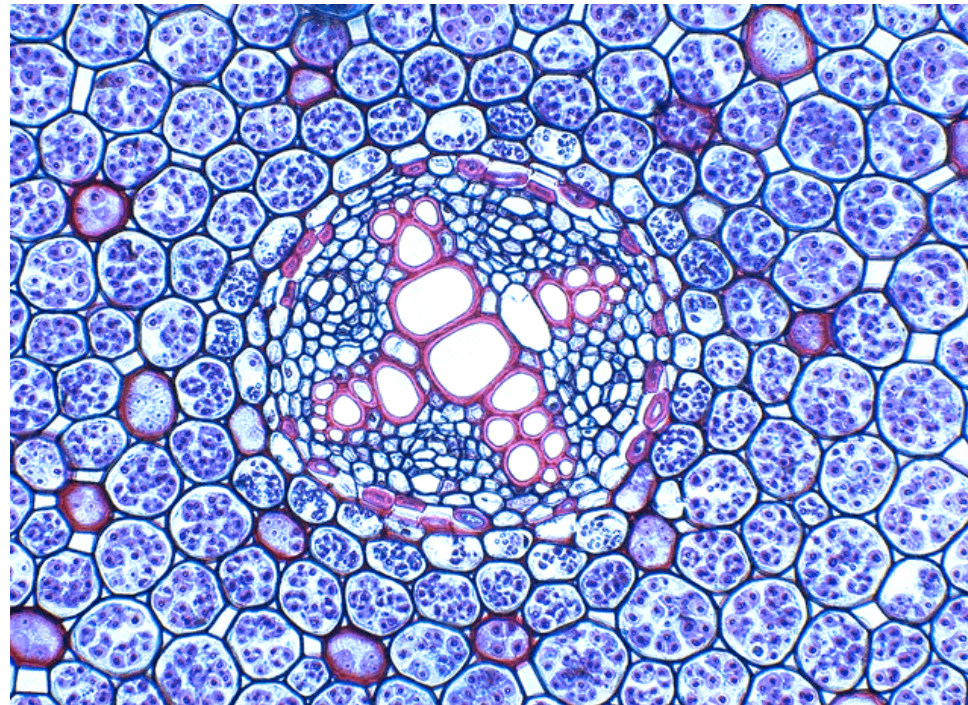


The Plant Body

Anatomy



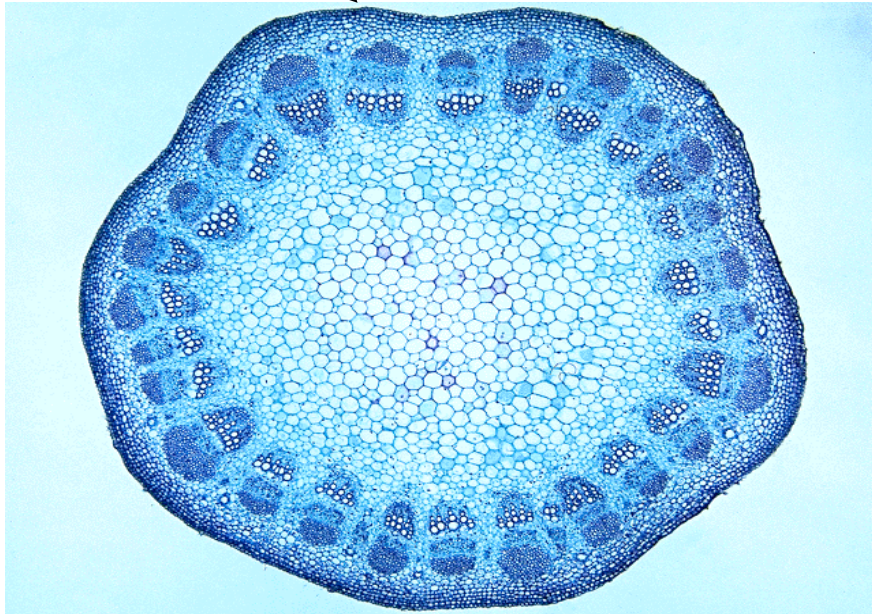
4 Types of Tissues

<u>Tissues</u>	<u>Function</u>
• Meristem	Growth
• Dermal	Protection
• Ground	PSN, Storage
• Vascular	Transport

Dermal Tissue

Outer protective layer = “Skin”

Dermal



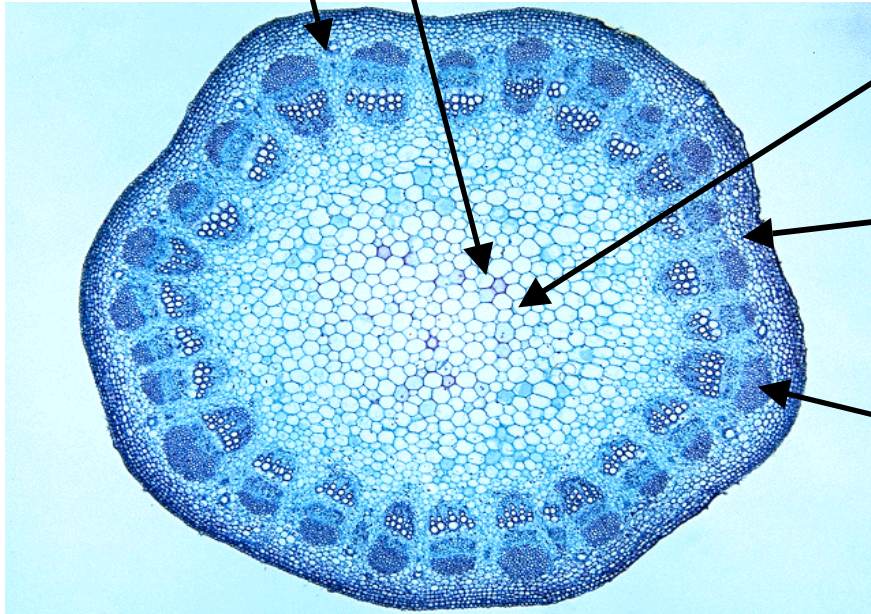
Cells

- Epidermal
- Guard cells
- Trichomes
 - nonglandular
 - glandular

Ground Tissue

located throughout “middle area” of organs

Ground



Cells

- **Parenchyma**
 - thin walls
- **Collenchyma**
 - thick non-sclerified walls
- **Sclerenchyma**
 - thick sclerified walls
 - support vascular bundles

