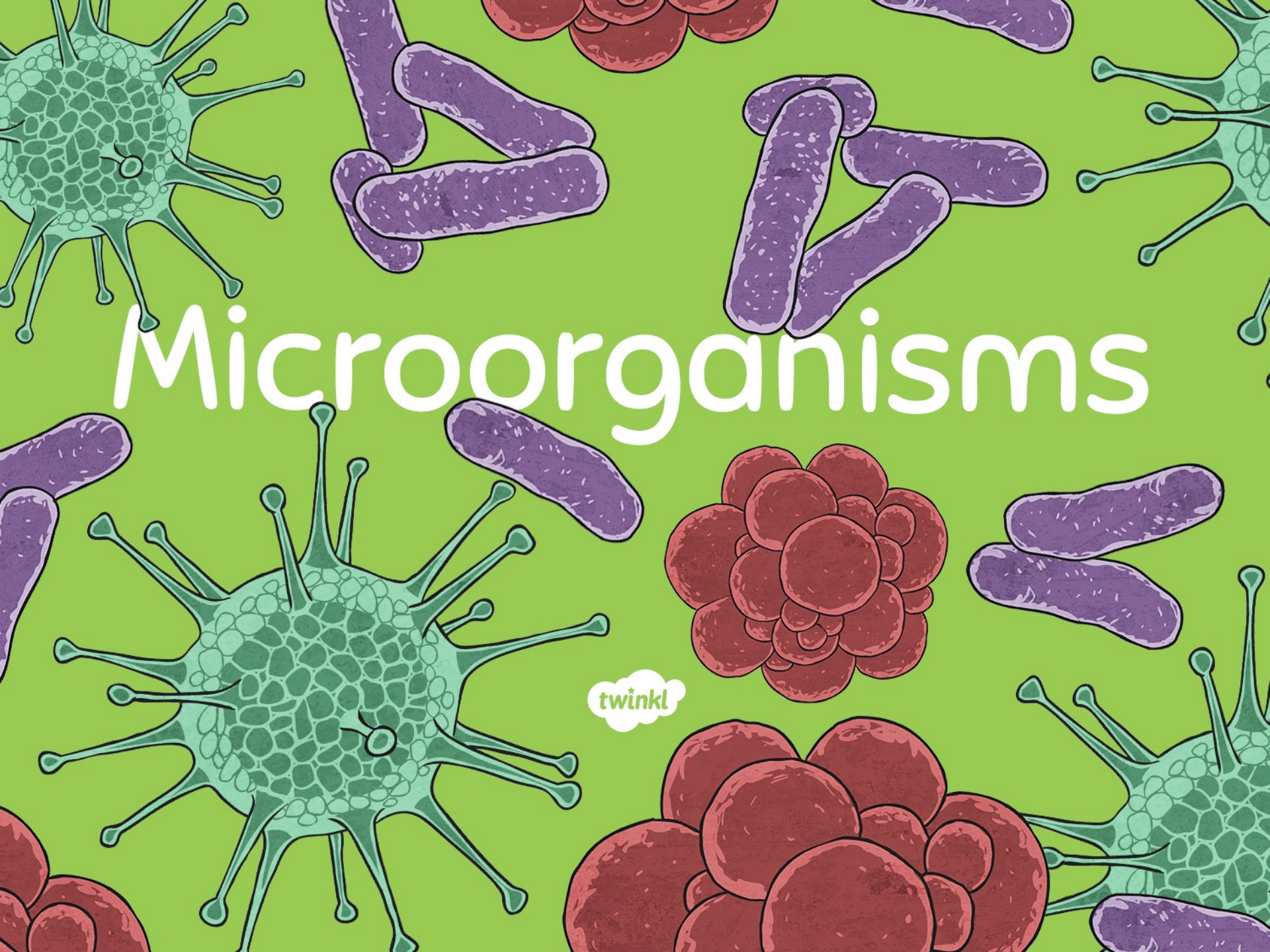
Science

Living Things and Their Habitats


Microorganisms
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Aim

- I can describe and investigate helpful and harmful microorganisms.

Success Criteria

- I can identify types of microorganism.
- I can describe helpful and harmful microorganisms.
- I can investigate harmful microorganisms.

What Are Microorganisms?

Microorganisms are very tiny living things. They are so small that they are not visible to the naked eye, so a microscope is needed to see them.

Microorganisms can be found all around us. They can live on and in our bodies, in the air, in water and on the objects around us. They can be found in almost every habitat on Earth.

What Are Microorganisms?

Some animals and plants are microorganisms. Examples include dust mites and plankton.

A magnified image of a household dust mite.

Plankton are microscopic organisms drifting in fresh or sea water, including plants and animals.

What Are Microorganisms?

