MB207 Jan 2:0

DNA-Protein interaction, Regulation of gene expression, Nanobiology

Instructor

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Department: Molecular Biophysics Unit

Course Time:

Lecture venue:

Detailed Course Page:

Announcements

Brief description of the course

asic concepts on structural basis for macromolecular recognition. Concept of charge in macromolecules, specific and non-specific recognition, symmetry in DNA-protein recognition, structural ensembles, co-operativity, specific examples, story of lambda, restriction enzyme recognition, t-RNA synthetase recognition, promoter-RNA polymerase interaction, inducers and repressors, action at a distance. Single molecule paradigm. Methods to follow nanobiology. DNA-protein recognition at the level of single molecules.

Prerequisites

None

Syllabus

Basic concepts on structural basis for macromolecular recognition. Concept of charge in macromolecules, specific and non-specific recognition, symmetry in DNA-protein recognition, structural ensembles, co-operativity, specific examples, story of lambda, restriction enzyme recognition, t-RNA synthetase recognition, promoter-RNA polymerase interaction, inducers and repressors, action at a distance. Single

molecule paradigm. Methods to follow nanobiology. DNA-protein recognition at the level of single molecules.

Course outcomes

Students taking this course will be:

Able to describe and explain the parameters that control biomolecular interactions and recognition esp. in the context of gene regulation.

Explain how single molecule methods are used to understand such molecular interactions at the nanoscale

Design and apply such studies to problems of board scientific interest that involve molecular interactions

Grading policy

10% Assignments

40% Mid-term

50% Finals

Assignments

Resources