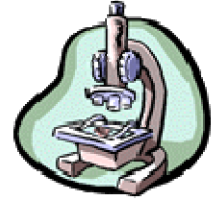


**Roland-Story Biology Class**  
**Chapter 3 Study Guide**  
**Cell Structure**

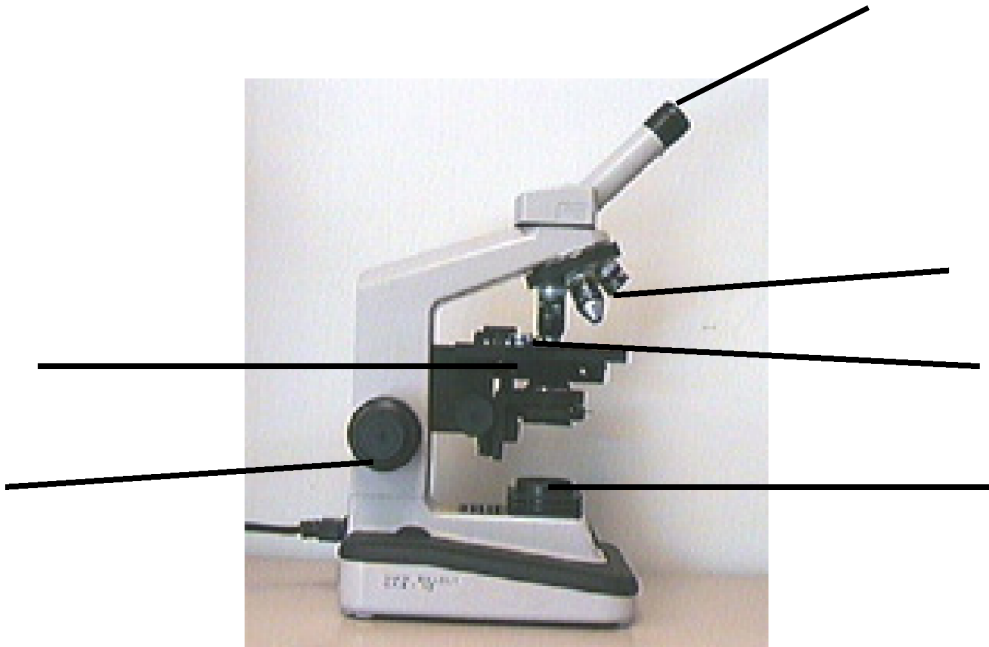


Name \_\_\_\_\_

1. \_\_\_\_\_ reveal cell structure.
2. When Robert Hooke used a crude microscope to observe a thin slide of cork, he saw \_\_\_\_\_.
3. Anton van Leeuwenhoek called the living creatures in pond water \_\_\_\_\_.
4. Explain the relationship between a meter, millimeter, and micrometer.
5. Describe how magnification and resolution affect the appearance of objects viewed under a microscope.
6. Compare and contrast a light microscope and a electron microscope.
7. Explain why electron microscopes cannot be used to view the structure of living cells.

8. Assume that for the purposes of your investigation, you need detailed images of the internal structure of a bacterium. What type of microscope would you select for that task? Explain your answer.
9. Which metric unit is about the width of a pencil tip?(Table 3-1) \_\_\_\_\_
10. Which metric unit is about the length of a water molecule \_\_\_\_\_
11. An electron microscope forms an image using a beam of [ light | electrons ]
12. [ Magnification | Resolution ] is the measure of clarity of an image.
13. Microscopes Have Different \_\_\_\_\_ and Limitations
14. Electron microscopes [ can | cannot ] be used to view living cells.
15. The [ objective | ocular ] lens is closest to the specimen.
16. The most powers compound light microscopes have a magnification of \_\_\_\_\_
17. Electron microscopes can magnify an image up to \_\_\_\_\_
18. A TEM can reveal a cell's [ internal | external ] structure
19. A scanning electron microscope forms a [ two-dimensional | three-dimensional ] image.
20. The \_\_\_\_\_ uses a needle-like probe to measure differences in voltage caused by electrons that leak, or tunnel from the surface of objects.
21. A \_\_\_\_\_ is used to track the movements of the probe.

22. Label the parts of the microscope:



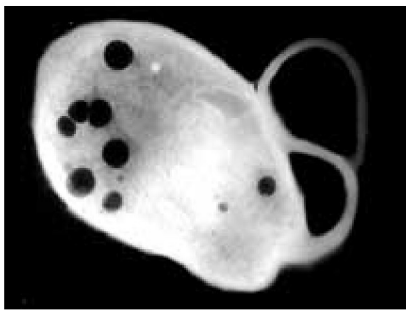
23. Describe the importance of the surface area to volume ratio of a cell.

