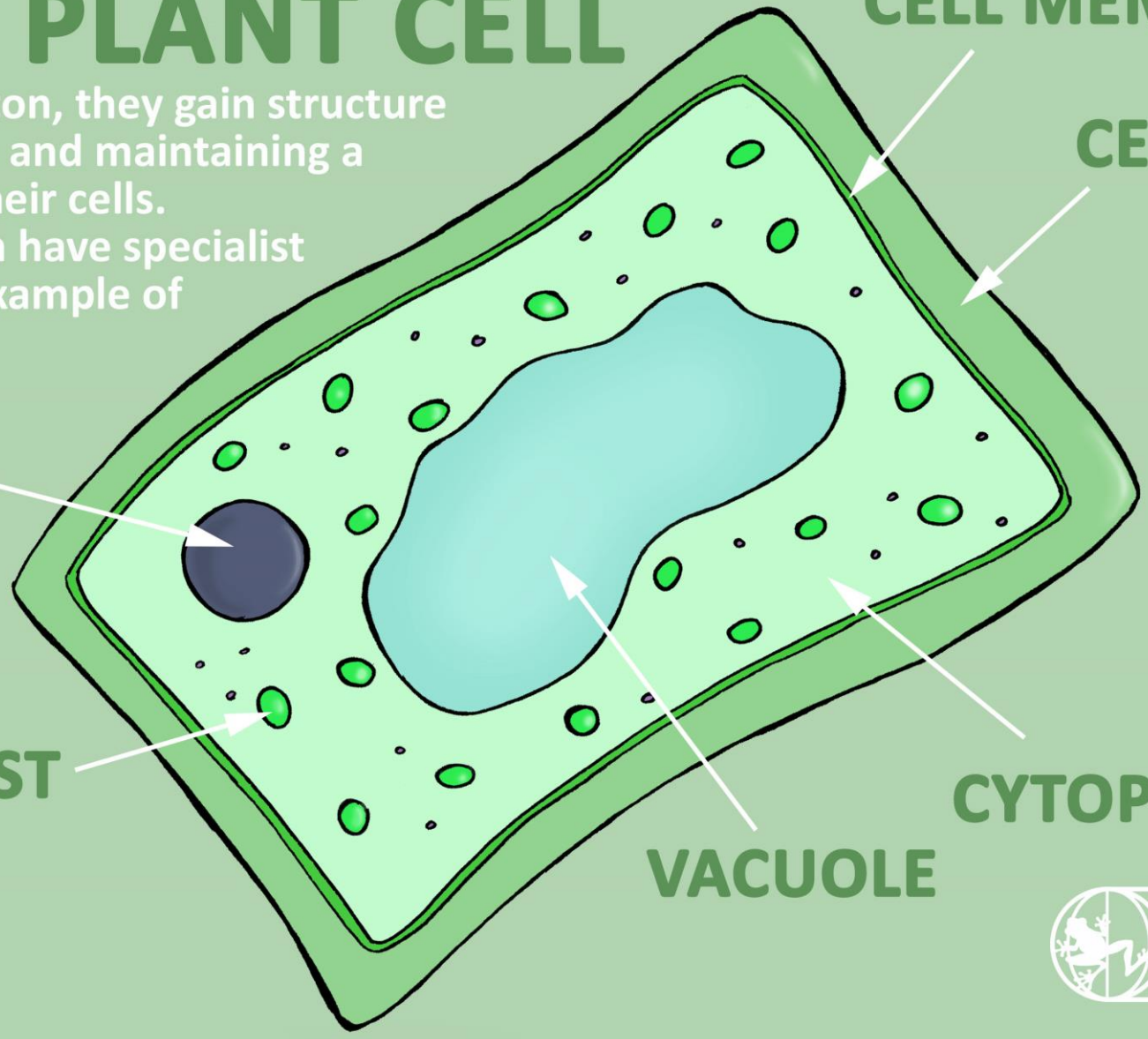
PLANTS:
STRUCTURE

PLANT STRUCTURE

TYPICAL PLANT CELL

As plants lack a skeleton, they gain structure from having cell walls and maintaining a level of moisture in their cells.
Whilst plants cells can have specialist functions, this is an example of a typical plant cell...



