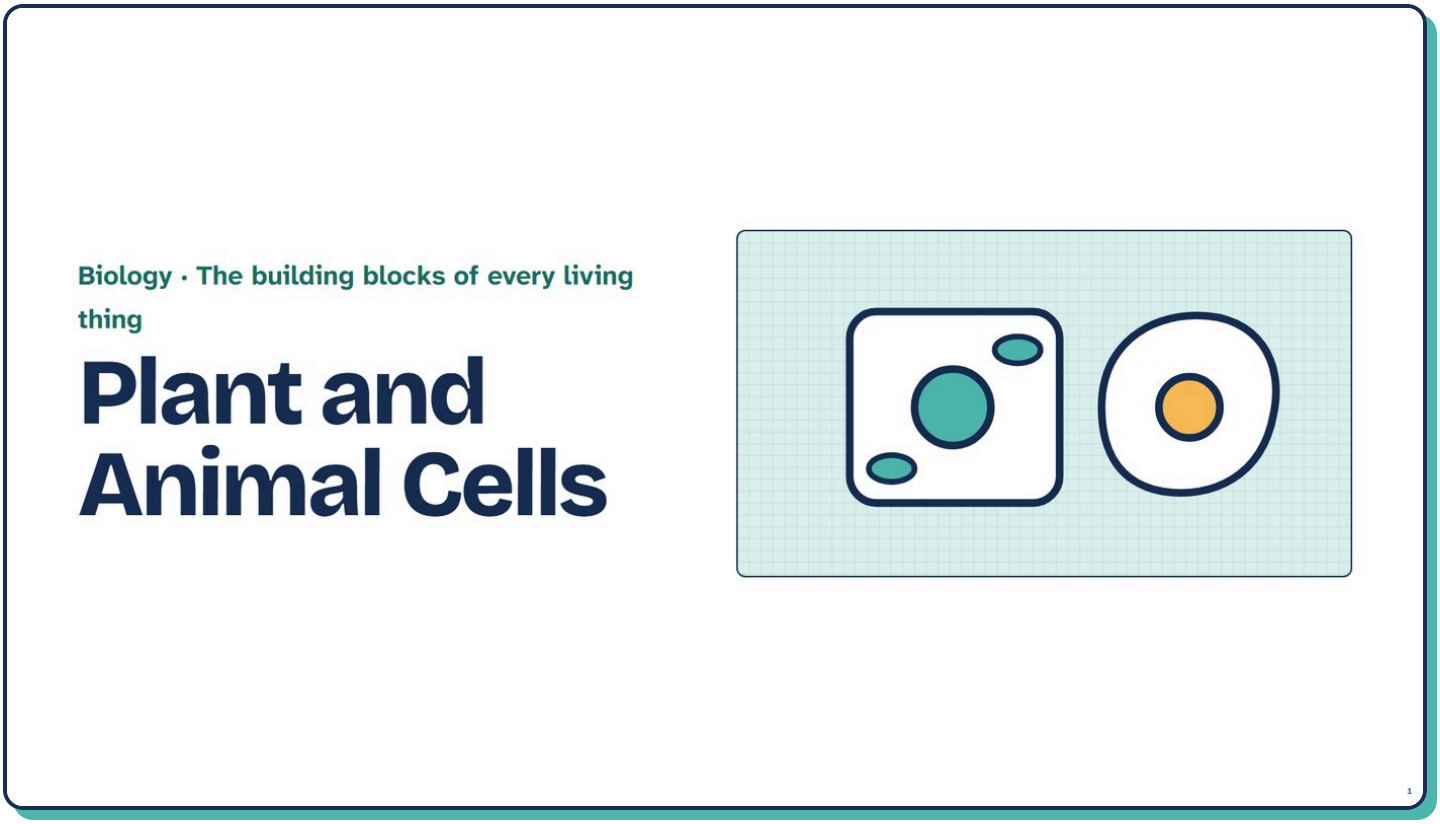
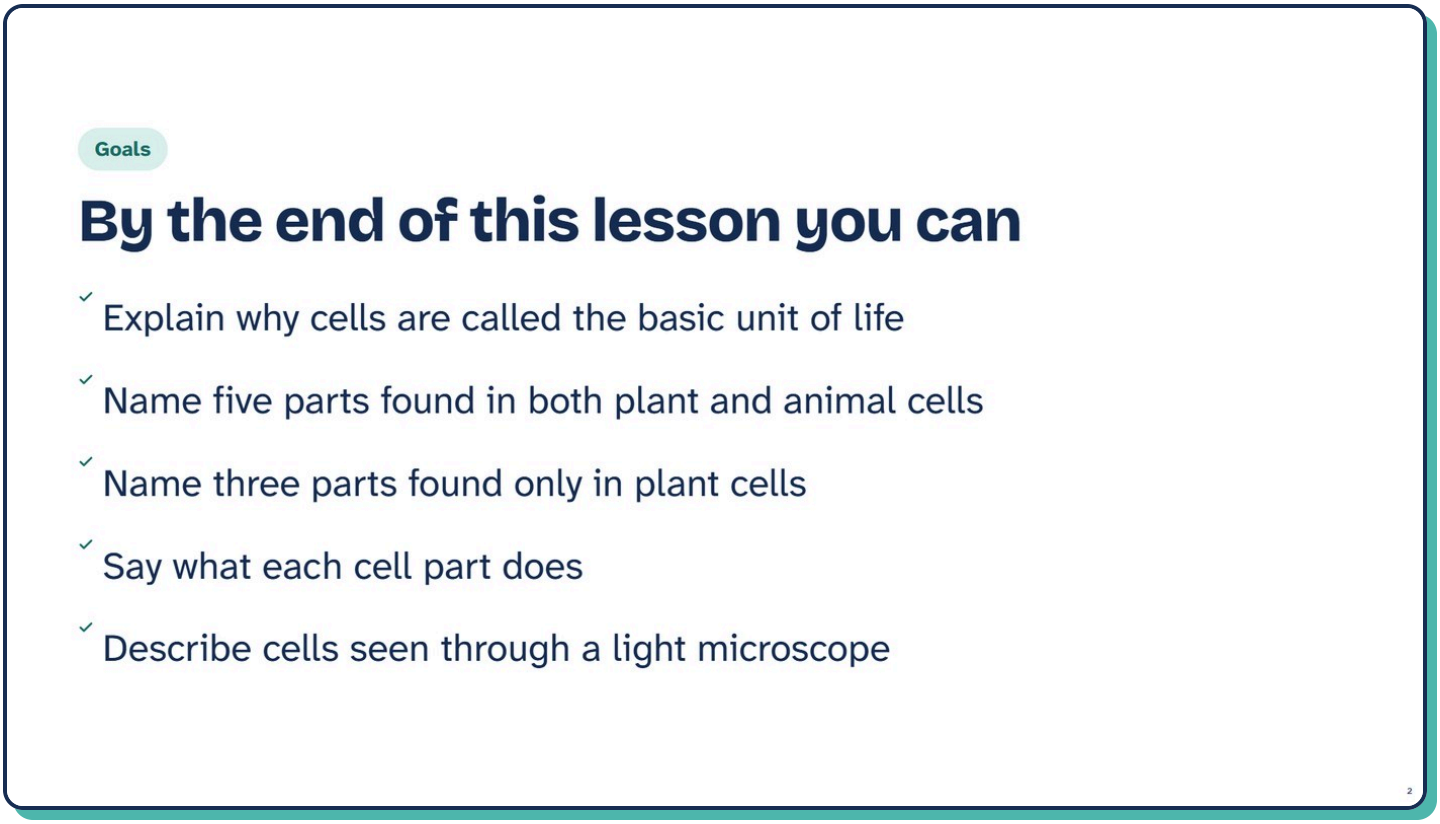


Plant and Animal Cells

Teacher notes

Hold up a leaf and point to your own hand. Ask: what do these two things have in common? Collect ideas, then reveal that both are built from cells. Today we find out what is inside a cell and why plant cells and animal cells are not quite the same.

