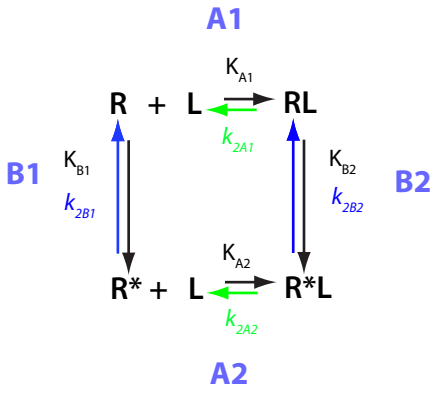
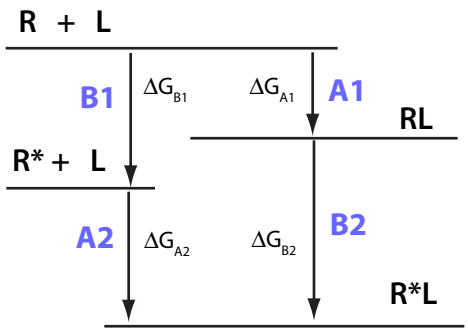
U-R-RL
Binding of one ligand coupled with intramolecular isomerization

Reaction scheme



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



Definitions of relationships between constants and energies (examples)

Equilibrium constant of binding: $K_{A1}=[RL]/[R][L]$

Equilibrium constant of isomerizaion: $K_{B1}=[R^*]/[R]$

Equilibrium constant expressed in terms of kinetic constants: $K_{A1}=k_{1A1}/k_{2A1}$

Standard free energy difference between the two states:
$\Delta G^o_{B1} = G^o_{R^*} - G^o_R = -RT \ln(K_{B1}) = - RT \ln([R^*]/[R])$

Thermodynamic cycle

$\Delta G^o_{B1} + \Delta G^o_{A2} = \Delta G^o_{A1} + \Delta G^o_{B2}$

$-RT \ln(K_{B1})-RT \ln(K_{A2})=-RT \ln(K_{A1})-RT \ln(K_{B2})$

$K_{B1}K_{A2}=K_{A1}K_{B2}$

We only need to set three equilibrium constants and the fourth will be dependent. To remove this dependent transition from kinetic analysis: set its reverse rate to a very small number, this will set forward rate to a small number too.

My plan
I will assume that I know equilibrium constants for B1, A1 and B2. Dependent constant then is $K_{A2}=K_{A1}K_{B2}/K_{B1}$

If we want to turn that around and assume we know constants for A1, A2, and B1, then for computations I will use $K_{B2} = K_{B1}K_{A2}/K_{A1}$