THANK YOU!

Haley Wintsch | hwintsch@calpoly.edu

Complete this form for an email with more information!

tinyurl.com/calfreshcalpoly

Food Pantry	CalFresh Outreach	Meal Vouchers	Food Distribution Site
Lower Level of Health Center (Bldg 27) MTRF 8-4:30pm W 9-4:30pm (805) 756-6181	Health Center (27-12) MT 2pm - 4pm WR 11am - 1pm calfresh@calpoly.edu calfreshcalpoly.org	Dean of Students Hillcrest (Bldg 81) M–F 9am - 5pm (805) 756-2472	SLO Food Bank + CHW Mott Lawn / Tahoe Rd 4th Tuesday of month 4:30 – 6pm

basicneeds.calpoly.edu

Botany 121: General Botany

Reading:
Mauseth pages, 115-120 (External Organization of Stems) 189-204 (Structure of Woody Plants), stop at secondary phloem

Lecture 4: Primary and Secondary Stem Growth

Lecture Outline

- Primary plant body and meristems
- External stem structure
- Internal stem structure
- Types of plants (monocots, eudicots)
- Modified stems
- Secondary growth - how woody plants and trees form

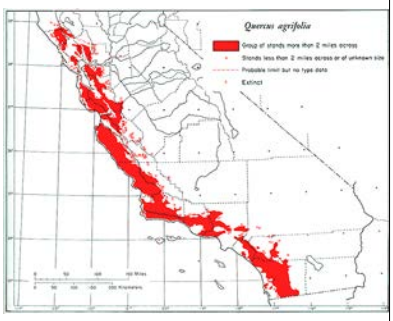
Starfish flower (*Stapelia hirsuta*)

Calico flower (*Aristolochia littoralis*)

Plant of the Week

Coast Live Oak (*Quercus agrifolia*)

- Q. agrifolia dominates coast live oak woodlands
- It is restricted to coastal areas from Sonoma County south into Baja California



Coast Live Oak (*Quercus agrifolia*)

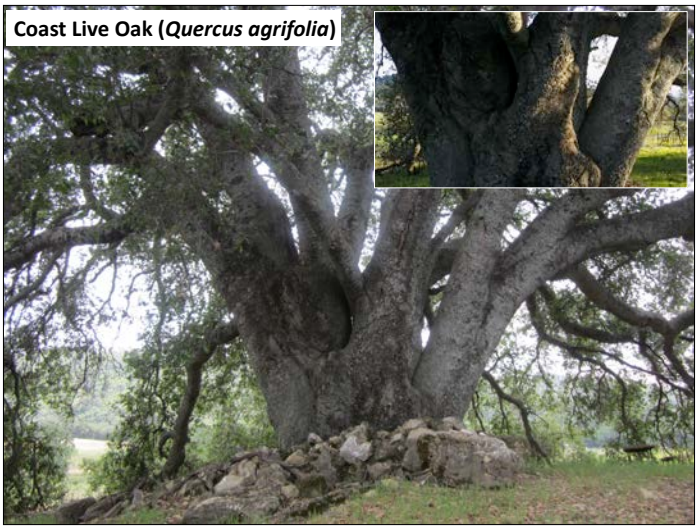
KWER-kus ag-rih-FOE-lee-uh
Quercus - L., name for these trees
agrifolia - L., rough leaves
Fagaceae

