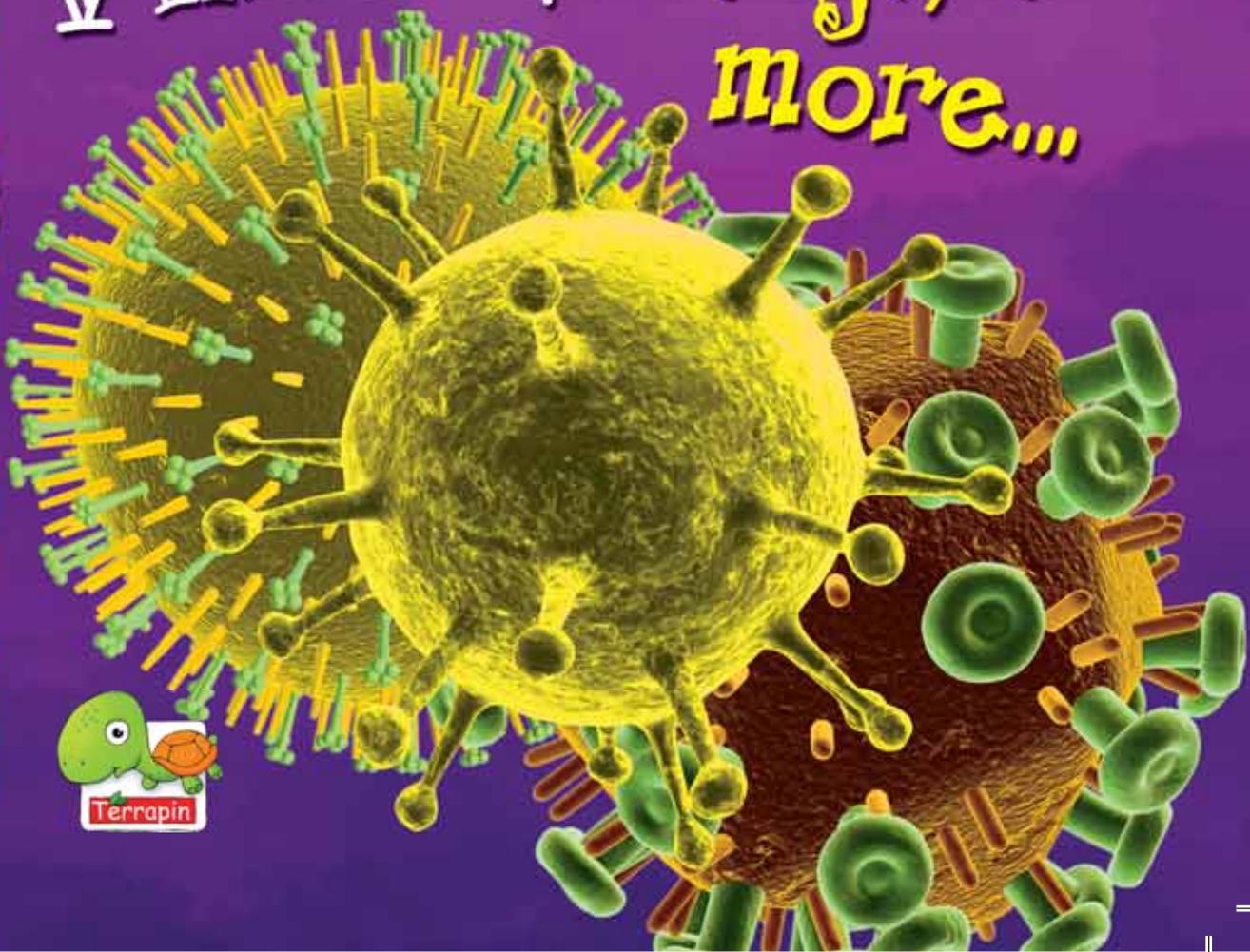




WHAT are BACTERIA, VIRUSES, *Fungi*, and *more...*





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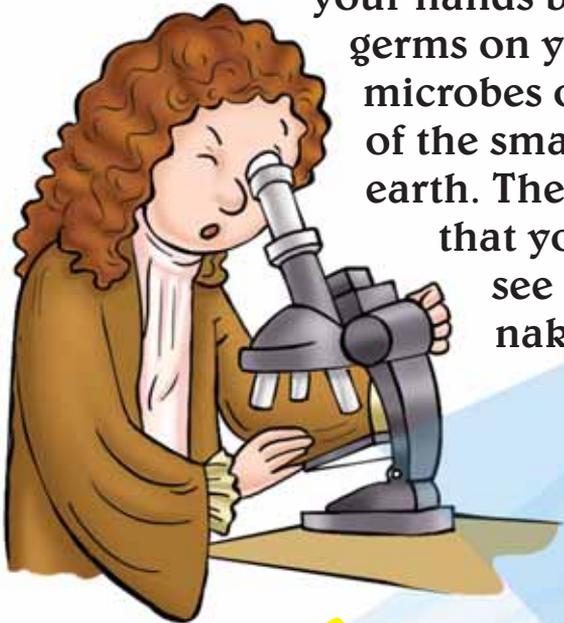
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ALL THE SMALL CREATURES



How many times has your mother insisted that you wash your hands before you eat, so that there are no germs on your hands. These germs, called microbes or micro-organisms, are some of the smallest creatures on earth. They are so small that you cannot see them with naked eyes.



