PLS 006: Flower Anatomy

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Outline

- Flower Structure
  - Parts of a basic flower
- Classification
  - Types of flowers


Pinterest.com


Almanac.com

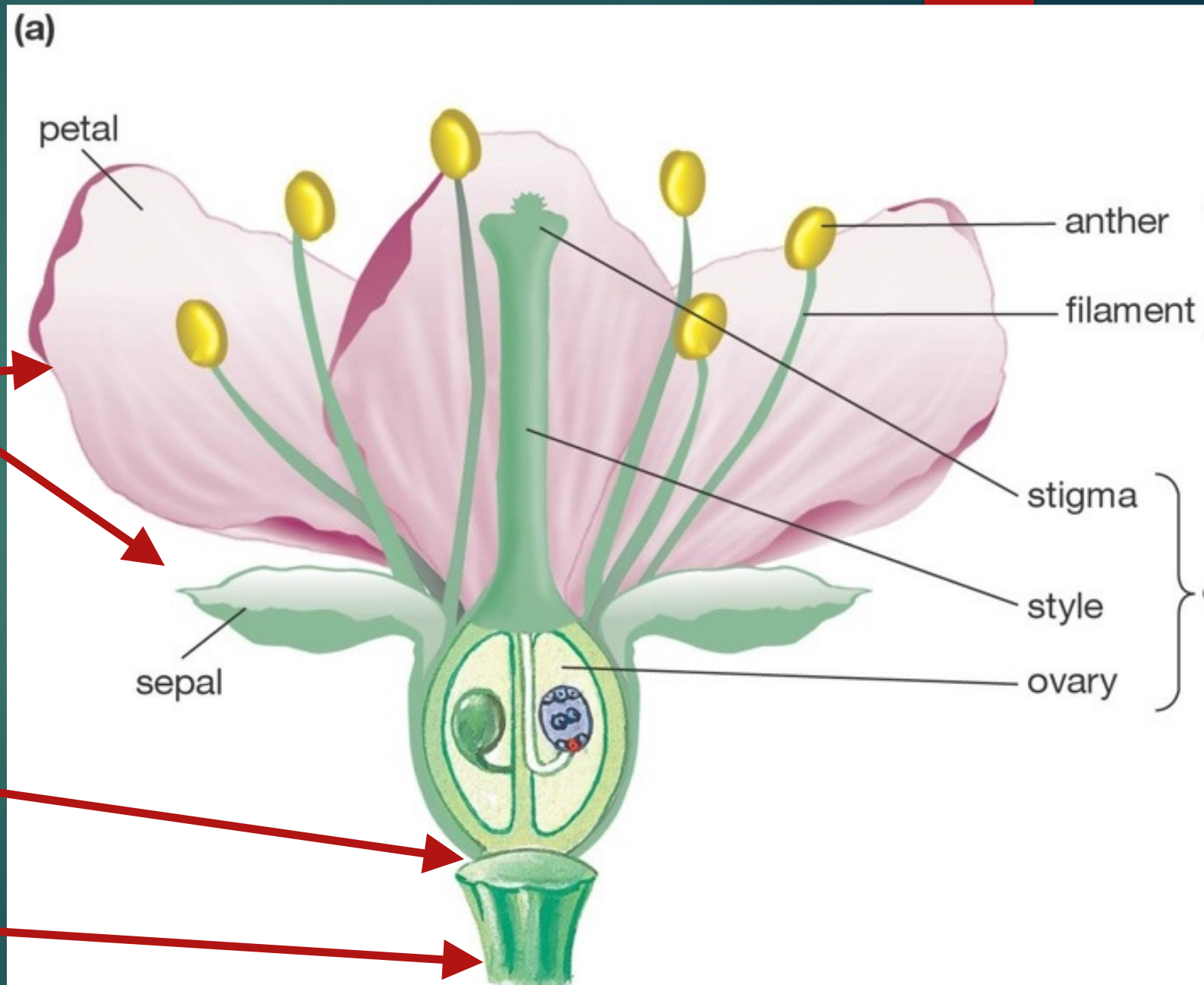

wikipedia.org


Pinterest.com


www.philipsmithphoto.com

Flower Structure

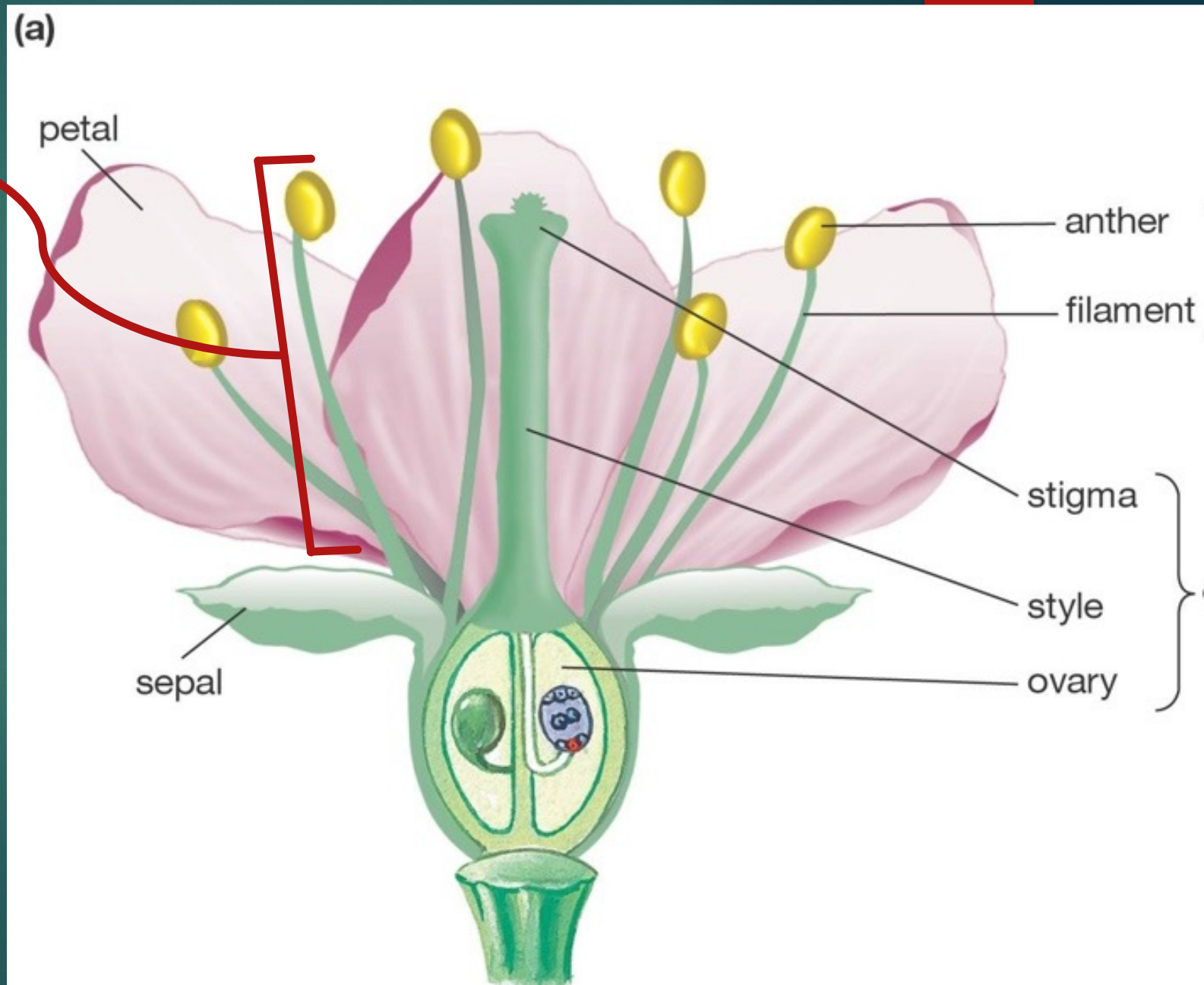
- Sepals
  - Located at base of flower; surround and protect the bud.
- Petals
  - Located above sepals; usually brightly colored and fragrant (attract pollinators).
- Receptacle
  - Holds it all together
- Pedicel



Flower Structure

Stamens

- Male reproductive structures
- Attached above petals
- Each consists of a:
  - Filament (stalk)
  - Anther (produces pollen)

