

STRUCTURE & FUNCTION

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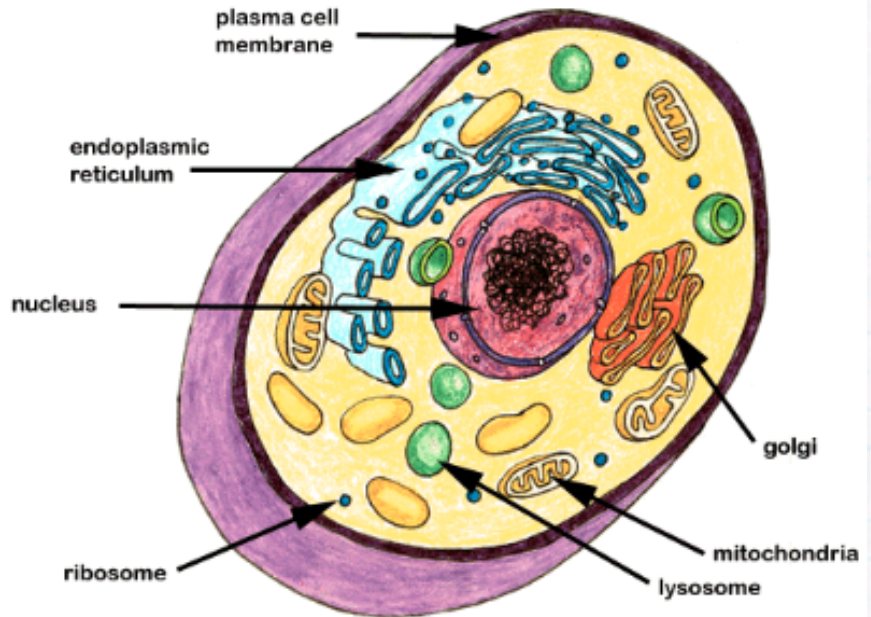
In Animals

To survive, animals and humans must be able to control the functions of their cells, eat, breathe, defecate, move, and reproduce.

The more highly evolved animals (including humans) have developed two main systems for coordinating and synchronizing the functions of their individual cells: the nervous system and the endocrine system.

The nervous system works by transmitting electrochemical impulses. Below is a diagram of the nervous system.

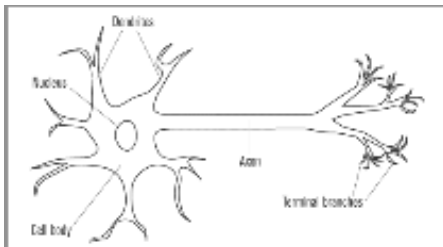
The endocrine system works by releasing chemical signals into the circulation.



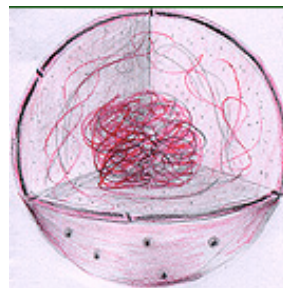
In Cells (pictured above)

In cells, there is a complex network of organelles that all have different functions. These organelles allow the cell to function properly (much like a human organ). Below is a picture of a nucleus. Its' job is to hold the cell's RNA.

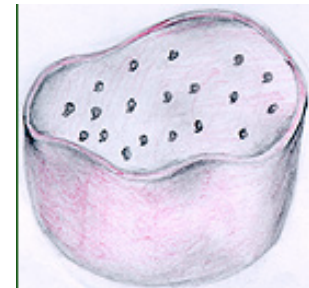
Another type of organelle is the lysosome. Its' function is to transport undigested food to the cell membrane for removal. A picture is shown below.



The *nervous system* (above) functions by the almost instantaneous transmission of electrochemical signals.



This is a picture of the nucleus of a cell. The function of the nucleus is to hold RNA for protein manufacture in the cell.



This is the lysosome. It transports waste to the exit (cell membrane).

Structure & Function cont.

The structure and function of cells was discovered gradually. As microscopes became more readily available, scientists began observing the more complex components of matter. Most were by accident. The first organelle discovered was the nucleus by Ernest Rutherford.

• **What is one of the main systems found in humans?**

- a.) reproductive system
- b.) circulatory system
- c.) nervous system
- d.) none of the above

The answer is c because it is one of the main systems. The others do exist, but they are not as major when it comes to functioning individual cells.

• **Fingers are to toes, as organs are to _____.**

- a.) cells
- b.) organelles
- c.) membranes
- d.) skin

The answer is b because organelles take part in the many functions that must be performed for the cell to survive, like eating. An organ does the same thing.