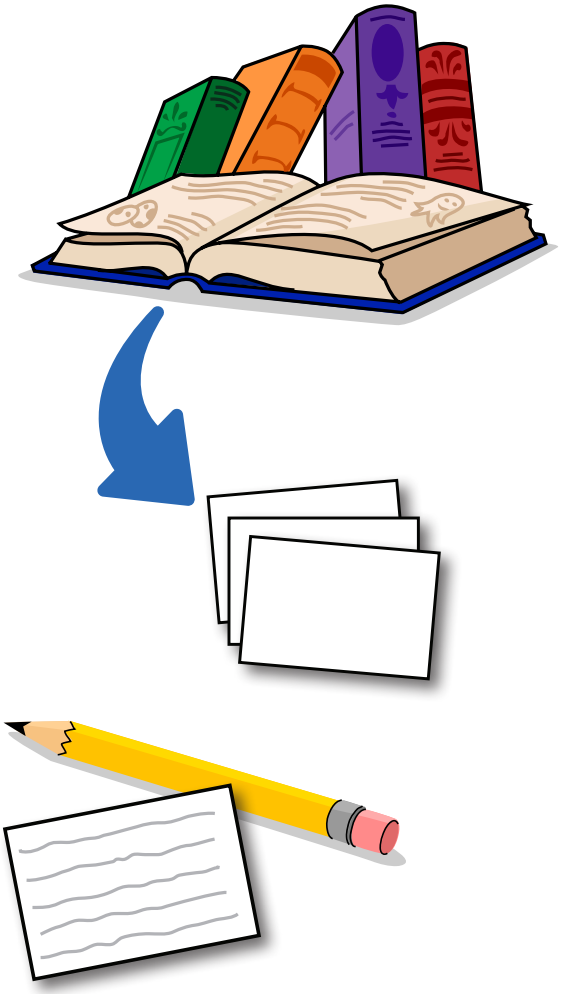
Biology Bits

Bite-size Science

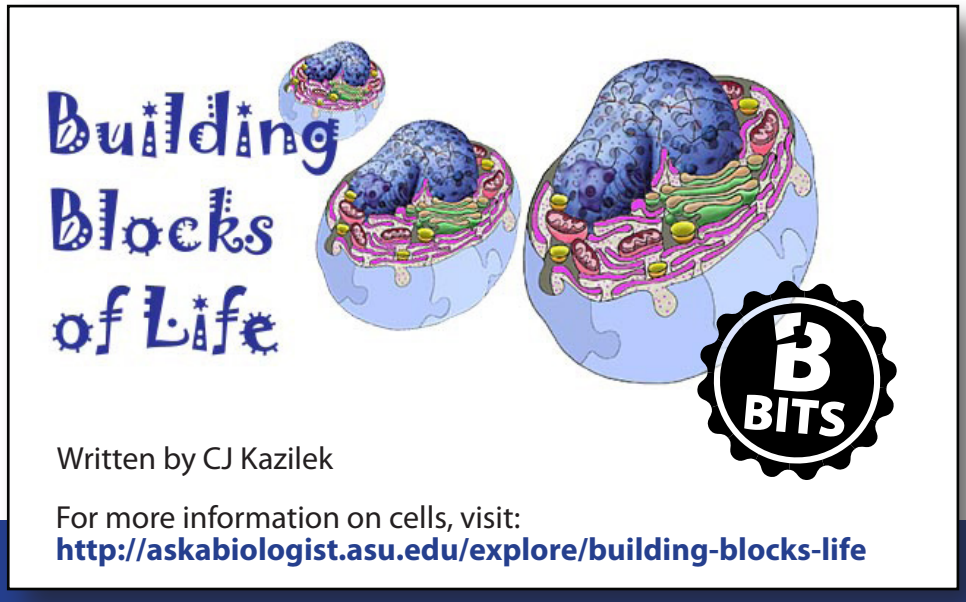


Trying new things can be hard. When you play a new sport, you have to learn and remember a whole new set of rules. When you try new food, you may end up not liking it (and you may even wish you could spit it out). The same goes for school. Learning information can be really hard and sometimes scary.

