

NAME: _____

Quiz 6

Things to remember

$$\text{For } A + B \rightarrow C + D: \Delta G^\circ = -RT \ln \left(\frac{[C]_{eq}[D]_{eq}}{[A]_{eq}[B]_{eq}} \right) \text{ and } \Delta G = \Delta G^\circ + RT \ln \left(\frac{[C][D]}{[A][B]} \right)$$

Your body is 310 K and $R = 0.00199 \text{ Cal Mole}^{-1} \text{ K}^{-1}$.



1. If the [glucose] across the enterocyte membrane is the same at equilibrium and the $[\text{Na}^+]$ across the enterocyte membrane is the same at equilibrium, determine ΔG° for the above reaction.
2. If the enterocyte is spontaneously importing glucose and Na^+ through SGLT1, what must the value for ΔG be for the above reaction?
3. If the [glucose] inside the enterocyte is 5 mM, the [glucose concentration in the jejunum is 2 mM, and the $[\text{Na}^+]$ in the jejunum is 120 mM; what $[\text{Na}^+]$ must the Na^+/K^+ pump of the enterocyte maintain within the inside of the enterocyte for SGLT1 to continue to spontaneously import glucose and Na^+ .

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