Classifying Ornamental Plants

At the completion of this unit students will be able to:

A. Describe the system used for naming and classifying plants.

B. Identify the major groups of plants.

C. Describe the differences between annuals, biennials, and perennials.

Interest Approach

- On a piece of paper list as many plants as you can in two minutes.
- Monocots or Dicots?
- Deciduous or Evergreen?
- Annual or Perennial?
- Fern, Angiosperm, Gymniosperm

Classifying Ornamental Plants

- **Why do we need this?**
  - **It clearly identifies plants**
  - **Universal System**

What is a Plant?

A. Define Plant Classification

I. Plants are classified based on the **similarities** of their characteristics.

Plant taxonomists compare **flowering** patterns, stem and **leaf** structures, life cycles, genetic similarities, and many other characteristics in deciding which plants are the most closely related.

Taxonomists use categories to group the plants.

A. Define Plant Classification

The categories, from general to specific, are:

A. Domain

A. Define Plant Classification

The categories, from general to specific, are:

A. Domain

B. Kingdom

C. Phylum

D. Class

E. Order

F. Family

G. Genus

H. Species

A. Define Plant Classification

D- Don't
K –Kings
P –Play
C –Chess
O –On
F –Finely
G –Grained
S –Sand

D –
K –
P –
C –
O –
F –
G –
S –

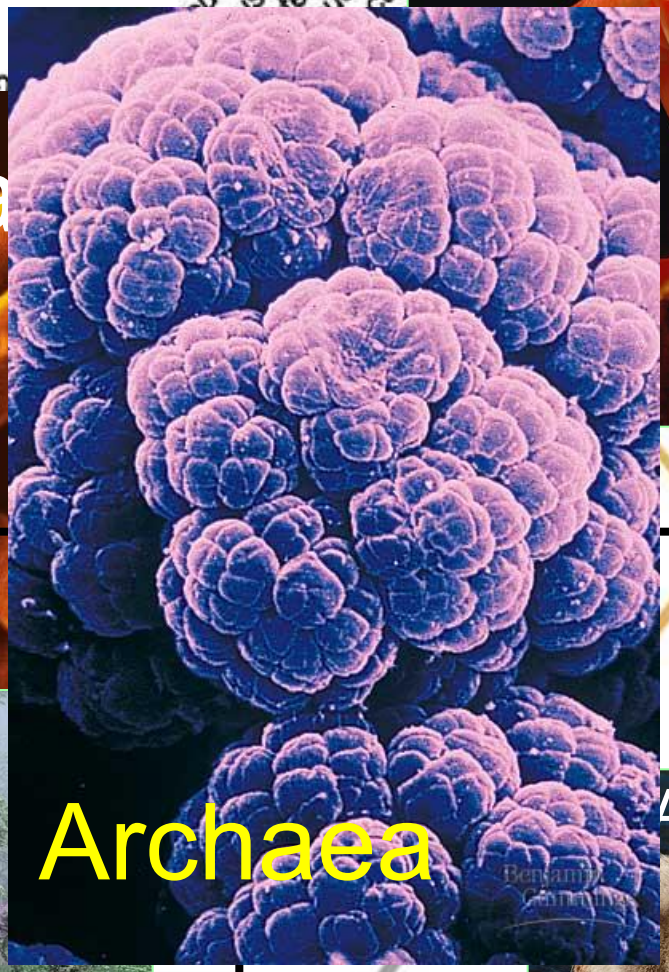
3 Domain System

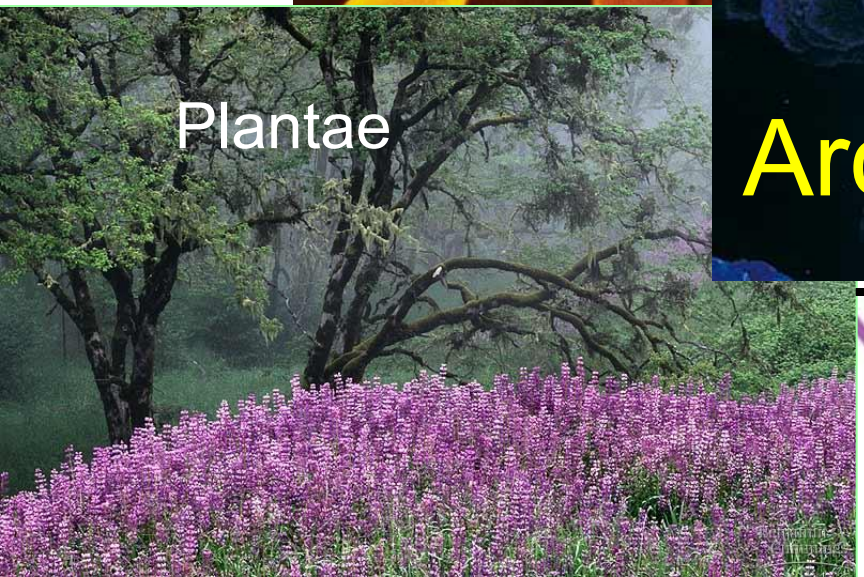
Bacteria Archea Eukaryotes

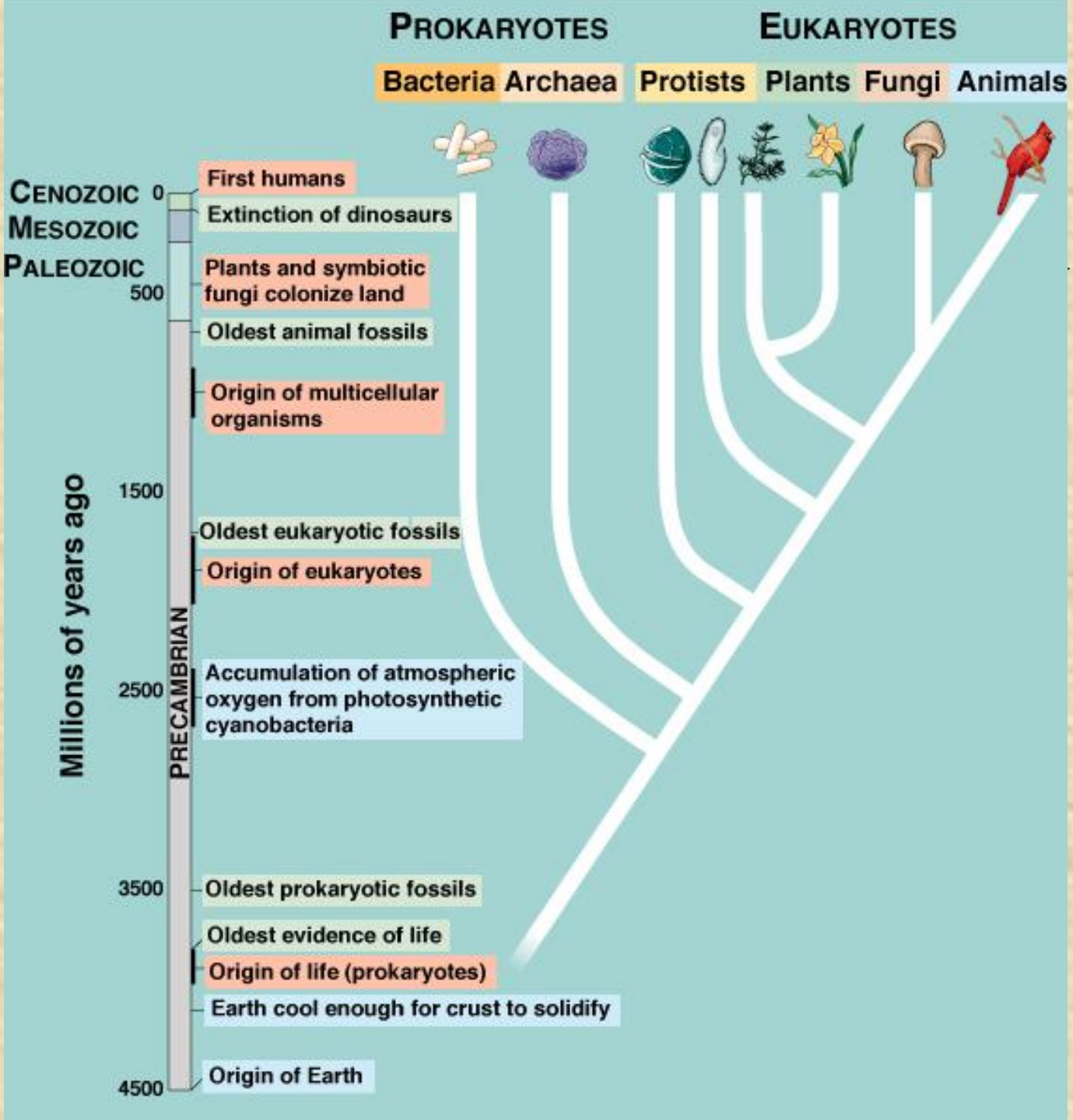
DOMAIN BACTERIA

DOMAIN ARCHAEA

DOMAIN EUKARYA





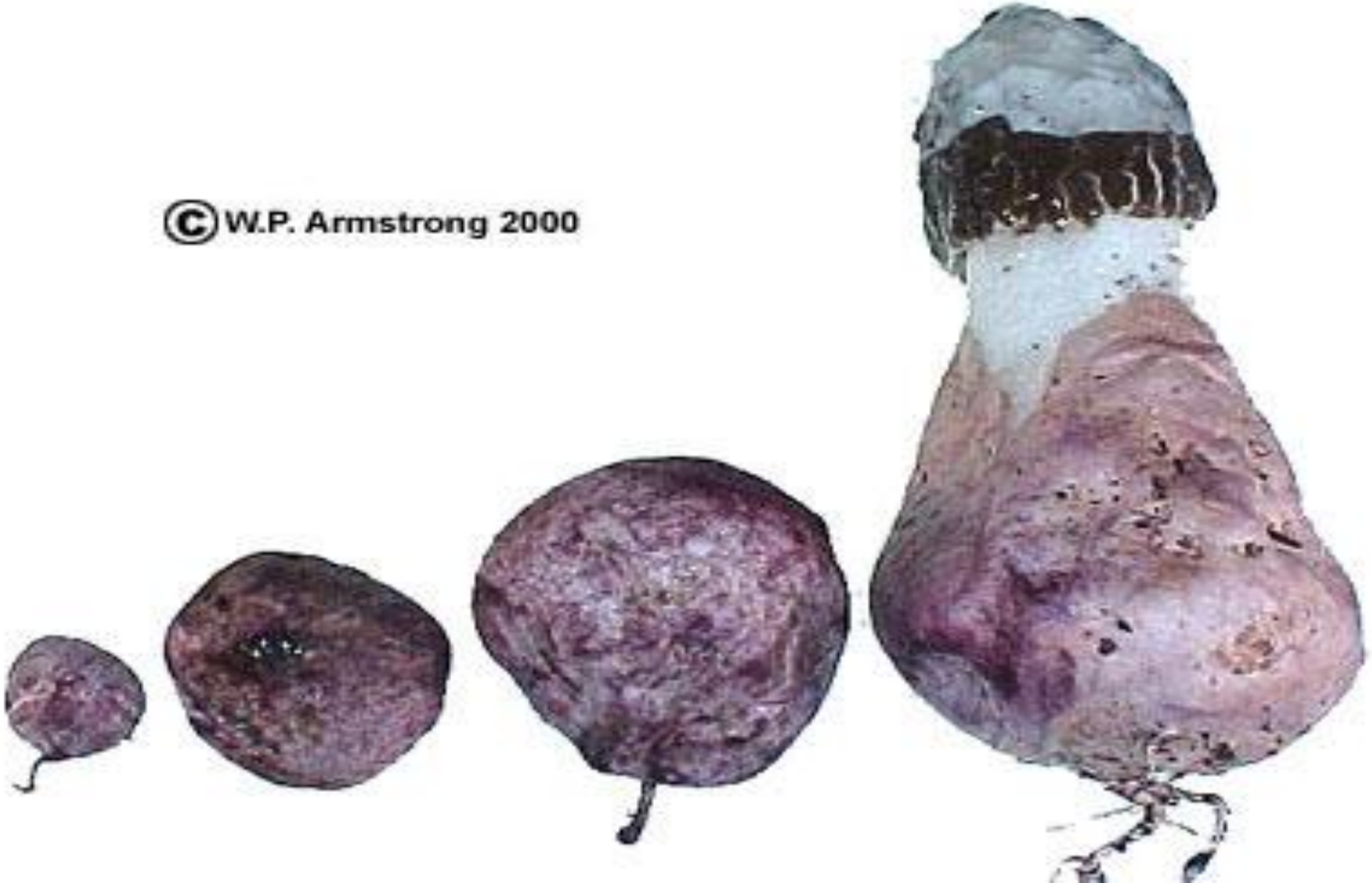

PROKARYOTES
EUKARYOTES
Bacteria
Archaea
Protists
Plants
Fungi
Animals
CENOZOIC
MESOZOIC
PALEOZOIC
0
500
1500
2500
3500
4500
PRECAMBRIAN
Millions of years ago
First humans
Extinction of dinosaurs
Plants and symbiotic fungi colonize land
Oldest animal fossils
Origin of multicellular organisms
Oldest eukaryotic fossils
Origin of eukaryotes
Accumulation of atmospheric oxygen from photosynthetic cyanobacteria
Oldest prokaryotic fossils
Oldest evidence of life
Origin of life (prokaryotes)
Earth cool enough for crust to solidify
Origin of Earth

