

# Allosteric Models in Biology

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*Course start date: January 23<sup>rd</sup> (Monday) 2017*

Hours: 11:30 am – 1:00 pm

Days: Jan 23, 24, and 25

## Syllabus

- 1. Introduction, MM equation, Substrate Definition**
- 2. The Hill Equation**
  - a. Definition, linear form, as a slope, statistical definition
  - b. Hill constant for a symmetric dimer
  - c. Hill constant for an asymmetric dimer
- 3. The MWC Model**
  - a. Hill constant for the MWC model – exclusive case for a symmetric dimer
  - b. Hill constant for the MWC model – non-exclusive case for an asymmetric dimer
- 4. The KNF model**
- 5. Partition Functions**
  - a. MM
  - b. MWC-exclusive
  - c. MWC-non-exclusive
  - d. Comparing MWC, non-exclusive with fraction in R-state
  - e. MWC-exclusive with inhibitor binding exclusively to the T-state
  - f. MWC-exclusive with inhibitor binding to both T- and R-states
- 6. Solving Equations for Kinetic Mechanisms using Cramer's Rule**
  - a. MM
  - b. Competitive inhibition
  - c. Allostery in monomeric enzymes
- 7. Cooperativity Owing to Dissociation**
- 8. Induced Fit vs Conformational Selection**