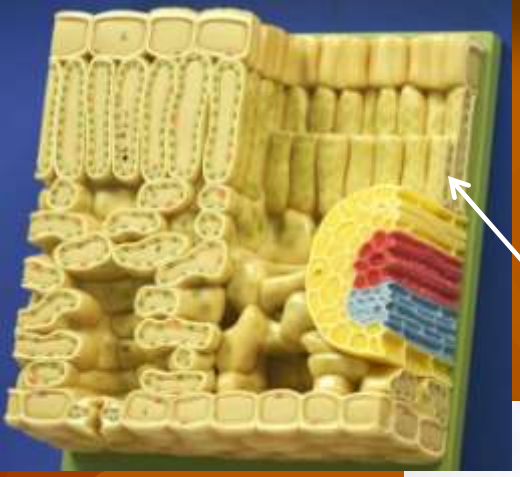
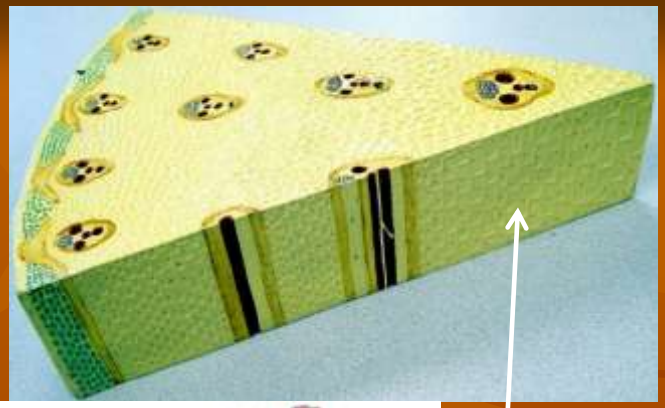
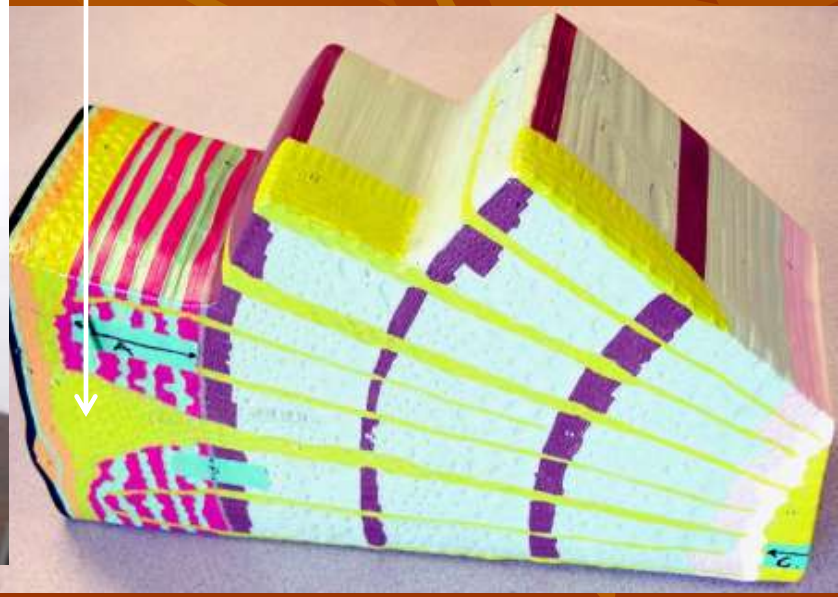


