

KINGDOM PLANTAE

I. General

- \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_

II. Responses

A. Tropisms

- plant \_\_\_\_\_ to a stimulus
- 1. \_\_\_\_\_
  - grows \_\_\_\_\_ the stimulus
- 2. \_\_\_\_\_
  - grows \_\_\_\_\_ the stimulus
- 3. \_\_\_\_\_
  - growth response \_\_\_\_\_
- 4. \_\_\_\_\_
  - growth response \_\_\_\_\_
- 5. \_\_\_\_\_
  - growth response \_\_\_\_\_
- 6. \_\_\_\_\_/
  - growth response \_\_\_\_\_

B. Taxis/Nastic

- plant \_\_\_\_\_ response to a stimulus
- 1. \_\_\_\_\_
  - movement response \_\_\_\_\_  
ex. *Helianthus annuus* = \_\_\_\_\_
- 2. \_\_\_\_\_
  - movement response \_\_\_\_\_  
ex. *Dionaea muscipula* = \_\_\_\_\_

III. Bryophytes

- mosses
  - liverworts
  - hornworts
- Importance

- significant component of plant biodiversity (~16,000 species)
- human uses- \_\_\_\_\_ (used for heat/fuel)

IV. Seedless Vascular Plants

- ferns & fern allies
- A. Evolution of Vascular Plants

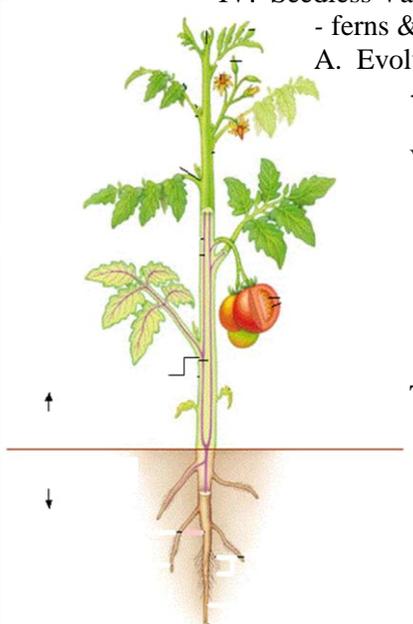
- \_\_\_\_\_
  - oldest vascular plant fossil

Vascular Plant Body

1. Root System
  - \_\_\_\_\_
  - \_\_\_\_\_
2. Shoot System
  - leaves -> \_\_\_\_\_
  - stems -> \_\_\_\_\_

Tissue Systems

1. Dermal
  - \_\_\_\_\_
2. Ground
  - \_\_\_\_\_



3. Vascular

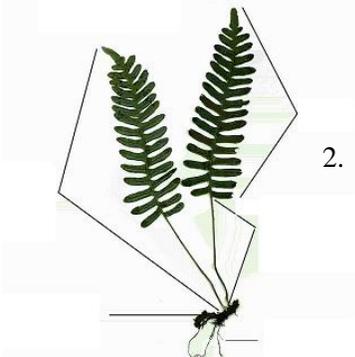
- \_\_\_\_\_
- a. \_\_\_\_\_ - conducts \_\_\_\_\_
- b. \_\_\_\_\_ - conducts \_\_\_\_\_

B. Phylum Pterophyta

- "ferns"
- "\_\_\_\_\_" = winged
- 11,000 living species -> 2<sup>nd</sup> most diverse seedless vascular phylum

1. Body

- lamina - blade
- petiole - stalk
- rachis - axis
- "fiddleheads" -> circinate venation



- \_\_\_\_\_
- protects the \_\_\_\_\_

2. Order Filicales

- most ferns belong to this order
- 10,500 species

Reproduction

- some have separate \_\_\_\_\_
- \_\_\_\_\_ - structures that \_\_\_\_\_
- \_\_\_\_\_
- some only reproduce \_\_\_\_\_

V. Gymnosperms

- conifers
- "\_\_\_\_\_" = \_\_\_\_\_; "\_\_\_\_\_" = \_\_\_\_\_
- 1st plants to clearly have \_\_\_\_\_

A. Reproduction

1. Male

- Microsporangia make \_\_\_\_\_ microspores
- \_\_\_\_\_

2. Female

- Megasporangia make \_\_\_\_\_ megaspores
- \_\_\_\_\_

3. Fertilization

- fertilization of the egg produces a \_\_\_\_\_
- stores tissue inside the seed for food
- seed is dispersed

