

Work of the week – 24th May 2021



The villi of the small intestine absorb the products of digestion. The diagram shows two villi. It also shows parts of some of the surface cells of a villus, as seen with an electron microscope.

Hints:
Surface area
Thickness
Mitochondria
Capillaries
For each one make sure you explain how this is an adaptation

Stuck:
Firstly the villi are...
This increases the...
Therefore...
As well as this they have...
This means that...

Describe and explain how the villi are adapted to maximise the rate of absorption of the products of digestion.

The villi have a thin membrane so the diffusion can be easy to travel through. They are covered with microvilli to increase the surface area for absorption. The villi are very close together to increase the surface area inside the membrane cell to be easy to absorb to cells. They have a blood supply to take away the nutrients and bring in the oxygen to keep the cells alive. The villi are covered in a mucus to prevent the villi from drying out.

Key words:
 Energy
 Concentration
 Diffusion
 Surface area
 Capillaries
 Mitochondria
 Microvilli

Perfect answer well done! (Total 6 marks)

Extension:
To help help take in nutrients to have a big surface area

Kane Bates Year 10
Science
Descriptions of the villi

Finn Bewley Year 10
Maths: Solving Simultaneous Equations

James Robson Year 10
Science
Descriptions of the villi.

25th May 2021

Starter
Work out
 $Y = 3$
① $4 \times 3 = 12$
② $2y + 9 = 2 \times 3 + 9 = 15$

Solving Simultaneous Equations

Example: Same Sign Subtract

$$\begin{array}{r} 5c + 4t = 22 \\ -2c + 4t = 16 \\ \hline 3c = 6 \\ c = 2 \end{array}$$

Substitute into "5c + 4t = 22"

$$\begin{array}{r} 5 \times 2 + 4t = 22 \\ 10 + 4t = 22 \\ -10 \quad -10 \\ \hline 4t = 12 \\ t = 3 \end{array}$$

1)
$$\begin{array}{r} 3x + 2y = 12 \\ -2x + 2y = 10 \\ \hline x = 2 \end{array}$$

Substitute into "3x + 2y = 12"

$$\begin{array}{r} 3 \times 2 + 2y = 12 \\ 6 + 2y = 12 \\ -6 \quad -6 \\ \hline 2y = 6 \\ y = 3 \end{array}$$

$x = 2$
 $y = 3$

2)
$$\begin{array}{r} 5a + 3b = 41 \\ 4a + 3b = 37 \\ \hline a = 4 \end{array}$$

$a = 4$
 $b = 7$

Tuesday 25th May 2021

The Villi

The small intestine breaks down food and then it can absorb nutrients. Diffusion = Spreading away particles from high concentration to a low concentration. Mitochondria = Release energy.

Villi = Are found in the small intestine - looks like bread crumbs.

Normal Colica

Loss of mitochondria to reduce the active transport.

Key word: Active transport enzymes.

Key point: Villi has a rich blood supply, has a large surface area, has a good blood supply, has a large surface area.

Supply to remove this product is a product of digestion.

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Stuck:
Firstly the villi are...
This increases the...
Therefore...
As well as this they have...
This means that...

Describe and explain how the villi are adapted to maximise the rate of absorption of the products of digestion.

Firstly the villi are short to allow the food to travel through them more easily. If the villi were long and the food was trying to travel through them it would get stuck because of the large villi and that's why the villi are short. So it is easier to get through the villi and then transport the nutrients. It's also good that it has a large surface area because it could take away more of the nutrients. It would have more of them. What provides the large surface area?

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3/5 (Total marks)