

# Classification & Kingdoms Worksheet

Name \_\_\_\_\_

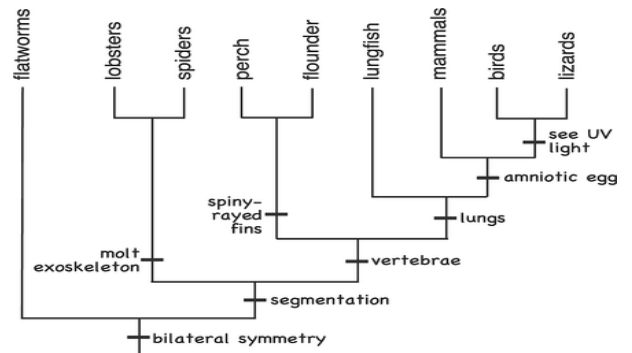
## Section A: Classification

1. What criteria are used to place organisms into their domains and kingdoms? \_\_\_\_\_
2. Use the chart in your notes to help answer these questions. Identify which kingdom the organisms are in based on the following description.
  - a. An organism contains a cell wall and is a multicellular autotroph. \_\_\_\_\_
  - b. An organism is unicellular, has a chloroplast and a nucleus. \_\_\_\_\_
  - c. An organism contains peptidoglycan in their cell walls, unicellular and autotroph. \_\_\_\_\_

3. Which taxon includes the most specific characteristics? \_\_\_\_\_
4. Which taxon includes the broadest characteristics? \_\_\_\_\_
5. Which taxon includes only organisms that can successfully interbreed? \_\_\_\_\_
6. Which two organisms are more closely related? How did you know? \_\_\_\_\_
7. If an organism is in the same **order**, what other taxa would be the same? \_\_\_\_\_
8. Using the information on the chart, what can you conclude about the classification taxa of an organism with the scientific name *Rana temporaria*? \_\_\_\_\_

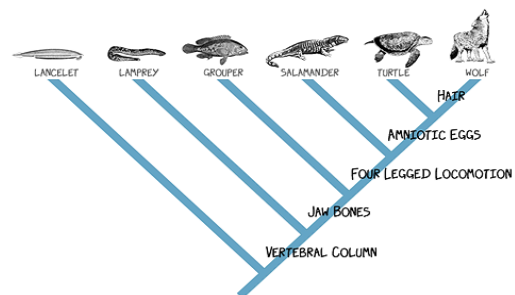
Taxons	Green Frog	Mountain Lion	Domestic Dog
<b>Kingdom</b>	Animalia	Animalia	Animalia
<b>Phylum</b>	Chordata	Chordata	Chordata
<b>Class</b>	Amphibia	Mammalia	Mammalia
<b>Order</b>	Anura	Carnivora	Carnivora
<b>Family</b>	Ranidae	Felidae	Canidae
<b>Genus</b>	<i>Rana</i>	<i>Felis</i>	<i>Canis</i>
<b>Species</b>	<i>clamitans</i>	<i>concolor</i>	<i>familiaris</i>

9. According to the cladogram, what characteristic do all of the organisms in the cladogram share?
10. According to the cladogram, which are more closely related: Lungfish and Flounder **OR** Lungfish and Mammals?
11. What is a major difference between mammals and birds according to the cladogram above?



12. Who devised a system of naming organisms that is still in use today? \_\_\_\_\_
13. The taxon that is larger than a genus and smaller than an order is a(n) \_\_\_\_\_.
14. Organisms are placed in \_\_\_\_\_ or classification groups.

15. According to the cladogram, what trait(s) are found in a salamander, but not in the grouper?
16. Which trait is found in all organisms, but the lancelet?
17. How is phylogeny used to classify organisms?



18. Linnaeus classified organisms based on physical characteristics. What do scientists use today to classify organisms?

❖ Classification Game -- <http://www.quia.com/rr/220195.html>

## Section B: Dichotomous Key

Introduction: The identification of biological organisms can be greatly simplified using tools such as dichotomous keys. A dichotomous key begins with general characteristics and lead to couplets indicating progressively specific characteristics. Follow the key and identify the following salamanders. Adapted from: [www.biologyjunction.com](http://www.biologyjunction.com)