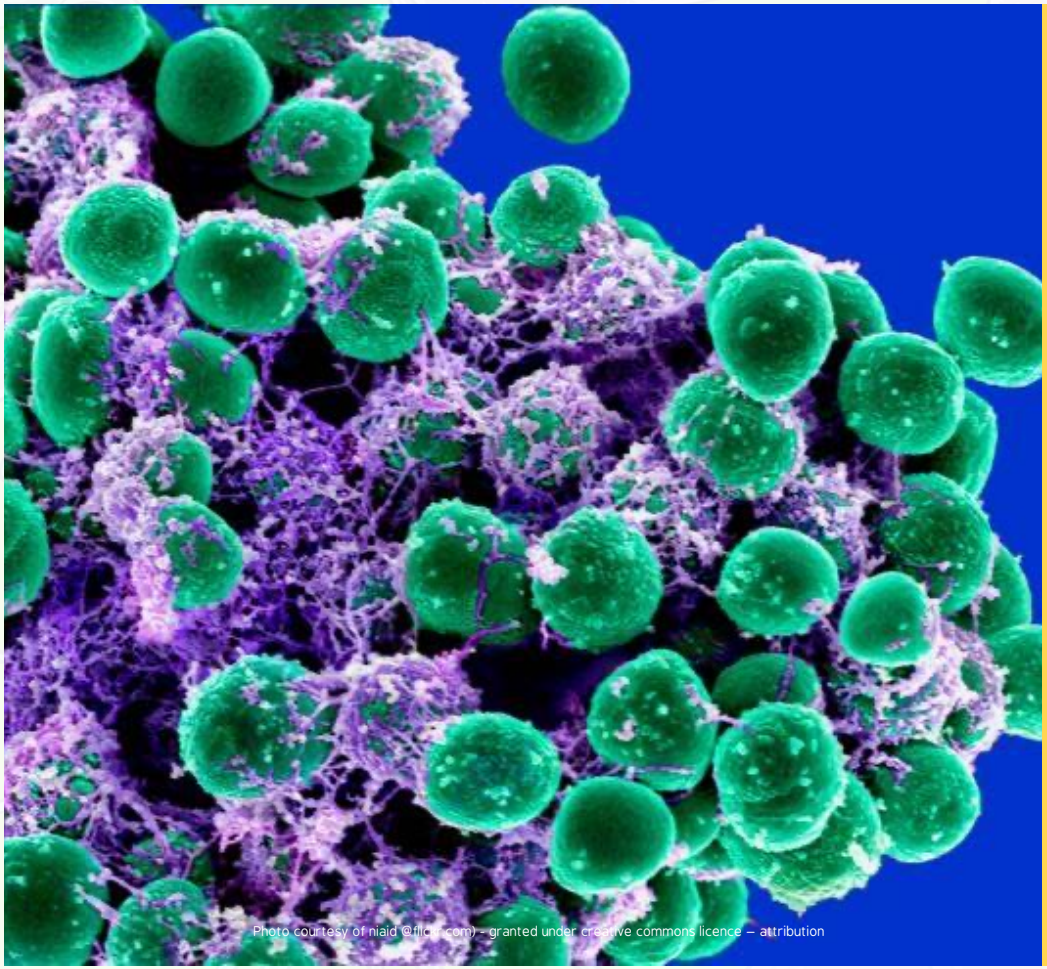
Other microorganisms are fungi, such as mould, yeast and Penicillium.

Mould is the common word for any fungus that grows on food or other materials.

Penicillium fungus is used to make the antibiotic penicillin.

Yeast is a microscopic fungus that can be used to raise bread dough.

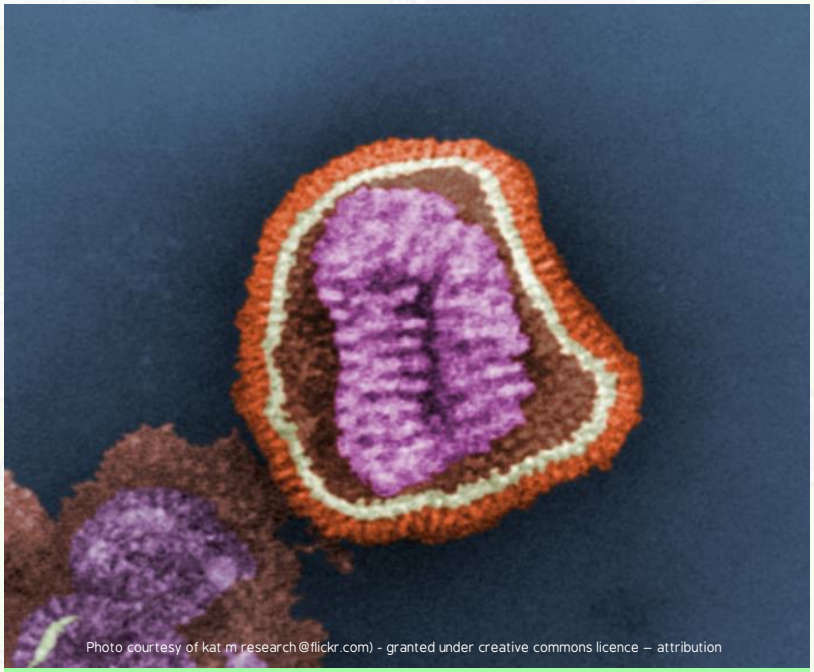
What Are Microorganisms?