VI. Angiosperms

**CARPEL**  
\*  
\*  
\*

**STAMEN**  
\*  
\*

- \_\_\_\_\_

A. Monocots

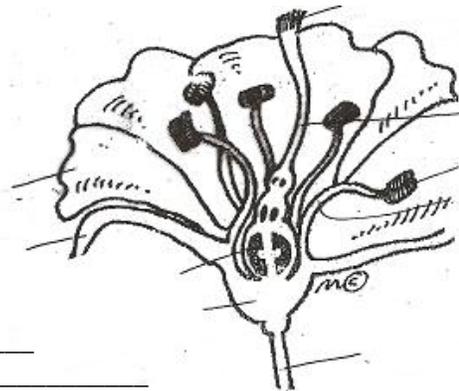
- \_\_\_\_\_
- multiples of \_\_\_\_\_

B. Dicots (Eudicots)

- \_\_\_\_\_
- multiples of \_\_\_\_\_

C. Double Fertilization

- \_\_\_\_\_ fuse with the \_\_\_\_\_
- 1st sperm and the egg create the \_\_\_\_\_
- 2nd sperm and the egg create the \_\_\_\_\_



D. Development of the Fruit

1. Ovule

- develops into the seed (2N)

- \_\_\_\_\_ = \_\_\_\_\_

- \_\_\_\_\_ = \_\_\_\_\_

2. Ovary

- develops \_\_\_\_\_

- \_\_\_\_\_ completely encloses \_\_\_\_\_

- fruit is a \_\_\_\_\_

F. Outcrossing/Cross Pollinating

1. Phases - \_\_\_\_\_

a. Staminate Phase (\_\_\_\_\_)

- \_\_\_\_\_ reflexed/bent to one side

- \_\_\_\_\_ produce \_\_\_\_\_

b. Carpellate Phase (\_\_\_\_\_)

- \_\_\_\_\_ swing up above

- \_\_\_\_\_ open to \_\_\_\_\_

2. Dichogamy

- \_\_\_\_\_

a. Protandrous

- "\_\_\_\_\_ " = \_\_\_\_\_

- \_\_\_\_\_

b. Protogynous

- "\_\_\_\_\_ " = \_\_\_\_\_

- \_\_\_\_\_

3. Adaptations of species with bisexual flowers

a. physical separation \_\_\_\_\_

b. self-incompatibility

- \_\_\_\_\_ from the same plant will not be able to fuse

with the \_\_\_\_\_ to germinate and produce any \_\_\_\_\_

e.g. Plums – must have 2 different varieties to get fruit!

4. Adaptations of species with unisexual flowers

a. monoecious

- "mono" = one

- \_\_\_\_\_

b. dioecious

- "di" = two

- \_\_\_\_\_

- guarantees outcrossing!

G. Inbreeding (Self-pollination)

- about 1/2 of species in the \_\_\_\_\_ self-pollinate

- usually have \_\_\_\_\_

Advantages:

1. \_\_\_\_\_

-can produce more seeds instead of colors, different maturation times, etc.

2. \_\_\_\_\_

-“if it ain't broke, don't fix it!”

3. \_\_\_\_\_

-cold environments- not many insects/birds/animals

## VII. Families of Flowering Plants

### A. Family Asteraceae

#### 1. General

- \_\_\_\_\_
- biggest \_\_\_\_\_ family
- \_\_\_\_\_ species

#### 2. Structure

- tiny flowers arranged into a huge compound head
- "\_\_\_\_\_ " – compound head of many smaller flowers
- fused \_\_\_\_\_ with a \_\_\_\_\_ sticking out the top
- 2 fused \_\_\_\_\_ make up the \_\_\_\_\_
- 5 fused \_\_\_\_\_
- 5 fused \_\_\_\_\_



#### 3. Examples/Exceptions

- Dandelions
  - have only \_\_\_\_\_ flowers
- Thistles
  - have only \_\_\_\_\_ flowers
- Sunflowers
  - have \_\_\_\_\_ flowers



### B. Family Orchidaceae

#### 1. General

- \_\_\_\_\_
- \_\_\_\_\_ species
- biggest \_\_\_\_\_ family

#### 2. Structure

- \_\_\_\_\_ fused with \_\_\_\_\_ and \_\_\_\_\_ to form a \_\_\_\_\_

## VII. Plant Pollinators

### A. Beetle-pollinated

- \_\_\_\_\_ (white, cream, green)
- \_\_\_\_\_ (fruity, spicy, or foul)
- \_\_\_\_\_ to protect ovules
- \_\_\_\_\_

