

How Are Plants Named and Classified?

- 📖 Plants are classified by their similarities within their characteristics.
 - Taxonomists compare flower patterns, stem and leaf structures, life cycles, genetic similarities and many other characteristics.
- 📖 They are then grouped in specific categories, or taxas:



Categories/Taxas

Example*

Kingdom

Plantae

Phylum

Pteridophyta

Class

Filicopsida

Order

Polypodiales

Family

Dryopteridaceae

Genus

Polystichum

Species

setiferum


*Sample classification of a Soft Shield Fern



📄 All plants are in the Kingdom Plantae.

📄 Vascular plants (plants with tissue specialized for conducting materials) are all in the Phylum Tracheophyta.




 There are many Classes, Orders, and Families of plants. Even though each plant is categorized using at least seven names, we call plants by only their last two scientific names, a naming system called ***binomial nomenclature*** (which means a two-name system of identifying).

- This classification system was developed by Carolus Linnaeus and uses Latin terms to name plants

📖 The two names that we use for the scientific names of plants are the **Genus** name, which is always capitalized, and the **species** name which is always lower case (e.g. *Solanum melongena*)

📖 The genus is a group of plants that are very similar to each other. The species is a group of plants that are so similar that they usually mate freely with each other in the wild. Plants are also called by common names, but those names are specific for language and geographic location. Scientific names are specific and remain the same across languages and borders. Although it is the Aubergine in Afghanistan, the plant is *Solanum melongena* everywhere on Earth.

What Are Some Ways That We Can Put Plants Into Groups?

-  The plant kingdom has become successful all over the Earth. They have done so by adapting to a wide variety of different conditions and niches. The following are some of the major groups of plants.
- Bryophytes, ferns, gymnosperms and angiosperms

Bryophytes

- 📖 Belong to the phylum Bryophyta
- 📖 Non-vascular plants
 - No conducting tissues
- 📖 Live in damp places
- 📖 Limited in size due to lack of conducting tissue
- 📖 Ex. Mosses and liverworts



Liverwort



Moss



Ferns



Ferns in the forest

- ❏ Vascular plants
- ❏ Reproduce by spores
- ❏ Have no true leaves; Only fronds
- ❏ Fronds produce food and spores
- ❏ New fronds called fiddleheads

Fiddleheads



Spores on underside of frond

Gymnosperms

- 📖 Reproduce with seeds found in cones
- 📖 Also known as a **conifer**
- 📖 Leaves reduced to scales or needles
- 📖 Most are **evergreen** – hold on to their green color year round
 - Ex. Pines, spruce, cedar
- 📖 Some can be **deciduous** – lose their leaves
 - Ex. Ginkgo, larch



Coniferous evergreen –
Pinus contorta



Deciduous conifer –
Ginkgo biloba

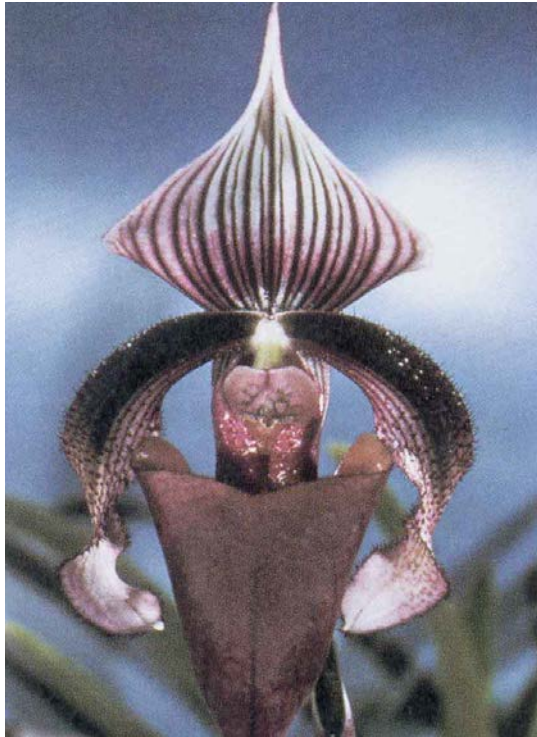


Angiosperms

- 📖 Plants that reproduce by flowers
- 📖 There are two types: monocotyledons (monocots) & dicotyledons (dicots)
- 📖 A **cotyledon** is a food storage structure in the seed.
 - Monocots have a single cotyledon
 - 📖 Ex. Grasses, maize and lilies
 - Dicots have two cotyledons
 - 📖 Ex. Roses, petunias, cranesbill, and beans



