**Life Sciences 11: The Cell**

Date: Name:

**By the end of the lesson you should be able to:**

* State the 2 types of cells
* Within eukaryotic cells, compare plant and animal cells
* Relate the structure to function for all the organelles
* Compare and contrast cellular respiration and photosynthesis and

explain the relationship between them

**Types of Cells**

There are two types of cells:

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

( )

2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

( )

**Cell Membrane**

* AKA: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* EVERY cell \_\_\_\_\_\_\_\_\_\_ have a cell membrane!
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Confines the cytoplasm ( )

**Structure of Cell Membrane**

* Made of a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* The fatty acid tails are “\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_”
* The phosphate heads are “\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_”
* There are proteins embedded in the membrane to transport molecules through

the membrane

**Nucleus**

* The “control centre” of the cell as it regulates gene expression (which DNA is being used and when), in-turn \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the cell.
* Houses the nucleoplasm, DNA and nucleolus
* Enclosed by the nuclear membrane which is connected to the rough endoplasmic

 reticulum (RER)

**Nucleolus**

* Found inside the nucleus and makes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Nuclear Membrane**

* Also called the nuclear envelope, a barrier that prevents the passage of materials into the nucleus while keeping the genetic material (DNA) inside the nucleus
* Has many holes called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ which regulate the passage of chemical messengers into the nucleus and allows \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (a small copy of some DNA) to exit.

**RER & SER**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Made of cell membrane folded into sacs that act as a transport network
* There are two types:
	+ Rough: has \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ attached
	+ Smooth: no ribosomes attached
	+ RER: processes \_\_\_\_\_\_\_\_\_ and sends them to the Golgi Apparatus
	+ SER: makes \_\_\_\_\_\_\_\_\_, detoxifies poisons, drugs and other toxins

**Ribosomes**

* Found attached to the RER and floating in the cytoplasm
* Are the site of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (make \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)

**Golgi Body**

* AKA: Golgi Apparatus or Golgi Complex
* Made of flattened sacs of membrane
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from the RER, \_\_\_\_\_\_\_\_\_\_\_\_ them, and \_\_\_\_\_\_\_\_\_\_\_\_\_ them via vesicles in a process called “\_\_\_\_\_\_\_\_\_\_\_\_\_”

**Vacuoles & Vesicles**

* Membrane bound \_\_\_\_\_\_\_\_\_\_\_\_ used for \_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Formed from ER and Golgi Apparatus
* Vesicles (small) are typically for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and

vacuoles (large) for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* Plants have a large central water vacuole while \_\_\_\_\_\_\_\_\_\_\_\_\_ do not

**Mitochondria**

* "Powerhouse of the cell", "Mightychondria)
* Converts chemical energy (glucose) into \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (\_\_\_\_\_\_) in a process called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The balanced equation for cellular respiration is

C6H12O6 + 6O2 🡪 6CO2 + 6H2O + ATP (energy)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_ + \_\_\_\_\_\_\_\_\_\_\_\_ 🡪 \_\_\_\_\_\_\_\_\_\_\_\_ + \_\_\_\_\_\_\_\_\_\_ + \_\_\_\_\_\_\_\_\_\_

**Chloroplast**

* Site of photosynthesis, found in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Uses \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to convert light energy into chemical energy (glucose)
* The balanced chemical equation for photosynthesis is

Sunlight (energy) + 6CO2 + 6H2O 🡪 C6H12O6 + 6O2

 \_\_\_\_\_\_\_\_\_\_\_\_\_ + \_\_\_\_\_\_\_\_\_\_\_\_\_\_ + \_\_\_\_\_\_\_\_\_\_\_\_\_ 🡪 \_\_\_\_\_\_\_\_\_\_\_\_\_ + \_\_\_\_\_\_\_\_\_\_\_

**What is the relationship between photosynthesis and cellular respiration?**

**Cell Wall**

* Found in bacteria, plants, fungi and protists, all have a cell wall, but NOT in \_\_\_\_\_\_\_\_
* Functions to provide \_\_\_\_\_\_\_\_\_\_\_\_\_\_ and protection for the cell

**Flagella & Cilia**

* Made of microtubules
* Flagella: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Cilia: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



**Centrioles**

* Not found in plant cells
* Help to organize spindle fibers during mitosis (cell division)

**Cytoskeleton**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and supports organelles
* Moves things inside the cell
* Made of microtubules, microfilaments and intermediate filaments

**Lysosomes**

* sac of hydrolytic enzymes that act as suicide sacs to ‘digest’ or recycle old organelles and cells, defend against invaders, and digest food vacuoles

Can You …

 … state the 2 types of cells?

… compare plant and animal cells?

… relate the structure to function for all the organelles?

… compare and contrast cellular respiration and photosynthesis and explain the relationship between them ?