NPTEL : Biomathematics (Biotechnology)

Co-ordinators : Dr. Ranjith Padinhateeri

NPTEL : Proteomics: Principles and Techniques (Biotechnology)

Co-ordinators : Prof. Sanjeeva Srivastava

NPTEL : NOC:Proteins and Gel-Based Proteomics (Biotechnology)

Co-ordinators : Prof. Sanjeeva Srivastava

NPTEL : NOC:Mass spectrometry based proteomics (Biotechnology)

Co-ordinators : Prof. Sanjeeva Srivastava

NPTEL : NOC:Interactomics: Protein Arrays and Label-free Biosensors (Biotechnology)

Co-ordinators : Prof. Sanjeeva Srivastava

Lecture 1 - Introduction to Interactomics

Lecture 2 - An overview of label-free technologies

Lecture 3 - An overview of surface plasmon resonance (SPR)

Lecture 4 - An overview of surface plasmon resonance imaging (SPRi)

Lecture 5 - Basics of SPR: Surface chemistry

Lecture 6 - Basics of SPR: Experimental design

Lecture 7 - Protein immobilization for protein-protein interaction studies

Lecture 8 - Protein-protein interaction study: Binding analysis

Lecture 9 - Protein-protein interaction study: Kinetic analysis

Lecture 10 - Protein-small molecule interaction study: Immobilization and binding analysis

Lecture 11 - Protein-small molecule interaction study: Kinetic analysis

Lecture 12 - SPR: Interactive Session - I

Lecture 13 - SPR: Interactive Session - II

Lecture 14 - An overview of ellipsometry and interferometry techniques

Lecture 15 - An introduction to BioLayer Interferometry (BLI) and its applications in protein research

Lecture 16 - Kinetic analysis of protein-protein interaction using BLI

Lecture 17 - Label-free quantification of proteins using BLI

Lecture 18 - Diffraction-based biosensors - I

Lecture 19 - Diffraction-based biosensors - II

Lecture 20 - Nanotechniques in proteomics - I

Lecture 21 - Nanotechniques in proteomics - II

Lecture 22 - High throughputplatforms of interactomics: Protein arrays

Lecture 23 - Conventional label based detection techniques for Protein microarrays

Lecture 24 - Novel detection techniques for Protein microarrays

Lecture 25 - Recombinational cloning and its application for Protein microarrays

Lecture 26 - An introduction to Cell-free protein synthesis

Lecture 27 - Cell-free synthesis based protein microarrays: PISA and NAPPA

Lecture 28 - Cell-free synthesis based protein microarrays: MIST, DAPA and Halotag Arrays

Lecture 29 - Digging deeper into NAPPA: Basic Workflow

Lecture 30 - Digging deeper into NAPPA: Surface Chemistry, Printing and Assessment

Lecture 31 - Application of cell free expression protein microarrays in biomarker discovery

NPTEL : NOC:Introduction to Proteomics (Biotechnology)

Co-ordinators : Prof. Sanjeeva Srivastava

NPTEL : NOC:Introduction to Biostatistics (Biotechnology)

Co-ordinators : Prof. Shamik Sen

NPTEL : NOC:Introduction to Mechanobiology (Biotechnology)

Co-ordinators : Prof. Shamik Sen

NPTEL : NOC:Introductory Mathematical Methods for Biologists (Biotechnology)

Co-ordinators : Dr. Ranjith Padinhateeri

NPTEL : NOC:Bioengineering: An Interface with Biology and Medicine (Biotechnology)

Co-ordinators : Prof. Sanjeeva Srivastava

NPTEL : NOC:Applications of Interactomics using Genomics and Proteomics Technologies (Biotechnology)

Co-ordinators : Prof. Sanjeeva Srivastava

NPTEL : NOC:Introduction to Proteogenomics (Biotechnology)

Co-ordinators : Prof. Sanjeeva Srivastava

NPTEL : NOC:Interactomics: Basics and Applications (Biotechnology)

Co-ordinators : Prof. Sanjeeva Srivastava

NPTEL : NOC:Maternal Infant Young Child Nutrition (Biotechnology)

Co-ordinators : Prof. Rupal Dalal

NPTEL : NOC:Maternal Infant Young Child Nutrition (Hindi) (Biotechnology)

Co-ordinators : Prof. Rupal Dalal

Lecture 1 - à¤ªà¤¹à¤²à¥‡ à¤²à¤•à¥à¤·à¤¯ : à¤à¤¨à¤šà¤«à¤¾, 5 à¤¡à¥‡à¤Ÿà¤¾

Lecture 2 - à¤¦à¥‚à¤‚à¤°à¤¾ à¤²à¤•à¥à¤·à¤¯ : à¤•à¤¼à¤°à¥à¤¯à¤•à¥à¤·à¤® à¤‚à¥‡ à¤‚à¤¾à¤•à¥à¤·à¤¯

Lecture 3 - à¤¤à¥€à¤¸à¤°à¤¾ à¤²à¤•à¥à¤·à¤¯ : à¤®à¤¾à¤¤à¥*f* à¤¶à¤¿à¤¶à¥ à¤¯à¥à¤µà¤¾ à¤¬à¤¾à¤²à¤¿à¤•à¤¾ à¤•à¥‹à¤·à¤£ à¤•à¥€ à¤°à¤•à¤¾à¤‡à¤–à¤¾ à¤”à¤° à¤•à¥à¤·à¤®à¤¤à¤¾ à¤¨à¤¿à¤°à¥à¤®à¤¾à¤£

Lecture 4 - à¤ªà¤¹à¤²à¥‡ à¤²à¤•à¥à¤·à¤¯ : à¤²à¤¾à¤‡à¤¨ à¤‚à¥‡à¤¶à¤¨

Lecture 5 - à¤¦à¥‚à¤‚à¤°à¤¾ à¤²à¤•à¥à¤·à¤¯ : à¤ªà¤¹à¤²à¥‡ à¤ªà¤¹à¤²à¤¾ à¤”à¤° à¤¦à¥‚à¤‚à¤°à¤¾ à¤ªà¥à¤°à¤•à¤¾à¤° à¤•à¥‡ à¤ªà¥‹à¤·à¤• à¤¤à¤¤à¥à¤µ - à¤¹à¥‡à¤²à¤²à¥à¤¥ à¤‚à¥à¤ªà¥‹à¤•à¤¨ à¤Ÿà¥à¤¯à¥‚à¤¬à¥‡à¤Ÿà¤¿à¤¯à¤¾ à¤²à¤¿à¤¯à¤¾