True Bacteria or Eubacteria

Archaea

Protista

Fungi



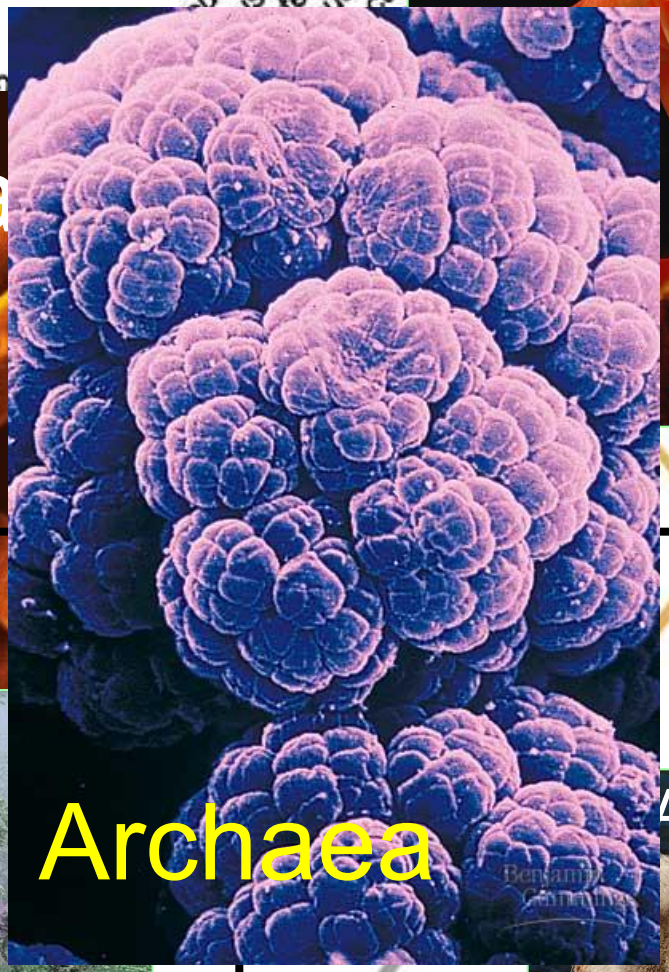
Plantae

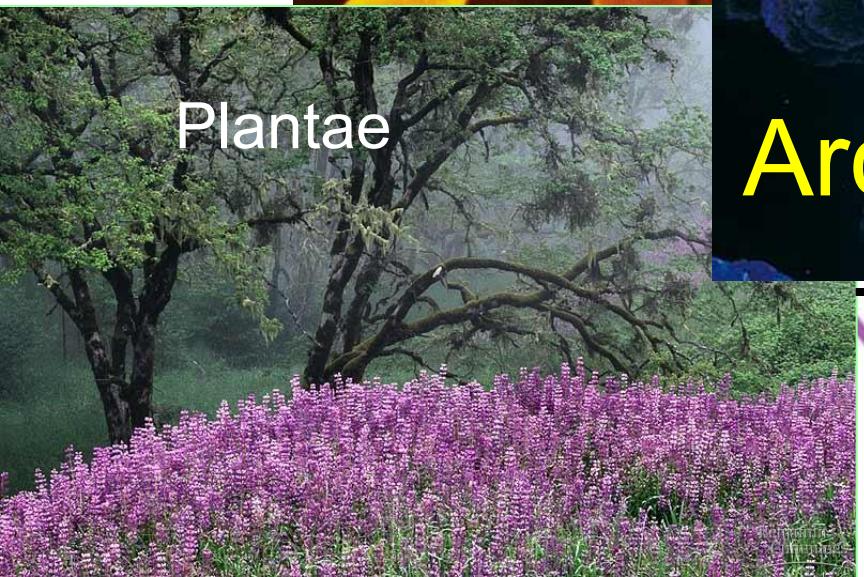
Animalia

DOMAIN BACTERIA

DOMAIN ARCHAEA

DOMAIN EUKARYA

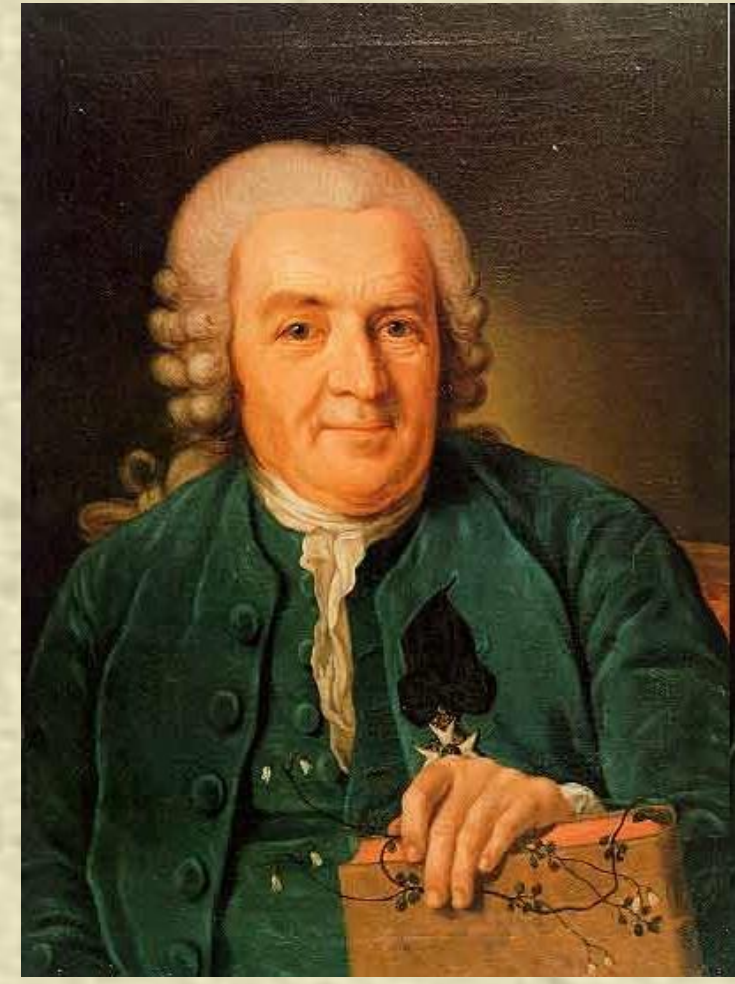




Carolus Linnaeus

Father of Botany

Created *Binomial System*



Writing and Pronouncing Botanical Names

Scientific Name

Botanical Name

Binomial Name

They are all the same

Botanical Name

- Plant names must have at least two parts.

- Example: *Tagetes patula*
  - *Tagetes* is the genus
  - *patula* is specific epithet
  - When combined they form the *species*

For ease of understanding,

Genus = last name (related individuals)

Specific epithet = first name (single type)

Warnick chad

What is your Bontanical Name?

Variety

- Natural occurring mutation or offspring that is significantly different from the parent.
  - Example white flowers instead of the pink

Cultivar

- A manmade variety.
  - Hence, the name, which is short for "cultivated variety"

Writing and Pronouncing Botanical Names

- *Genus* is always capitalized.
- *Specific epithet* begins with a lowercase.
  - *Both are italicized*
- Variety name follows not italicized and may be lised as “v.” or “var.”
- “cv.” can follows same format as variety

- Common Name = English Ivy
- Scientific Name = *Hedra helix*

B. Identify the major groups of plants.

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

Plants which are classified in the Phylum **Bryophyta**.

These are non-vascular plants such as **mosses** and liverworts.

They tend to live in **damp** places and are very limited in size due to the lack of conducting tissue.

All higher plants are in the Phylum Tracheophyta.

Ferns

Vascular plants which reproduce by **spores**.

Ferns have no true leaves but have **fronds** which have a double purpose of food production and spore formation.


Cycad


Ginkgo


Conifer


Ephedra

Gymnosperms

Plants which reproduce with seeds that lay **naked** on scales.

Most gymnosperms reproduce using a structure called a **cone**.

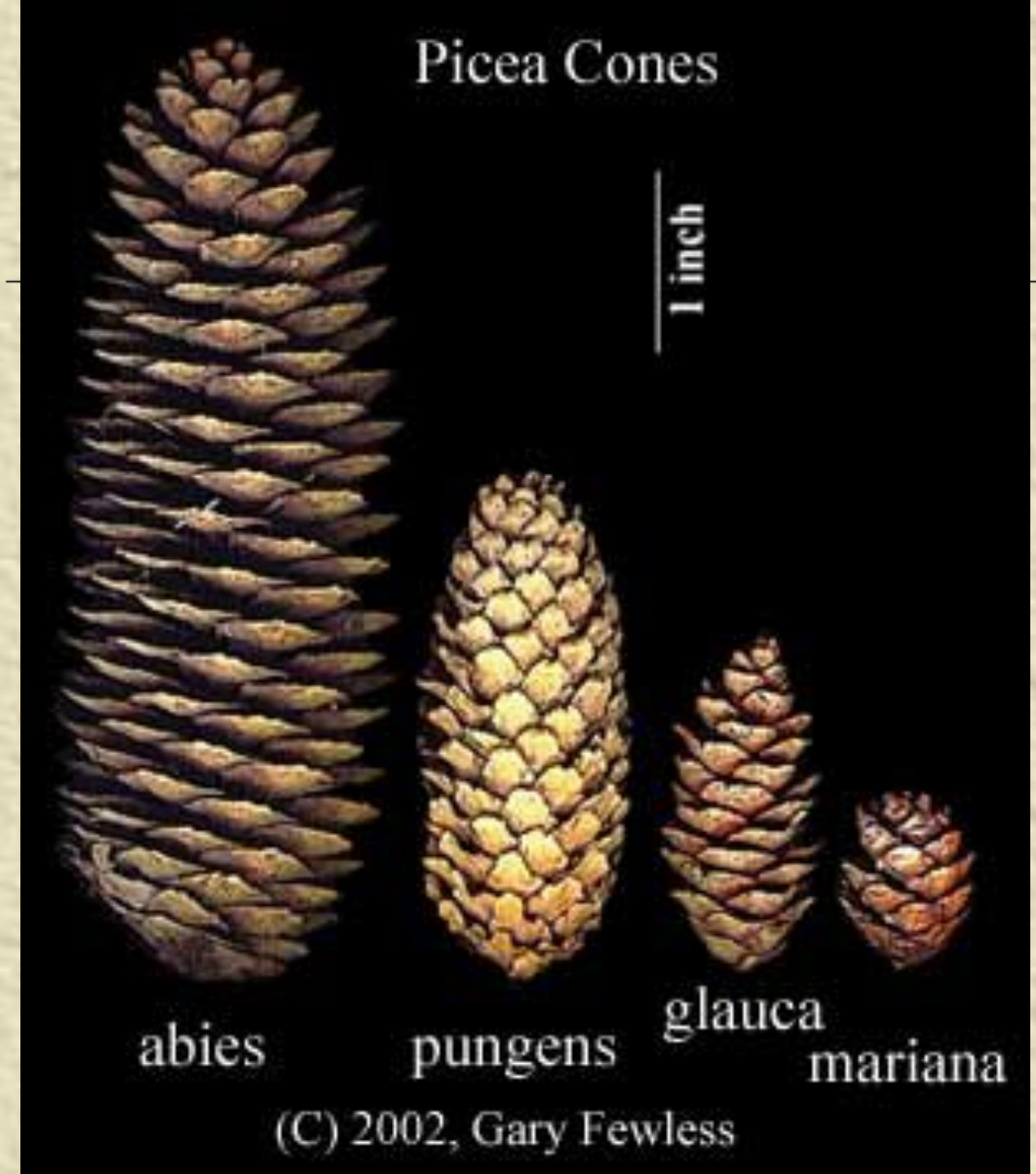
Any gymnosperm which reproduces by cone is called a ***conifer***.

