PEER Life Science Cells Are Us Levels of Organization Notes Outline

**Introduction**

* A \_\_\_\_\_\_ is the smallest unit of life.
* The human body is composed of \_\_\_\_\_\_\_\_\_\_\_\_ of cells. Their size and shape depends on their \_\_\_\_\_\_\_\_\_\_\_.
* Name three functions of cells:
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Each cell contains the body’s \_\_\_\_\_\_\_\_\_\_\_\_\_\_ material that is passed on to our offspring.

**Why It Matters**

* Each cell in our body has a \_\_\_\_\_\_\_\_ that helps our body stay well and survive.
	+ When our cells are healthy, our body is healthy/sick.
	+ When our cells are sick, our body is healthy/sick.
* Name four situations that can cause cells to lose or change their function.
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**What We Know**

* The basic structural, functional, and biological unit of all living organisms is a \_\_\_\_\_\_\_\_.
	+ This is similar to a \_\_\_\_\_\_\_\_\_\_ that makes up buildings in a city.
* A group of cells with similar functions joining together makes up \_\_\_\_\_\_\_\_\_\_\_\_.
	+ This is similar to \_\_\_\_\_\_\_\_\_\_ of buildings in a city.
* Groups of different tissues working together make up \_\_\_\_\_\_\_\_\_.
	+ This is similar to \_\_\_\_\_\_\_\_\_\_\_\_\_\_ in a city.
* Groups of organs working together for a shared function makes up \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
	+ This is similar to a city district, like a medical district.
* Different organ systems work together to make up an entire \_\_\_\_\_\_\_\_\_\_\_\_\_\_.
	+ This level is like the entire \_\_\_\_\_\_\_\_\_\_\_.
* Specialized structures that perform various jobs in cells are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. They function within the cell similarly to how \_\_\_\_\_\_\_\_\_\_\_\_ function in the body.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are organelles that obtain usable energy for the cell. This is kind of like part of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ system in the body.
* The \_\_\_\_\_\_\_\_\_\_\_\_\_ is a cellular organelle that stores DNA and is the command and control center of the cell. It’s similar to the \_\_\_\_\_\_\_\_\_\_\_\_ in the body.
* The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a barrier around the cell that controls what enters and leaves the cells and interacts with the world outside of the cell. It’s similar to the \_\_\_\_\_\_\_ in the body.
* The \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a gel-like fluid in which the cell’s organelles are suspended and that transports materials within the cell. It’s analogous to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ system in the body.
* The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ transports materials from one part of the cell to another, like the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ system in the body.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ manufacture proteins and send them to parts of the cell where they are needed. They have similarities to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ system.
* The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ packages and sends out proteins similar to how the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ system breaks down and repackages food for the body.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ break down cell parts and remove cellular waste. \_\_\_\_\_\_\_\_\_\_\_\_\_\_ store waste, water, and necessary materials. They function similarly to the excretory system.
* Label the organelles in the diagram below.
* Cells can have many/few different structures. Cell shape and structure is determined by their \_\_\_\_\_\_\_\_\_\_\_\_\_.
* Most cells are naturally transparent, but we can use \_\_\_\_\_\_\_\_\_\_ to see the different parts.

**How We Know**

* Most cells are \_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* To study cells and how they work, scientists often grow them as a \_\_\_\_\_\_\_\_\_\_\_\_\_\_. A cell culture is a growth of a large group of cells in the laboratory.
* Name two things that cell cultures can be used for.
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* In order for cells to stay alive in a culture they need:
	+ A sample of the type of cells needed that are \_\_\_\_\_\_\_\_\_\_ and can \_\_\_\_\_\_\_\_\_\_\_.
	+ A culture media that supplies the cells with \_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_.
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Warm \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Removal of \_\_\_\_\_\_\_\_\_\_ gas
* The warm temperature is provided by a machine called an \_\_\_\_\_\_\_\_\_\_\_\_\_.
* When looking at a tissue cut from an organ under a microscope, that organ may have several types of \_\_\_\_\_\_\_\_. Each cell has even smaller structures called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Organelles can be visualized with powerful microscopes like \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ microscopes.

**Common Hazards**