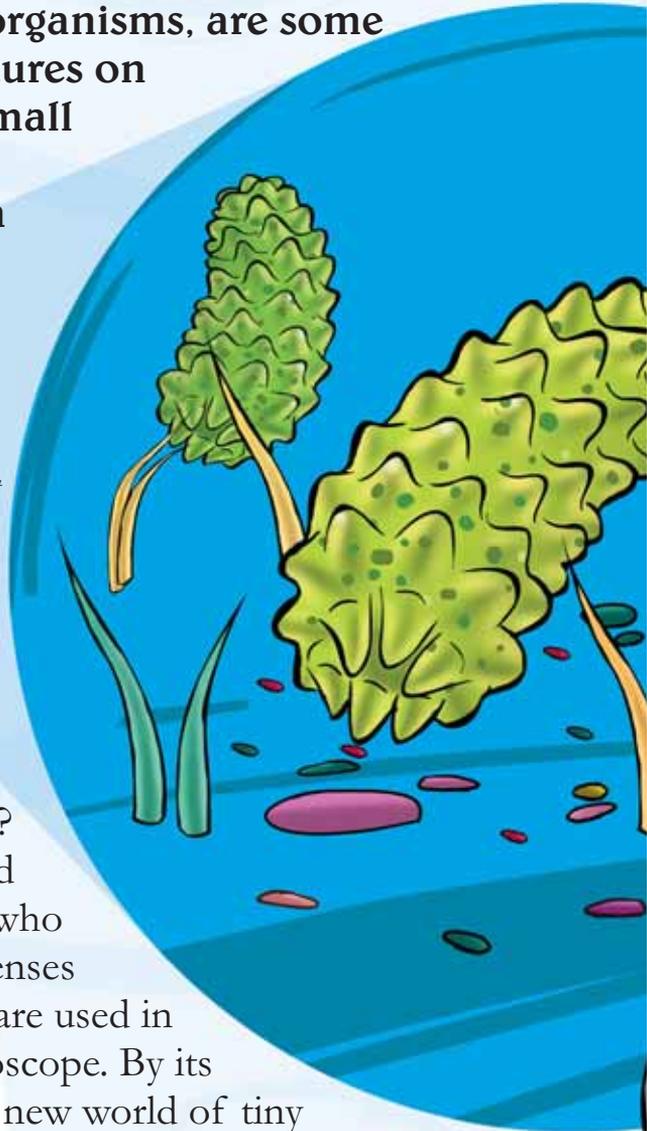
A modern microscope can help us unravel the mysteries of even the smallest microbes.

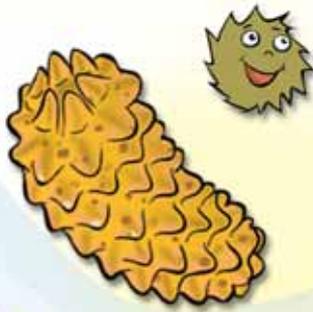
Discovering a whole new world

So, if microbes cannot even be seen, how do we know so much about them? It is thanks to a man named Anton van Leeuwenhoek, who in 1673, used two lenses (lenses are the special glasses that are used in spectacles) to build a microscope. By its use, he discovered a whole new world of tiny microscopic creatures.

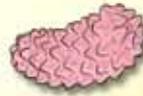


The first microscopes looked nothing like they do now!