1	a	Hind limbs absent	<i>Siren</i>
	b	Hind limbs present	Go to 2
2	a	External gills present in adults	<i>Mud puppy</i>
	b	External gills absent in adults	Go to 3
3	a	Large size	Go to 4
	b	Small size	Go to 5
4	a	Body background black, large white spots irregular in shape and size completely covering body & tail	<i>Tiger salamander</i>
	b	Body background black, small, round, white spots in a row along each side from eye to tip of tail	<i>Spotted Salamander</i>
5	a	Body background black with white spots	Go to 6
	b	Body background light color with dark spots and or lines on body	Go to 7
6	a	Small white spots on a black background in a row along each side from head to tip of tail	<i>Jefferson salamander</i>
	b	Small white spots on a scattered throughout a black background from head to tip of tail	<i>Slimy salamander</i>
7	a	Large irregular black spots on a light background extending from head to tip of tail	<i>Marbled salamander</i>
	b	No large irregular black spots on a light background	Go to 8
8	a	A light stripe running the length of the body and bordered by dark pigment extending downward on the sides	<i>Red-backed salamander</i>
	b	A light stripe extending the length of the body, a marked constriction at the base of the tail	<i>Four-toed salamander</i>



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



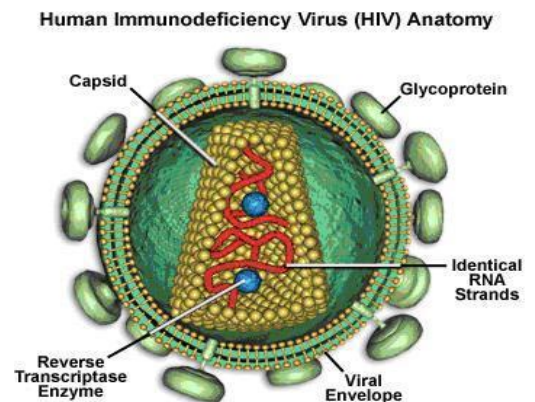
2. \_\_\_\_\_



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

## Section C: Viruses

- Explain why viruses are considered nonliving particles. \_\_\_\_\_  
\_\_\_\_\_
- What is a host cell? \_\_\_\_\_
- Why can't viruses be grown in agar petri plates like bacteria? \_\_\_\_\_  
\_\_\_\_\_
- What two structures are found in all viruses? \_\_\_\_\_
- Identify the function(s) of the viral particle structure.
  - Capsid - \_\_\_\_\_  
\_\_\_\_\_
  - RNA strand - \_\_\_\_\_  
\_\_\_\_\_
  - Envelope - \_\_\_\_\_  
\_\_\_\_\_
  - Reverse Transcriptase - \_\_\_\_\_  
\_\_\_\_\_
  - Glycoprotein - \_\_\_\_\_  
\_\_\_\_\_



6. Why can't viruses attach to any cell it encounters?
7. Explain what occurs in the lytic cycle.
8. Explain what occurs in the lysogenic cycle.
9. Which replication cycle do you see symptoms? \_\_\_\_\_
10. Suppose Jon contracted the influenza virus. How would he proceed to treat this viral infection? \_\_\_\_\_

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11. Shingles and chickenpox are both viral diseases caused by the varicella-zoster herpes virus. Shingles usually occurs years after a person has had the chickenpox. Based on this information, what kind of infection cycle do you think the varicella-zoster virus has? \_\_\_\_\_
12. Why don't vaccines work on all viruses? \_\_\_\_\_

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**Section D: Who's got the FLU?**



Exchange #1: \_\_\_\_\_  
 Exchange #2: \_\_\_\_\_  
 Exchange #3: \_\_\_\_\_

1. How would the results differ if people were continuously entering and leaving class?
2. How would the results differ if the infected person died very quickly or very slowly after contracting the disease?

**Section E: Archaeobacteria & Eubacteria**

All bacteria were once classified into Kingdom Monera. Scientists discovered there were differences among the evolutionary history and biochemistry which led them classify them into two very different kingdoms – Archaeobacteria and Eubacteria. Archaeobacteria and Eubacteria are thought to have split from each other billions of years ago. Archaeobacteria and Eubacteria have similar in size and shape. All bacteria are unicellular and do not have a nucleus – prokaryotes. The general structure of archaea and bacteria are the same, but the composition or some structures are different in archaea. Archaea differ in the composition of their cell wall --- the cell wall does not contain peptidoglycan. Other structural differences include lipids in their cell membrane. Archaea and Eubacteria both reproduce asexually by binary fission, fragmentation and budding. Eubacteria have the ability to form spores to remain dormant over years, something not found in Archaea. Archaea can survive in extreme, harsh environments such as hot springs, salt lakes, marshes, oceanic vents and guts of ruminants and humans. Eubacteria are found everywhere and live in different types of habitats.