Examples include pines, spruces, and cedars.

Gymnosperms

Conifers leaves are specialized to be either **needles** or scales.

Most conifers are ***evergreen***, holding their leaves all year round. But some are ***deciduous***, dropping their leaves in the winter.


Picea Cones
1 inch
abies
pungens
glauca
mariana
(C) 2002, Gary Fewless

Angiosperms

Are seed plants whose seeds develop within a **fruiting** body.

Angiosperms all reproduce by **flowers**, although many flowers are very small and not **showy**.

So if any plant has flowers, it is in the **Angiosperm** group.

There are two types of Angiosperm.

-Monocots

-Dicots


Oak


Maple


Basil


Rice


Potato


Water lilies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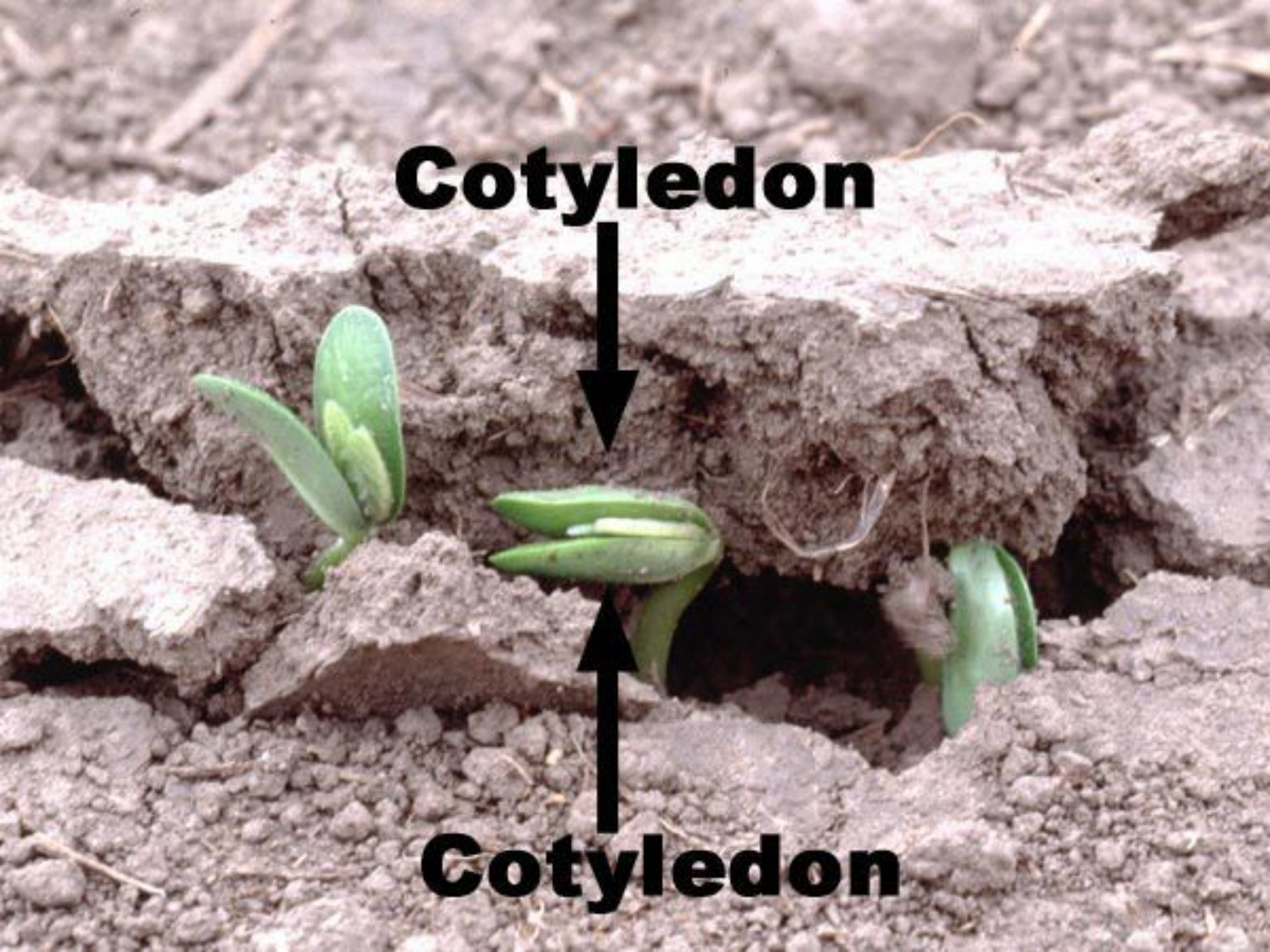

Cotyledon
Cotyledon

Crop Plants

- **Monocots and Dicots**

D. Recognize ways to Classify plants

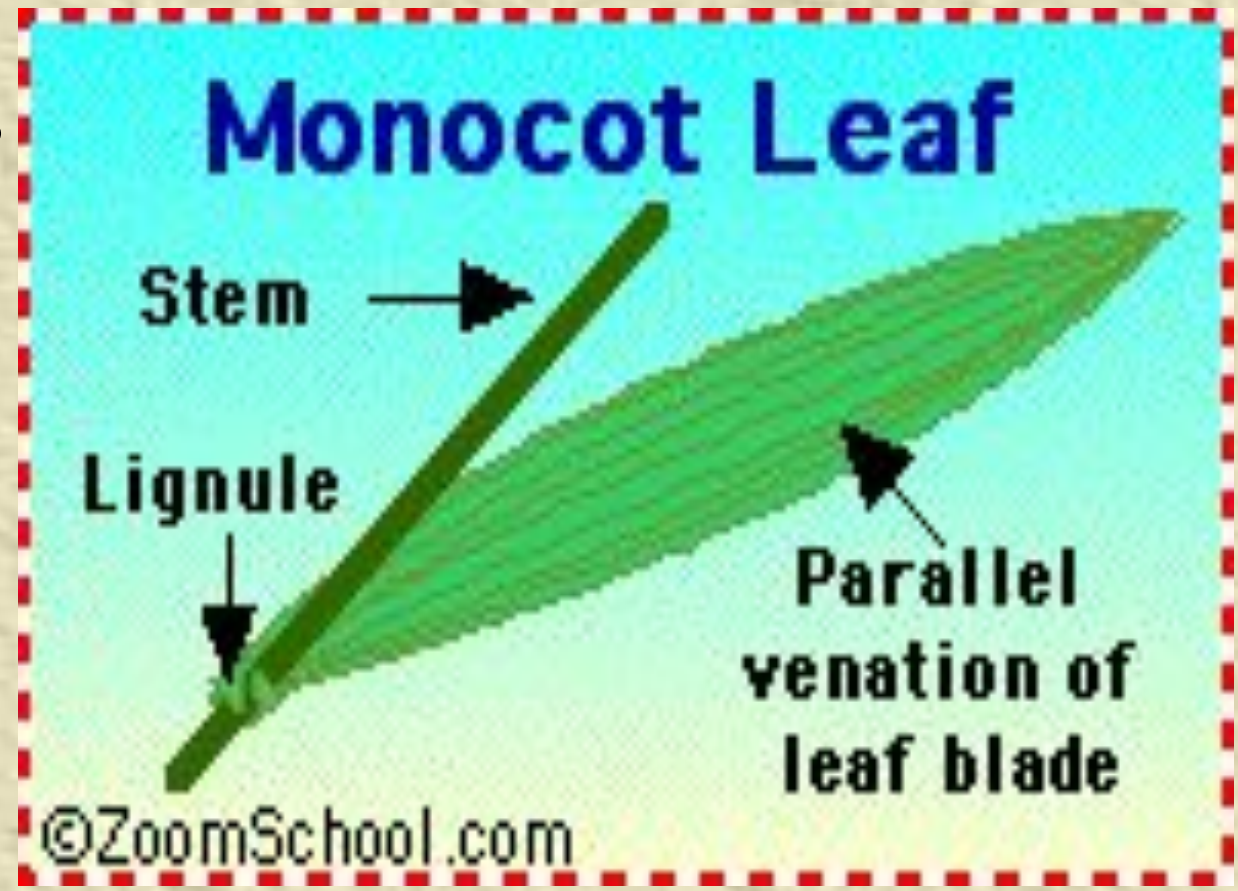
- **Monocots and Dicots**
  - **Monocots**
    - **1 cotyledon in a seed**
    - **Leaves with parallel veins**
    - **Vascular bundles scattered throughout**
    - **Root System composed of many fibrous roots with many hairs**
    - **Flower parts in 3's**