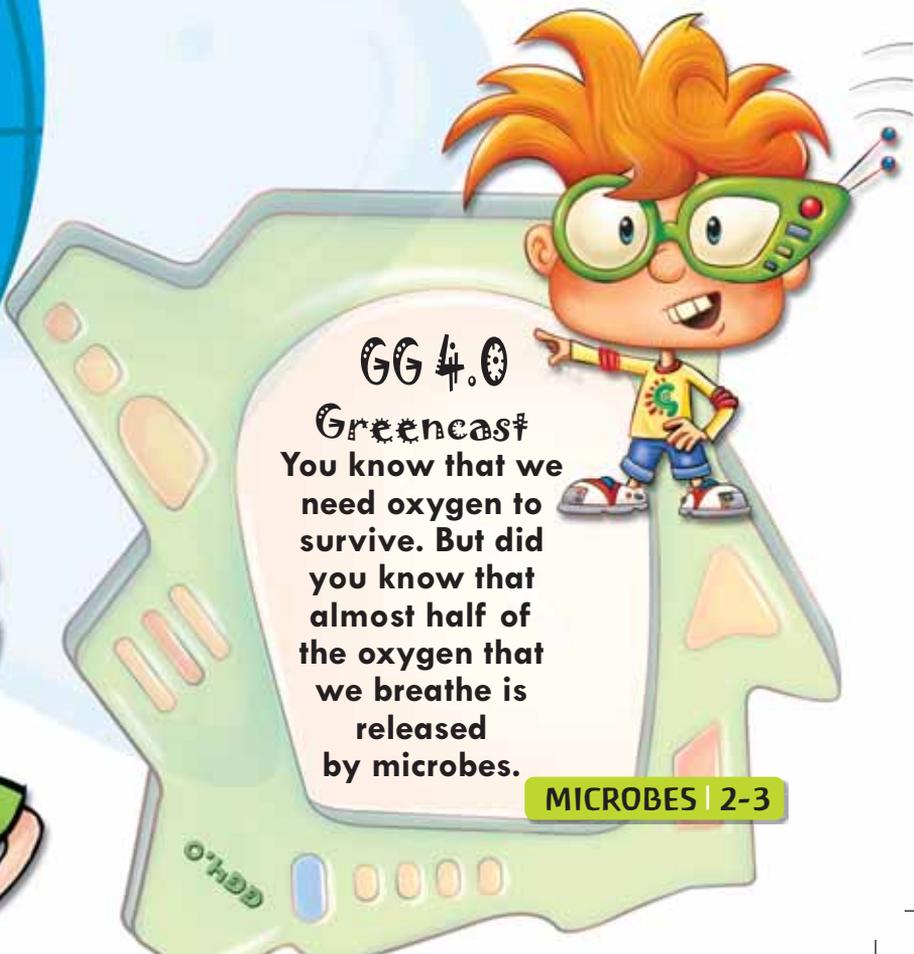
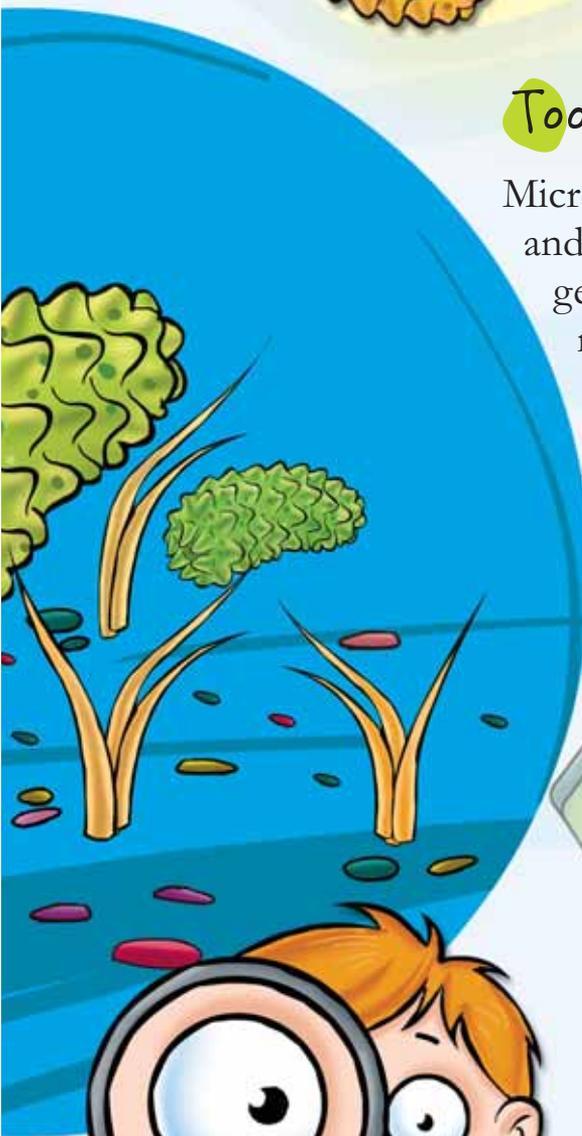


Microbes are present everywhere—in the water you drink, in the food you eat, and even in the air you breathe.



Too many, too small

Microbes are the oldest creatures on our planet and the largest in number. These creatures are generally made up of a single cell. But some microbes like fungi can be made up of many cells, just like your body is made up of billions and billions of cells.