Vascular Tissues

Transport of materials

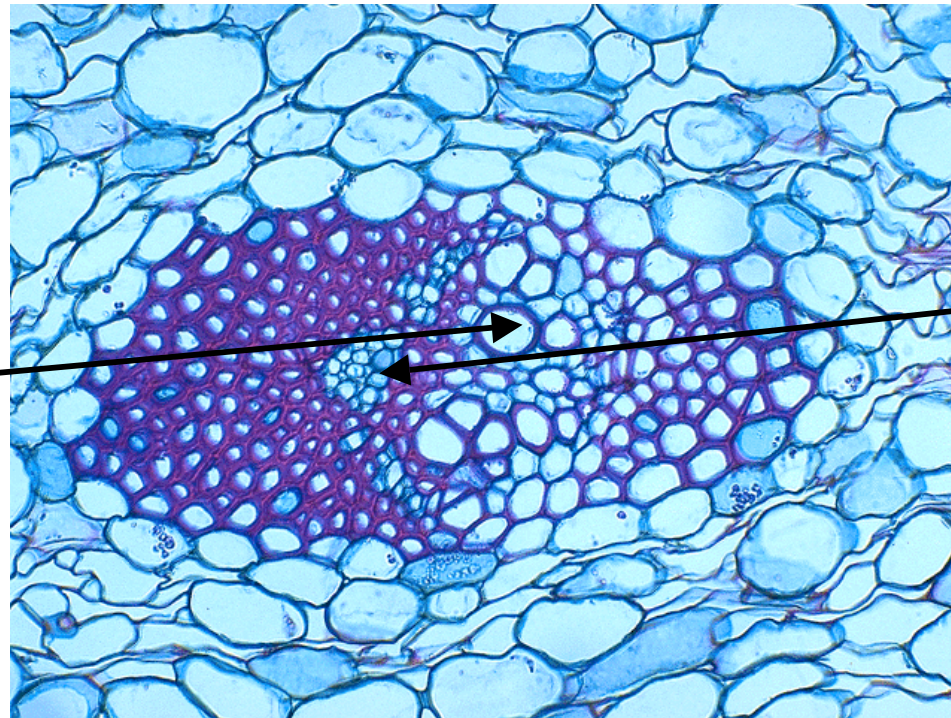
Xylem

Water & minerals

Phloem

Sugar

Xylem



Phloem

Vascular tissue: Xylem & Phloem

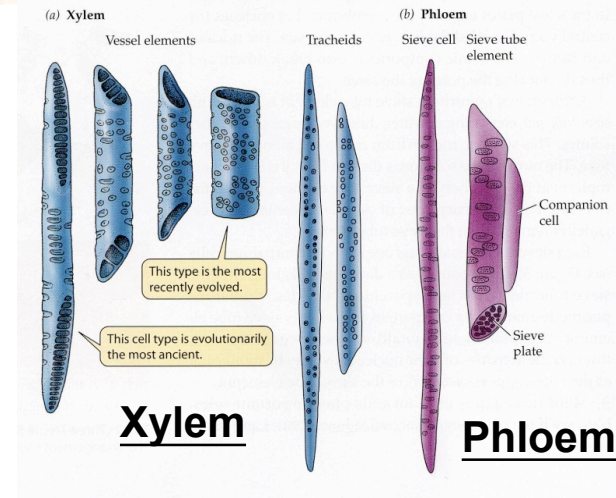
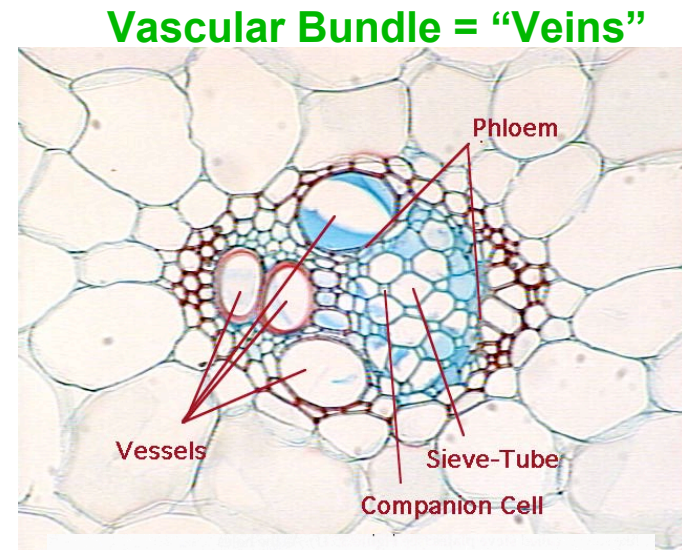
Xylem: carries water & minerals
(roots to shoots)

Cells:
Tracheids – long & narrow
or
Vessels – short w/ open ends

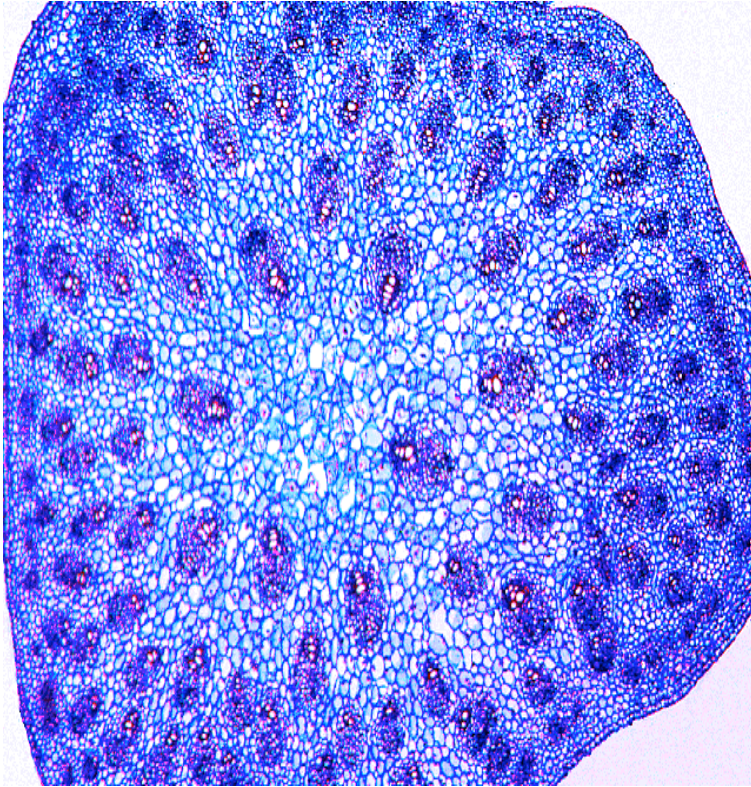
Phloem: transports sugar
(leaves to roots & reproductive organs)

