CHAPTER 29

In this unit, you will be exploring the tiny world of **cells**! If you remember in chapter 25, you first learned that your cells make up everything that is in your body!

Your cells act just like building blocks...you can put them together to make all kinds of things like your skin, muscles, organs, blood and all other kinds of things as well.

But you can find cells in every living creature, not just in humans! That's right...

Every organism in every kingdom is made up of at least one cell!

In this unit, you will be looking at how animal cells, plant cells and bacteria cells look, act and work.

But first, I think it would help if we reviewed some topics...

There is so much biodiversity on the planet (don't forget that "biodiversity" means "all of the different kinds of life that exist on the world") scientists have placed all living things into groups. They do this to make it easier to study them! These groups can be put in order from largest to smallest:

Kingdoms
Populations
Organisms
Organs
Tissues
Cells

Out of all of these groups, **kingdoms** are the largest of them all! In fact, kingdoms are made up of many **populations**. These populations are made up of individual **organisms**. Some organisms use **organs** to stay alive. These organs are made up of **tissues**. Tissues are made up of large groups of **cells**!

Cells can be placed into two different groups:

Prokaryotic ("pro-carry-ot-ik")

and

Eukaryotic ("u-carry-ot-ik")

There are many things about prokaryotic and eukaryotic cells that are the same:

- They both must use food to keep them alive.
- They both must be able to grow.
- They both react to changes in the environment
- They both can make another of its own kind (which is known as "reproduction")
- They both can let air in and out of themselves (for example...breathing)

Do these things look familiar to you? They should! These are the basic needs for all living organisms you learned about in chapter one!

And...

- They both have a **membrane** around them.

  A membrane is a covering that surrounds the cell and protects it! It also lets nutrients, water and air into and out of the cell!

- They both have **DNA**.

  DNA is a group of chemicals that contain all of the instructions for making all the structures and materials an organism needs to survive!

- They both have **cytoplasm**.

  cytoplasm ("sight-o-plaz-m") is a gooey fluid that fills up the inside of a cell, just like a water balloon!

Not all things are the same between prokaryotic and eukaryotic cells...

Let's look at what makes them different!

If you are prokaryotic, you are made up of only one cell and belong to the...

Archaebacteria Kingdom

or

Eubacteria Kingdom

If you are eukaryotic, you are made up of more than one cell and you belong to...

Fungi Kingdom
Protist Kingdom
Plant Kingdom

or the
Animal Kingdom

But the main difference between prokaryotic and eukaryotic organisms is this...

Eukaryotic cells have organelles and prokaryotic cells do not!

