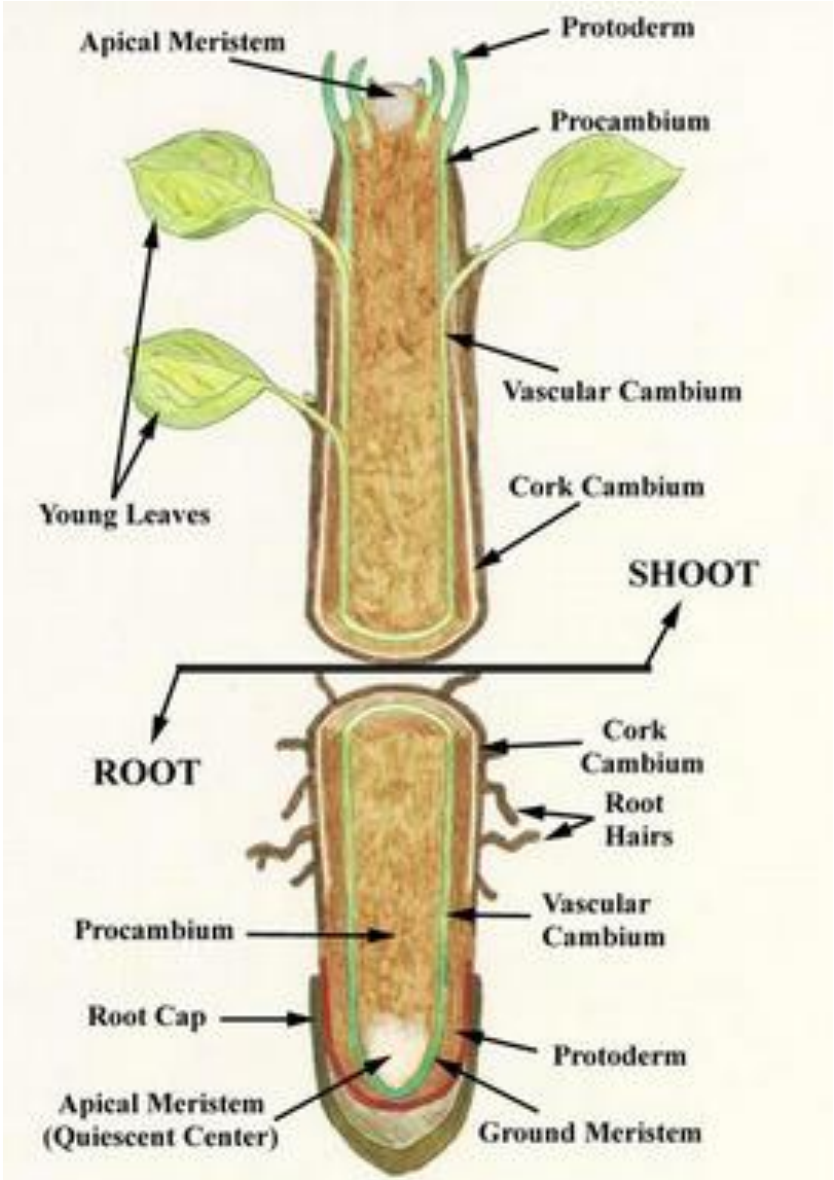
PRIMARY GROWTH (vertical)

- **Apical meristem** found at the tips of all plant parts
  - Root
  - Stem
  - Leaf

SECONDARY GROWTH (lateral)