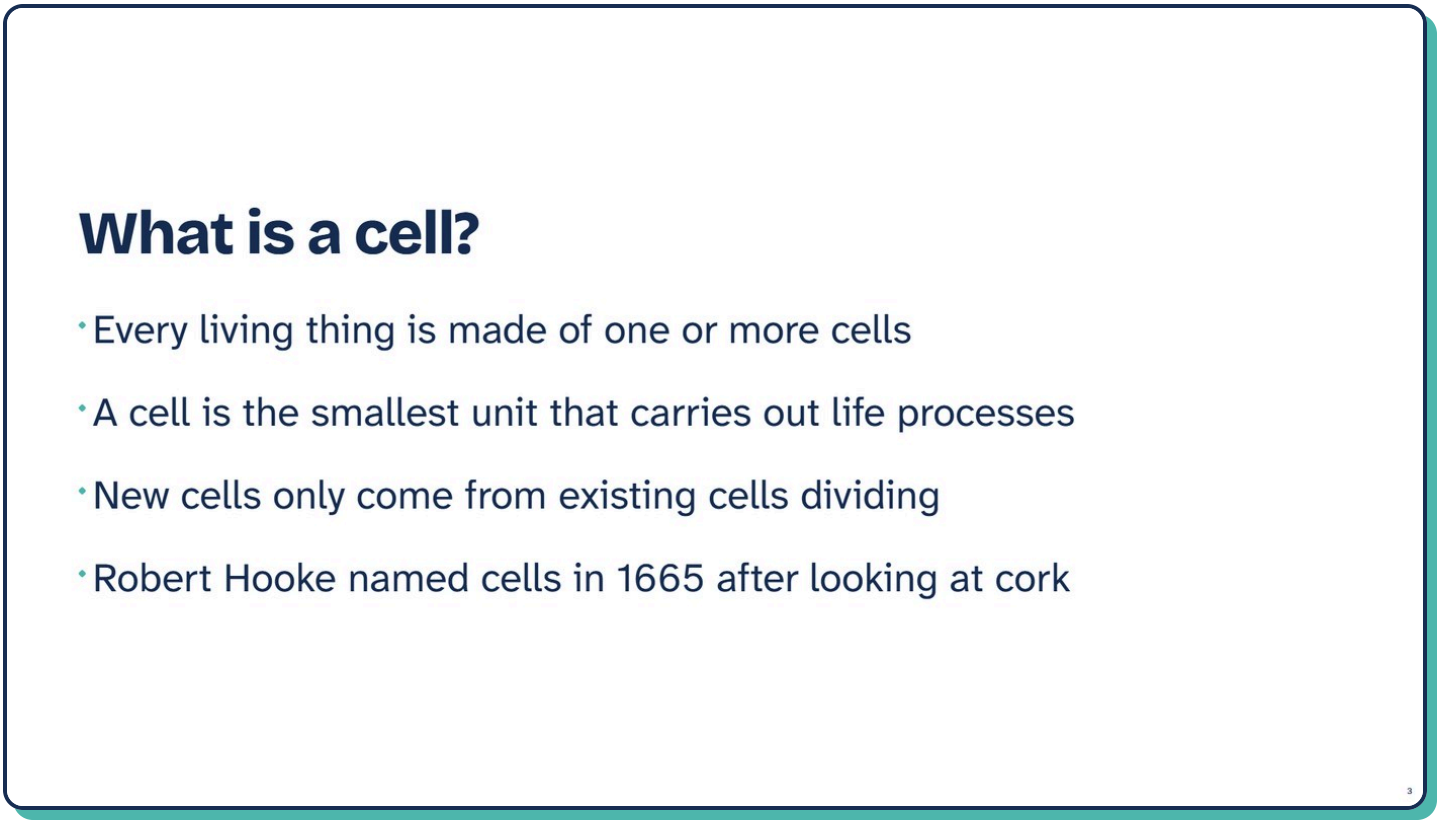
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By the end of this lesson you can

Teacher notes

Read the objectives aloud. Tell students to draw a two-column table in their books headed 'plant' and 'animal' and fill it in as the lesson goes on. They will need it for the quick check and the quiz.

