

7 Science Remote Learning Packet

Please submit scans of written work in Google Classroom at the end of the week.

Week 7: May 11-15, 2020

Course: 7 Science

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Weekly Plan:

Monday, May 11

- Work on the Poem! See how far you can get!
- Read *Teacher Notes - Cell Theory*
- Important Points Assignment****

Tuesday, May 12

- Read *Teacher Notes - The Structure and Function of the Cell*
- Watch “Cell Anatomy Video – Tuesday May 12” on Google Classroom
- Complete Cell Anatomy Diagrams****

Wednesday, May 13

- Work on the Poem!
- Review *Teacher Notes* from Monday and Tuesday
- Fill out Cell Comparison Venn Diagram****

Thursday, May 14

- Work on the Poem!
- Read *Teacher Notes - Organelle Details*
- Begin Planning Your Cell Model Project

Friday, May 15

- Attend Office Hours at 9 AM! Find the Zoom link on the Stream in your 7 Science Google Classroom.
- Review the Poem!
- Catch-Up on Unfinished Work and Review Notes from this Week

**** Everything listed in green with a ** after it needs to be turned in.****

Statement of Academic Honesty

I affirm that the work completed from the packet is mine and that I completed it independently.

I affirm that, to the best of my knowledge, my child completed this work independently

Student Signature

Parent Signature

Monday, May 11

- Work on the Poem! See how far you can get!

- Read *Teacher Notes - Cell Theory*

- Important Points Assignment
 - ◆ On a piece of paper with a full heading, list *at least* three important ideas you learned from today's notes. You must write in complete sentences.

TEACHER NOTES

Cell Theory

For the last 5 MONTHS we have been studying the organ system of the human body. As a reminder, the word organ comes from the Greek "organon" meaning that which does work. Each of the many organs in our body performs a specific function, does its work, so the body as a whole can function and do its work. Similarly, each organ is made up of many CELLS, in fact, millions or billions of cells, that each perform a function so the organ as a whole can perform its function.

Throughout the year we have talked about CELLS many times—

- In making distinctions in the Linnaean Taxonomy between Kingdom Eukarya and Kingdoms Bacteria and Archaea, we said Eukarya are made up of complex cells and the others simple cells.
- Plants, animals, and fungi are multicellular organisms (eukaryotic), while most protists, bacteria and archaea are single cell organisms (prokaryotic).
- Three out of the four pathogens are cells.
- The skin system is made up of skin cells that quickly and constantly reproduce. The dead skin cell layer on the outside acts as a barrier against disease.
- Red and White blood cells are CELLS (yes, even Phagocytes and Lymphocytes).

→ Extracellular fluid is fluid outside of cells in which cells float, exist, and exchange materials

We already know so much! So now let's DEFINE a cell! Cell comes from the Latin "cella" meaning small room. Looking further back in the history of the Latin language, we could say it comes from the Latin "celare" meaning to hide or conceal - it would be interesting to compare these two definitions once we know more about what a cell is...

The modern scientific definition of a cell is the smallest unit of life determining the structural, functional, and genetic identity of all known organisms. This is a BIG definition for such a small thing! To break this definition down into simpler parts, Robert Hooke (who first discovered the cork cell) came up with the Cell Theory in 1839.

Cell Theory has three tenants:

1. All living things are made up of one or more cells.
2. Cells create the structure and carry out the function of all living things.
3. Cells can only reproduce from living cells to create more living cells of the same kind.

As stated above, we have already talked about the first tenant — that all living things are made up of one or more cells — in learning about the three Domains. As a reminder — Eukarya is mostly multicellular organisms and Bacteria and Archaea are mostly unicellular (meaning single cell) organisms.

Tomorrow we will begin our study cell structure by comparing the anatomies of animal, plant, and bacteria cells.

Next week we will study a little genetics — how cells make more cells of the same kind.