Monocots

- 1 cotyledon in a seed

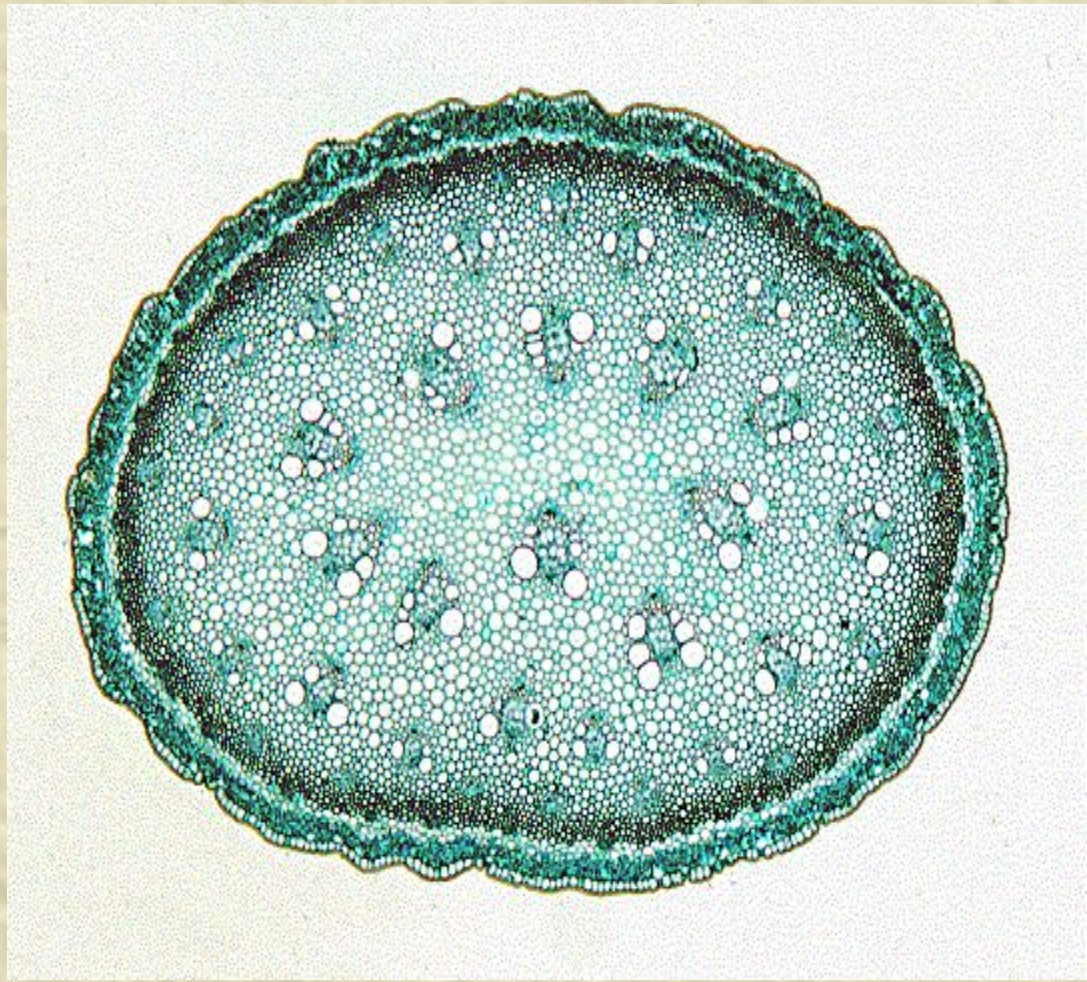
Monocots

- **Leaves with parallel veins**



Monocots

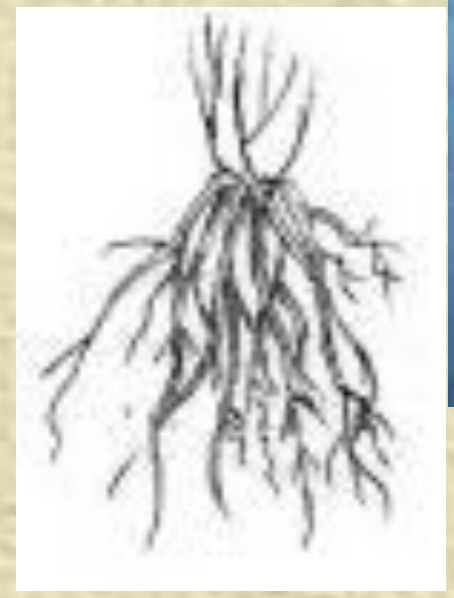
- **Vascular bundles scattered throughout**