1. What was the name of the kingdom that all bacteria were once classified into? \_\_\_\_\_
2. When do scientists believe the two types of bacteria split? \_\_\_\_\_
3. Fill in the chart – similarities and differences among Archaeobacteria and Eubacteria.

DIFFERENCES	SIMILARITIES

**Section F: Archaeobacteria**

On the 'Websites-Evolution' page, click on 'Bacteria'.....then click on "Archaeobacteria Kingdom". Answer these questions.

1. When and why did scientist decide to place Archaeobacteria into their own kingdom? \_\_\_\_\_
2. In a Nutshell.....

Kingdom Archaeobacteria	
Type of Organism	
Cellular Structure	
Habitat	
Peptidoglycan in Cell Wall	
Reproduction	
Nutrition Mode	

3. What 6 characteristics distinguish Archaeobacteria from Eubacteria?
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_
  - e. \_\_\_\_\_
  - f. \_\_\_\_\_
4. Are archaeobacteria pathogenic? \_\_\_\_\_ What does that mean? \_\_\_\_\_

5. List some basic characteristics and habitat of the three subgroups of archaeobacteria.

Methanogens	
Halophiles	
Thermoacidophiles	

6. List a few examples of how archaea are important organisms. \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

**Section G: Eubacteria**

1. In a Nutshell....

Kingdom Eubacteria	
Type of Organism	
Cellular Structure	
Habitat	
Peptidoglycan in Cell Wall	
Reproduction	
Nutrition Mode	

2. What is the process of using inorganic compounds to make your own food? \_\_\_\_\_
3. Identify the following bacteria – \_\_\_\_\_

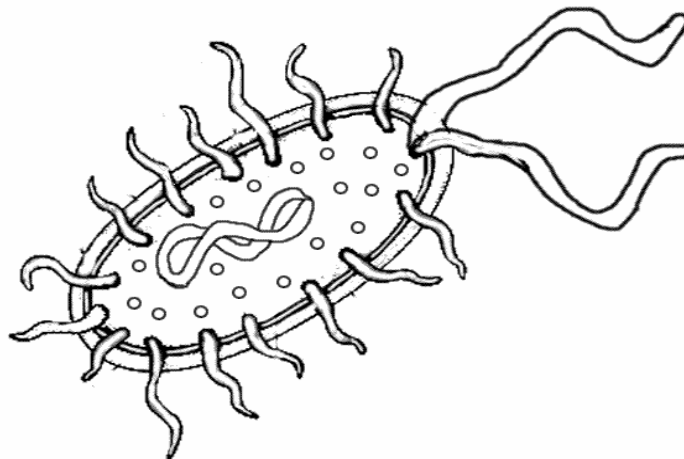


4. Gram test are used to identify how much \_\_\_\_\_ is found in the cell wall.
5. What's the difference between obligate aerobes and obligate anaerobes? \_\_\_\_\_

➤ On the "Websites-Evolution" page, click on 'Bacterial Structure' to help answer questions below.

6. Label the diagram of a bacterial cell and color the structures.

- cell wall – blue
- cell membrane – orange
- pili – red
- DNA – green
- cytoplasm – yellow
- ribosomes – black



7. In a bacterium, where is the DNA located?  
\_\_\_\_\_
8. Which structure(s) allows bacteria to adhere to substances? \_\_\_\_\_
9. Which structure is a sticky protective layer that helps bacteria evade the immune system?  
\_\_\_\_\_
10. Why do bacteria form endospores? \_\_\_\_\_
11. What are plasmids? \_\_\_\_\_

➤ On the 'Websites-Evolution' page, click on 'Bacteria'.....then click on the different headings to help answer these questions.

12. Why is sexual reproduction important for the survival of a bacterial species? \_\_\_\_\_
13. In a petri dish, how can you tell if an antibiotic or chemical is killing the bacteria? \_\_\_\_\_
14. Compare how you treat a bacterial infection to the treatment of a viral infection. \_\_\_\_\_
15. How are bacteria beneficial to the environment? \_\_\_\_\_
16. How are bacteria beneficial to humans? \_\_\_\_\_
17. How do bacteria become resistant to antibiotics? \_\_\_\_\_

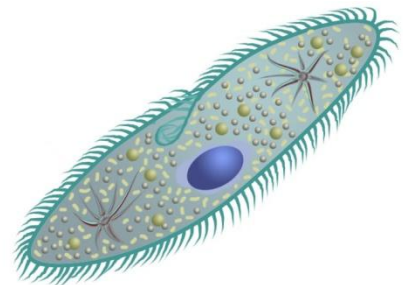
**Section H: What is it?** --- Identify the term for each description about bacteria.