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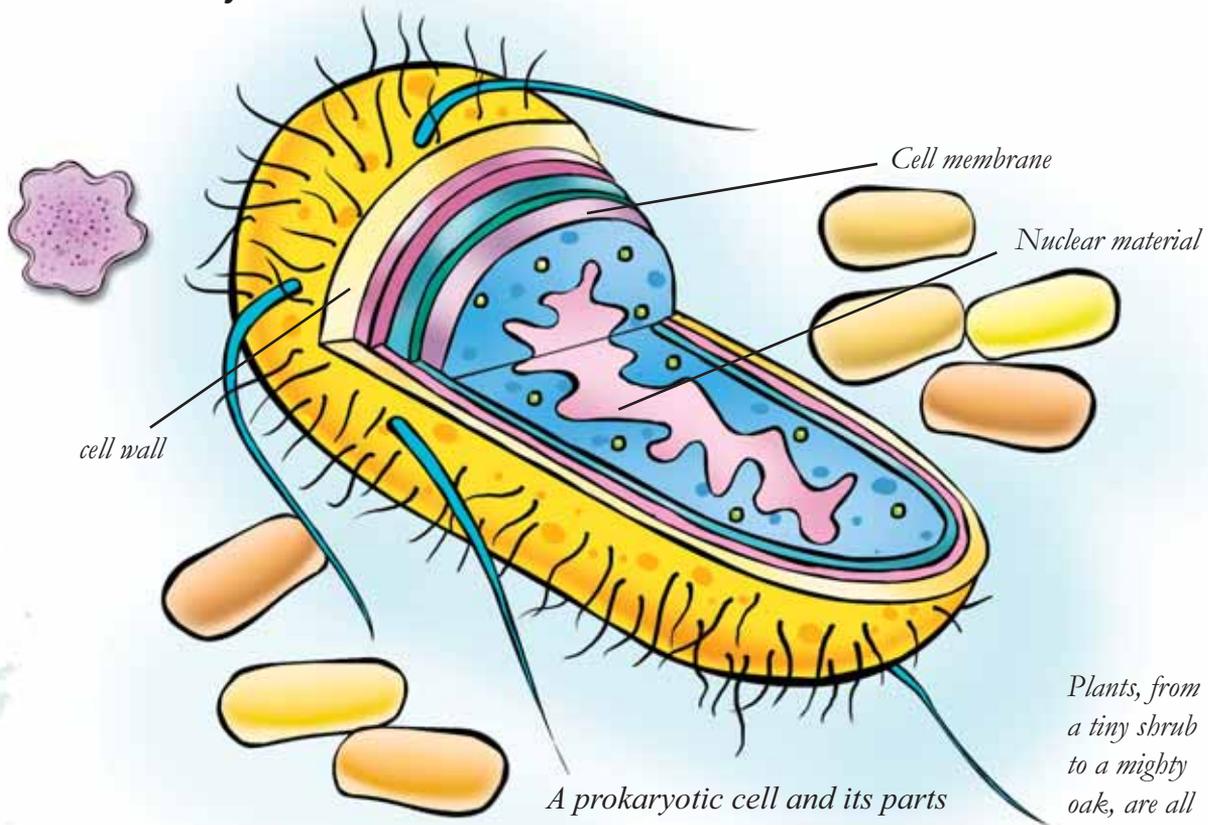
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You know that we need oxygen to survive. But did you know that almost half of the oxygen that we breathe is released by microbes.

HOW IT ALL BEGAN



Microbes can be prokaryotes or eukaryotes. This depends on the presence or absence of the nucleus. Just like the brain controls all the functions of our body, the nucleus acts as a control system for the cell.