Leaf underside showing tufts of hairs

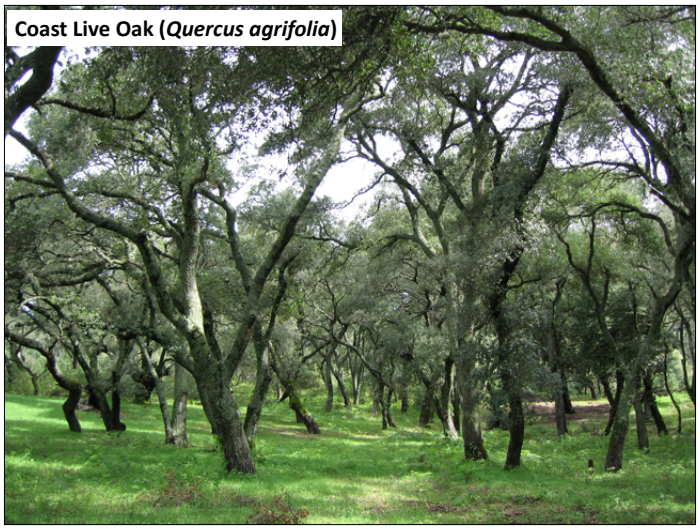
Acorns

Coast Live Oak (*Quercus agrifolia*)

Coast Live Oak (*Quercus agrifolia*)



Coast Live Oak (*Quercus agrifolia*)

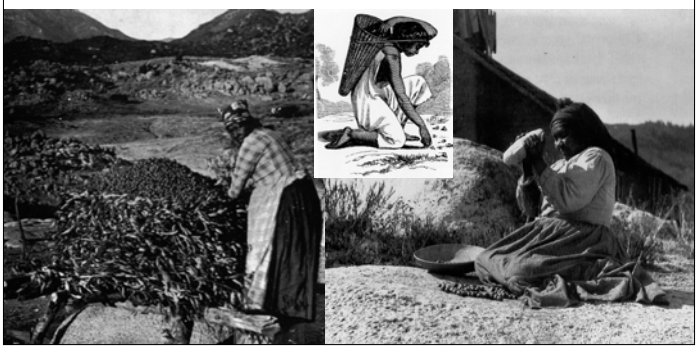


Coast Live Oak (*Quercus agrifolia*)

Coast Live Oak (*Quercus agrifolia*)

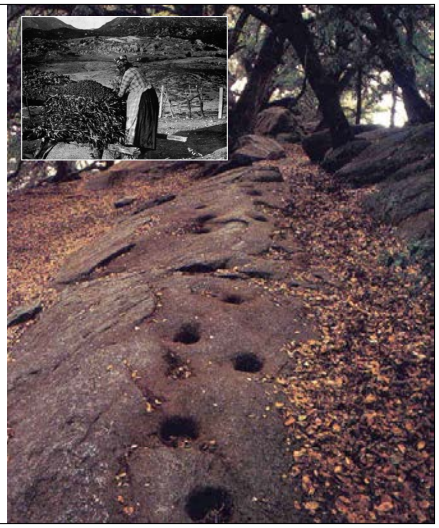
Oaks and Native Californians

- **At times <u>acorns</u> constituted the primary daily food for more that 3/4 of all native Californians**



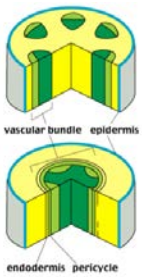
Acorns

- Native Californians crushed acorns in bedrock mortars
- After acorn meal was made, the toxic tannins were leached out with water

