

Name: _____ Class: _____ Date: _____

Observing and Classifying Protozoa

Background

The name protozoa actually means “first animals”. This name was given because many protozoa share characteristics with animals. However, there are also many that share characteristics with plants. In this lab, you will observe different members of this diverse group.

Materials

Microscope

Clean glass microscope slides

Clean cover slips

Pipette

Live samples of:

- Amoeba proteus
- Volvox
- Euglena gracilis
- Paramecium caudatum
- Six other protozoa cultures

Background

The classification of protozoa is a constantly changing field. Below are listed the five “supergroups” that protozoa are currently classified in and a summary of common characteristics of each.

Excavata – Name refers to an “excavated groove” found on one side of the cell. Most excavates are heterotrophic and move with a flagellum.

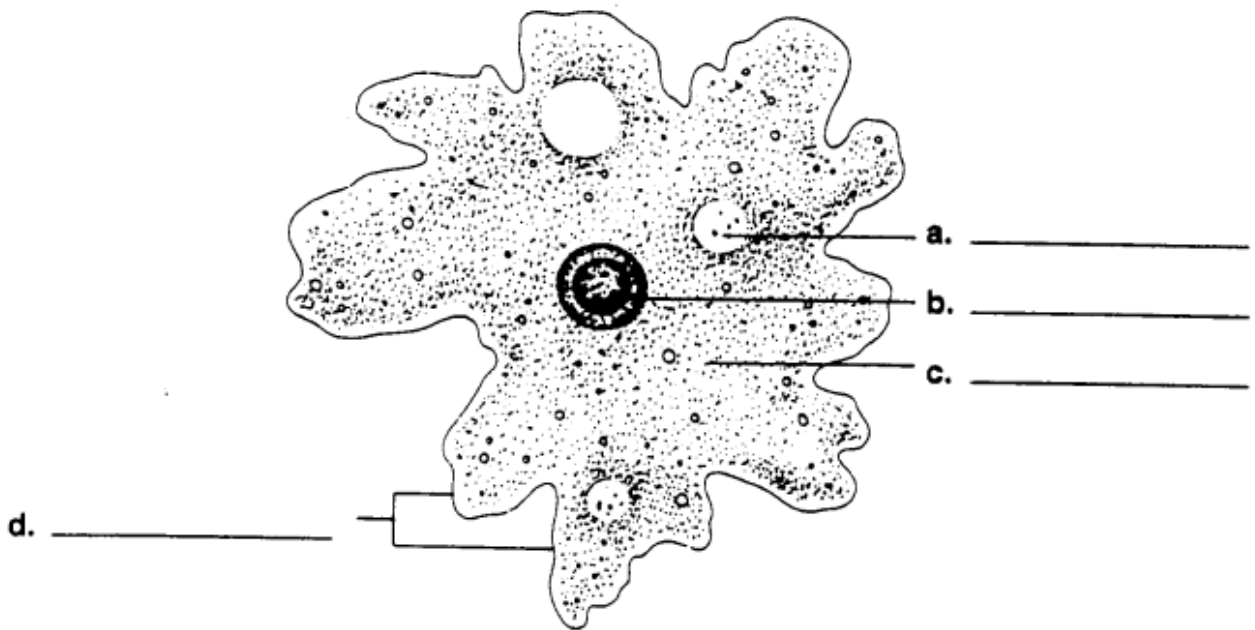
Chromalveolata – Many contain pigments (“chromo”) and membrane bound sacs (“alveolata”) inside their cells. May be autotrophic or heterotrophic. Movement varies.

Rhizaria – Name refers to threadlike pseudopods used for movement.

Archaeplastida – Group of eukaryotes most closely related to plants. Each contains a form of a chloroplast. Most reproduce sexually.

Unikonta – Group of eukaryotes most closely related to animals. All are heterotrophic.

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Procedure for Making a Slide

1. Using a pipette, place one drop of the protozoa culture to be studied on a clean glass slide.
****If you are studying paramecium or euglena, take a few strands of cotton and add them to the drop on the slide. This is needed to slow down the protozoa so you can see it!**
2. Gently lower and press a coverslip over the drop. Try to avoid air bubbles in the slide.
3. Remove any excess liquid from the cover slide as shown below.

