

Cambridge
Natural
Science
5
Pupil's Book

WHAT IS NATURAL SCIENCE?



Science helps us understand how the world works. It helps us solve problems and can make life easier.

2



1



How are the people in the photos using science?



9



Look around you. Where is science being used?

8



Which photo is being described?
Listen and guess.



Do you ever wonder how something works, why something happens or how changing something would make a difference? Scientists use the **scientific method** to understand the world around us. It always starts with a **question**.

I wonder why / how ...?

How does ... work?

What would happen if ...?



Scientists then decide how to answer the question by thinking of an **experiment**. Before carrying out the experiment, they guess what will happen. This guess is called a **prediction** or a **hypothesis**.



Scientists draw **conclusions** from their observations and the **results** of their experiments. These conclusions help us to understand the world we live in.



1

LIVING THINGS

Look and discuss...

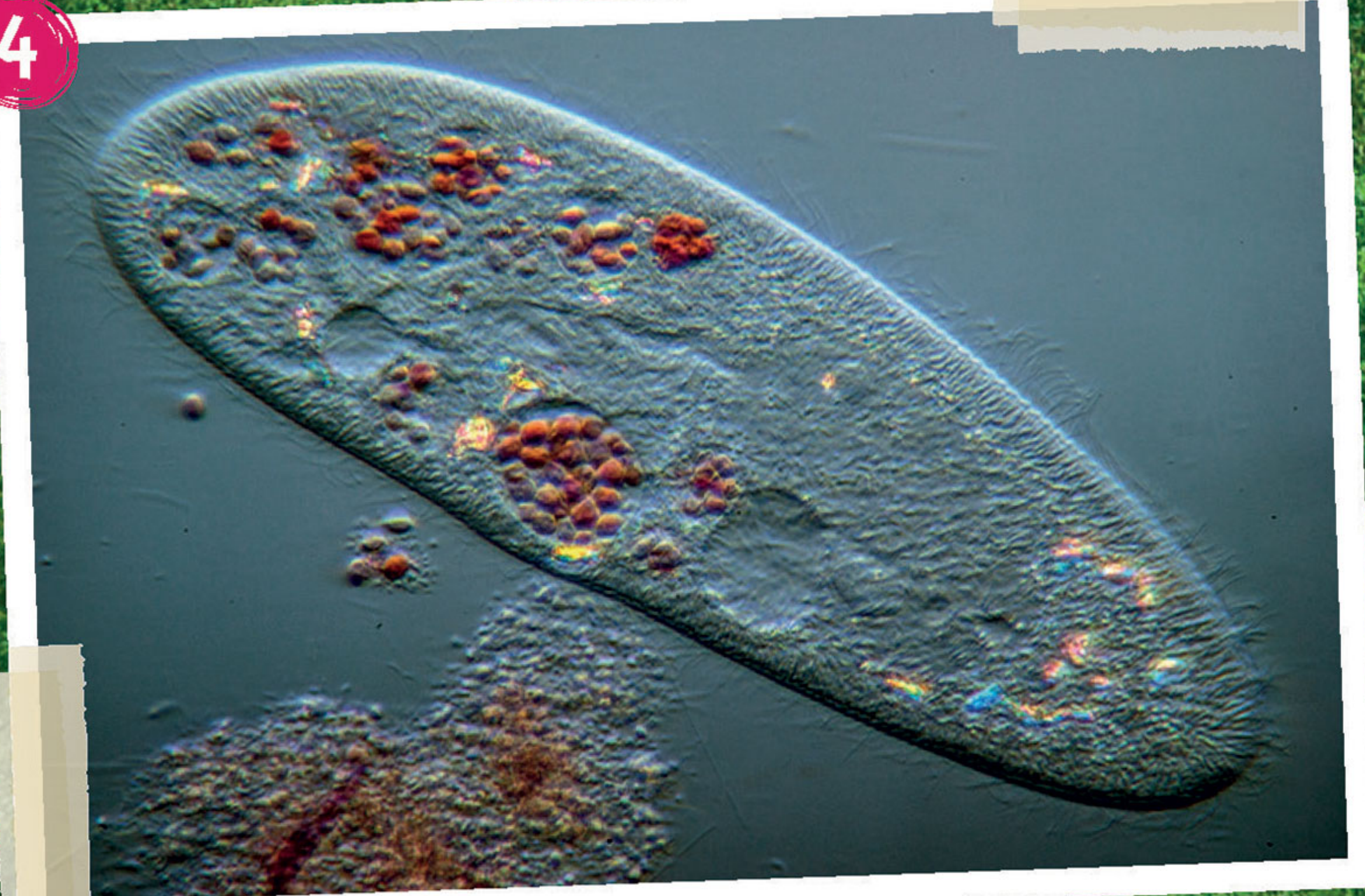
Which kingdom is each organism from?
Which kingdom is missing?