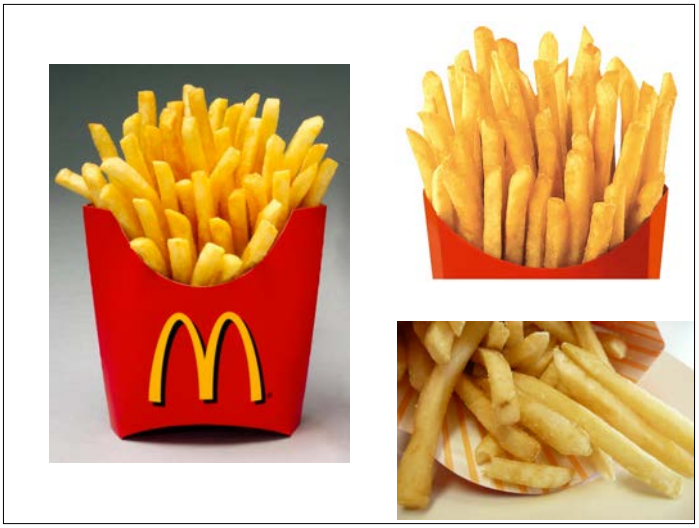


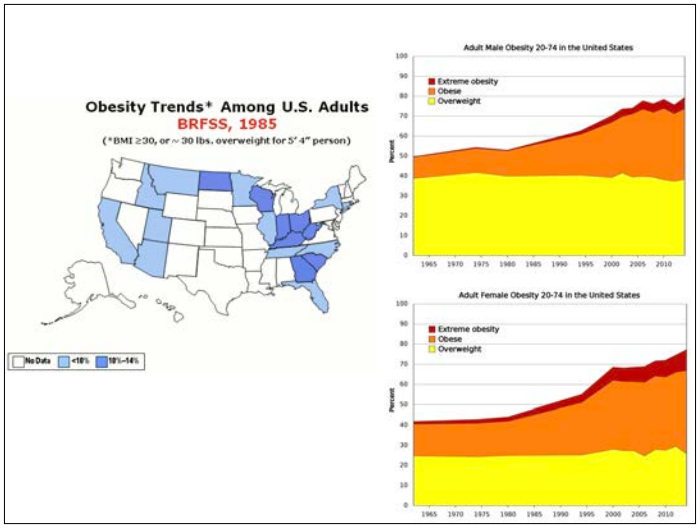
Tissues Review

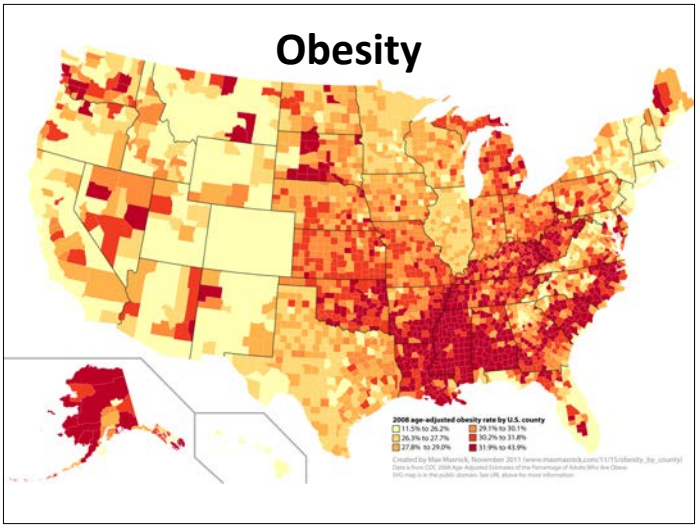
- Apical Meristem and Lateral Meristems (vascular cambium and cork cambium)
- 3 Main Tissues:
  - <u>Epidermal</u> (stomata, trichomes)
  - <u>Ground</u> (parenchyma, collenchyma, sclerenchyma [fibers and sclereids])
  - <u>Vascular</u> (Xylem [tracheids and vessel elements] Phloem [sieve tube members and companion cells])

