NPTEL Video Course - Physics - NOC:Physics of Biological Systems

Subject Co-ordinator - Prof. Mithun Mitra

Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 30 - Entropic springs and persistence length
Lecture 31 - Freely rotating chain model and radius of gyration
Lecture 32 - The hierarchical chromatin packing model
Lecture 33 - FISH and DNA looping
Lecture 34 - Nucleosomes as barriers, Hi-C, and contact probabilities
Lecture 35 - Deriving the full force extension curve
Lecture 36 - Random walk models for proteins
Lecture 37 - Hydrophobic polar protein model
Lecture 38 - Diffusion in crowded environments
Lecture 39 - Depletion interactions
Lecture 40 - Examples and implications of depletion interactions
Lecture 41 - Introduction to Biological dynamics
Lecture 42 - Introduction to rate equations
Lecture 43 - Separation of timescales in enzyme kinetics
Lecture 44 - Structure and treadmilling of actins and microtubules
Lecture 45 - Average length of polymers in equilibrium
Lecture 46 - Growth rate of polymers
Lecture 47 - Dynamic treadmilling in microtubules
Lecture 48 - Introduction to molecular motors
Lecture 49 - Force generation by molecular motors
Lecture 50 - Models of motor motion
Lecture 51 - molecular motors
Lecture 52 - Free energies of motor for stepping
Lecture 53 - Two state models
Lecture 54 - cooperative transport of cargo
Lecture 55 - Cytoskeleton as a motor
Lecture 56 - translocation ratchet
Lecture 57 - Spatial pattern in biology
Lecture 58 - Some common spatial patterns in biology
Lecture 59 - reaction diffusion and spatial pattern
Lecture 60 - Pattern formation in reaction diffusion system with stability
Lecture 61 - Condition for destablization in pattern formation
Lecture 62 - Schnakenberg kinetics