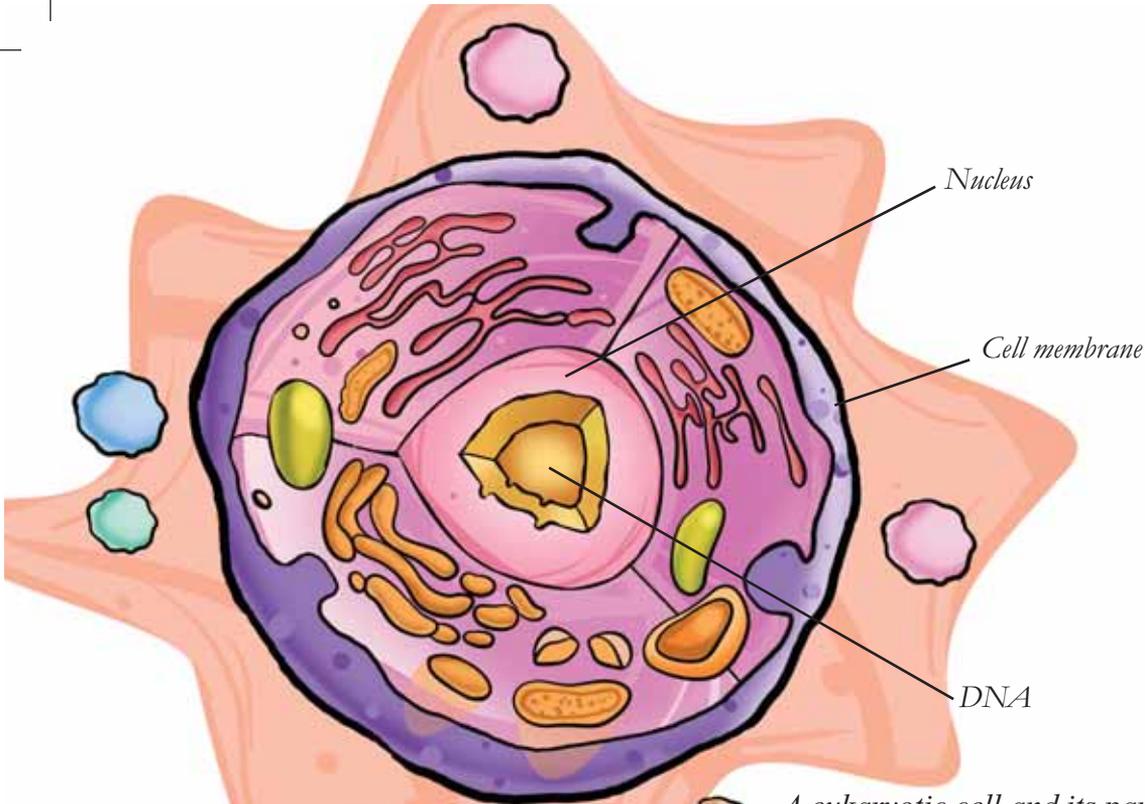


Plants, from a tiny shrub to a mighty oak, are all eukaryotes. All their cells have nuclei.

Prokaryotes: surviving without a nucleus

The Greek term “prokaryote” means “before nucleus”. Prokaryotes are called so because they do not have a well-defined nucleus. The information on how a cell will function is stored in the deoxyribonucleic acid, or DNA, which floats freely in the cell. Prokaryotic cells are usually round, rod-shaped, or helical.



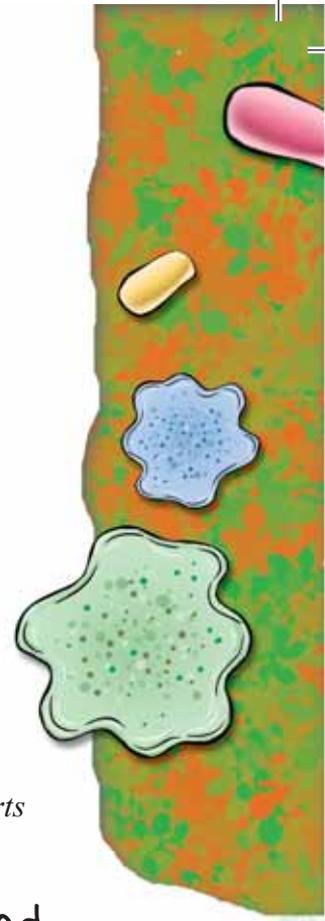


Nucleus

Cell membrane

DNA

A eukaryotic cell and its parts

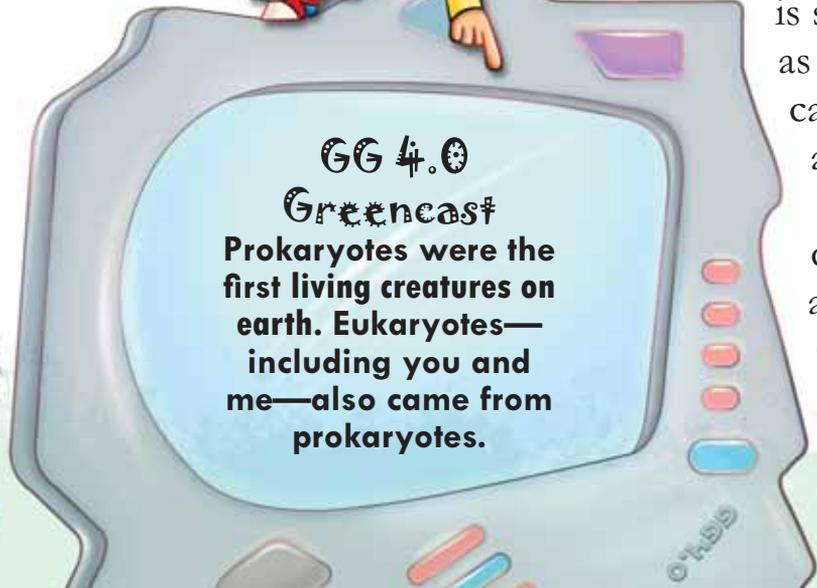


Eukaryotes: ruled by the nucleus

The Greek word “eukaryote” means “true nucleus”.