With food, what's the best way to start with something new? Trying a very small piece. You can take a tiny bite…taste it, feel the texture of it, and decide if you want more. Just like with new food, new information can also be easier to learn if you start off with really tiny bites.

Biology Bits stories are a great way for you to learn about biology a little bit at a time. We've broken down information into pieces that are very tiny—bite-sized, we call them. You can try just reading the Biology Bits at first. Cutting out the cards will let you organize them however you want, or use them as flashcards while you read.

Then, when you're ready to move on, use the empty cards to write out what you learned. You can copy what was already written, or try to write it in your own words if you are up for a challenge. Just remember, don't bite off too much at once!



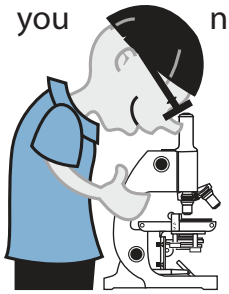
Written by CJ Kazilek

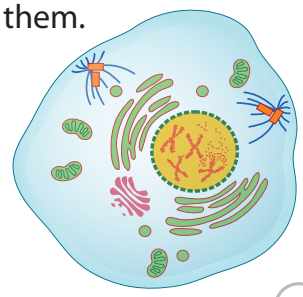
For more information on cells, visit:
http://askabiologist.asu.edu/explore/building-blocks-life

This set of bits will teach you about the tiny pieces that you are made of: **your very own cells.**

Hungry for more bits? Visit:
http://askabiologist.asu.edu/activities/biology-bits

Cells are a basic building block of all living things. It does not matter if it is a plant or animal they will be made of cells. Some living things are made of only one cell. Other living things are made of many more cells. You are made of trillions (1,000,000,000,000) of cells. Most cells are so small you need a microscope to see them.





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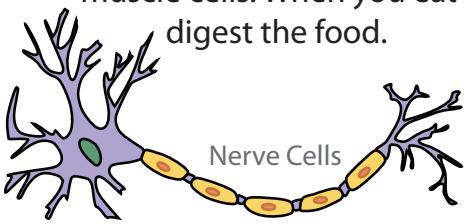
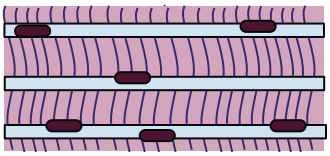
Not all cells are the same. Plants and animals have different types of cells that do different jobs. Your body has more than 200 types of cells. Some cells help tell other parts of your body what to do. These are nerve cells. Others cells help you walk and pick things up. You know them as muscle cells. When you eat there are cells that help digest the food.



Nerve Cells



Muscle Cells

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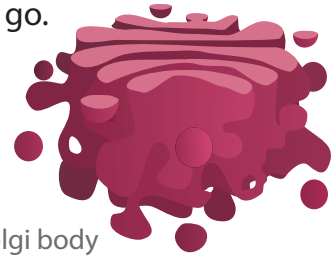
Inside each cell are tiny parts that also have jobs. You can think of a cell like a tiny city. There is a part that gives instructions like city hall. This is the nucleus. Other parts are the power stations. They are called mitochondria. There is a part that works like a post office. It sorts the packages and sends them to where they need to go. It is named after the scientist who discovered it and is called the Golgi body. There are more of these tiny cell parts and together they are called organelles.



Golgi body

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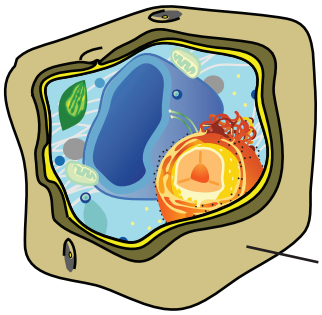
Inside plants cells are some parts that you do not find in animal cells. One part is called the chloroplast. The chloroplast helps plant cells make food for the plant. They do this by using sunlight, water, and parts of the air called carbon dioxide. Plant cells also have a cell wall that works like walls of a building. The cell wall makes it possible for plants to grow upwards and not fall over.