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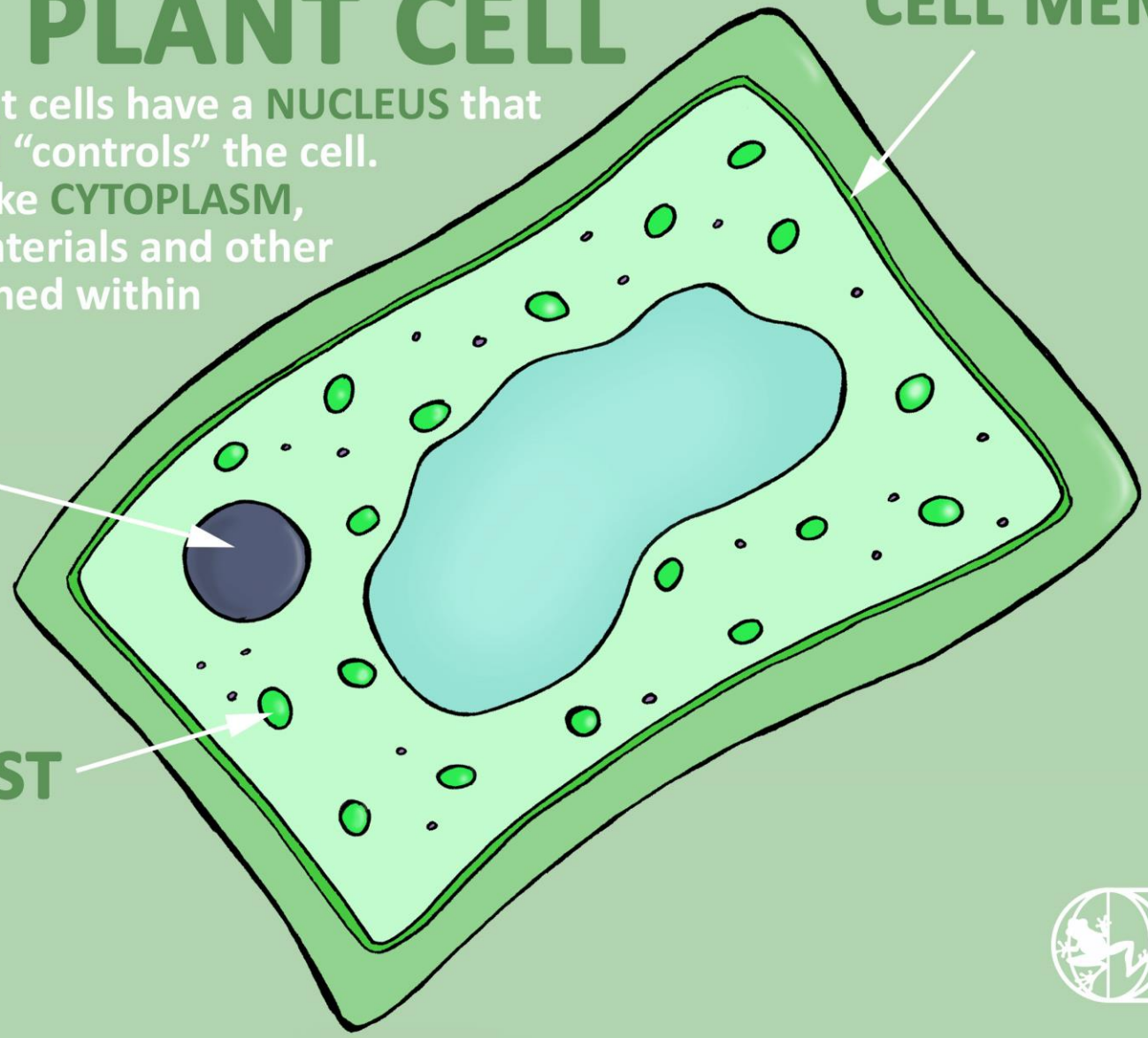
PLANT STRUCTURE

TYPICAL PLANT CELL

Like animal cells, plant cells have a NUCLEUS that contains the DNA and "controls" the cell. They also have jelly-like CYTOPLASM, containing soluble materials and other tiny structures contained within a CELL MEMBRANE.