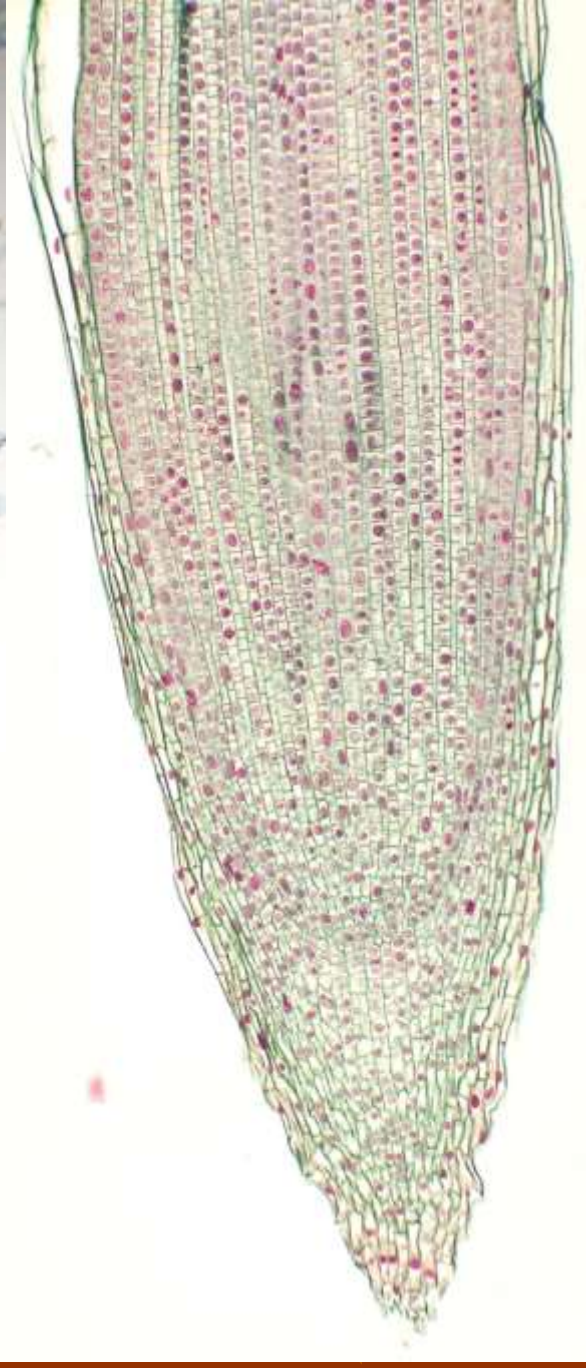


- ✓ Thin-walled
- ✓ Living at maturity



Parenchyma cells

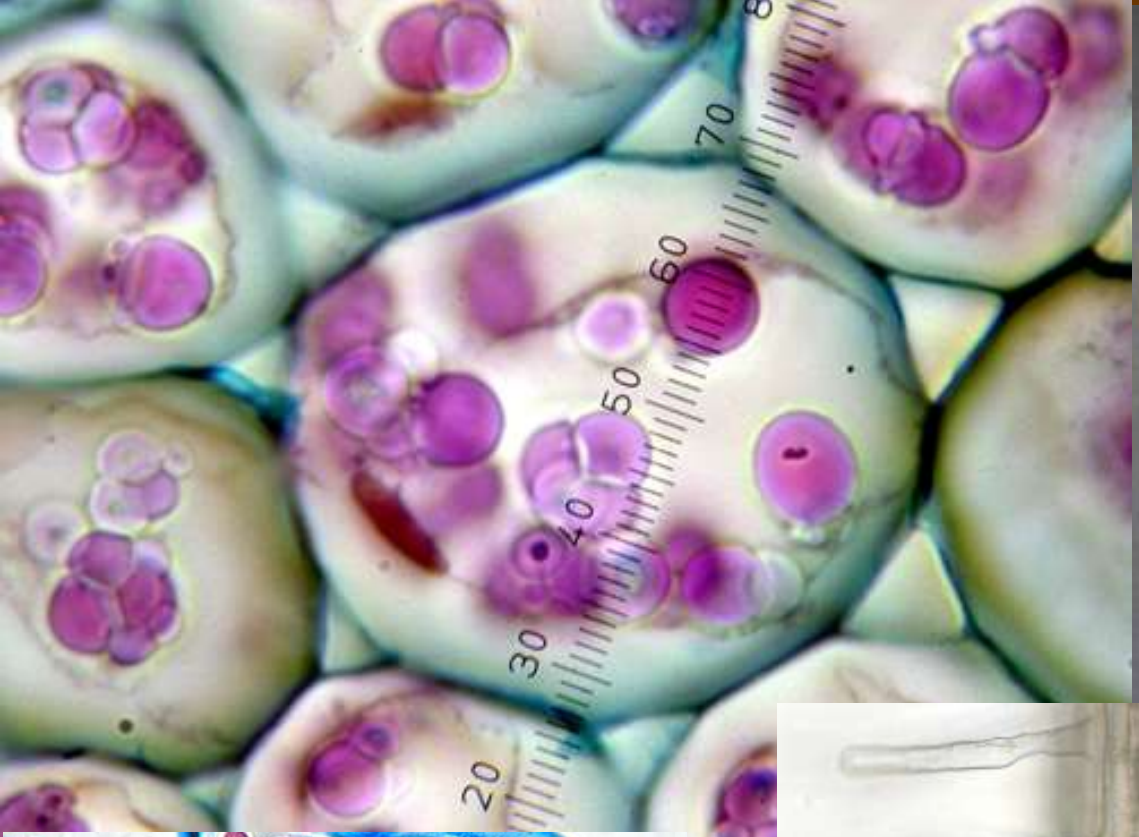
Cell Types

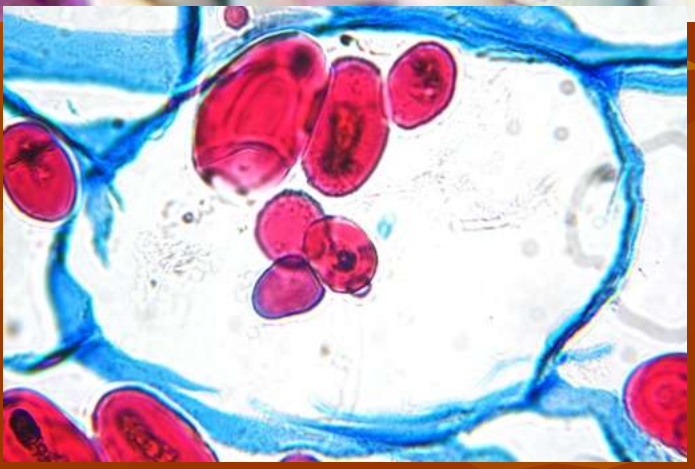


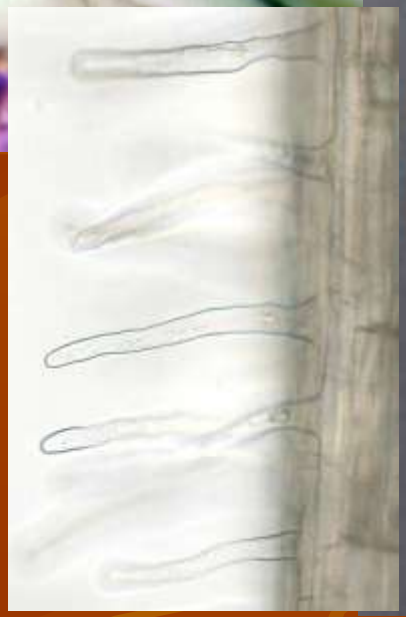
Apical meristem produces the
procambium, ground meristem , and protoderm

The mature tissues formed still usually contain
parenchyma cells that retain the ability to divide