Bacteria are single-celled microorganisms. Bacteria are found in diverse habitats all over the Earth.

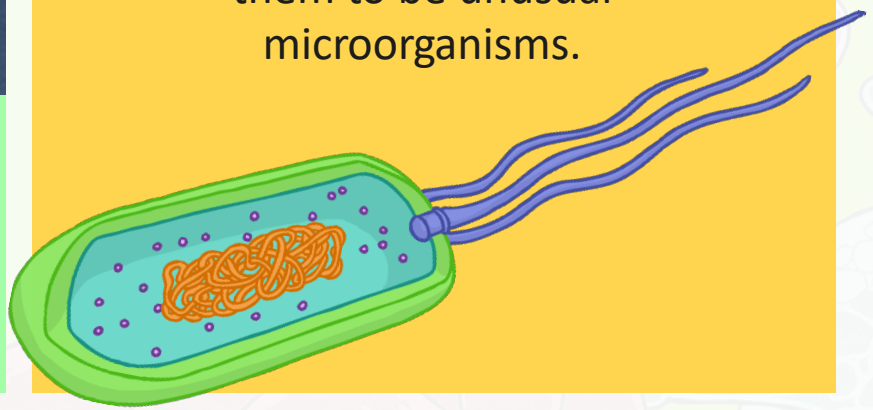
This image was produced by a scanning electron microscope. It shows a clump of staphylococcus epidermidis bacteria that is typically found growing on human skin, usually harmlessly.

What Are Microorganisms?



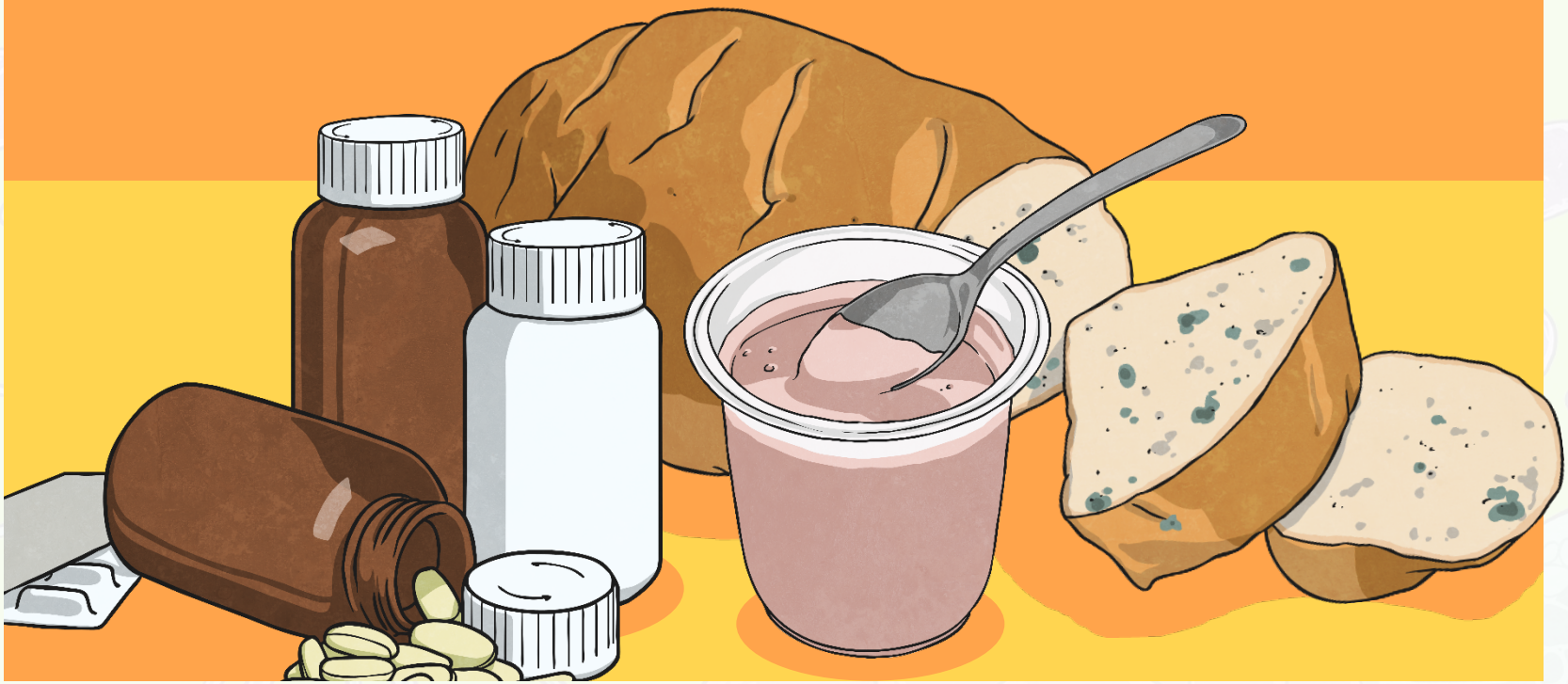
This image is a scanning electron micrograph of an influenza virus particle. This microorganism could cause you to have the flu.

