

# Cell Structure

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## Objectives

- Identify the major structures found in eukaryotic cells
- Distinguish those structures found in plant versus animal cells
- Know the primary functions of cellular structures

## Introduction

In the 17th century Leeuwenhoek, Hooke, and other early microscopists used early light microscopes to discover the cellular nature of living organisms.

While developments which greatly improved the optics of light microscopes allow us to view cells in much greater detail and clarity than these early microscopes, the inherent limitations of light microscopes do not allow us to observe the fine structures of cells. With the advent of the electron microscope in the 20th century, we are now able to view the “ultrastructure” of the cell never before seen. Biologists have discovered that internal components of all cells show a basic similarity in structure and function. Here you will practice your ability to recognize some of these structures and provide their function.

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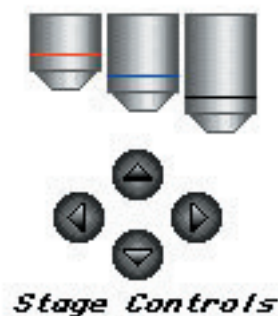
### **Activity 6.1** **Cellular Structures**

In the Cell Biology section of the Biology One DVD, select the Cell Structure simulation to review the major cellular structures of eukaryotic cells.

As you move through this simulation, you can view or hide the text box by clicking on the 'T' within box in the upper right. On screens showing images one would see through a microscope, the controls for the 'microscope' are located to the left of the image. Click on one of the three lenses to view low, medium or a high magnification image (only for images from light microscopes). The arrow buttons below the lenses allow you to move the image as if you were moving the slide on the microscope's stage. To the right of the image you will usually see a number of structures listed. Clicking on one of these structures moves the image so that structure is at the tip of the pointer.

You should become familiar with the structure and function of the organelles reviewed in this exercise. In the Results Section, label the indicated structures in the illustrations of an animal cell and plant cell.

### **Controls for microscopic images**



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### **Activity 6.2** **Matching Exercise**

The second part of this simulation is a matching exercise. First for an animal cell and then for a plant cell, you will be asked to match the organelle's name and structure with the given function of the organelle. Simply read the organelle's function in the lower right. Then click on the corresponding name and structure in the illustration of the cell. If correct, it will be indicated above the cell. Once you have completed all the organelles illustrated in the animal cell, click on the forward arrow in the lower right to repeat this exercise for a plant cell.

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### **Activity 6.3** **Identify Organelles**