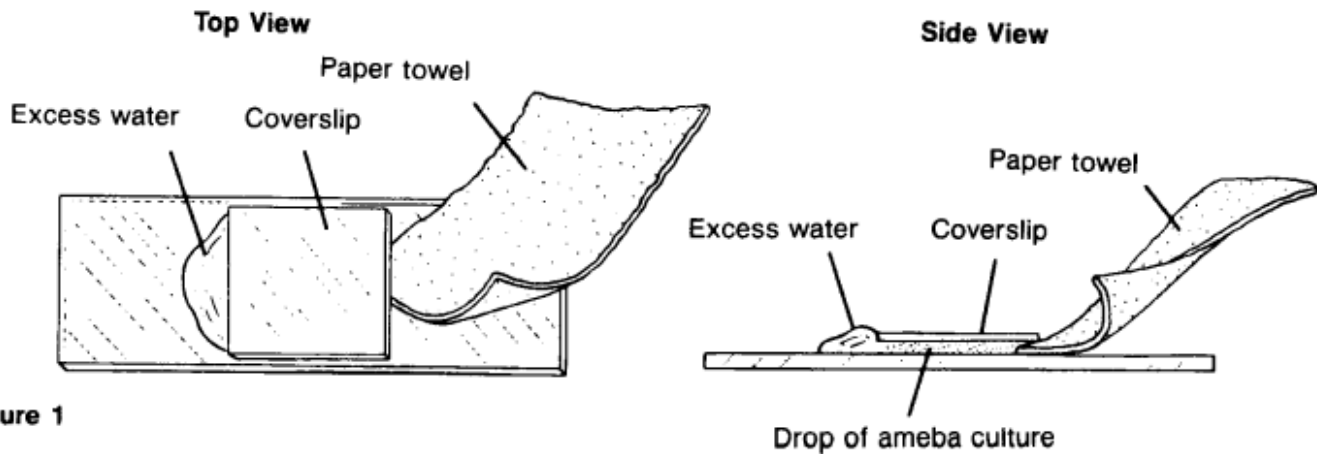


Figure 1

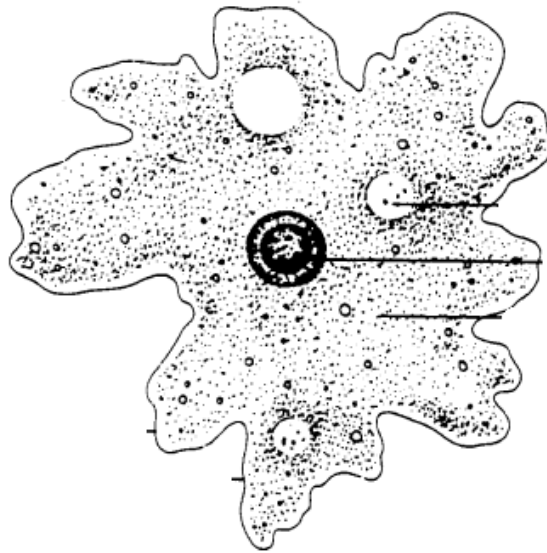
4. Place the slide onto the microscope. Turn to the lowest-power objective. Bring the slide into focus using the coarse adjustment knob.
5. Turn to the highest-power objective. Bring the slide into focus using the fine adjustment knob.
6. Once the protozoan is in view, sketch it and answer the questions that follow.

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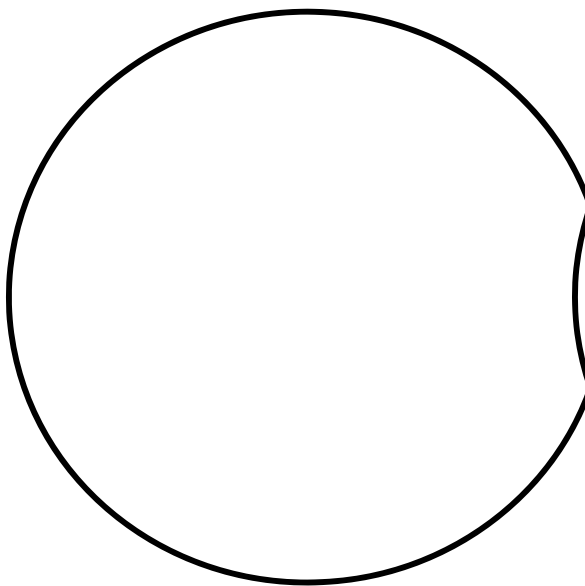
Amoeba proteus

Label all of the parts on the *Amoeba proteus* diagram below. Include each of the following:

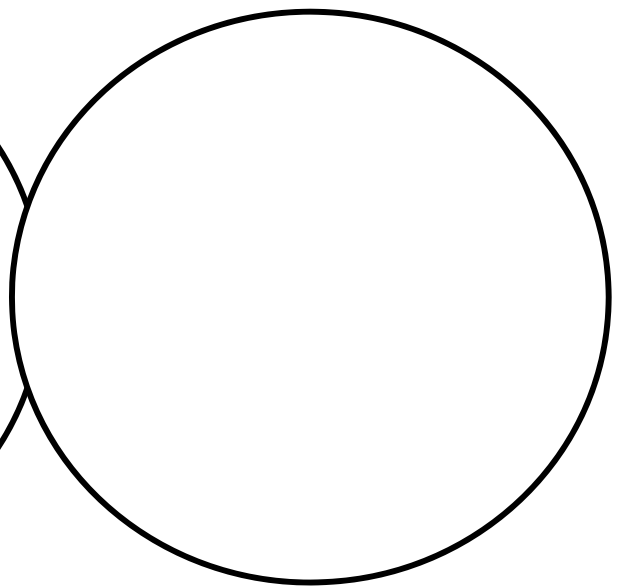
Contractile vacuole, nucleus, pseudopod, endoplasm



Draw the *Amoeba proteus* specimen you observe in the microscope under 10x and 40x magnification. Label each of the parts from the diagram above.



Amoeba proteus, 10x magnification



Amoeba proteus, 40x magnification

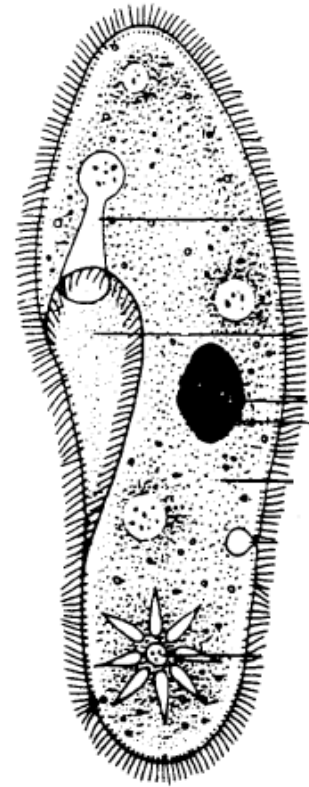
Name: _____ Class: _____ Date: _____

1. Describe any observations of the protozoan's movements or behavior while you view it:

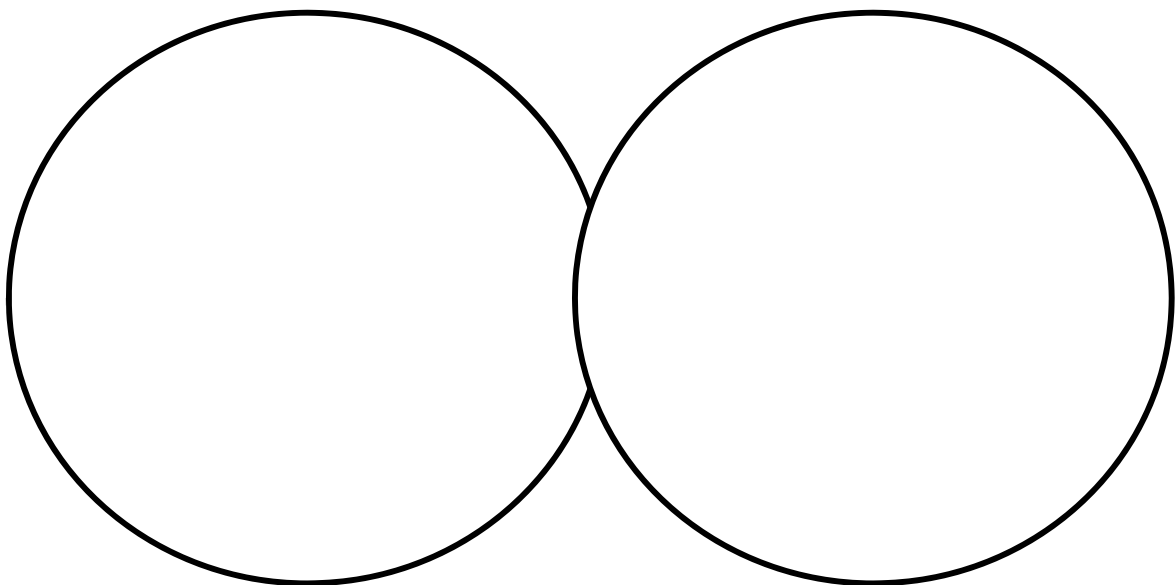
Paramecium caudatum

Label all of the parts on the *Paramecium caudatum* diagram to the right.. Include each of the following:

Cytosome, cytoplasm, cilia, micronucleus, macronucleus, contractile vacuole, gullet



Draw the *Amoeba proteus* specimen you observe in the microscope under 10x and 40x magnification. Label each of the parts from the diagram above.