Cells:
Sieve tubes – carry sugar

Companion cells – load sugar
into sieve cells

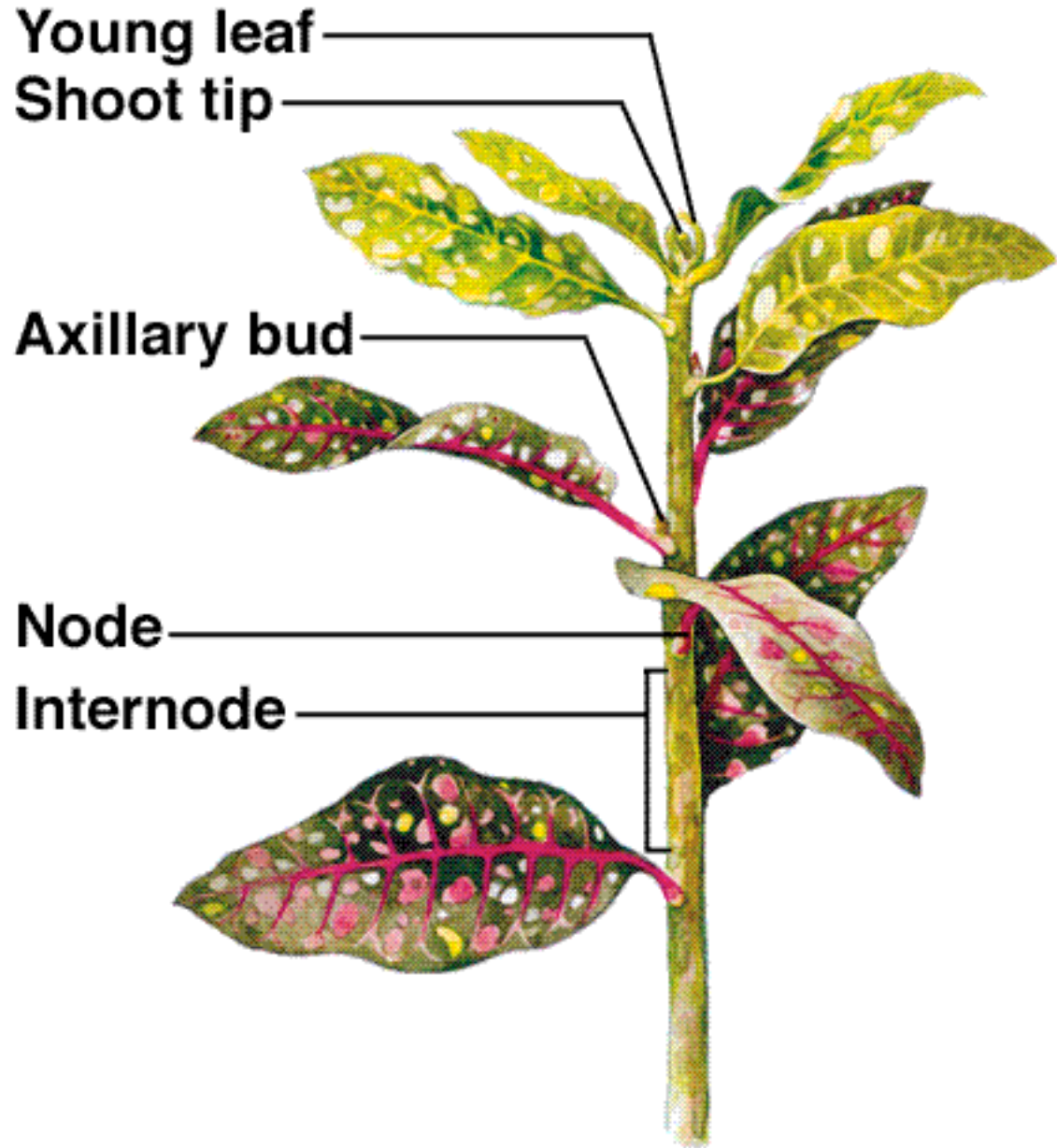


Stems



Support
Conduction
Storage

Stems Consist of Nodes and Internodes



Leaves

Photosynthesis (PSN)