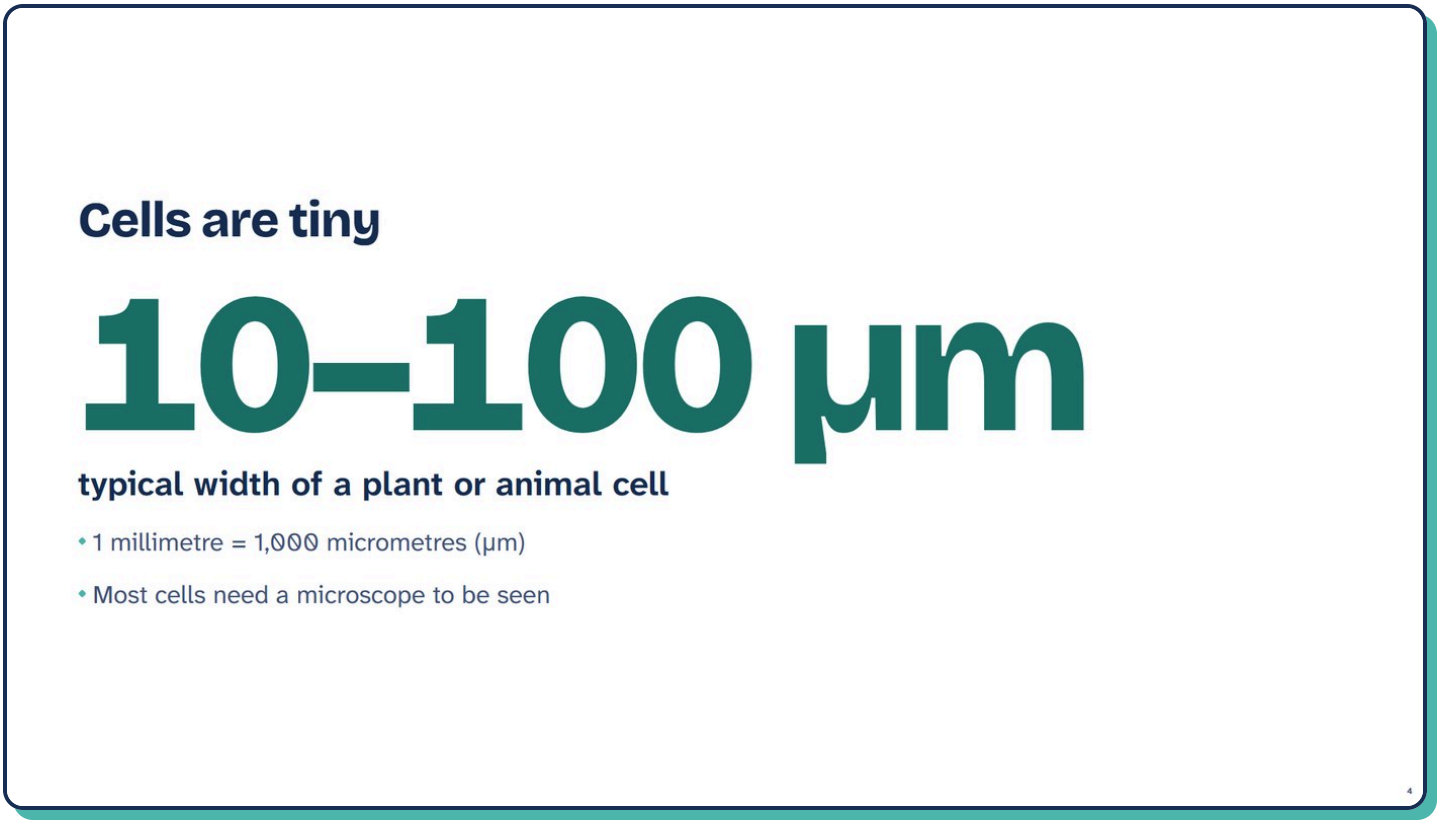


What is a cell?

Teacher notes

These three ideas together are called the cell theory. Hooke saw the empty, box-like walls of dead cork cells through his lenses and called them cells. Some organisms, such as bacteria and yeast, are a single cell; you are made of trillions.

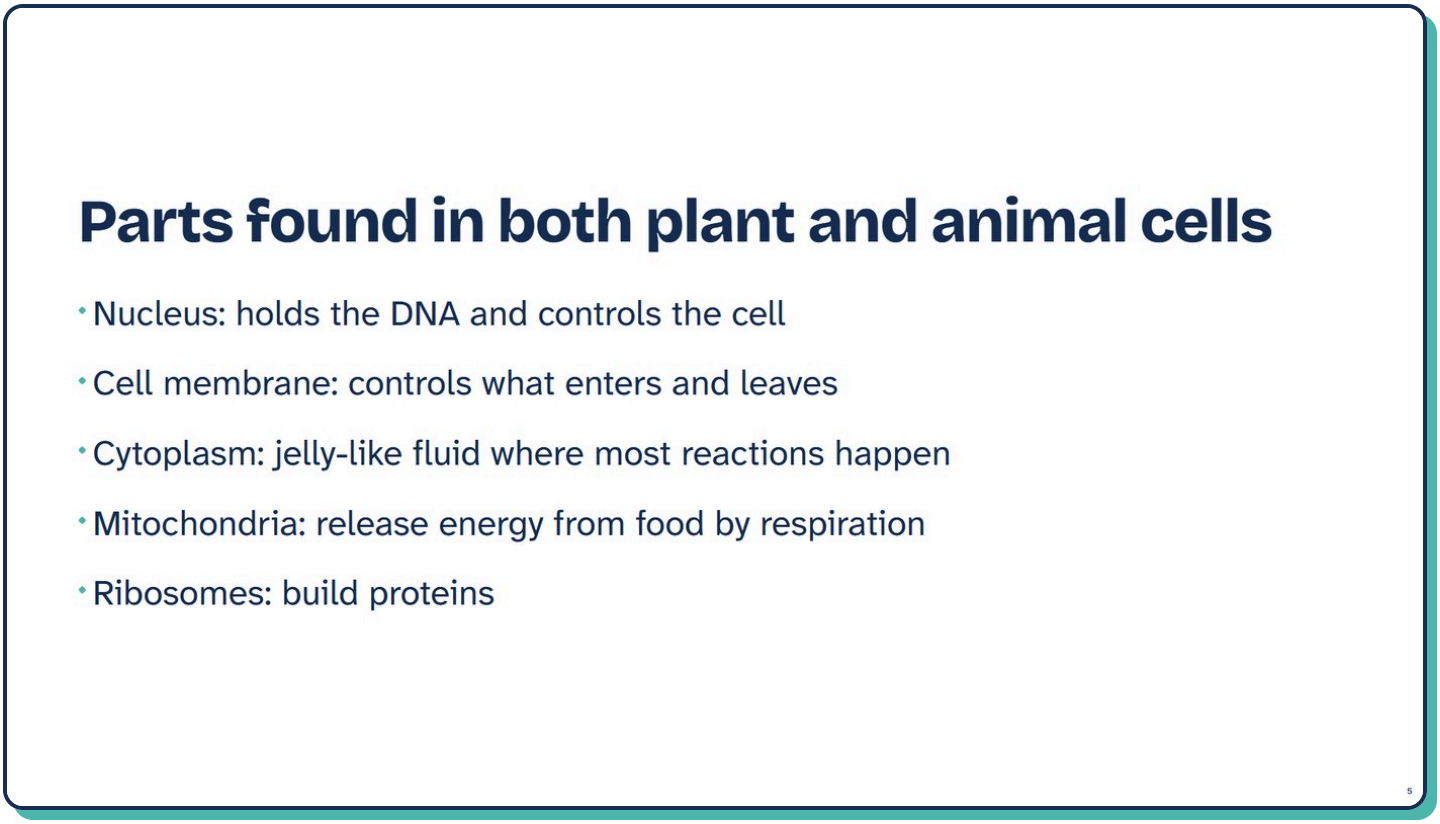
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Cells are tiny

Teacher notes

Ask students to find 1 mm on a ruler, then imagine splitting it into 1,000 parts. Ten to a hundred of those parts is one cell. An adult human body is estimated to contain somewhere between 10 and 100 trillion cells, so there is a huge range of estimates; the point is that the number is enormous.



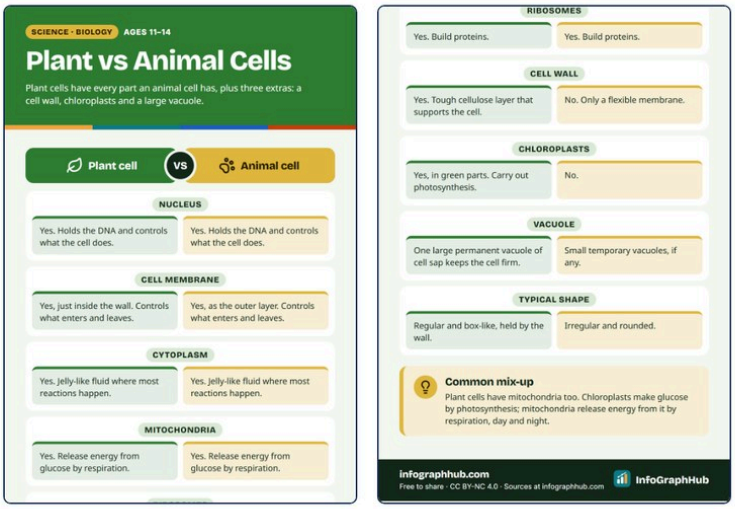
Parts found in both plant and animal cells

Teacher notes

Use a school analogy if it helps: the nucleus is the head teacher's office holding the instructions, the membrane is the security gate, the cytoplasm is the corridors where work happens, the mitochondria are the boiler room and the ribosomes are the workshops. Remind students that analogies are not perfect. Ribosomes are too small to see with a school light microscope.