Tuesday, May 12

- Read *Teacher Notes - The Structure and Function of the Cell*
- Watch “Cell Anatomy Video – Tuesday May 12” on Google Classroom and label the Cell Anatomy Diagrams for the Animal Cell and Plant Cell found after the *Teacher Notes*. You will also find a labeled Anatomy of the Bacteria Cell for your convenience.

TEACHER NOTES

The Structure and Function of Cells

There are many types of **cells**. Even in our little pinky finger there are blood **cells**, blood vessel **cells**, bone **cells**, skin **cells** - just to name a few. But even though there are different kinds of **cells** that perform different functions, they all have the same **basic structure** because they are all **ANIMAL CELLS**. In fact, the **cells** in your pinky have the same basic structure as the that make up your lungs, your pet, an elephant, or a red ant.

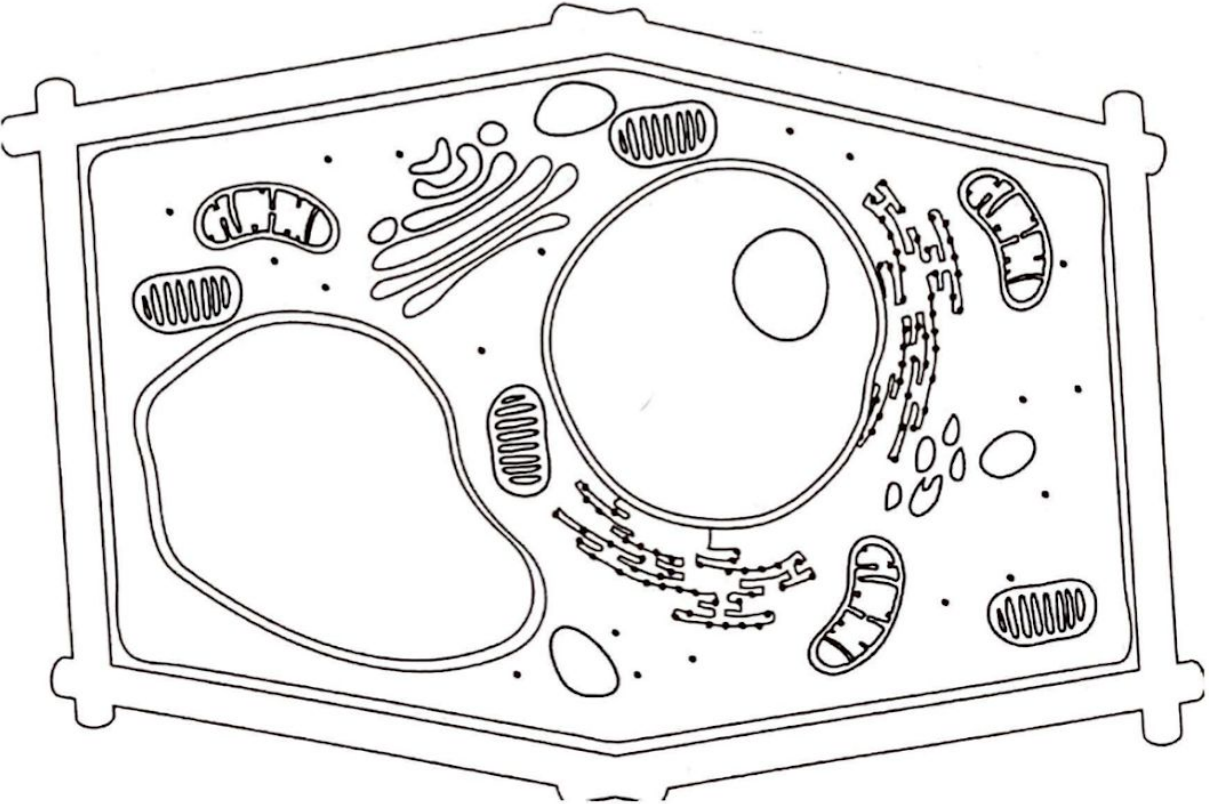
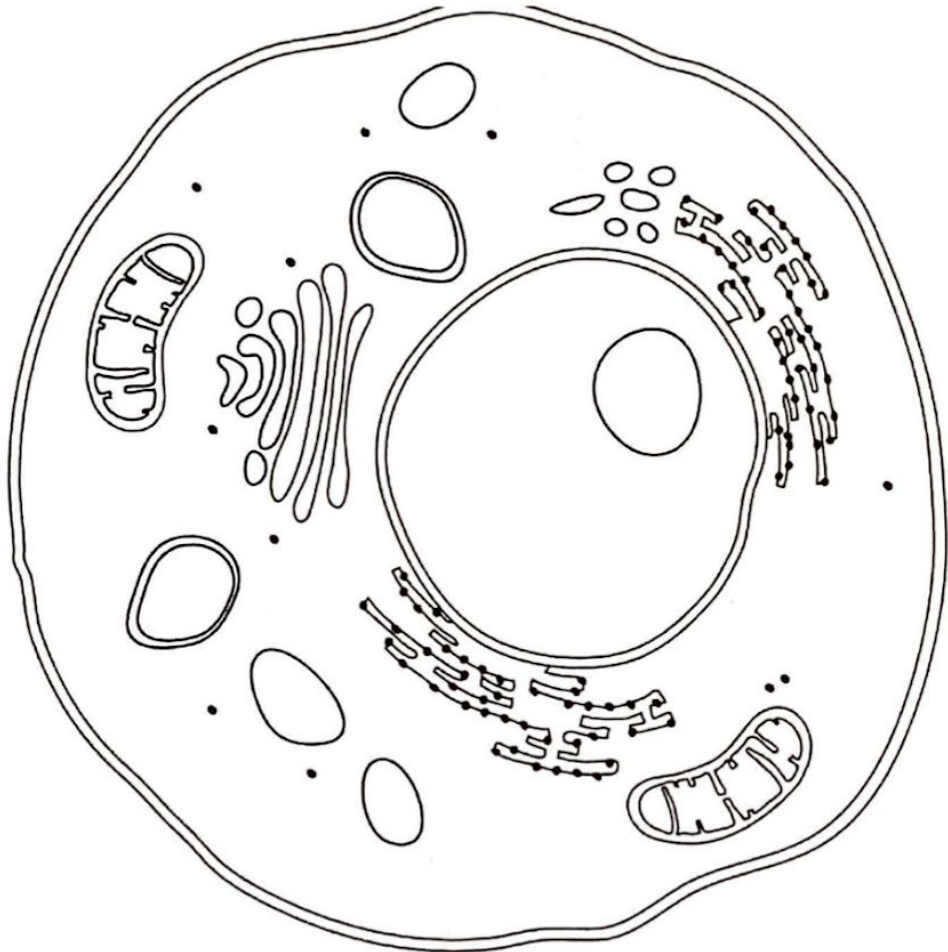
All Animal Cells Have the same Basic Structure and Cell Machinery (called organelles).