Sometimes viruses are called microorganisms, but they are not really alive. They are infectious agents that can replicate only inside the cells of living things. Scientists disagree on whether or not to call viruses microorganisms. In this lesson we will consider them to be unusual microorganisms.



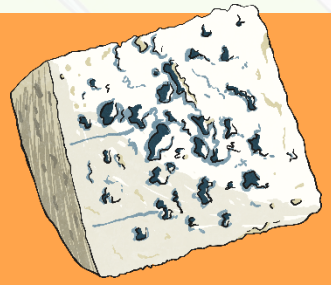
Helpful or Harmful?

Some microorganisms can be helpful in certain situations. Others can be harmful, and their spread needs to be controlled or contained.



Helpful or Harmful?

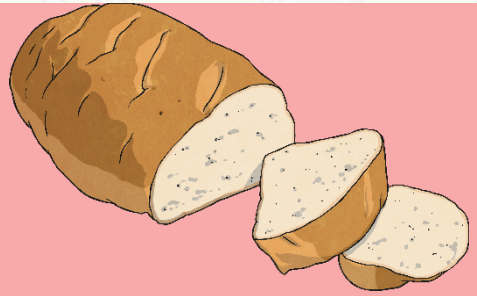
These examples show some of the helpful uses of microorganisms.



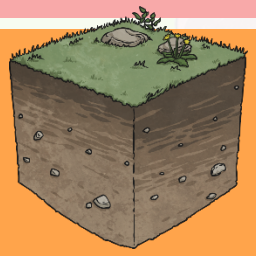
Bacteria are used to ferment milk as part of the cheese making process.

Yeast ferments the carbohydrates found in grapes to make alcoholic wine.

Yoghurt is made using milk that has been soured by bacteria.



Yeast is added to bread dough to make it rise.

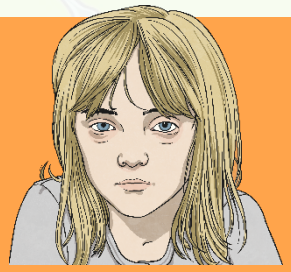


Microorganisms feed on leaves, plants and other matter, decomposing it and creating compost.

Antibiotics are used to kill bacteria that cause infections. They are created from fungi such as Penicillium.

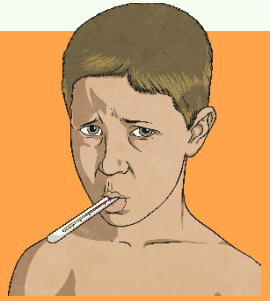
Helpful or Harmful?

These examples show how microorganisms can be harmful to us. Harmful microorganisms are often called germs.



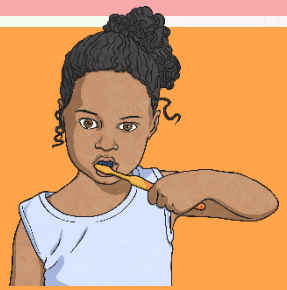
Food poisoning can be caused by bacteria that grow on uncooked or undercooked food.

Chicken pox is caused by a virus. It spreads very easily.



The influenza virus causes flu symptoms, such as a headache and fever.

Athlete's foot is caused by a fungus that grows between the toes.



Plaque on our teeth is formed when bacteria in the mouth combine with small food particles.