1. bacteria that require oxygen \_\_\_\_\_
2. number of chromosomes in bacteria \_\_\_\_\_
3. rod shaped bacteria \_\_\_\_\_
4. bacteria living in very salty environments \_\_\_\_\_
5. corkscrew shaped bacteria that may cause disease such as syphilis \_\_\_\_\_
6. bacteria that live in very hot, acid environments such as hot springs \_\_\_\_\_
7. bacteria that gram stain purple \_\_\_\_\_
8. live in swamps and in sewage and produce methane gas \_\_\_\_\_
9. long whip-like tails for movement in some bacteria \_\_\_\_\_
10. term used to refer to most bacteria \_\_\_\_\_
11. prefix used when bacteria grow in chains \_\_\_\_\_
12. thought to be the ancestors of eukaryotes \_\_\_\_\_
13. structure formed to help bacteria survive harsh environments \_\_\_\_\_
14. bacteria that can carry on photosynthesis \_\_\_\_\_
15. bacteria that do not need oxygen \_\_\_\_\_
16. organisms without a nucleus or membrane-bound organelles \_\_\_\_\_
17. short hairs on the cell wall of some bacteria for attachment \_\_\_\_\_
18. produces sticky sugars for attachment of bacteria to objects \_\_\_\_\_
19. protein-carbohydrate in the cell walls of eubacteria \_\_\_\_\_
20. prefix used when bacteria grow in grapelike clusters \_\_\_\_\_

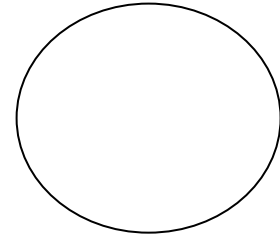
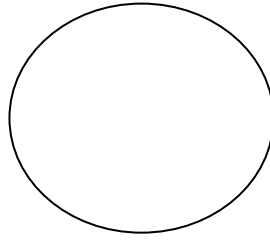
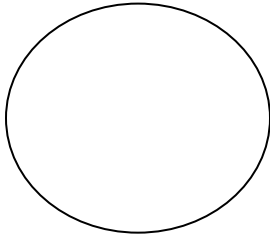
**Section I: Protist**

Use your notes to answer these questions and use the website. On the 'Websites-Evolution', click on Protist...read and answer these questions.

1. What are the three types of protist? \_\_\_\_\_
2. The cell walls of diatoms contain \_\_\_\_\_.
3. An amoeba is a type of \_\_\_\_\_.
4. Red tide is caused by an explosion of \_\_\_\_\_.
5. Amoebas use their \_\_\_\_\_ to find food and to move.
6. Label the contractile vacuole and the nucleus in the diagram of the paramecium. Answer these questions about the paramecium.
  - a. How does the paramecium move? \_\_\_\_\_
  - b. If the contractile vacuole were to malfunction, what effect would this likely have on the organism? \_\_\_\_\_
  - c. Is this a unicellular or multicellular protist? \_\_\_\_\_
  - d. If the cilia were to malfunction, what effect would this likely have on the organism? \_\_\_\_\_
7. Euglenas have an eye spot. What do you think the function of this structure is? \_\_\_\_\_
8. Why are algal blooms harmful to an aquatic ecosystem? \_\_\_\_\_
9. What type of sexual reproduction does most protist undergo? \_\_\_\_\_
10. What type of asexual reproduction does most protist undergo? \_\_\_\_\_
11. Why are phytoplankton essential for an aquatic food web? \_\_\_\_\_
12. How can someone contract an *Entamoeba* species or a *Giardia* species? \_\_\_\_\_
13. How is Malaria contracted? \_\_\_\_\_
14. How is African Sleeping Sickness contracted? \_\_\_\_\_
15. How are protist beneficial to humans and the environment? \_\_\_\_\_
16. How are plant-like protist similar to plants? \_\_\_\_\_
17. How are fungi-like protist similar to fungi? \_\_\_\_\_



18. Select three different prepared slides and sketch the protist. Identify the name and type of protist.



\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

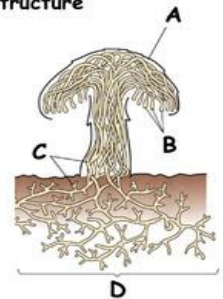
**Section J: Fungi**

On the 'Websites-Evolution', click on Fungi...read and answer these questions.