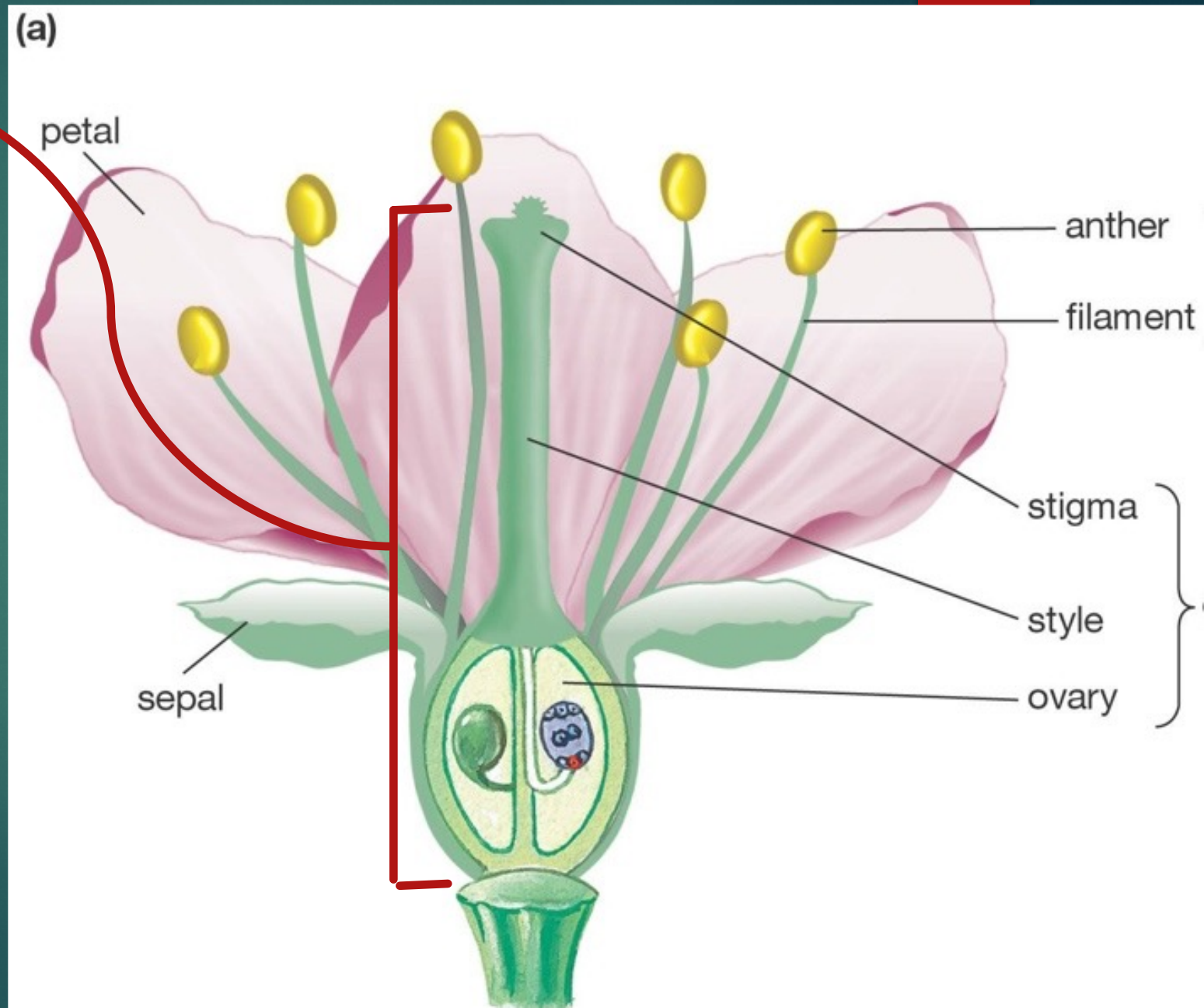


Flower Structure

Flower Structure

Carpel (Pistil)

- Female reproductive structure - centrally located
- Each consists of a:
  - Stigma (catches pollen)
  - Style - tube
  - Ovary – contains one or more ovules
    - Ovules develop into seeds
    - Ovary develops into a fruit



Questions 1 & 2

1. Which flower parts are part of the stamen?

- A. Stigma, Style
- B. Anther, Filament
- C. Leaf, Stem
- D. Petals, sepals

2. Which flower parts are part of the carpel?

- A. Stigma, Style
- B. Anther, Stamen
- C. Leaf, Stem
- D. Petals, sepals

Classification:
What type of flower is it?

- Perfect vs Imperfect
- Complete vs Incomplete
- Simple vs Compound vs Composite

Types of flowers - Perfectness

Turbotax.intuit.com

www.thestudygurus.com

Types of flowers - Perfectness

- Perfect – Flower that contain both stamens and pistils
  - Both male and female parts
- Imperfect – Individual flower is either male or female
  - Monoecious – same plant
  - Dioecious – separate plants

