6 **(a)** Phosphoinositide 3-kinase (PI3K) and protein kinase B (PKB) are enzymes involved in the regulation of blood glucose concentration.

Fig. 6.1 shows a cell-signalling pathway involving insulin, PI3K and PKB in a muscle cell.

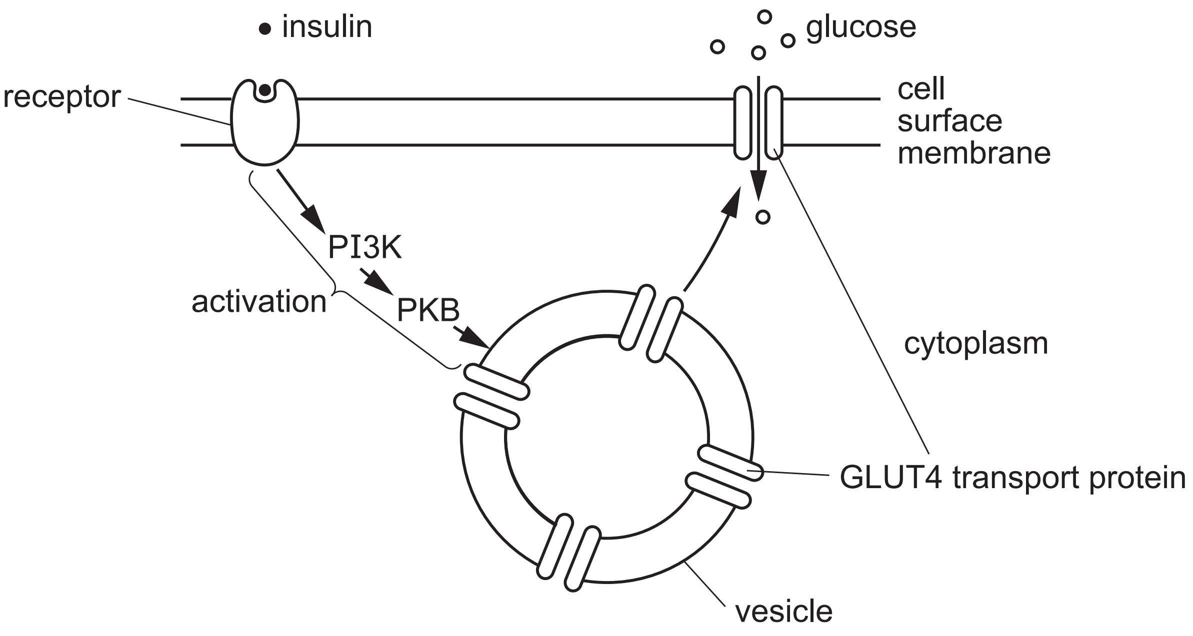

Fig. 6.1

Type 2 diabetes mellitus is a common disease. Some people with type 2 diabetes have a low concentration of PI3K in their muscle cells and cannot maintain their blood glucose concentration within normal limits.

With reference to Fig. 6.1, suggest why a low concentration of PI3K can lead to type 2 diabetes.

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(b) Describe how a biosensor can be used to measure blood glucose concentration.

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