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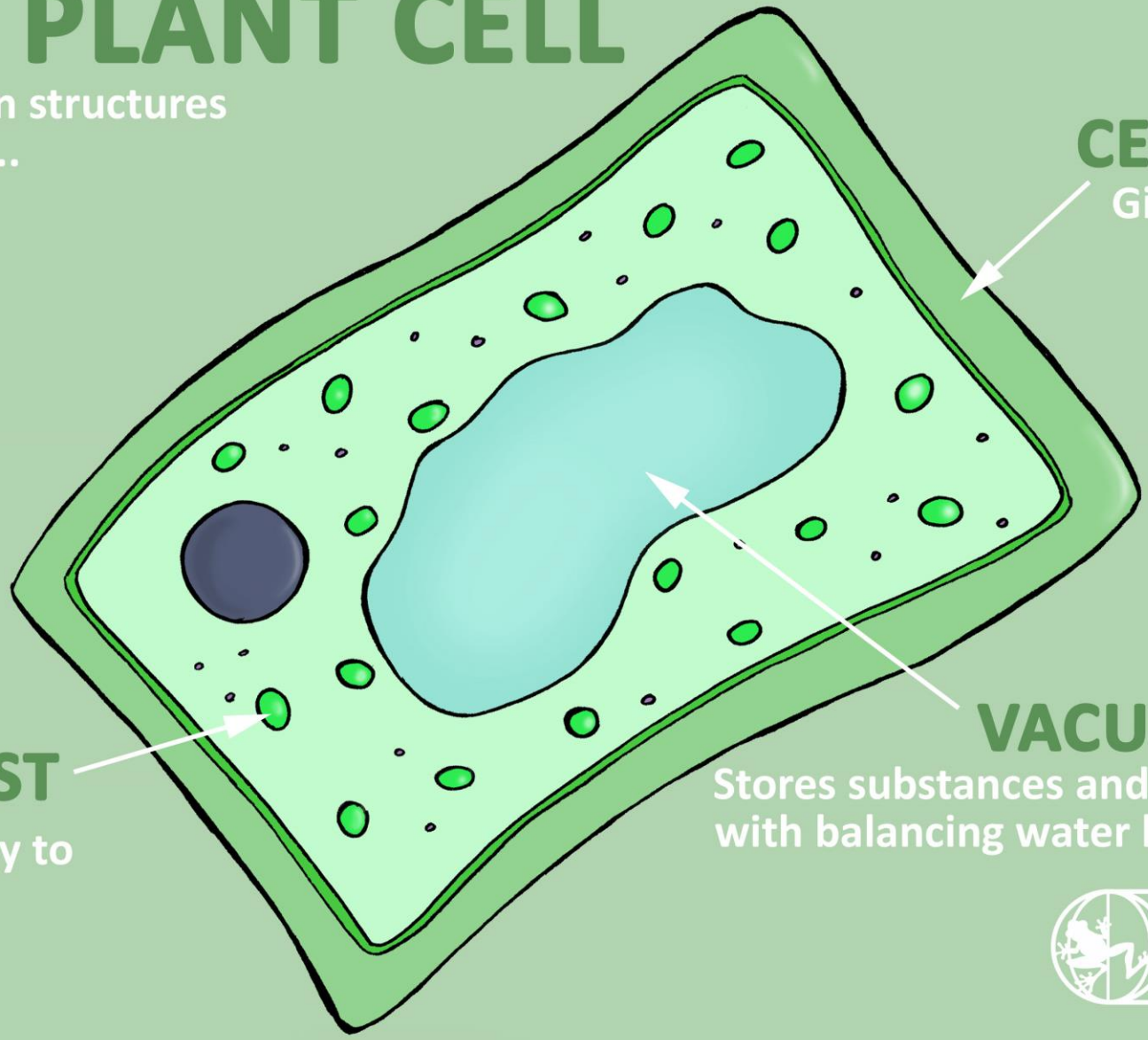
PLANT STRUCTURE

TYPICAL PLANT CELL

Plant cells also contain structures that animal cells lack...



CELL WALL

Gives structure to the cell.

VACUOLE

Stores substances and helps with balancing water levels.

CHLOROPLAST

Uses sunlight energy to create sugars by PHOTOSYNTHESIS.

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("*photo*" = light + "*synthesize*" = make/produce)

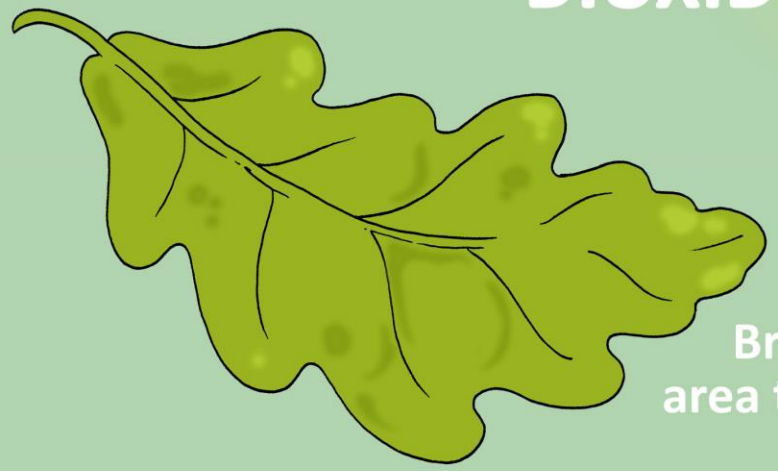
PHOTOSYNTHESIS

The chemical reaction by which plants create sugars using light energy.