Gas Exchange

Water Balance

Leaves

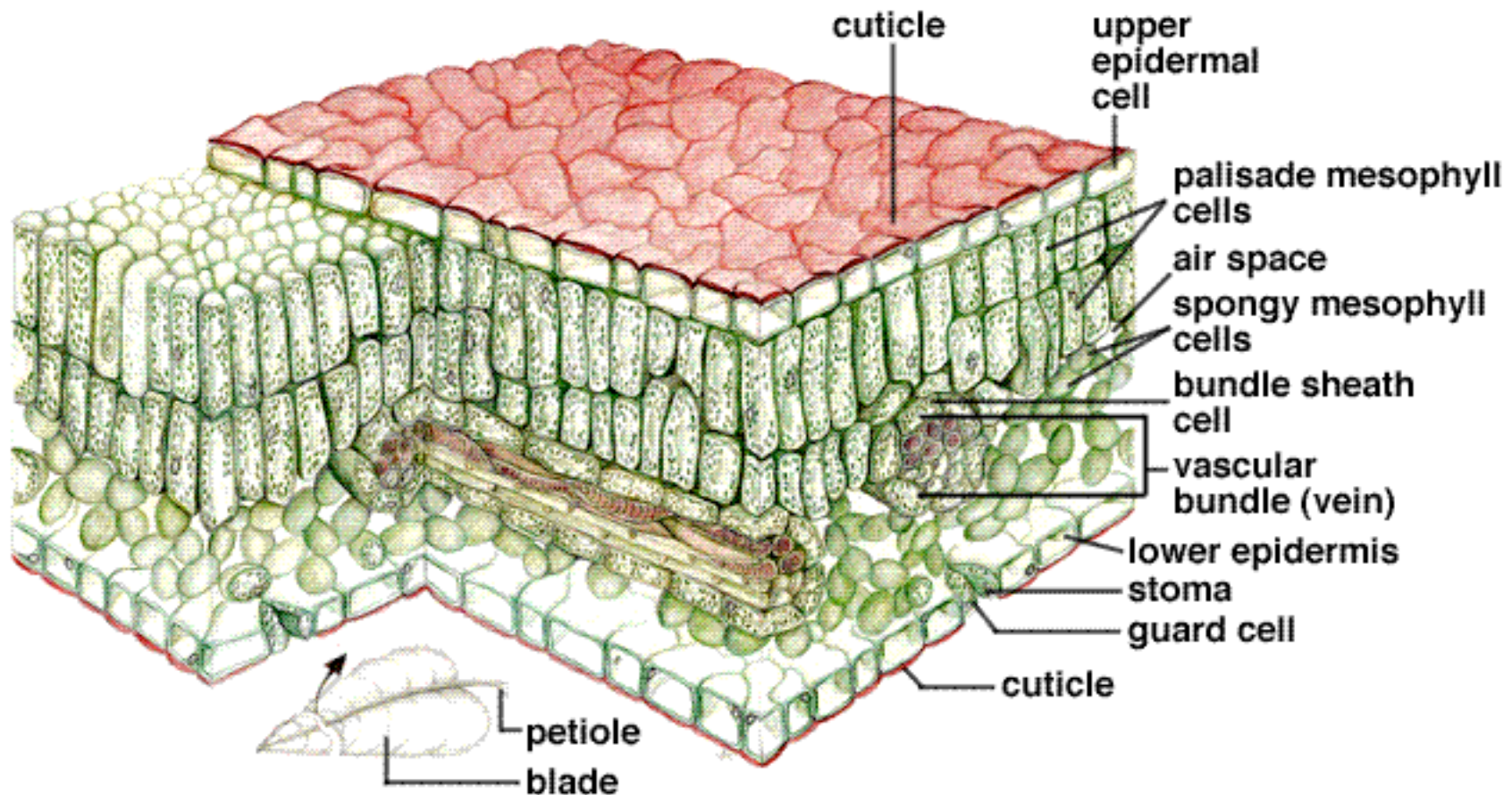
Light capture
(High Surface Area)

vs.

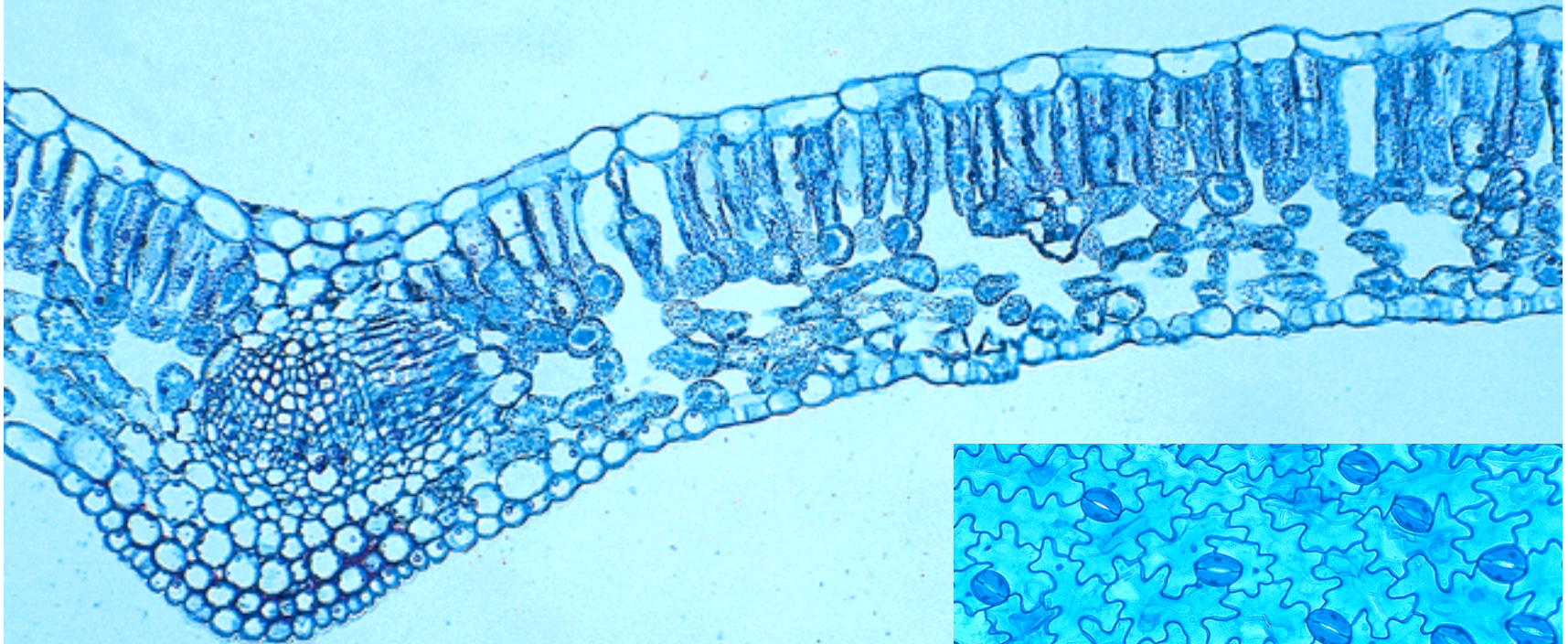
Water balance
(Low SA)

- **Large leaves in wet habitats**
- **Small leaves in dry habitats**

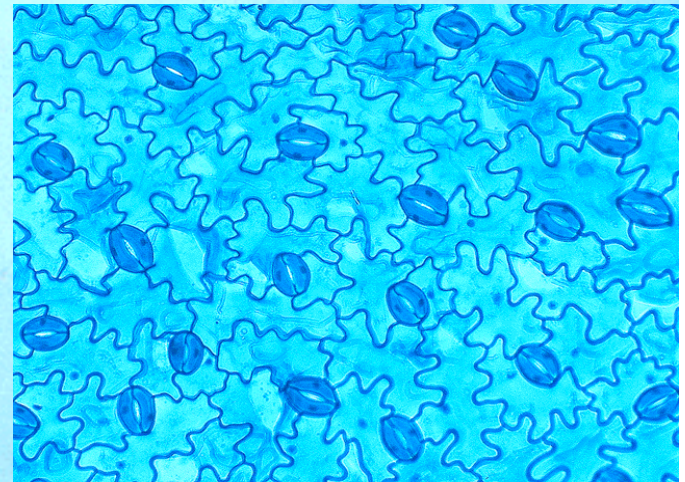
A Stereoscopic View of a Portion of a Typical Leaf