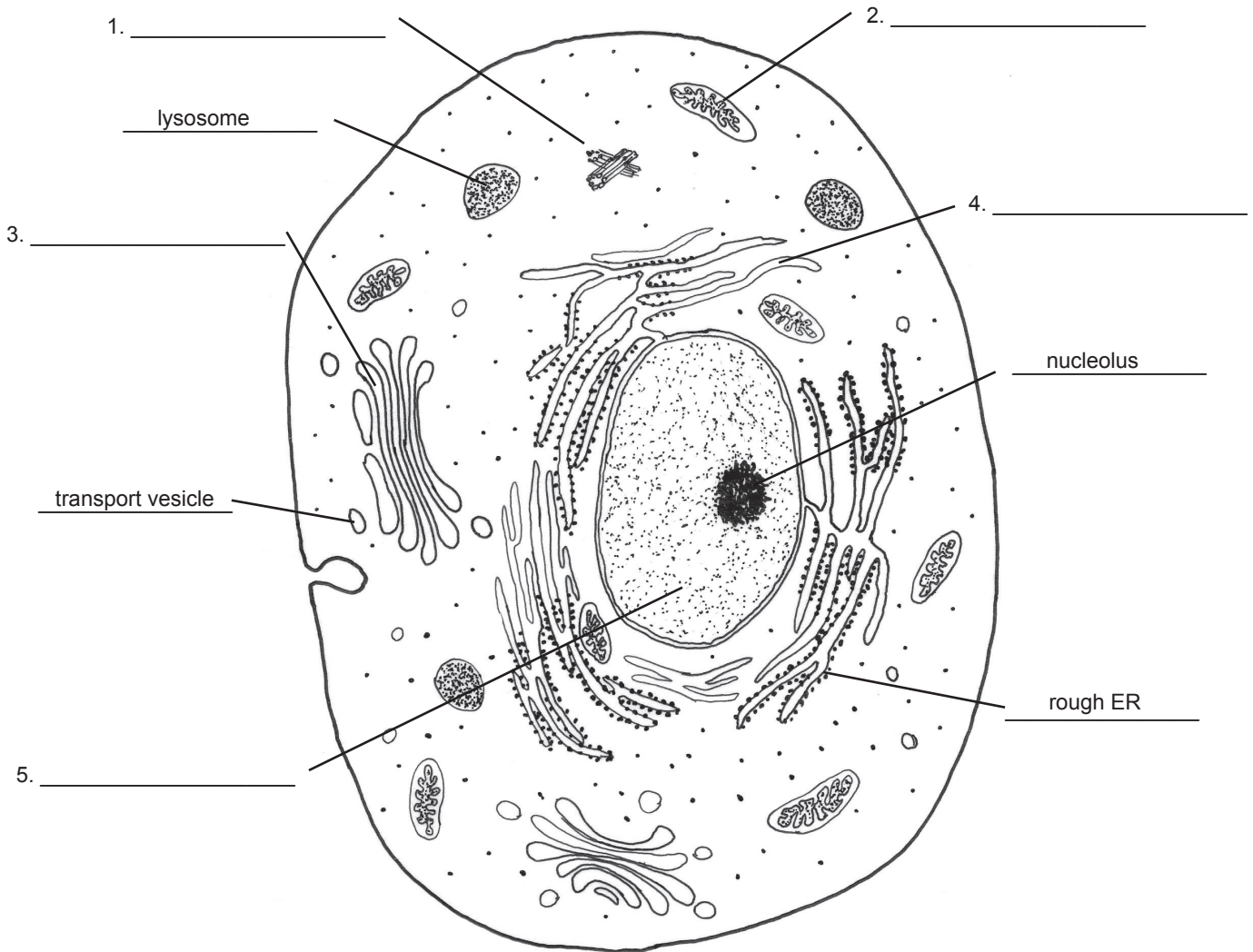
Using your text and the BiologyOne DVD as a resource, identify the cell structures shown in the photographs in the Results Section. Provide a short