LIGHT ENERGY

H_2O + CO_2 → $C_6H_{12}O_6$ + O_2

WATER + CARBON DIOXIDE → GLUCOSE + OXYGEN



Broad leaves on plants offer a greater area to capture the energy from the sun.

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PLANTS: CLASSIFICATION

MOSSES

- Small, thin leaves that may be one cell deep

- Form clumps in damp, shaded areas (on rocks, buildings or trees in woodland/forest)

- Produce spores on the from capsules on stalks

- Lack roots (a very simple form of plant)

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PLANTS: CLASSIFICATION

FERNS

e.g. bracken

- They have large, leafy fronds

- An ancient group of plants, they lack flowers and so do not produce seeds

- Produce spores on the underside of theirs fronds

- They do have roots and a transport system of vessels

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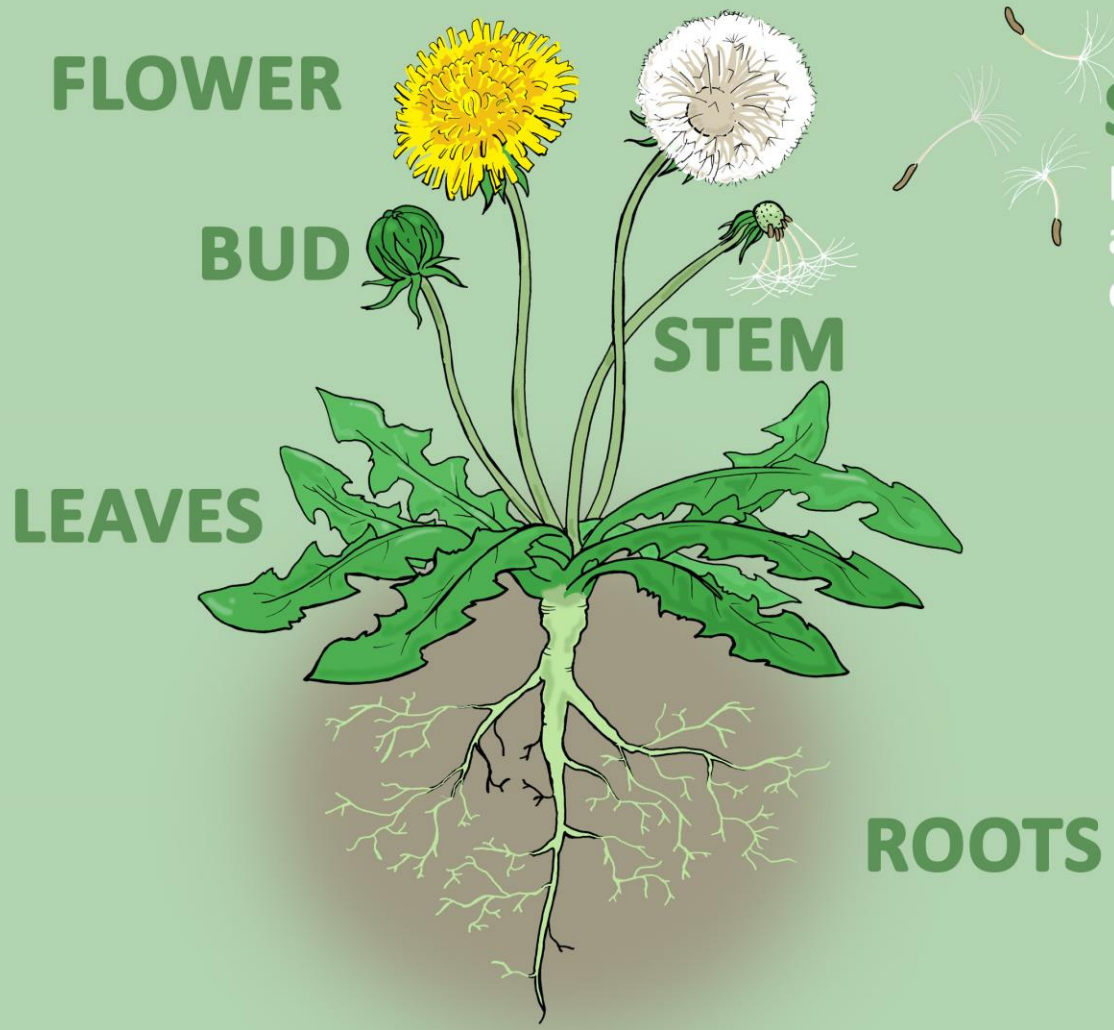
FLOWERING PLANT STRUCTURE