Plant and animal cells side by side

- Both have a nucleus, membrane, cytoplasm, mitochondria and ribosomes
- Plant cells add a cell wall, chloroplasts and a large vacuole



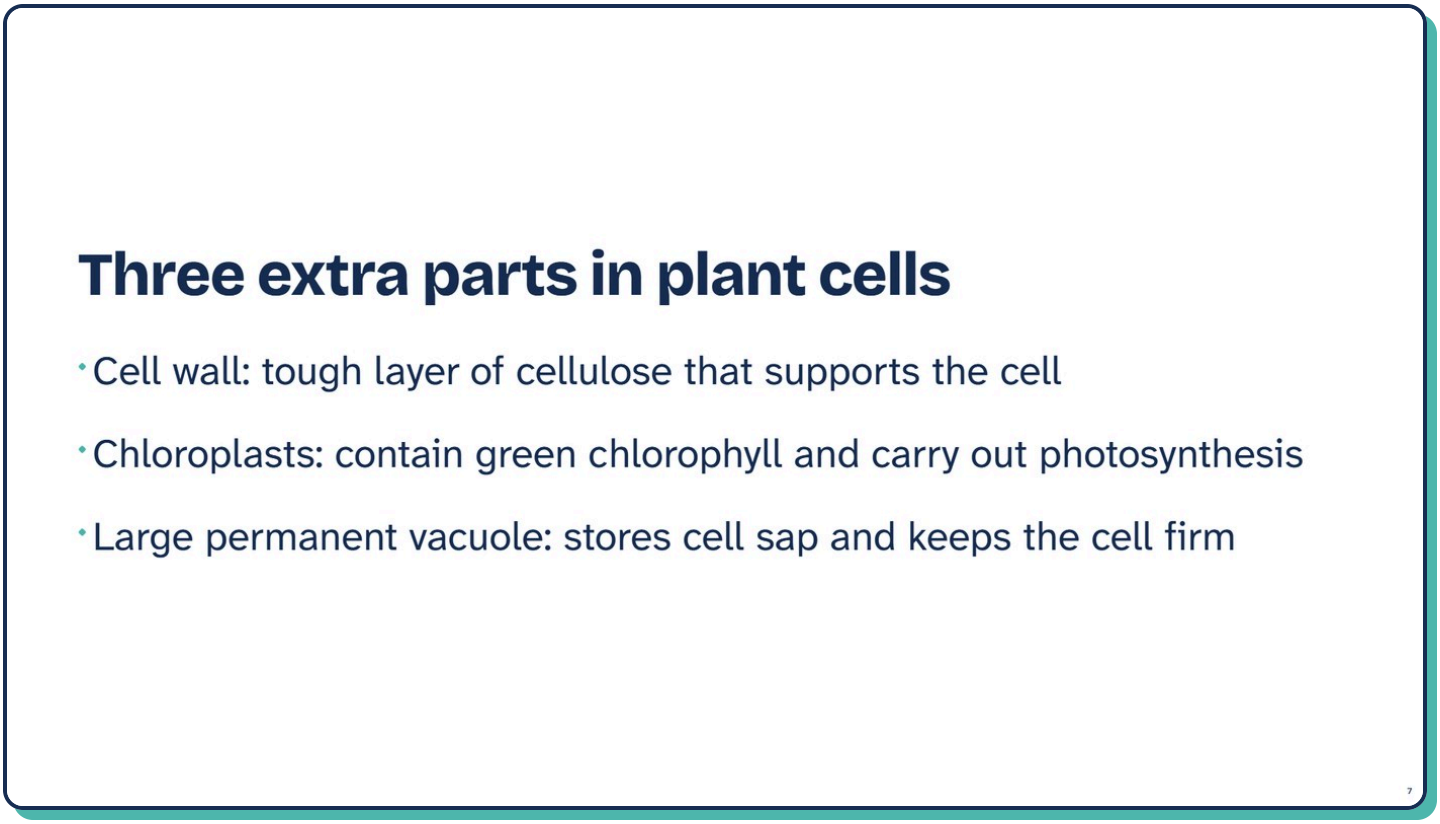
Poster: Plant vs Animal Cells: What Each Part Does

6

Plant and animal cells side by side

Teacher notes

Use the comparison poster to point to each structure in turn. Ask students to tick off each part in their two-column table. Stress that the shared parts come first: plant cells have everything an animal cell has, plus three extras.

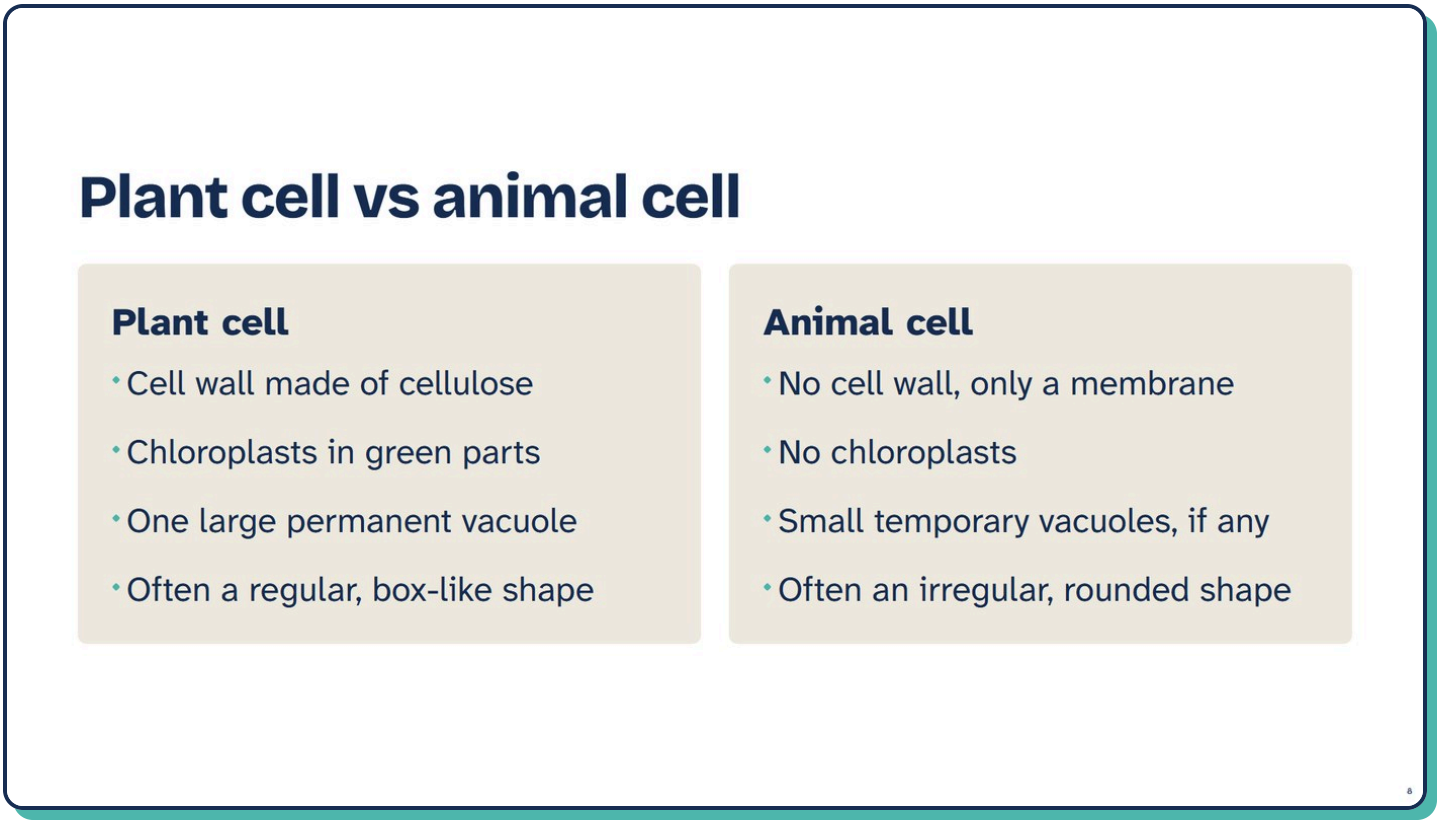


Three extra parts in plant cells

Teacher notes

The cell wall sits outside the cell membrane; it does not replace it. Chloroplasts are found in the green parts of a plant that photosynthesise, such as leaves. Animal cells may have small, temporary vacuoles, but not one large permanent vacuole.