description of their function where indicated.

# Results Section

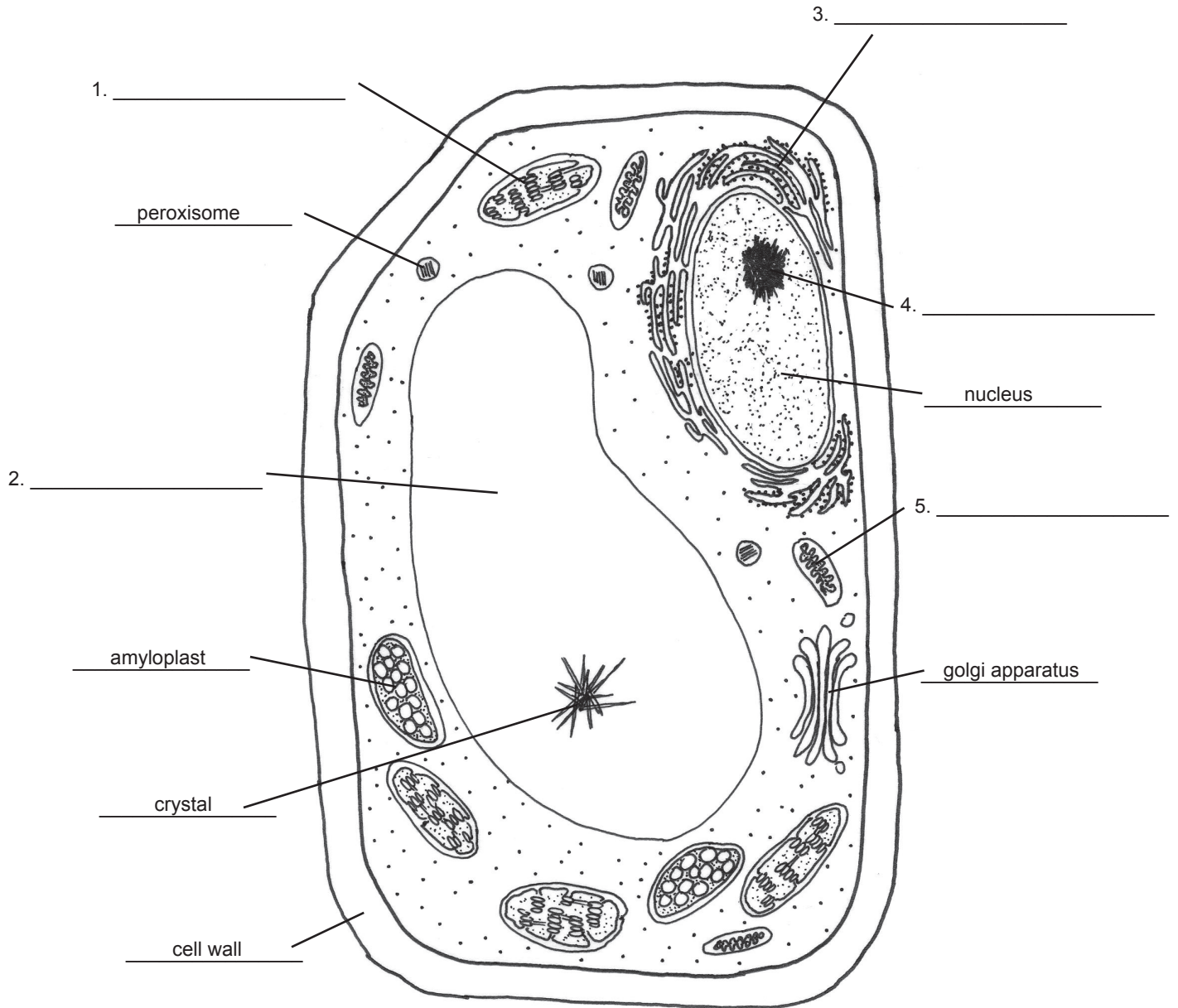
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## Activity 6.1 Cellular Structures