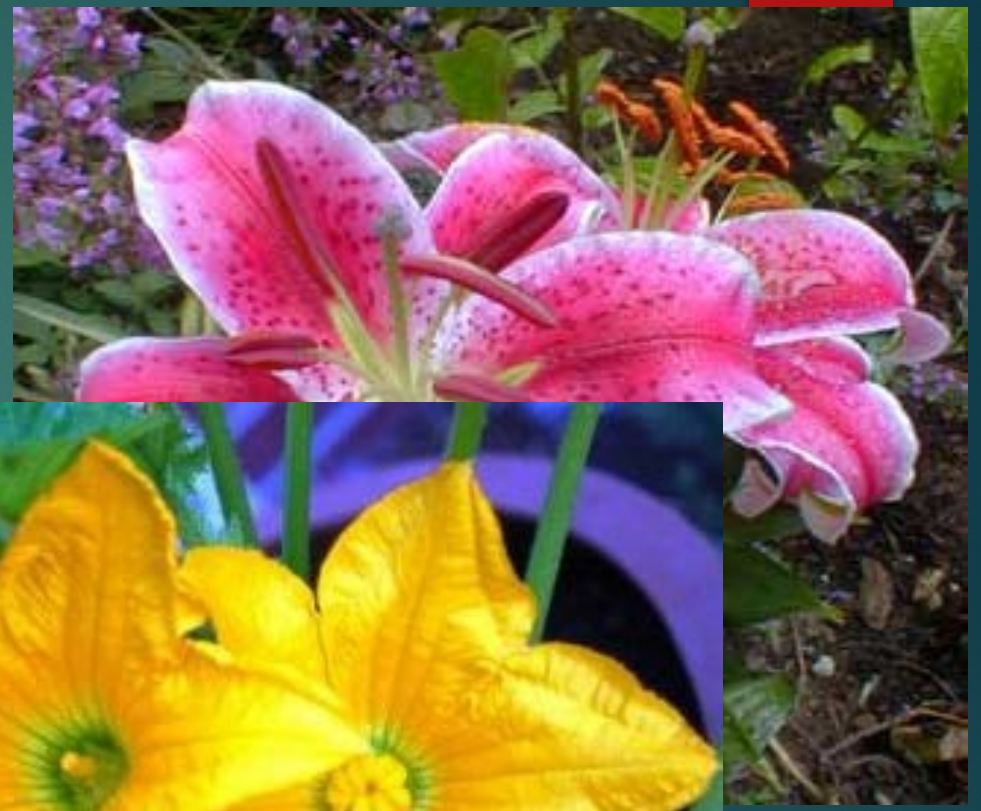
https://selectree.calpoly.edu

evolution.berkely.edu

Types of flowers - Completeness

Types of flowers - Completeness

- Complete
  - Has sepals, petals, stamens, and carpels (pistils)
- Incomplete
  - Lacks one or more of the above structures



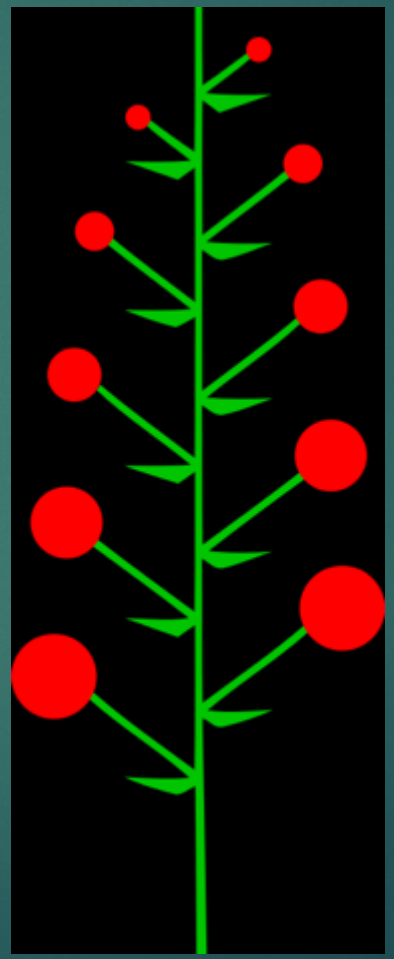
Types of flowers - Simple vs Compound

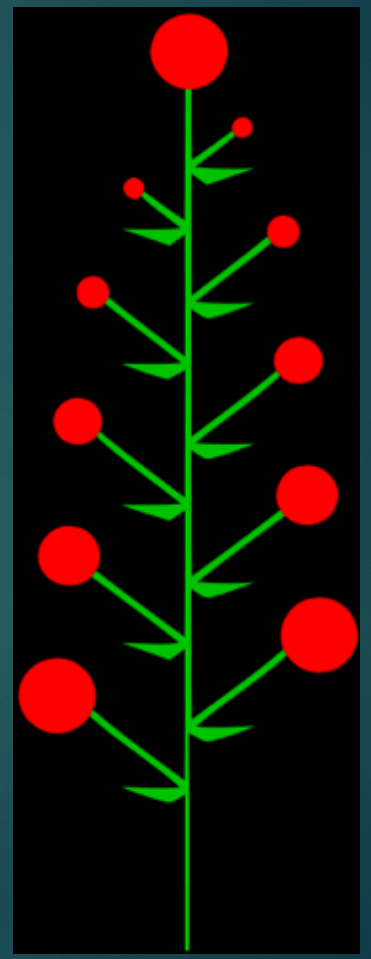
- Simple
  - One single flower per stalk
- Compound
  - More than one flower attached to a common stalk
- Inflorescence
  - Group or cluster of flowers arranged on a stem composed of a main branch or arrangement of branches