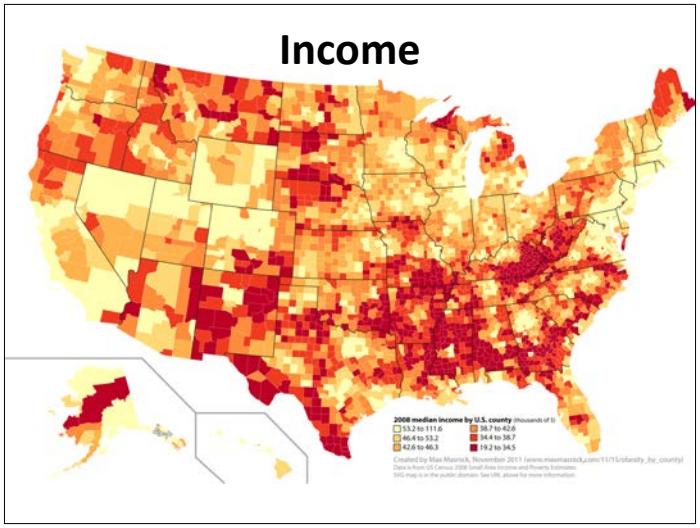


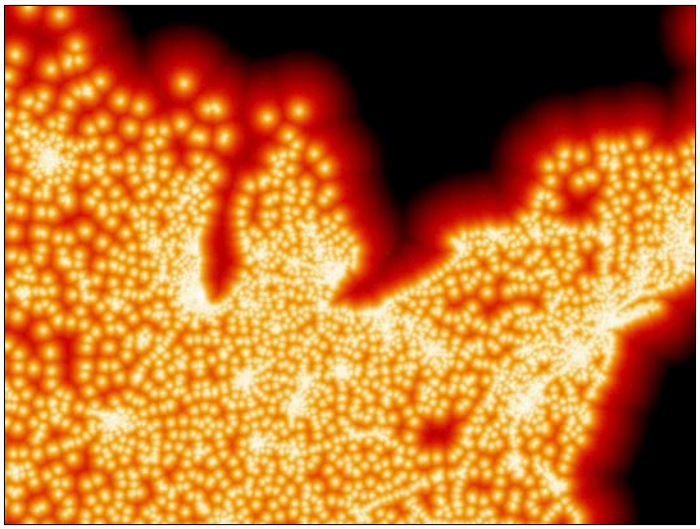
The potato is the most eaten vegetable in America.

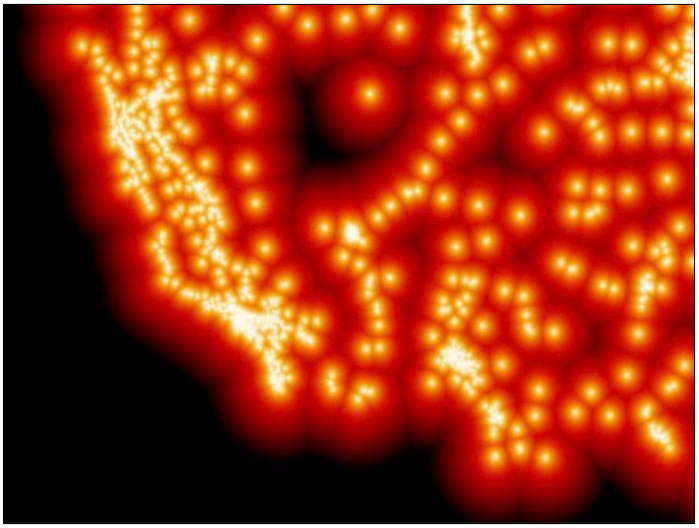


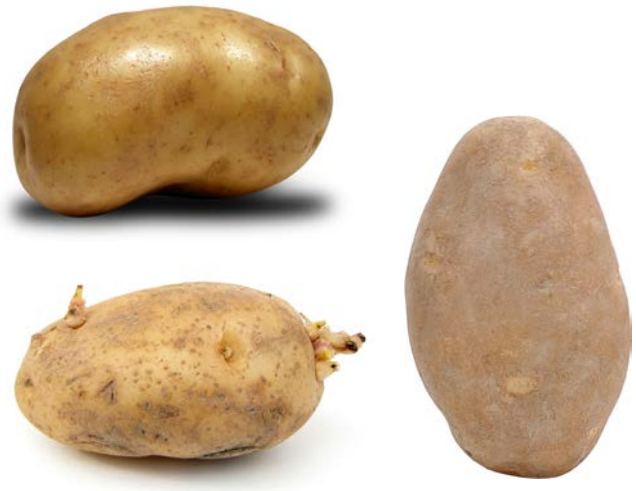

Obesity Trends* Among U.S. Adults
BRFSS, 1985
(*BMI ≥30, or ~ 30 lbs. overweight for 5' 4" person)
No Data
<10%
10%–14%
Adult Male Obesity 20-74 in the United States
Extreme obesity
Obese
Overweight
Percent
Adult Female Obesity 20-74 in the United States
Extreme obesity
Obese
Overweight
Percent


