Active Transport **Comprehension Questions**

1. Define active transport.

2. Name **one** place active transport is important in animals.

3. Name **one** place active transport is important in plants.

4. Describe how cells get the energy required for active transport.

5. Explain why villi are adapted to have an increased surface area.

6. Explain how glucose is transported from the small intestine into the bloodstream after a high sugar content meal.

7. Explain why active transport is important in plants.

8. Suggest what would happen in humans if the carrier proteins in the cells lining the small intestine become denatured.

Active Transport **Comprehension Answers**

1. Define active transport.

   The process of moving substances across membranes, from a more dilute solution to a more concentrated solution, against a concentration gradient.

2. Name **one** place active transport is important in animals.

   villi/cells lining the small intestine

3. Name **one** place active transport is important in plants.

   root hair cells

4. Describe how cells get the energy required for active transport.

   The energy is released by mitochondria during respiration.

5. Explain why villi are adapted to have an increased surface area.

   To maximise the rate of uptake of glucose from the small intestine into the bloodstream by active transport.

6. Explain how glucose is transported from the small intestine into the bloodstream after a high sugar content meal.

   Once food starts to digest in the small intestine, there is a higher concentration of glucose in the small intestine than in the bloodstream. Therefore, glucose moves by diffusion from the small intestine into the bloodstream.

   After a while, the concentration of glucose in the small intestine and the bloodstream become equal.

   The remaining glucose is transported from the small intestine into the bloodstream via active transport, this requires energy.

7. Explain why active transport is important in plants.

   Minerals such as nitrate ions are needed so that plants can remain healthy. They get nitrate ions from the soil surrounding the roots.

   The concentration of nitrate ions is lower in the soil surrounding the root hair cell than inside the cell.

   Therefore, the ions must be transported against the concentration gradient via active transport.

8. Suggest what would happen in humans if the carrier proteins in the cells lining the small intestine become denatured.

   Less glucose would be absorbed into the bloodstream as active transport would no longer take place. Therefore, less glucose would be transported to cells and tissues, so less energy would be released by respiration.