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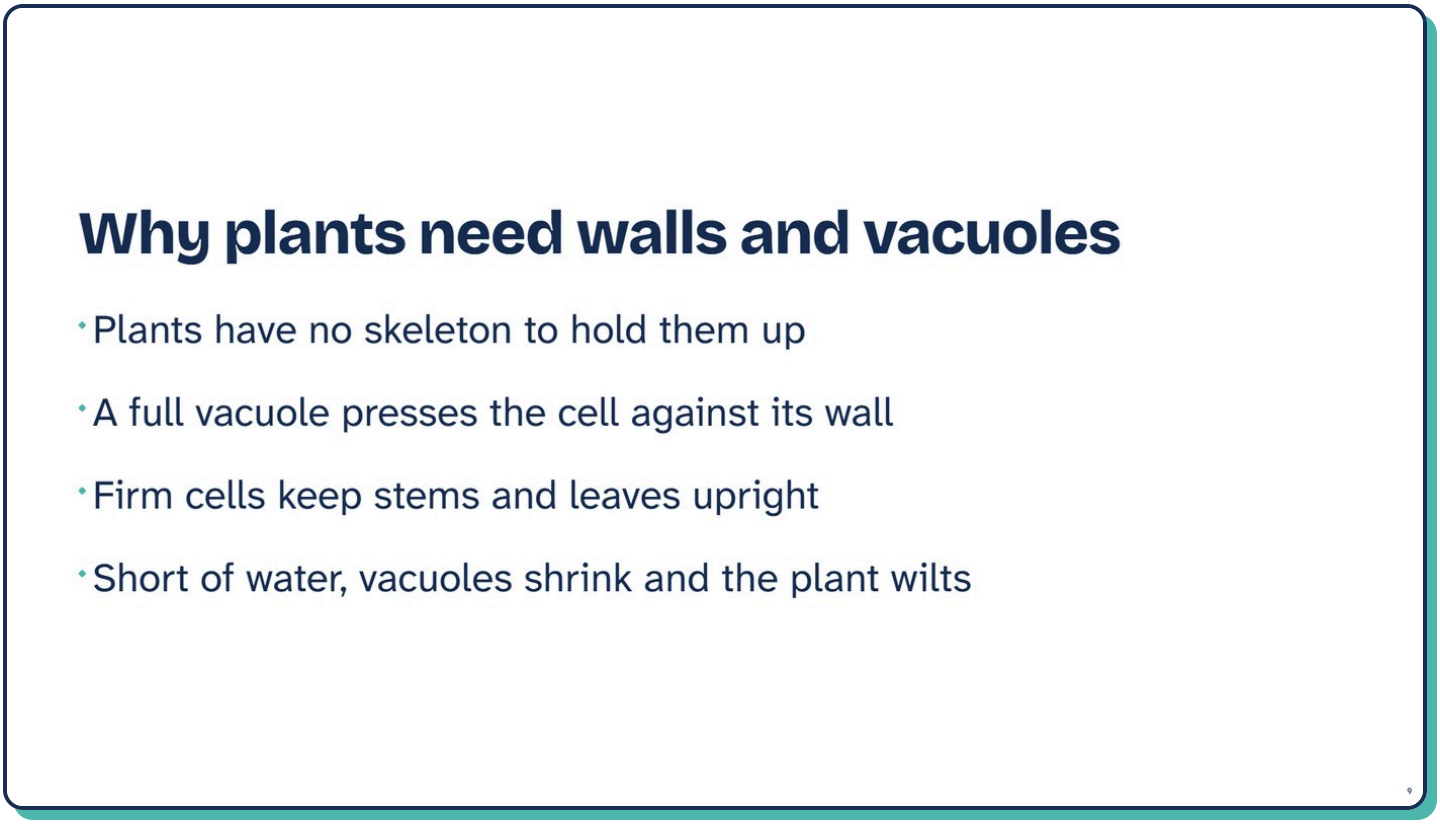


Plant cell vs animal cell

Teacher notes

Ask students why animal cells can change shape more easily: without a rigid wall, only the flexible membrane holds them in. Then ask why plants need walls at all. That leads into the next slide on support.

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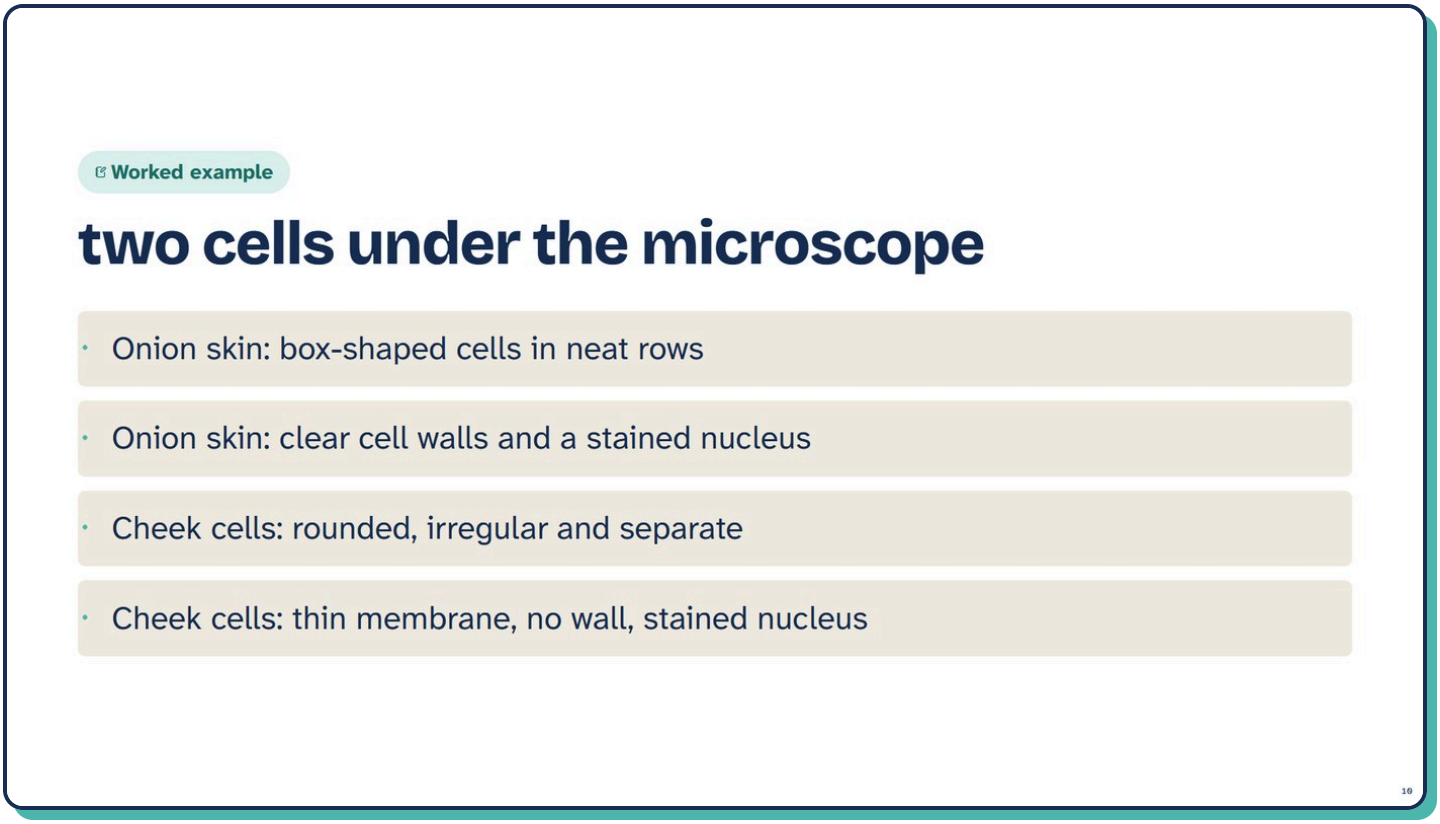