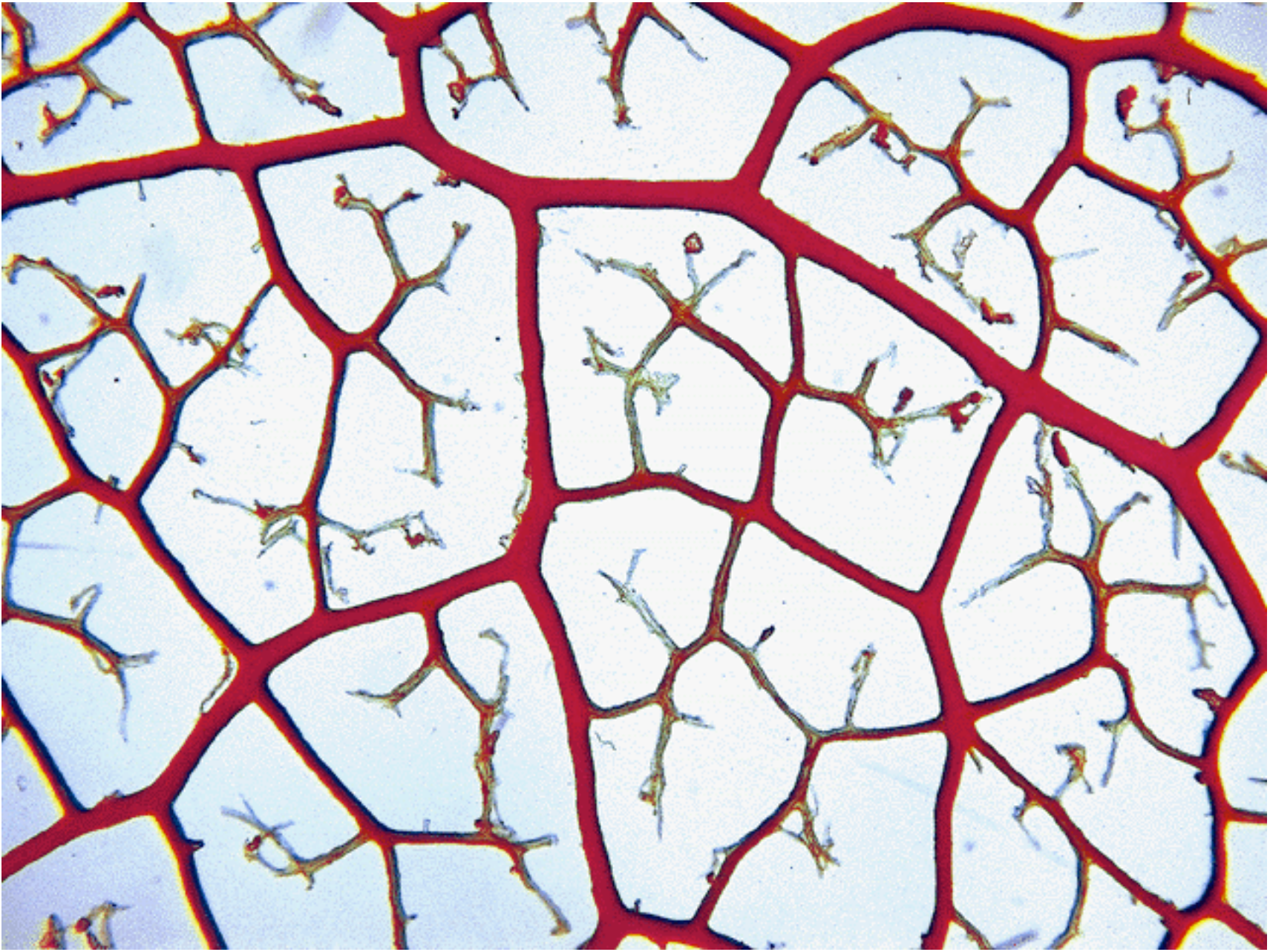


Stomata = holes in leaf



**Guard cells surround stomata:
regulate gas exchange
& water loss**

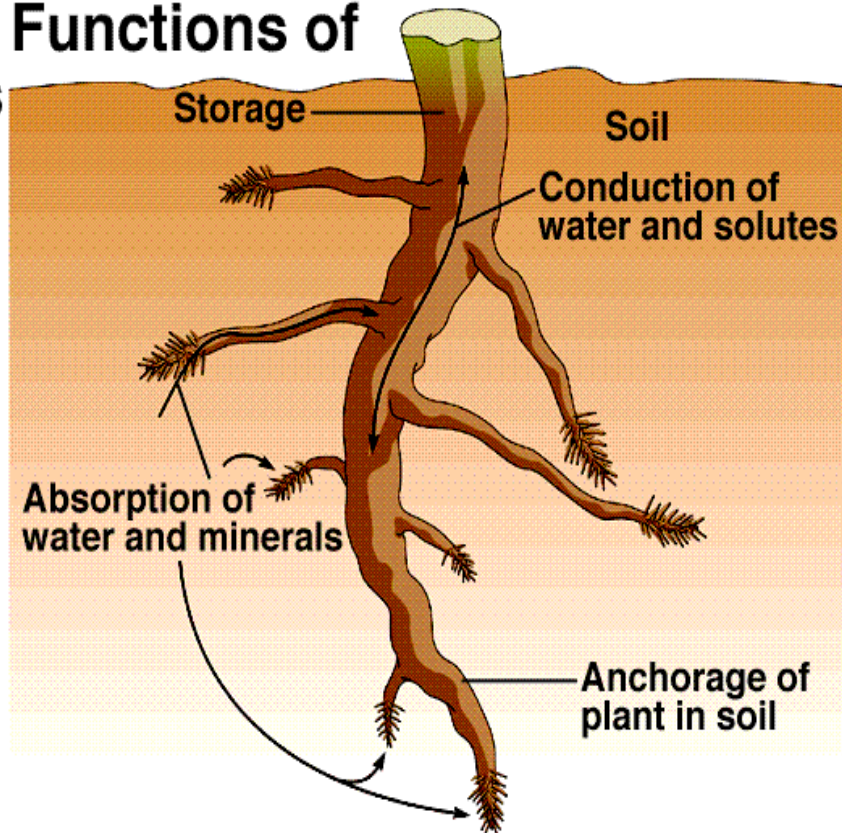




Roots

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Major Functions of Roots



Functions

Anchorage

Absorption

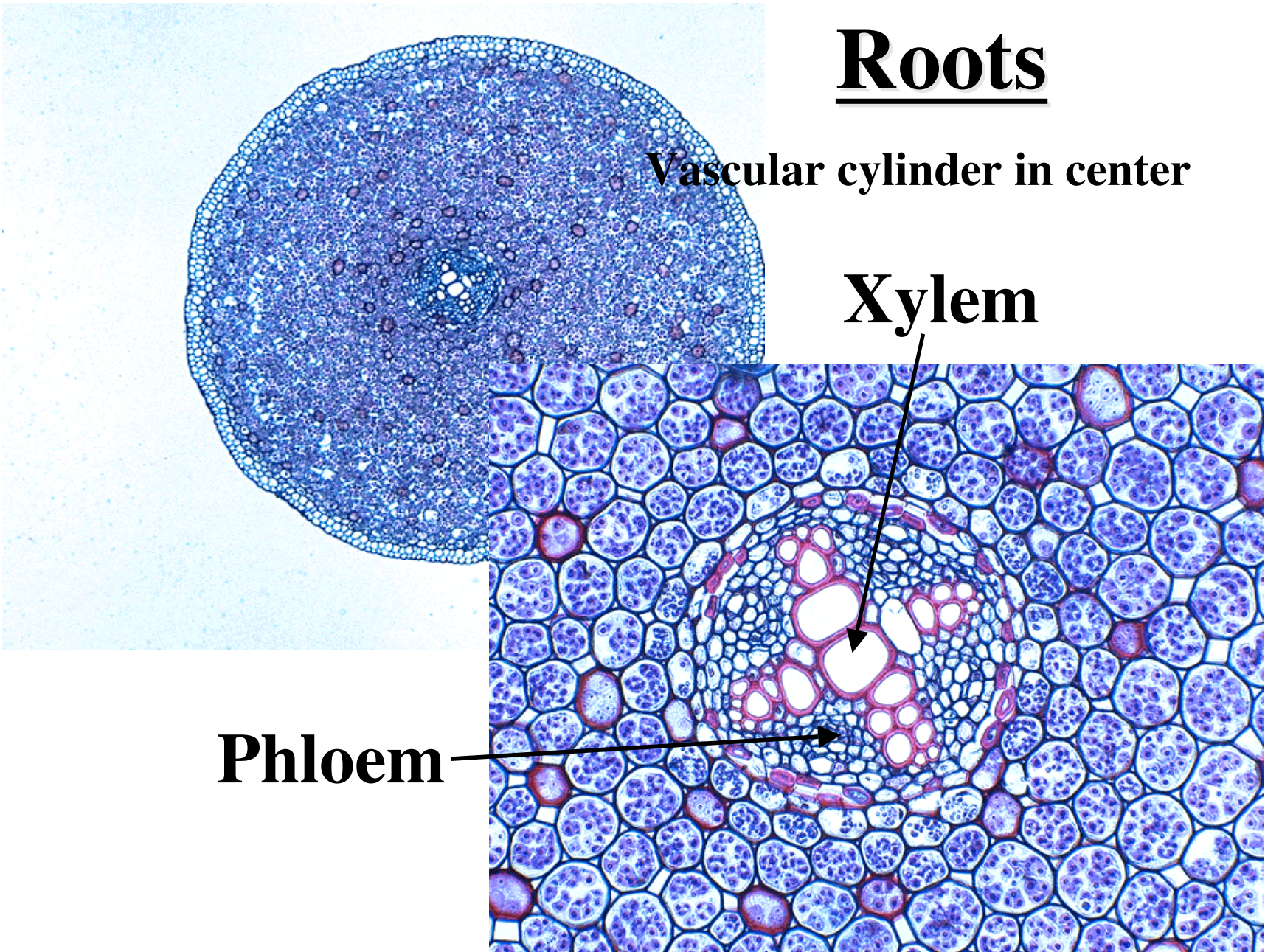