Eukaryotes are organisms that have a well-defined nucleus with a marked outer covering. All the

information about the cell is stored in the nucleus as DNA. Eukaryotes can be single-celled like amoebae or they may be made up of many cells like the plants and animals we see around us.



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Prokaryotes were the first living creatures on earth. Eukaryotes—including you and me—also came from prokaryotes.



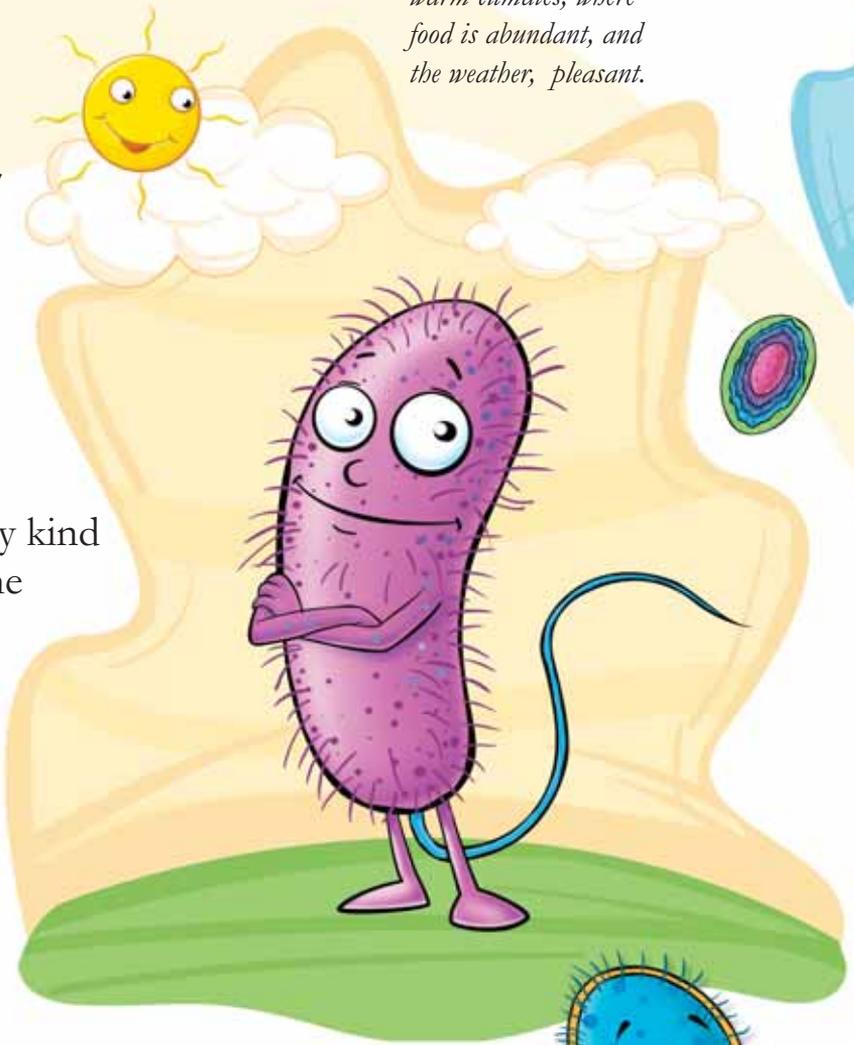
SOAK UP THE SUN

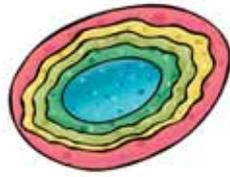
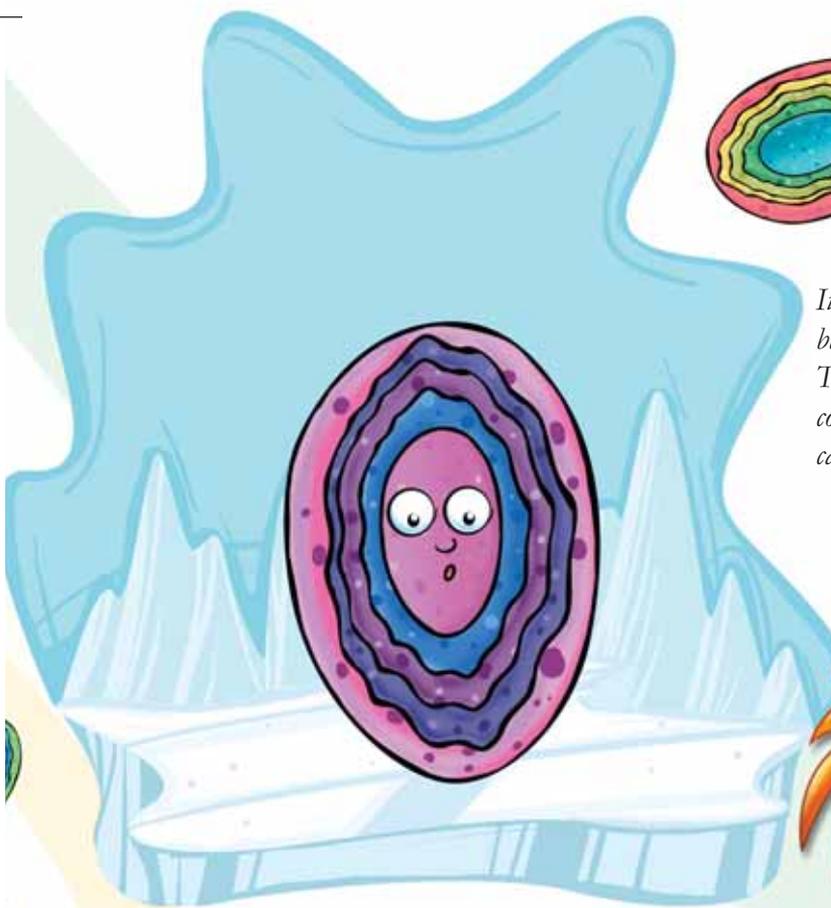
Bacteria have been on the earth since a long time—they appeared even before plants and animals came into being. They are single-celled, prokaryotic, and are present everywhere.

Where and what

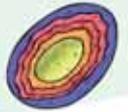
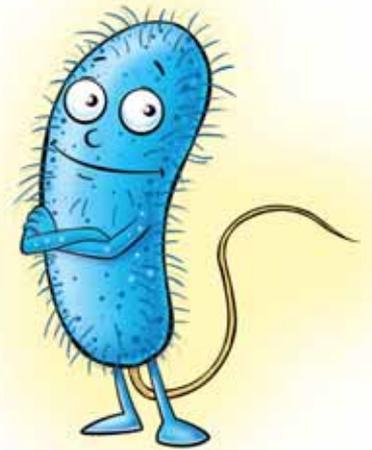
Bacteria are found in every kind of environment—from the bottom of the deepest oceans to the icy cold Antarctic regions. A single teaspoon of topsoil contains more than a billion bacteria. Some of them can live in temperatures above the boiling point of water and in cold that would freeze your blood. In harsh