Lecture 6 - à¤¤à¥€à¤¸à¤°à¤¾ à¤²à¤•à¥à¤·à¤¯ : à¤ªà¥à¤°à¥‹à¤Ÿà¥€à¤¨ à¤•à¤¾ à¤®à¤¹à¤¤à¥à¤µ

Lecture 7 - à¤šà¥Œà¤¥à¤¾ à¤²à¤•à¥à¤·à¤¯ : à¤•à¥‹à¤²à¥€à¤¨ à¤•à¤¾ à¤®à¤¹à¤¤à¥à¤µ

Lecture 8 - à¤ªà¤¾à¤‚à¤šà¤µà¤¾ à¤²à¤•à¥à¤·à¤¯ : à¤«à¥‹à¤²à¥‡à¤Ÿ à¤•à¤¾ à¤®à¤¹à¤¤à¥à¤µ

Lecture 9 - à¤›à¤ à¤¾ à¤²à¤•à¥à¤·à¤¯ : à¤¬à¥€ 12 à¤•à¤¾ à¤®à¤¹à¤¤à¥à¤µ

Lecture 10 - à¤‚à¤¾à¤¤à¤µà¤¾à¤‚, à¤²à¤•à¥à¤·à¤¯ : à¤‚à¥‡à¤•à¥‡à¤¨à¤¿à¤¯à¤® à¤•à¤¾ à¤®à¤¹à¤¤à¥à¤µ à¤µà¤¿à¤Ÿà¤¾à¤®à¤¿à¤¨ à¤ à¤•à¤¾ à¤®à¤¹à¤¤à¥à¤µ

Lecture 11 - à¤ªà¤¹à¤²à¤¾ à¤²à¤•à¥à¤·à¤¯ : à¤•à¥^à¤²à¥¶à¤¿à¤¯à¤® à¤•à¤¾ à¤®à¤¹à¤¤à¥à¤µ

Lecture 12 - à¤¦à¥‚à¤‚à¤°à¤¾ à¤²à¤•à¥à¤·à¤¯ : à¤®à¥^à¤—à¥¨à¥€à¤¶à¤¿à¤¯à¤® à¤•à¤¾ à¤®à¤¹à¤¤à¥à¤µ

Lecture 13 - à¤¤à¥€à¤¸à¤°à¤¾ à¤²à¤•à¥à¤·à¤¯ : à¤ªà¥‹à¤Ÿà¥‡à¤¶à¤¿à¤¯à¤® à¤•à¤¾ à¤®à¤¹à¤¤à¥à¤µ

Lecture 14 - à¤šà¥Œà¤¥à¤¾ à¤²à¤•à¥à¤·à¤¯ : à¤œà¤‚à¤• à¤«à¥‚à¤¡

Lecture 15 - à¤ªà¤¾à¤šà¤µà¤¾ à¤²à¤•à¥à¤·à¤¯ : à¤‡à¤‚à¤¨à¥à¤¯à¥‚à¤¨à¤¿à¤à¥€ à¤•à¤¾ à¤®à¤¹à¤¤à¥à¤µ

Lecture 16 - à¤›à¤ à¤¾ à¤²à¤•à¥à¤·à¤¯ : à¤®à¥^à¤•à¥°à¥‹à¤¨à¥à¤¯à¥à¤¿à¤¯à¤¨à¥, à¤•à¤¾ à¤ªà¤°à¤¿à¤šà¤¯

Lecture 17 - à¤ªà¤¹à¤²à¤¾ à¤²à¤•à¥à¤·à¤¯ : à¤ªà¤¹à¤²à¥‡ 1,000 à¤¦à¤¿à¤¨

Lecture 18 - à¤¦à¥‚à¤‚à¤°à¤¾ à¤²à¤•à¥à¤·à¤¯ : à¤—à¤°à¥à¤à¤¾à¤µà¤¸à¥à¤¥à¤¾ à¤®à¤¹à¤¿à¤²à¤¾à¤“ à¤•à¥‡ à¤²à¤¿à¤ à¤¸à¤°à¤² à¤¥à¤°à¤¾à¤¹à¤°à¥€ à¤•à¤¾à¤¯à¤¦à¥‡

Lecture 19 - à¤¤à¥€à¤¸à¤°à¤¾ à¤²à¤•à¥à¤·à¤¯ : à¤†à¤¯à¤¾à¤¨ à¤•à¤¾ à¤®à¤¹à¤¤à¥à¤µ

Lecture 20 - à¤šà¥Œà¤¥à¤¾ à¤²à¤•à¥à¤·à¤¯ : à¤µà¤¿à¤Ÿà¤¾à¤®à¤¿à¤¨ à¤‚à¥€ à¤•à¤¾ à¤®à¤¹à¤¤à¥à¤µ

Lecture 21 - à¤ªà¤¾à¤šà¤µà¤¾ à¤²à¤•à¥à¤·à¤¯ : à¤‚à¤²à¥«à¤° à¤•à¤¾ à¤®à¤¹à¤¤à¥à¤µ

Lecture 22 - à¤ªà¤¹à¤²à¤¾ à¤²à¤•à¥à¤·à¤¯ : à¤‚à¥à¤¯à¤¾à¤¨ à¤•à¤¾ à¤µà¤¿à¤œà¥à¤žà¤¾à¤¨

Lecture 23 - à¤¦à¥‚à¤‚à¤°à¤¾ à¤²à¤•à¥à¤·à¤¯ : à¤‚à¥à¤¨à¤¹à¤°à¤¾ à¤˜à¤‚à¤Ÿà¤¾ à¤”à¤° à¤–à¥€à¤¨, à¤ªà¤¿à¤²à¤¾à¤¨à¥ à¤•à¤¾ à¤®à¤¹à¤¤à¥à¤µ

Lecture 24 - à¤¤à¥€à¤¸à¤°à¤¾ à¤²à¤•à¥à¤·à¤¯ : à¤‚à¥à¤¯à¤¾à¤¨ à¤•à¤¾ à¤®à¤¹à¤¤à¥à¤µ