Life has done extremely well here on Earth. Scientists estimate several million species live on our planet!

I think this organism belongs to ...



Yes, I think so, too. / I'm not sure about that.



Plant 1, 7; Animal 2, 8, 6;
Fungus 3, 5; Protist 4, 6;
missing kingdom: Monera

1



3



5



Song

Cells, tissues, organs, systems

6



7



8



Can you name the seven
characteristics of living things?

DOCUMENTARY

Living or non-living?

Explore

Make a *Book of Life*. You will:

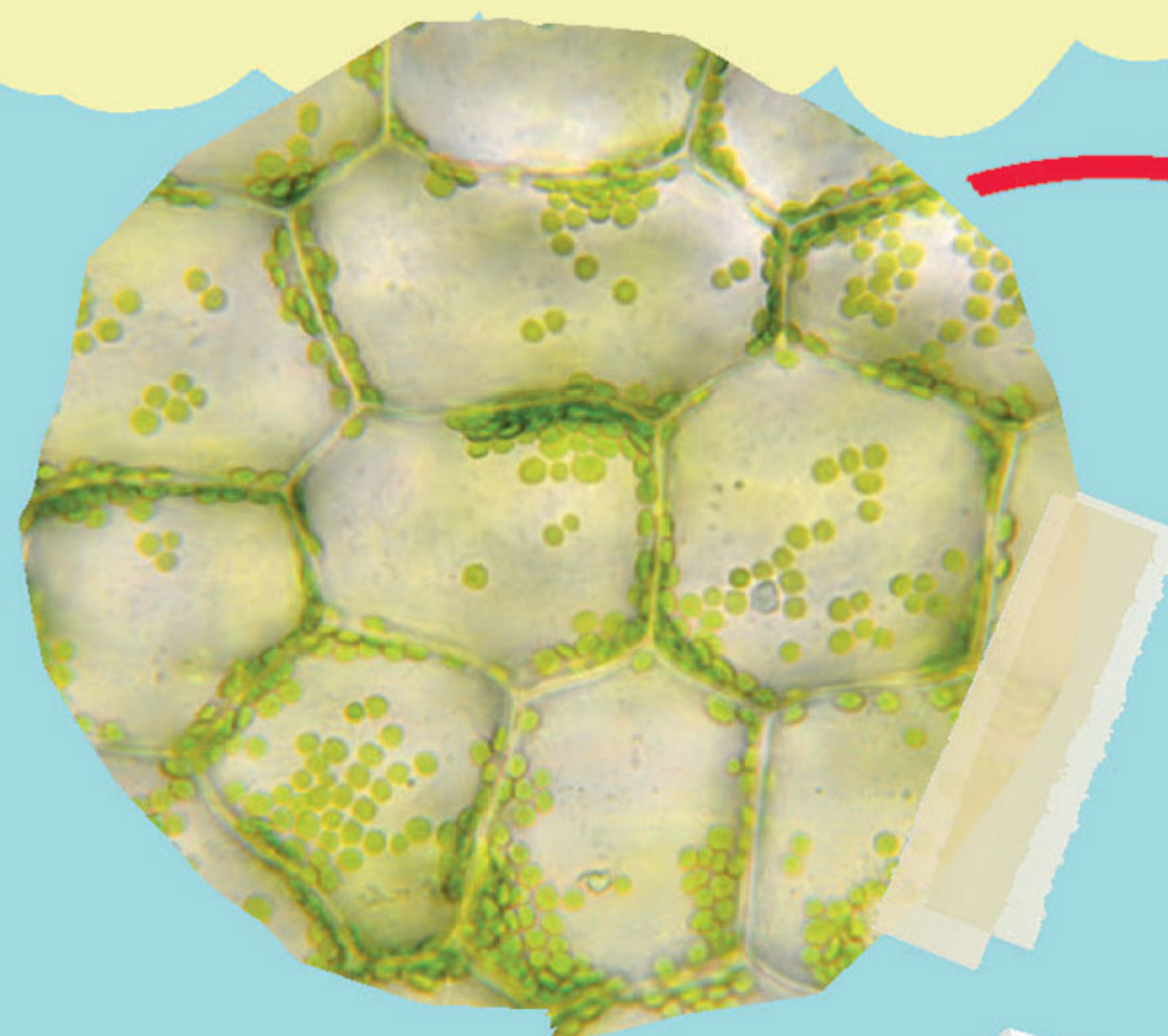
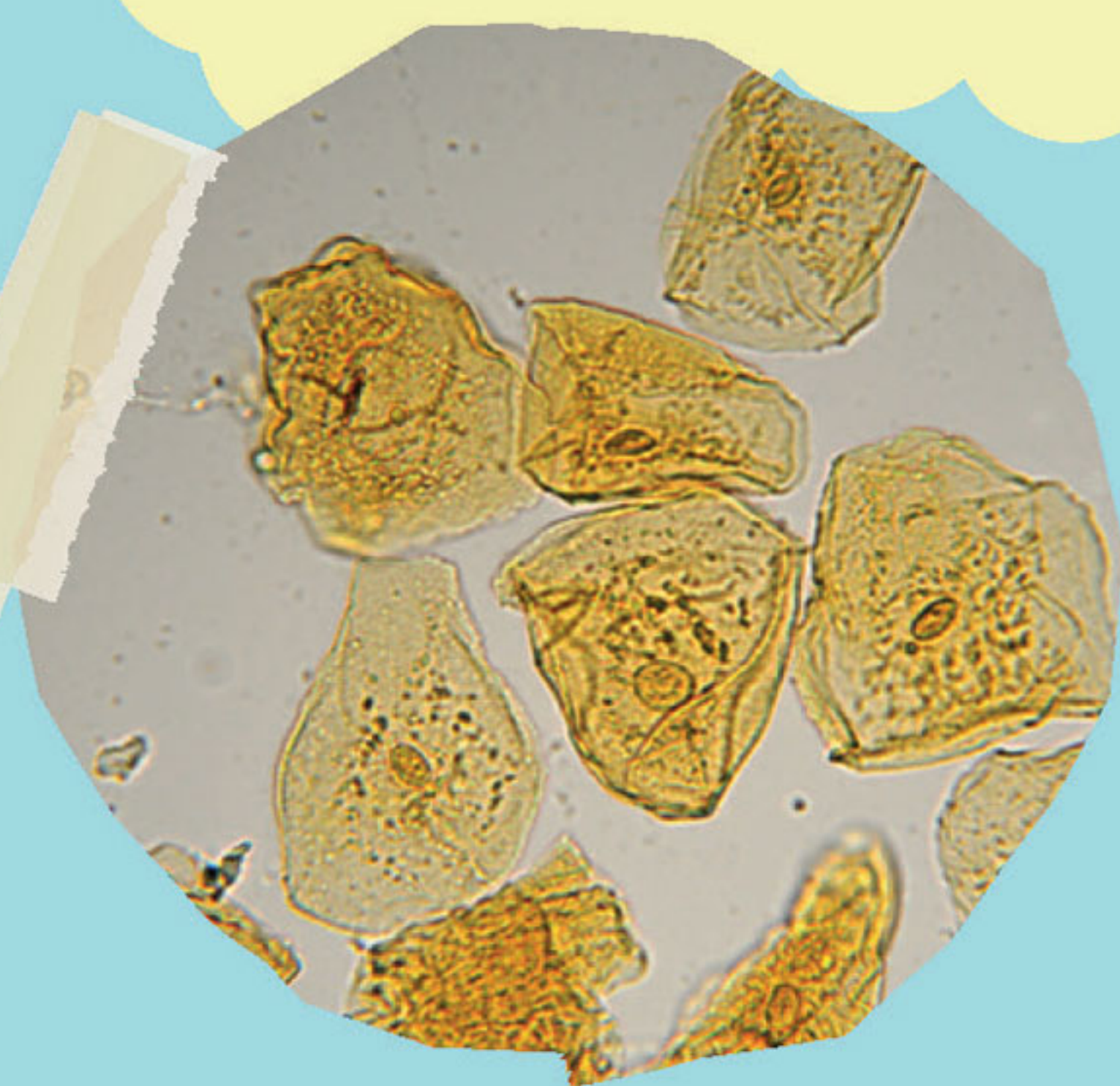
- learn about different types of cells.
- research information and take notes about an interesting organism.
- organise facts and share information with others.
- present the information you have collected.