- **Vascular Cambium**
  - grows new xylem and phloem

- **Cork Cambium**
  - grows new bark



Primary Meristem includes

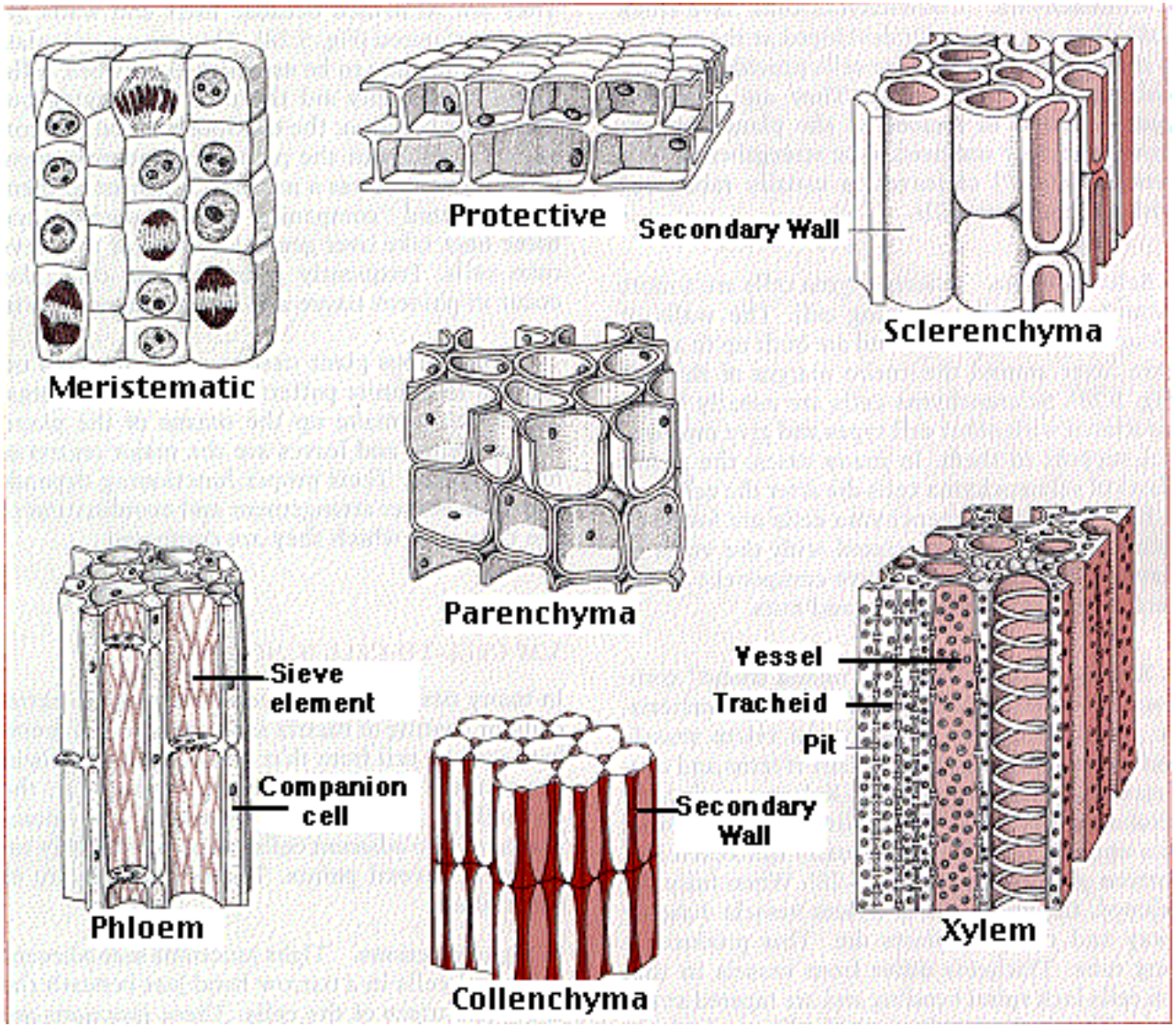
1. Protoderm
2. Procambium
3. Ground Meristem