Lecture 25 - à¤šà¥Œà¤¥à¤¾ à¤²à¤•à¥à¤·à¤¯ : à¤¬à¥à¤°à¥‡à¤‚à¤¥à¥ à¤•à¥à¤°à¥‰à¤¨

Lecture 26 - à¤ªà¤¾à¤šà¤µà¤¾ à¤²à¤•à¥à¤·à¤¯ : à¤‚à¥à¤¯à¤¾à¤¨ à¤•à¥€ à¤°à¤•à¥à¤·à¤¾ à¤•à¥‡ à¤²à¤¿à¤ à¤¸à¤¿à¤¦à¥à¤§à¤¾à¤¨à¥à¤¤

Lecture 27 - à¤›à¤ à¤¾ à¤²à¤•à¥à¤·à¤¯ : à¤¨à¤µà¤œà¤¾à¤¤ à¤¶à¤¿à¤¶à¥ à¤•à¥‡ à¤²à¤¿à¤ à¤¸à¤°à¥à¤µà¥‹à¤¤à¥à¤¤à¤® à¤¦à¥‚à¤§ à¤•à¥‡ à¤¨à¤¿à¤°à¥à¤®à¤¾à¤£, - à¤¨à¤µà¤œà¤¾à¤¤ à¤¶à¤¿à¤¶à¥ à¤•à¥‡ à¤²à¤¿à¤ à¤¸à¤°à¥à¤µà¥‹à¤¤à¥à¤¤à¤® à¤¦à¥‚à¤§

Lecture 28 - à¤¸à¤¾à¤¤à¤µà¤¾à¤‚ à¤²à¥‡à¤•à¥à¤šà¤° : à¤•à¤¸à¤—à¤¾à¤°à¥‚ à¤®à¤¦à¤° à¤•à¥‡à¤¯à¤° - à¤Ÿà¥‹à¤ªà¥€ à¤•à¥‡ à¤¸à¤¾à¤¥ à¤•à¤¸à¤—à¤¾à¤°à¥‚ à¤¬à¥ˆà¤— à¤¬à¤¨à¤¾à¤¨à¥‡ à¤•à¤¾ à¤¤à¤°à¥€à¤•à¤¾

Lecture 29 - à¤ªà¤¹à¤²à¤¾ à¤²à¥‡à¤•à¥à¤šà¤° : à¤®à¤¾à¤ à¤•à¥€ à¤¤à¥ˆà¤¯à¤¾à¤°à¥€ à¤”à¤° à¤¬à¤šà¥à¤šà¥‡ à¤•à¥€ à¤¸à¥à¤¥à¤¿à¤¤à¤¿

Lecture 30 - à¤¦à¥‚à¤¸à¤°à¤¾ à¤²à¥‡à¤•à¥à¤šà¤° : à¤¸à¥à¤¤à¤¨ à¤•à¥‹ à¤ªà¤•à¤¡à¤¼à¤¨à¤¾ à¤”à¤° à¤¬à¤šà¥à¤šà¥‡ à¤•à¥‹ à¤¸à¥à¤¤à¤¨ à¤¸à¥‡ à¤²à¤—à¤¾à¤¨à¤¾

Lecture 31 - à¤¤à¥€à¤¸à¤°à¤¾ à¤²à¥‡à¤•à¥à¤šà¤° : à¤…à¤¨à¥à¤¯ à¤ªà¤°à¤¾à¤®à¤°à¥à¤¶ à¤¬à¤¿à¤‚à¤¦à¥

Lecture 32 - à¤šà¥Œà¤¥à¤¾ à¤²à¥‡à¤•à¥à¤šà¤° : à¤•à¥à¤°à¥‰à¤¸ à¤•à¥à¤°à¥‡à¤¡à¤² à¤¸à¥à¤¥à¤¿à¤¤à¤¿ à¤”à¤° à¤²à¥ˆà¤šà¤¿à¤‚à¤— à¤ªà¤° à¤¹à¥‡à¤²à¥à¤¥ à¤¸à¥à¤ªà¥‹à¤•à¤¨ à¤Ÿà¥à¤¯à¥‚à¤Ÿà¥‹à¤°à¤¿à¤¯à¤²

Lecture 33 - à¤ªà¤¾à¤‚à¤šà¤µà¤¾ à¤²à¥‡à¤•à¥à¤šà¤°: à¤•à¥à¤°à¥‰à¤¸ à¤•à¥à¤°à¥‡à¤¡à¤² à¤¸à¥à¤¥à¤¿à¤¤à¤¿ à¤®à¥‡à¤‚ à¤¬à¤šà¥à¤šà¥‡ à¤•à¥‹ à¤¦à¥‚à¤§ à¤ªà¤¿à¤²à¤¾à¤¨à¥‡ à¤®à¥‡à¤‚ à¤†à¤¨à¥‡ à¤µà¤¾à¤²à¥€ à¤¸à¤®à¤¸à¥à¤¯à¤¾à¤“à¤‚ à¤•à¤¾ à¤¸à¤®à¤¾à¤§à¤¾à¤¨

Lecture 34 - à¤›à¤ à¤¾ à¤²à¥‡à¤•à¥à¤šà¤° : à¤¸à¥à¤¥à¤¿à¤¤à¤¿ à¤”à¤° à¤—à¤¹à¤°à¥‡ à¤œà¥à¤¡à¤¼à¤¾à¤µ à¤•à¥‡ à¤²à¤¾à¤‡à¤µ à¤µà¥€à¤¡à¤¿à¤¯à¥‹

Lecture 35 - à¤ªà¤¹à¤²à¤¾ à¤²à¥‡à¤•à¥à¤šà¤°-à¤… : à¤¸à¥à¤¤à¤¨à¤ªà¤¾à¤¨ à¤•à¥‡ à¤²à¤¿à¤ à¤«à¥à¤Ÿà¤¬à¥‰à¤² à¤ªà¤•à¤¡à¤¼