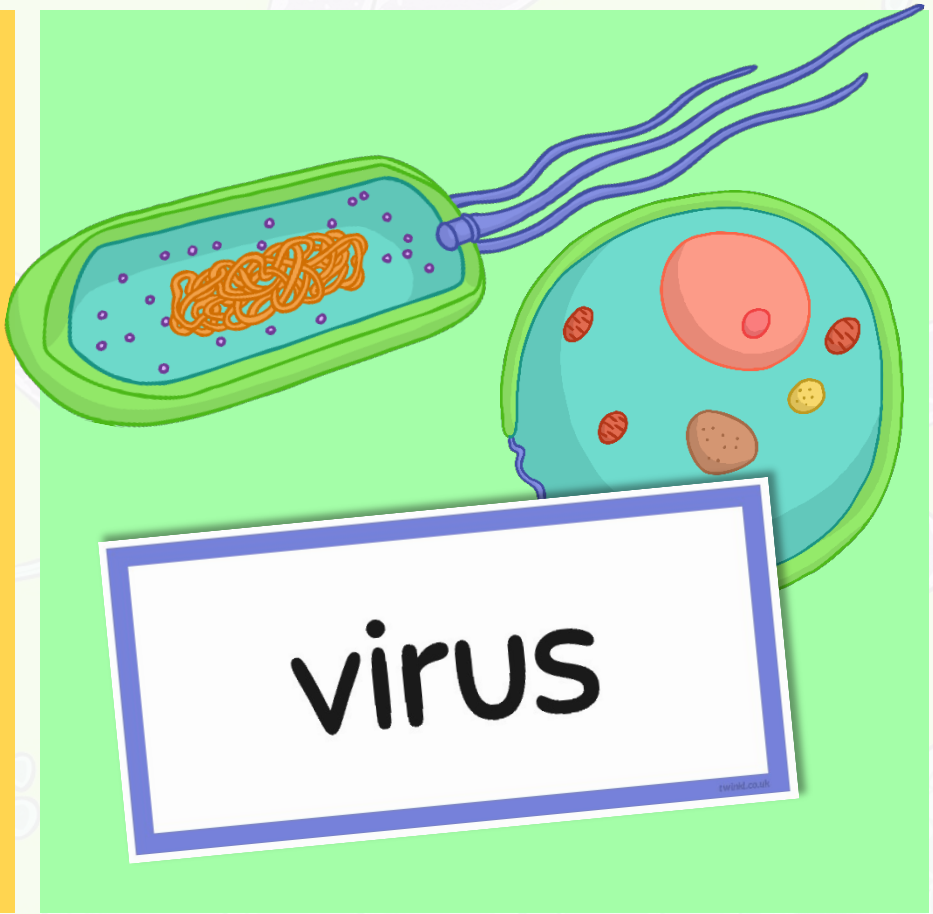
The fungi that grow on food are called moulds. Mould can make you ill if you eat it.

Describing Helpful and Harmful Microorganisms

Around your classroom you will see the names of different types of microorganisms.

Your teacher will show you a card showing an example of a helpful or harmful microorganism.

You will have 10 seconds to think about the type of microorganism on each card. Then you should move to stand under the name of the microorganism shown on the card.



What Makes Mould Grow?

Mould is the name for the types of fungi that grow on food. What do you think makes mould grow?

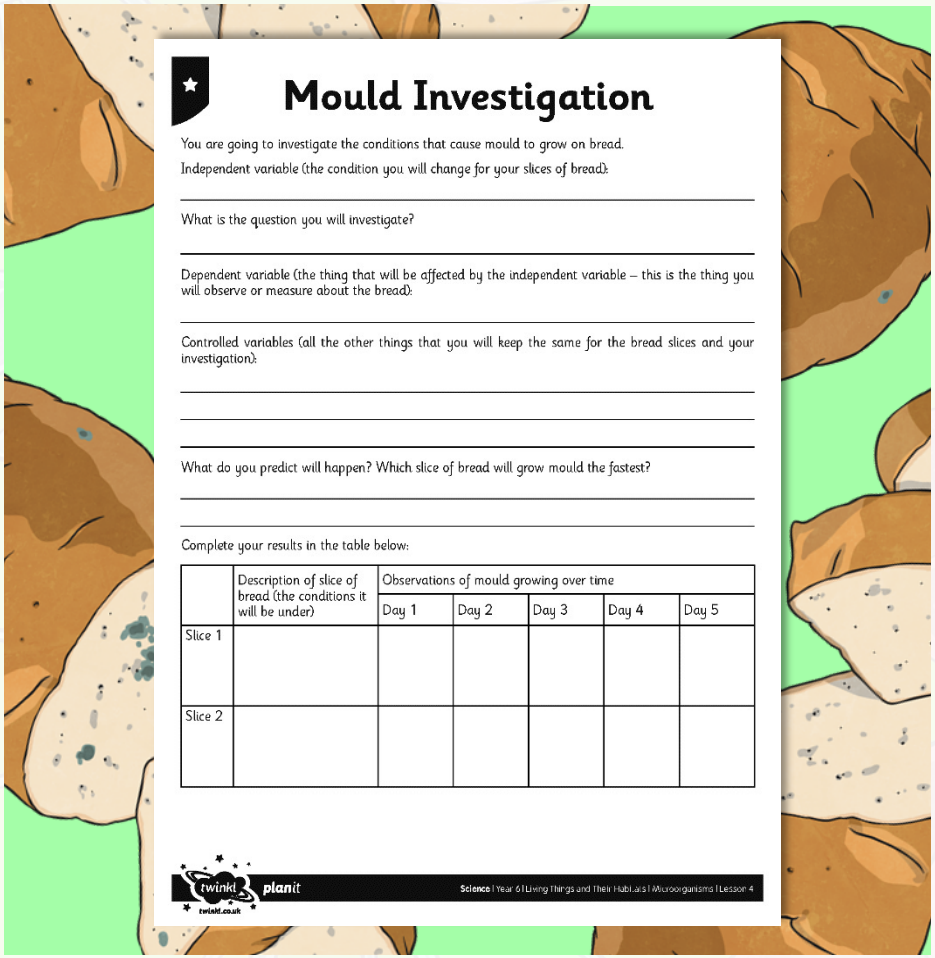
It is useful to know what makes mould grow so that we can stop it happening as fast, and keep our food fresher for longer.

