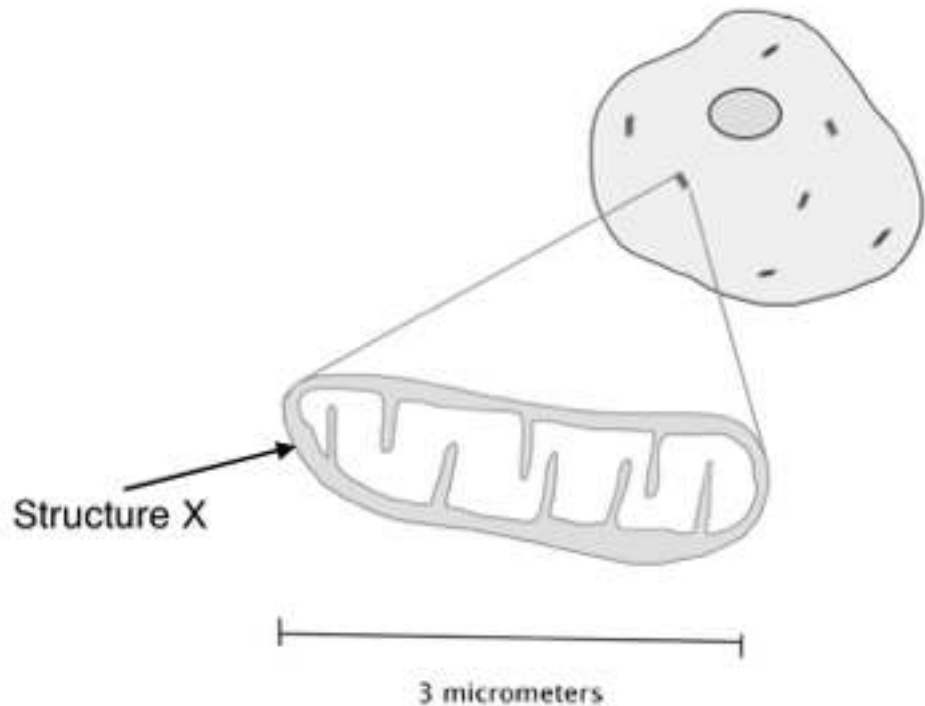


0	1
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Cells require energy in order to stay alive. Every cell contains structures that release energy by the process of aerobic respiration.



0	1
---	---

1

The diagram above shows one of these structures as viewed under an electron microscope. Name structure X

Mitochondrion/mitochondria [1 mark]

0	1
---	---

2

Name 2 substances that are released in structure X as a result of aerobic respiration

carbon dioxide and water [2 marks]

0	1
---	---

3

In mammals, the energy provided by respiration is used to maintain body temperature. Describe one other use by mammals of the energy released by aerobic respiration.

muscle contraction [1]; for movement [1]

make protein [1]; for growth [1]

active transport [1] to move particles against their concentration gradient [1]
[2 marks]

0	2
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An athlete runs a one hundred metre race. During the short race his muscles release energy from glucose in the absence of oxygen. Lactic acid is a product of this process.



0	2	1
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What is the name of the process that releases energy from glucose in the absence of oxygen?

_____ anaerobic respiration _____ [1 mark]

0	2	2
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The amount of energy released by this process is small in comparison to the amount of energy available in molecules of glucose. Suggest one advantage of the process, even though it releases a small amount of energy.

it is quicker/faster or releases energy quicker (despite glucose only being partially broken down) _____ [1 mark]

0	2	3
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After the race the athlete breathes heavily for a while.

Explain why.

build up of lactic acid [1]; causes pain/poisonous/toxic [1]

oxygen needed to oxidise/break down lactic acid [1] to carbon

carbon dioxide and water [1]



[3 marks]