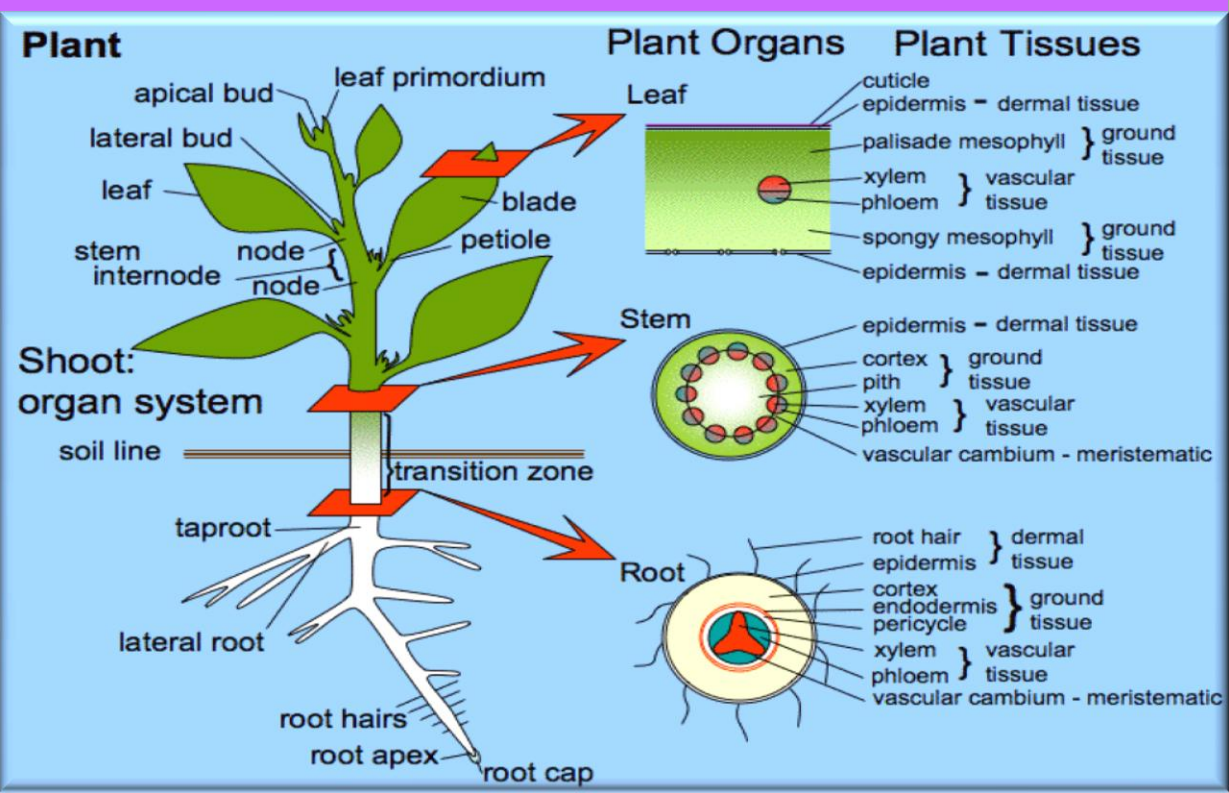
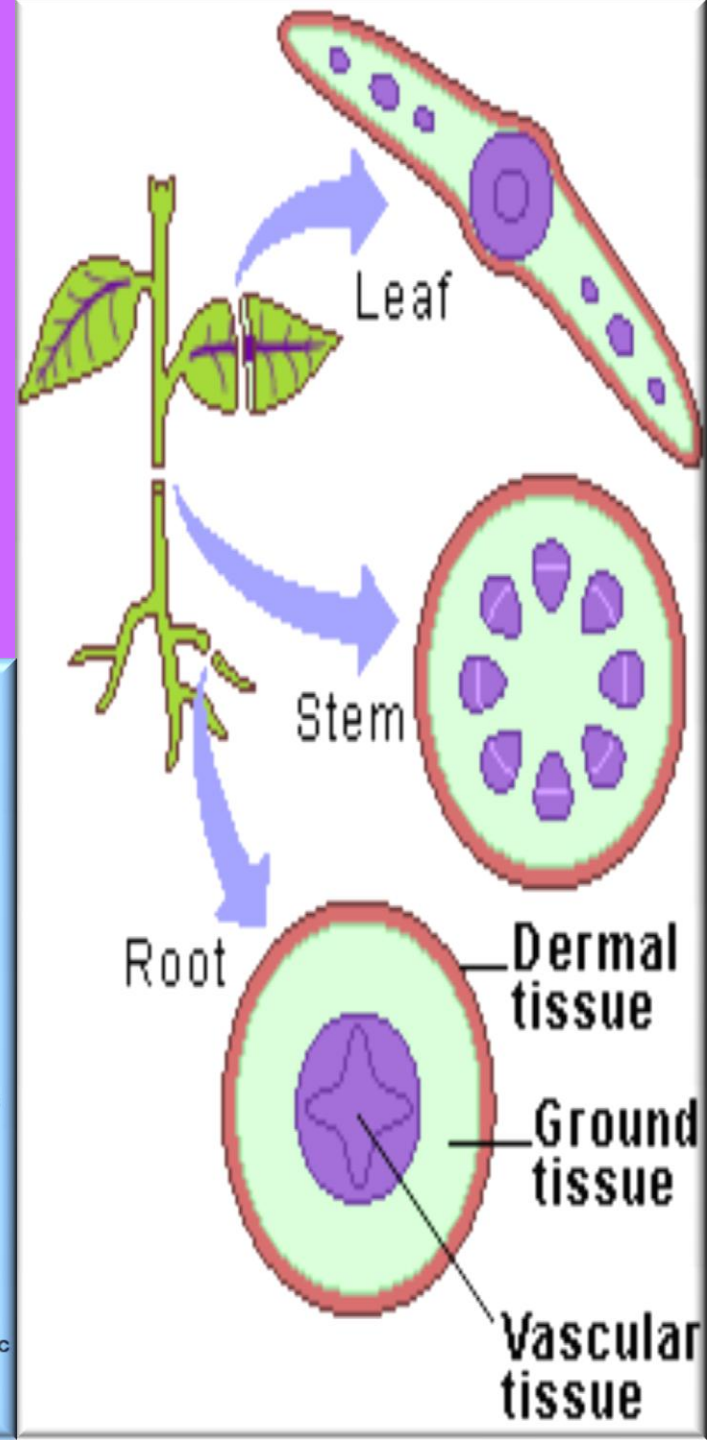


# Anatomy of plant

## Lab 10



# Anatomy of plant



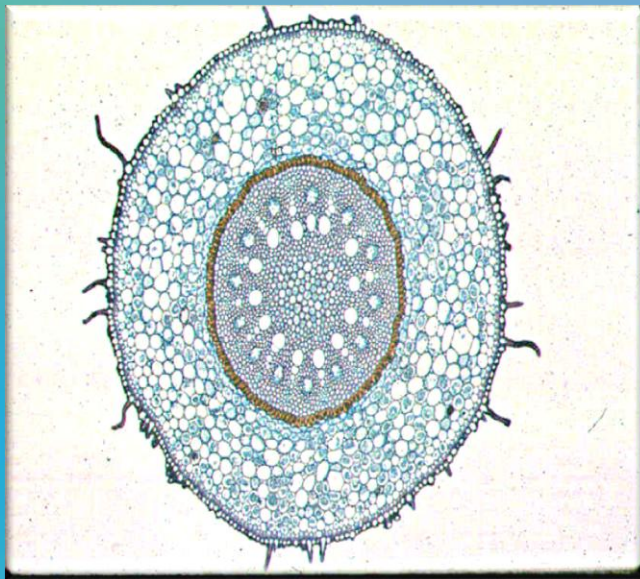
**Roots**



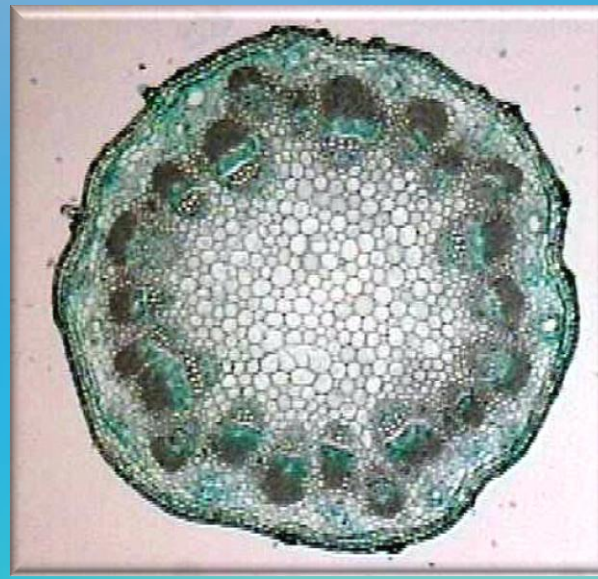
**Stems**



**Leaves**



**Root**



**Stem**



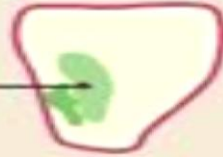
**Leaf**



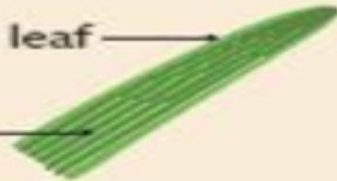
# Monocot vs Dicot

## MONOCOTS

Single cotyledon

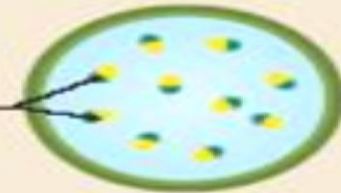


Long, narrow leaf



Veins are parallel

Vascular bundles scattered



Flower parts in multiples of three

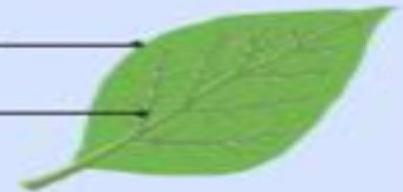


## DICOTS

Two cotyledons

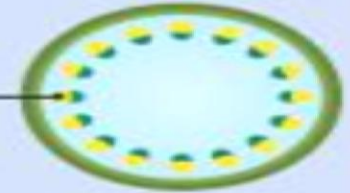


Broad leaf



Network of veins

Ring of vascular bundles



Flower parts in multiples of five (or four)