e.g. DANDELION



SEEDS

Dandelion seeds are dispersed over great distances by the wind

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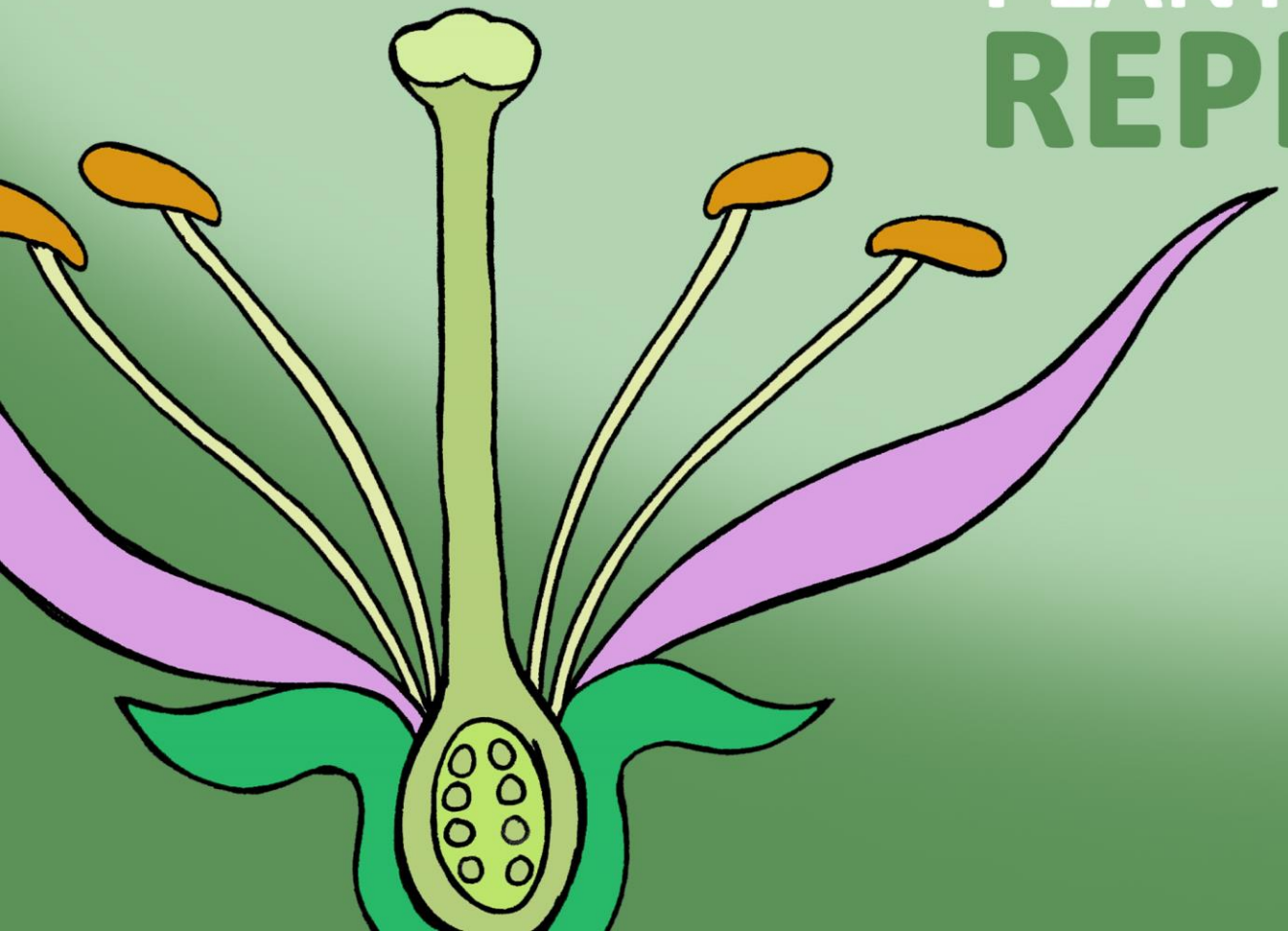
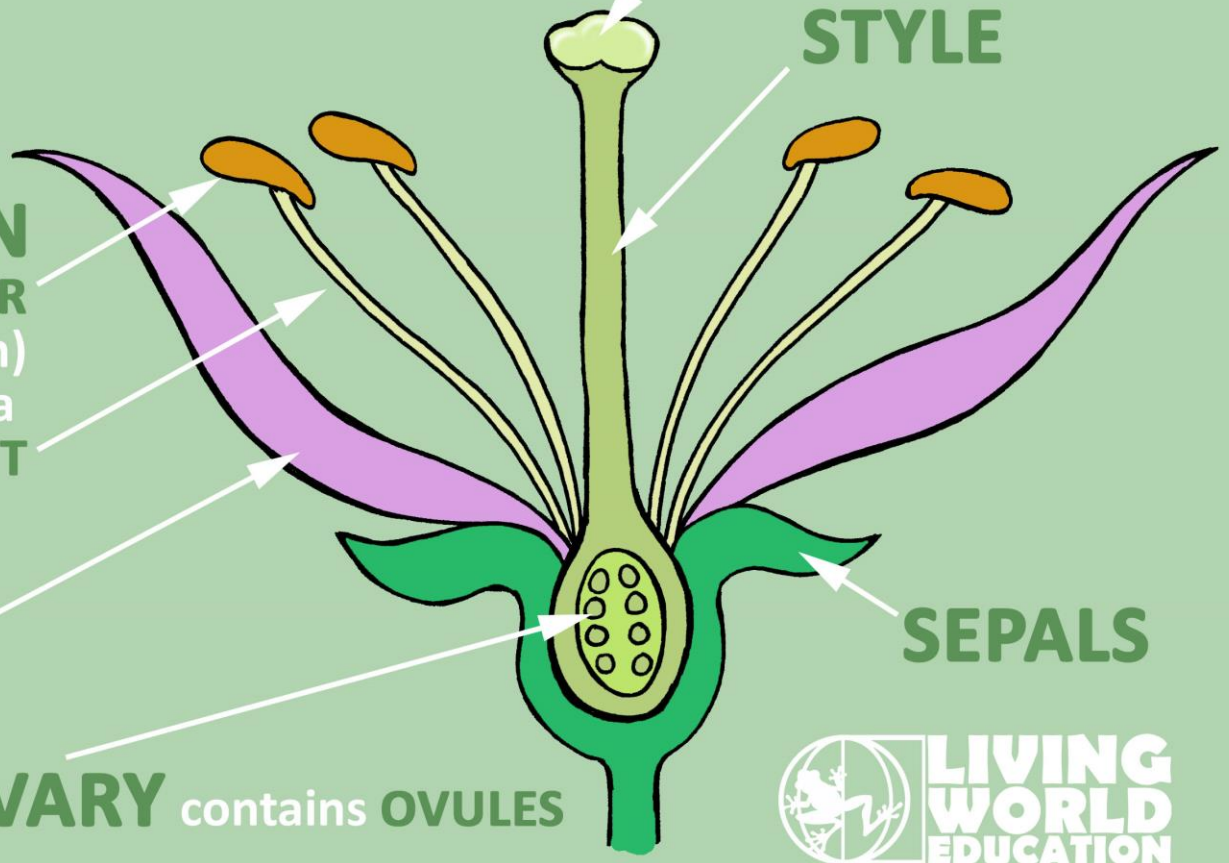
PLANTS:
REPRODUCTION



PLANT REPRODUCTION

FLOWER STRUCTURE

Flowers come in a wide variety of shapes, colours and sizes. They contain male and female parts, and these structures allow plants to make fertile embryos, and reproduce.



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PLANT REPRODUCTION

INSECT POLLINATION

insect pollinator e.g. honey bee

Attracted by scent, bright petals and the promise of a sweet meal of nectar, insects become coated in, and then transport, tiny pollen grains.

insect pollinator
e.g. peacock butterfly

POLLEN

Pollen can be microscopic, but in large volumes appears like dust. It must be transferred between plants so that flowers produce seeds.