Storage

Roots

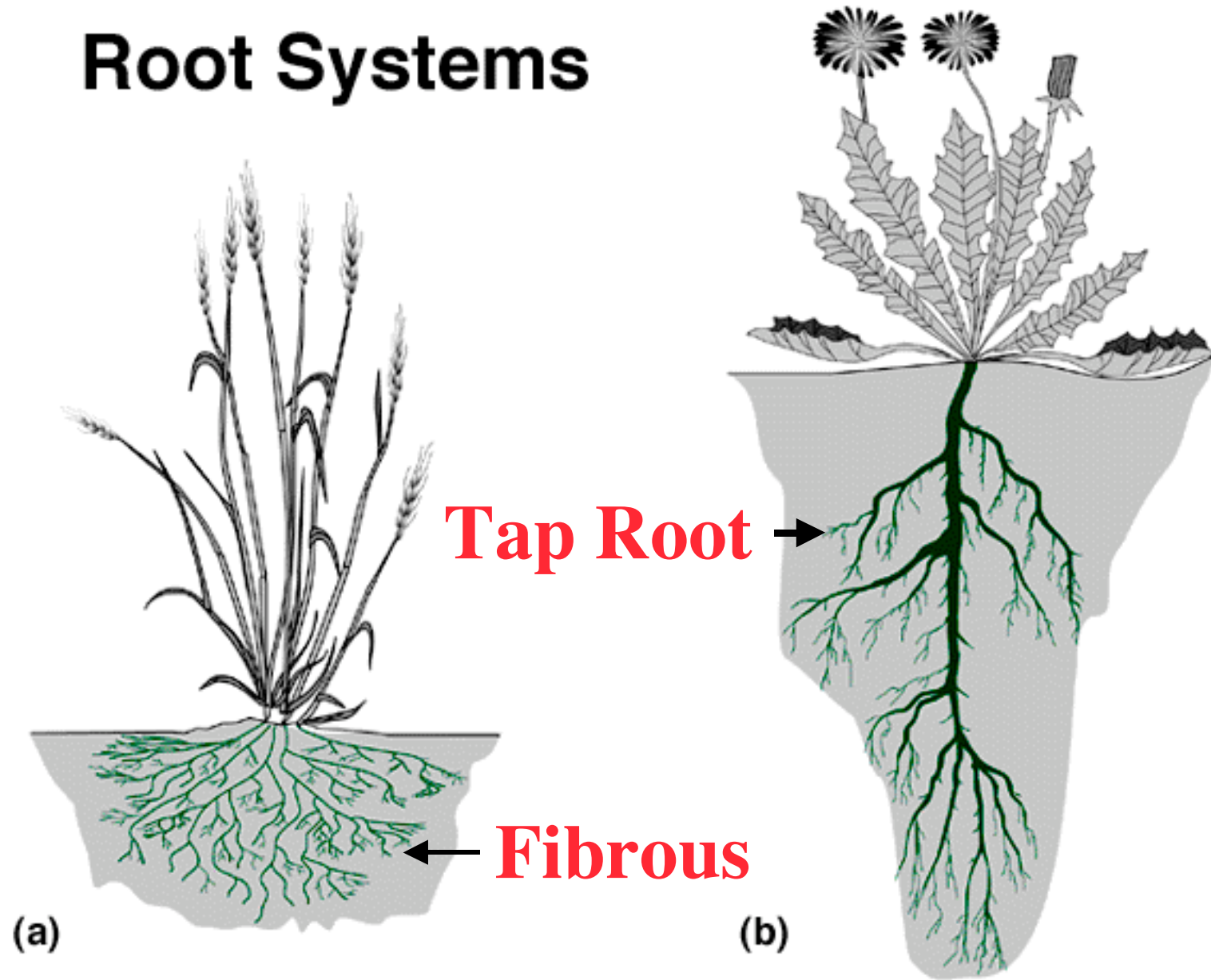
Vascular cylinder in center

Xylem

Phloem



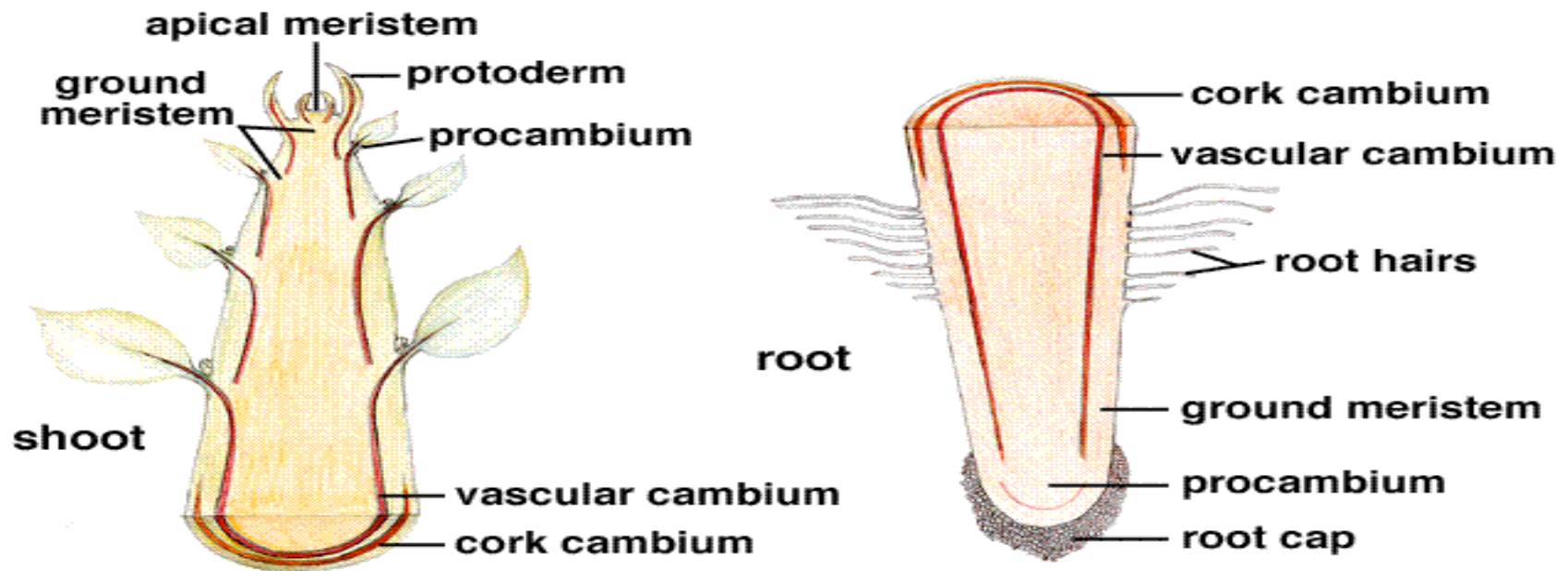
Root Systems



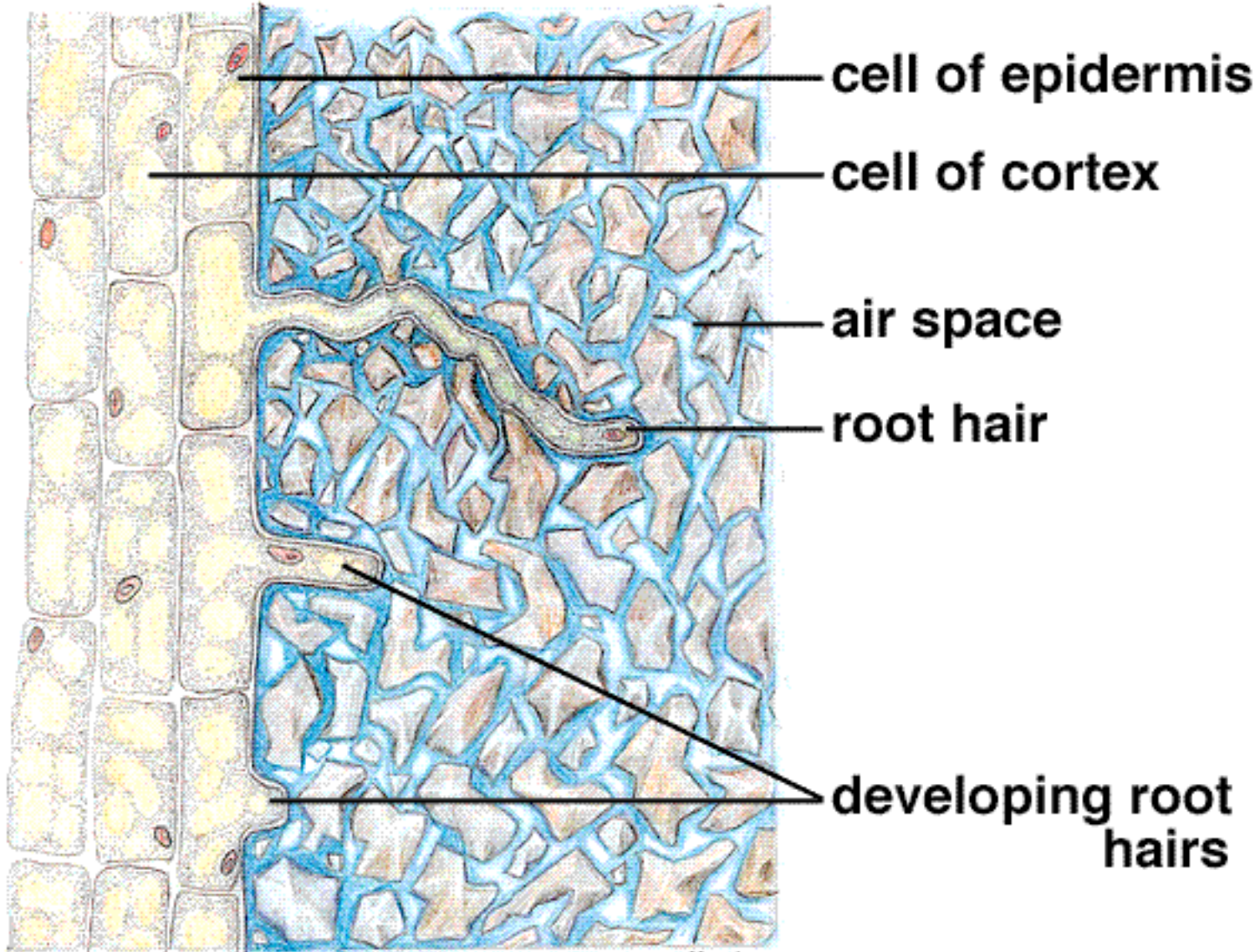
Root hairs absorb water & minerals from soil

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Longitudinal Axis of a Plant