Parenchyma – primary meristems in shoot and root tips

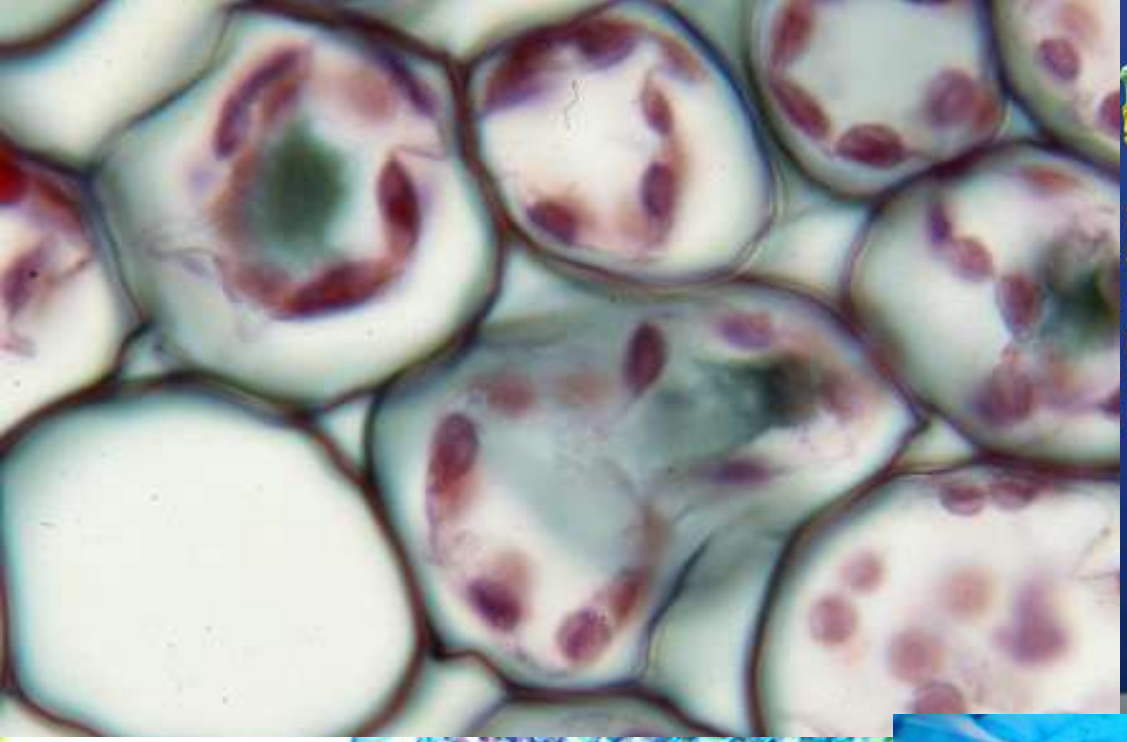


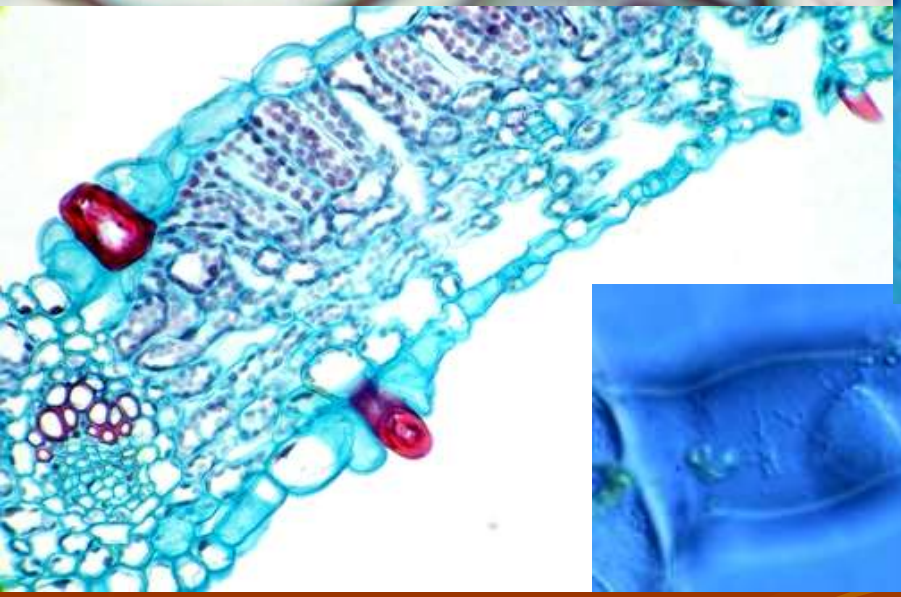


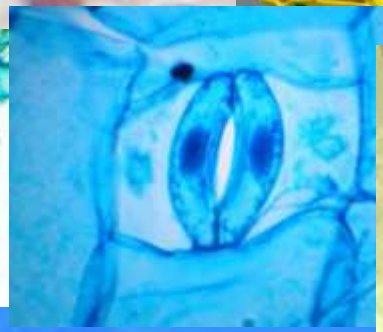


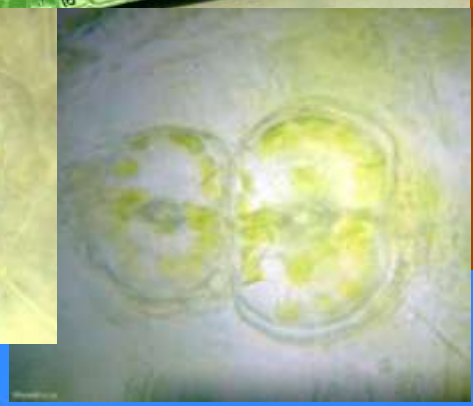
Parenchyma – epidermis with and root hairs and starch storage in root cortex (and tubers)