Types of flowers - Simple

Types of Flowers - Compound

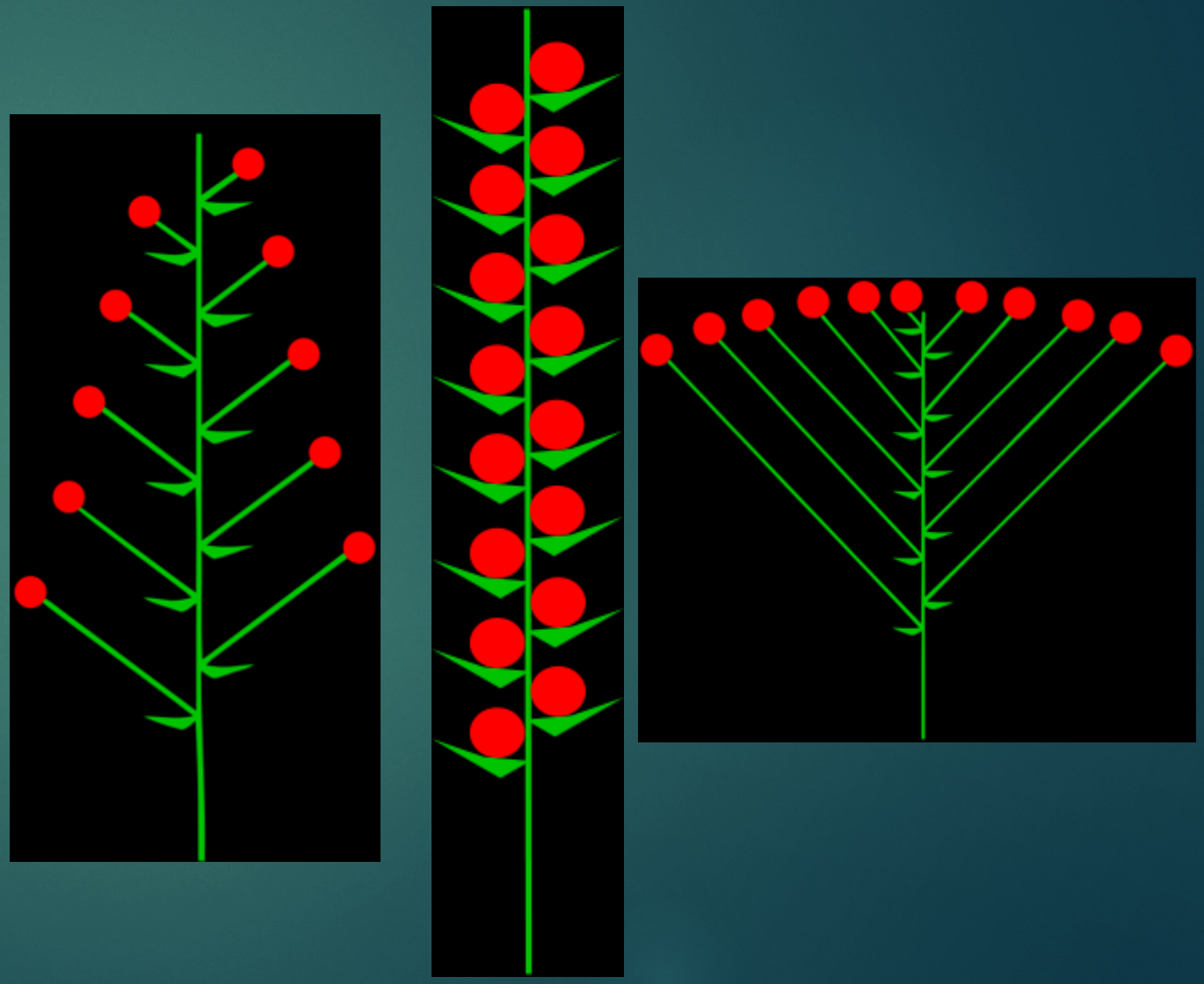
- Indeterminate
  - Terminal bud keeps growing and forming lateral flowers, terminal flower is never formed
- Determinate
  - Terminal bud forms a terminal flower, other flowers then grow from lateral buds





Types of flowers - Compound

- Raceme
  - Unbranched, indeterminate inflorescence with pedicellate (short floral stalks) flowers along the axis
- Spike
  - Type of raceme that do not have a pedicel
- Corymb
  - Unbranched, indeterminate inflorescence that is flat topped or convex



