

CHAPTER 32

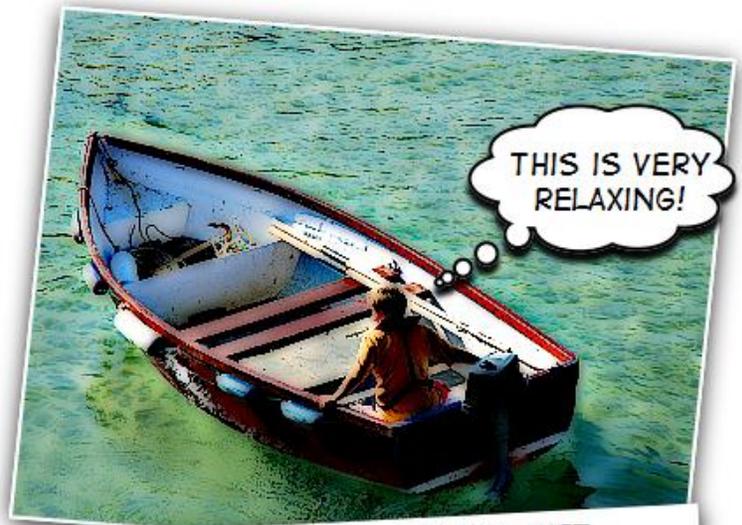
In the past two chapters, you have explored the organelles that can be found in both plant and animal cells. You have also learned that plant cells contain an organelle that is not found in animal cells. Don't forget... plant and animal cells are eukaryotic because they have organelles!

But what about the prokaryotic cells?

If you remember from chapter 29, bacterial cells are known as **prokaryotic**. Each prokaryotic cell is one organism that does not have any organelles!!

Even though bacteria do not have any organelles, they still have the same needs as any other organism:

- They must use food to keep them alive.
- They must be able to grow.
- They react to changes in the environment
- They must reproduce
- They must use air to survive



IN BACTERIA, DNA (THE BOSS) JUST FLOATS THROUGHOUT THE CYTOPLASM.

And... just like eukaryotic cells, every bacteria has a membrane which holds in the gooey fluid called cytoplasm.

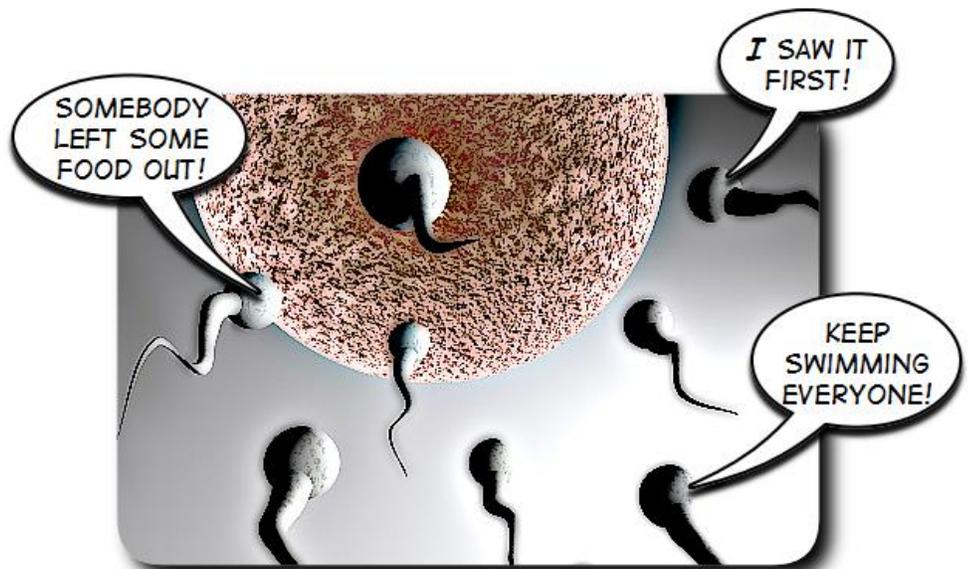
However, the DNA ("**the boss**") that is inside a bacteria is not protected inside a nucleus...

...it just floats around in the cytoplasm!

Ok...so how do bacteria survive without any organelles?

First of all, prokaryotic cells are protected the same way a plant cell is protected... **with a cell wall!** The cell wall surrounds the bacteria and keeps the bacteria safe.