Cell Types









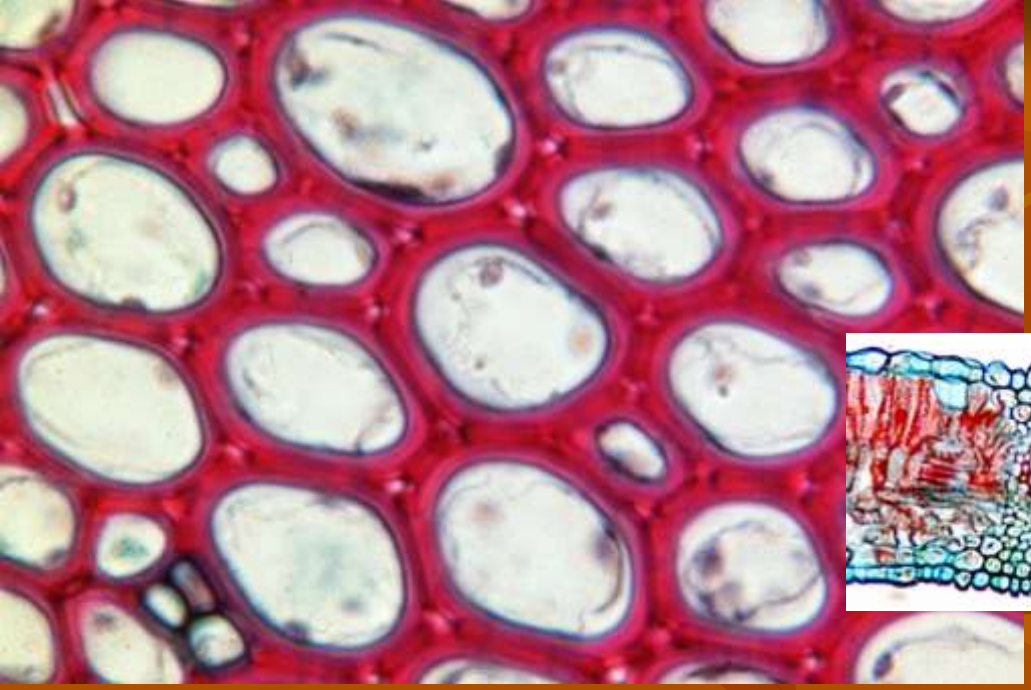
Parenchyma cells of leaf – mesophyll, trichomes, guard cells

Cell Types

Parenchyma cells also make up the secondary meristems: vascular cambium and cork cambium

The mature tissues formed still usually contain parenchyma cells that retain the ability to divide

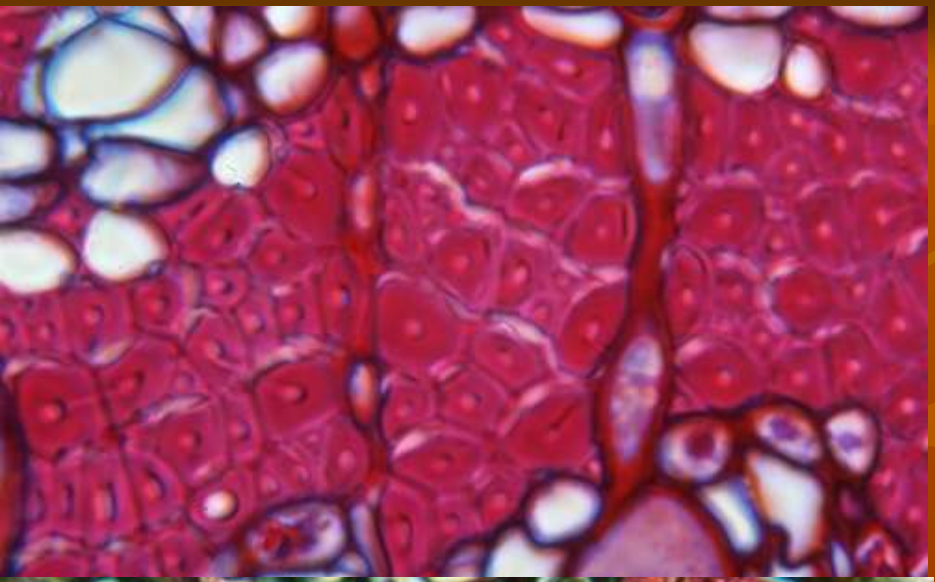
Parenchyma – secondary or lateral meristems in woody dicot stems and roots

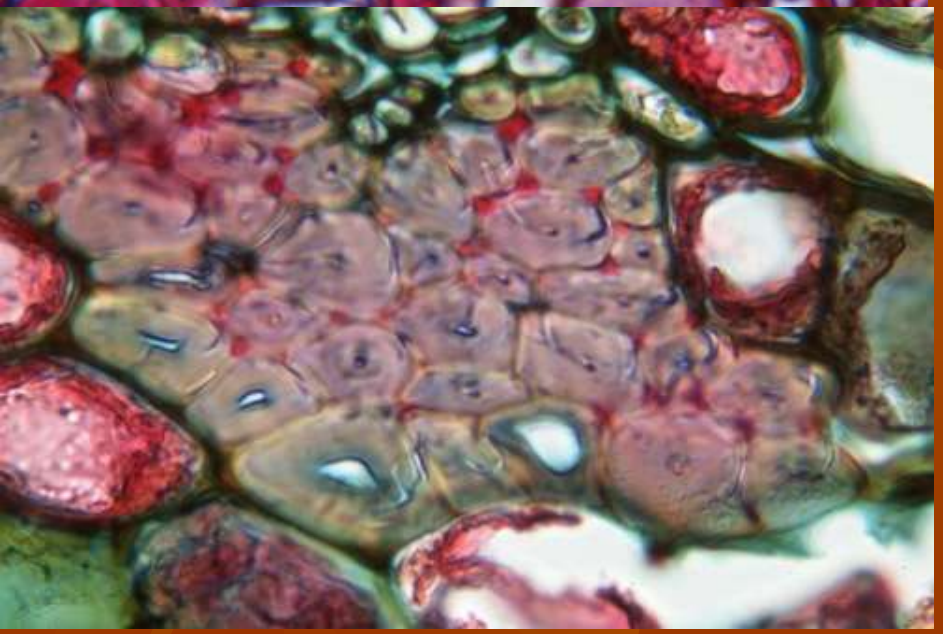


- ✓ Cells support the growing organ
- ✓ Living at maturity

Collenchyma

Cell Types





- ✓ Supports xylem and phloem and fruit tissue
- ✓ Thick walled and dead at maturity

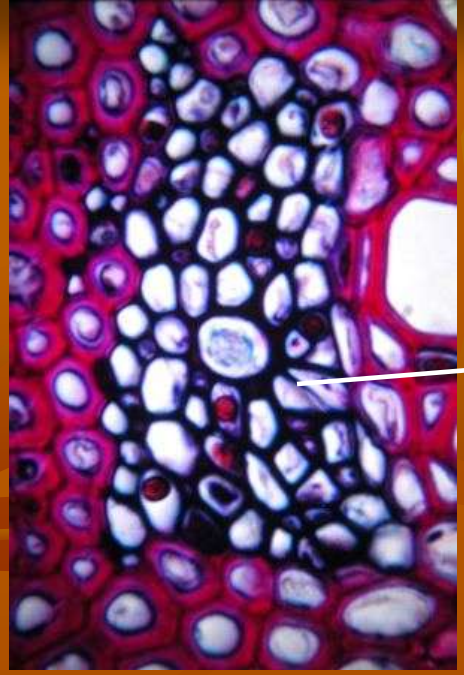
Sclerenchyma

Cell Types

- ✓ Transports sugars from leaves to roots, etc.