Lecture 36 - à¤¦à¥‚à¤¸à¤°à¤¾ à¤²à¥‡à¤•à¥à¤šà¤°-à¤… : à¤à¤• à¤¤à¤°à¤« à¤²à¥‡à¤Ÿ à¤•à¤° à¤¸à¥à¤¤à¤¨à¤ªà¤¾à¤¨ à¤•à¤°à¤¾à¤¨à¥‡ à¤•à¥€ à¤ªà¤•à¤¡à¤¼

Lecture 37 - à¤¤à¥€à¤¸à¤°à¤¾ à¤²à¥‡à¤•à¥à¤šà¤°-à¤… : à¤¸à¥à¤¤à¤¨à¤ªà¤¾à¤¨ à¤•à¤¾à¤°à¤•à¥‹à¤‚ à¤”à¤° à¤…à¤¨à¥à¤¯ à¤•à¤¾à¤°à¤•à¥‹à¤‚ à¤•à¥‡ à¤•à¤¾à¤°à¤£ à¤•à¤® à¤µà¥›à¤¨ à¤¬à¥à¤¨à¤¾|

Lecture 38 - à¤šà¥Œà¤¥à¤¾ à¤²à¥‡à¤•à¥à¤šà¤° : à¤•à¥‹à¤µà¤¿à¤¡ - 19 à¤•à¥‡ à¤¦à¥Œà¤°à¤¾à¤¨ à¤¸à¥à¤¤à¤¨à¤ªà¤¾à¤¨

Lecture 39 - à¤ªà¤¾à¤‚à¤šà¤µà¤¾ à¤²à¥‡à¤•à¥à¤šà¤°-à¤… : à¤¹à¤¾à¤¥ à¤¸à¥‡ à¤¸à¥à¤¤à¤¨ à¤•à¤¾ à¤¦à¥‚à¤§ à¤¨à¤¿à¤•à¤¾à¤²à¤¨à¤¾

Lecture 40 - à¤›à¤ à¤¾ à¤²à¥‡à¤•à¥à¤šà¤°-à¤… : à¤¸à¥à¤¤à¤¨à¤ªà¤¾à¤¨ à¤•à¤°à¤¾à¤¤à¥€ à¤®à¤¾à¤“à¤‚ à¤•à¥‡ à¤¨à¤¿à¤ªà¥à¤ªà¤² à¤•à¥€ à¤¸à¥à¤¥à¤¿à¤¤à¤¿

Lecture 41 - à¤ªà¤¹à¤²à¤¾ à¤²à¥‡à¤•à¥à¤šà¤°-à¤… : 6 à¤¸à¥‡ 24 à¤®à¤¹à¥€à¤¨à¥‡ à¤•à¥‡ à¤¶à¤¿à¤¶à¥à¤“à¤‚ à¤•à¥‡ à¤²à¤¿à¤ à¤ªà¥‚à¤°à¤• à¤†à¤¹à¤¾à¤° à¤•à¥‡ à¤¸à¤‚à¤¬à¤‚à¤§ à¤®à¥‡à¤‚ à¤¦à¤¿à¤¶à¤¾-à¤¨à¤¿à¤°à¥à¤¦à¥‡à¤¶

Lecture 42 - à¤¦à¥‚à¤¸à¤°à¤¾ à¤²à¥‡à¤•à¥à¤šà¤°-à¤… : à¤¶à¤¿à¤¶à¥ à¤•à¤¾ à¤–à¤¾à¤¨à¤¾ à¤¬à¤¨à¤¾à¤¨à¥‡ à¤”à¤° à¤–à¤¿à¤²à¤¾à¤¤à¥‡ à¤¹à¥à¤ à¤–à¥à¤¦ à¤•à¥€ à¤¸à¤«à¤¾à¤ˆ à¤•à¥€ à¥›à¤°à¥‚à¤°à¤¤

Lecture 43 - à¤¤à¥€à¤¸à¤°à¤¾ à¤²à¥‡à¤•à¥à¤šà¤°-à¤… : 6 à¤®à¤¹à¥€à¤¨à¥‡ à¤•à¥‡ à¤¬à¤šà¥à¤šà¥‹à¤‚ à¤•à¥‡ à¤²à¤¿à¤ à¤¶à¤¾à¤•à¤¾à¤¹à¤¾à¤°à¥€ à¤”à¤° à¤®à¤¾à¤‚à¤¸à¤¾à¤¹à¤¾à¤°à¥€ à¤–à¤¾à¤¨à¤¾ à¤¬à¤¨à¤¾à¤¨à¥‡ à¤•à¥‡ à¤¤à¤°à¥€à¤•à¥‡

Lecture 44 - à¤šà¥Œà¤¥à¤¾ à¤²à¥‡à¤•à¥à¤šà¤°-à¤… : 7 à¤®à¤¹à¥€à¤¨à¥‡ à¤•à¥‡ à¤¬à¤šà¥à¤šà¥‹à¤‚ à¤•à¥‡ à¤²à¤¿à¤ à¤¶à¤¾à¤•à¤¾à¤¹à¤¾à¤°à¥€ à¤–à¤¾à¤¨à¤¾ à¤¬à¤¨à¤¾à¤¨à¥‡ à¤•à¥‡ à¤¤à¤°à¥€à¤•à¥‡

Lecture 45 - à¤ªà¤¾à¤‚à¤šà¤µà¤¾ à¤²à¥‡à¤•à¥à¤šà¤°-à¤… : 8 à¤¸à¥‡ 11 à¤®à¤¹à¥€à¤¨à¥‡ à¤•à¥‡ à¤¬à¤šà¥à¤šà¥‹à¤‚ à¤•à¥‡ à¤²à¤¿à¤ à¤¶à¤¾à¤•à¤¾à¤¹à¤¾à¤°à¥€ à¤–à¤¾à¤¨à¤¾ à¤¬à¤¨à¤¾à¤¨à¥‡ à¤•à¥‡ à¤¤à¤°à¥€à¤•à¥‡

Lecture 46 - à¤ªà¤¹à¤²à¤¾ à¤²à¥‡à¤•à¥à¤šà¤° : à¤ªà¥‚à¤°à¤• à¤†à¤¹à¤¾à¤° à¤•à¥‡ à¤¦à¥Œà¤°à¤¾à¤¨ à¤¹à¥‹à¤¨à¥‡ à¤µà¤¾à¤²à¥€ à¤¸à¤®à¤¸à¥à¤¯à¤¾à¤à¤‚

