

# Biological Systems and Processes

## Lesson 4 - Aerobic Respiration

KS3 Biology

Miss Hindle



## Recap of energy:

Leah eats her breakfast and then goes out to play football on Sunday morning. Describe the energy transfers that take place.

The food in her breakfast is a \_\_\_\_\_ store of \_\_\_\_\_. As she moves around energy is transferred into her \_\_\_\_\_ store and the \_\_\_\_\_ store of the air.



# Quick check

“We need respiration to keep us alive”

Improve this statement.



# Quick check...

**oxygen + glucose → carbon dioxide + water**

- Turn this into a description of what your body does after inhaling air.
  - Use the equation and the following words:  
**blood, alveoli, diffusion, oxygen, glucose, respiration, cells, mitochondria, water vapour, energy, carbon dioxide, exhale**
1. Air goes into our lungs and then the oxygen...
  2. The blood then...
  3. Once it gets to the cells...



# Quick check

1. Define the term aerobic...
2. What are the two reactants needed for aerobic respiration?
3. Where do each of these reactants come from? How do they get into the body?
4. What is the word equation for aerobic respiration?
5. In which organelle does respiration occur?
6. Give two uses of energy released by respiration...



# Past Paper Question...

1. Sarah is feeling unwell so she goes to her doctor. Her doctor thinks she may have Chronic Fatigue Syndrome (CFS).

CFS is difficult to diagnose. Before diagnosis doctors rule out a condition called anaemia by carrying out a blood test.

A blood test checks the number of blood cells in Sarah's blood.

- i. What is the role of the **red** blood cell?

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----- [1]

Source: OCR, Specimen, J257/01



# Past Paper Question...

ii. One symptom of CFS is extreme tiredness.

	Red blood cell (per mm <sup>3</sup> )	White blood cell (per mm <sup>3</sup> )	Platelets (per mm <sup>3</sup> )
Normal level	3 800 000	8 500	250 000
Sarah	2 700 000	9 000	245 000

iii. Explain how the results shown in the table above could cause Sarah to feel tired.

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[3]

Source: OCR, Specimen, J257/01



# Past Paper Question...

- iv. The table below shows some information about red blood cells and the cells taken from the cheek of a human.

	Red blood cell	Cheek cell
Surface area ( $\mu\text{m}^2$ )	136	7854
Volume ( $\mu\text{m}^3$ )	90	65 450
Surface area: volume ratio		0.12 : 1

v.

Calculate the surface area to volume ratio of the red blood cell.

Show your working.

Give your answer to **two** significant figures.

vi. .... [1]

Source: OCR, Specimen, J257/01



# Past Paper Question...

vii. Red blood cells have a greater surface area to volume ratio than cheek cells.

Explain how this allows them to carry out their function.

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----- [1]

Source: OCR, Specimen, J257/01



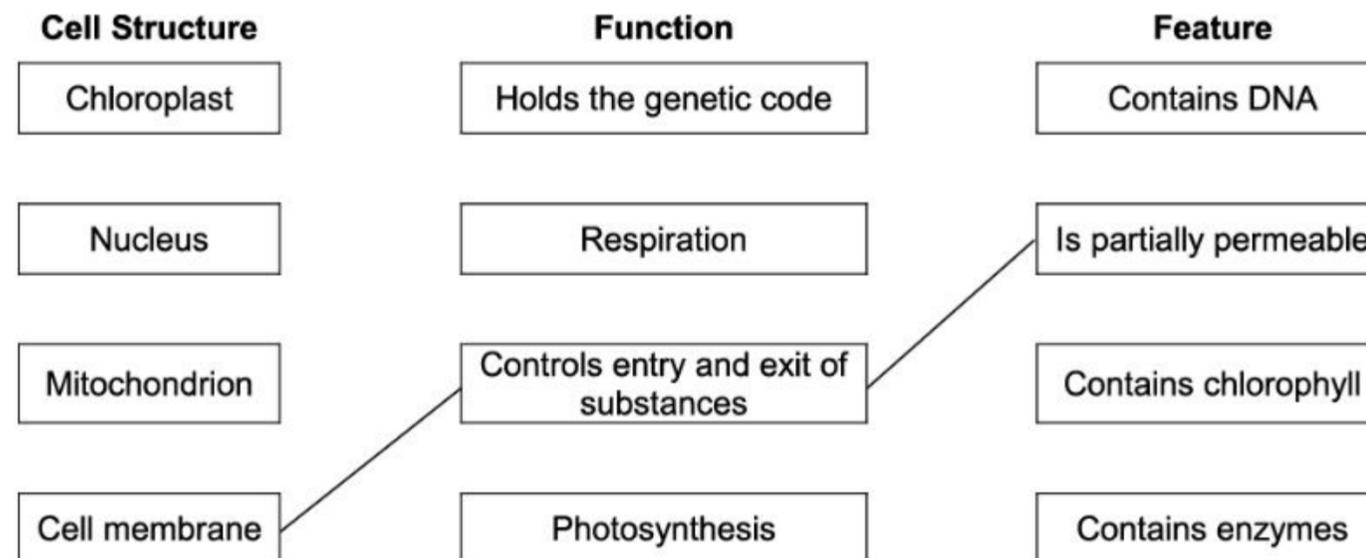
# Past Paper Question...

2. Cells are the basic building blocks of life. They need to do many things in order to stay alive.

Structures within cells perform a variety of functions and have features that allow them to do these jobs.

Use straight lines to complete the diagram to show which cell structure links to the **function** and the **feature** that allows that structure to do its job.

Two lines have been drawn for you.



[3]

Source: OCR, Specimen, J257/02