WHAT ARE CELLS MADE UP OF?

All living things are made up of **cells**. Although we can only see them with a microscope, they are very important.

Discover...

what the jelly-like substance inside a cell is called.



The cells on the far left are human cheek cells. Can you guess what type of organism these cells belong to?

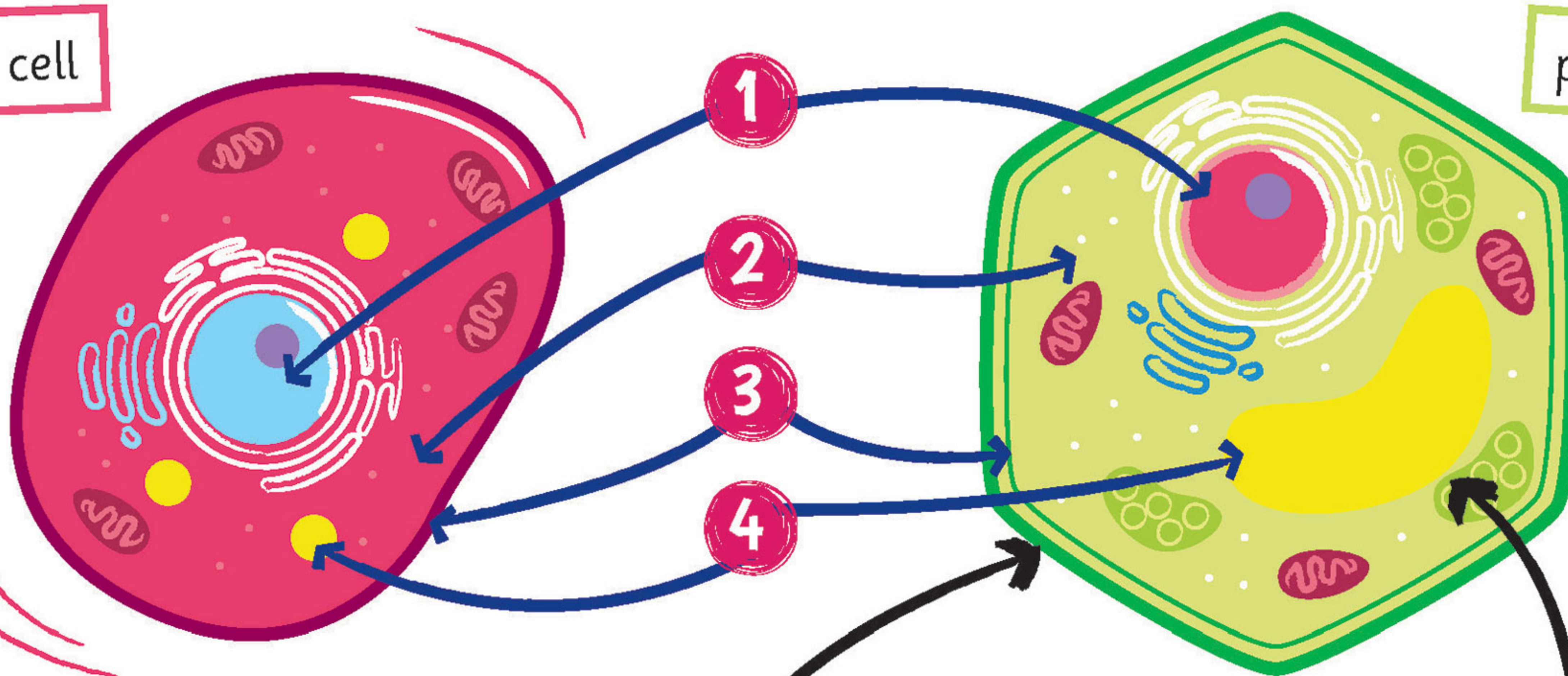
Cells may look very different from one another, but they have got several similar characteristics and structures.