# ROOT ANATOMY

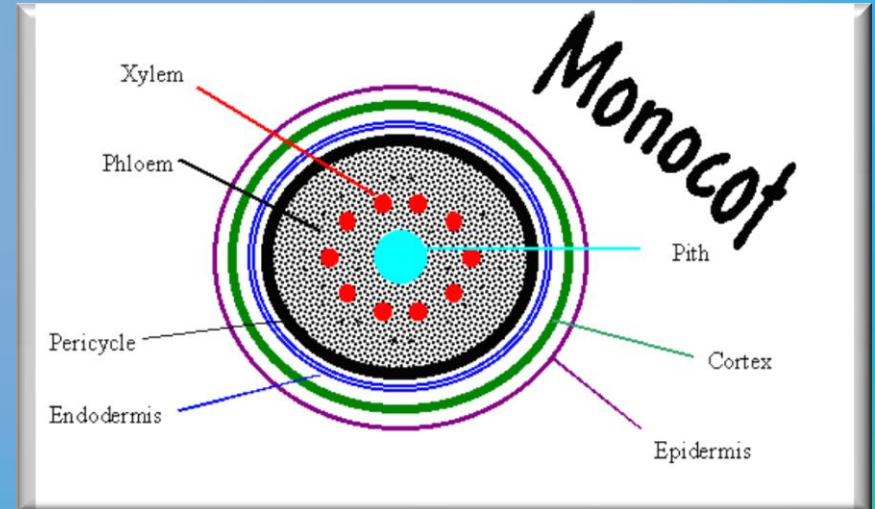
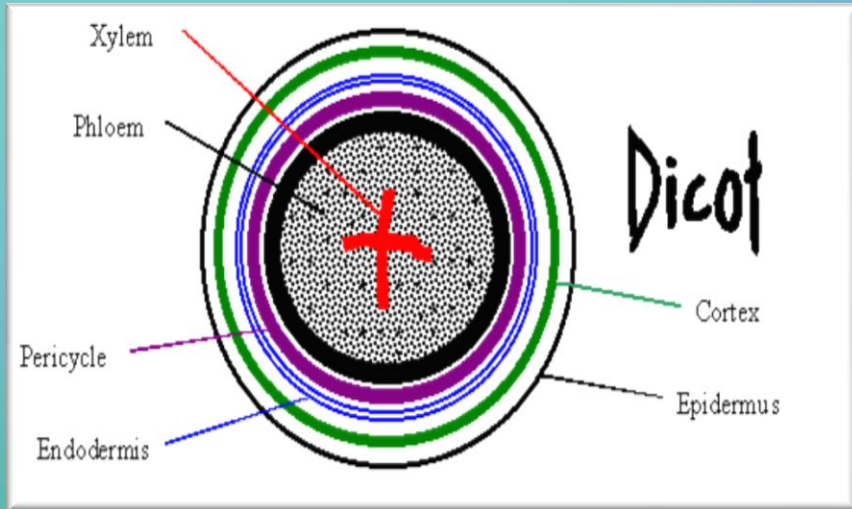
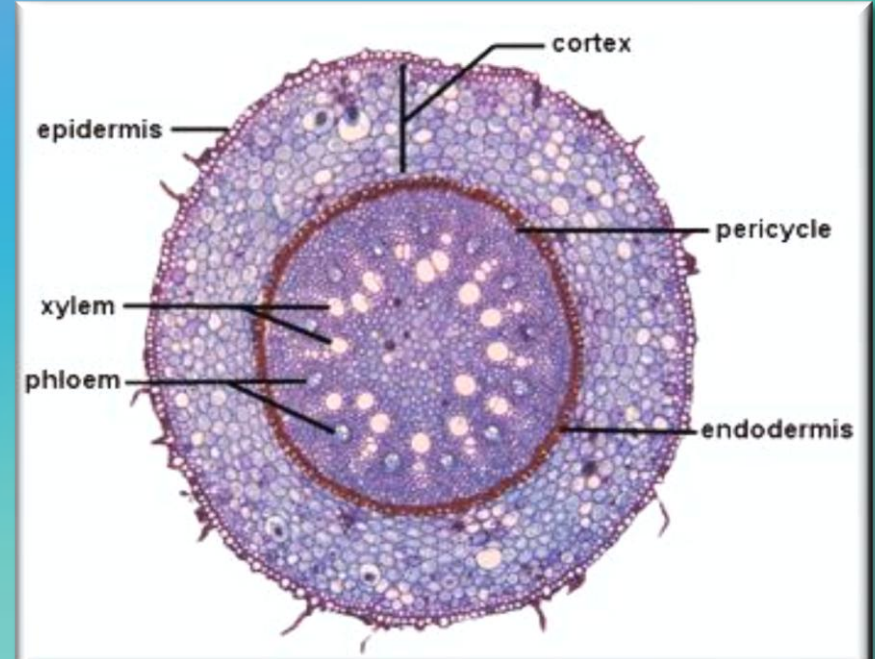
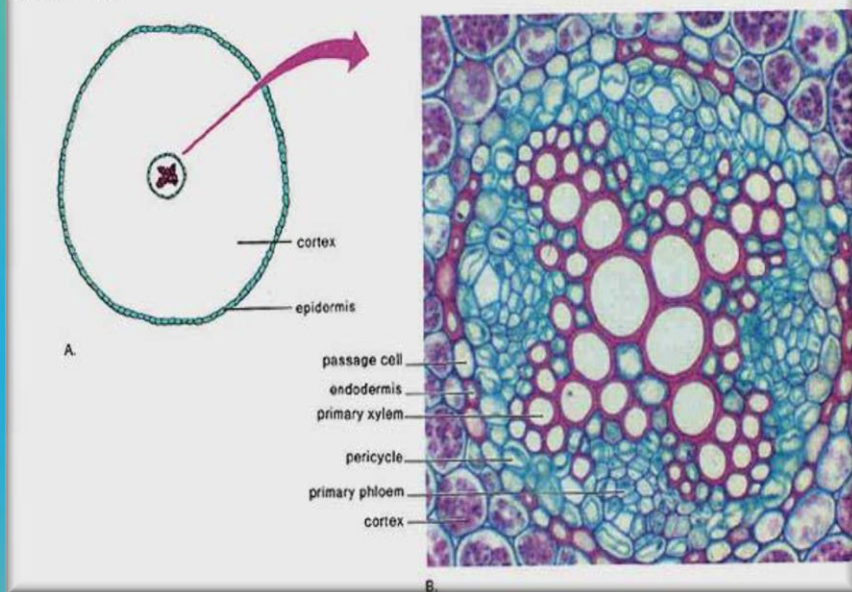


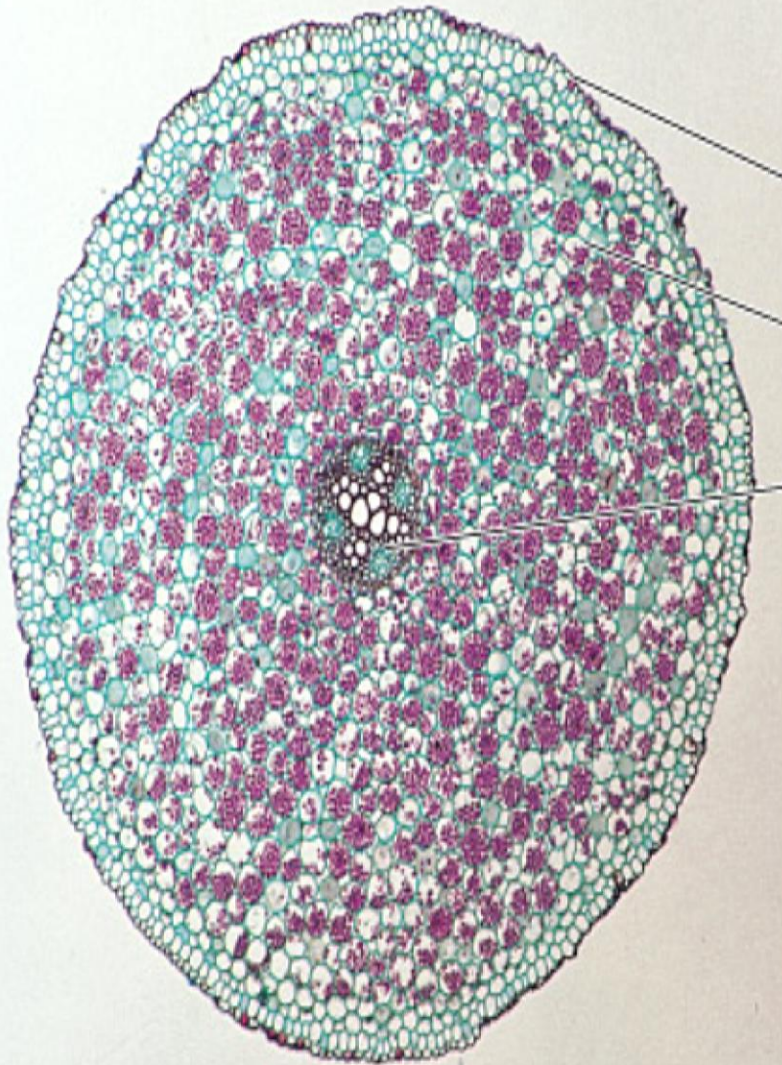
FIGURE 6.5 A cross section through the region of maturation of a root of a buttercup (*Ranunculus*), a dicot. (Photomicrograph by G. S. Elmore)