Sieve tube members and companion cells of phloem tissue

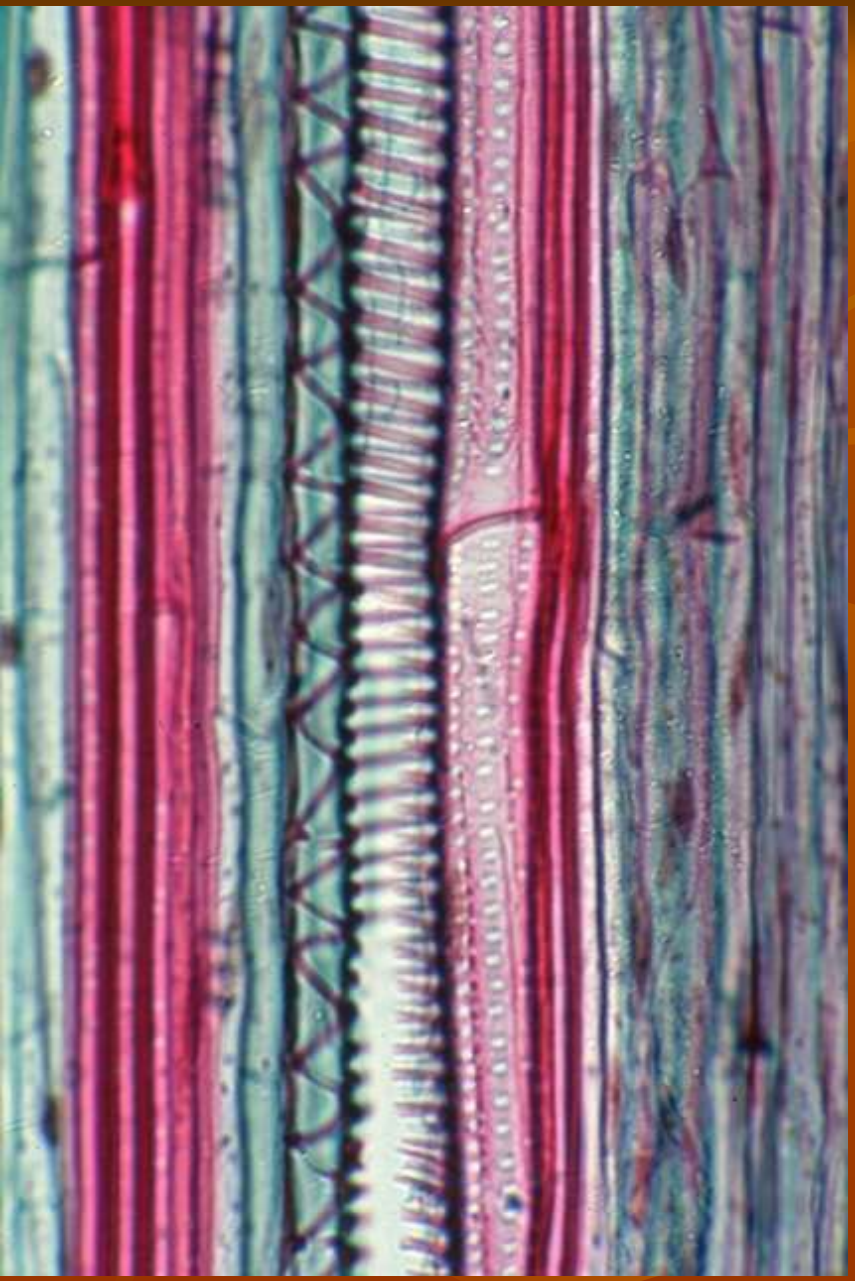
Cell Types



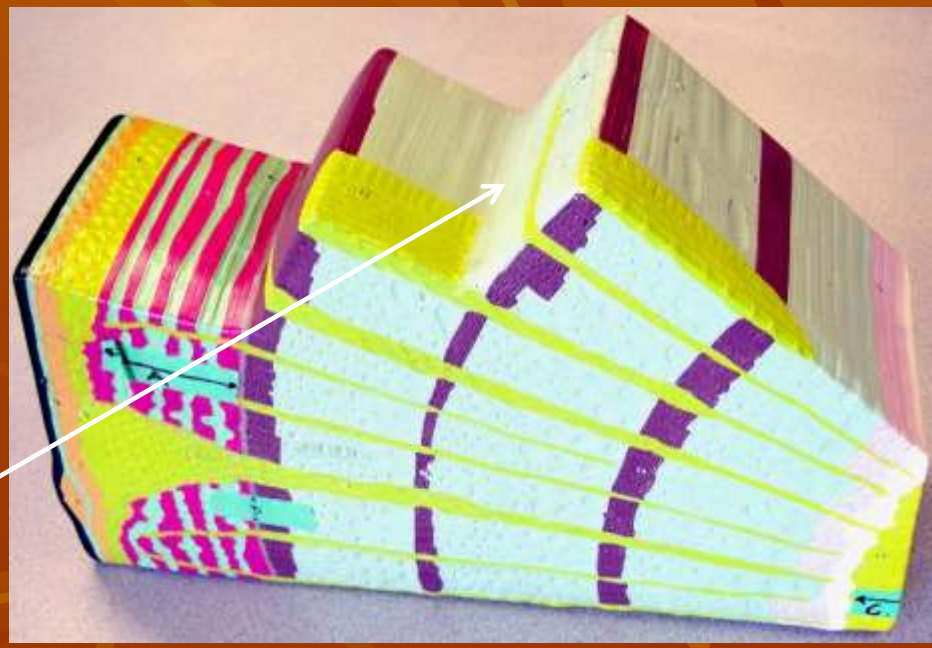
✓ Transports sugars from leaves to roots, etc.