1 Nucleus: controls what happens inside the cell and contains all the genetic information.

2 Cytoplasm: jelly-like substance which helps give the cell shape and is where all the cell structures are found.

animal cell

plant cell



3 Cell membrane: controls the movement of substances in and out of cells.

Cell wall: gives structural support to the cell.

4 Vacuole: a storage space for the cell.

Chloroplasts: help the plant make food from sunlight and water.

Find out about other structures within a cell. What jobs do they do?

WHY HAVE PLANT CELLS GOT A RIGID WALL?

Find out more...

Discover...

the differences between plant and animal cells.



Background: There are some similar structures in animal and plant cells, but only plant cells have got a cell wall.

Hypothesis: Why have plants cells got a cell wall? Write your hypothesis in your notebook.

Materials: eight balloons, four shoe boxes

Step 1: Blow up the balloons (not too big). Put one balloon in each shoe box and leave the rest out.

Step 2: Build two towers, one using only the balloons and the other using the shoe boxes with balloons inside.

Conclusion: What is the function of a plant cell wall?

Reflect 1

What do the balloons represent?
What do the shoe boxes represent?

Reflect 2

Which tower is easiest to build?

Animal cells haven't got a cell wall. Compare the human body with a tree. What has the human body got to help with support that a tree hasn't?

Cell walls provide ...

The human body has got ... ,
whereas a tree ...