1. Identify the structures in the diagram.

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_

Fungi Structure



- 2. Where do fungi grow best? \_\_\_\_\_
- 3. The body of a fungus usually consists of thin filament called \_\_\_\_\_.
- 4. Are most fungi multicellular or unicellular? \_\_\_\_\_
- 5. What is the name of the structure that grows above ground? \_\_\_\_\_
- 6. A mass of hyphae is called \_\_\_\_\_.
- 7. How do fungi obtain nutrients through extracellular digestion? \_\_\_\_\_
- 8. What compound is found in the cell walls of fungi? \_\_\_\_\_
- 9. \_\_\_\_\_ obtain food by feeding on dead organisms.
- 10. Explain the role of both organisms in a mycorrhiza relationship. \_\_\_\_\_
- 11. Is lichen only a fungus? If not, what else lives within it? How do they benefit each other? \_\_\_\_\_
- 12. What are spores? \_\_\_\_\_
- 13. What type of asexual reproduction occurs when fungi cells break off and grow new fungi with identical haploid spores? \_\_\_\_\_
- 14. How are fungi used in the fermentation process? \_\_\_\_\_
- 15. How do fungi function as parasites? \_\_\_\_\_

**Section K: Plants**

- 1. Green alga is thought to be the ancestor of plants. What characteristics do green algae and plants share? \_\_\_\_\_
- 2. Write the formula for photosynthesis. \_\_\_\_\_
- 3. What are the cell walls of plants composed of? \_\_\_\_\_
- 4. What are the basic characteristics that all plants share? \_\_\_\_\_
- 5. What trend is present in the evolution of plants? \_\_\_\_\_



6. Plants are composed of three organs: roots, stems and leaves. How are these structures beneficial?
  - a. Roots - \_\_\_\_\_
  - b. Stems - \_\_\_\_\_
  - c. Leaves - \_\_\_\_\_
7. Earlier plant forms didn't have vascular tissue. How did the formation of vascular tissue allow plants to move away from a watery environment? \_\_\_\_\_  
\_\_\_\_\_
8. What modifications do plants have to help them retain water? \_\_\_\_\_  
\_\_\_\_\_
9. How has the formation of the seed and pollen grains changed the reproductive ability of plants? \_\_\_\_\_  
\_\_\_\_\_
10. Why is lignin an essential component of cell walls? \_\_\_\_\_  
\_\_\_\_\_

**Section L: Plant Adaptations**

On the "Website-Evolution" page, click on "Plant Adaptations".....go through each biome and fill in the chart.

Biome	Adaptations that a plant might have in order to survive in this specific biome.
Desert	
Tundra	
Tropical Rain Forest	
Temperate Deciduous Forest	
Taiga	
Grassland	
Temperate Rain Forest	



**Section M: Plant Types & Hormones**

1. Identify the type of PLANT - Put an 'X' in the box if the group of plants has the following characteristics:

	Bryophytes	Seedless Vascular	Gymnosperms	Angiosperms
has vascular tissue				
avascular or nonvascular				
obtains H <sub>2</sub> O by osmosis				
produces spore				
produces seeds				
produces cones				
needs water for fertilization				
produces flowers & fruit				
pine trees				
apple tree				
moss				
ferns				

2. What is the function of xylem? \_\_\_\_\_
3. What is the function of phloem? \_\_\_\_\_
4. What stimuli is causing roots to grow down and stems to grow up? \_\_\_\_\_
5. Why do some plants grow towards the sides instead of straight up? \_\_\_\_\_
6. Which hormone levels would increase during the fall? \_\_\_\_\_
7. Which hormone levels would increase during the spring and summer, but decrease during the fall?  
\_\_\_\_\_

**Section N: Animals**

On the "Website-Evolution" page, click on "Animal Adaptations".....go through each adaptation and fill in the chart.

1. What is an adaptation? \_\_\_\_\_
2. Explain the difference between anatomical, behavioral, and physiological adaptations. Provide an example for each.
  - a. Anatomical adaptations – \_\_\_\_\_
  - b. Behavioral adaptations – \_\_\_\_\_
  - c. Physiological adaptations – \_\_\_\_\_
3. Fill in the information on the chart.

Adaptation	What is it? How does the animal use it?
Parasitic	
Bioluminescence	
Chemical communication	
Mimicry	
Warning coloration	
Courtship displays	

Moulting	
Camouflage	
Territorial	
Aestivation	
Hibernation	
Migration	
Poisonous	
Predation defense	