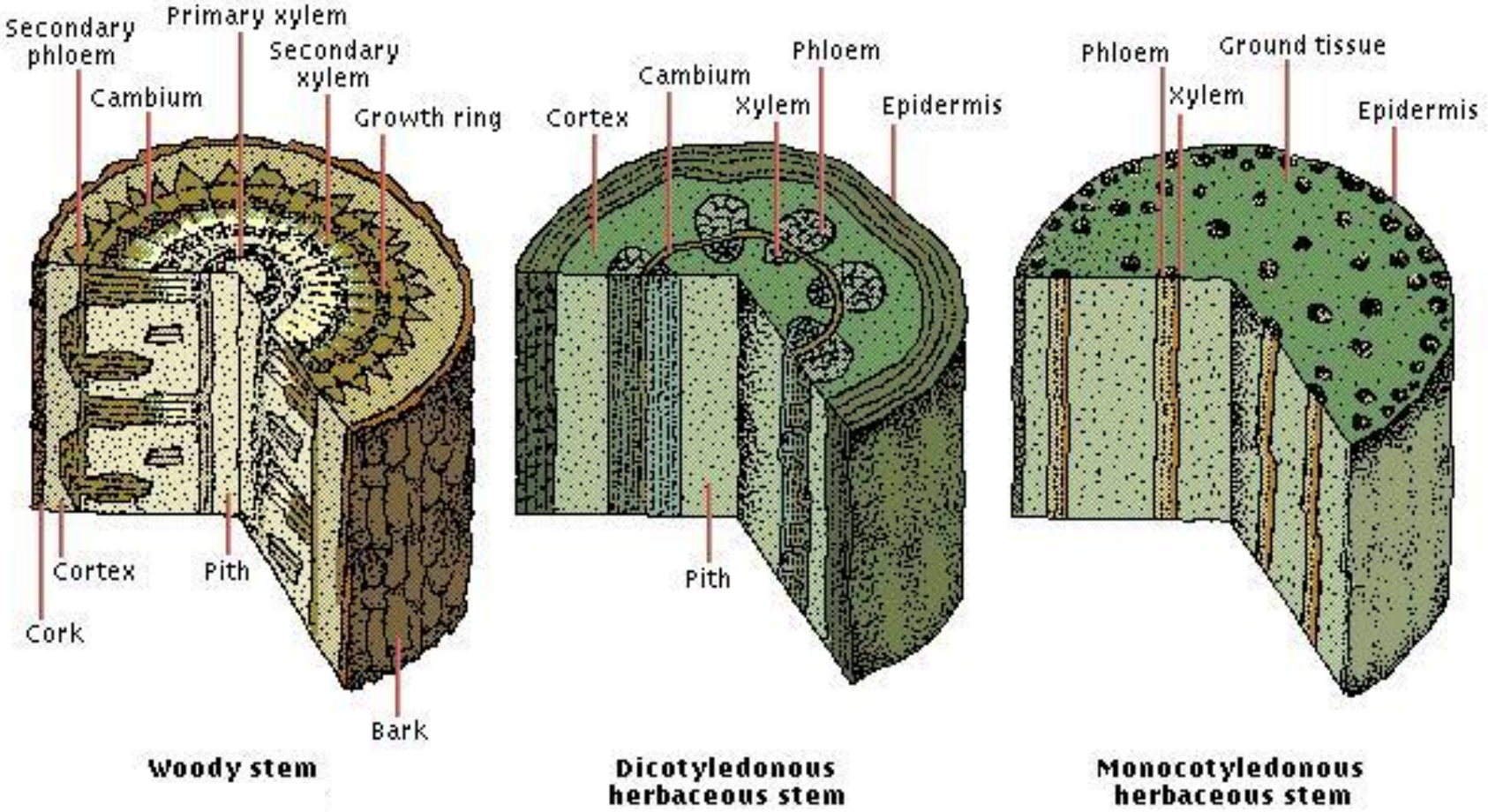
Protective Tissue

- **Epidermis**
  - One cell thick
  - Water proofs leaves and stems
  - Protects roots from bacteria

- **Cork**
  - At least 3 cell layers thick
  - Initial barrier
  - Water proofs stems only

Tissue Review




Secondary phloem
Primary xylem
Secondary xylem
Cambium
Growth ring
Cortex
Pith
Cork
Bark
Woody stem
Cambium
Phloem
Cortex
Xylem
Epidermis
Pith
Dicotyledonous herbaceous stem
Phloem
Ground tissue
Xylem
Epidermis
Monocotyledonous herbaceous stem