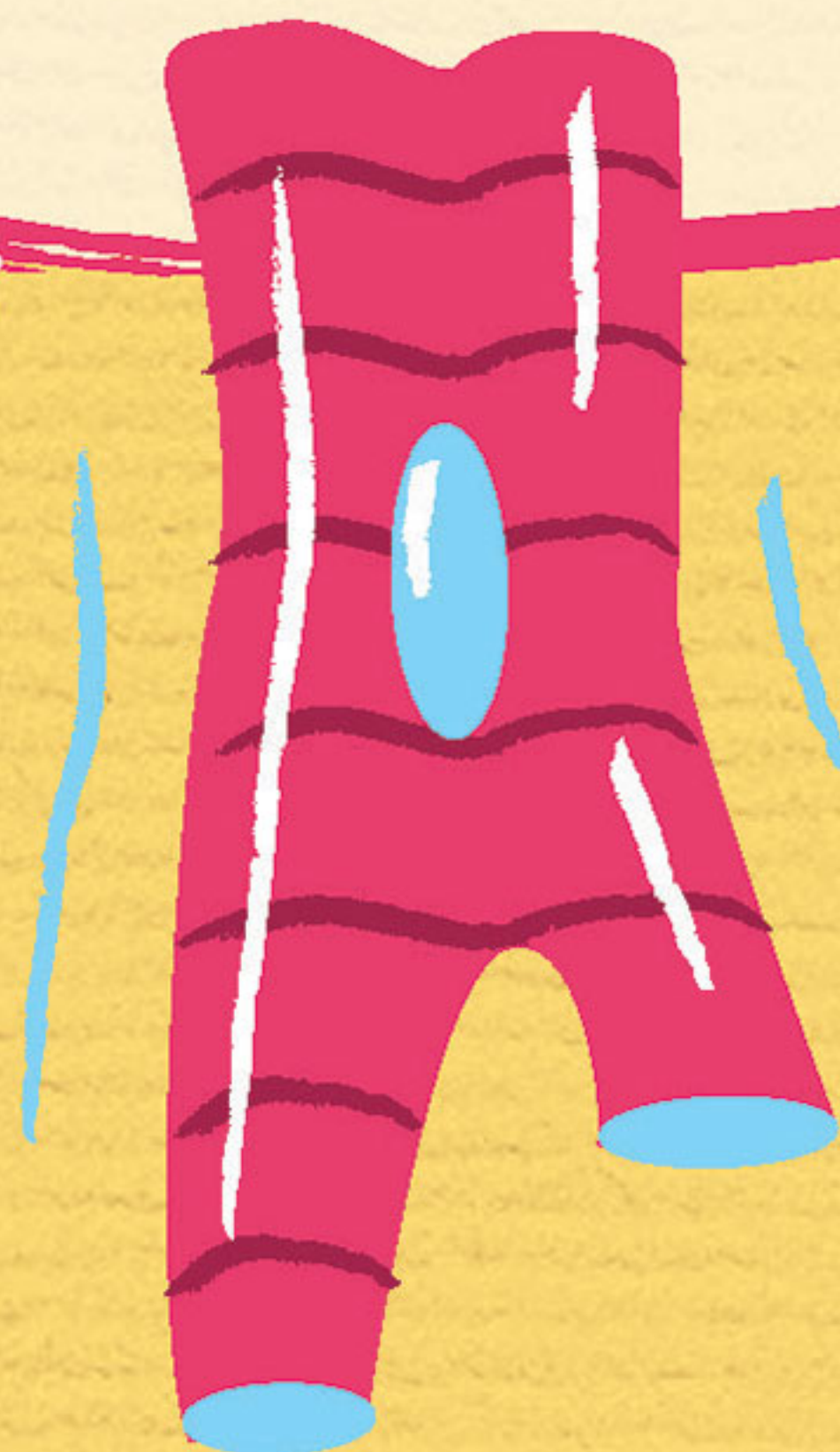
HOW DO CELLS COMBINE TO MAKE BIGGER THINGS?

Discover...

the structural hierarchy of an organism.

Cells are the structural units of life, but their function doesn't stop there!

cell



system

Organs work together to make **systems**.



Can you name any of the systems in the human body?

tissue

Most cells work with other similar cells to make layers, known as **tissues**. For example, individual muscle cells combine to form muscle tissue.



What organs are in a plant?

organ

Many tissues work together to make **organs**, like the heart, skin or stomach. Each organ has got a specific job.



What is the biggest muscle in the human body?



organism

All the systems work together to ensure that we function properly as an **organism**. Other organisms, such as animals, plants and fungi have got the same organisation. Only the basic structural units – the cells – are different from ours.

Some organisms, such as bacteria, are **unicellular**. They have got one cell that does everything.

What do you call an organism with many cells?



STAGE 1

- Choose an interesting organism.
- Find out if it is unicellular or multicellular. Investigate what types of cells, tissues, organs or systems it has got.
- Draw the organism on a piece of paper and add labels.