Name: _____ Class: _____ Date: _____

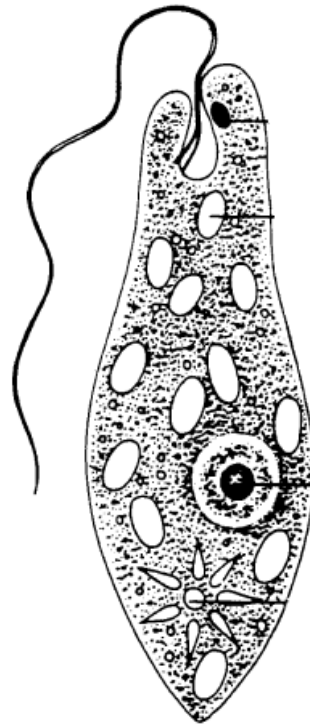
Paramecium caudatum, 10x magnification *Paramecium, caudatum*, 40x magnification

1. Describe any observations of the protozoan's movements or behavior while you view it:

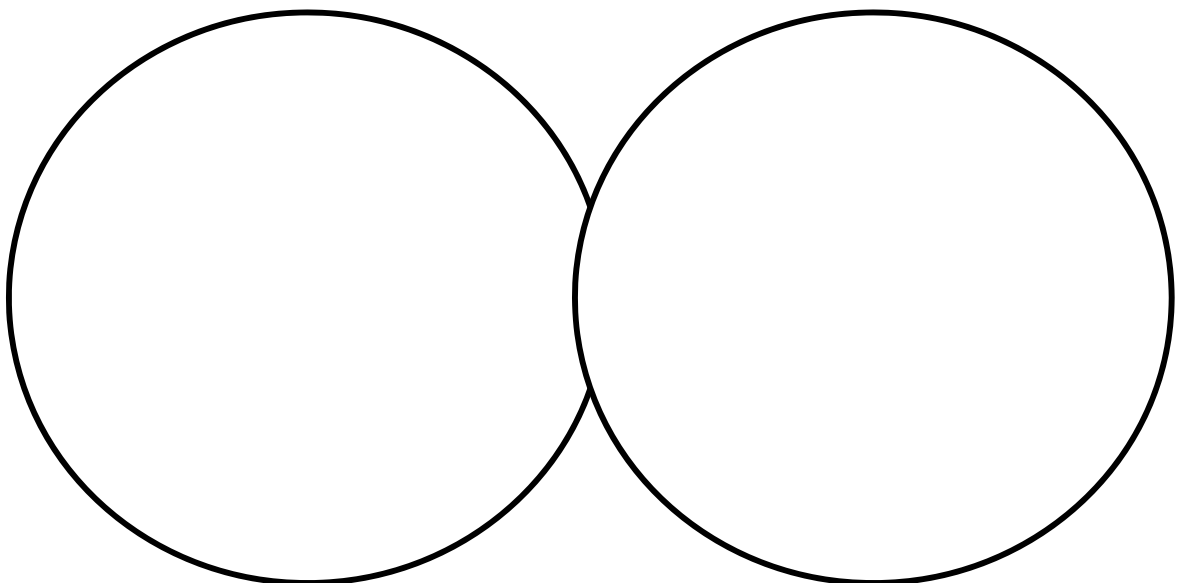
Euglena gracilis

Label all of the parts on the *Euglena gracilis* diagram to the right.. Include each of the following:

Eyespot, flagellum, contractile vacuole, nucleus, chloroplast, plasma membrane



Draw the *Euglena gracilis* specimen you observe in the microscope under 10x and 40x magnification. Label each of the parts from the diagram above.