Cross section of *Asparagus*

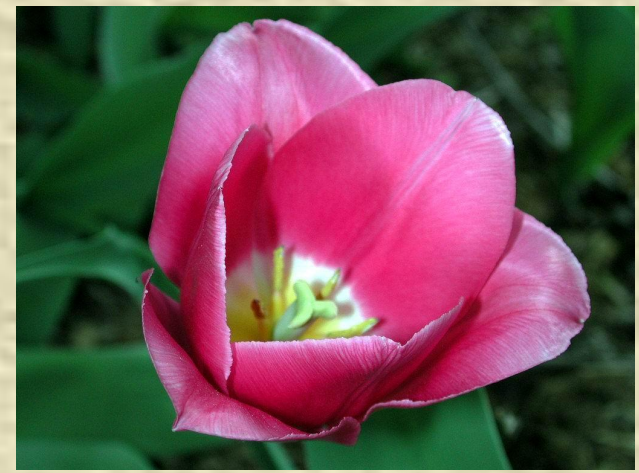
Monocots

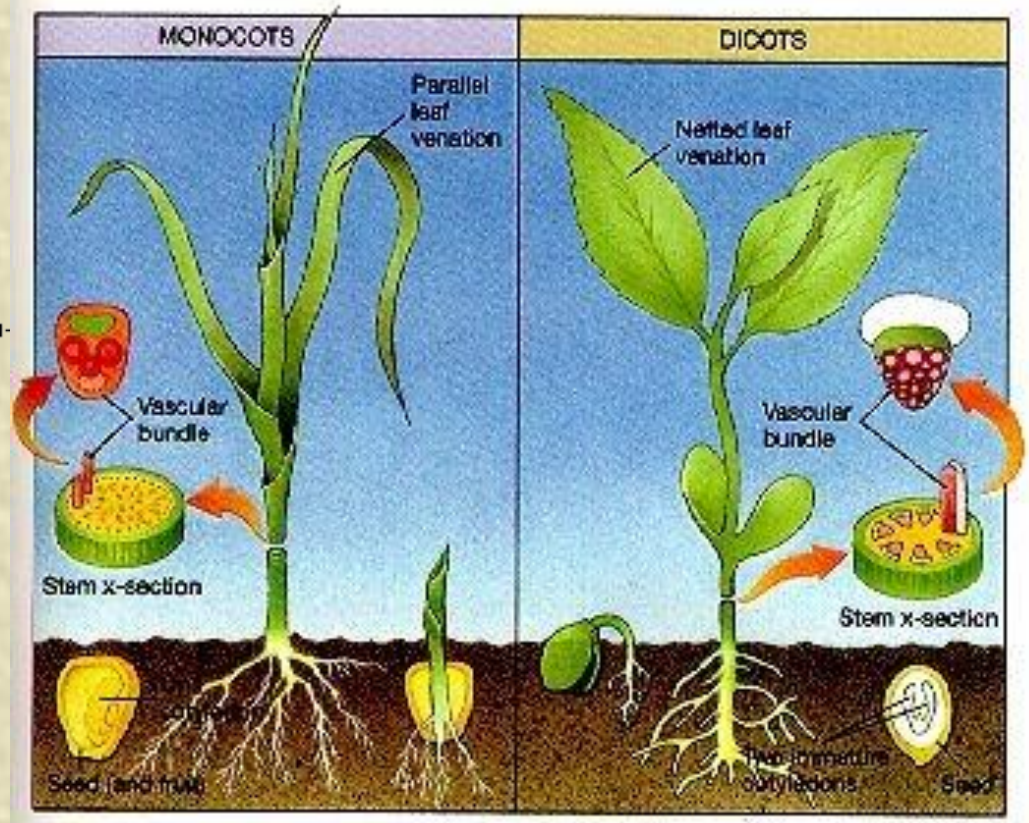
- **Root System composed of many fibrous roots with many hairs**

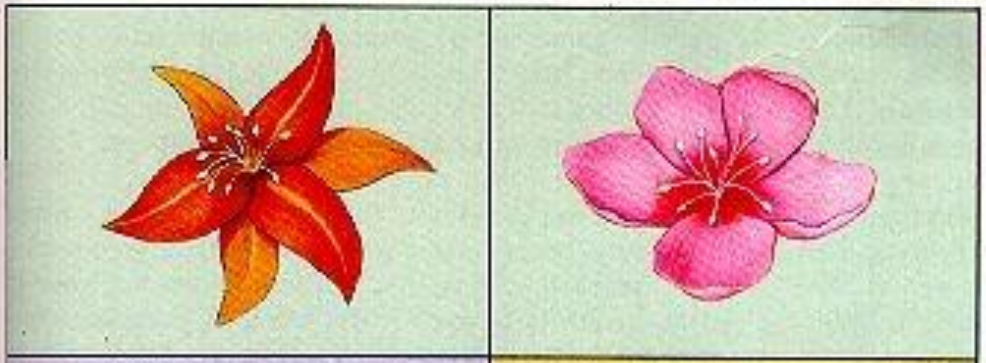


Monocots

- **Flower parts in 3's**







Monocots	Dicots
Flowers: floral parts in multiples of 3	Flowers: floral parts in multiples of 4 or 5
Seeds: contain one cotyledon	Seeds: contain two cotyledons
Stems: vascular bundles are scattered	Stems: vascular bundles arranged in a circle
Leaves: long tapering blades with parallel venation	Leaves: broad to narrow leaves with netted venation

D. Recognize ways to Classify plants

- **Dicots**
  - **2 cotyledons in each seed**
  - **Leaves with network of veins**
  - **Vascular bundles form ring outside of stem**
  - **Root system composed of primary tap root and many hairs**
  - **Flowers in 4's or 5's**

Dicots

- 2 cotyledons in each seed

Dicots

- **Leaves with network of veins**

Dicots

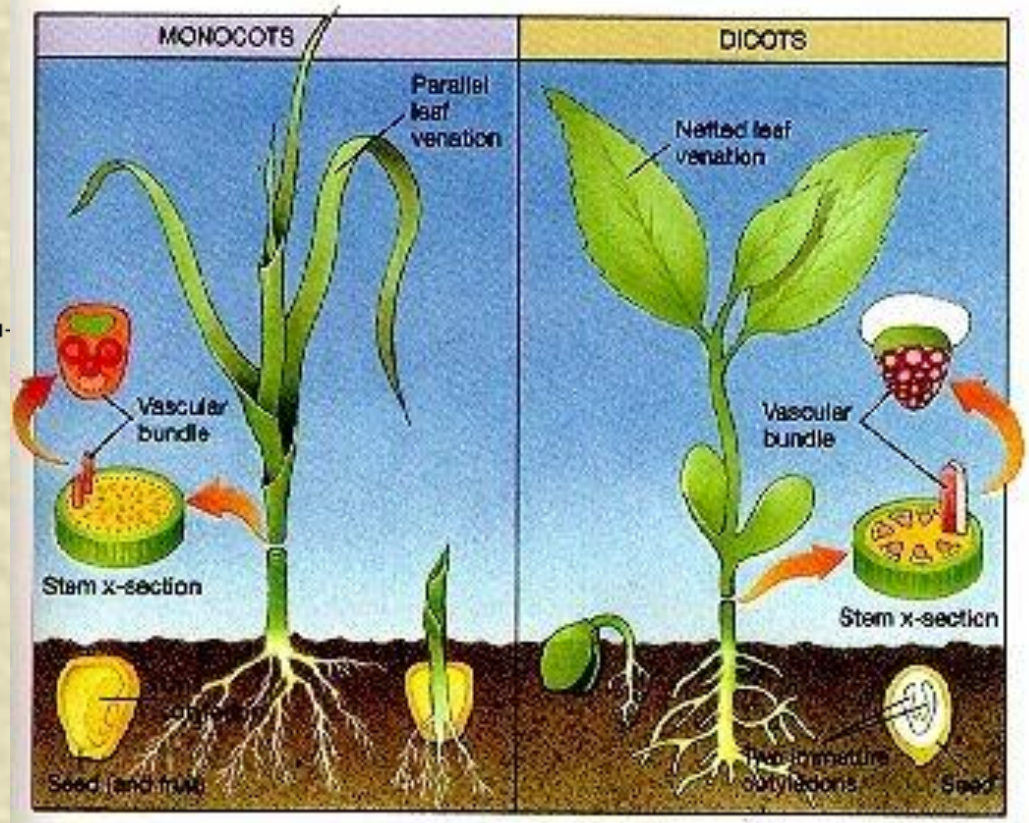
- **Vascular bundles f ring outsi of stem**