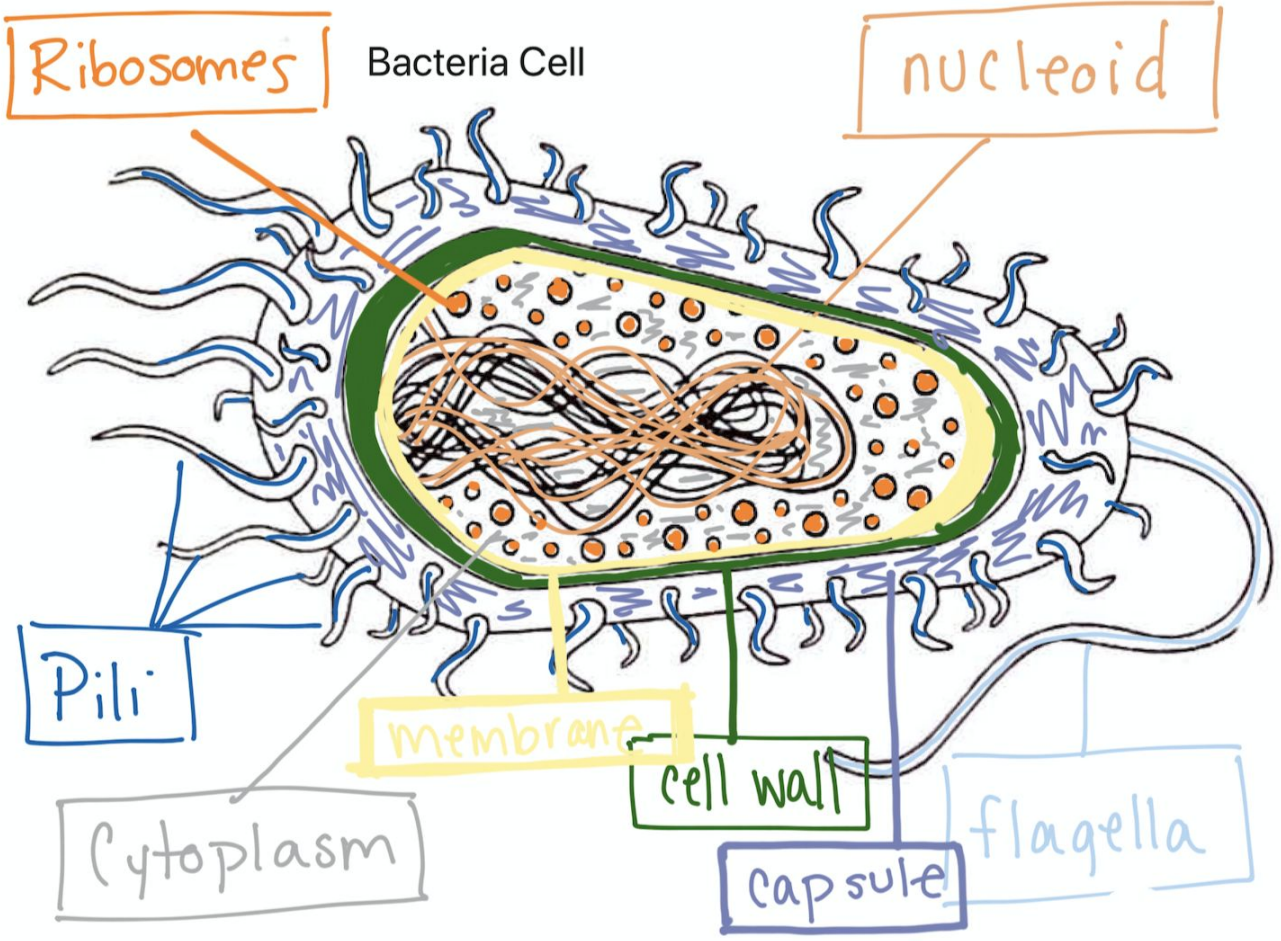
Similarly, all plant cells have the same basic structure and organelles as other plant cells, and all bacteria cells have the same basic structure and organelles as other bacteria cells.