Sieve tube members, companion cells, sclerenchyma & parenchyma cells of phloem tissue

Cell Types

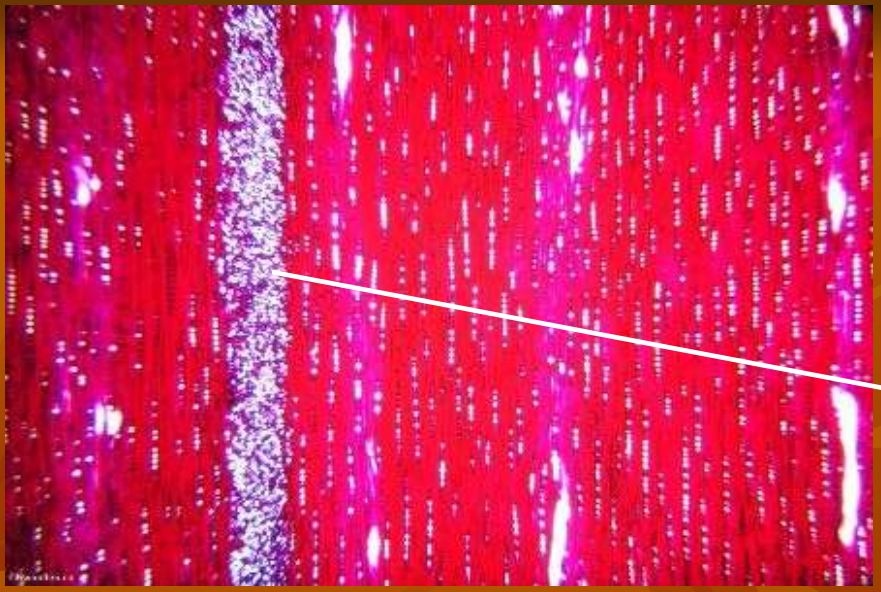


✓ Transports water and minerals up from roots

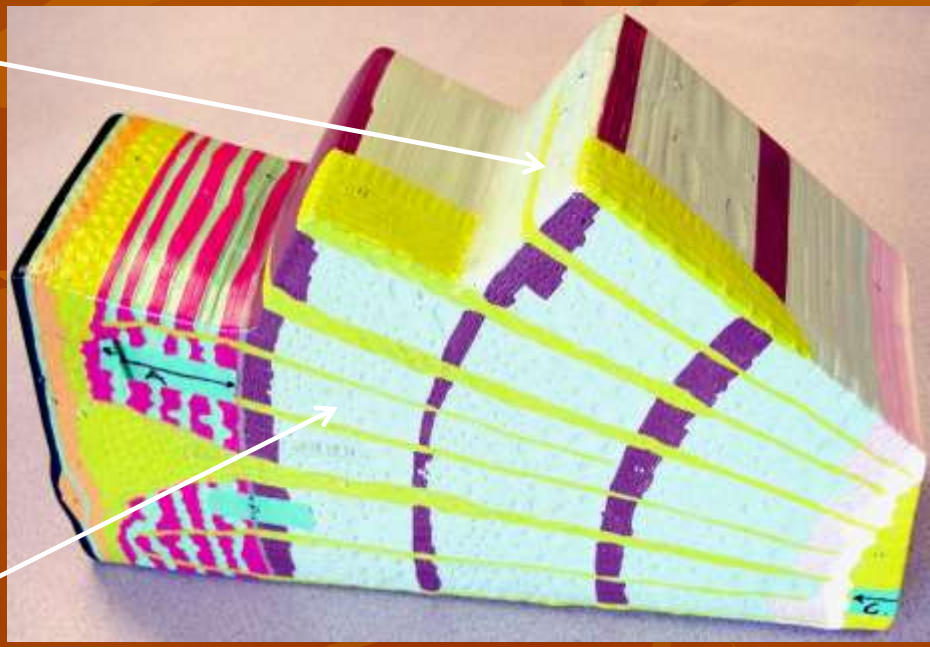