You will work with a partner to investigate the conditions which cause mould to grow.

You will use 3 slices of bread and 3 clear plastic bags. You will place each slice of bread in a plastic bag and then decide which one variable you want to change.

For example, you may put one slice of bread in a very light place and one in a very dark place. The third slice of bread will be a control that stays in the plastic bag in the normal classroom environment. Or one may go in a very cold place such as the fridge or freezer and the other a very warm place such as over a radiator. The control bag will again just stay in the normal warmth of the classroom environment.

What Makes Mould Grow?



Mould Investigation

You are going to investigate the conditions that cause mould to grow on bread.

Independent variable (the condition you will change for your slices of bread):

What is the question you will investigate?

Dependent variable (the thing that will be affected by the independent variable – this is the thing you will observe or measure about the bread):

Controlled variables (all the other things that you will keep the same for the bread slices and your investigation):

What do you predict will happen? Which slice of bread will grow mould the fastest?

Complete your results in the table below:

	Description of slice of bread (the conditions it will be under)	Observations of mould growing over time				
		Day 1	Day 2	Day 3	Day 4	Day 5
Slice 1						
Slice 2						

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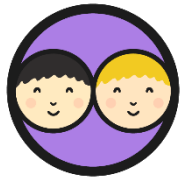
Independent variable
The condition you will change for your slices of bread.

Dependent variable
The thing that will be affected by the independent variable – this is the thing you will observe or measure about the bread.

Controlled variables
All the other things that you will keep the same for the bread slices and your investigation.

What Makes Mould Grow?

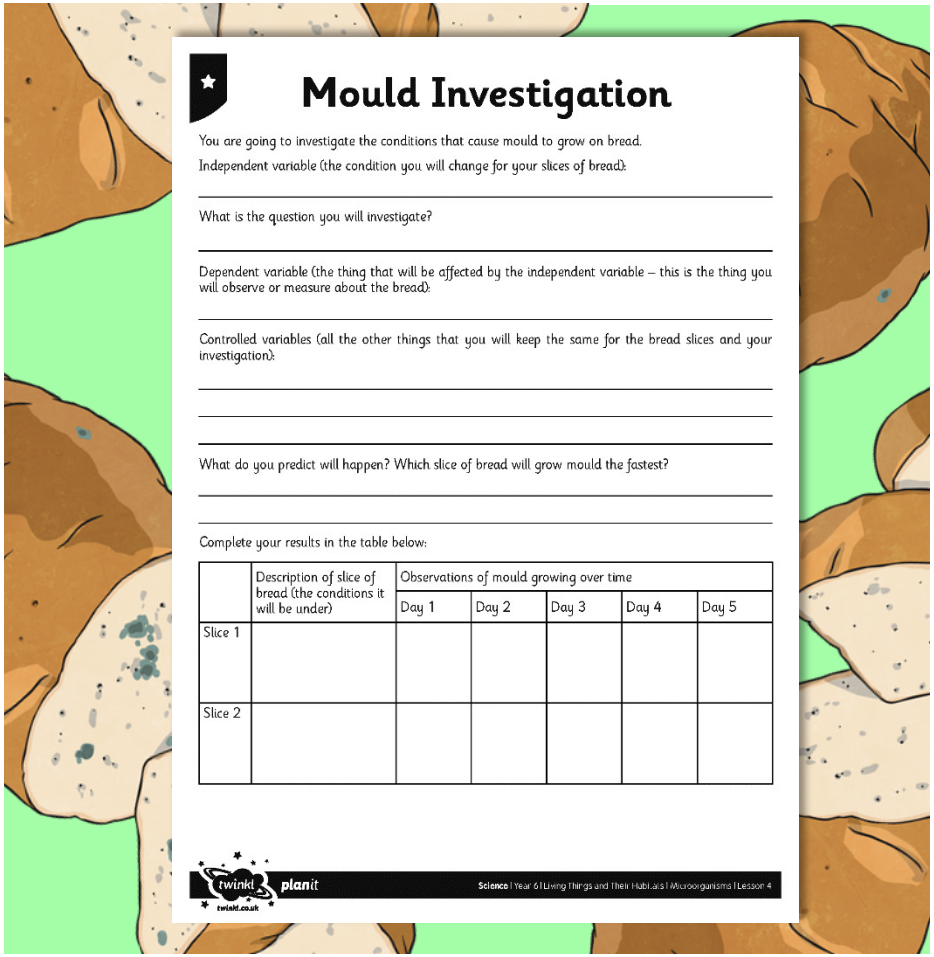


Decide with your partner which variable you will change. Use this variable to construct your question.