Angiosperms - Monocot



Orchid – *Paphiopedilum curtisii*

- Have flower parts (sepals, petals, stamens, pistils) in multiples of three
 - 3, 6, 9...
- Parallel venation within the leaves
- Stems with scattered vascular bundles
- Narrow leaves
- Fibrous root system

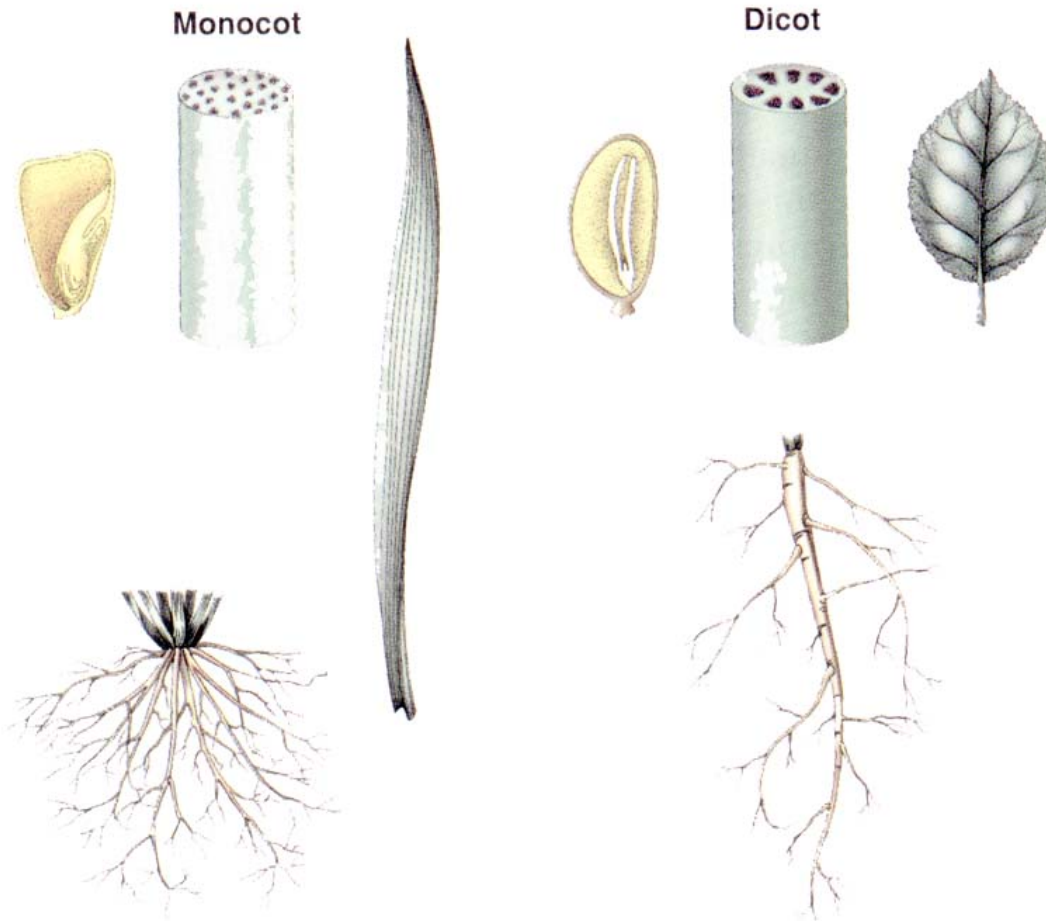
Angiosperms - Dicot

- 📖 Flower parts are in multiples of 4's or 5's
 - 4, 12, 16 or 5, 10, 15
- 📖 Netted veins
- 📖 Vascular bundles are in rings around the stem
- 📖 Have broad leaves
- 📖 Taproot system