Obesity
2008 age-adjusted obesity rate by U.S. county


Income
2008 median income by U.S. county



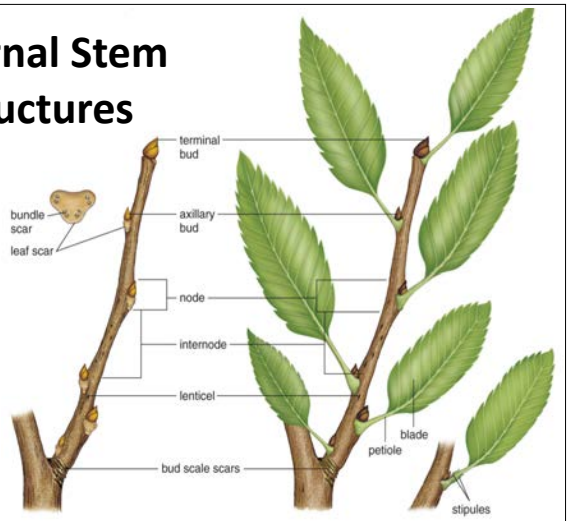


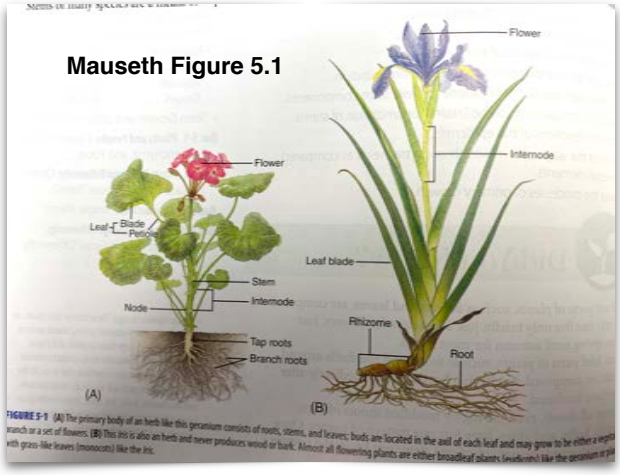


Functions of a Stem

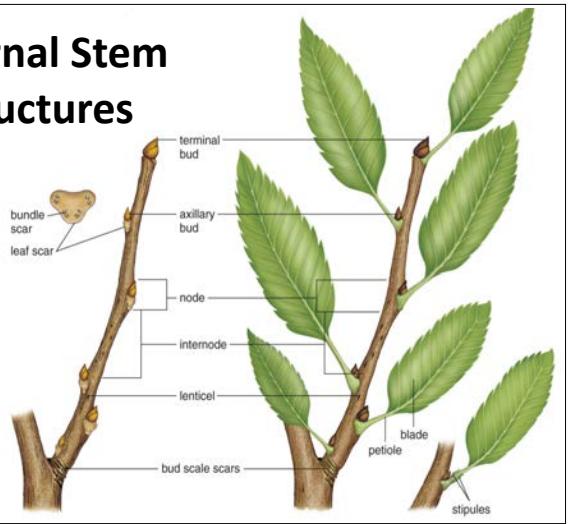
- Transport - Stem facilitates transport through the vascular tissue
- Support - The stem holds leaves up in a position for efficient photosynthesis

