

9 Gas exchange – Part 1

Name: _____ Class: _____ Date: _____

Vocabulary

Write each word three times.

English	Write it 3 times (English)		
oxygen	_____	_____	_____
carbon dioxide	_____	_____	_____
lungs	_____	_____	_____
trachea	_____	_____	_____
bronchi	_____	_____	_____
bronchioles	_____	_____	_____
alveoli	_____	_____	_____
cartilage	_____	_____	_____
ciliated epithelium	_____	_____	_____
cilia	_____	_____	_____
mucus	_____	_____	_____
goblet cells	_____	_____	_____
microbes	_____	_____	_____
smooth muscle	_____	_____	_____

Recall

At IGCSE you learned that we breathe in **oxygen** and breathe out **carbon dioxide**, and that this swap happens in the **lungs**. Now we follow the air in and look at the airway walls.

- Air travels down a set of branching tubes to tiny air sacs.
- The airways have special tissues that keep the lungs clean and open.

Nothing here is harder than IGCSE – it just adds the right words.

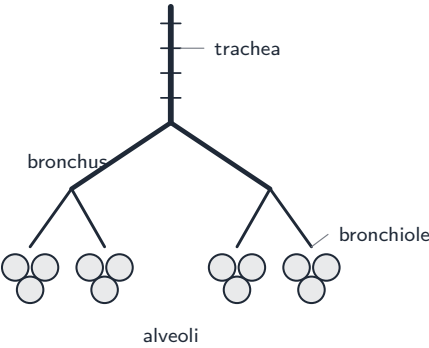
New ideas

Read these first, then do the Practice.

■ 1 The path of the air

Air follows this path into the lungs:

- down the **trachea** (windpipe),
- into two **bronchi** (one to each lung),
- into many smaller **bronchioles**,
- into tiny air sacs, the **alveoli**.

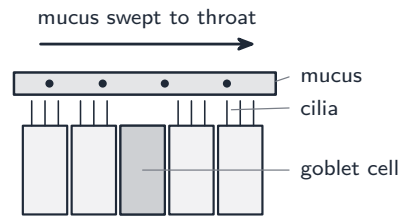


■ 2 Tissues of the airways

Tissue	Function
cartilage	C-shaped rings that hold the airway open so it cannot collapse
ciliated epithelium	tiny hairs (cilia) beat to sweep mucus up to the throat
goblet cells	make the mucus, which traps dust and microbes
smooth muscle	contracts to make the airway narrower

■ 3 Keeping the lungs clean

The mucus traps dust and microbes you breathe in. The cilia then sweep the dirty mucus up to the throat, where it is swallowed – so the lungs stay clean and healthy.



Watch out: the air path is trachea → bronchi → bronchioles → alveoli. Cartilage holds the airways *open*; goblet cells make the mucus that traps dirt; cilia sweep it up. If the cilia are damaged, mucus builds up.

Practice

Try these in order.

9.1 Put these in the order air passes through them: bronchioles, trachea, alveoli, bronchi.[1]

9.2 What is the job of the cartilage rings in the trachea and bronchi? [1]

9.3 Explain how the goblet cells and cilia work together to keep the lungs clean. [2]

9.4 Name the tiny air sacs where gas exchange happens. [1]

9.5 What does the smooth muscle in the airway walls do when it contracts? [1]

9.6 Suggest why a smoker, whose cilia are damaged, often has a cough. [2]

9.7 Challenge. Explain why breathing in dirty air is more harmful to a smoker (whose cilia are damaged) than to a non-smoker. [2]