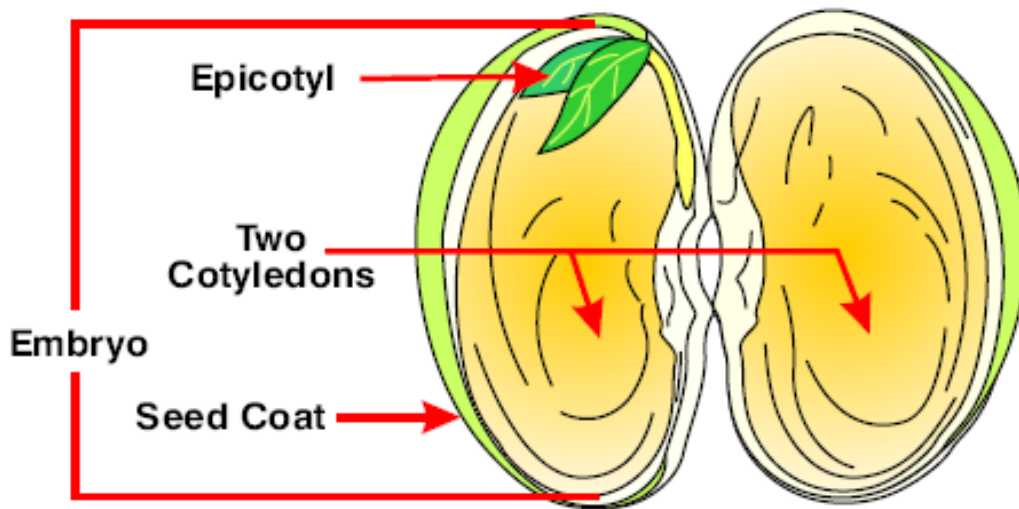


Hibiscus sp.