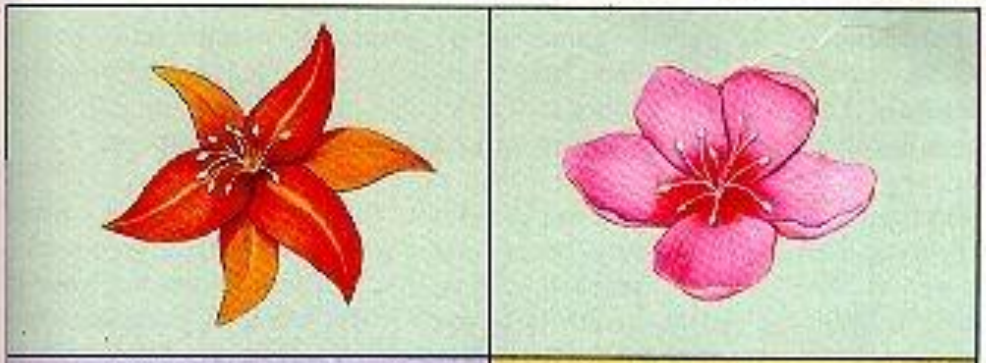
Dicots

- **Root system composed of primary tap root and many hairs**

Dicots

- **Flowers in 4's or 5's**





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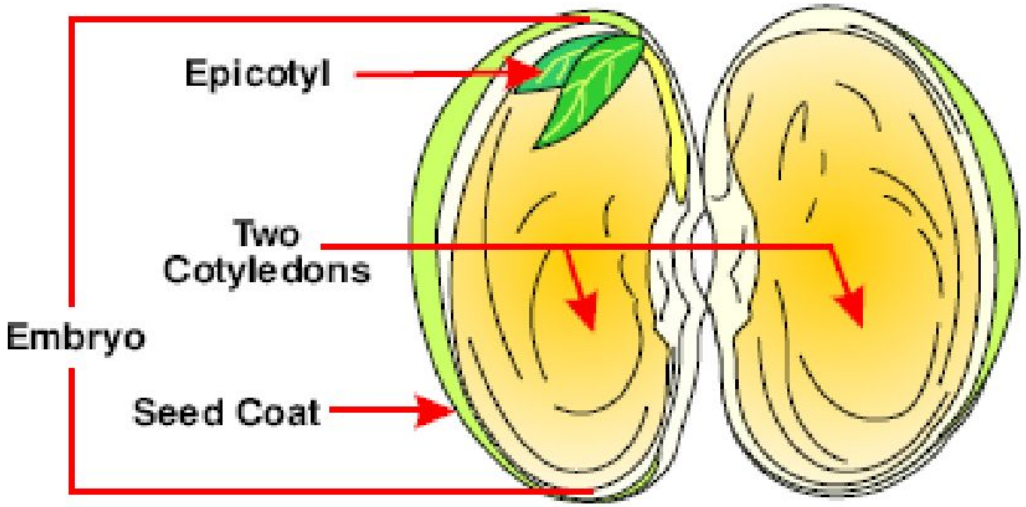
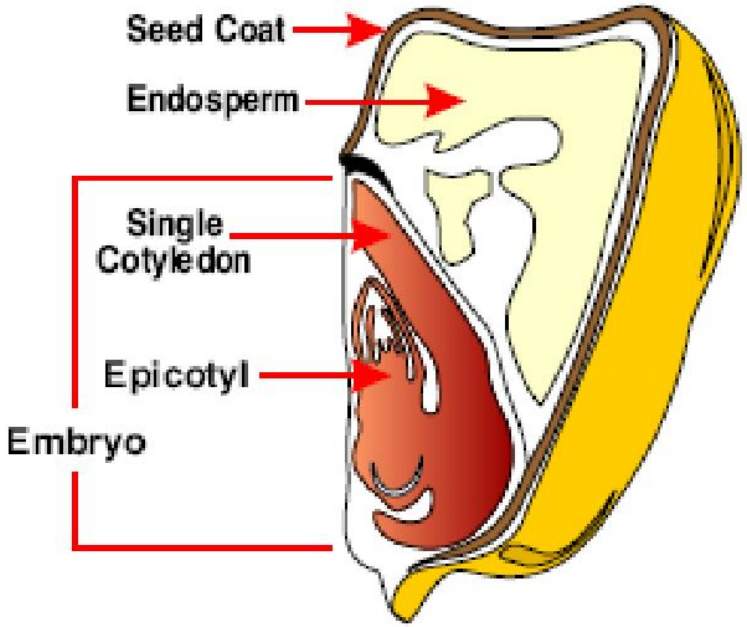
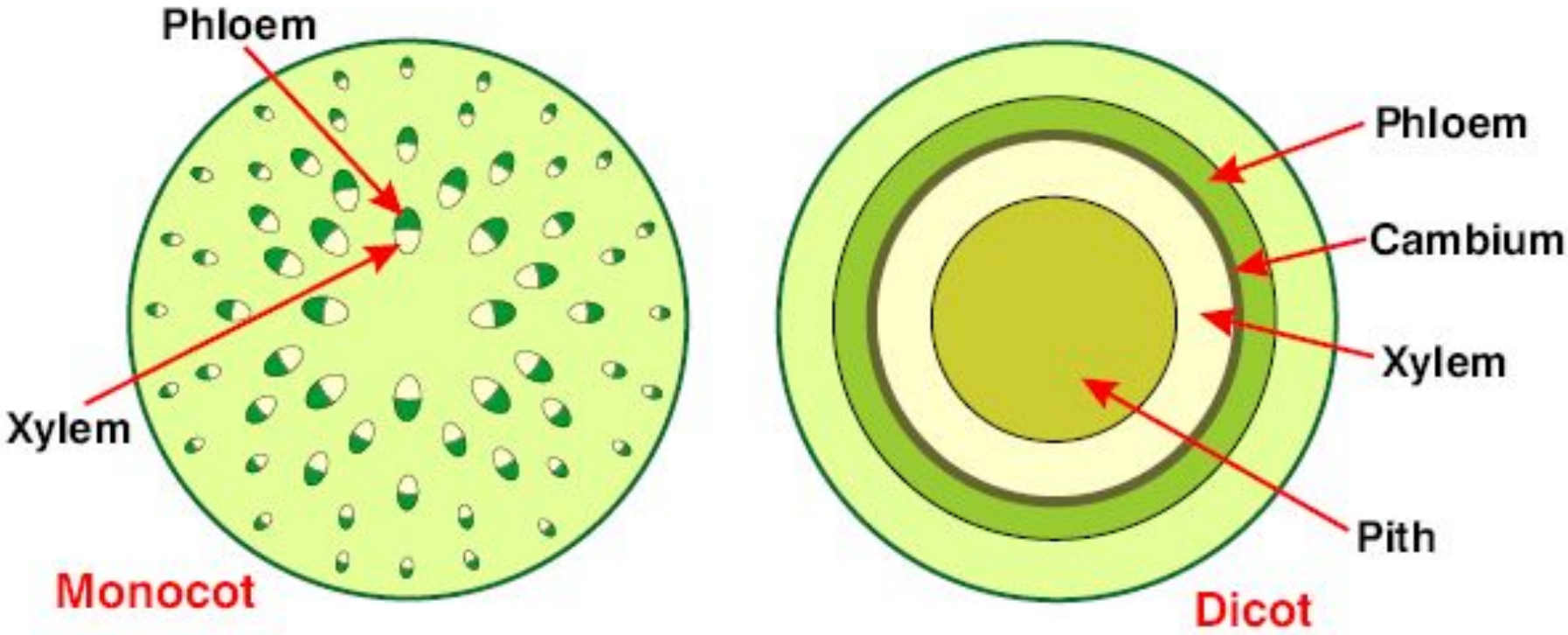


Bean Seed (dicot)



