

<p><b><u>Class Notes</u></b></p> <p><b><u>Cell Organelles</u></b></p> <p><b>Questions/Main Idea:</b></p>	<p>Name: _____</p> <p>Period: _____</p> <p>Date: _____</p> <p style="text-align: center;"><b>Notes:</b></p>
<p>What is an organelle?</p>	<ul style="list-style-type: none"> <li>• Specialized subunits of cells that have a particular function</li> <li>• Prokaryotes have a few (e.g., ribosomes)</li> <li>• Eukaryotes have many, usually surrounded by a membrane</li> <li>• This where we get the term “membrane-bound organelles”</li> </ul>
<p>What is the function of the cell membrane?</p>	<ul style="list-style-type: none"> <li>• Also called plasma membrane</li> <li>• Protects and supports the cell</li> <li>• Controls what enters and leaves the cell</li> <li>• It is a lipid bilayer (2 layers of fat cells)</li> <li>• Found in all types of cells – prokaryotes and eukaryotes!</li> </ul>
<p>What is the function of the cell wall (plants)?</p>	<ul style="list-style-type: none"> <li>• Found in eukaryotic plant and protist cells; also in prokaryotes</li> <li>• Main function is protection, rigidity, and support</li> <li>• Outside of cell membrane</li> <li>• Made of cellulose (a carb!)</li> <li>• Allows water and dissolved substances to pass through</li> </ul>
<p>What is the function of the nucleus?</p>	<ul style="list-style-type: none"> <li>• Controls most activities in the cell</li> <li>• Usually one per cell</li> <li>• Contains DNA – the coded instructions for making proteins and other molecules for the cell</li> <li>• The nuclear envelope has nuclear pores, where things can enter or leave</li> </ul>
<p>What is the function of the nucleolus?</p>	<ul style="list-style-type: none"> <li>• Small, dense region in the middle of the nucleus</li> <li>• This is where ribosomes are formed</li> </ul>
<p>What is the function of the cytoplasm?</p>	<ul style="list-style-type: none"> <li>• Clear fluid within cell that contains all organelles</li> <li>• Moves materials throughout the cell</li> </ul>
<p>What is the function of the ribosomes?</p>	<ul style="list-style-type: none"> <li>• Makes proteins in the cell</li> <li>• May be free in cytoplasm or attached to ER</li> <li>• Proteins are <u>vital</u> to life – all cells must produce them!!!</li> </ul>
<p>What is the function of the Golgi apparatus (body)?</p>	<ul style="list-style-type: none"> <li>• Stacks of membranes used for storing, modifying, or packaging chemicals</li> <li>• Packaged chemicals can be stored inside the cell or secreted outside the cell</li> <li>• Cells that make saliva or mucus have many Golgi bodies</li> </ul>
<p>What is the function of the endoplasmic reticulum (ER)?</p>	<ul style="list-style-type: none"> <li>• Series of folded membranes that form sacs or tubes</li> <li>• Two types – smooth and rough</li> </ul>
<p>What is the difference between the rough and smooth endoplasmic reticulum?</p>	<ul style="list-style-type: none"> <li>• Rough ER: <ul style="list-style-type: none"> <li>– Ribosomes make it look rough or bumpy</li> <li>– Ribosomes synthesize (make) proteins, so the Rough ER is where this happens!</li> </ul> </li> <li>• Smooth ER: <ul style="list-style-type: none"> <li>– Smooth - no ribosomes!</li> <li>– Synthesizes (makes) lipids</li> <li>– Detoxifies drugs</li> </ul> </li> </ul>

What is the function of lysosomes?	<ul style="list-style-type: none"> <li>• Made by the Golgi Apparatus</li> <li>• Full of digestive enzymes to digest unwanted particles</li> <li>• Help white blood cells to destroy bacteria</li> <li>• Clean-up crew!</li> </ul>
What is the function of peroxisomes?	<ul style="list-style-type: none"> <li>• Filled with enzymes to digest toxic substances</li> <li>• Numerous in the liver</li> <li>• Do not form at Golgi Body</li> </ul>
What is the function of vacuoles?	<ul style="list-style-type: none"> <li>• Store food, water, or waste materials</li> <li>• In plant cells, they are very large!</li> </ul>
What is the function of chloroplasts?	<ul style="list-style-type: none"> <li>• Found in eukaryotic plant cells &amp; some protist cells</li> <li>• Capture light energy and convert it into chemical energy during photosynthesis</li> </ul>
What is the function of the mitochondria?	<ul style="list-style-type: none"> <li>• Energy producers – the “powerhouse” of the cell!</li> <li>• Convert chemical energy into useable energy</li> <li>• Found in animal and plant cells</li> </ul>
What is the function of the cytoskeleton?	<ul style="list-style-type: none"> <li>• Overlapping network of filaments and fibers that support the cell and help it maintain its shape</li> <li>• Can also help cells move</li> <li>• Microfilaments and microtubules</li> </ul>
What is the function of centrioles?	<ul style="list-style-type: none"> <li>• Help to organize the cell during cell division</li> <li>• They migrate to either side of the cell and help to pull it apart</li> <li>• Only found in animal cells!</li> </ul>
What is the function of the flagellum?	<ul style="list-style-type: none"> <li>• Extension of the cytoskeleton- Allows movement, main source of transportation for cells</li> <li>• Only some animals and some prokaryotes have these</li> </ul>
What is the function of cilia and pili?	<ul style="list-style-type: none"> <li>• Extension of the cytoskeleton- Allows things to move around the cell. Propels mucus in your throat, helps with hearing in your ears, and helps move food particles in your stomach.</li> <li>• Only some animal cells and some prokaryotes</li> </ul>
Which organelles have their own set of DNA?	<ul style="list-style-type: none"> <li>• Only two organelles have their own DNA – mitochondria and chloroplasts.</li> <li>• Among multicellular animals, nearly all of the mtDNA in a fertilized egg is inherited from only the mother. <ul style="list-style-type: none"> <li>– One mechanism for this is simple dilution: an egg contains 100,000 to 1,000,000 mitochondria, whereas a sperm contains only 10 to 100.</li> </ul> </li> </ul>
What is the evolutionary origin of mitochondria and chloroplasts?	<ul style="list-style-type: none"> <li>• Endosymbiotic Theory: <ul style="list-style-type: none"> <li>– Mitochondria and chloroplasts descended from ancient prokaryotes that developed symbiotic relationships with ancient cells.</li> <li>– In other words... mitochondria and chloroplasts are former prokaryotes that now “live” inside eukaryotes!</li> </ul> </li> </ul>
<b>Summary:</b>	