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Euglena gracilis, 10x magnification

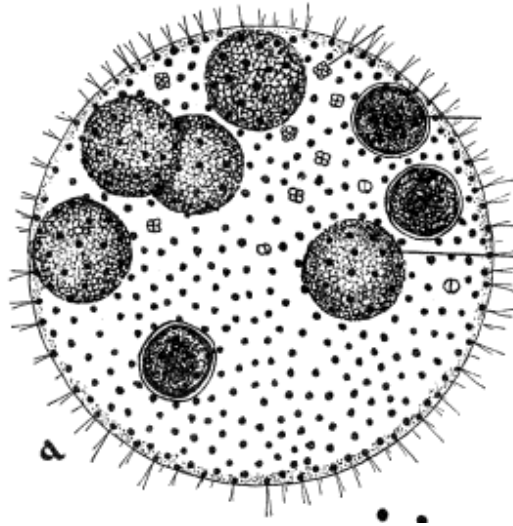
Euglena gracilis, 40x magnification

1. Describe any observations of the protozoan's movements or behavior while you view it:

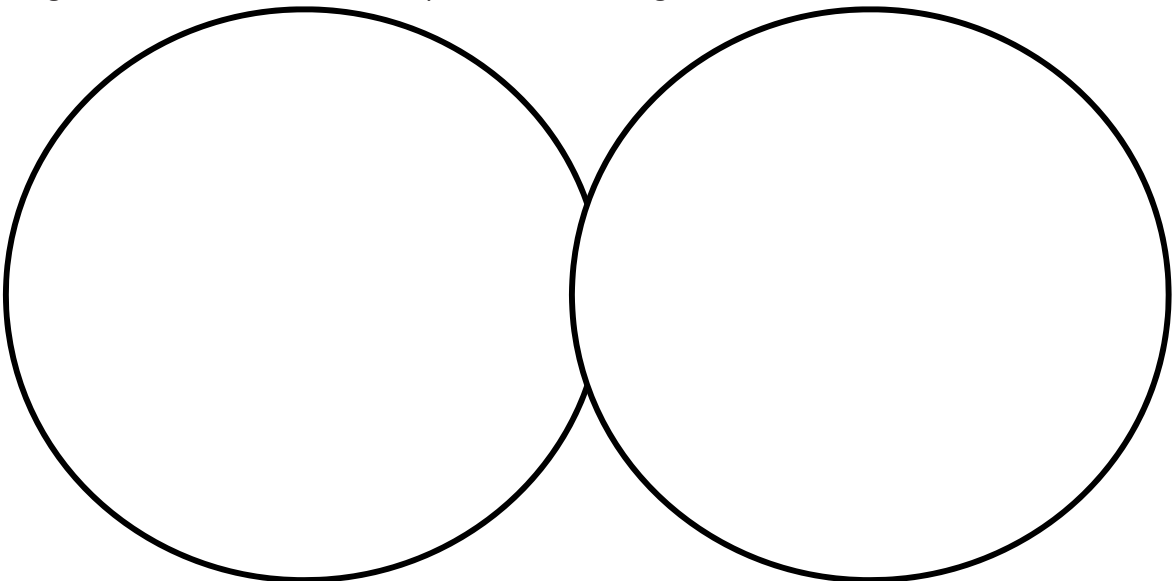
Volvox

Volvox is a photosynthetic protozoa that lives in colonies. Each volvox sphere actually contains hundreds of individual cells. Label the following parts of the volvox:

Volvox colony, daughter colony, individual volvox cell, flagella



Draw the *volvox* specimens you observe in the microscope under 10x and 40x magnification. Label each of the parts from the diagram above.



Name: _____ Class: _____ Date: _____

Amoeba proteus, 10x magnification

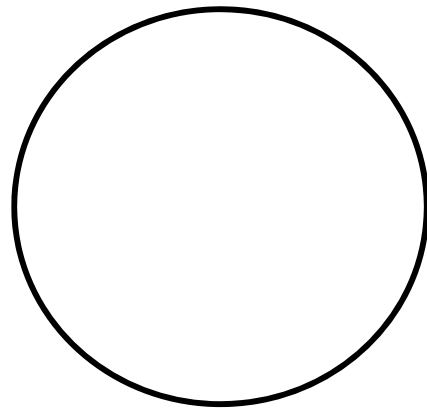
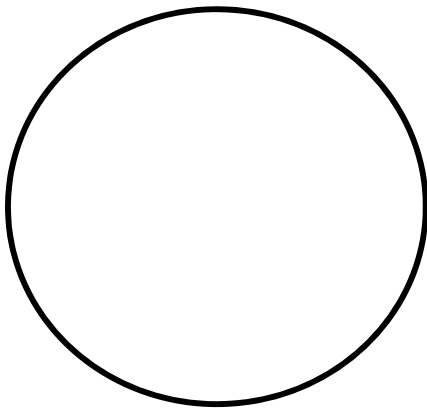
Amoeba proteus, 40x magnification

1. Describe any observations of the protozoan's movements or behavior while you view it:

Unknown Protozoa

For any remaining protozoa cultures, make a slide and view under the microscope. Sketch each under 10x and 40x power. Label the species of each protozoa you view. Label any structures you recognize from observing the euglena, paramecium, volvox, and amoeba.