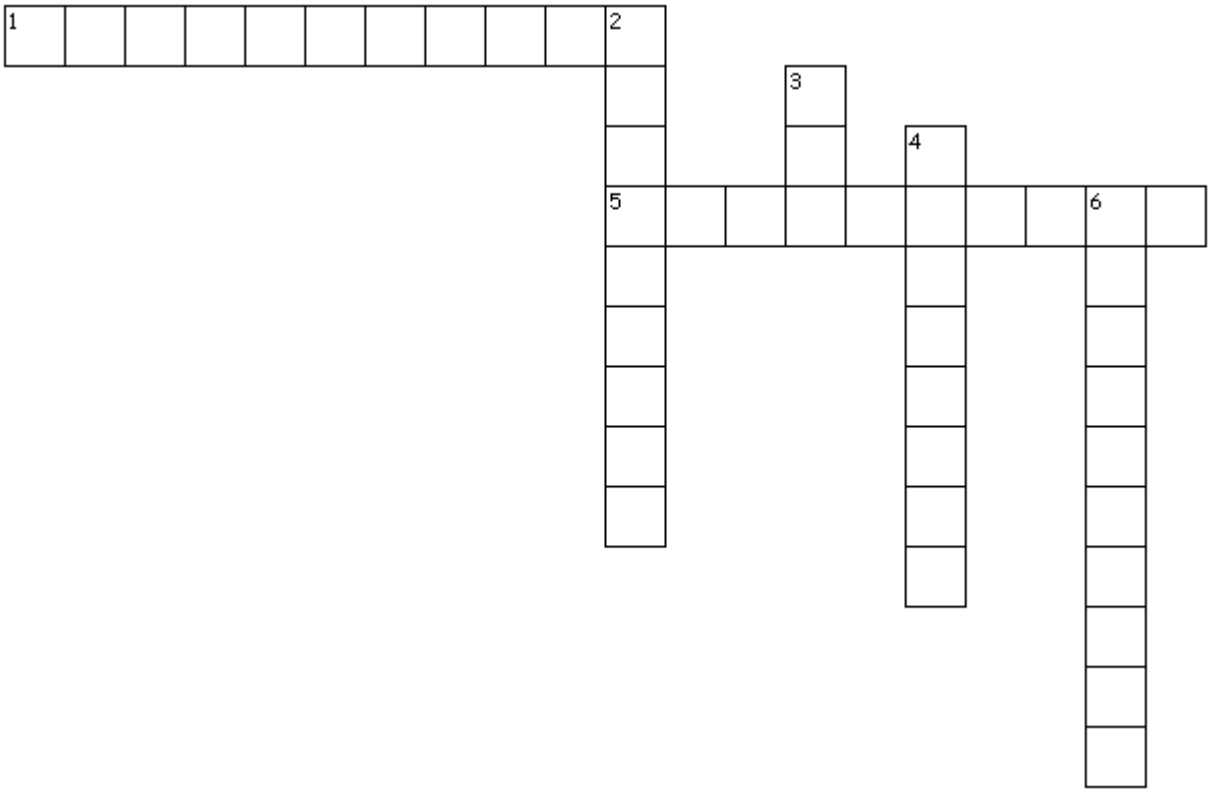
Organelles ("or-ga-nells") are small structures inside of cells that have a specific job. One kind of organelle makes all of the energy for the cell to work! Another organelle stores all of the food! And so on...

Prokaryotic cells, like bacteria, do not have organelles.

Eukaryotic cells have more parts in them. They are responsible for keeping large organisms, like us, alive! They have to be better organized in order to work well! The organelles in the eukaryotic cells are very good at their jobs.

You are going to learn about many of the organelles in the cells of animals and plants in the next chapters.

Place the answers to the following clues in the boxes below. Each box should contain one letter.



Across

1. cells or organisms that belong to the Kingdoms Archaebacteria or Eubacteria
5. small structures inside of cells that have a specific job

Down

2. a gooey fluid that fills up the inside of a cell
3. a group of chemicals that contain all of the instructions for making all the structures and materials the organism needs to survive
4. a covering that surrounds the cell and protects it
6. cells or organisms that belong to the Kingdoms Animal, Plant, Protist or Fungi

Match the words in the first column to the best available answer in the second column.

_____ Prokaryotic	1) a covering that surrounds the cell and protects it
_____ Eukaryotic	2) cells or organisms that belong to any Kingdoms except Archaebacteria and Eubacteria
_____ Membrane	3) cells or organisms that belong to the Kingdoms Archaebacteria or Eubacteria
_____ DNA	4) a group of chemicals that contain all of the instructions for making all the structures and materials the organism needs to survive
_____ Cytoplasm	5) small structures inside of cells that have a specific job
_____ Organelles	6) a gooey fluid that fills up the inside of a cell

Which one is right? Circle the correct answer.

1. The following list is in order from smallest to largest:
    a. cells, tissues, organs, organisms, populations
    b. populations, organisms, organs, tissues, cells
    c. cells, tissues, organisms, organs, populations

2. The main difference between prokaryotic and eukaryotic cells is:
    a. only prokaryotic cells have a membrane
    b. only eukaryotic cells have organelles
    c. only eukaryotic cells have DNA

3. All prokaryotic cells belong to the following kingdoms:
    a. archaebacteria and eubacteria
    b. fungi, protist, plant and animal
    c. archaebacteria, eubacteria and fungi

4. The cytoplasm inside a prokaryotic cell contains:
    a. organelles
    b. DNA
    c. tissues

5. If an organism is only made of one cell, it is known as...
    a. an organelle
    b. prokaryotic
    c. eukaryotic

6. Organelles are larger than cells.
    a. true
    b. false