Cell Wall

Chloroplast

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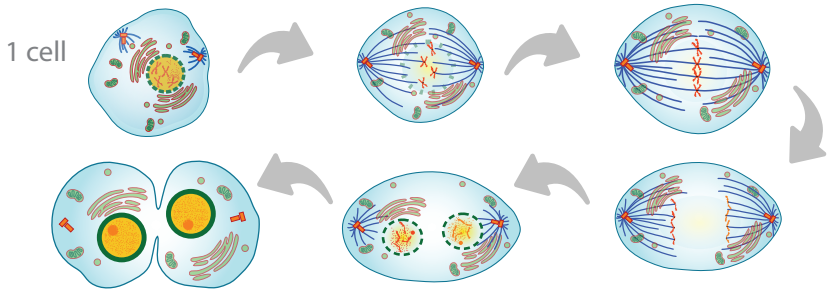
Living things grow by making more cells. You started as one cell and now have trillions of cells. A plant starts as a single seed that grows larger by making more cells. Living things are able to make more cells by splitting one cell into two cells that are the same. This is called cell division.



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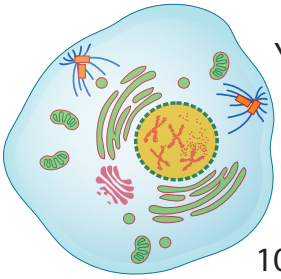

Your body is always losing and making new cells. Some cells live longer and others are around for a very short time. There are cells that last your entire life like brain cells. Some bone cells can last 10 years. Your skin cells will last up to 2 weeks. The cells in your stomach only last 5 days. These cells have a difficult job because they have to protect the body from the powerful digestive fluids used to break up food. All together your body loses 19 million (19,000,000) cells every minute and makes an equal amount to replace them.

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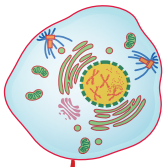
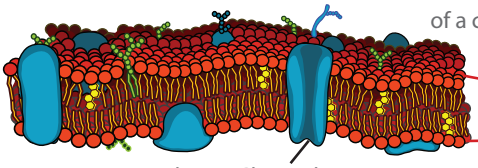
Cells are not like a balloon. Balloons filled with water do not let anything in or out. Cells need to let some things in and keep other things out. This is the job of the cell membrane. If you have a very powerful microscope you would be able to look at the cell membrane. You would see there are openings like tunnels into the cell. These are called membrane channels. These channels only let certain items in and out of the cell.



Microscope view of a cell membrane



Membrane Channel

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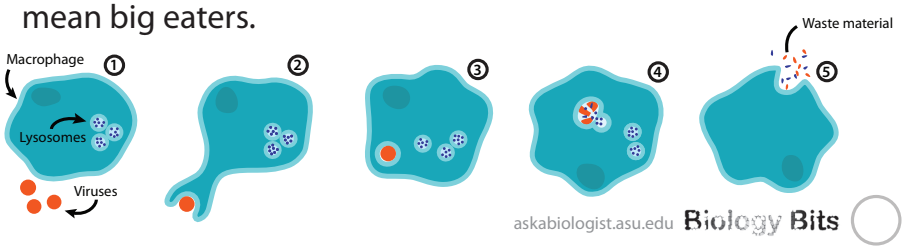
Cells can go out of control. They start making more cells than they should. Sometimes they lose their ability to do their job. It is also possible for cells to be attacked by outside cells like bacteria. The good news is you have special cells that work to protect and defend your good cells. One of these cells is called a macrophage. The macrophage gets its name from two Latin words that mean big eaters.



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Today scientists are learning how to control cells. To do this they are changing and fixing the instructions that are stored in almost every cell. These instructions are found in the nucleus and have a very long name. Deoxyribonucleic acid is the long name, but is also called DNA. As scientists learn more about DNA they are finding new ways to treat people who get sick and are not able to be helped by regular medicine.