# Dicot Root

# Monocot Root



**THREE  
PRIMARY  
TISSUES:**

Epidermis  
(dermal)

Cortex  
(ground)

Stele  
(vascular)

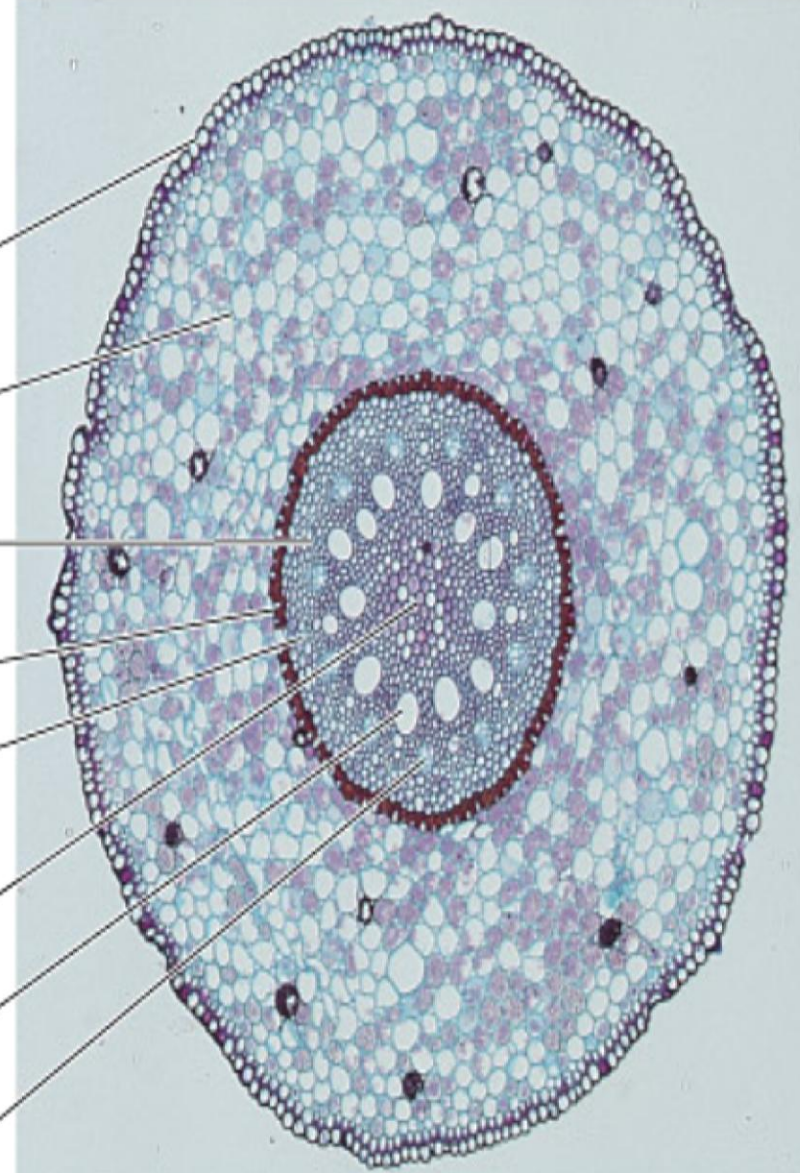
Endodermis

Pericycle

Pith

Xylem

Phloem



(a) Cross section of a dicot root

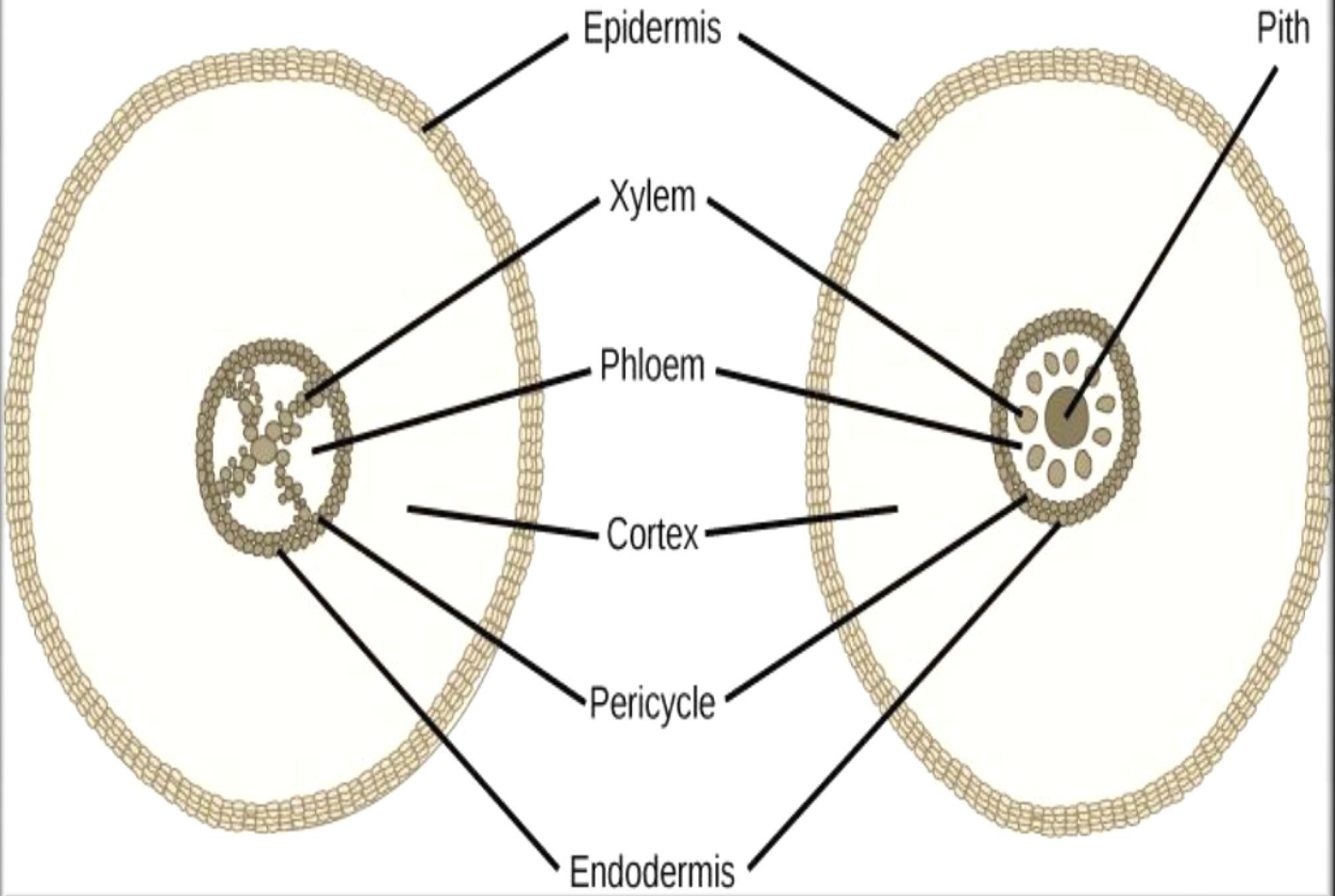
500  $\mu\text{m}$

(b) Cross section of a monocot root

100  $\mu\text{m}$