Types of flowers - Compound

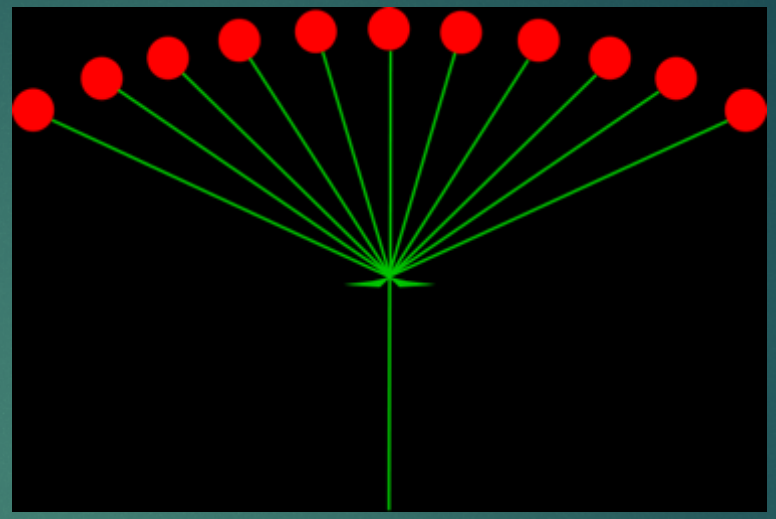
Lily of the valley

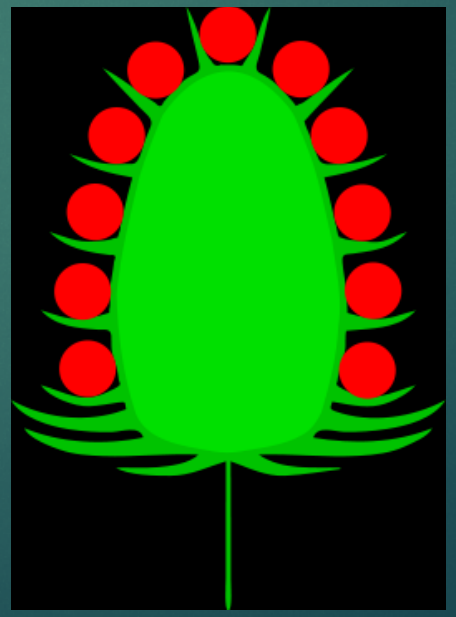
gladiolus

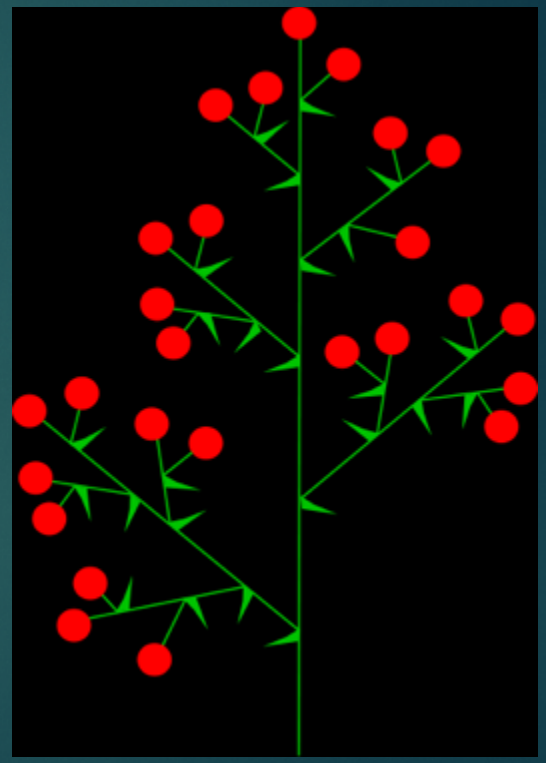
Boneset, *Eupatorium perfoliatum*

Types of flowers - Compound

- Umbel
  - Type of raceme with short axis and multiple floral pedicels of equal length that arise from common point
- Head
  - Contracted raceme with single flowers borne on an enlarged stem
- Panicle
  - Compound, definite inflorescence with irregular branching, each with a terminal flower







