

Organelle Identification

Organelles found in plant, animal and bacterial cells have evolved to perform particular functions that eventually contribute to the entire cell's existence. Such functions may include energy production (as ATP), cellular trafficking, and waste degradation. As part of today's exercise, you will be using a collection of interactive images from www.cellsalive.com to understand organellar function and the presence (or absence) of such organelles in plant, animal and bacterial cells. Finally, you will work in pairs to relate organellar functions within a cell to the functions of particular objects in daily systems.



Access www.cellsalive.com from your internet browser. On the left hand side, under the “contents” headline, click “cell biology.” This menu allows access to lots of interesting pages that you might want to look at later, such as one where you can monitor the growth of a cancer cell in real time, or another where you can compare relative sizes of cells and organelles. For this section, we will be using “cell models.” Click on this headline, and read the introduction to eukaryotic and prokaryotic cells.

List three differences between eukaryotes and prokaryotes. What could be the reason(s) for such differences?

To view each of the cell models, click on one of the cell pictures. As you move the cursor over the cell, the organelle associated with that location will appear in the white box. Read about the organelles listed below from the menu on the right hand side of the picture. List the function(s) and a unique identifier of each, and determine in which cells you may find each. (Make sure to look at all three cell types.)

	Function	Unique Identifier	Present in...		
			P	A	B
Nucleus					
Nucleolus					
ER					
Golgi					
Mitochondria					
Chloroplast					
Vacuole					
Lysosome					
Centrosome					
Cytoskeleton					
Cytosol					
Cell wall					
Plasma membrane					

After completing this list, you can probably see that each organelle has a specialized function, or the ability to complete a task that no other organelle can accomplish. In dividing these tasks, cells are able to work efficiently with minimal energy expenditure. (Just imagine what would happen if you had 10 nuclei in each cell, and no mitochondria!) Let's make an analogy to cellular structure with a "system" that you see daily. Working with a partner, pick a "system" from the instructor. Imagine this system as the cell, and choose 5 components within that system to function as an organelle might.

As an example, say our system was an ice cream parlor. In such a "cell", the center of command, or nucleus might be the huge menu behind the counter, containing all of the information for the store's desserts. To get desserts from one location to the other, like the golgi does with proteins, the clerk behind the counter has to scoop the ice cream and bring it to the customer. (How do you get rid of uneaten ice cream???) There are no right answers, however, your choices should make logical sense when you explain them to the rest of the class.