Lecture 47 - à¤¦à¥‚à¤¸à¤°à¤¾ à¤²à¥‡à¤•à¥à¤šà¤° : 12 à¤¸à¥‡ 18 à¤®à¤¹à¥€à¤¨à¥‡ à¤•à¥‡ à¤¬à¤šà¥à¤šà¥‹à¤‚ à¤•à¥‡ à¤²à¤¿à¤ à¤¶à¤¾à¤•à¤¾à¤¹à¤¾à¤°à¥€ à¤–à¤¾à¤¨à¤¾ à¤¬à¤¨à¤¾à¤¨à¥‡ à¤•à¥‡ à¤¤à¤°à¥€à¤•à¥‡|

Lecture 48 - à¤¤à¥€à¤¸à¤°à¤¾ à¤²à¥‡à¤•à¥à¤šà¤° : 19 à¤¸à¥‡ 24 à¤®à¤¹à¥€à¤¨à¥‡ à¤•à¥‡ à¤¬à¤šà¥à¤šà¥‹à¤‚ à¤•à¥‡ à¤²à¤¿à¤ à¤¶à¤¾à¤•à¤¾à¤¹à¤¾à¤°à¥€ à¤–à¤¾à¤¨à¤¾ à¤¬à¤¨à¤¾à¤¨à¥‡ à¤•à¥‡ à¤¤à¤°à¥€à¤•à¥‡ |

Lecture 49 - à¤šà¥Œà¤¥à¤¾ à¤²à¥‡à¤•à¥à¤šà¤° : à¤¬à¤šà¥à¤šà¥‹à¤‚ à¤•à¥€ à¤ªà¤¾à¤°à¥à¤Ÿà¤¿à¤¯à¥‹à¤‚ à¤•à¥‡ à¤²à¤¿à¤ à¤¸à¥à¤µà¤¾à¤¦à¤¿à¤·à¥à¤Ÿ à¤–à¤¾à¤¨à¤¾ à¤¬à¤¨à¤¾à¤¨à¥‡ à¤•à¥‡ à¤¤à¤°à¥€à¤•à¥‡ |

Lecture 50 - à¤ªà¤¹à¤²à¤¾ à¤²à¥‡à¤•à¥à¤šà¤° : à¤•à¤¿à¤¶à¥‹à¤°à¥‹à¤‚ à¤•à¥‡ à¤²à¤¿à¤ à¤¶à¤¾à¤•à¤¾à¤¹à¤¾à¤°à¥€ à¤”à¤° à¤®à¤¾à¤‚à¤¸à¤¾à¤¹à¤¾à¤°à¥€ à¤–à¤¾à¤¨à¤¾ à¤¬à¤¨à¤¾à¤¨à¥‡ à¤•à¥‡ à¤¤à¤°à¥€à¤•à¥‡| à¤ªà¥‚à¤°à¥à¤µ à¤—à¤°à¥à¤-

à¤¾à¤µà¤¸à¥à¤¾ à¤ªà¥‹à¤·à¤£

Lecture 51 - à¤¦à¥‚à¤°à¤¾ à¤²à¥‡à¤•à¥à¤šà¤° : à¤—à¤°à¥à¤µà¤¤à¥à¤¿à¤¯à¤¾, à¤•à¥‡ à¤²à¤¿ à¤²à¥‡à¤Œà¤·à¥à¤Ÿà¤¿à¤• à¤¶à¤¾à¤•à¥à¤¤à¤¿à¤¯à¥‹à¤‚ à¤”à¤° à¤®à¤¾à¤¨à¤µ à¤•à¥‡ à¤–à¤¿à¤²à¤¾à¤« à¤•à¤¾à¤® à¤•à¤°à¤¨à¥‡ à¤•à¥‡ à¤²à¤¿à¤

Lecture 52 - à¤¦à¥€à¤¨à¤¦à¤¯à¤¾ à¤²à¥‡à¤•à¥à¤šà¤° : à¤¸à¥à¤µà¤¤à¤¨à¥‡ à¤•à¥‡ à¤²à¤¿à¤ à¤•à¤®à¤¾à¤²à¥€ à¤®à¤¾à¤²à¤¿à¤•à¥€ à¤•à¥‡ à¤²à¤¿à¤ à¤•à¤¾à¤®à¤•à¤¾à¤¨à¥‚à¤¨ à¤”à¤° à¤®à¤¾à¤¨à¤µà¤¾à¤§à¤¿à¤•à¤¾à¤° à¤–à¤¿à¤²à¤¾à¤« à¤•à¤¾à¤®à¤•à¤¾à¤¨à¥‚à¤¨ à¤•à¥‡ à¤²à¤¿à¤

Lecture 53 - à¤ªà¤¹à¤²à¥‡ à¤²à¥‡à¤•à¥à¤šà¤° : à¤¡à¤¿à¤œà¤¼à¤¾à¤¯à¤¨à¤¿à¤‚à¤— à¤¨à¤¹à¥€à¤‚ à¤¹à¥‹à¤¤à¤¾ à¤¥à¤¾ à¤¤à¤¬ à¤¸à¥‡ à¤¹à¤® à¤…à¤§à¥à¤¯à¤¨ (1997-2003)| à¤ªà¥à¤°à¤¸à¥à¤¤à¥à¤¤à¤¿ à¤•à¥‡ à¤µà¤ƒà¤¦à¥à¤¯ à¤šà¤¾à¤°à¥à¤Ÿ

Lecture 54 - à¤¦à¥‚à¤°à¤¾ à¤²à¥‡à¤•à¥à¤šà¤° : à¤®à¤¾à¤¨à¤• à¤¸à¤¾à¤®à¤¾à¤¨à¥à¤¯ à¤µà¤¿à¤šà¤²à¤¨ à¤¡à¤¿à¤¸à¥à¤•à¤¾à¤‰à¤¨à¥à¤Ÿ à¤¸à¥‡ à¤¬à¤¾à¤¹à¤° à¤•à¥à¤¯à¥‹à¤‚ à¤œà¥‡à¤¡à¤¿ à¤¸à¤¾à¤°à¥à¤¥à¤•

