

9 Gas exchange – Part 1

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)		
oxygen	氧气	_____	_____	_____
carbon dioxide	二氧化碳	_____	_____	_____
lungs	肺	_____	_____	_____
trachea	气管	_____	_____	_____
bronchi	支气管	_____	_____	_____
bronchioles	细支气管	_____	_____	_____
alveoli	肺泡	_____	_____	_____
cartilage	软骨	_____	_____	_____
ciliated epithelium	纤毛上皮	_____	_____	_____
cilia	纤毛	_____	_____	_____
mucus	黏液	_____	_____	_____
goblet cells	杯状细胞	_____	_____	_____
microbes	微生物	_____	_____	_____
smooth muscle	平滑肌	_____	_____	_____

Recall

At IGCSE you learned that we breathe in **oxygen** 氧气 and breathe out **carbon dioxide** 二氧化碳, and that this swap happens in the **lungs** 肺. 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.

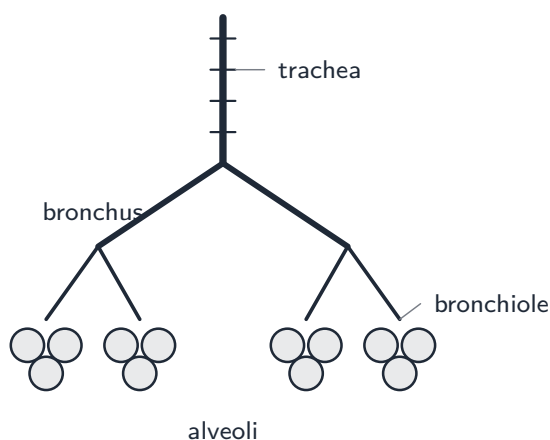
New ideas

Read these first, then do the Practice.

■ 1 The path of the air

Air follows this path into the lungs:

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

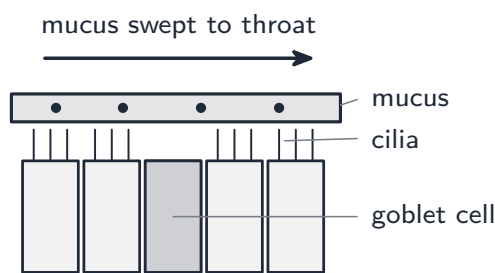


■ 2 Tissues of the airways

Tissue	Function
cartilage 软骨	C-shaped rings that hold the airway open so it cannot collapse
ciliated epithelium 纤毛上皮	tiny hairs (cilia 纤毛) beat to sweep mucus 黏液 up to the throat
goblet cells 杯状细胞	make the mucus, which traps dust and microbes 微生物
smooth muscle 平滑肌	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]
