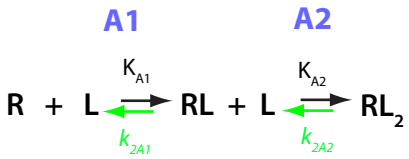
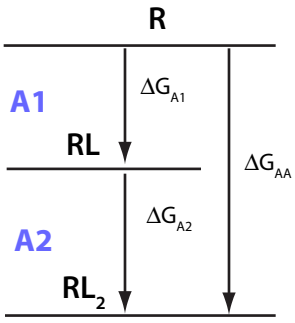
B
Binding of two ligand molecules to one receptor monomer

Reaction scheme (macroscopic constants)



Free-energy diagram
(positions of energy levels are chosen for easy viewing)

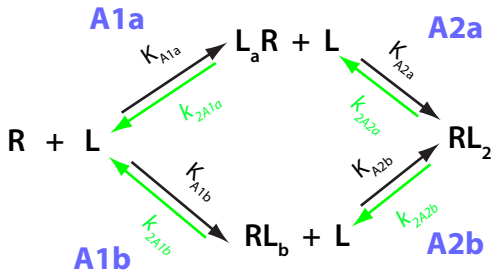


Thermodynamic cycle

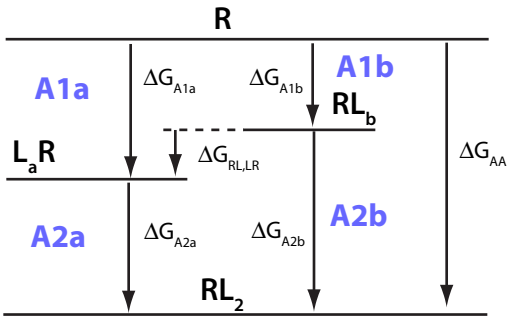
$\Delta G^{o}_{AA} = \Delta G^{o}_{A1} + \Delta G^{o}_{A2}$

$K_{AA} = K_{A1} K_{A2}$

Reaction scheme (microscopic constants)



Free-energy diagram
(positions of energy levels are chosen for easy viewing)



Thermodynamic cycle

$\Delta G^{o}_{AA} = \Delta G^{o}_{A1a} + \Delta G^{o}_{A2a} = \Delta G^{o}_{A1b} + \Delta G^{o}_{A2b}$, => $K_{AA} = K_{A1a}K_{A2a} = K_{A1b}K_{A2b}$

Dependent constant: $K_{A2b} = K_{A1a}K_{A2a}/K_{A1b}$

Additional equilibrium constant:

$\Delta G^{o}_{RL,LR} = \Delta G^{o}_{A1a} - \Delta G^{o}_{A1b}$, => $K_{RL,LR} = K_{A1a}/K_{A1b}$