To be clear—

- Animal Cells are the cells that make up animals.
- Plant Cells are the cells that make up plants.
- Bacteria Cells are the cells that make up bacteria.

We will now look at the anatomies of these three types of cells.

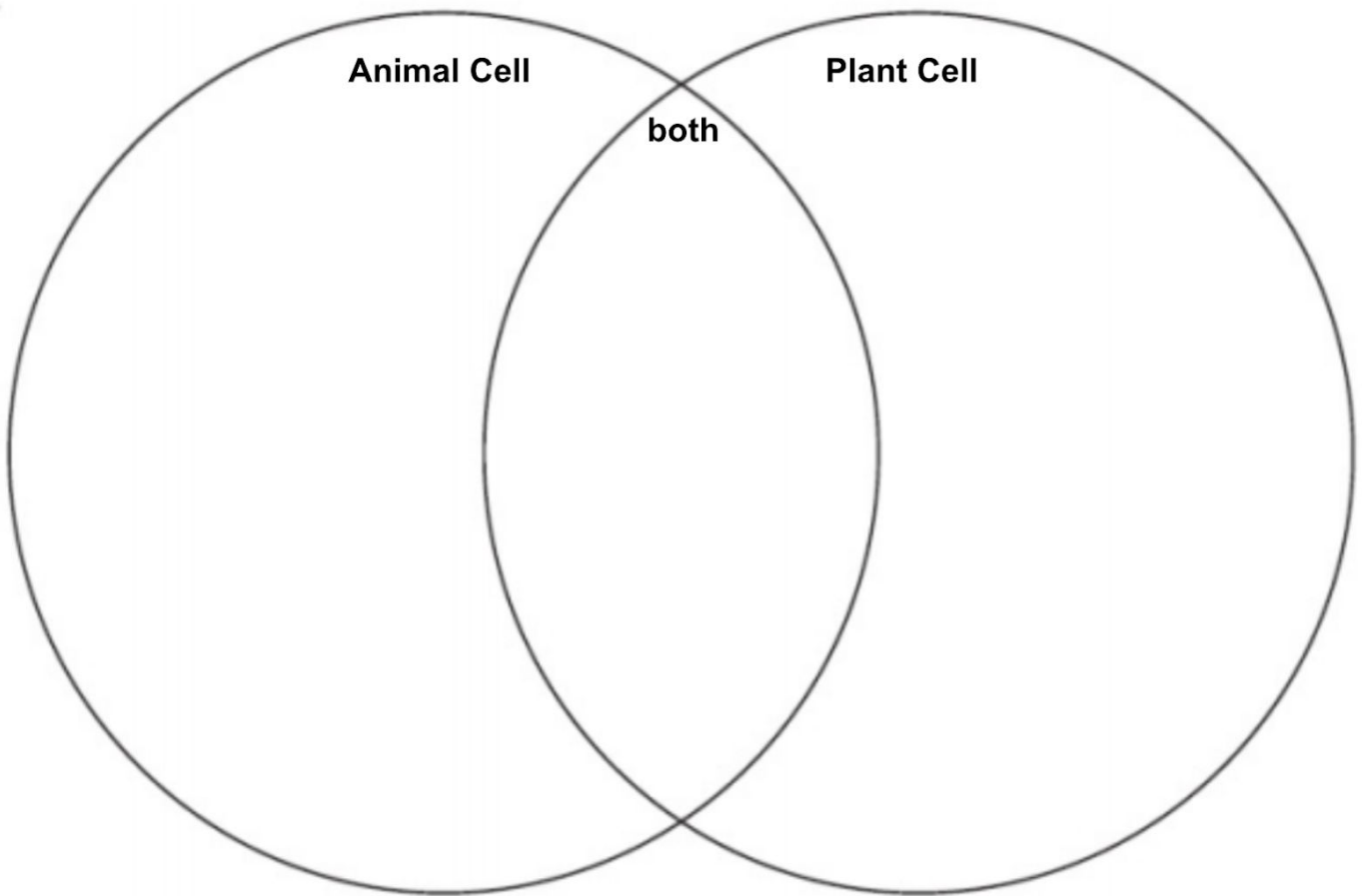




Wednesday, May 13

- Work on the Poem!
- Review *Teacher Notes* from Monday and Tuesday
- Fill out the Cell Comparison Venn Diagram below using yesterday's video and your anatomy diagrams.
 - ◆ In the overlapping portion of the venn diagram, list all organelles plant and animal cells share in common.
 - ◆ In the left side of the venn diagram, list all organelles animal cells have that plant cells don't.
 - ◆ In the right side of the venn diagram, list all organelles plant cells have that animal cells don't.
- Below the venn diagram. Write one or two sentences describing how a *bacteria cell* is different from plant and animal cells.