Unknown #1 Species: _____

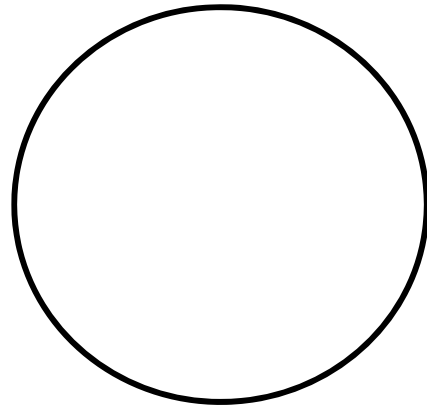
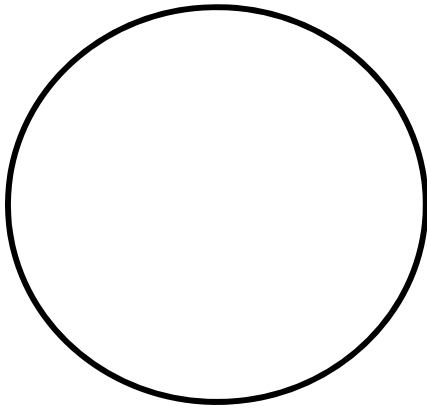


_____, 10x magnification _____, 40x magnification

1. Describe any observations of the protozoan's movements or behavior while you view it. Is this species unicellular, multicellular, or colonial?

Unknown #2 Species: _____

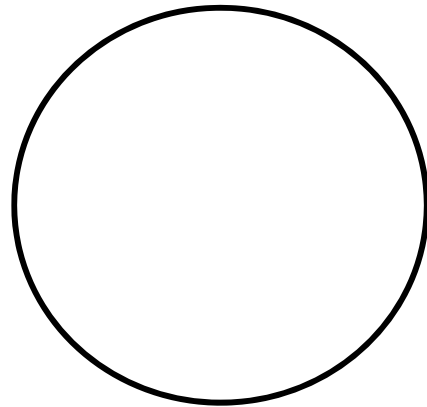
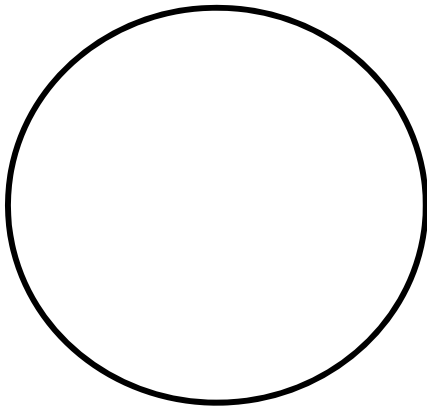
Name: _____ Class: _____ Date: _____



_____, 10x magnification _____, 40x magnification

1. Describe any observations of the protozoan's movements or behavior while you view it. Is this species unicellular, multicellular, or colonial?

Unknown #3 Species: _____

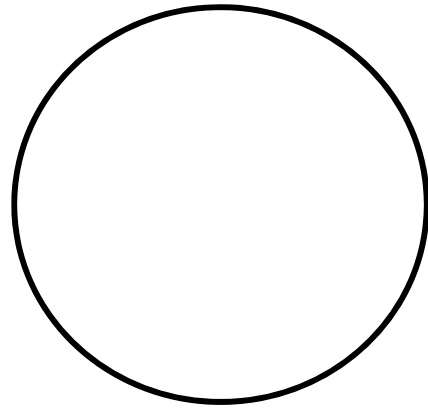
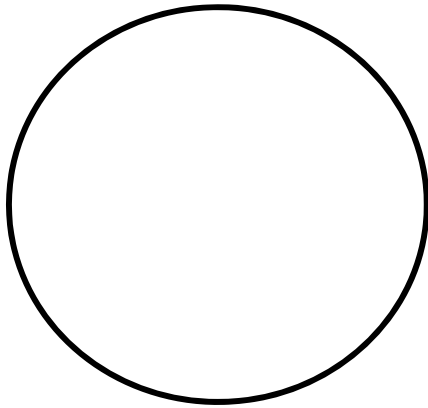


_____, 10x magnification _____, 40x magnification

1. Describe any observations of the protozoan's movements or behavior while you view it. Is this species unicellular, multicellular, or colonial?