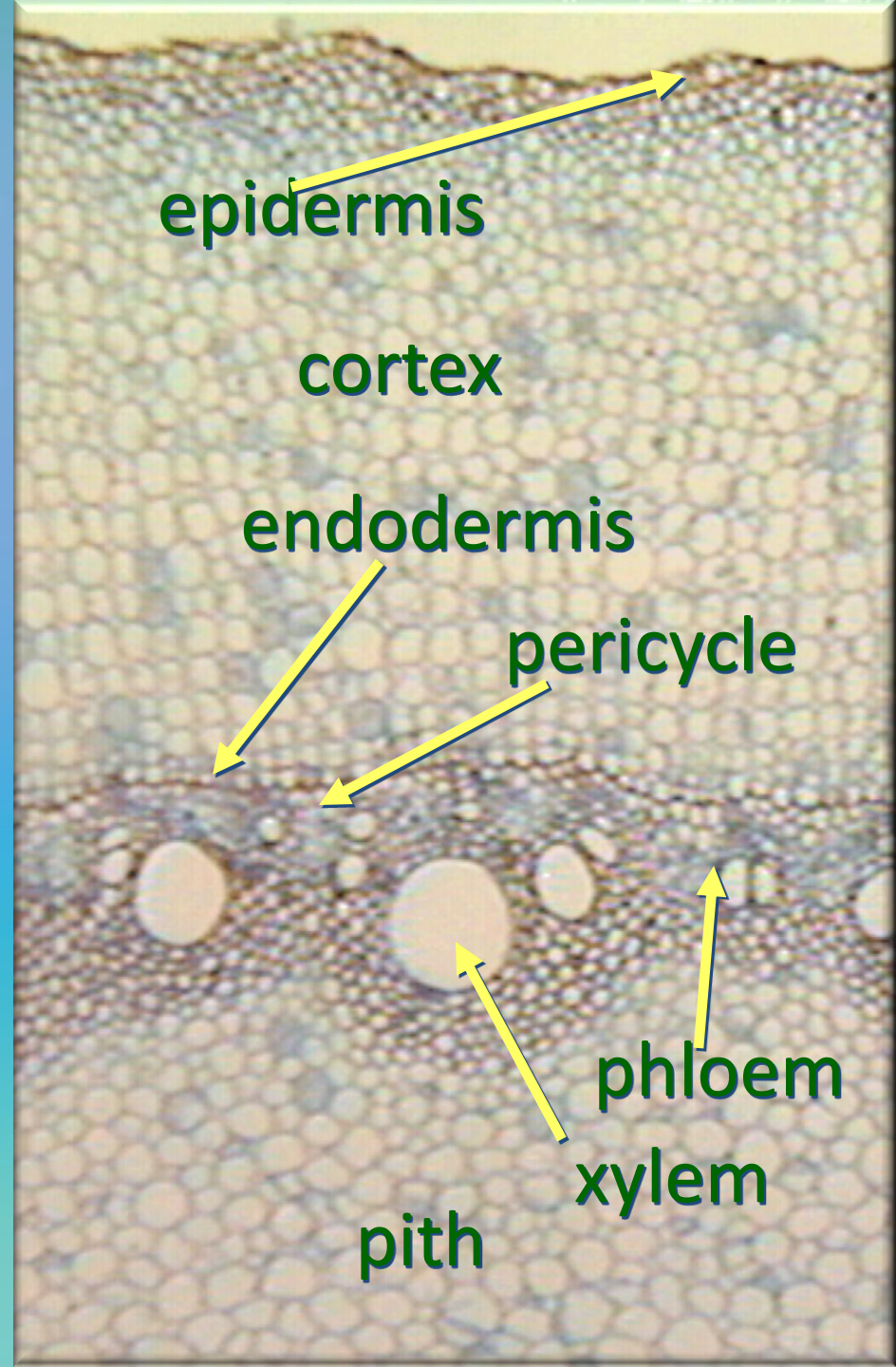
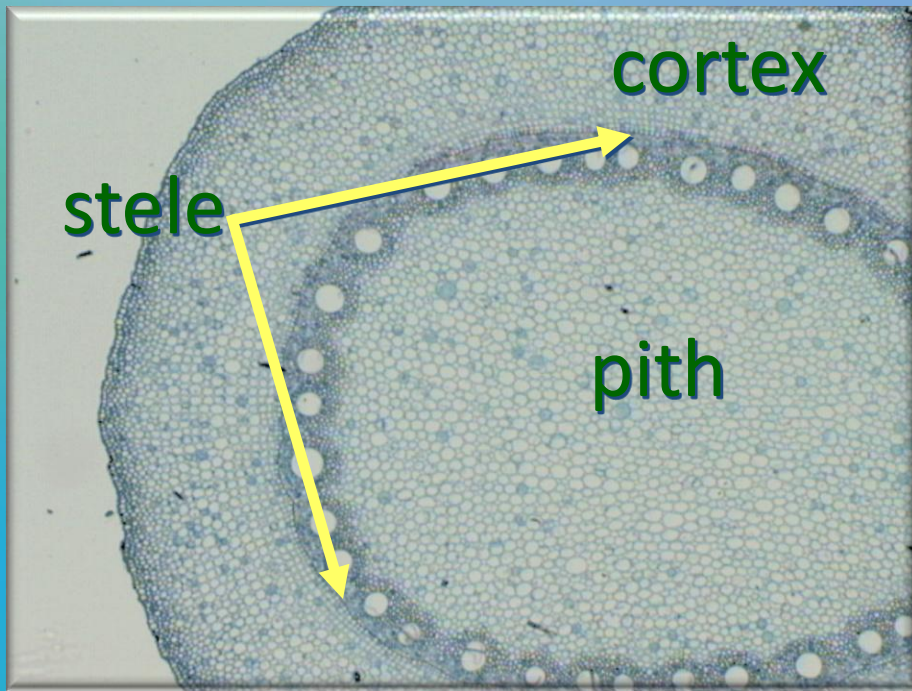
Dicot root

Monocot root



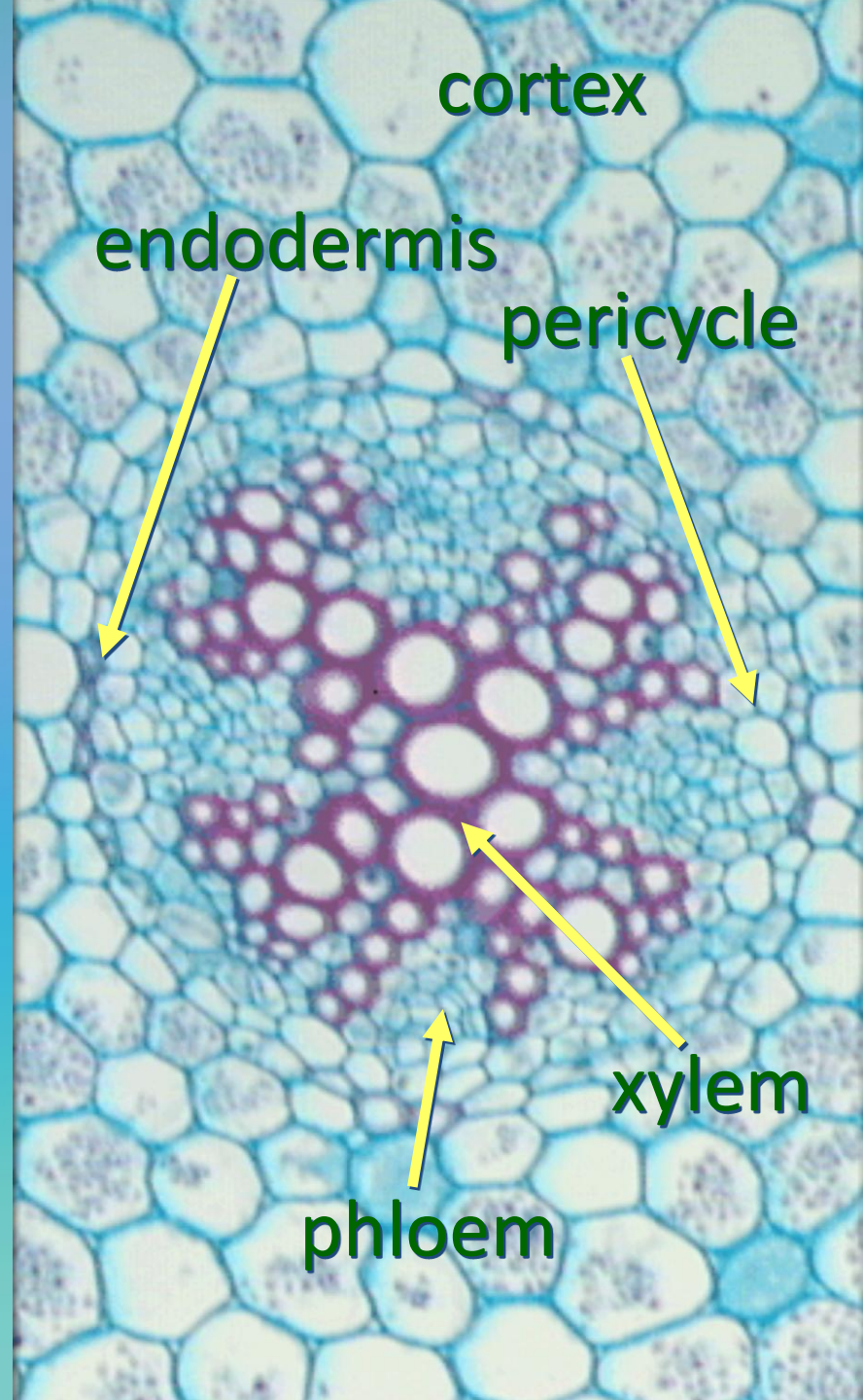
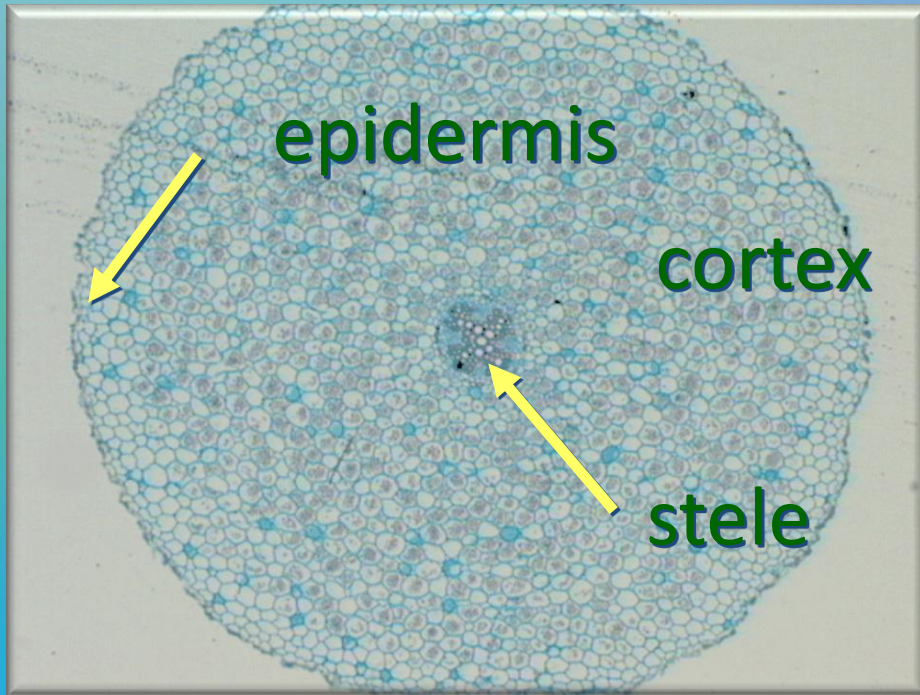


# Monocot Root Anatomy





# Dicot Root Anatomy





# Stem Anatomy

Pith at center, then  
3 annual rings, and  
then bark on outside

Cork cambium (light line)