24. Compare the structure of a eukaryotic cell with that of a prokaryotic cell.

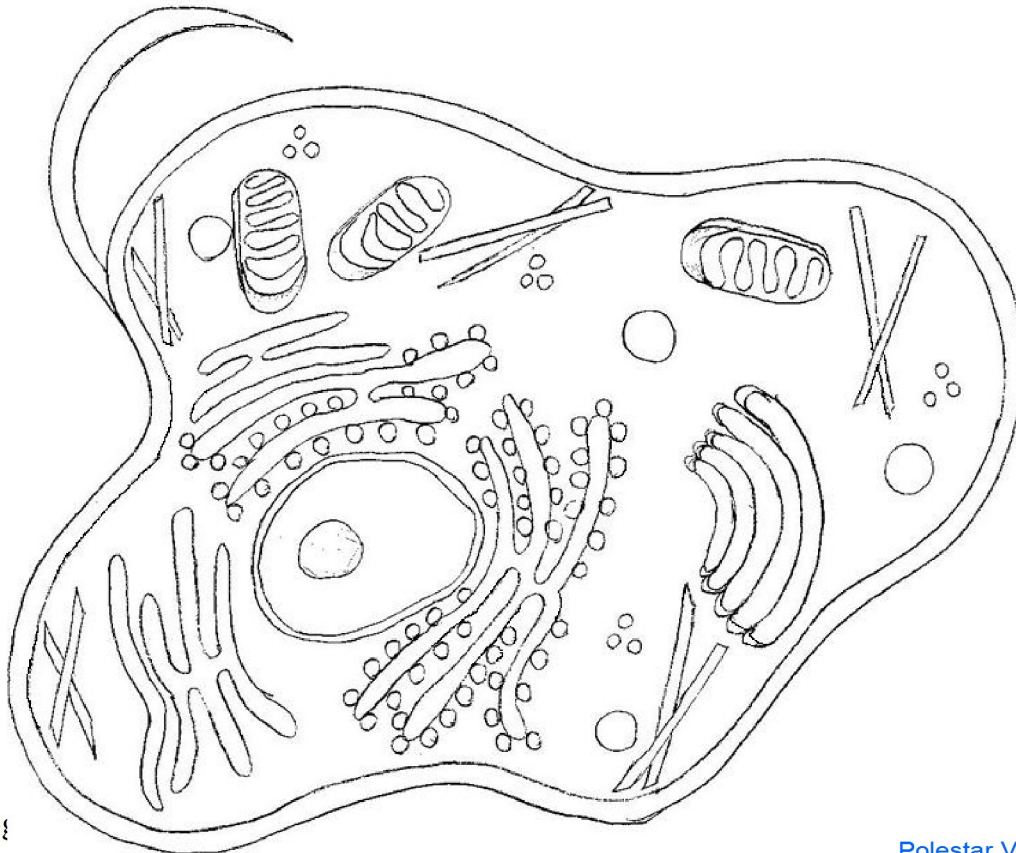
25. Describe the functions of two types of cell membrane proteins.

26. Analyze the three parts of the cell theory and describe two observations of early scientists that support it.

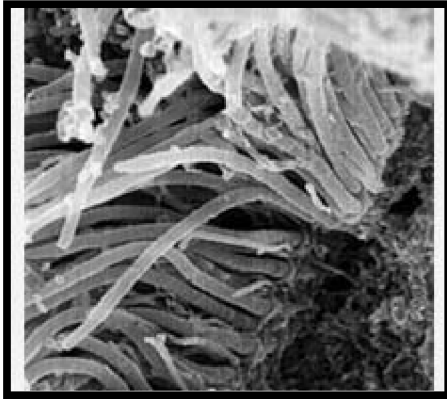
27. What type of cell is shown in the picture/diagram? Explain why?



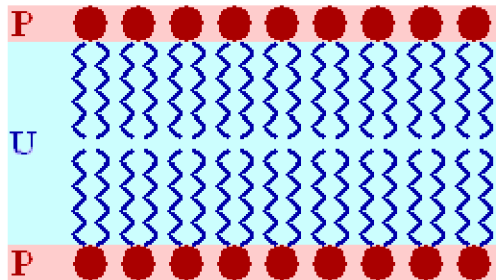
28. Label the parts of this animal cell?