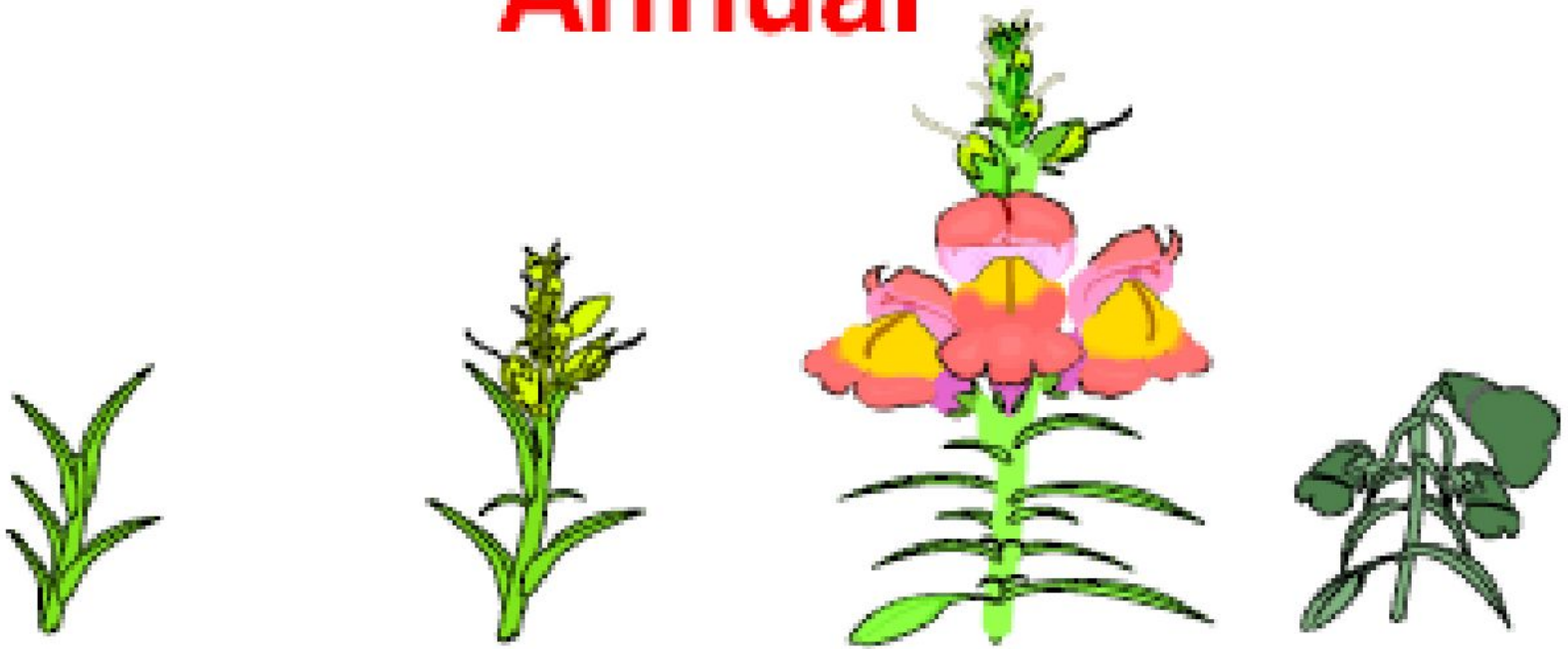
Corn Seed (monocot)


Phloem
Xylem
Monocot
Phloem
Cambium
Xylem
Pith
Dicot

D. Recognize ways to Classify plants

- **Annuals: complete life cycle in one season**

Annual



Germination → Growth → Flowering → Death

Life Cycles

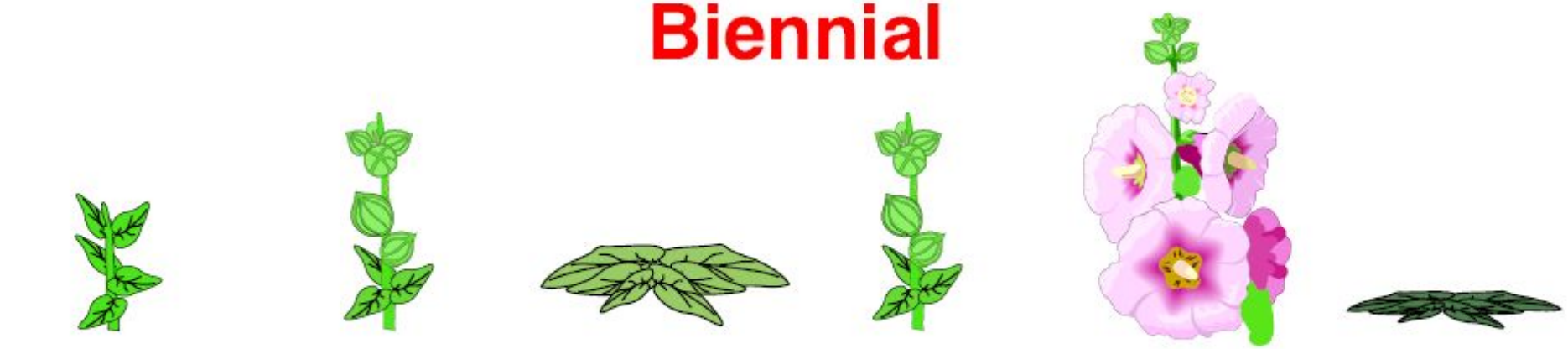
- **Annuals:**

complete life cycle in one season

D. Recognize ways to Classify plants

- **Biennials**
  - **Complete life cycle occurs over two growing seasons**

Biennial


Germination
(Season 1)
Growth
Dormancy
Growth
(Season 2)
Flowering
Death

Life Cycles

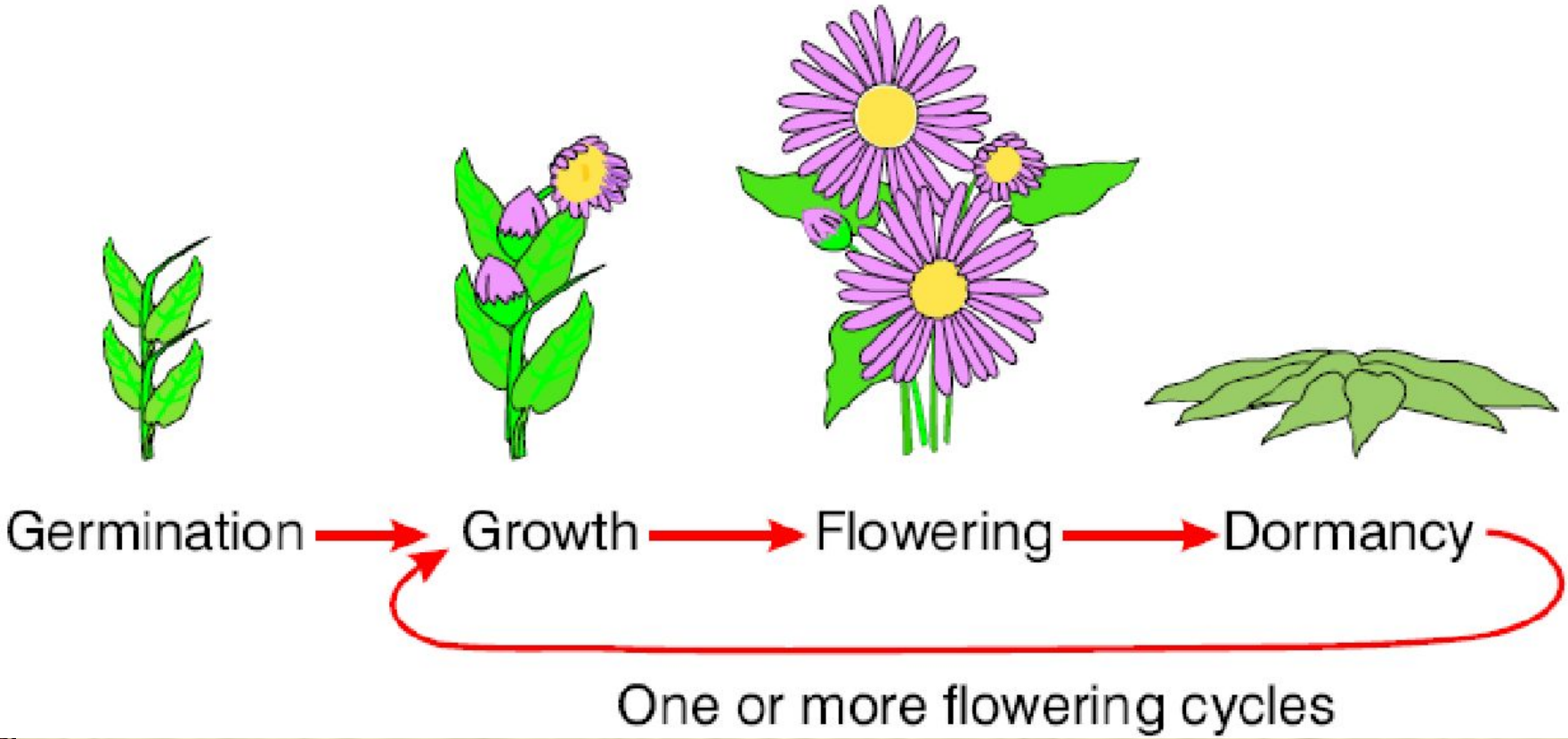
- **Biennials**

- **Complete life cycle occurs over two growing seasons**

D. Recognize ways to Classify plants

- **Perennials**
  - **Live year after year**

Perennial


Germination
Growth
Flowering
Dormancy
One or more flowering cycles

Life Cycles

- **Perennials**
  - **Live year after year**