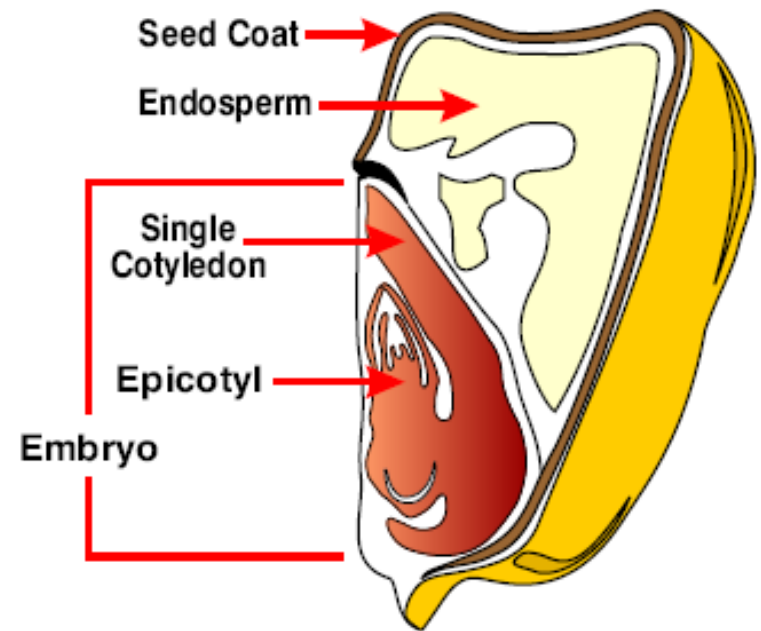
Monocot vs. Dicot



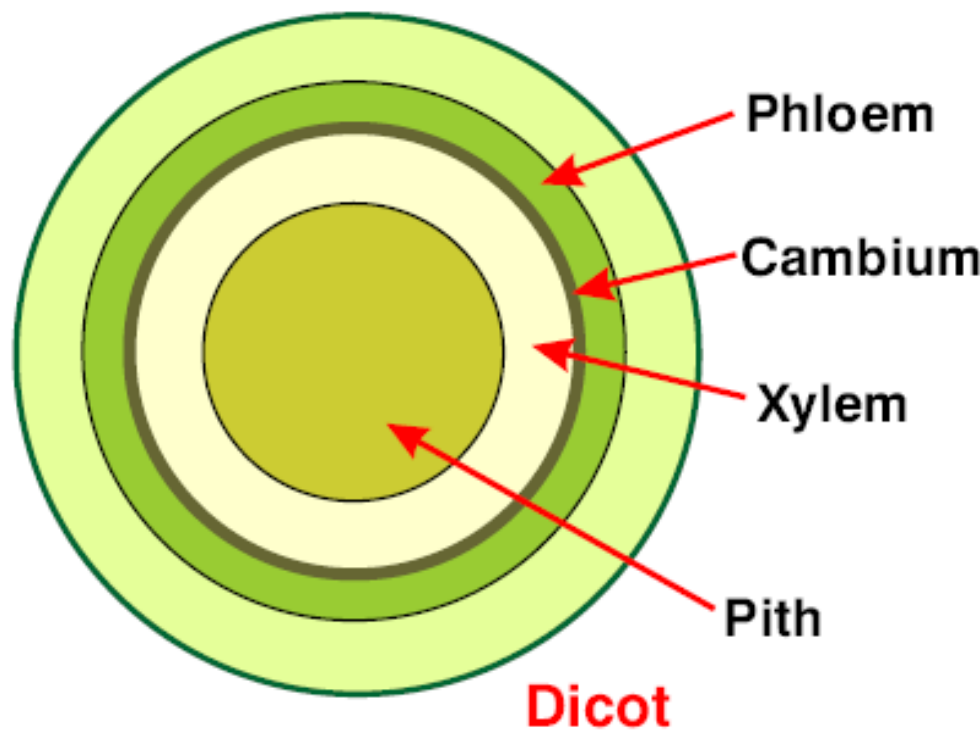
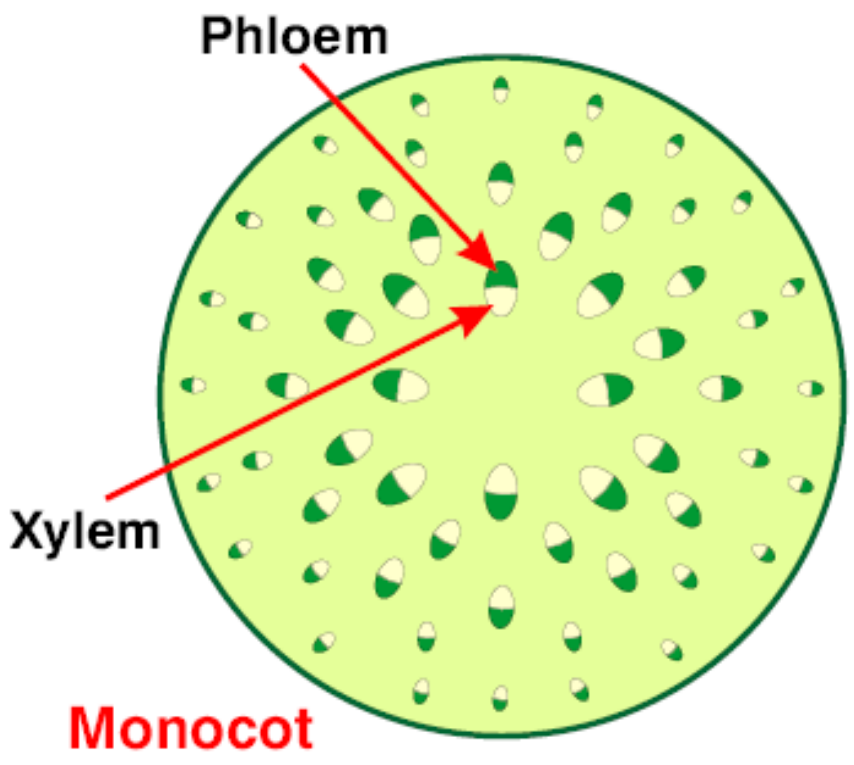
DICOTS AND MONOCOTS



Bean Seed (dicot)



Corn Seed (monocot)



What Is the Difference Between Annuals, Biennials and Perennials?

