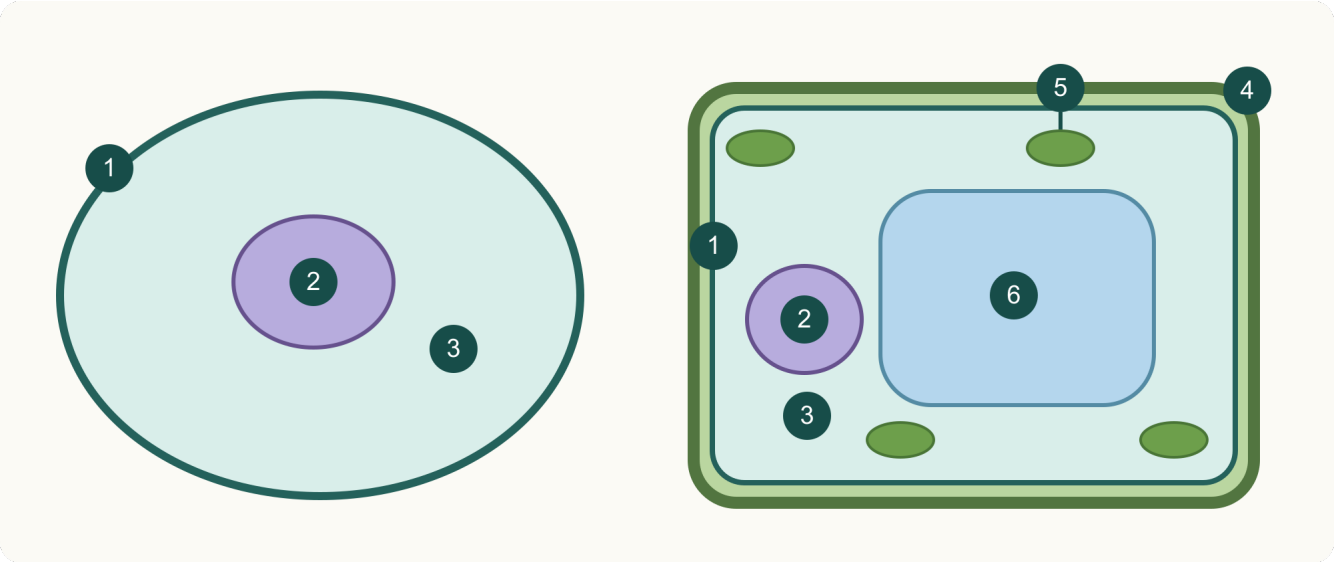
Animal cell model project: compare animal and plant cell structures

Middle school: compare cell structures



Learning diagram: Animal cell example · Green plant cell example · 1 Membrane · 2 Nucleus · 3 Cytoplasm · 4 Cell wall · 5 Chloroplast · 6 Central vacuole

Materials

Two pieces of card or paper for bases · Paper shapes or modeling clay in three or more colors · A pen and tape; scissors with adult help · The diagram and your teacher’s required labels

1. Make an oval animal-cell base and a rounded rectangular green-plant-cell base. Keep a key so each color has the same meaning in both models.

2. Add membrane, cytoplasm and nucleus to both. On the plant model, add a separate wall outside the membrane, a large central vacuole and chloroplasts. Use paper shapes or small clay pieces.

3. Label each structure and compare the two models with the diagram. Explain one relationship the model shows and one it cannot show; add other structures only after checking your assignment and source.

My observations and explanation

Checks and explanations

1. Membrane, cytoplasm and nucleus occur in the typical nucleated cells shown.

2. The cell wall is outside the membrane; the green plant example includes chloroplasts and a large central vacuole.

3. Teaching colors and proportions should not be treated as measured properties.

Find shared parts first

The diagram deliberately shows only a few structures. The cell membrane separates the inside from the surroundings and helps regulate exchange. The cytoplasm contains many cell components. The nucleus contains genetic material. Cell wall and cell membrane are different structures, not interchangeable labels.

Compare without overgeneralizing

The plant cell wall lies outside its membrane. This example represents a typical green plant cell: not every plant cell contains chloroplasts. Animal cells lack cell walls and chloroplasts, but it would be incorrect to conclude that they have no small vacuoles or vesicles.

Turn a model into an explanation

Choose one cell, label three structures and describe their relative positions. Explain one feature the model leaves out. A model can clarify an arrangement; it cannot replace microscopy or reproduce the scale, timing and full complexity of a living cell.

For parents and teachers

Check the required organelles and materials against the teacher’s assignment first. This introductory diagram is not a complete organelle inventory or a finished science fair investigation. Help with scissors and supervise small craft parts; these are simplified models, not to-scale replicas.

What the model can and cannot show

This is an original teaching schematic, not a micrograph or a medical atlas. AI reference images and generated models can contain errors; use the cited resources for factual checks.

Check observations against your textbook and the sources below.

OpenStax Biology 2e: Eukaryotic Cells · https://openstax.org/books/biology-2e/pages/4-3-eukaryotic-cells

义务教育生物学课程标准（2022年版） · https://www.moe.gov.cn/srcsite/A26/s8001/202204/W020220420582359998122.pdf

NGSS MS-LS1-2: Develop and use a cell model · https://www.nextgenscience.org/pe/ms-ls1-2-molecules-organisms-structures-and-processes

SEP: Bioconstruyendo la célula procarionte y eucarionte · https://aprendeencasa.sep.gob.mx/secundaria/bioconstruyendo-la-celula-procarionte-y-eucarionte/

Федеральная рабочая программа: Биология, 5–9 классы · https://edsoo.ru/wp-content/uploads/2025/07/2025_ooo_frp_biologiya_5-9_baza.pdf