conditions, they become inactive and form endospores. They remain in this state till conditions become favourable for their survival. They eat almost everything—from sugar and starch to sulphur and even iron.

Bacteria thrive in warm climates, where food is abundant, and the weather, pleasant.





It's the cold that bacteria despise! They shrink and cover themselves in a capsule in the cold!



Shapes and sizes

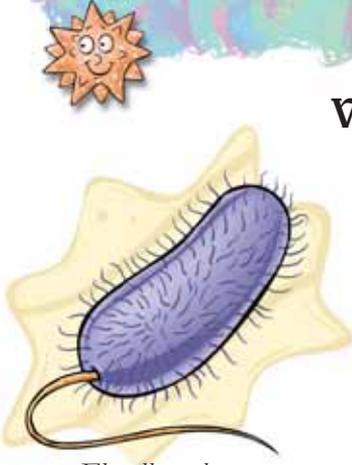
Bacteria may be spherical like an orange, rod-shaped, or spiral like a spring. Some bacteria have whip-like tails (flagella) or hair (cilia), which help them in moving around. They have short hair-like structures called pili (singular: pilus), which help them in their multiplication.

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There are bacteria in your ears. When you wear headphones for one hour, their number increases by seven hundred times.

MAKING A KILLING

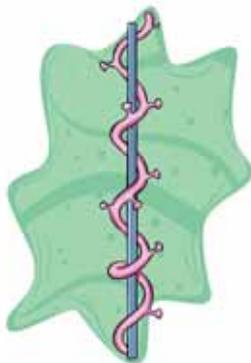


Flagellates have a whip-like flagella on their bodies.

Virus in Latin means “poison”. Viruses are the smallest of the prokaryotic organisms. Some scientists say that viruses are not even living things.

