



Organizing Animal Cell Organelles

The study of cells is fascinating. Just like you have an active life and have needs, so does a cell. You have skin that keeps things out of your body and you have ways of getting things into your body. So does a cell. You take in nutrients and you excrete waste, so does a cell. You make things you may need in your life, like dinner or a bracelet, a cell also makes things. You clean yourself, so does a cell. You reuse things like towels or 2 liter soda bottles, cells reuse also. You store things like money or socks or magazines, cells store things. You package things like wrapping presents to give, cells also package things they will give away. Cells are super busy things and we are still learning more about them everyday. In college there is an entire class devoted to just the cell.

You are made of organs, cells are made of organelles. Anything that refers to cells is called cellular. The study of cells is called cytology. The study of how things work inside a cell is called cell physiology. The prefix cyto- is what biologist use to refer to cells.

In this activity you can organize all the organelles of the cell.

Use these tables to make notes about each organelle and what it does. Title your cover included in this activity, cut out your pages and make your cell organelle book. Then refer to it during your studies to help refresh your memory. You will need to make 4 copies of page 2.

Organelle	Drawing of organelle
What organelle does	

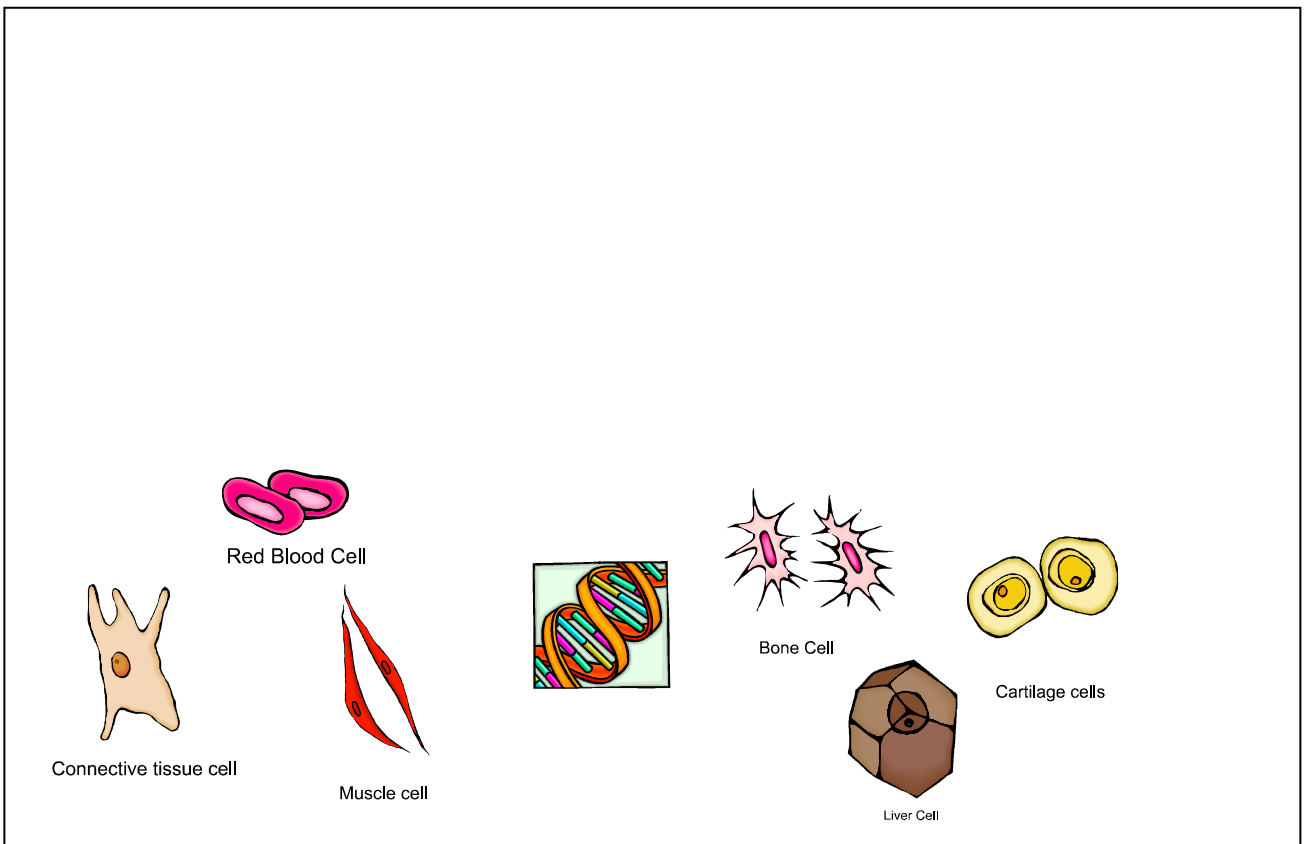
Some interesting facts	
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Organelle	
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What organelle does

Some interesting facts



Teacher instructions:

Following is a list of the organelles your child should use along with some interesting facts about the organelle. Choose what to use based on your child's age and ability.