Identify the structures indicated in this illustration of an animal cell

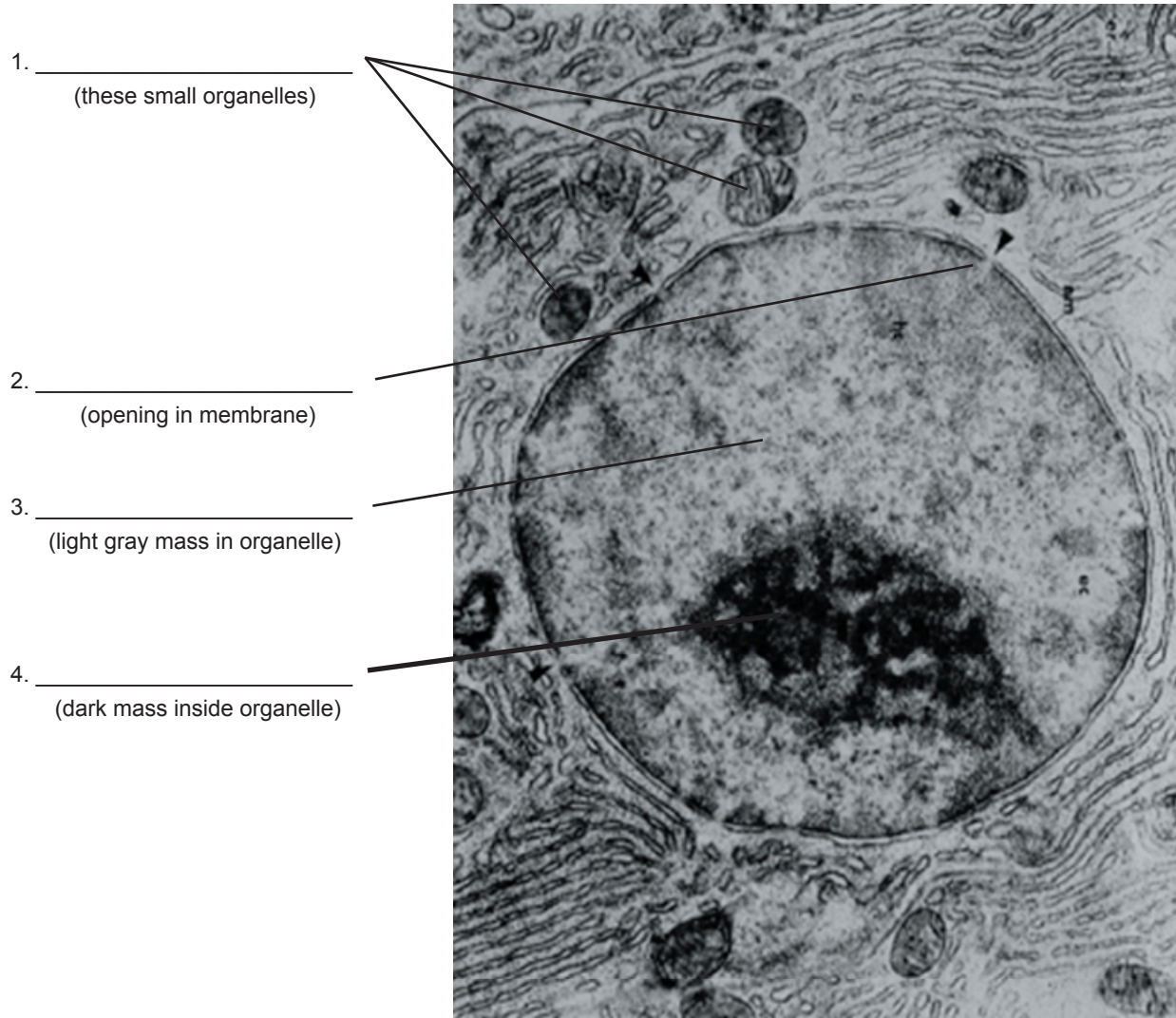


Identify the structures indicated in this illustration of an plant cell

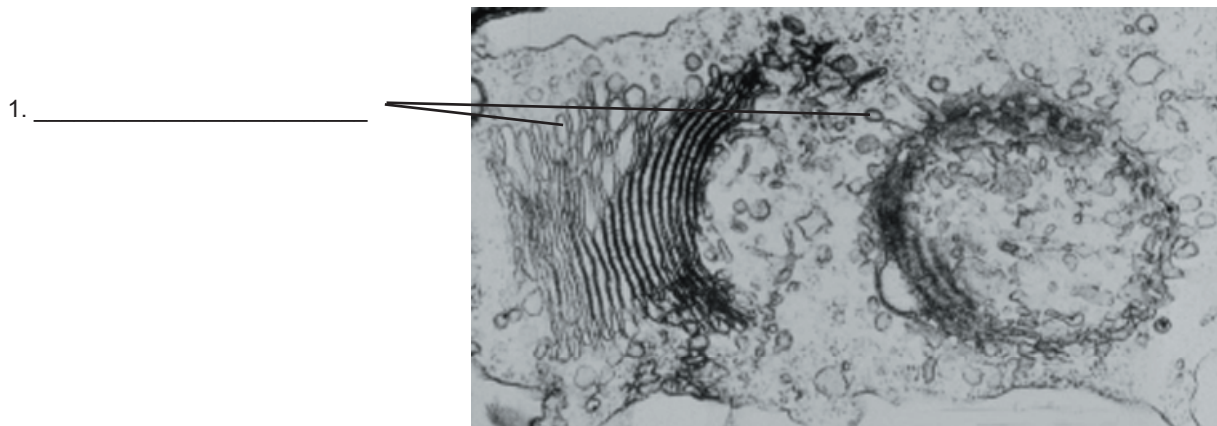


**Activity 6.3**  
**Micrographs of Organelles**

Identify the structures indicated in the following micrographs.

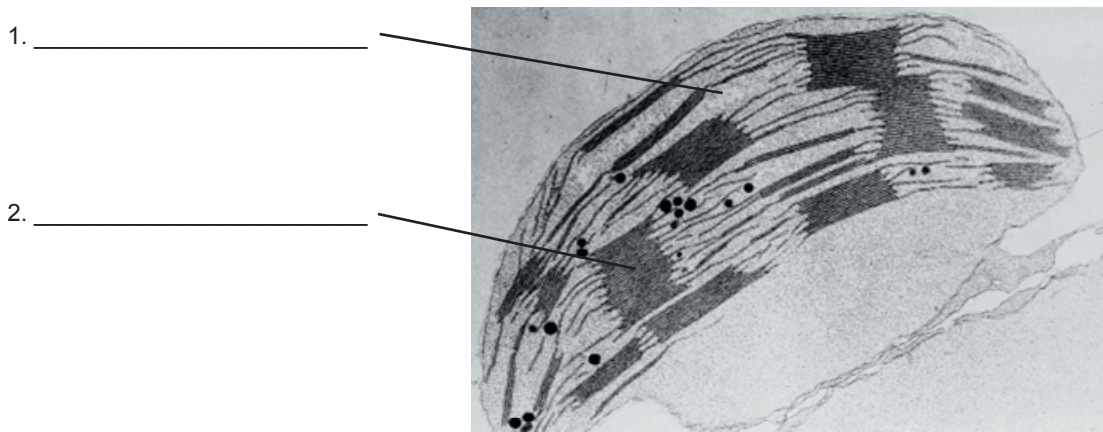


What is the function of the nuclear pore?