### B. Bee-pollinated

- \_\_\_\_\_ (yellow and blue)
- \_\_\_\_\_ markings (stripes and spots)
- \_\_\_\_\_ fragrances
- \_\_\_\_\_
- \_\_\_\_\_ at the base of a corolla tube

### C Butterfly & Moth-pollinated

#### 1. Butterflies

- \_\_\_\_\_ w/nectar at the bottom (specific to \_\_\_\_\_)
- \_\_\_\_\_ colors (red and orange)
- \_\_\_\_\_ fragrances

#### 2. Moths

- \_\_\_\_\_
- emit fragrance \_\_\_\_\_
- \_\_\_\_\_ w/nectar at the bottom (specific to mouth parts)
- \_\_\_\_\_ colors

- D. Bird-pollinated
  - often \_\_\_\_\_
  - usually \_\_\_\_\_
  - large amount of \_\_\_\_\_
- E. Bat-pollinated
  - \_\_\_\_\_
  - \_\_\_\_\_
  - some open \_\_\_\_\_
  - large amount of \_\_\_\_\_
- F. Wind-pollinated
  - \_\_\_\_\_
  - petals \_\_\_\_\_
  - \_\_\_\_\_

## IX. Plant Hormones

- \_\_\_\_\_ organic molecules
- highly specific \_\_\_\_\_
  - only produce certain results
- function in \_\_\_\_\_
  - a little goes a long way
- regulate \_\_\_\_\_
- A. Auxins
  - produced in the \_\_\_\_\_
  - stimulate \_\_\_\_\_
  - only moves \_\_\_\_\_ through the plant
  - Indolacetic Acid (IAA)
    - most common natural auxin
    - important in \_\_\_\_\_
- B. Cytokinins
  - produced in the \_\_\_\_\_
  - stimulates \_\_\_\_\_
  - only moves \_\_\_\_\_ through the plant
- C. Ethylene
  - only \_\_\_\_\_ in plants
  - inhibits \_\_\_\_\_
  - promotes \_\_\_\_\_
    - \_\_\_\_\_
    - \_\_\_\_\_
  - promotes \_\_\_\_\_
- D. Extras
  1. Abscisic Acid (ABA)
    - \_\_\_\_\_
    - \_\_\_\_\_ plant growth
  2. Gibberellins
    - promotes \_\_\_\_\_
      - \_\_\_\_\_
    - promotes \_\_\_\_\_
      - fertilized seed can start to grow

## CROSSWORD CLUES

### KINGDOM PLANTAE I

#### Across

2. plant growth response to light
8. vein pattern of eudicots
11. the oldest vascular plant fossil
12. vascular tissue that transports minerals
13. function of dermal tissue of plants
15. plants that make fruits and/or flowers
18. the diploid (2N) cell that is created during fertilization
21. structure in gymnosperms that holds the male gametes
22. the female gamete of gymnosperms
23. order of ferns that has 10,500 species

#### Down

1. group of plants that don't have vascular tissue or seeds; such as hornworts
3. development type of ferns; they uncurl as they develop
4. vascular tissue that transports water
5. plant growth response to gravity
6. vein pattern of monocots
7. plant movement response to touch
9. \_\_\_\_\_ and absorption are the two functions of roots
10. phylum of the ferns
14. plant movement response shown by a field of sunflowers
16. structure of ferns that holds the spores
17. "naked seed"
19. tissue type that includes the cortex and makes up the major part of the plant body
20. the number of gametes that are produced in a megasporangia
22. the male gamete of gymnosperms
24. life cycle of plants