Types of flowers - Compound

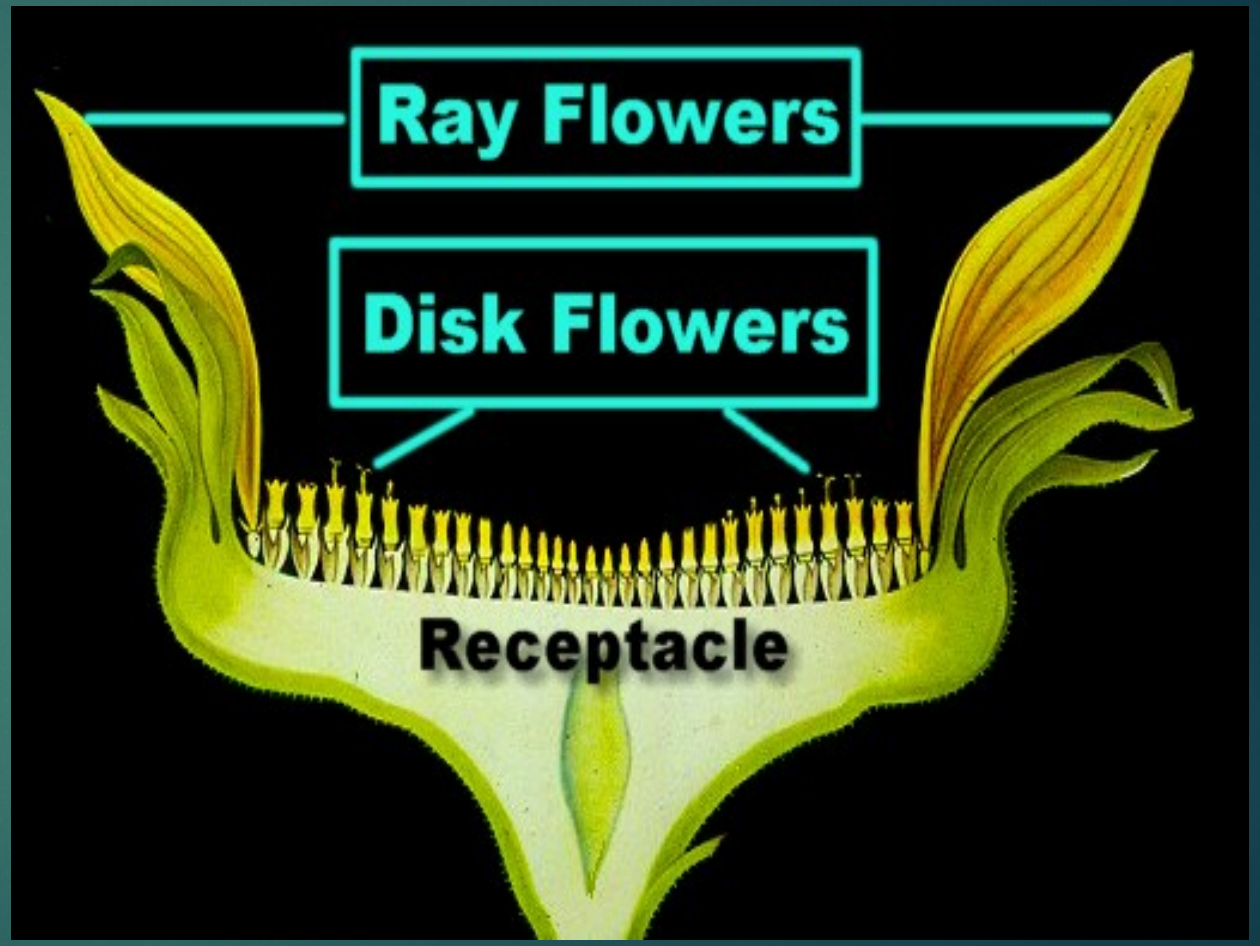
Hemlock-parsley,
Conioselinum pacificum

Fullers teasel,
Dipsacus fullonum

Lychee,
Litchi chinensis

Composite flowers

- Multiple floretes per receptacle
- Asteraceae family
  - Daisy family
  - Sunflowers
  - Chrysanthemums
  - Dandelions



Asteracea

Asteracea

Dandelion: Composite flower