Why plants need walls and vacuoles

Teacher notes

Show a wilted plant or a photo of one if you can. Explain that when the vacuole loses water it no longer pushes outwards, so the wall is left unsupported and the plant droops. Watering refills the vacuoles and the plant can stand upright again.

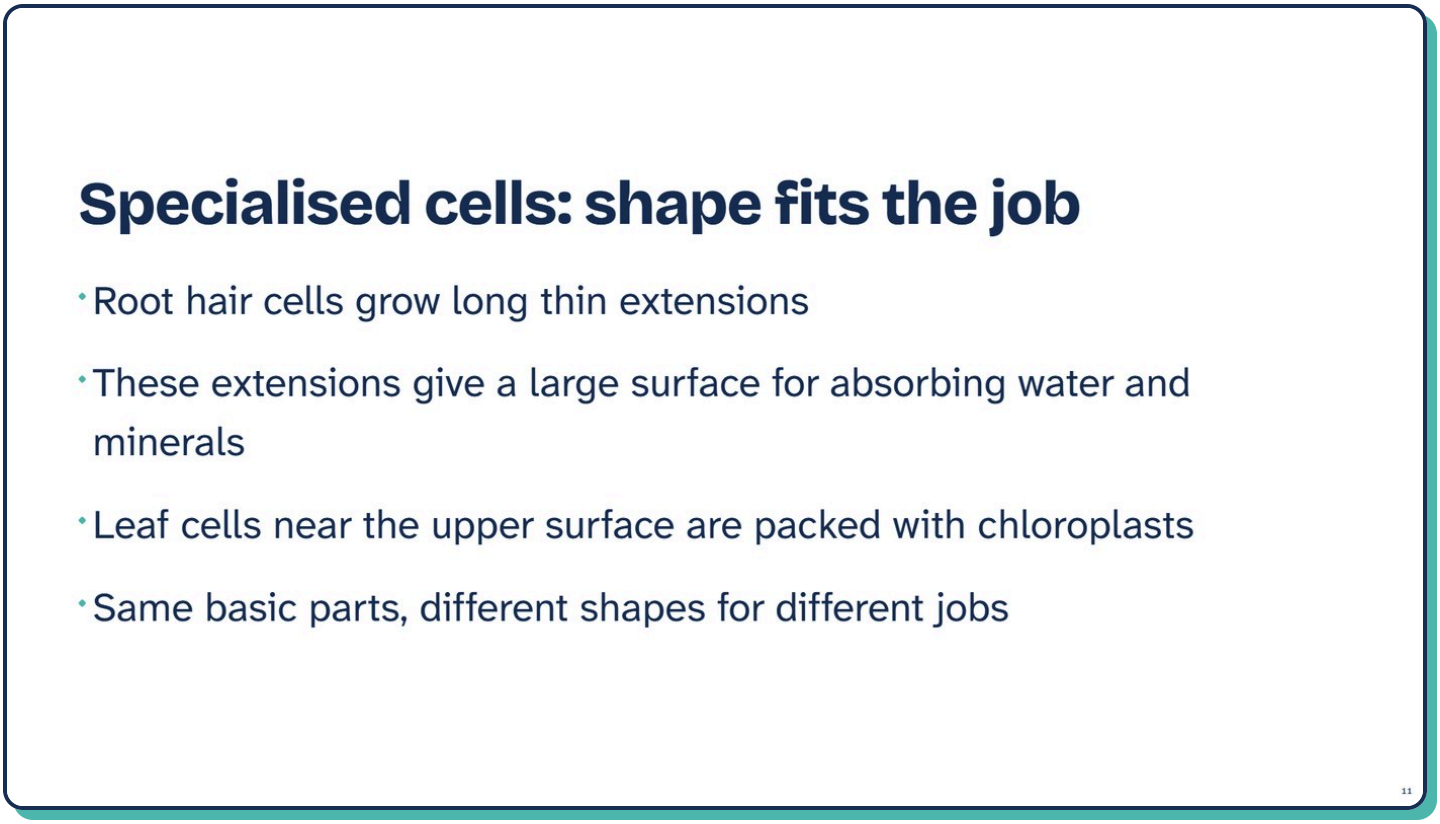
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Example: two cells under the microscope

Teacher notes

If you run this as a practical, follow your school's risk assessment for stains and for collecting cheek cells. A school light microscope magnifies up to about 400 times. Ask students to draw one cell of each with a sharp pencil, label only what they can actually see and write the magnification next to the drawing.