- 📖 Plants are often classified based on their life cycles
- 📖 Even though gymnosperms and angiosperms reproduce by seed, there are different strategies for passing the seeds on to future generations





Zinnia- *Zinnia elegans*

Annuals

- ☞ Plants grow from seed, flower, produce new seeds all in one season
- ☞ It dies after producing new seeds
- ☞ Have an **herbaceous** stem – green & fleshy
 - Ex. petunias, zinnias, and maize



See life cycle

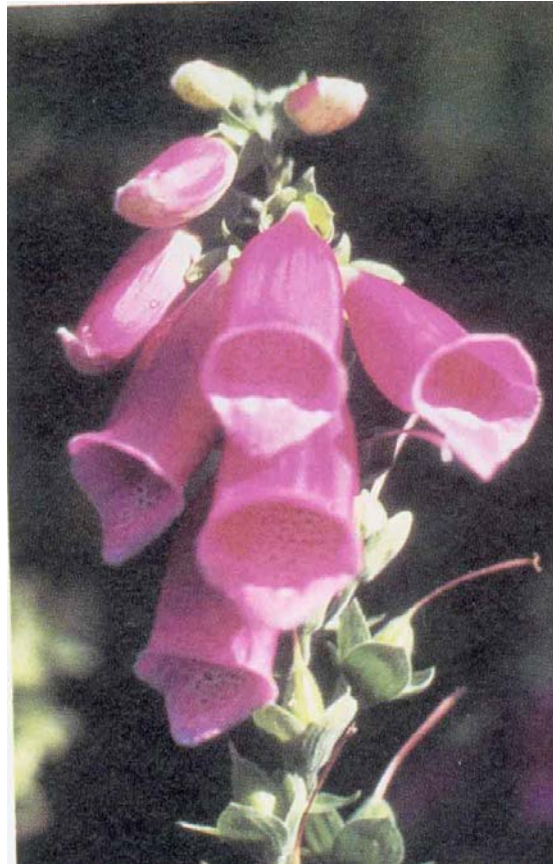
Biennials

- 📖 Plants that live for two years, then flower and die
- 📖 Food is produced during the first year, flowers the second year
 - Ex. Foxglove and carrots



See life cycle

Foxglove – *Digitalis purpurea*



Perennials



Tulip- *Tulipa hybrid*

- ❏ Plants that live for three or more years
- ❏ Flower for a short time
- ❏ Do not die after flowering
- ❏ Perennials do not usually have a predetermined age of death, some living for three or four years, some for over 1000
- ❏ Can be herbaceous or **woody** – having thick stems made of wood
 - Ex. Tulips, Irises, and trees and shrubs



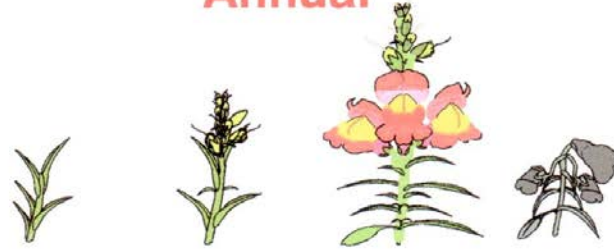
See life cycle



PLANT LIFE CYCLES

◀ Back to Annuals

Annual



Germination----Growth---Flowering----Death

◀ Back to Perennials

Perennial



Germination----Growth---Flowering----Dormancy

One or more flowering cycles

◀ Back to Biennials

Biennial



Germination---Growth---Dormancy---Growth---Flowering---Death

Season 1

Season 2



Summary

- 📄 What is the difference between an angiosperm and a gymnosperm?
- 📄 How is a monocot different from a dicot?
- 📄 Are evergreens herbaceous or woody plants?



Summary Cont.

- 📖 What makes up the scientific name of a plant?
- 📖 Why are scientific names written in Latin?
- 📖 In what group would you find mosses? Describe their habitat.
- 📖 Describe the life cycle of a perennial.
- 📖 Name all 7 taxas in the classification system.