http://themagnifyingglass.typepad.com/weblog/2010/05/flowers-101.html

Flower Symmetry

- Bilateral (Zygomorphic)
  - Divided by only a single plane into two mirror-image halves
- Radial (Actinomorphic)
  - Capable of being divided into equal halves along any diameter

Flower Symmetry

Zygomorphic

Actinomorphic

Question 3

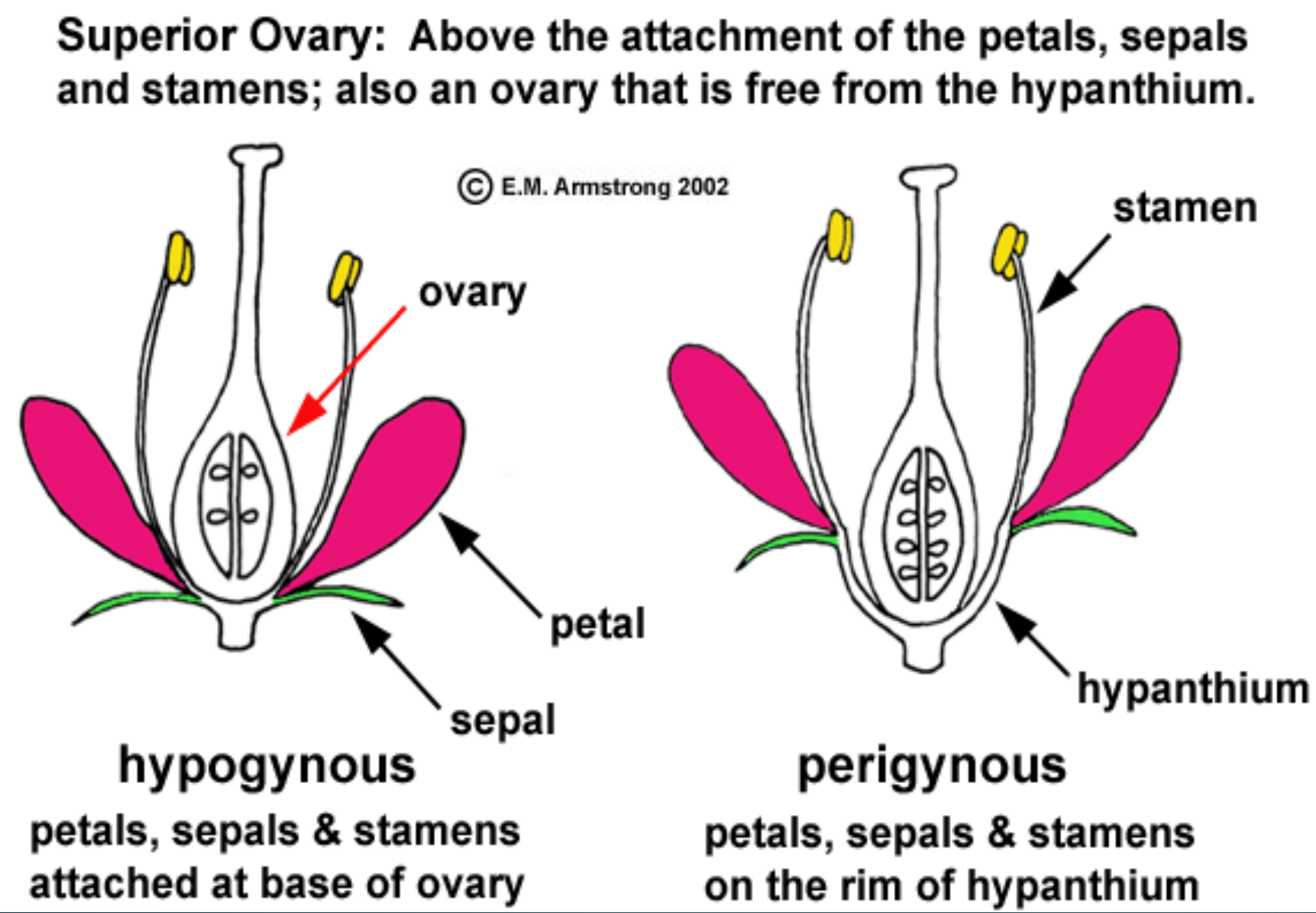
- How many flowers are present?

