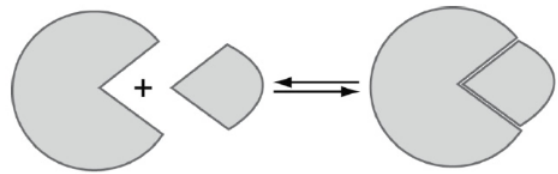


21.6: Protein Recognition and Binding

Enzyme/Substrate Binding

Lock-and-Key (Emil Fisher)

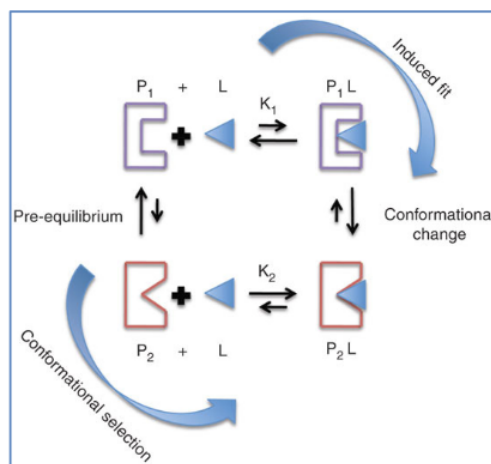
- Emphasizes shape complementarity
- Substrate typically rigid
- Concepts rooted in initial and final structure
- Does not directly address recognition



But protein-binding reactions typically involve conformational changes. Domain flexibility can give rise to dramatic increase in binding affinity. A significant conformational change/fluctuation may be needed to allow access to the binding pocket.

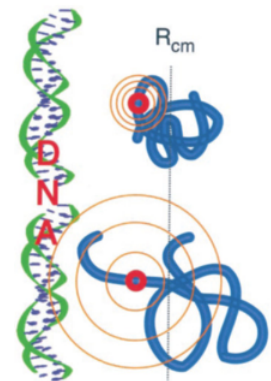
For binding a substrate, two models vary in the order of events for conformational change vs. binding event:

1. Induced fit (Daniel Koshland)
2. Conformational selection: Pre-existing equilibrium established during which enzyme explores a variety of conformations.



Protein-Protein Interactions

- Appreciation that structure is not the only variable
- Coupled folding and binding
 - Fold on contact
 - Fly-casting
- Both partners may be flexible



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