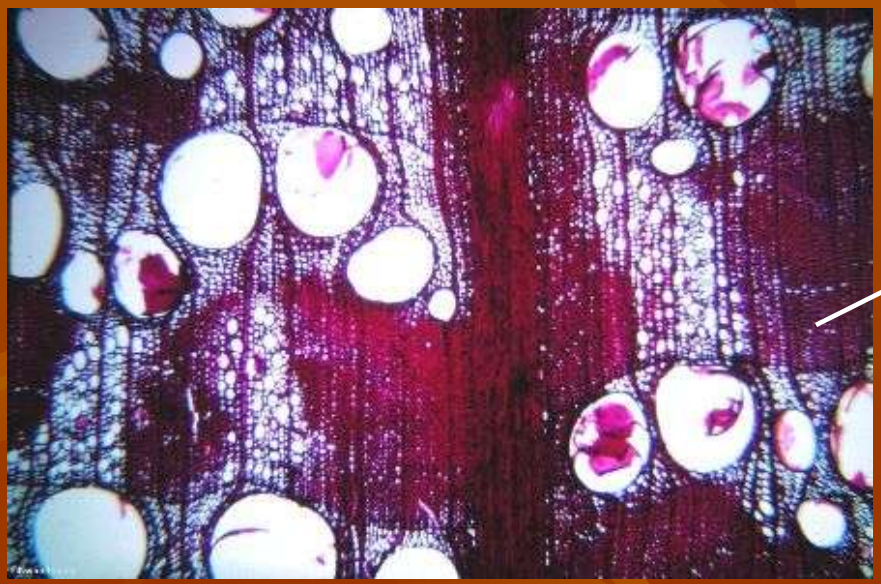
Xylem – vessels and tracheids

Cell Types



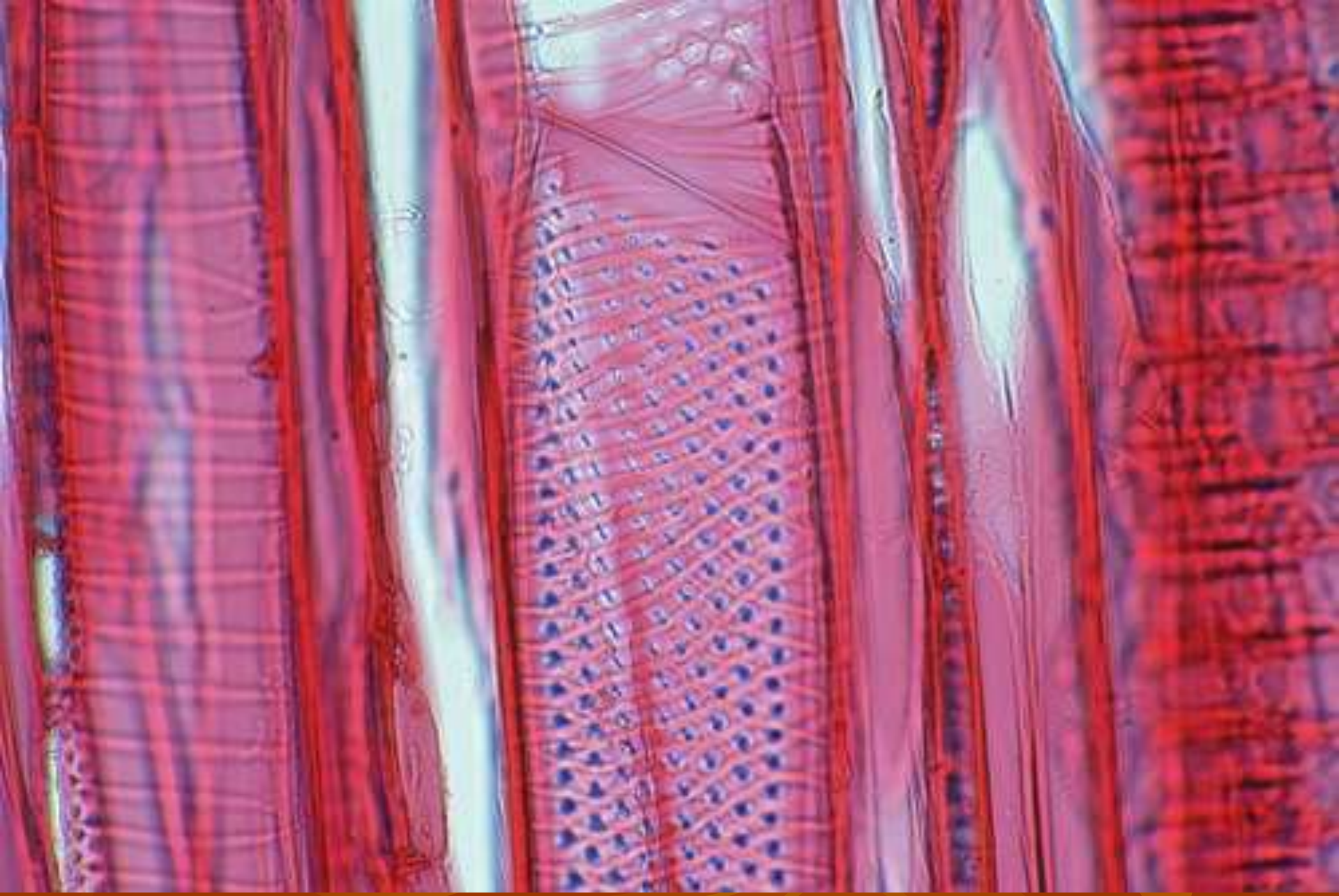
- ✓ Transports water and minerals up from roots





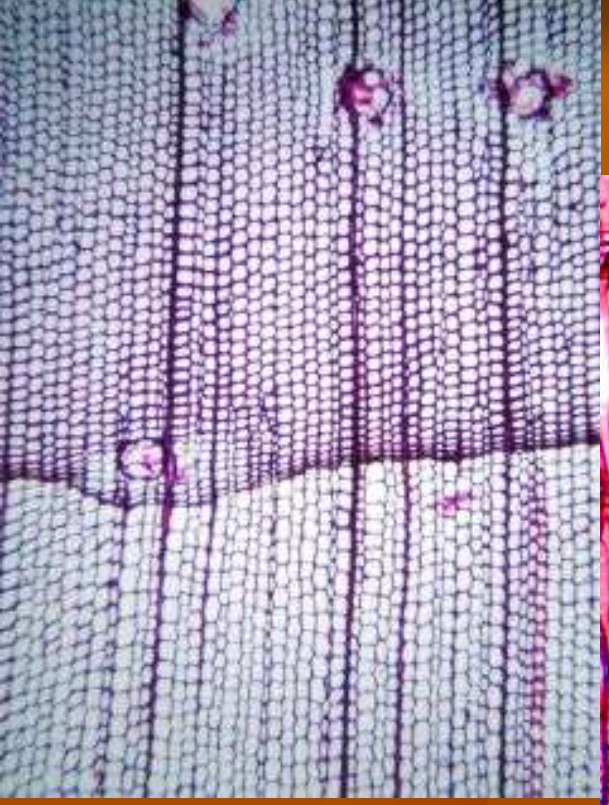
Xylem – vessels and tracheids (t.s. and c.s.)