Lecture 55 - à¤¦à¥€à¤¨à¤¦à¤¯à¤¾ à¤²à¥‡à¤•à¥à¤šà¤°:à¤¡à¤¿à¤¸à¥à¤•à¤¾à¤‰à¤¨à¥à¤Ÿ-à¤‰à¤®à¥à¤° à¤•à¥‡ à¤¹à¤¿à¤¸à¤¾à¤¬ à¤¸à¥‡ à¤µà¤¿à¤¤à¥à¤¤ à¤”à¤° à¤²à¥‡à¤¨à¤¦à¥‡à¤¨ à¤¸à¤®à¤à¤¨à¤¾ à¤¸à¤¾à¤°à¥à¤¥à¤• à¤ªà¤° à¤¬à¤¾à¤¤à¤šà¥€à¤¤ à¤•à¤°à¤¨à¤¾,à¤¸à¤¹à¤¿à¤¤

Lecture 56 - à¤šà¥Œà¤¥à¤¾ à¤²à¥‡à¤•à¤šà¤° : à¤¤à¤¬à¥à¤²à¥‡à¤®à¥‡à¤‚à¤Ÿà¥à¤°à¥€ à¤®à¥‡à¤¥à¤¡

Lecture 57 - à¤ªà¤¹à¤²à¥‡ à¤²à¥‡à¤•à¤šà¤° : à¤¸à¥à¤¤à¤¨à¤¾à¤¤à¥ à¤•à¥‡ à¤²à¤¿à¤ à¤²à¥ªà¥« à¤ªà¤°à¥€à¤•à¥à¤·à¤¾à¤¤à¥ à¤¤à¤¥à¤¾ à¤¸à¤¾à¤®à¤¾à¤¨à¥à¤¯ à¤—à¤¿à¤£à¤¿à¤¤ - à¤à¤¾à¤— 1

Lecture 58 - à¤¦à¥‚à¤°à¤¾ à¤²à¥‡à¤•à¤šà¤° : à¤¸à¥à¤¤à¤¨à¤¾à¤¤à¥ à¤•à¥‡ à¤²à¤¿à¤ à¤²à¥ªà¥« à¤ªà¤°à¥€à¤•à¥à¤·à¤¾à¤¤à¥ à¤¤à¤¥à¤¾ à¤¸à¤¾à¤®à¤¾à¤¨à¥à¤¯ à¤—à¤¿à¤£à¤¿à¤¤ - à¤à¤¾à¤— 2| à¤¸à¥à¤¤à¤¨à¤¾à¤¤à¥ à¤•à¥‡ à¤²à¤¿à¤ à¤¸à¤®à¤¾à¤¨à¥à¤¯ à¤—à¤¿à¤£à¤¿à¤¤ à¤«à¥‰à¤°à¥à¤®

Lecture 59 - à¤¦à¥€à¤¨à¤¦à¤¯à¤¾ à¤²à¥‡à¤•à¤šà¤° : à¤ªà¥‹à¤·à¤£ à¤šà¤¾à¤°à¥à¤Ÿ

Lecture 60 - à¤šà¥Œà¤¥à¤¾ à¤²à¥‡à¤•à¤šà¤° : à¤²à¤¾à¤à¤¦à¤¾à¤¯à¤• à¤ªà¥à¤°à¥‹à¤Ÿà¥‹à¤•à¥‰à¤² - à¤à¤¾à¤— 1

Lecture 61 - à¤ªà¤¾à¤,à¤šà¤µà¥‡ à¤²à¥‡à¤•à¤šà¤° : à¤²à¤¾à¤à¤¦à¤¾à¤¯à¤• à¤ªà¥à¤°à¥‹à¤Ÿà¥‹à¤•à¥‰à¤² - à¤-à¤¾à¤— 2

Lecture 62 - à¤› à¤¾à¤¾ à¤²à¥‡à¤•à¤šà¤° : à¤®à¤¾à¤¤à¥ƒ, à¤¶à¤¿à¤¶à¥ à¤”à¤° à¤¬à¤¾à¤² à¤¸à¥‡à¤·à¤¾ à¤•à¥‡ à¤²à¤¿à¤ à¤ªà¥à¤°à¤®à¥à¤–à¤¤à¤¾à¤¯à¥

NPTEL : Enzyme Science and Engineering (Biotechnology)

Co-ordinators : Prof. Subhash Chand

NPTEL : NOC:Introduction to Dynamical Models in Biology (Biotechnology)

Co-ordinators : Prof. Biplab Bose

NPTEL : NOC:Genetic Engineering: Theory and Application (Biotechnology)

Co-ordinators : Dr. Vishal Trivedi

NPTEL : NOC:Experimental Biotechnology (Biotechnology)

Co-ordinators : Dr. Vishal Trivedi

NPTEL : NOC:Biointerface Engineering (Biotechnology)

Co-ordinators : Prof. Lalit M. Pandey

NPTEL : NOC:Basics of Biology (Biotechnology)

Co-ordinators : Prof. Vishal Trivedi

NPTEL : NOC:Data Analysis for Biologists (Biotechnology)

Co-ordinators : Prof. Biplab Bose

NPTEL : NOC:Genome Editing and Engineering (Biotechnology)

Co-ordinators : Prof. Utpal Bora

NPTEL : NOC:Enzyme Sciences and Technology (Biotechnology)

Co-ordinators : Prof. Vishal Trivedi

NPTEL : Animal Physiology (Biotechnology)

Co-ordinators : Prof. Mainak Das

Lecture 32 - Animal Physiology

Lecture 33 - Animal Physiology

Lecture 34 - Animal Physiology

Lecture 35 - Animal Physiology

Lecture 36 - Animal Physiology

Lecture 37 - Animal Physiology

Lecture 38 - Animal Physiology

Lecture 39 - Animal Physiology

Lecture 40 - Animal Physiology

NPTEL : Bio electricity (Biotechnology)

Co-ordinators : Prof. Mainak Das

NPTEL : NOC:Human Molecular Genetics (Biotechnology)

Co-ordinators : Mr.S. Ganesh

NPTEL : NOC:Functional Genomics (Biotechnology)

Co-ordinators : S. Ganesh

NPTEL : NOC:Bioenergy (Biotechnology)

Co-ordinators : Prof. Mainak Das

NPTEL : NOC:Animal Physiology (Biotechnology)

