B2.1 Membranes and membrane transport: data-based questions

What the Cell · DP Biology · data-based questions

Name _____ **Date** _____ **Total** _____ / 7

Read the data carefully before you answer. The number of marks shows how many separate points to make. Show your working in calculations.

1 Glucose entry into red blood cells

7 marks

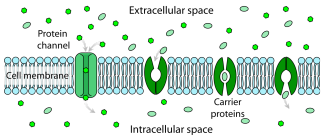
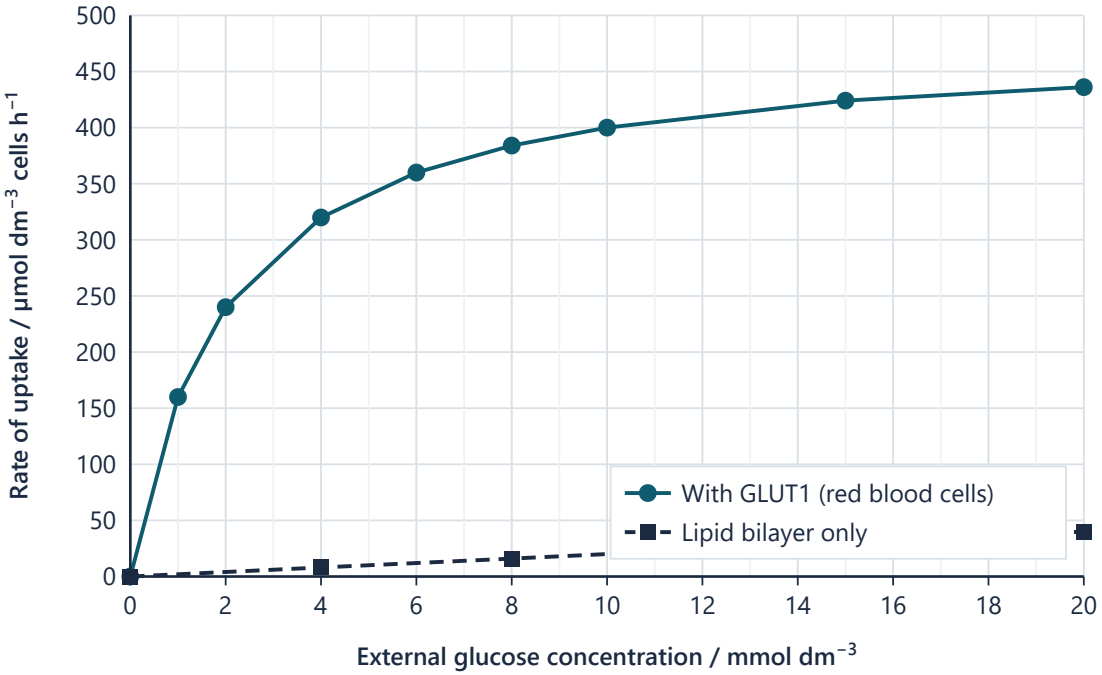


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Red blood cells take up glucose through GLUT1 carrier proteins in the plasma membrane. The rate of glucose uptake was measured at different external glucose concentrations, in normal cells and in artificial lipid vesicles that have no carrier proteins.



a **State** the rate of uptake through GLUT1 at an external glucose concentration of 4 mmol dm^{-3}. **[1]**

b **Compare** the uptake of glucose with and without carrier proteins. **[2]**

c **Explain** why the rate of uptake through GLUT1 levels off. **[2]**

d **Calculate** how many times faster uptake is with GLUT1 than through the bilayer alone at 10 mmol dm^{-3}. **[1]**

e **Suggest** why glucose crosses the lipid bilayer so slowly. **[1]**