In addition, many bacteria can move with the help of a tail known as **flagella**. The flagella of a bacteria looks like a long whip that helps to push the bacteria through a liquid...just like the tail of a fish!



How do bacteria get their food?

Well, they can always move with the help of their flagella to where the food is. But some bacteria do not have flagella! These bacteria must be able to get the nutrients it needs in order to survive. One way that the bacteria can do this is to make its own food...just like a plant cell!

That is right! Some bacteria can make their own food, just like plants do.

In these bacteria, sunlight is used by its chlorophyll to go through photosynthesis. in bacteria, photosynthesis can take place anywhere inside the gooey cytoplasm!!!



Aarrghhh!!!
There is so many things to learn!
How can I make it easier to remember?

The following table may help you understand all of these cells a little better:

	Plant cell	Animal cell	Bacterial cell
DNA	YES	YES	YES
Cell membrane	YES	YES	YES
Cytoplasm	YES	YES	YES
Nucleus	YES	YES	NO
Ribosomes	YES	YES	NO
"ER"	YES	YES	NO
Mitochondria	YES	YES	NO
Lysosome	YES	YES	NO
Golgi body	YES	YES	NO
Vacuole	YES	YES	NO
Cell wall	YES	NO	YES
Chloroplast	YES	NO	NO
Chlorophyll	YES	No	Some do

A cartoon illustration of a squirrel with a speech bubble. The squirrel is brown and black, standing on a white background. The speech bubble is white with a black outline and contains the text: "LET'S LOOK BACK AT WHAT WE HAVE LEARNED SO FAR THIS YEAR:".

LET'S LOOK BACK AT
WHAT WE HAVE LEARNED
SO FAR THIS YEAR:

You started off looking at "everything in the world" which is known as the **environment**. Since the world is such a huge place, scientists break it down into

sections called **biomes**. Each biome is different from the others. Each of these biomes contain so many different organisms, scientists have placed them into six different groups called **kingdoms**. Within each kingdom there are thousands of different **species** of organism. Each species is a group of similar organisms that you can find anywhere in the world.

When you get a group of similar organisms living in one place, you call this group of organisms a **population**. Since each population is a group of similar **organisms**, we need to look closely at each one!

Most organisms (except for bacteria!) use **organs** to stay alive. These organs are made up of **tissues**. Tissues are nothing more than a large group of **cells!** And, you have been learning that eukaryotic cells are all made up of **organelles** that work together to keep the cell alive.

If you were to put these words in order from largest to smallest, this is what it looks like:

Environment

Biomes

Kingdoms

Species

Populations

Organisms

Organs

Tissues

Cells

Organelles

You can pat yourself on the back! You have learned quite a lot this year!

But you are not done yet. In the next unit, you are going to explore how you can keep yourself healthy and happy!

Fill in the blanks with the correct words from the bank at the bottom of the page.

A _____ a

_____ that _____ to
_____ the bacteria through a
liquid.

Word Bank:

flagella
is
long
helps
tail
push
whip-like

Fill in the blanks in the following table. You may write "yes" or "no"

	Plant cell	Animal cell	Bacterial cell
DNA	YES	YES	
Cell membrane		YES	YES
Cytoplasm	YES	YES	YES
Nucleus		YES	NO
Ribosomes	YES	YES	
"ER"	YES		NO
Mitochondria	YES	YES	
Lysosome		YES	NO
Golgi body	YES	YES	
Vacuole	YES		NO
Cell wall			
Chloroplast	YES	NO	
Chlorophyll	YES	No	Some do

Unit Eight review

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

- | | | |
|-------|--------------|--|
| _____ | Mitochondria | 1. the largest organelle in a plant or animal cell; contains the Dna |
| _____ | ER | 2. an organelle that gets rid of the waste inside a cell |
| _____ | Vacuole | 3. an organelle that turns nutrients into energy for the cell |
| _____ | Nucleus | 4. an organelle that wraps up proteins into a bundle inside a cell |
| _____ | Golgi body | 5. organelle that sends protein messages to other organelles |
| _____ | Lysosome | 6. an organelle that stores extra water and nutrients |

Fill in the missing boxes with "yes" or "no".

	Plant cell	Animal cell	Bacterial cell
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DNA			
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Cell membrane			
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Cytoplasm			
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Nucleus			
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Chloroplast			
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Cell wall			
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Be certain to go over your definitions for the test!