External Stem Structures

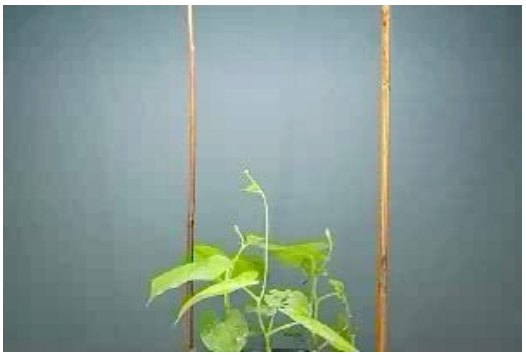




External Stem Structures



Bean Stem Growing



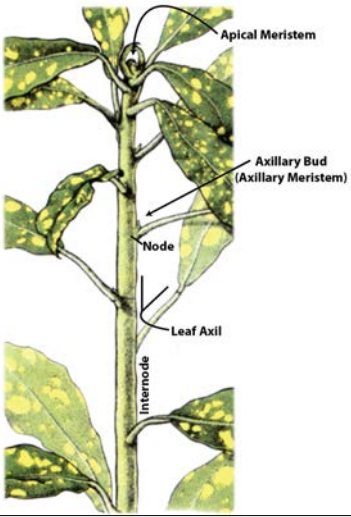
Sir David Attenborough

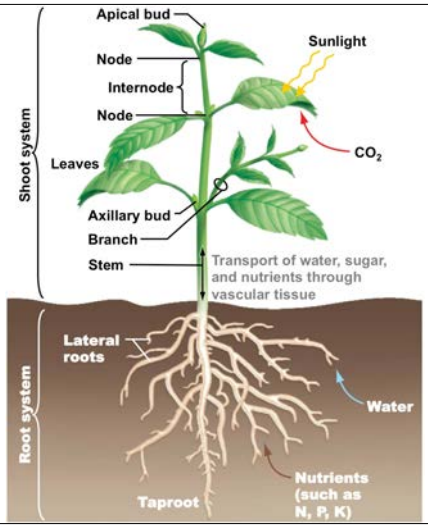
- Film maker, writer, and conservation biologist

Blackberry Stem Growing

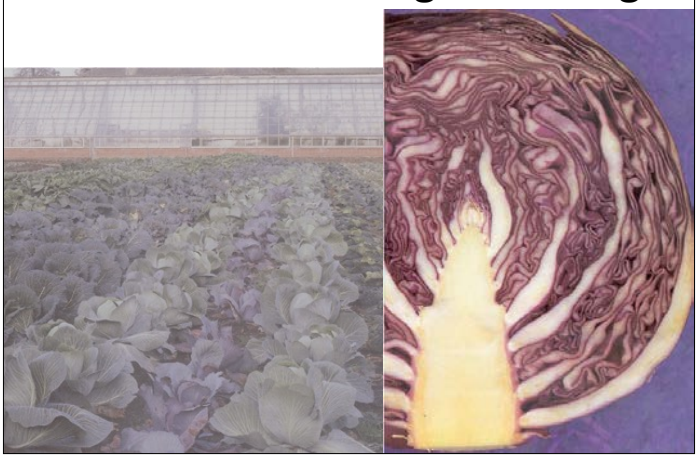
Stem Structure

- The **apical meristem** produces tissues that grow into mature stem and leaf tissues.
- Leaves are attached at **nodes**. One or more leaves occur at each node.
- **Internodes** are the space between each node.
- A bud occurs in the axil of each leaf, called the **axillary bud**.
  - Axillary buds grow into new leafy stems or flowers.