Cork

phloem

Vascular cambium

Late wood

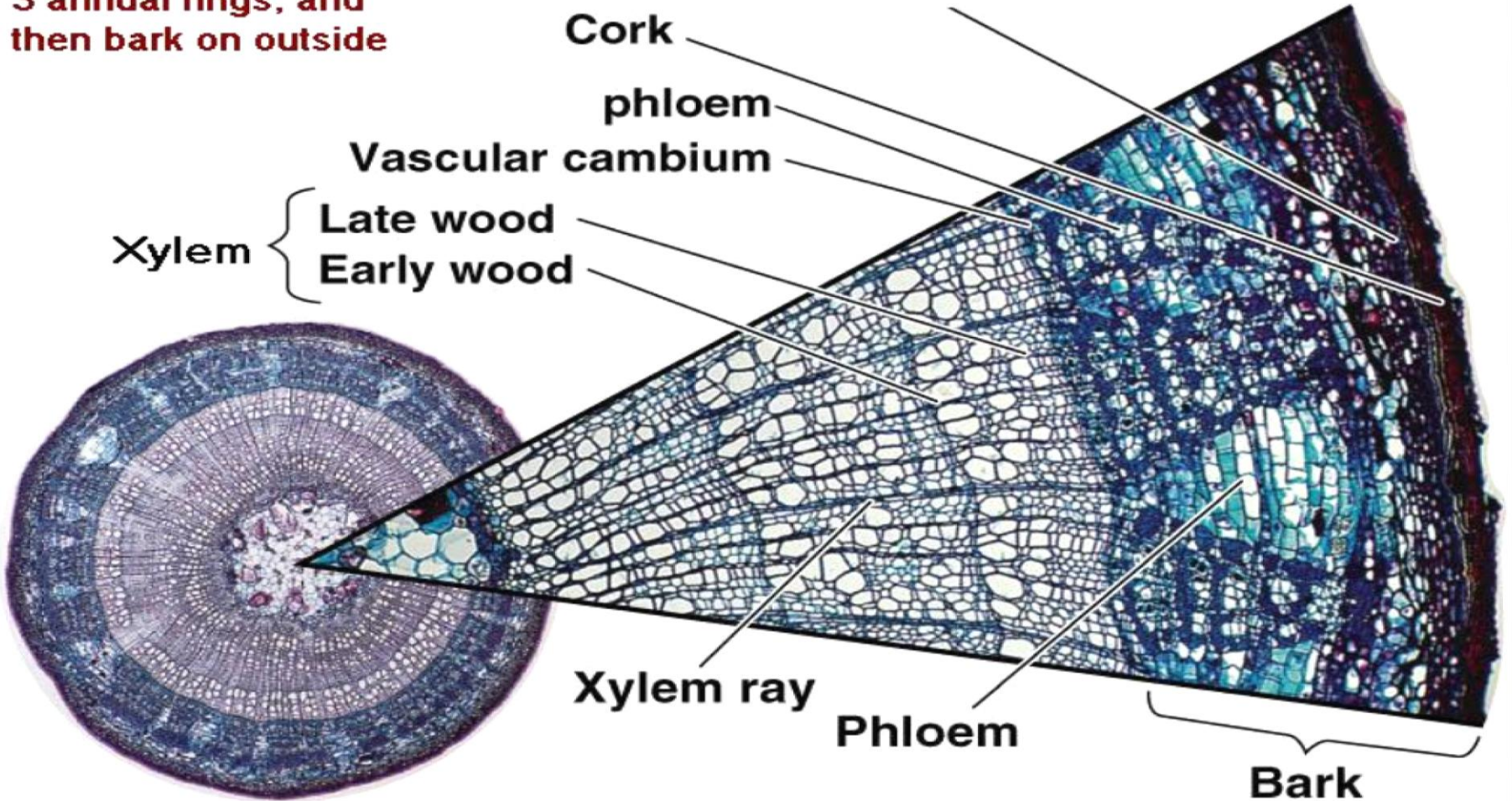
Early wood

Xylem

Xylem ray

Phloem

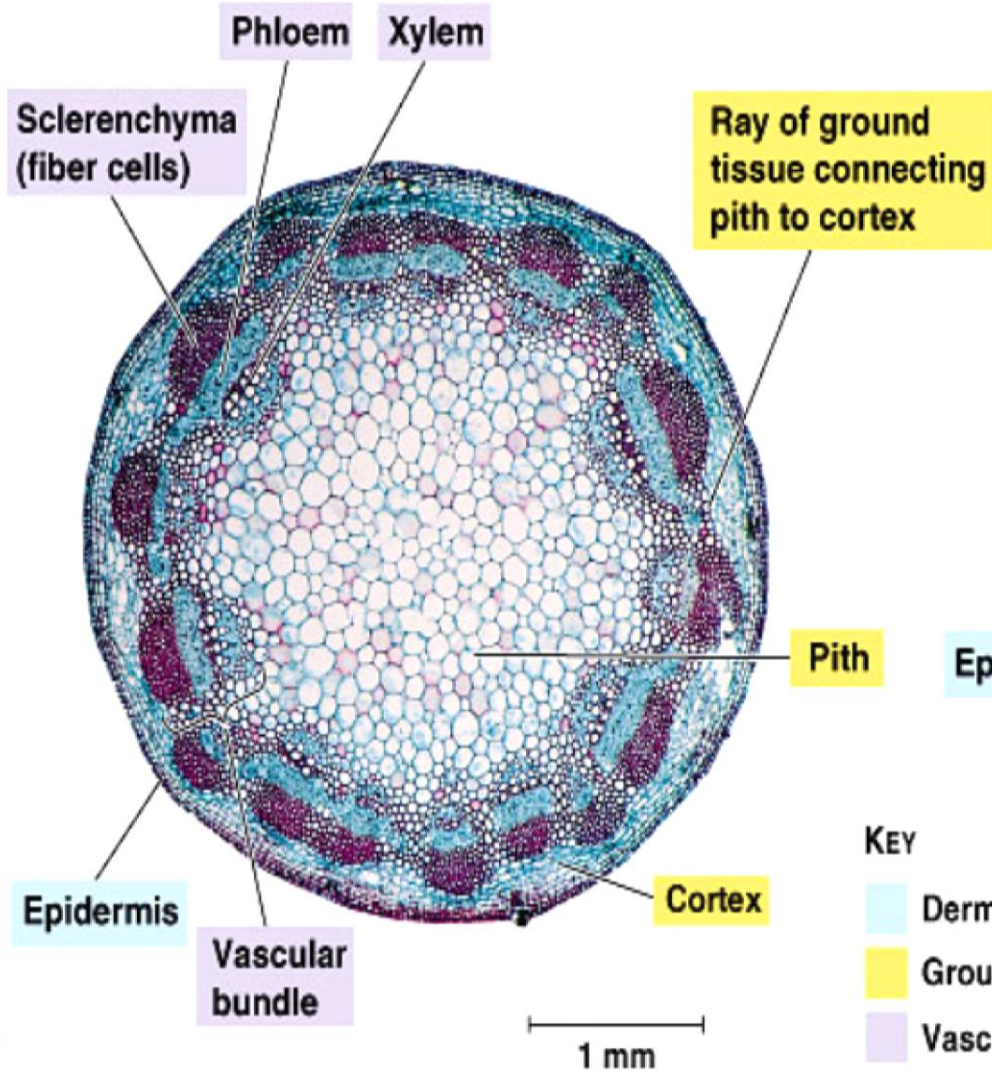
Bark



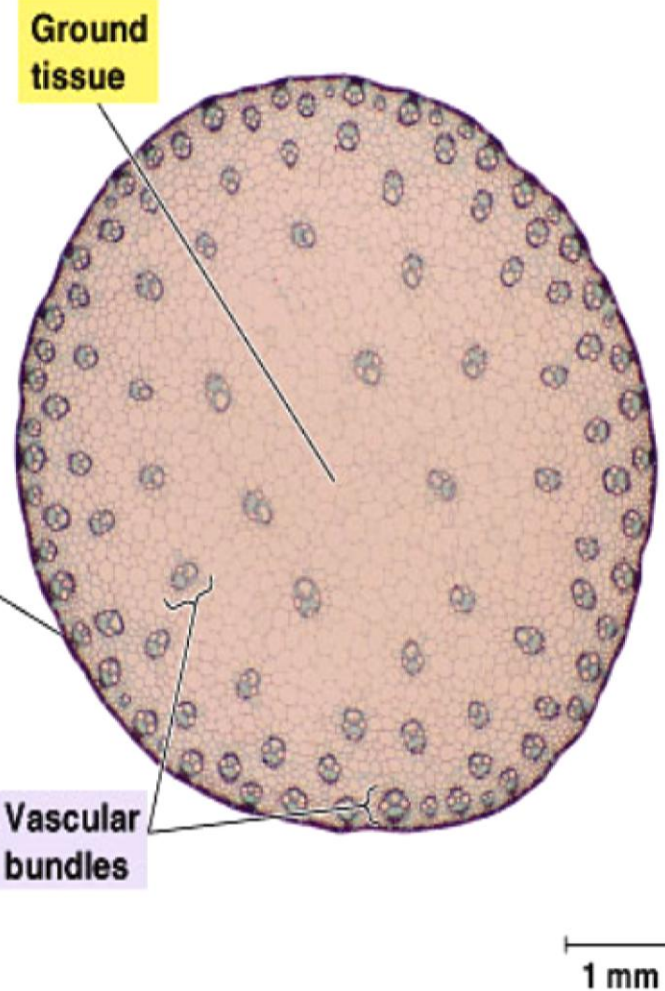


# Dicot Stem

# Monocot Stem



(a) Dicot