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PLANT REPRODUCTION

WIND POLLINATION

As pollen grains are so microscopic, they are easily carried by wind. Some plants have adapted methods of dispersing pollen over vast distances

MICROSCOPIC POLLEN GRAINS

Grasses and stinging nettles both employ the strategy of hanging structures that can then readily release pollen. This is transported on the breeze, hoping to land on and POLLINATE another plant.

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PLANT REPRODUCTION

SEED DISPERSAL: ANIMAL TRANSPORT

Bright, sweet fruits attract hungry animals who then eject the seeds within over a great distances, having digested the juicy flesh that had surrounded them.

Fruit is often brightly coloured to advertise the potential meal it offers.

fruit eater
e.g. waxwing

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PLANT REPRODUCTION

SEED DISPERSAL: ANIMAL TRANSPORT

The hook-like structures surrounding the seeds of some plants are incredibly effective at snagging the hair of passing creatures, who then carry them to populate new areas.

e.g. cockleburs on domestic dogs

HOOK-LIKE STRUCTURES

These tangle hairs and become difficult to to remove, aiding the chance that the host will have travelled further away.

e.g. burs

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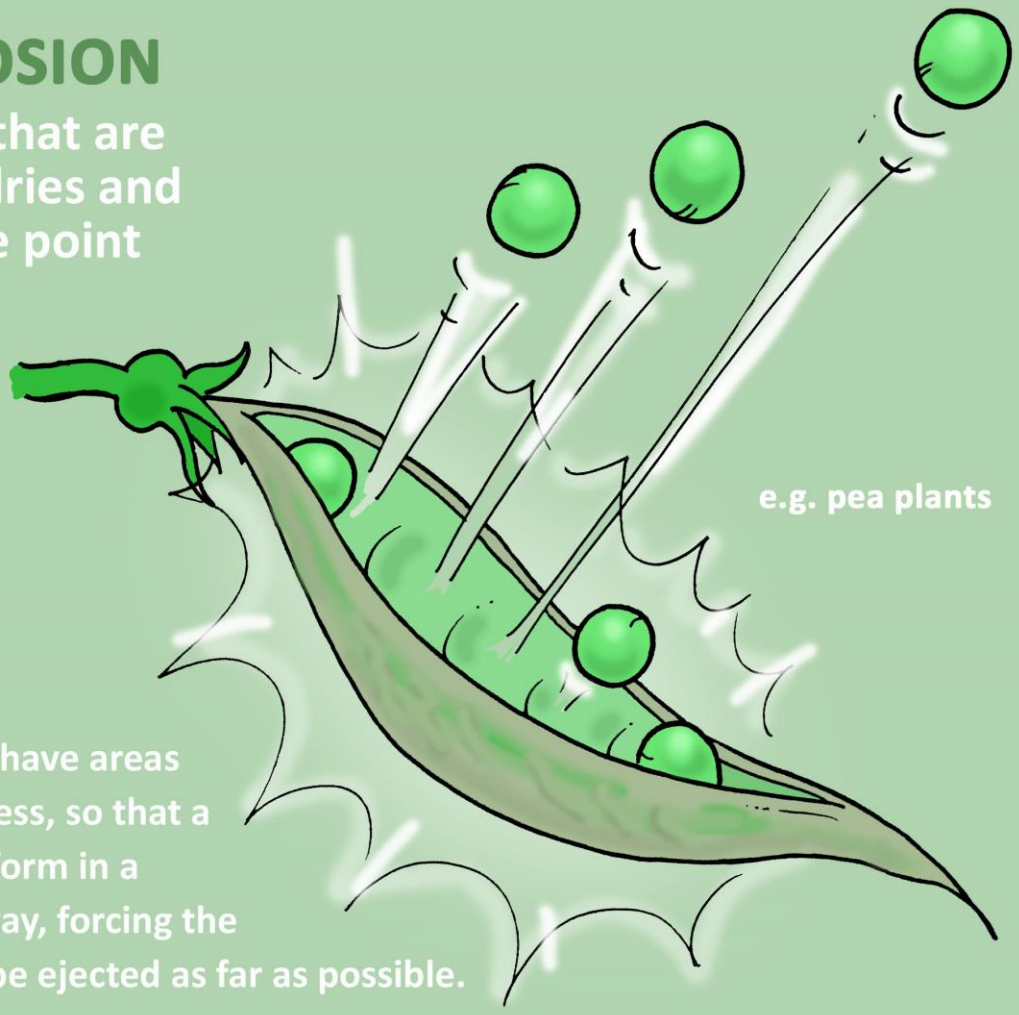
PLANT REPRODUCTION

SEED DISPERSAL: EXPLOSION

Some plants develop pods containing seeds that are spread out as they explode out. As the pod dries and shrinks, the seeds within are squeezed to the point the pod ruptures and the seeds burst out!

e.g. flag iris



e.g. pea plants

The pods have areas of weakness, so that a split will form in a specific way, forcing the seeds to be ejected as far as possible.