Unknown #4 Species: _____

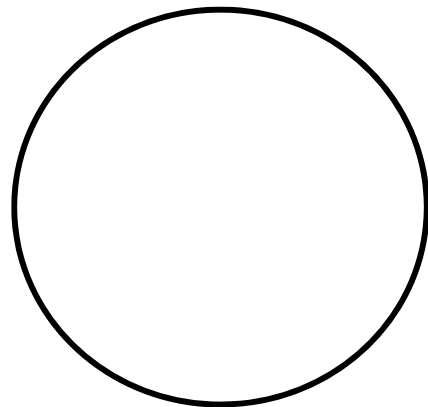
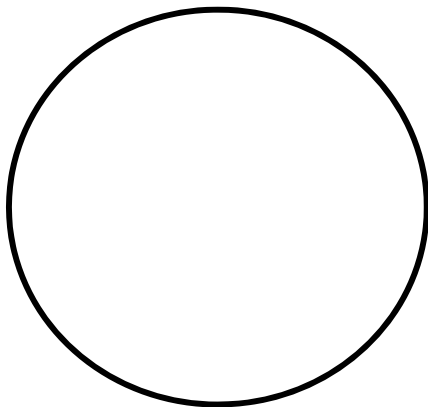
Name: _____ Class: _____ Date: _____



_____, 10x magnification _____, 40x magnification

1. Describe any observations of the protozoan's movements or behavior while you view it. Is this species unicellular, multicellular, or colonial?

Unknown #5 Species: _____

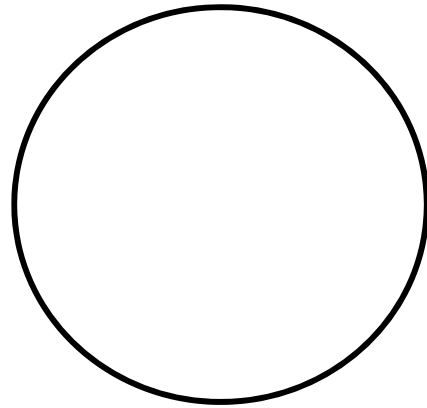
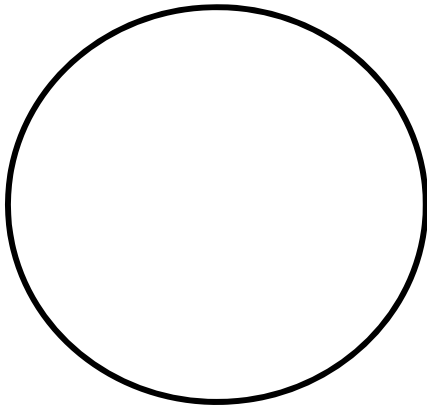


_____, 10x magnification _____, 40x magnification

1. Describe any observations of the protozoan's movements or behavior while you view it. Is this species unicellular, multicellular, or colonial?

Unknown #6 Species: _____

Name: _____ Class: _____ Date: _____



_____, 10x magnification _____, 40x magnification

1. Describe any observations of the protozoan's movements or behavior while you view it. Is this species unicellular, multicellular, or colonial?

Conclusion

1. List each of the protozoa you studied below. Indicate whether you believe it is more animal-like or plant-like. Justify your choice based on specific observations you made during this lab.

Protozoa	Animal or Plant-like?	Explanation

2. The protozoans have been very difficult for scientists to classify. They initially were classified in their own kingdom, then were spread out amongst the different supergroups. What characteristics of the protozoa make them so difficult to categorize?