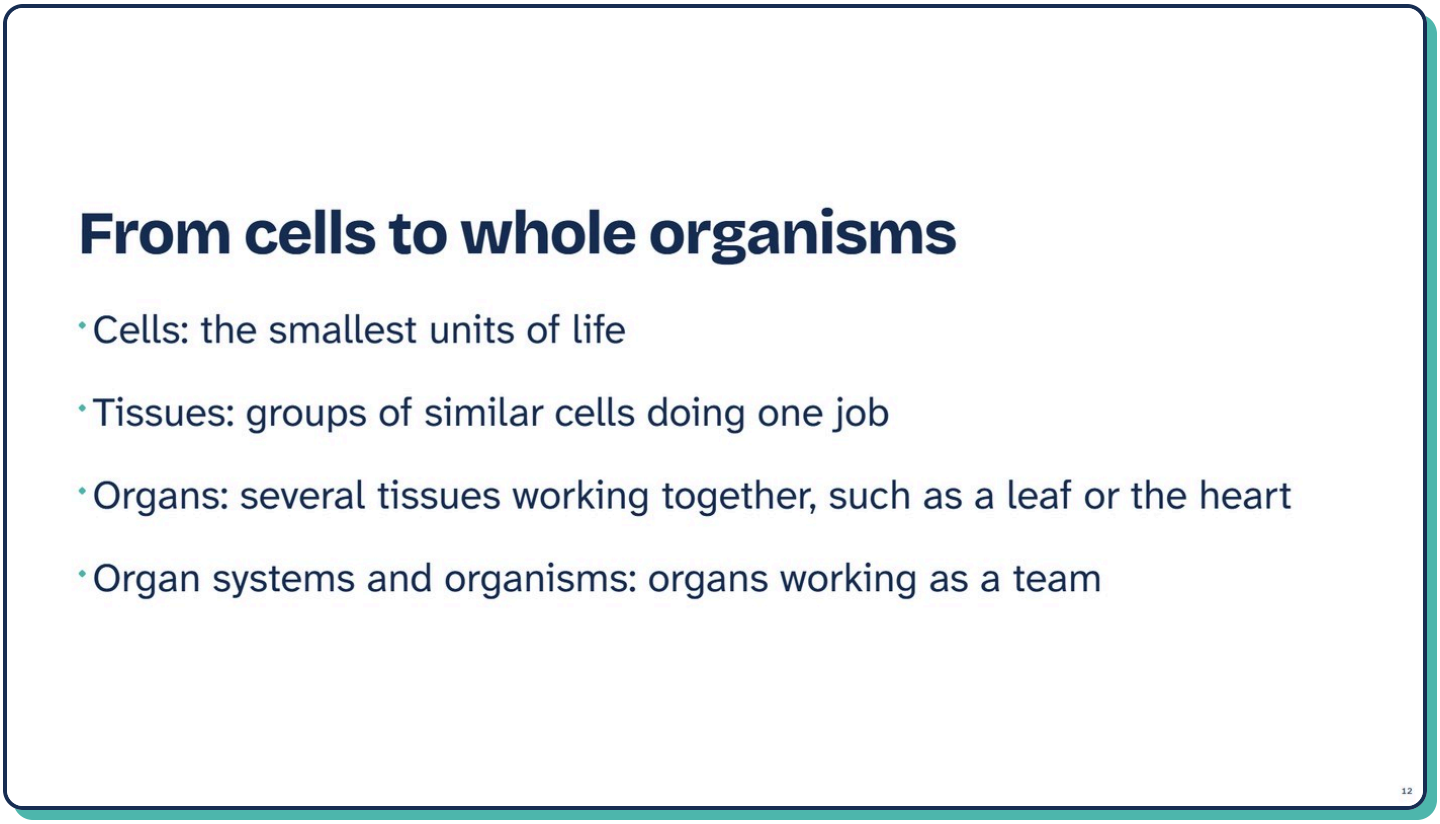


Specialised cells: shape fits the job

Teacher notes

This bridges to later lessons. Ask: why would a root hair cell not need chloroplasts? (It is underground, with no light.) Ask students to suggest one specialised animal cell they already know, such as a nerve cell or a red blood cell, and guess how its shape helps.

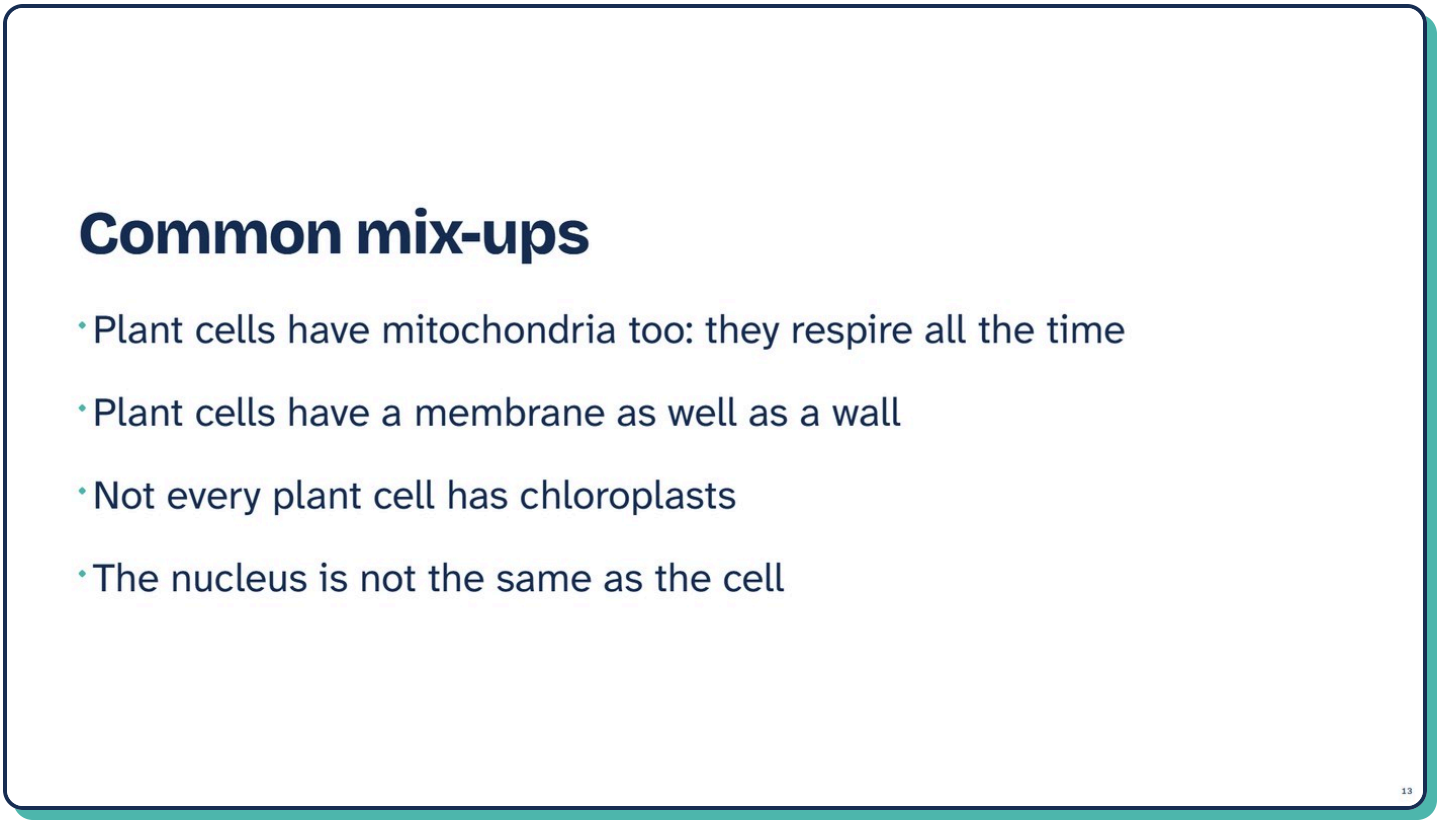
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From cells to whole organisms