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PLANT REPRODUCTION

SEED DISPERSAL: WIND DISPERSAL

Some plants employ ingenious structures to assist the dispersal of seeds using the power of the wind. From delicate parachutes to sail-like extensions, they are incredibly diverse and an effective strategy.

(e.g. Maple) Dry, wing-like structures catch the wind

e.g. dandelion

Disperal by wind allows plants to populate new sites over vast areas

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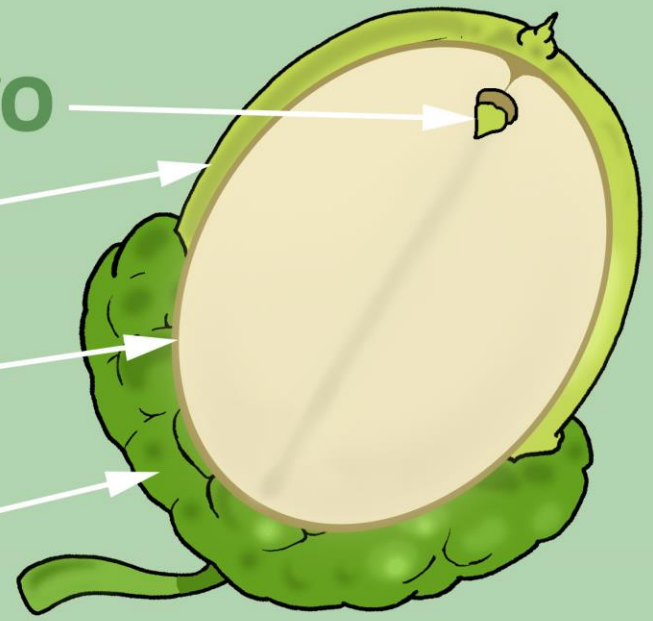
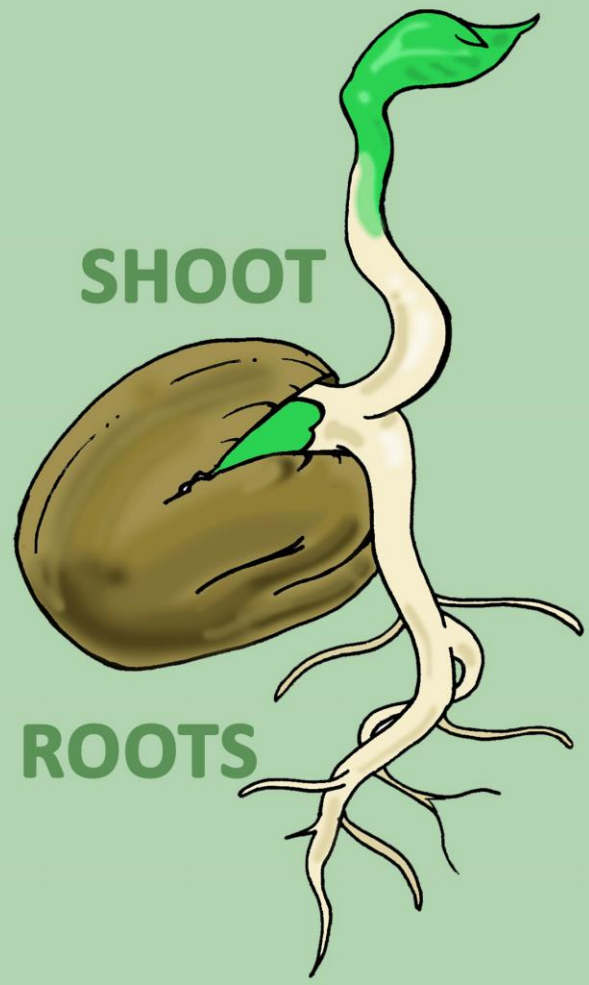
GERMINATION e.g. OAK ACORNS





Acorns fall from oak trees. The warmth of spring and moisture causes the embryo to develop. The outer shell (pericarp) splits as roots and shoots emerge.

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GERMINATION e.g. OAK ACORNS

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