Co-ordinators : Prof. Mainak Das

NPTEL : NOC:Cell Culture Technologies (Biotechnology)

Co-ordinators : Prof. Mainak Das

NPTEL : NOC:Forest Biometry (Biotechnology)

Co-ordinators : Prof. Mainak Das, Dr. Ankur Awadhiya

NPTEL : NOC:Introduction to Professional and Scientific Communication (Biotechnology)

Co-ordinators : Mr. S. Ganesh

NPTEL : NOC:Bioelectrochemistry (Biotechnology)

Co-ordinators : Prof. Mainak Das

NPTEL : NOC:Bioenergetics of Life Processes (Biotechnology)

Co-ordinators : Prof. Mainak Das

NPTEL : NOC:WildLife Conservation (Biotechnology)

Co-ordinators : Dr. Ankur Awadhiya

NPTEL : NOC:Nanotechnology in Agriculture (Biotechnology)

Co-ordinators : Prof. Mainak Das

NPTEL : NOC:Wild Life Ecology (Biotechnology)

Co-ordinators : Dr. Ankur Awadhiya, Prof. Mainak Das

NPTEL : NOC:Forests and their Management (Biotechnology)

Co-ordinators : Dr. Ankur Awadhiya

NPTEL : NOC:Conservation Economics (Biotechnology)

Co-ordinators : Dr. Ankur Awadhiya

NPTEL : NOC:Conservation Geography (Biotechnology)

Co-ordinators : Dr. Ankur Awadhiya

NPTEL : NOC:Neurobiology (Biotechnology)

Co-ordinators : Prof. Nitin Gupta

NPTEL : BioChemistry I (Biotechnology)

Co-ordinators : Prof. S. Dasgupta

NPTEL : NOC:Industrial Biotechnology (Biotechnology)

Co-ordinators : Prof. Debabrata Das

NPTEL : NOC:Aspects Of Biochemical Engineering (Biotechnology)

Co-ordinators : Prof. Debabrata Das

NPTEL : NOC:Biomicrofluidics (Biotechnology)

Co-ordinators : Prof. Tapas Kumar Maiti, Prof. Suman Chakraborty

NPTEL : NOC:Immunology (Biotechnology)

Co-ordinators : Prof. Agneyo Ganguly, Prof. S. K Ghosh

NPTEL : NOC:Metabolic Engineering (Biotechnology)

Co-ordinators : Prof. Amit Ghosh, Prof. Pinaki Sar

NPTEL : NOC:Environmental Chemistry and Microbiology (Biotechnology)

Co-ordinators : Prof. Sudha Goel, Prof. Anjali Pal

NPTEL : NOC:Environmental Biotechnology (Biotechnology)

Co-ordinators : Prof. Pinaki Sar

NPTEL : NOC:Fundamentals of Protein Chemistry (Biotechnology)

Co-ordinators : Prof. Swagata Dasgupta

NPTEL : NOC:Introduction to Biomedical Imaging Systems (Biotechnology)

Co-ordinators : Dr. Arun K.Tangirala

Lecture 32 - Ultrasound_Intro_Phys

Lecture 33 - Ultrasound Phys_Interactions

Lecture 34 - US doppler and Instrumentation

Lecture 35 - US_Beampattern

Lecture 36 - Approximations

Lecture 37 - US_Imaging Equation_modes

Lecture 38 - Parameters of interest

Lecture 39 - Beam Steering : Phased Array

Lecture 40 - MRI_Intro_S1-S9

Lecture 41 - MRI_Phys_S10-S16

Lecture 42 - MRI_Phys_S17-S20

Lecture 43 - MRI_Phys_S21-S28

Lecture 44 - MRI_Phys_S29-S39

Lecture 45 - MRI_Phys_S40-S44

Lecture 46 - MRI_Phys_S45_S52

Lecture 47 - MRI_Instru_S1_S16

Lecture 48 - MRI_Instru_s17_s26

Lecture 49 - MRI_slice sel_S27_S41

Lecture 50 - MRI_Freq_Encode_S42_S60

Lecture 51 - MRI_DAQ_S61_S69

Lecture 52 - MRI_RECON_S70_S82

Lecture 53 - MRI_IQ_S83_S96

NPTEL : NOC:Next Generation Sequencing Technologies: Data Analysis and Applications (Biotechnology)

Co-ordinators : Prof. Riddhiman Dhar

NPTEL : NOC:Computational Neuroscience (Biotechnology)

Co-ordinators : Prof. Sharba Bahdyopadhyay

NPTEL : NOC:Electrophysiology of Heart (Biotechnology)

Co-ordinators : Dr. Arijita Banerjee

NPTEL : NOC:Principles of Downstream techniques in Bioprocess (Biotechnology)

Co-ordinators : Prof. Mukesh Doble

NPTEL : Thermodynamics (Biotechnology)

Co-ordinators : Prof. G.K. Suraishkumar

NPTEL : NOC:Principles of Downstream Techniques in Bioprocess (Biotechnology)

Co-ordinators : Prof. Mukesh Doble

NPTEL : NOC:Biostatistics and Design of Experiments (Biotechnology)

Co-ordinators : Prof. Mukesh Doble

NPTEL : NOC:Bioreactors (Biotechnology)

Co-ordinators : Prof. G.K. Suraishkumar

NPTEL : NOC:Medical Biomaterials (Biotechnology)

Co-ordinators : Prof. Mukesh Doble

NPTEL : NOC:BioInformatics - Algorithms and Applications (Biotechnology)

Co-ordinators : Prof. M. Michael Gromiha

NPTEL : NOC:Demystifying the Brain (Biotechnology)

Co-ordinators : Dr. V Srinivasa Chakravarthy

NPTEL : NOC:Computational Systems Biology (Biotechnology)

Co-ordinators : Prof. Karthik Raman

NPTEL : NOC:Material and Energy Balances (Biotechnology)

Co-ordinators : Prof.Vignesh Muthuvijayan

NPTEL : NOC:Computer Aided Drug Design (Biotechnology)

Co-ordinators : Prof. Mukesh Doble

NPTEL : NOC:Plant Cell Bioprocessing (Biotechnology)

Co-ordinators : Prof. Smita Srivastava

NPTEL : NOC:Tissue Engineering (Biotechnology)