Teacher notes

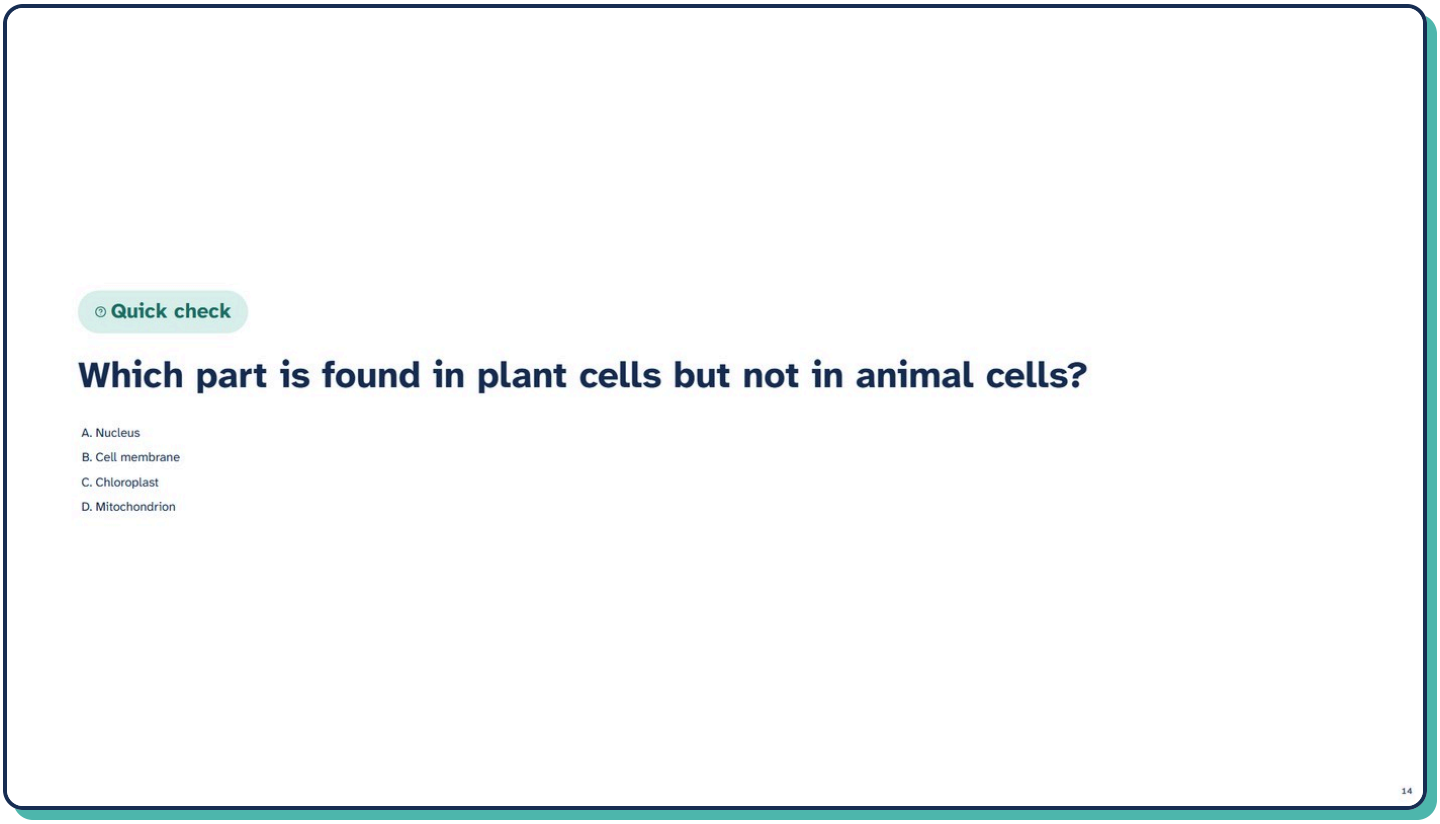
Keep this brief: it shows where cells fit in the bigger picture and sets up the next lesson. Give one plant and one animal example at each level if time allows.



Common mix-ups

Teacher notes

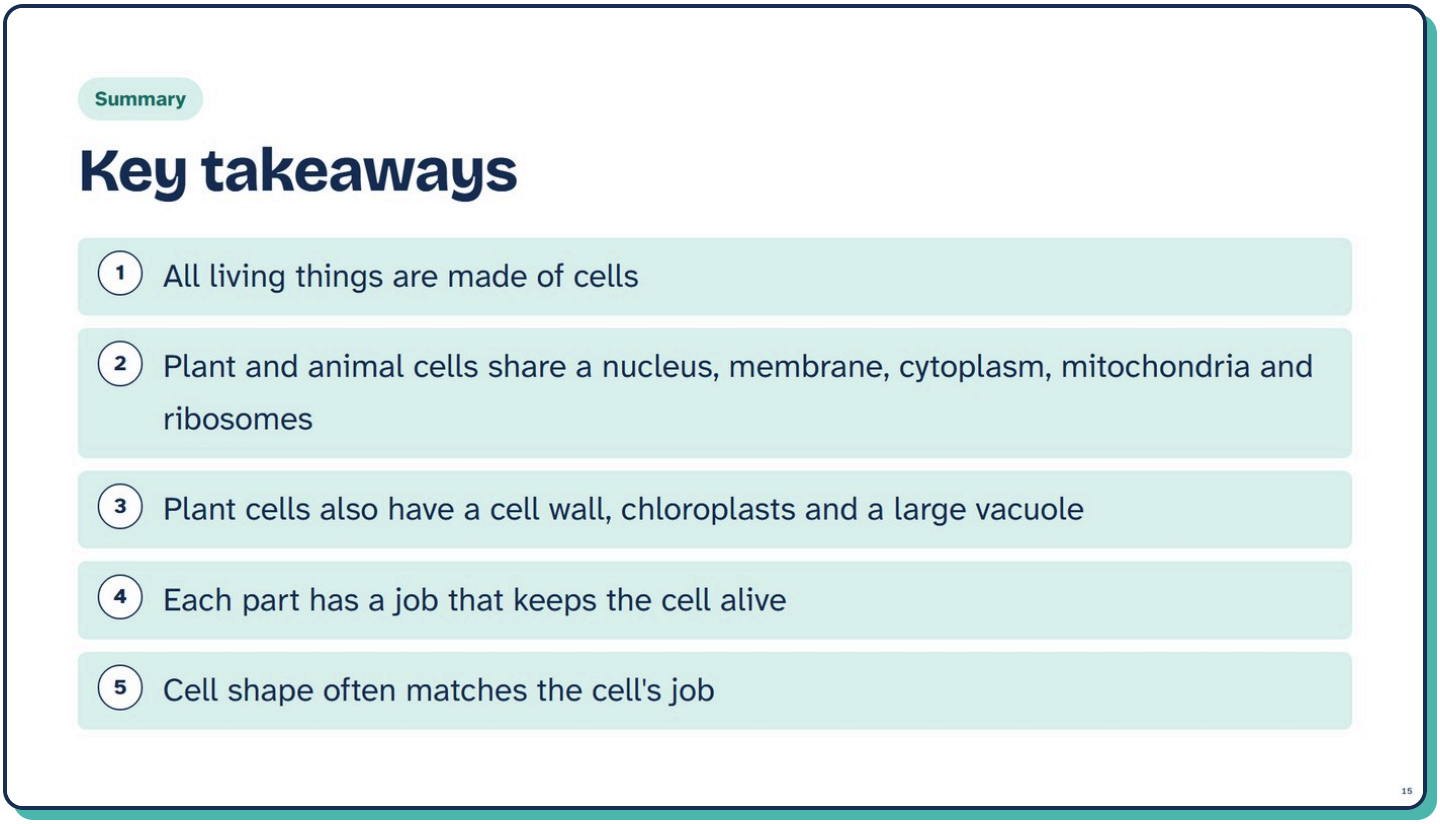
These are the errors that come up most in tests. Ask students to vote true or false on each statement before revealing the bullet. The mitochondria point matters most: many students think chloroplasts replace mitochondria in plants, but plants need to release energy from glucose just as animals do.



Quick check

Teacher notes

Answer: chloroplast. Ask students to show the answer on fingers (1 to 4) before you reveal it. If many choose mitochondrion, revisit the common mix-ups slide.



Key takeaways

Teacher notes

Ask students to check their two-column table against this slide and fill any gaps. Then move to the five-question quiz on the page. Homework idea: draw and label a plant cell and an animal cell from memory, then check against the poster.

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