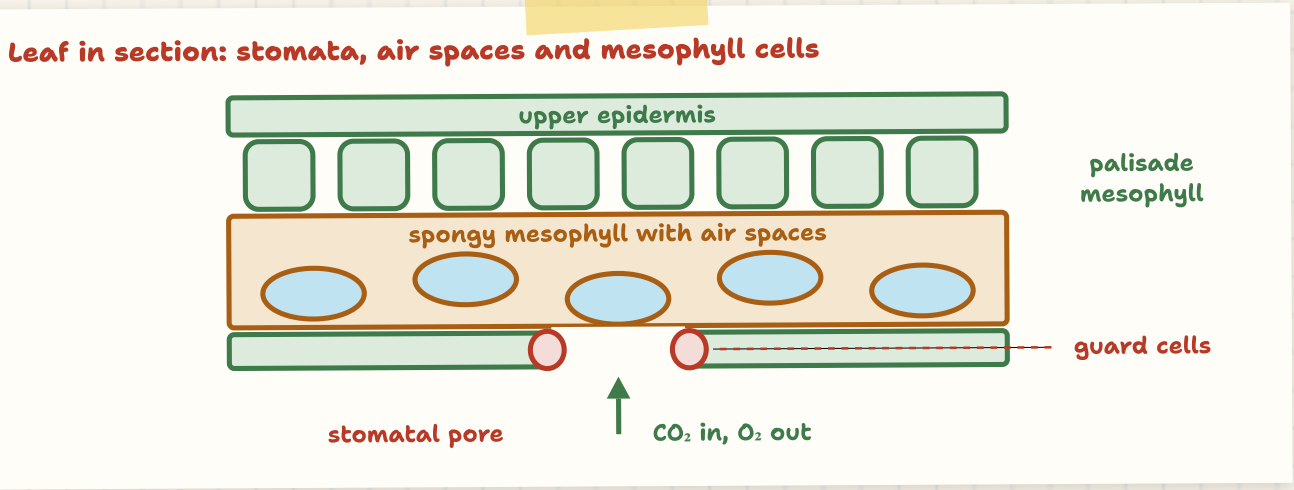
Gas Exchange in Leaves: Mesophyll and Stomata

Carbon dioxide enters through stomata, diffuses through air spaces and reaches the mesophyll cells, where it is used in photosynthesis.



Key terms

stoma (stomata)	a pore in the epidermis (mostly the lower) through which gases diffuse.
guard cell	one of a pair of cells that open and close the stoma.
mesophyll	the photosynthetic tissue inside the leaf: palisade and spongy layers.
air space	gaps between spongy mesophyll cells that let gases diffuse through the leaf.
dicotyledon	a flowering plant with a network of veins in its leaves; the leaf type in this specification.
concentration gradient	CO_2 is used up in photosynthesis, so its concentration inside stays low.

I can...

- [ ] Gas exchange by the leaves of dicotyledonous plants: mesophyll and stomata

EXAM TRAP

Say stomata, not "holes", and the gas moves by diffusion, not active transport. The gradient exists because carbon dioxide is used in photosynthesis, not made.

4 marks: what earns them

1. Stomata open, so carbon dioxide diffuses into the leaf (and oxygen out)
   Not: gases go through holes with no stomata named; carbon dioxide passes through the cuticle; stomata let carbon dioxide in by active transport
2. Air spaces in the (spongy) mesophyll allow gases to diffuse through the leaf / to the cells
   Not: air spaces store gas; air spaces in the epidermis
3. Mesophyll cells provide a large surface area in contact with the air (for gas exchange)
   Not: large surface area with no reference to mesophyll cells or air spaces
4. Carbon dioxide is used in photosynthesis, so a concentration gradient is maintained
   Not: carbon dioxide is made in photosynthesis; gradient with no reason

Remember

Stomata open, CO_2 diffuses in.
Air spaces carry it through the leaf.
Photosynthesis keeps the gradient steep.

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