For example, if you are changing the dampness of the bread, your question may be: "Does damp bread go mouldy faster than dry bread?"

Complete the Mould Investigation Activity Sheet and set up your investigation.

You will observe the bread over a week and collect your results in the next lesson.



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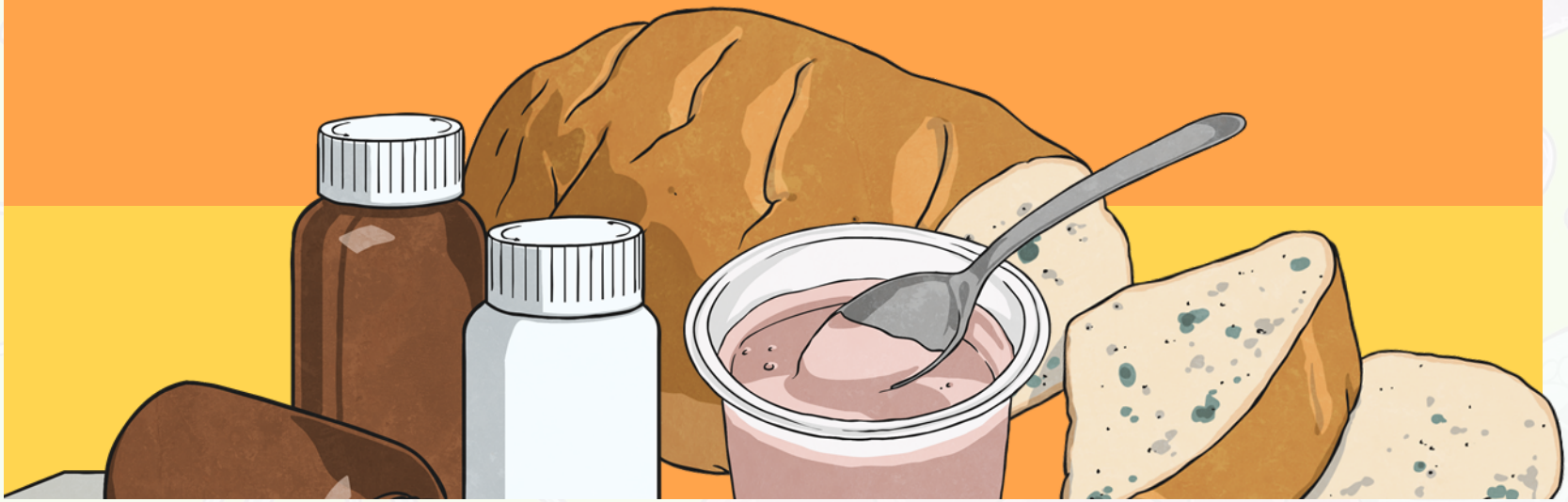
Mixed up Microorganisms

These names of microorganisms have been mixed up! Can you and your talk partner work out what they should say?