Root Hairs in Contact With Soil Particles



Monelo

Plant Growth

**New Cells are produced in
Meristematic Tissues**

**Embryonic tissues
with no central vacuole in cells
undergoing mitosis**

Primary Growth

- **Apical & Axillary meristems**
- **Increases Body Length**
- **Produces Roots & Shoots**

Secondary Growth

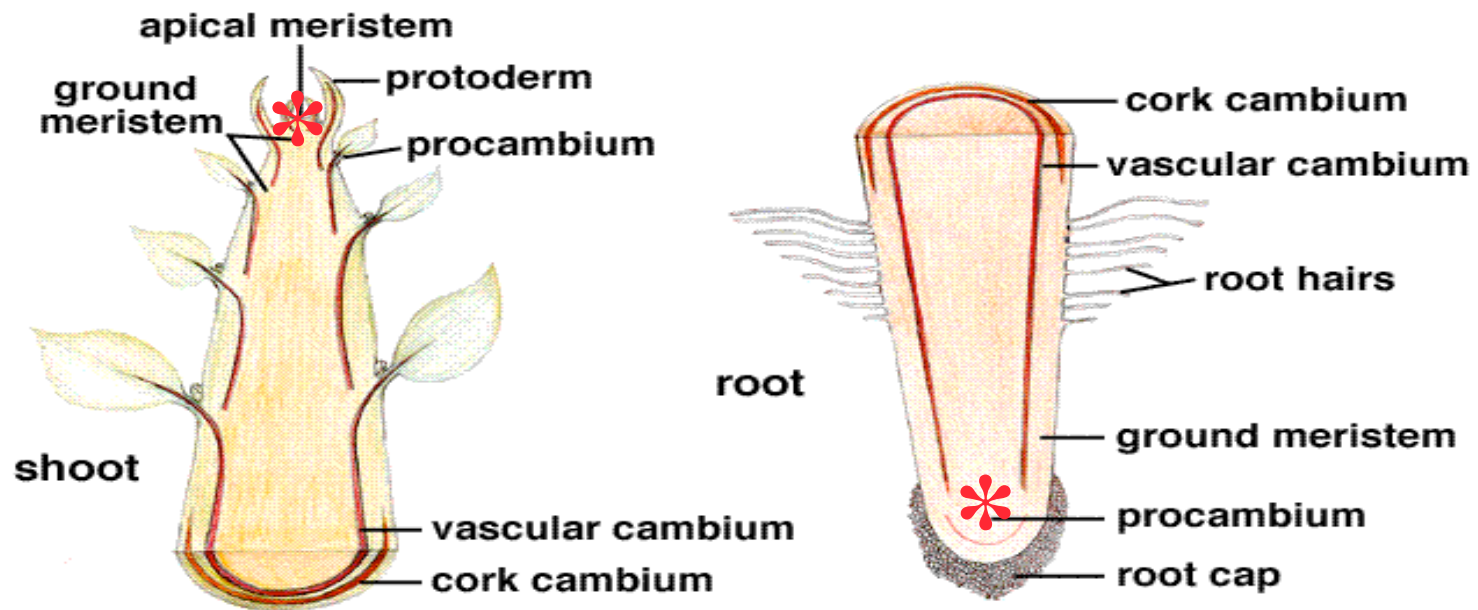
- **Lateral meristem**
- **Increases Body Width (girth)**
- **Produces Wood**

Apical Meristems

At growing tips of shoots & roots

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Longitudinal Axis of a Plant



Axillary Meristems

form branches on shoot

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Coleus Stem