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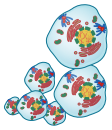

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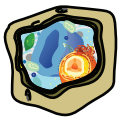

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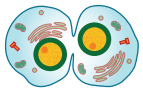

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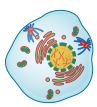

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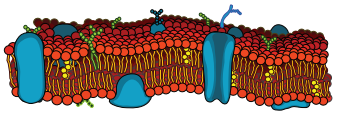

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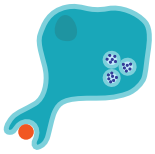

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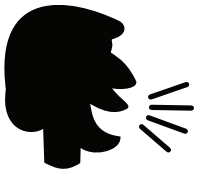

How do you say?

Nucleus – [**new**-klee-us]
Mitochondria – [my-tuh-**kon**-dree-uh]
Golgi – [**goal**-jee]
Organelle – [or-guh-**nell**]
Chloroplast – [**klor**-uh-plast]
Membrane – [**mem**-brain]
Macrophage – [**mack**-ruh-feyj]
Deoxyribonucleic –
[dee-ox-si-rahy-boh-**new**-clay-ik]

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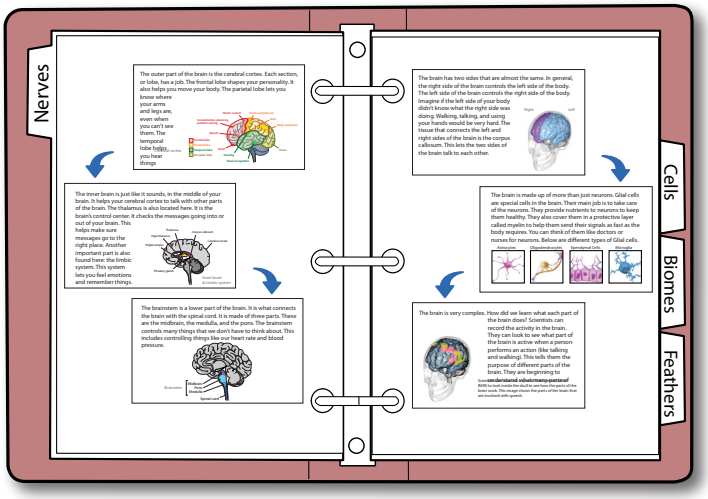
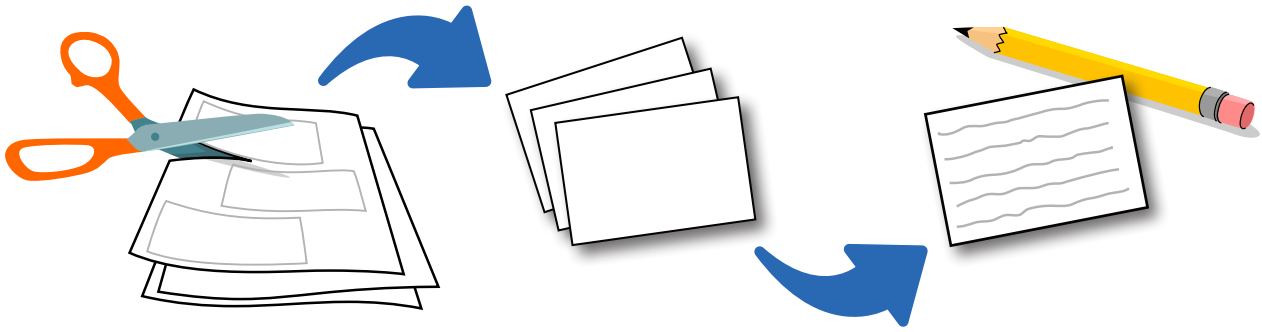


Instructions

Ready to begin? You can use these bits in many ways. You can print the pages and place them in a notebook for review. You can also cut each card out to re-organize them any way you want.

The empty cards can be used to write out what you learned in your own words, or to copy what's already written. Also included is a pronunciation guide, to help you learn how to say the more complicated words.



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