

Answer on Question #57441 - Biology - Biochemistry

Question:

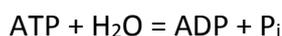
What is meant by high transfer potential?

Solution

Various reactions in biochemistry require the transfer of a functional group from a donor molecule to a particular receptor molecule. The concept of group transfer potential reveals the trend for such reactions to occur.

The group transfer potential is the free energy change that occurs upon hydrolysis, that is, upon transfer of the particular group to water.

The release of free energy that occurs upon the hydrolysis of ATP can be treated quantitatively in terms of group transfer. For the hydrolysis of ATP



the group transfer potential represents the free energy change is given by

$$\Delta G^\circ = -RT \ln K_{eq}$$

where K_{eq} the equilibrium constant for the group transfer

$$K_{eq} = \frac{[\text{ADP}][\text{P}_i]}{[\text{ATP}][\text{H}_2\text{O}]}$$

So, transfer potential is the negative of the value of ΔG° for the hydrolysis reaction. The hydrolysis of a species with a high transfer potential can drive the phosphorylation of a species with a lower transfer potential.