NPTEL Video Course - Multi Disciplinary - NOC:Comprehensive Molecular Diagnostics and Advanced Gene Expressio

Subject Co-ordinator - Prof. Arindam Ghosh, Prof. Aritri Bir

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - Foundation of Molecular Biology
Lecture 2 - DNA Replication and Repair Mechanism
Lecture 3 - Transcription (RNA Synthesis)
Lecture 4 - Protein Synthesis (Translation)
Lecture 5 - Nucleic Acid Isolation and Detection Methods
Lecture 6 - PCR (Polymerase Chain Reaction) Fundamentals
Lecture 7 - Realtime PCR - Part 1
Lecture 8 - Realtime PCR - Part 2
Lecture 9 - Variations of the PCR - Part 1
Lecture 10 - Variations of the PCR - Part 2
Lecture 11 - DNA Cloning and Recombinant DNA technology - I
Lecture 12 - DNA Cloning and Recombinant DNA technology - II
Lecture 13 - DNA Cloning and Recombinant DNA technology - III
Lecture 14 - Genome Editing Technologies - I
Lecture 15 - Genome Editing Technologies - II
Lecture 16 - DNA Microarray
Lecture 17 - FISH (Fluorescence in situ Hybridization)
Lecture 18 - Methods to study DNA-protein interaction - I
Lecture 19 - Methods to study DNA-protein interaction - II
Lecture 20 - Epigenetics and DNA methylation analysis
Lecture 21 - DNA Sequencing - Part 1 - Maxam Gilbert Sequencing
Lecture 22 - DNA Sequencing - Part 2 - Sanger Sequencing
Lecture 23 - Next Generation Sequencing - Part 1
Lecture 24 - Next Generation Sequencing - Part 2
Lecture 25 - Next Generation Sequencing - Part 3
Lecture 26 - Overview, Importance, Methods in Proteomics
Lecture 27 - Proteomic Techniques - High performance liquid chromatography (HPLC)
Lecture 28 - Proteomic Techniques - Mass Spectrometry
Lecture 29 - Proteomic Techniques - Differential in-gel electrophoresis

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Lecture 30 - Proteomic Techniques - Protein Microarray
Lecture 31 - Label-based Protein Quantification Technologies - Part 1
Lecture 32 - Label-based Protein Quantification Technologies - Part 2
Lecture 33 - Label free methods of protein quantification
Lecture 34 - Next Generation Proteomics
Lecture 35 - Proteomic Data Analysis and Bioinformatic Tools
Lecture 36 - Syndromic Panels and Multiplex Assay : Molecular identification of Microorganism
Lecture 37 - Molecular Diagnostics in Antimicrobial Resistance Testing
Lecture 38 - RNA Sequencing: Role in Infectious diseases - I
Lecture 39 - RNA Sequencing: Role in Infectious diseases - II
Lecture 40 - Point of Care (POC) diagnostics in Infectious diseases
Lecture 41 - Molecular genetics in tumorogenesis
Lecture 42 - Liquid biopsies in cancer detection
Lecture 43 - Digital PCR in Cancer detection
Lecture 44 - Mutation Detection Methods
Lecture 45 - Isothermal Nucleic Acid Amplification
Lecture 46 - Genetic Testing and Inherited Disorders - Part 1
Lecture 47 - Genetic Testing and Inherited Disorders - Part 2
Lecture 48 - Prenatal diagnostics and NIPT
Lecture 49 - Reproductive genetics and genetic counselling
Lecture 50 - Genetic counselling and patient education
Lecture 51 - Serial Analysis of Gene Expression
Lecture 52 - Metabolomics in Molecular Diagnostics
Lecture 53 - Immunoassay and Luminex Multiplex Assay
Lecture 54 - Molecular diagnostics in Metabolic, Cardiovascular and Gastrointestinal disorders
Lecture 55 - Molecular diagnostics in Endocrine, Neurodegenerative and Transplantation disorders
Lecture 56 - Pharmacogenomics and Personalized Medicine
Lecture 57 - Quality control (QC) in molecular diagnostics
Lecture 58 - Ethical concerns in molecular diagnostics
Lecture 59 - Artificial Intelligence and Machine learning in Genomics
Lecture 60 - Integration of Multiomics Data in Molecular Diagnostics
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