Cell membrane-

Controls movement of molecules into and out of the cell. It is made of 2 layers. One layer is fatty and one is water based. Cholesterol is needed to make the fatty layer. Items pass into the cell in one of three different ways, passive transport, active transport and endo and exocytosis. Some examples of things that move in and out of cells are, oxygen, carbon dioxide, sugar, fat, hormones, enzymes, protein, water, vitamins. The cell membrane has a lock and key mechanism for large items or items that could be toxic and need permission to enter. Viruses have fake keys and get in illegally to hijack a cell. The cell membrane is constantly moving and being taken up and made.

Endoplasmic Reticulum

This is a transportation system, kind of like a road. This system is mainly for proteins. Proteins are made on the outside of the E.R. as they work their way through the ER membrane to the inside, they are completed. Once inside, they travel the hollow passage way to their destination somewhere else inside the cell or outside the cell. Making a protein is complex. It is made with instructions from the DNA which is inside the nucleus. DNA is permanently stuck inside the nucleus so copies, called RNA, are made of it. These copies are brought to the ER for protein synthesis, or making proteins. Cool! Cells make copies! Since they work closely with the nucleus, you'll find them right around it.

Ribosomes

These are the places on the outside of the ER where proteins begin their construction. They look like beads stuck to the outside of the ER. There are also ribosomes floating freely inside the cell. They also make proteins. They are the mobile factories, spitting out proteins where they are needed in emergency.

Mitochondria

These make the energy you use to move your body, digest food, think and other body processes. Plants use sunlight, water and carbon dioxide to make sugars and oxygen. We do the opposite, we use those sugars and the oxygen to burn for energy and give off the carbon dioxide and water. What plants do is called photosynthesis and what we do is called cellular respiration. It happens here in the mitochondria. The more energy required of a cell, the more mitochondria the cell makes. The larger the cell, the more mitochondria it makes. More mitochondria, the more sugars, fats and proteins it can burn. Muscles and liver cells have the most mitochondria. Mitochondria have their own DNA.

Vacuoles

These are the storage facilities. They float freely in the cell cytoplasm. Some things they store are water, fats, waste products waiting for recycling or removal. Plant cells tend to have larger and more vacuoles than animals' cells.

Lysosomes

The prefix lys- means to breakdown. Lysosomes are used to breakdown large molecules, usually food products, into smaller sizes. They are then sent to the mitochondria where they'll be burned for energy. Lysosomes are also involved in recycling. They will digest old cell parts, viruses that have invaded the cell and been destroyed and will send the parts to various places for storage and reuse. In

the event of the cell's death, the lysosome will digest the cell itself. Lysosomes also clean up messes.

Golgi Bodies/ Golgi Apparatus

Golgi are the packaging agents of the cell. Golgi and the cell membrane are made of the same things. Golgi package molecules that may be toxic to the cell or large molecules, or liquid molecules, they move these to the cell membrane where they will fuse with it and then open and spill their contents into the blood stream.

Likewise, molecules that move into the cell by wrapping themselves in the membrane like a bubble and floating in will fuse with the golgi to dump off their protective bubble. Golgi are found in large numbers in cells that make important enzymes and hormones, like the pancreas, which makes insulin.

Nucleus

The nucleus is the brain or control center of the cell. The nucleus is programmed to understand the type of cell it is in and the function of that cell. For instance, if it were an ovary cell it would be making any one of the estrogen hormones. The nucleus gets the instructions from the DNA (deoxyribonucleic acid), the blueprint for the entire animal. Only the parts relating to estrogen will be needed but the complete DNA is in every cell. The nucleus has a membrane made very much like the cell membrane.

Peroxisome

These are the chemistry centers of the cell. If, in the process of dealing with cellular activities, chemicals mix and form toxic substances, the peroxisome is there to breakdown the chemicals into non-toxic forms. Toxins in our environment that get into our bloodstream and into the cell will be caught by these organelles and broken down into their basic, non-toxic states then released back into the bloodstream. As you can guess, the liver would have many of these organelles.