Biology

QUIZ 5: KINGDOM PROTISTA

Name _____ Period: 7

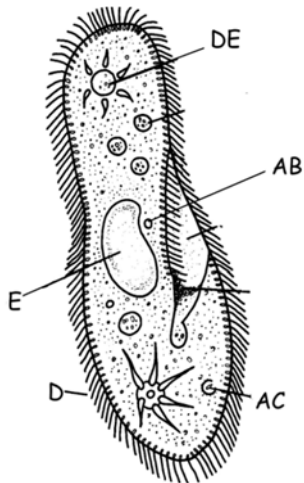


Figure 1

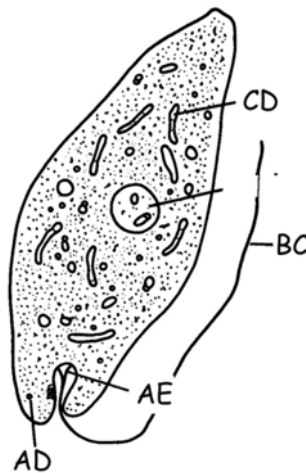


Figure 2

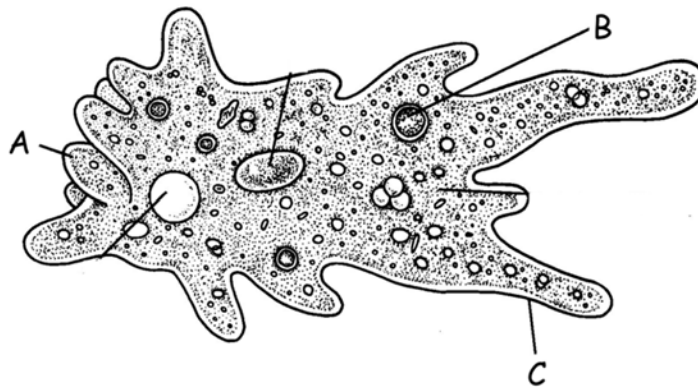


Figure 3

Directions: Using the diagrams above match the letter(s) which corresponds with named organelle/structure. Hint: No structure is used more than once. (1 pt. each).

1. Macronucleus
2. Micronucleus
3. Contractile vacuole
4. Chloroplast

5. Pseudopod
6. Cell Membrane
7. Cilia
8. Gullet

9. Eye Spot
10. Flagellum
11. Food Vacuole
12. Anal Pore

Multiple Choice: In the space provided, write the letter of the term or phrase that best completes each statement or best answers each question. (1 pt. each)

13. Figure 1 refers to which common protist? _____
 a. Paramecium
 b. Euglena
 c. Amoeba
14. Figure 2 refers to which common protist? _____
 a. Paramecium
 b. Amoeba
 c. Euglena
15. Figure 3 refers to which common protist? _____
 a. Rotifer
 b. Euglena
 c. Paramecium
 d. Amoeba
16. Paramecium belong to which phylum? _____
 a. Sporozoa
 b. Ciliophora
 c. Sarcodina
 d. Euglenophyta
17. Amoebas belong to which phylum? _____
 a. Sporozoa
 b. Ciliophora
 c. Sarcodina
 d. Euglenophyta
18. Euglenas belong to which phylum? _____
 a. Sporozoa
 b. Ciliophora
 c. Sarcodina
 d. Euglenophyta
19. Which disease is caused by a Sarcodine? _____
 a. AIDS
 b. Amoebiasis
 c. Malaria
 d. Ring worm
20. The organism in figure 1 moves via what structure

 a. Cilia
 b. Flagellum
 c. Pseudopod
 d. Diffusion

21. The organism in figure 2 moves via what structure?

 a. Cilia
 b. Flagellum
 c. Pseudopod
 d. Diffusion
22. The organism in figure 3 moves via what structure

 a. Cilia
 b. Flagellum
 c. Pseudopod
 d. Diffusion
23. The plasmodium parasite causes what potentially deadly disease?
 a. Rabies
 b. Mononucleosis
 c. Ebola
 d. Malaria
24. Plasmodia are transported between hosts by what carrier? _____
 a. Snails
 b. Tiger mosquitoes
 c. Anopheles mosquitoes
 d. leeches
 e. none of the above
25. Plant-like protists are so named because they usually have? _____
 a. Cell walls
 b. Large water vacuoles
 c. Chloroplasts
 d. Nuclei

Matching: Choose from the choices below for each item.

- _____ 26. Has outer protective coating of silicon (glass)
 _____ 27. Kelp is a form of this algae.
 _____ 28. This algae, when it blooms, release toxins from Red Tide which can destroy ecosystems
 _____ 29. Has an outer layer of cellulose and chloroplast
 _____ 30. Can be used as an ingredient in ice cream
- A. Dinoflagellates
 B. Diatoms
 C. Green Algae
 D. Red Algae
 E. Brown Algae

E

1. AB
2. DE
3. CD
4. A
5. C
6. D
7. AE
8. AD
9. BC
10. B
11. AC
12. A
13. C
14. D
15. B
16. C
17. D
18. C
19. A
20. B
21. C
22. C
23. D
24. C
25. C
26. B
27. E
28. D
29. A

Protist quiz key