**6th Grade Unit 5: Cells**

*Lesson 1: What are living things made of?*

What is a cell?

* All living things are made up of \_\_\_\_\_\_\_
* **Cell**-
* **Organism**-
* An organism carries out all of its own \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ using

 \_\_\_\_\_-\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of cells

* \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ was the first person to observe them and saw that they looked like little boxes which he called cells (in Latin means “\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_”)

Why are most cells small?

* Most are too small to be seen without a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Their size is limited by their outer \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Take in \_\_\_\_\_\_\_\_\_\_ and get rid of \_\_\_\_\_\_\_\_\_\_\_\_ through their outer surface
* Bigger cell need to move \_\_\_\_\_\_\_\_ in and out and need a larger \_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_ increases faster than surface area as a cell grows
* Big cells don’t have enough \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ to take in and pump out materials
* Cells need a greater \_\_\_\_\_\_\_\_\_\_\_\_\_-to-\_\_\_\_\_\_\_\_\_\_\_\_\_ ratio
* **volume = length x width x height**
* **area= length x width**
* **Surface area of a cube= the number of faces x the area of one face**

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What is the cell theory?

* Scientific knowledge often \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the work of several people.
* Discoveries by Mathias Schleiden, Theodore Schwann, and Rudolf Virchow led to the \_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_.
* It lists \_\_\_\_ basic characteristics of all \_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_:
	+ All \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are made of 1 or more cells.
		- Anton von Leeuwenhoek observed the first living cells
		- Schleiden said all \_\_\_\_\_\_\_\_\_\_\_\_ were made of cells (1838)
		- Schwann said all \_\_\_\_\_\_\_\_\_\_\_\_\_ were made of cells and included all organisms in the theory
		- *Unicellular-*
		- *Multicellular-*
			* Cells of multicellular organisms have special \_\_\_\_\_\_\_\_\_\_\_\_\_
	+ The cell is the basic \_\_\_\_\_\_\_\_\_\_\_\_ of all organisms
		- Schwann saw that parts of cells cannot do all the necessary \_\_\_\_\_\_\_\_\_\_\_\_ of life ,and so, you can not divide organisms into any smaller \_\_\_\_\_\_\_\_\_\_\_\_\_
	+ All cells come from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cells
		- Virchow proposed that cells can only come from the \_\_\_\_\_\_\_\_\_\_\_\_\_ of other existing cells
* It is used in the studies of biology, evolution, and other \_\_\_\_\_\_\_\_\_\_ sciences.

What parts do all cells have in common?

* Cell parts each carry out specific jobs or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* All cells (no matter the \_\_\_\_\_\_\_\_\_) have:
	+ **Cell membrane-**
		- Acts as a \_\_\_\_\_\_\_\_\_\_\_\_
		- Controls materials like \_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_ that move in and out of the cell
		- Aka \_\_\_\_\_\_\_\_\_\_\_\_\_\_ membrane
	+ **Cytoplasm-**
		- Includes all of the \_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ **Organelles-**
		- Cells can have \_\_\_\_\_ or \_\_\_\_\_\_\_\_ types
		- most (but not all) have a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ **DNA (deoxyribonucleic acid)-**
		- Inherit from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- In some cells it is in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and in some it is in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ freely floating

(label the parts that all cells have)

What are the two types of cells?

* Prokaryotic cells
	+ **Prokaryote-**
		- Has organelles called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that do not have a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- Some have a hair-like tail called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that help them \_\_\_\_\_\_\_\_\_\_\_\_
		- Include the organisms in the kingdoms \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- Are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ than eukaryotes

Label the type of cell in the diagram



* Eukaryotic cells
	+ **Eukaryote-**
	+ - Contain membrane-bound \_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (organelle w/out a membrane)
		- Includes the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ plantae, animalia, fungi, and protista
		- ALL \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ organisms are eukaryotes
		- Some eukaryotes are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ like yeasts and amoebas