## KINGDOM PLANTAE II

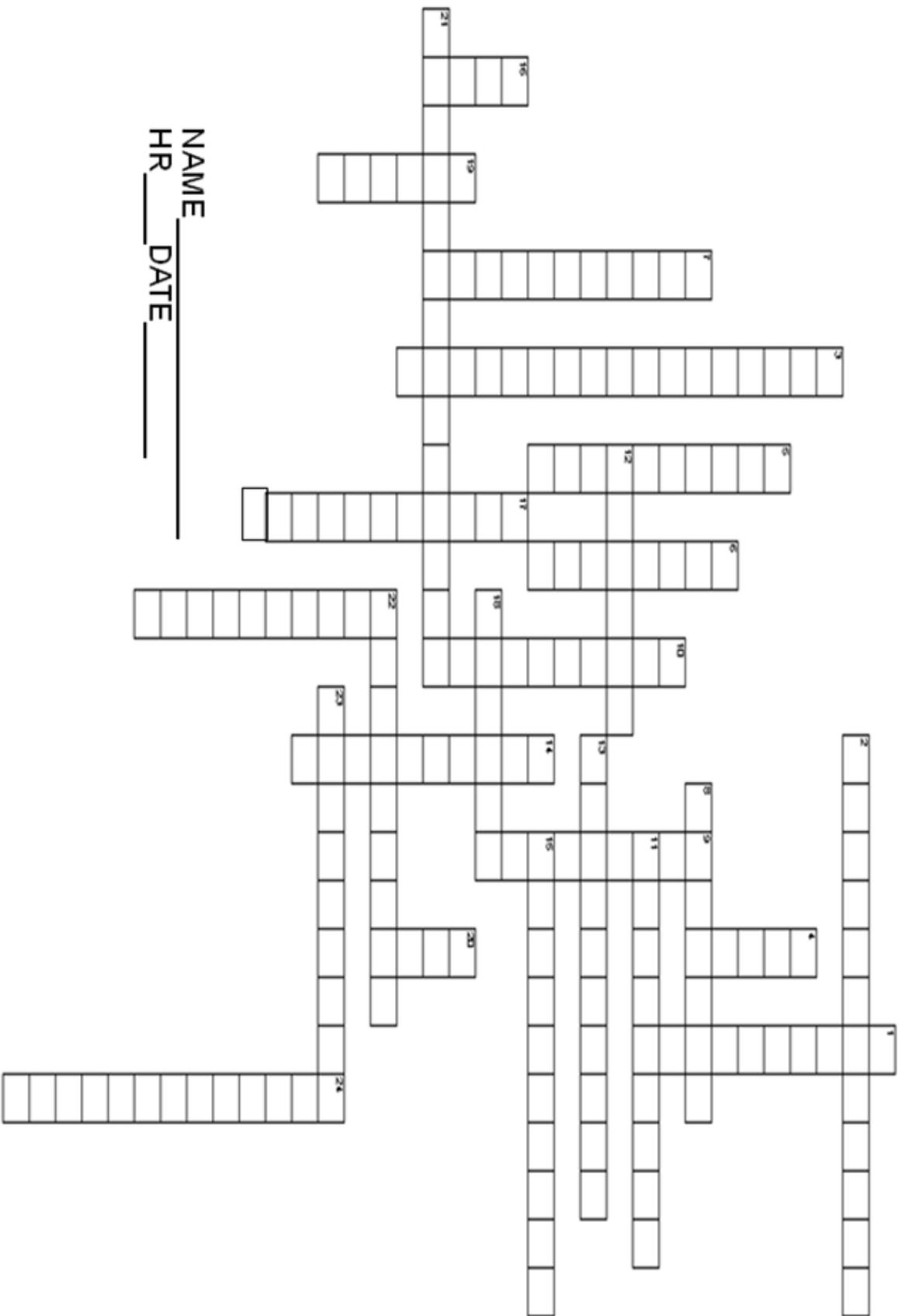
### Across

3. develops into the fruit; used for dispersal
4. angiosperms with multiples of 3
5. most common natural auxin, important in fruit growth
6. carpels and stamens mature at different times
9. tissue that is created from the 2nd sperm and egg during double fertilization
10. hormone that works against auxins and cytokinins to restrain plant growth
13. hormone that causes seeds to germinate
14. family of angiosperms that includes the daisies
16. cell result from cytokinins
17. pollinator for a flower that has a long tube with nectar at the bottom and is red
20. plant type that is self-incompatible
21. biggest monocot family
23. integument

### Down

1. cell result from auxins
2. hormone that's produced in the root tips and only moves up
7. male and female flowers are separated, but on the same plant
8. pollinator for a flower that has small cream petals, no smell and no nectar
11. pollinator for a flower that is white, has a strong foul odor, and edible parts
12. compound head of many smaller flowers
13. "female" in Latin
15. male and female flowers are on completely different plants
18. "andro" in English
19. pollinator for a flower that has striped petals and a landing platform
22. angiosperms with multiples of 4 or 5
24. plant hormone that causes fruit to ripen and leaves to drop
25. plant hormone that's produced in the shoot tips and moves downward

# KINGDOM PLANTAE I



NAME \_\_\_\_\_  
HR \_\_\_\_\_ DATE \_\_\_\_\_

# KINGDOM PLANTAE

## II