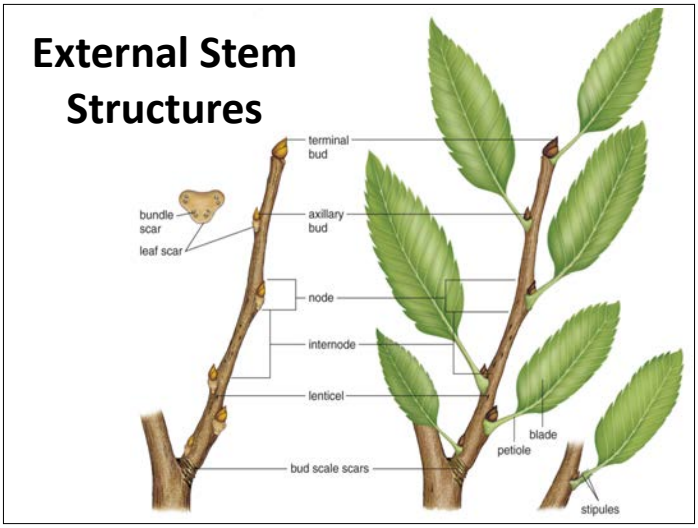




Short Internode Length: Cabbage

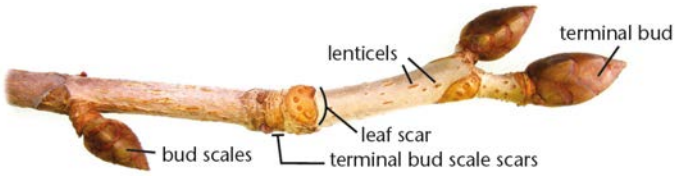


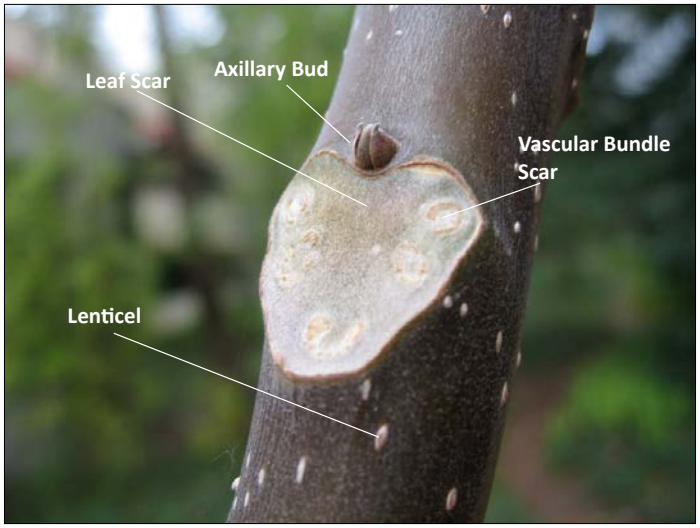
External Stem Structures



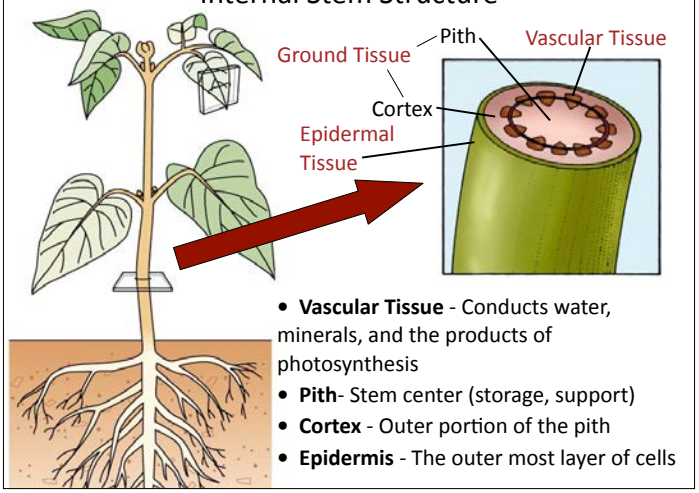
Deciduous Stem

<u>Deciduous</u> - plant structures that fall off naturally at the end of a growing period, e.g., leaves that fall seasonally or plants that are seasonally leafless.





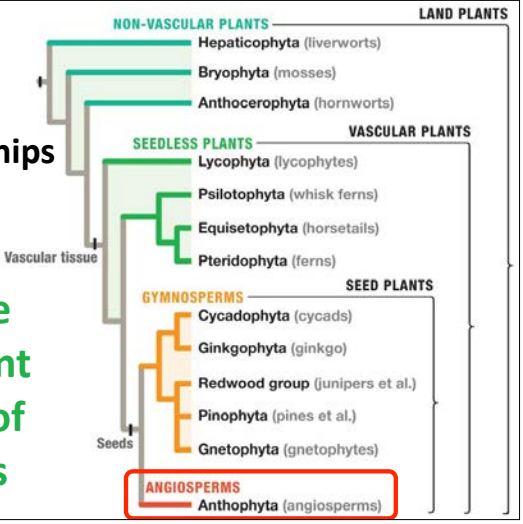
Internal Stem Structure



- **Vascular Tissue** - Conducts water, minerals, and the products of photosynthesis
- **Pith**- Stem center (storage, support)
- **Cortex** - Outer portion of the pith
- **Epidermis** - The outer most layer of cells

