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.

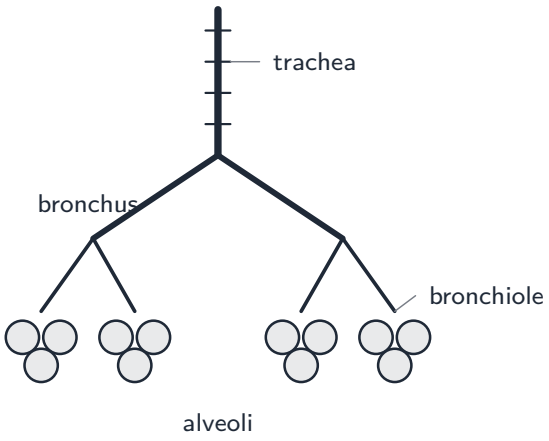
New ideas

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**.

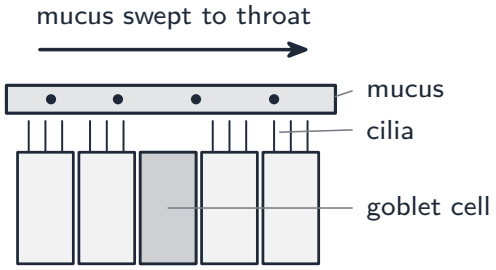


2 Tissues of the airways

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]