A. Zero

B. One

C. More than one

Ovary position - Superior



- Hypanthuium – The ringlike, cup-shaped, or tubular structure of a flower on which the sepals, petals, and stamens are born

Ovary position - Superior

Peach

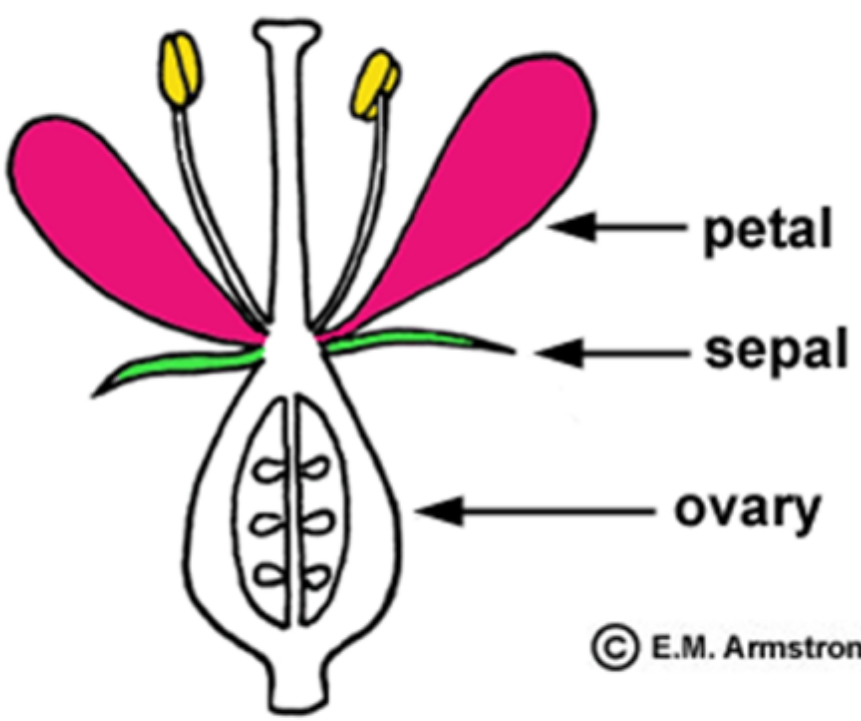
Boxchilli.com

Blackberry

Wikipedia.org

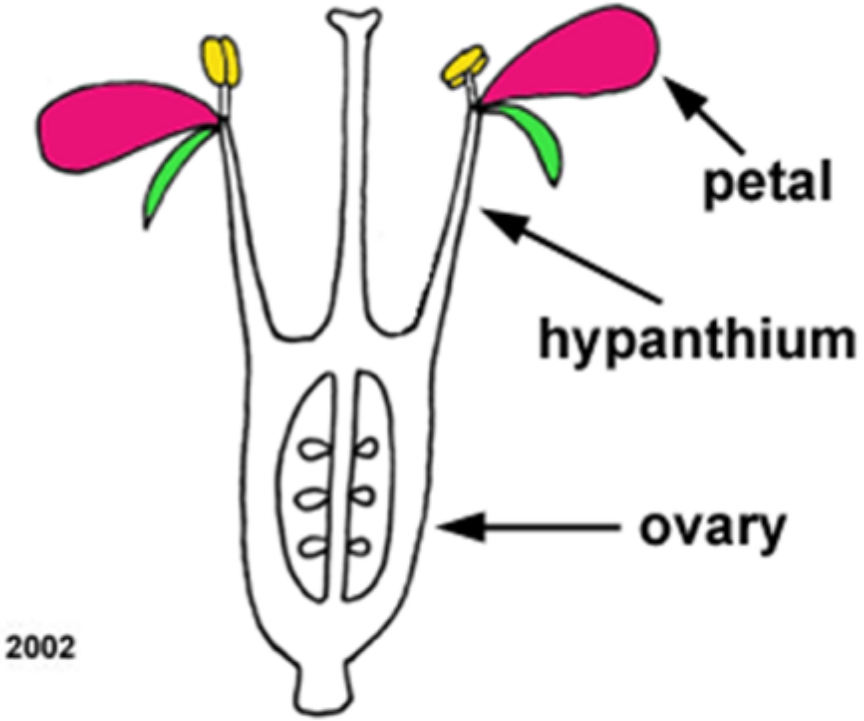
Ovary position - Inferior

Inferior Ovary: Below the attachment of the petals, sepals and stamens; may have hypanthium adnate to top of ovary.



epigynous

petals, sepals & stamens attached at top of ovary



epigynous

petals, sepals & stamens on the rim of hypanthium

Ovary position - Inferior

Pomegranate

Cucumber

Vocabulary

- Classification:
  - Perfect/Imperfect
  - Complete/Incomplete
  - Radial/Bilateral
  - Superior/Inferior ovary
  - Simple/composite
  - Inflorescences
- Flower parts:
  - Sepal
  - Petal
  - Stamen
  - Pistil/Carpel