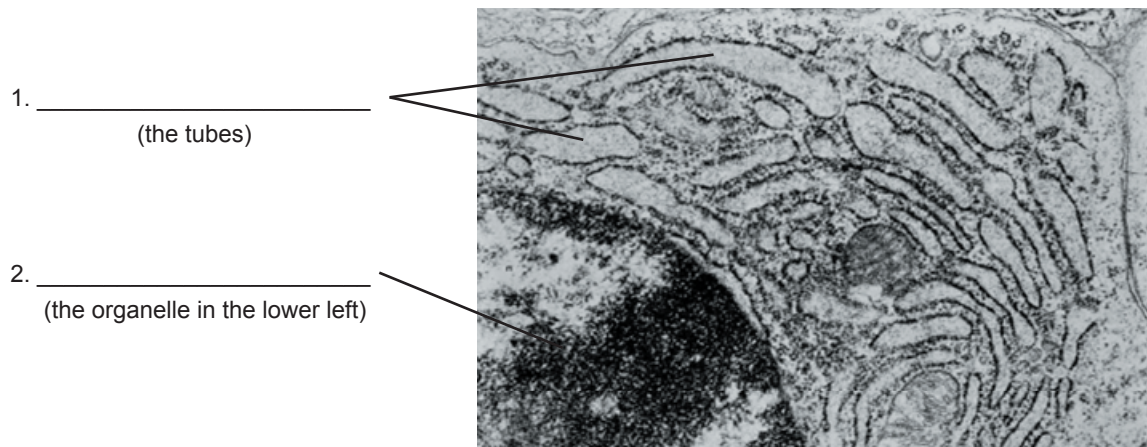
What organelle is shown here ? (top down view on right, side view on left)

What does the Golgi apparatus do to proteins?

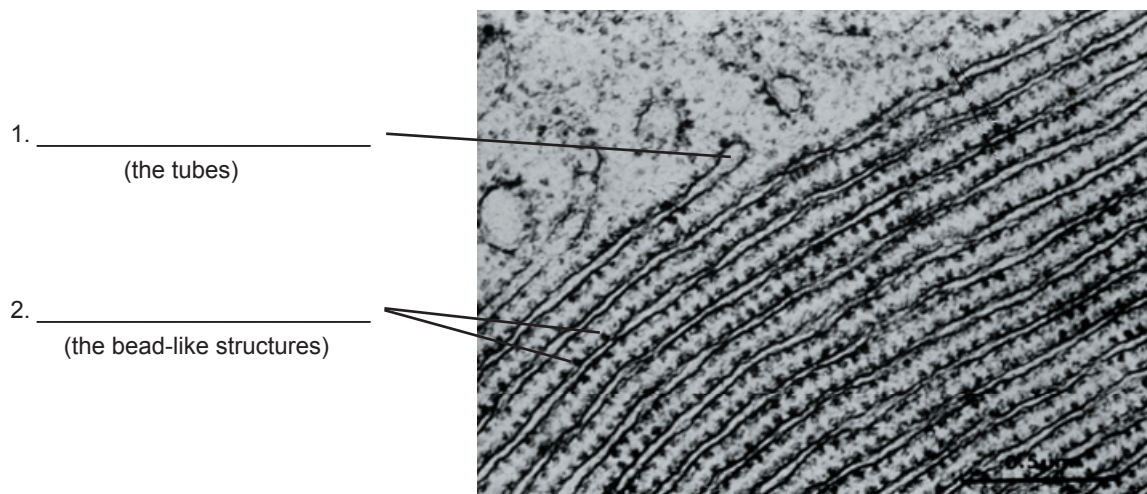


What organelle is shown here?

What metabolic process occurs in the chloroplast?



What would you find contained inside the smooth ER?



In what process do ribosomes function?