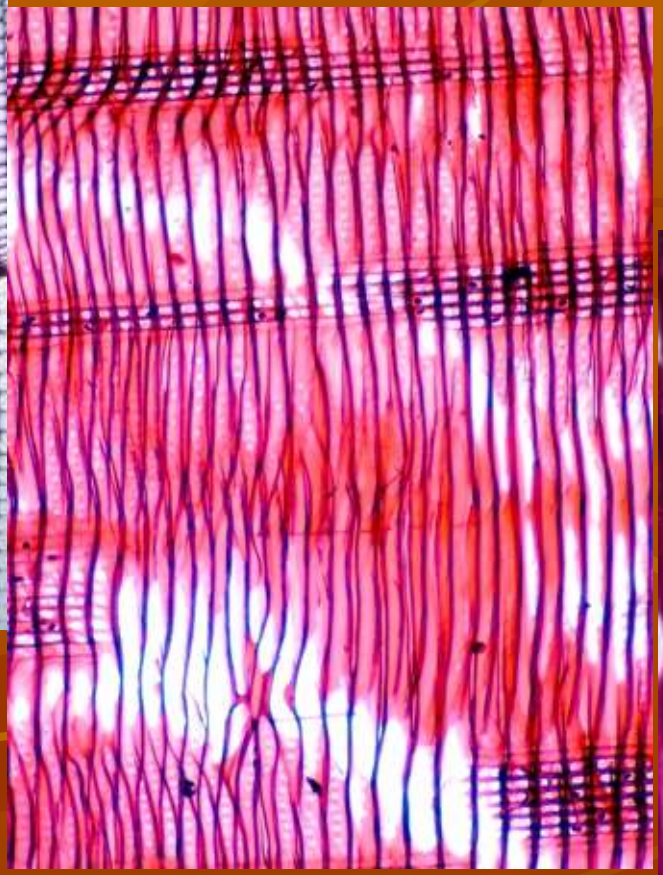
Cell Types



Vessels (l.s.) are in Angiosperms only

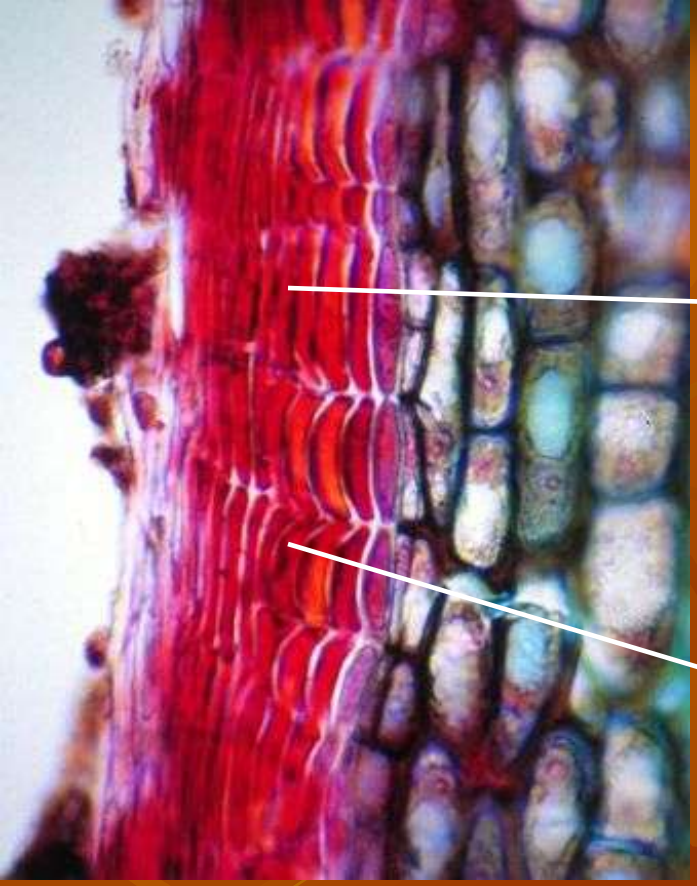
Cell Types

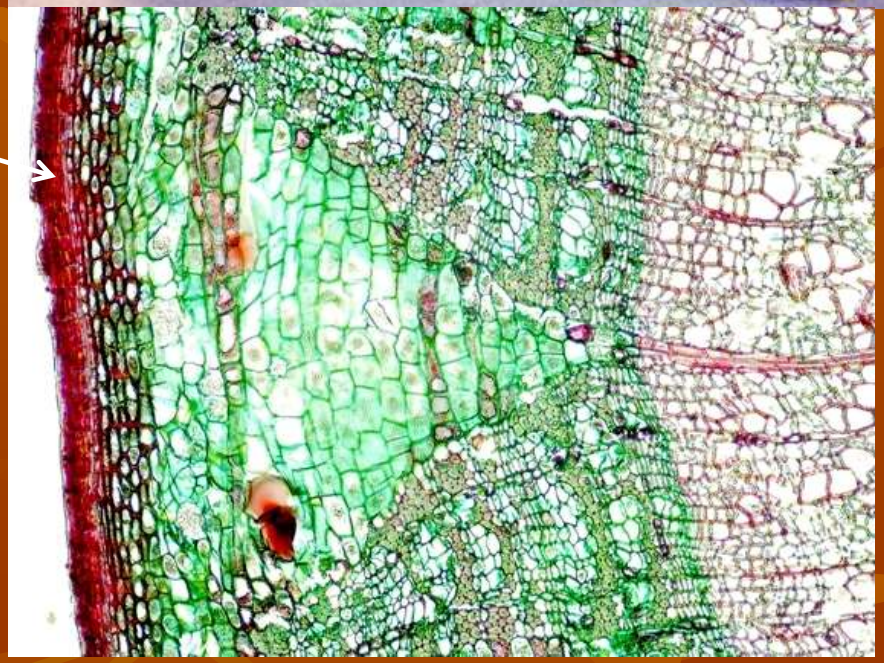




- ✓ The only water conducting cells in softwoods

Tracheids, ray cells and resin duct cells of pine – conifer - softwood (c.s., r.s., t.s.)





- ✓ Dead at maturity
- ✓ Impregnated with suberin

Cork cells

Cell Types