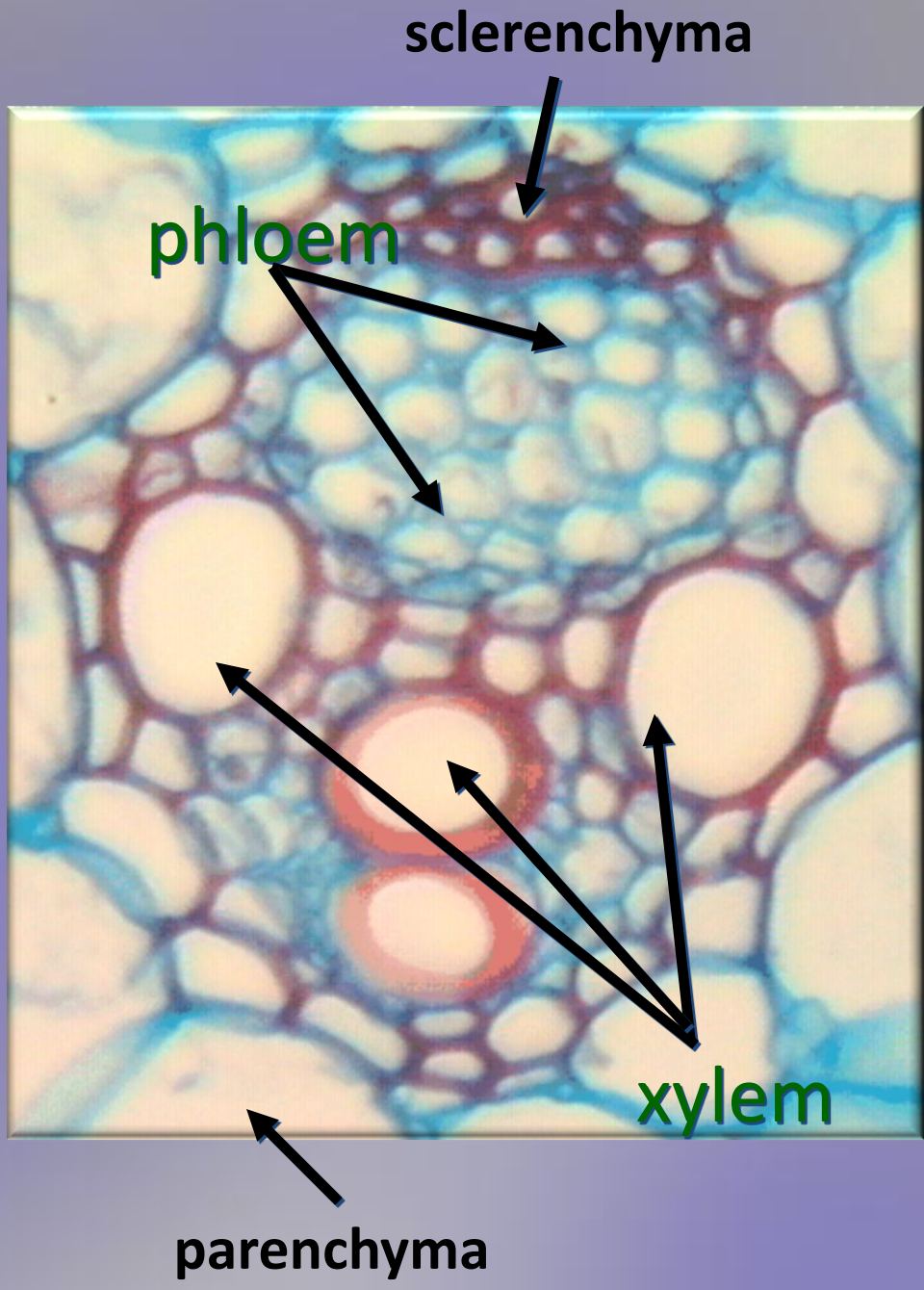
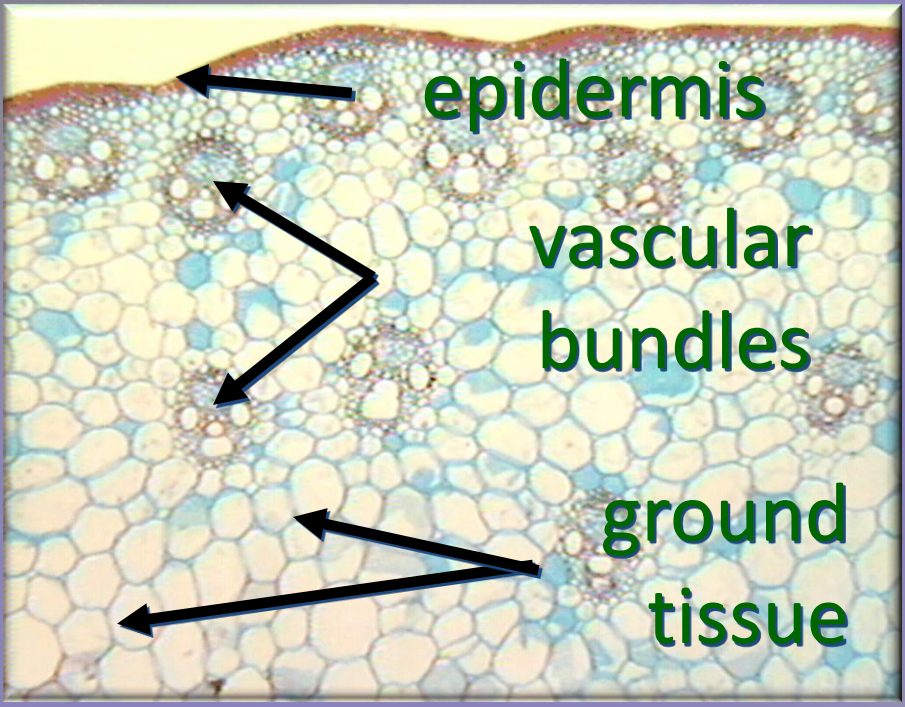
(b) Monocot

KEY

Light blue	Dermal
Yellow	Ground
Purple	Vascular

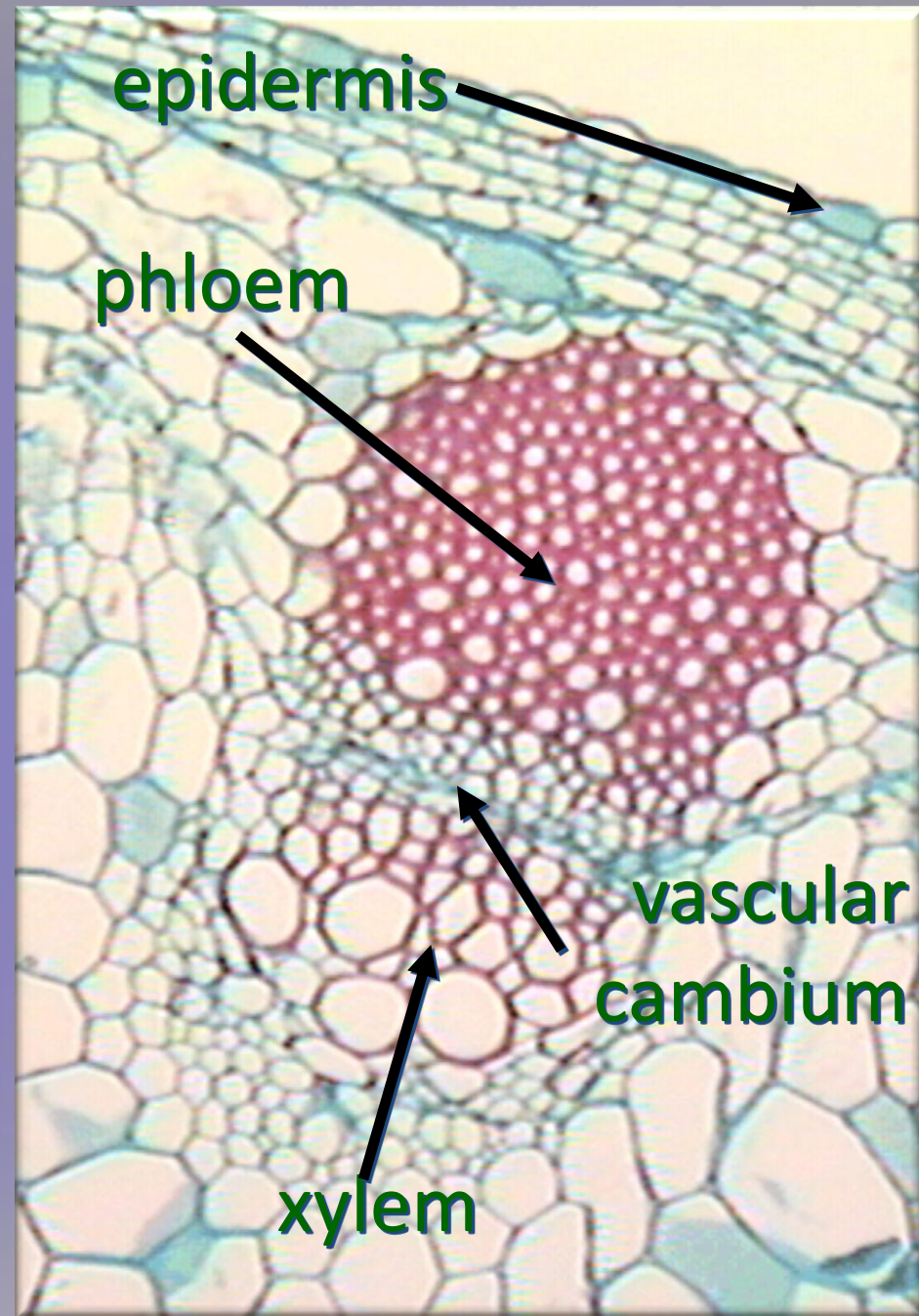
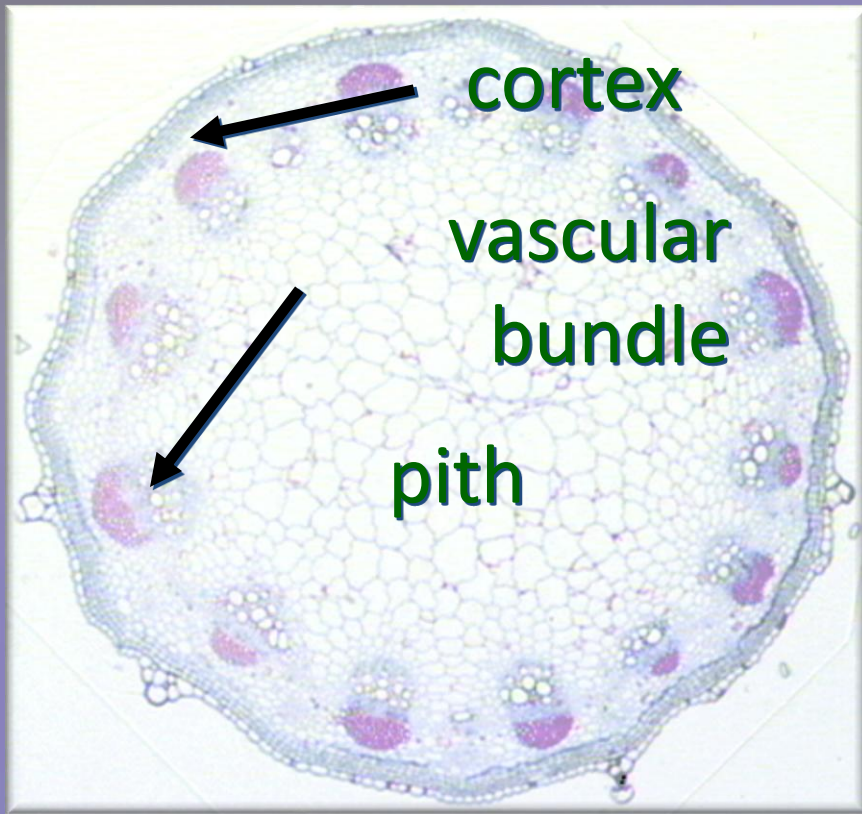