Co-ordinators : Prof.Vignesh Muthuvijayan

NPTEL : NOC:Thermodynamics for Biological Systems: Classical and Statistical Aspect (Biotechnology)

Co-ordinators : Prof. G.K. Suraishkumar, Prof. Sanjib Senapati

NPTEL : NOC:Transport Phenomena in Biological Systems (Biotechnology)

Co-ordinators : Prof. G.K. Suraishkumar

NPTEL : NOC:Introduction to Developmental Biology (Biotechnology)

Co-ordinators : Prof. Subramaniam K

NPTEL : NOC:Bioreactor Design and Analysis (Biotechnology)

Co-ordinators : Prof. Smita Srivastava

NPTEL : NOC:Biochemistry (IITM) (Biotechnology)

Co-ordinators : Prof. Subramaniam K

NPTEL : NOC:Cellular Biophysics: A Framework for Quantitative Biology (Biotechnology)

Co-ordinators : Prof. R. Chaitanya A. Athale

NPTEL : NOC:Medical Image Analysis (Biotechnology)

Co-ordinators : Prof. Ganapathy Krishnamurthi

NPTEL : NOC:Organ Printing (Biotechnology)

Co-ordinators : Prof. Falguni Pati

NPTEL : NOC:Introduction to Cell Biology (Biotechnology)

Co-ordinators : Prof. Girish Ratnaparkhi

NPTEL : NOC:RNA Biology (Biotechnology)

Co-ordinators : Prof. Rajesh Ramachandran

Lecture 32 - snRNA, rRNA, miRNA, siRNA Processing, Export and Function: RNA Export Mechanisms

Lecture 33 - snRNA, rRNA, miRNA, siRNA Processing, Export and Function: RNA Quality Control

Lecture 34 - Mechanisms of RNA Decay and Non Coding RNAs: Decay Pathways

Lecture 35 - Mechanisms of RNA Decay and Non Coding RNAs: The Exosomes

Lecture 36 - Mechanisms of RNA Decay and Non Coding RNAs: mRNA Surveillance

Lecture 37 - Mechanisms of RNA Decay and Non Coding RNAs: Mechanisms of RNA Decay

Lecture 38 - Mechanisms of RNA Decay and Non Coding RNAs: Autoregulation of RNAs

Lecture 39 - Mechanisms of RNA Decay and Non Coding RNAs: Introduction to Non-Coding RNAs

Lecture 40 - Dosage Compensation and X-Inactivation: SRP and Different Modes of Compensation

Lecture 41 - Dosage Compensation and X-Inactivation: Dosage Compensation of X

Lecture 42 - Dosage Compensation and X-Inactivation: Omprinted vs Random X Inactivation

Lecture 43 - Dosage Compensation and X-Inactivation: Molecular Basis of X-Inactivation

Lecture 44 - Dosage Compensation and X-Inactivation: ES Cells and X-Inactivation

Lecture 45 - Dosage Compensation, Xist and ncRNA in Imprinting: The Roles of YY1

Lecture 46 - Dosage Compensation, Xist and ncRNA in Imprinting: shRNAs and Gene Expression

Lecture 47 - Dosage Compensation, Xist and ncRNA in Imprinting: Mechanism of RNAi in Action

Lecture 48 - Dosage Compensation, Xist and ncRNA in Imprinting: Genomic Imprinting in Action

Lecture 49 - Dosage Compensation, Xist and ncRNA in Imprinting: Different ncRNAs and their Roles

Lecture 50 - Dosage Compensation, Xist and ncRNA in Imprinting: lncRNA-Induced Cancer

Lecture 51 - Dosage Compensation, Xist and ncRNA in Imprinting: Xist and Cancer

Lecture 52 - Telomere, Telomerase and Impact on Genomes: The Importance of Telomeres

Lecture 53 - Telomere, Telomerase and Impact on Genomes: Telomerase and Aging

Lecture 54 - Telomere, Telomerase and Impact on Genomes: Telomere Length as Marker of Aging

Lecture 55 - Telomere, Telomerase and Impact on Genomes: Telomeres and Cancer

Lecture 56 - Telomere, Telomerase and Impact on Genomes: Cell Cycle Arrest

Lecture 57 - Telomere, Telomerase and Impact on Genomes: Maintenance and Manipulation of Telomeres

Lecture 58 - Epitranscriptome and Protein Synthesis: Important RNA Modifications

Lecture 59 - Epitranscriptome and Protein Synthesis: Readers, Writes and Erasers

Lecture 60 - Epitranscriptome and Protein Synthesis: Biological Implications of RNA Modifications

Lecture 61 - Epitranscriptome and Protein Synthesis: Roles of RNAs in Translation

Lecture 62 - Epitranscriptome and Protein Synthesis: Mechanism of Translation

NPTEL : NOC:Biomechanics (Biotechnology)

Co-ordinators : Prof. Varadhan

NPTEL : Analytical Technologies in Biotechnology (Biotechnology)

Co-ordinators : Dr. Ashwani K. Sharma

NPTEL : NOC:Biomedical Nanotechnology (Biotechnology)

Co-ordinators : Prof. P.Gopinath

NPTEL : NOC:Plant Developmental Biology (Biotechnology)

Co-ordinators : Prof. Shri Ram Yadav

NPTEL : NOC:Structural Biology (Biotechnology)

Co-ordinators : Prof. Saugata Hazra

NPTEL : NOC:Learning about Learning: A Course on Neurobiology of Learning and Memory (Biotechnology)

Co-ordinators : Prof. Balaji Jayaprakash

NPTEL : NOC:Drug Delivery: Principles and Engineering (Biotechnology)

Co-ordinators : Rachit Agarwal

NPTEL : NOC:Fundamentals of Micro and Nanofabrication (Biotechnology)

Co-ordinators : Prof. Shankar Selvaraja

NPTEL : NOC:Optical Spectroscopy and Microscopy: Fundamentals of Optical Measurements and Instrumentation (Biotechnology)

Co-ordinators : Prof. Balaji Jayaprakash

NPTEL : NOC:Cell Biology: Cellular Organization, Division and Processes (Biotechnology)

Co-ordinators : Prof. Shikha Laloraya

Lecture 32 - Nerve cells

Lecture 33 - The Cancer Cell