sayet	lodum	risuv

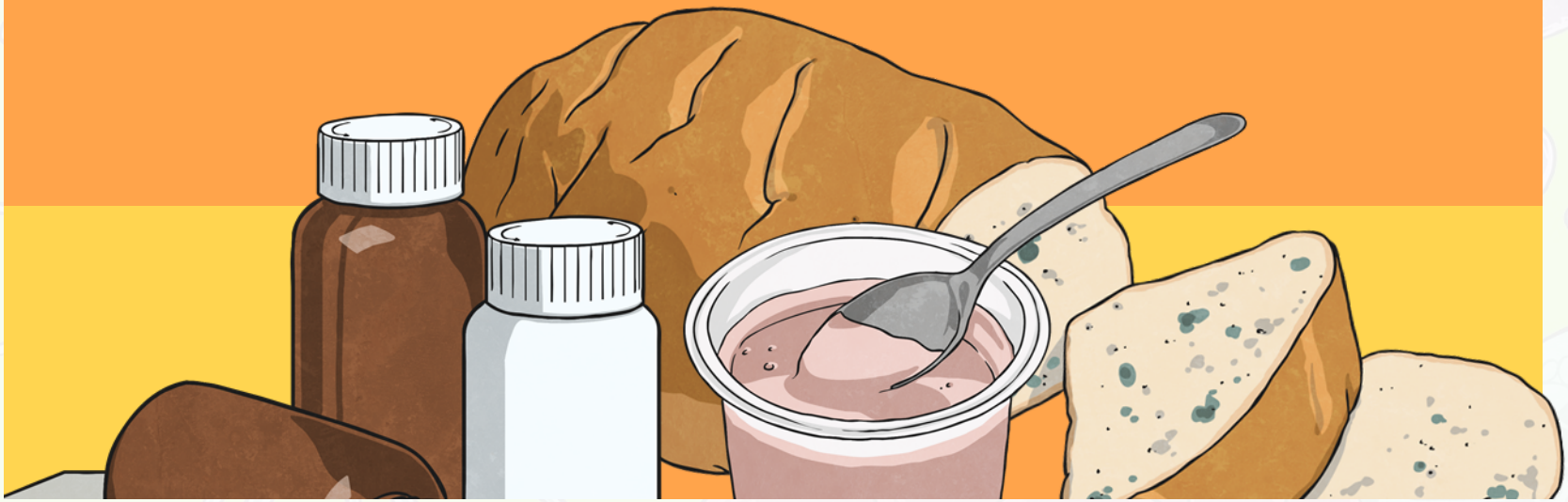


Mixed up Microorganisms

How did you do?

yeast	mould	virus

What does each microorganism do?



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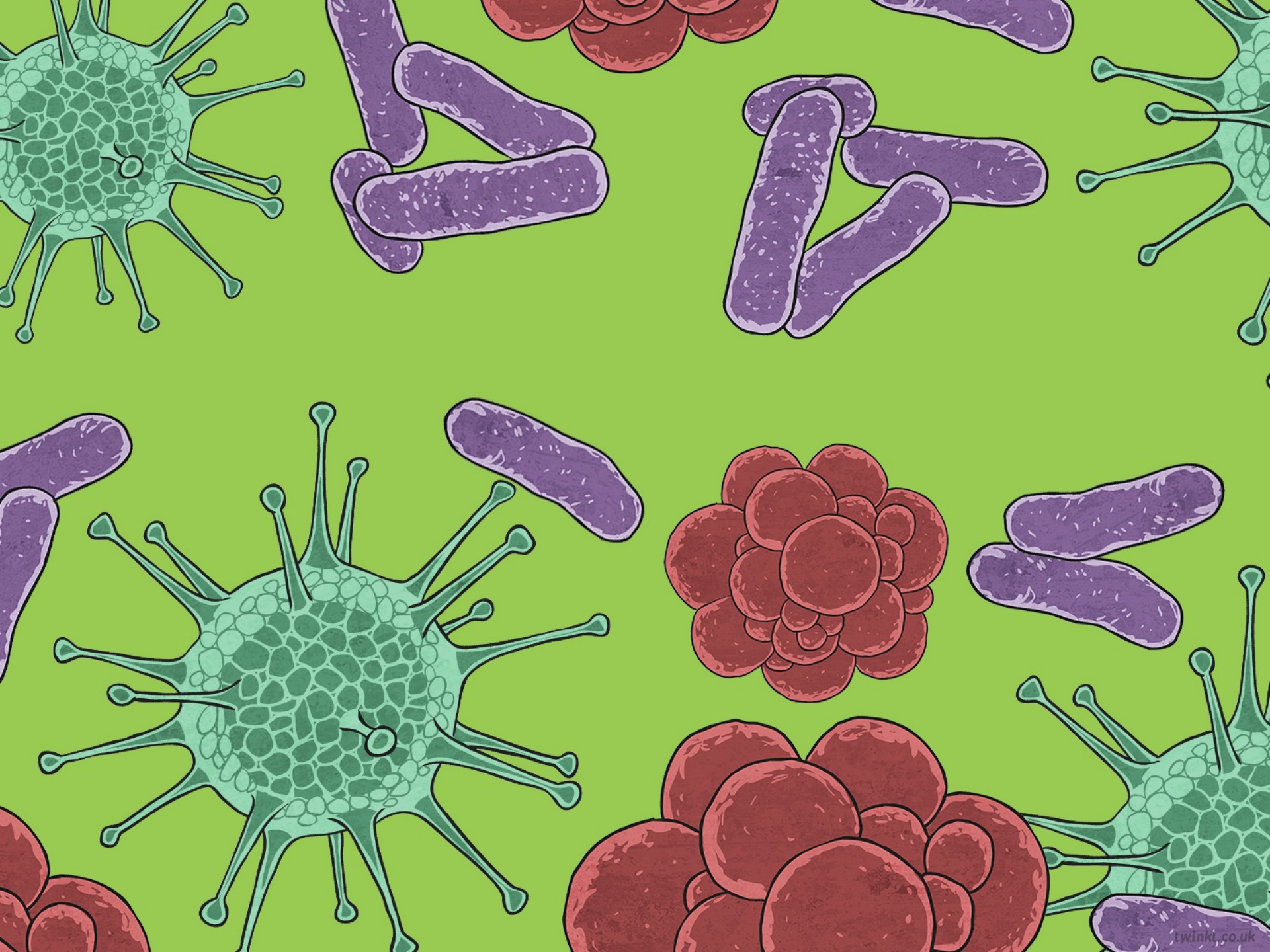
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