# Monocot Stem Anatomy



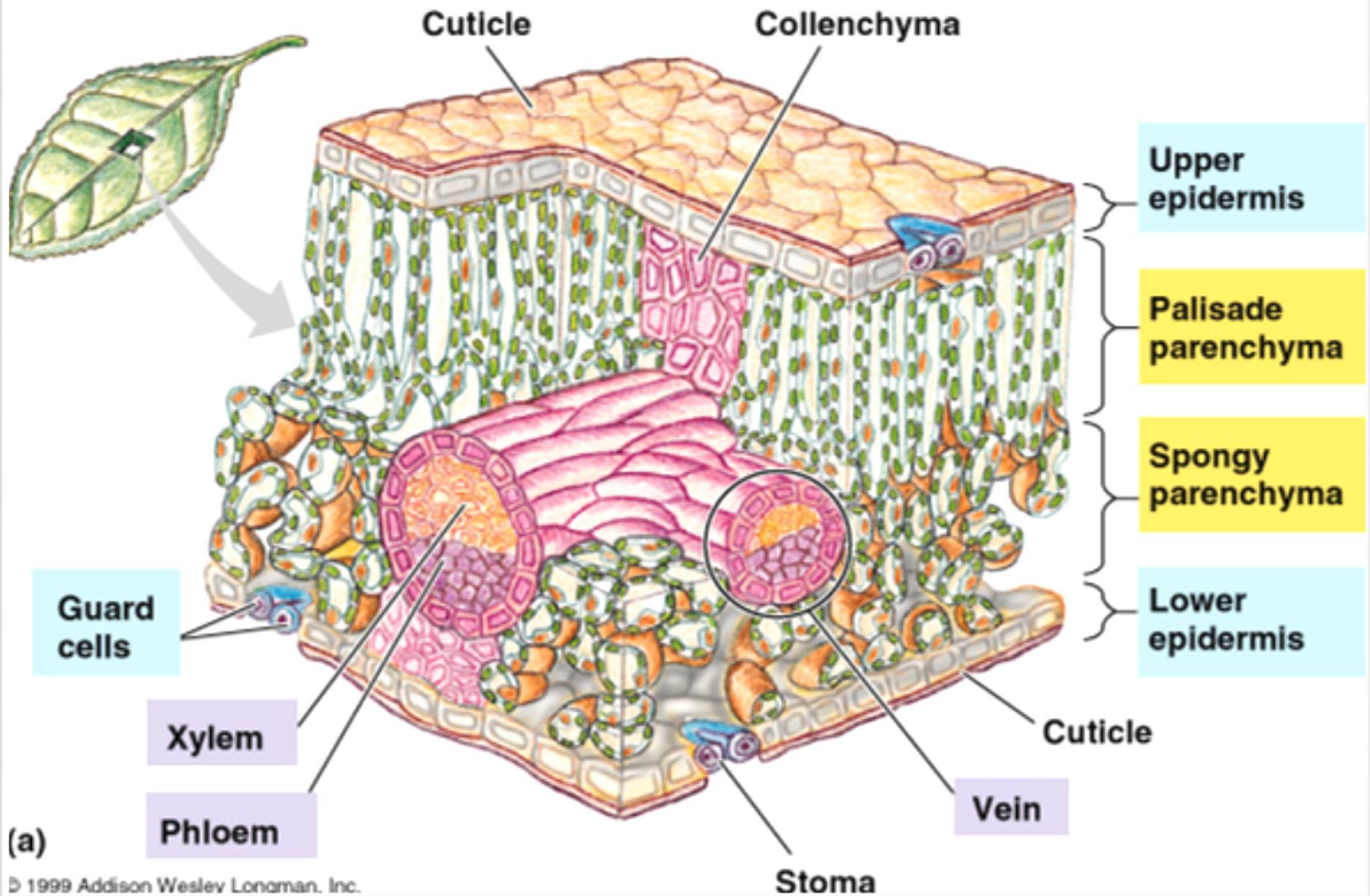


# Dicot Stem Anatomy





# Leaf Anatomy





# Dicot leaf Anatomy

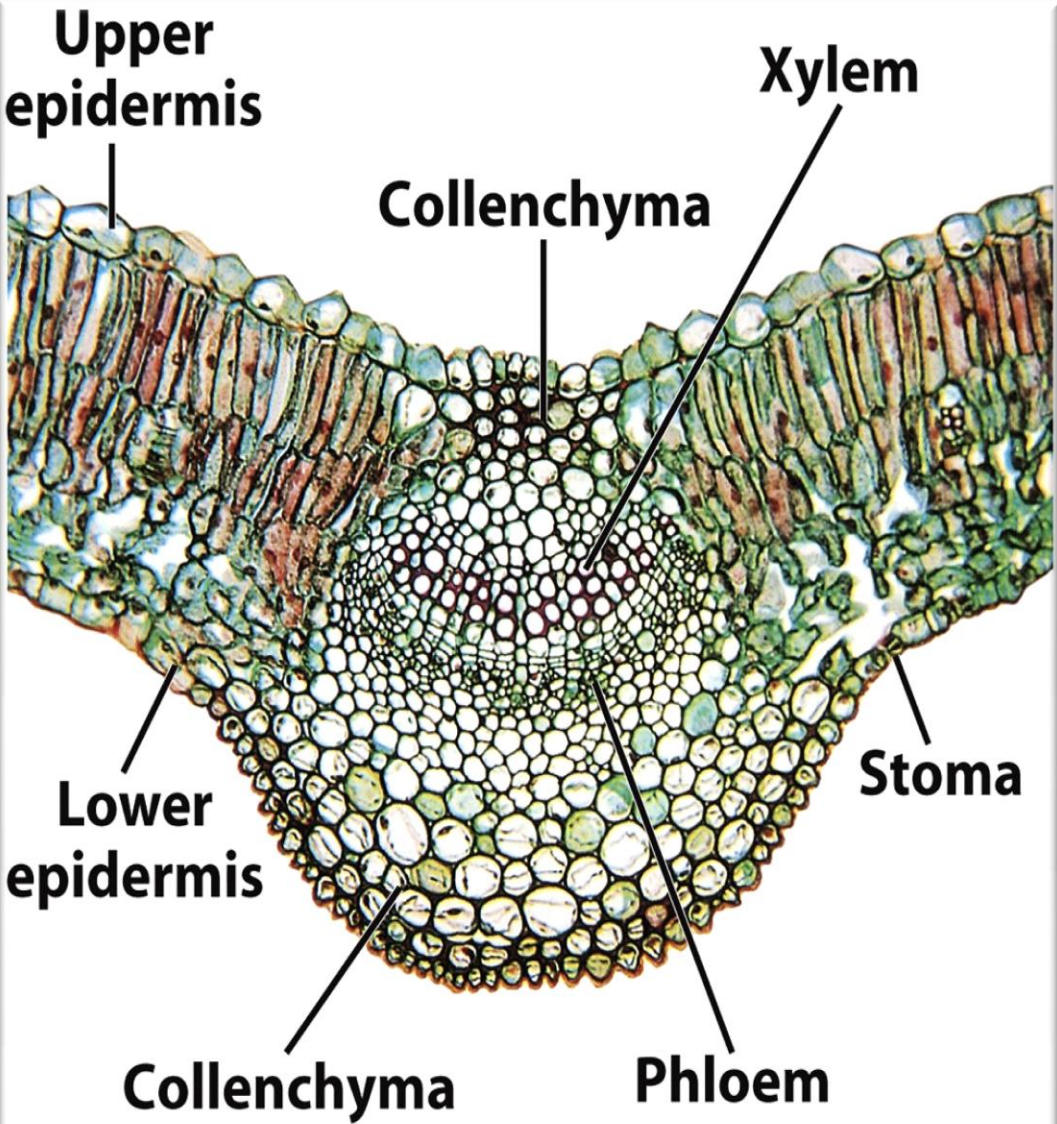
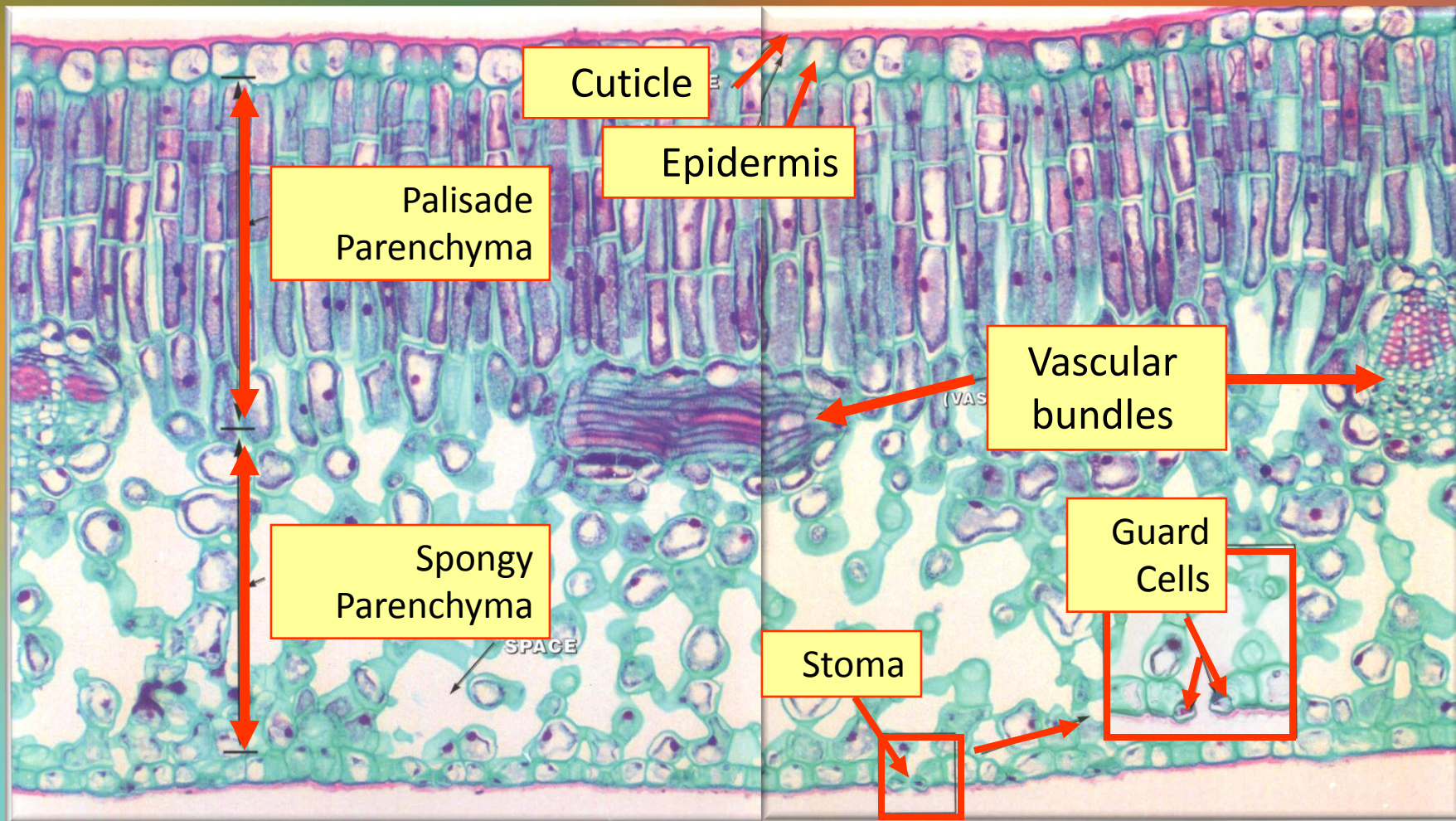


Figure 25-20a  
*Biology of Plants, Seventh Edition*  