29. Explain the purpose of the cilia as shown in this diagram.



30. Explain this diagram.



31. Describe the role of the nucleus in cell activities.

32. Sequence the course of newly made proteins from the rough ER to the outside of the cell.

33. Describe the role of mitochondria in the metabolism of eukaryotic cells.

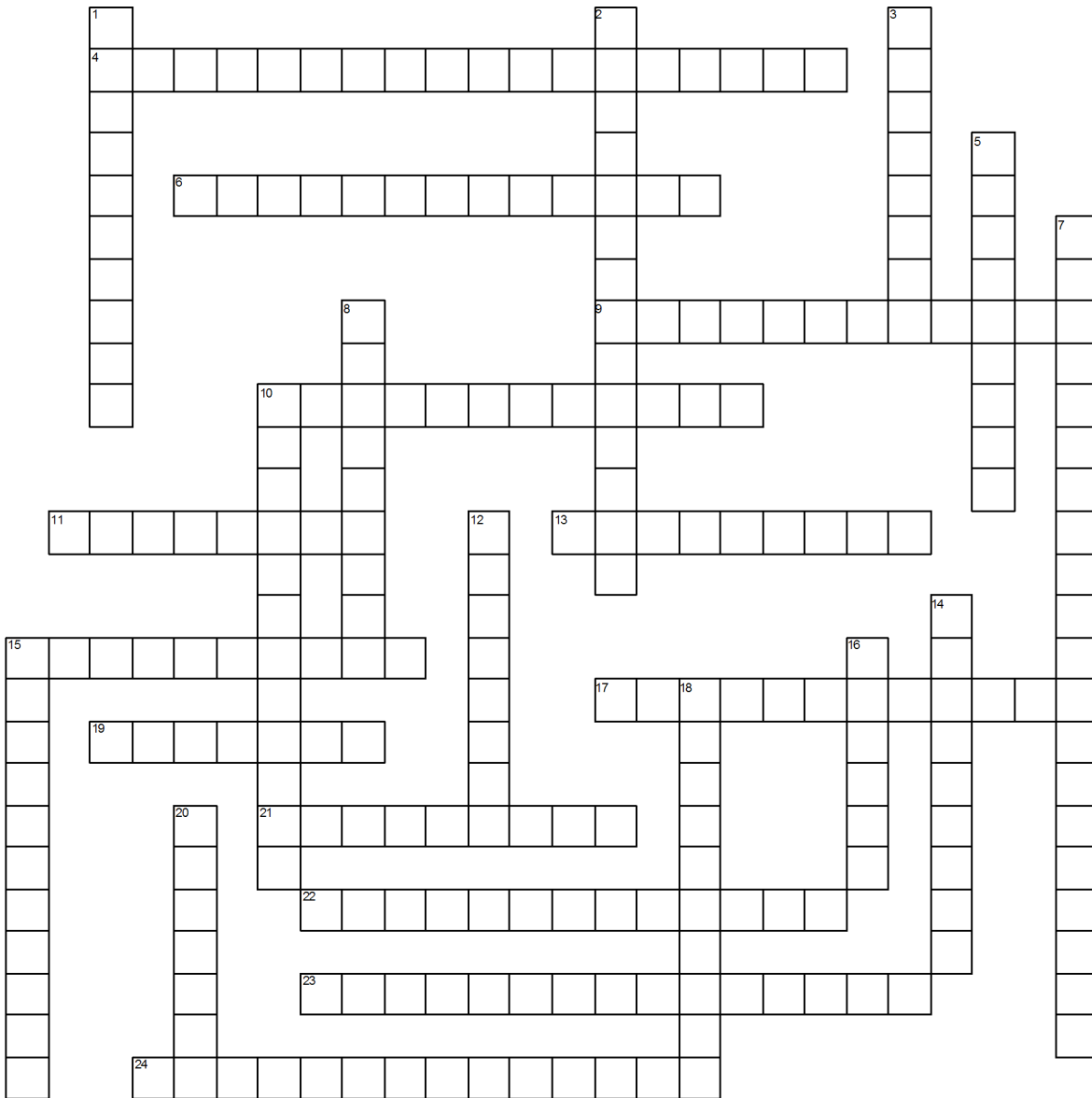
34. Explain how a plant cell's central vacuole and cell wall help make the cell rigid.

35. What is the importance of a cell enclosing its digestive enzymes inside lysosomes?

36. Label the components of the following plant cell.



37. Define the following terms by filling out the chapter crossword puzzle.



www.CrosswordWeaver.com

### Clues on the next page

#### ACROSS

- 4 forms an image of a specimen using a beam of electrons
- 6 is the quality of making an image appear larger than its actual size
- 9 a lipid made of a phosphate group and two fatty acids
- 10 outer boundary of a cell
- 11 cellular structures that make proteins
- 13 organism whose cells have a nucleus
- 15 observations discovered by Hooke and Leeuwenhoek
- 17 phospholipids arranged in a double layer
- 19 internal compartment of cell that holds DNA
- 21 a structure that carries out specific activities in the cell
- 22 an organelle that harvests energy from organic compounds to make ATP
- 23 light passes through one or more lenses to produce an enlarged image of a specimen
- 24 part of cell that stores water and contains other substances

#### DOWN

- 1 is a measure of clarity of an image
- 2 flat membrane bound sacs that serve as packaging and distribution center of cell
- 3 surrounds cell membrane and provides support
- 5 cell interior
- 7 an extensive system of internal membranes that move proteins
- 8 1000 meters -- 2/3rds of a mile
- 10 suspended structures within the cytoplasm
- 12 are small spherical organelles that contain the cells digestive enzymes
- 14 long threadlike structures that protrude from the cells surface
- 15 organelles that use light energy to make carbohydrates from CO<sub>2</sub> and water
- 16 short hairlike structures that protrude from the surface
- 18 single celled organisms that lacks a nucleus and other internal components
- 20 small membrane bound sac that transports substances in the cell