Plant Relationships

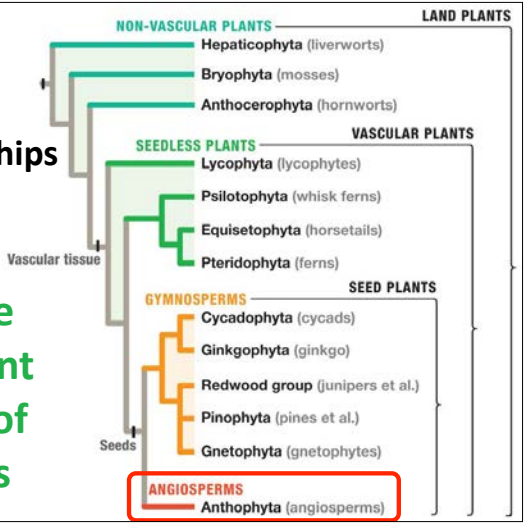
All the different types of plants



Mosses

- Reproduce by spores
- Short and soft
- No vascular tissue

Plant Relationships

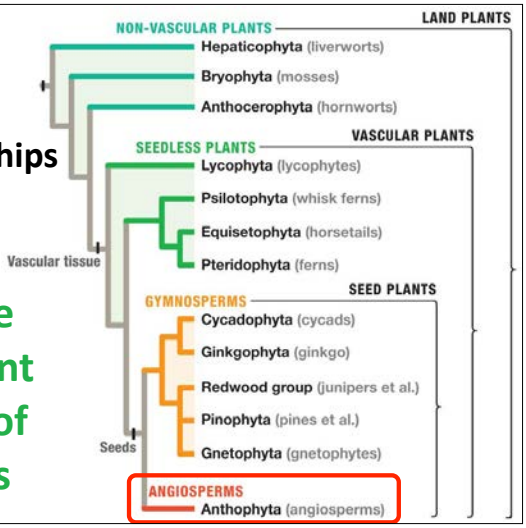


All the different types of plants

Seedless Vascular Plants

- Horsetails, Fern, and their relatives

Plant Relationships



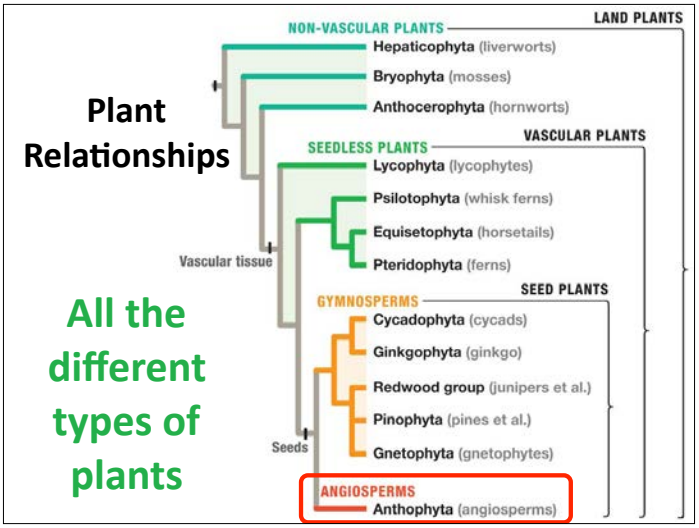
All the different types of plants

Gymnosperms

- No fruit or flowers
- Cycads, ginkgo, conifers, and their relatives

Plant Relationships

All the different types of plants



Flowering Plants: Angiosperms

Plant Relationships

All the different types of plants