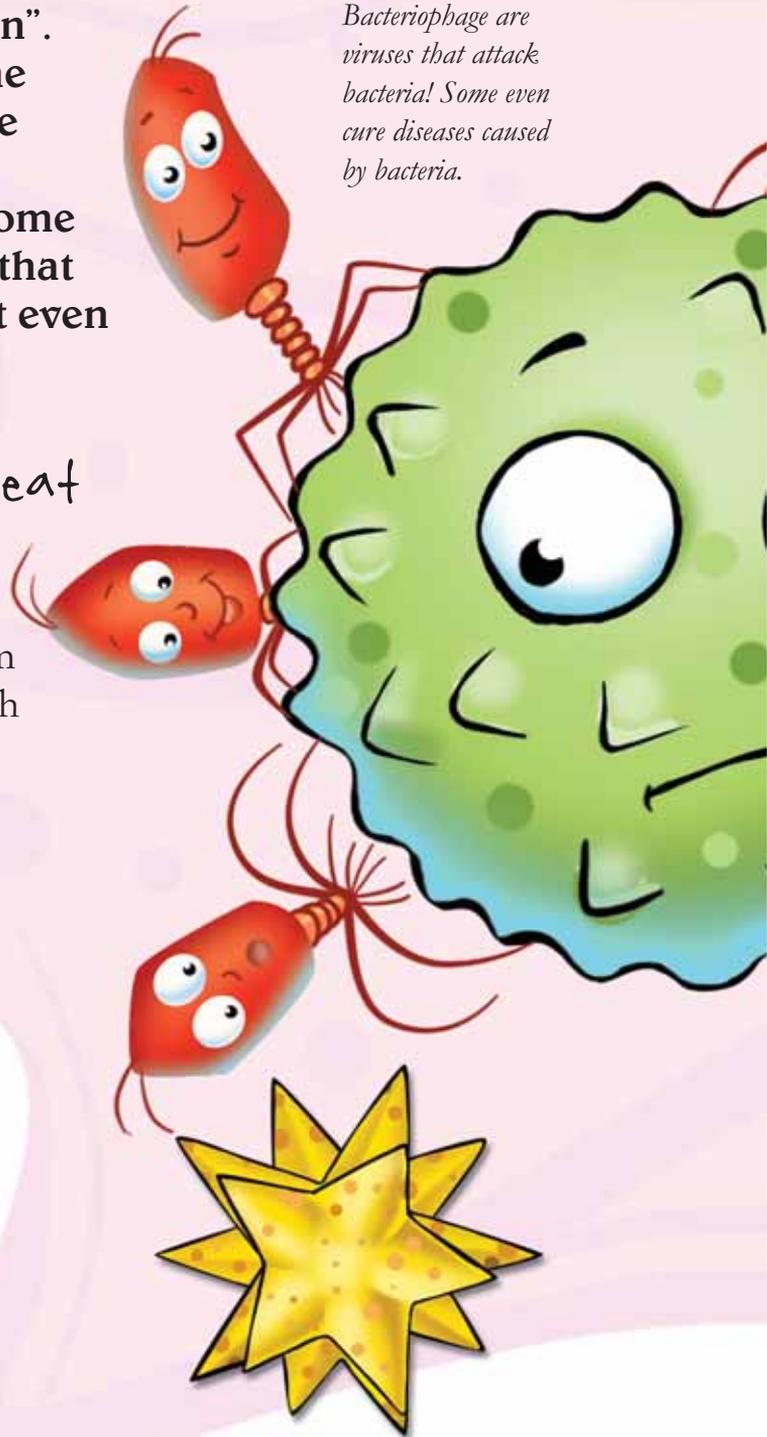
Viruses must eat

All viruses are parasites. They get food and energy from the organism in which they live. Though they reproduce (multiply) like living organisms, they cannot multiply on their own. They need to attack a host organism (another microbe or a plant or an animal) for this purpose.

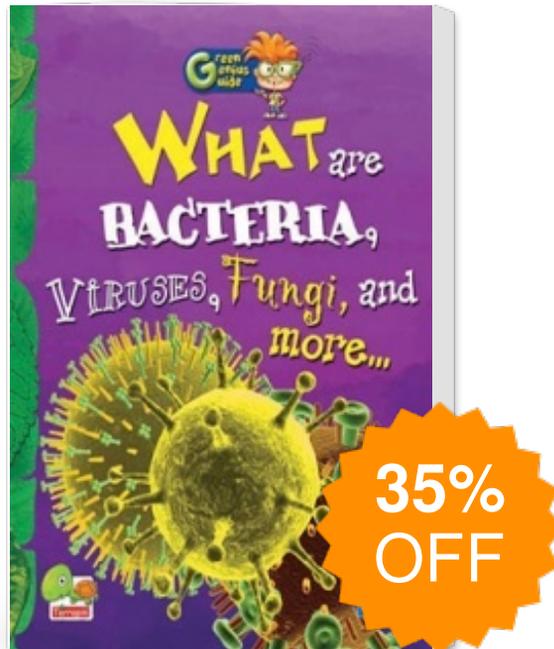


The tobacco mosaic virus is a helical virus.

Bacteriophage are viruses that attack bacteria! Some even cure diseases caused by bacteria.



Green Genius Guide : What are Bacteria, Viruses, Fungi, and more



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