© 2005 W.H. Freeman and Company

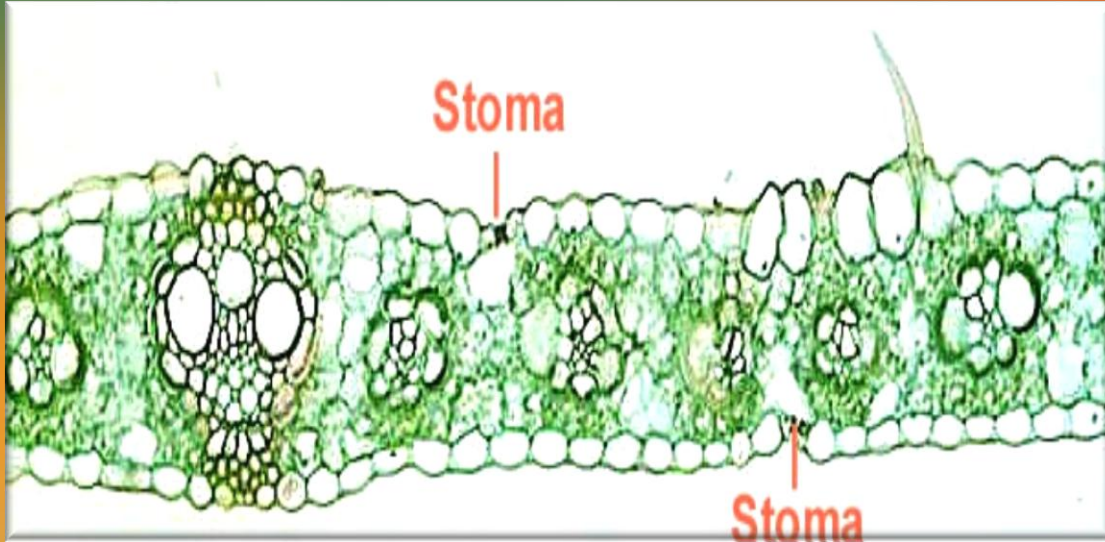


# Typical Dicot Leaf X-Section



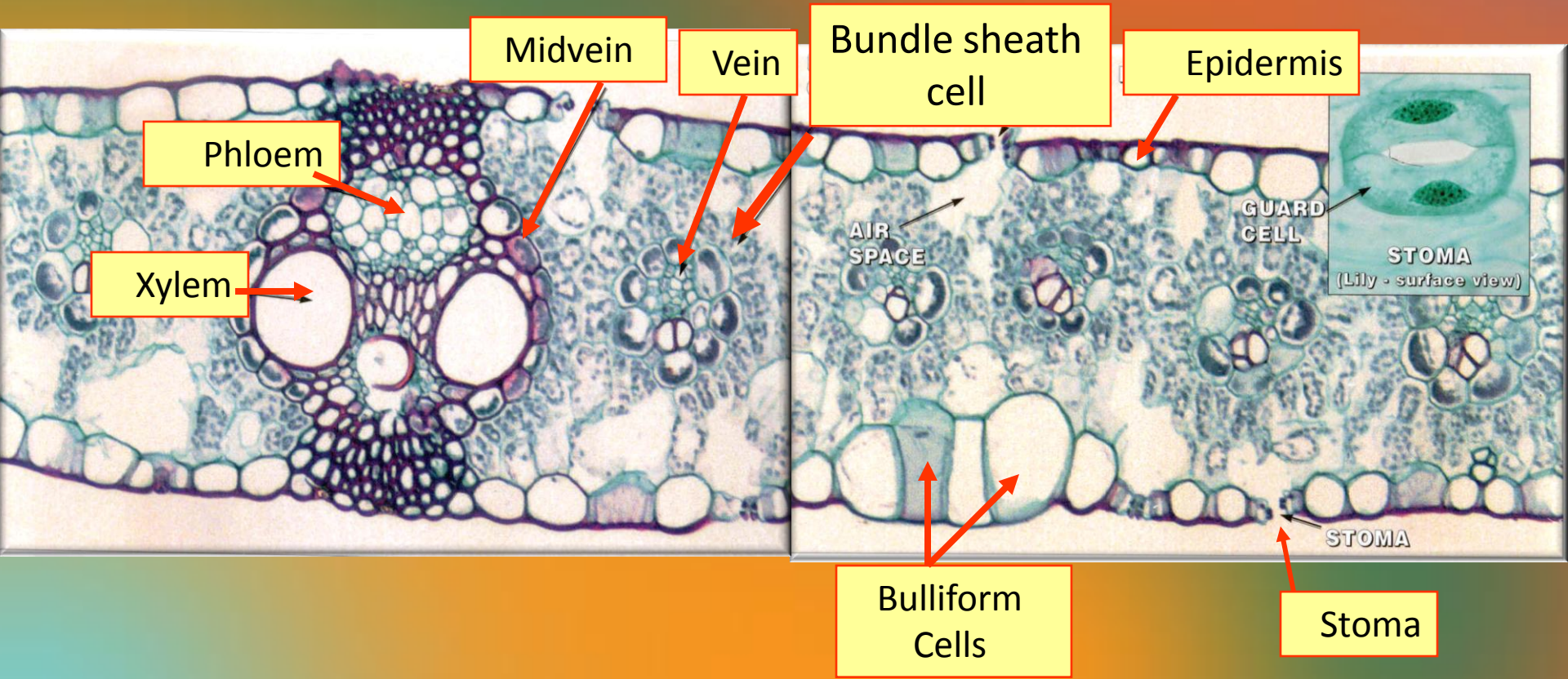


# Monocot leaf Anatomy





# Typical Monocot Leaf X-Section



# Munira Al-Dosari



*Thank  
Very  
Much*