Comparison of Animal versus Plant Cell Organelles



Thursday, May 14

- Work on the Poem!
- Read *Teacher Notes - Organelle Details*
- Over the next week and a half you will be working on a Cell Model Project. A picture of your model along with a copy of your written “key” (instructions below) are **due Sunday May 17** with your Week 8 Packet.
 - ◆ You may choose to make a model of a plant cell, an animal cell, or a bacteria cell.
 - ◆ Your model must include *at least 5* organelles. You can use whatever you want to create the model, multiple ideas can be found at the link at the bottom of these instructions.
 - ◆ You must make a “Key” for your cell model supplying a written description of the 5 organelles found in your model. This written description should include information such as: what type of cell it is, organelle function, why you represented the organelle by the medium you chose (size, shape, etc.), and how its structure supports its function.
 - ◆ *If you have your model done by Friday May 15, please bring it to Zoom Office Hours to present to your classmates!*
 - ◆ [This link](#) provides *many* ideas for making your model. Use your imagination!

* *Use materials you have around your house and make your model without* *

* *asking your parents to go to the store to buy materials for your project!* *

Teacher Notes begin on the next page.

Organelle (Cell Machinery) Details

Just like an organ of the body that serves a particular function, the **organelles** of the **cell** also each serve a particular function for the **cell**. This is why they are called "**cell machinery**" - they do work for the **cell**. We will focus on only four **organelles**:

1. Membrane
2. Cytoplasm
3. Mitochondria
4. Nucleus

① The Membrane

The membrane in the plant cell and animal cell serve different purposes but have the same structure. The "cell membrane" of the animal cell is the outermost layer of the cell. The "plasma membrane" of the plant cell is surrounded by the Cell Wall, which gives the plant structure and stability like the skeleton does for the human body.

Either way, the MEMBRANE forms a boundary of the cell, keeping the cytoplasm and organelles inside the cell and keeping everything else out.

The structure of the membrane is a

LIPID BILAYER

A molecule with a "head" and two "tails".

→ "Bi" means two. There are two layers of lipids making up the membrane.

The Lipid "Head" likes to be near water (called HYDROPHILIC)

water loving


← "Head"

HATE water (called HYDROPHOBIC)

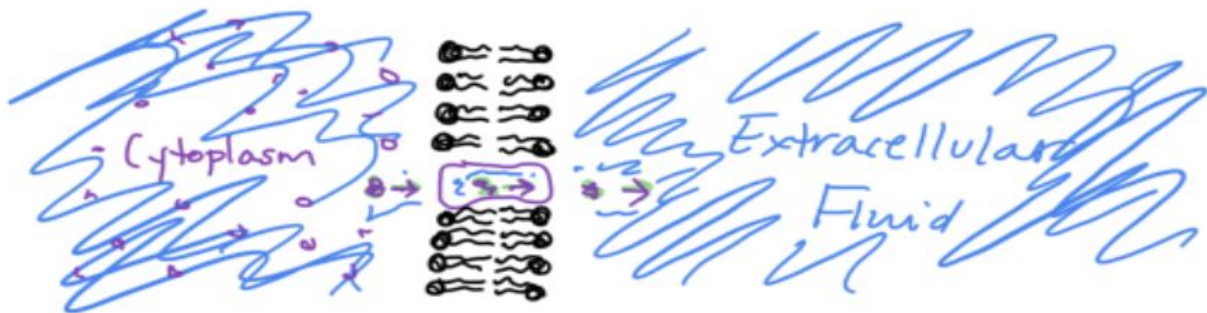
water fearing

hide in between the two heads of the bilayer, away from the water in the extracellular space and the cytoplasm inside.

so it will face both the inside and the outside of the cell.



→ **Cytoplasm** is constantly exchanging nutrients and waste with the organelles inside the cell and with the extracellular fluid outside the cell through protein-channels in the lipid bilayer.



We'll continue with details about **Mitochondria** and the **Nucleus** on Monday.