**(Prof. V.K.Gupta)**

Dept. of Biochemistry

**Lecture schedule for BCH - 08 (Intermediary Metabolism-II)**

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| --- | --- |
| **Dated** | **Topic to be taught** |
| 20.01.15 | A general discussion of Amino acids and Steps in their degradation Transamination reactions of amino acids |
| 21.01.15 | Oxidative deamination, Non-oxidative deamination and decarboxylation reactions of amino acid metabolism  Role of glutamine in ammonia transport |
| 27.01.15 | Glucose-Alanine cycle involved in the transport of nitrogen from muscles  Conversion of ammonia into urea via Urea Cycle |
| 28.01.15 | Regulation of Urea Cycle  Degradation of amino acids |

**Lecture schedule for BCH - 21 (Basic Biotechnology)**

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| **Dated** | **Topic to be taught** |
| 22.01.15 | Introduction to Recombinant DNA technology  Steps involved in gene cloning |
| 23.01.15 | Steps involved in gene cloning (continued)  Cloning Vectors- Introduction, Features of an ideal cloning vector |
| 29.01.15 | Plasmids as cloning vector- structural features and use of pBR322 as a cloning vector |
| 30.01.15 | Structural features and use of pUC plasmids as cloning vectors |

**Note:** I shall take extra class or exchange my class with some other teacher if I am on leave. If there is mass absence of the students, then either extra class will be taken or the topic scheduled for that day will be assumed to be delivered.

**(Prof. V.K.Gupta)**

Dept. of Biochemistry

**Lecture schedule for BCH - 08 (Intermediary Metabolism-II)**

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| --- | --- |
| **Dated** | **Topic to be taught** |
| 04.02.2015 | Degradation of amino acids (continued) |
| 10.02.15 | Degradation of amino acids (continued) |
| 11.02.15 | Degradation of amino acids (continued) |
| 18.02.15 | Amino acids as biosynthetic precursors |
| 24.02.15 | Amino acids as biosynthetic precursors (continued) |
| 25.02.15 | Biosynthesis of non-essential amino acids |

**Lecture schedule for BCH - 21 (Basic Biotechnology)**

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| **Dated** | **Topic to be taught** |
| 05.02.15 | Features of lambda phage as cloning vector, Insertional and replacement vectors based on lambda phage |
| 06.02.15 | Insertional and replacement vectors based on lambda phage (continued)  Cosmids as cloning vectors |
| 22.02.15 | BAC as cloning vector |
| 13.02.15 | Ligation of insert DNA with the vector for construction of recombinant DNA molecules |
| 19.02.15 | Introduction of recombinant DNA into host cells- Features of host cells, Transformation, transfection and in vitro packaging |
| 20.02.15 | Construction of gene library |
| 26.02.15 | Construction of cDNA library |
| 27.02.15 | Selection and screening of recombinants from gene library and cDNA library using various methods |

**Note:** I shall take extra class or exchange my class with some other teacher if I am on leave. If there is mass absence of the students, then either extra class will be taken or the topic scheduled for that day will be assumed to be delivered.

**Schedule of the topics to be taught in M.Sc. (Previous) Sem-II**

**Biochemistry, Session 2014-2015**

**Dr. Jasbir Singh**

**Paper BCH-11 (Molecular Biology- I)**

|  |  |
| --- | --- |
| 19-24 Jan, 2015 | Structure of DNA, various forces responsible for stability of DNA, various forms of DNA, DNA topology, topological and geometric properties, DNA supercoiling, Topoisomerase in prokaryotes and eukaryotes |
| 27-31 Jan, 2015 | DNA organisation in prokaryotes and eukaryotes, c-value paradox, denaturation: different ways for carrying out denaturation, renaturation: requirements, kinetics, significance, various classes of DNA: highly repetitive, moderately repetitive and unique sequence |
| 2-7 Feb, 2015 | RNA: structure and types, DNA replication, mutation and DNA repair: Possible modes of DNA replication |
| 9-14 Feb, 2015 | Meselson- Stahl experiment, DNA polymerase and other enzymes involved in DNA replication, okazaki fragments |
| 16-21 Feb, 2015 | Mechanism of replication in prokaryotes an  D eukaryotes, inhibitors of DNA replication, molecular basis of mutations |
| 23-28 Feb, 2015 | DNA repair mechanisms like direct, base excision, nucleotide excision, mismatch, SOS and recombinational repair |
| 9-14 Mar 2015 | Transcriptional and post transcriptional modification: RNA polymerase/s in prokaryotes and eukaryotes; DNA footprinting technique |
| 16-21 Mar, 2015 | Initiation, elongation and termination of transcription, post transcriptional modifications |
| 1-4 Apr, 2015 | Different types of introns and their splicing mechanisms, processing of mRNA , rRNA and tRNA precursors, overlapping genes and split genes |
| 6-11 Apr, 2015 | Protein synthesis, targeting and degradation: Characterization of the genetic ode, biological significance of degeneracy, decoding of code |
| 13-18 Apr, 2015 | Wobble hypothesis, ribosome structure and function in prokaryotes and eukaryotes |
| 21-25 Apr, 2015 | Aminoacyl tRNA – synthetase various factors and steps involved in protein synthesis in prokaryotes and eukaryotes, polyribosome |
| 27-29 Apr, 2015 | Post- translational processing, signal hypothesis and protein targeting to lysosomes, plasma membrane, extracellular matrix and different compartment of mitochondria and chloroplast of, protein degradation |

**Schedule of the topics to be taught in M.Sc. (Previous) Sem-II**

**Biochemistry, Session 2014-2015**

**Dr. Suman Dhanda**

**Paper BCH-10 (Immunology)**

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| --- | --- |
| Week | Topics |
| 19-24 Jan 2015 | Introduction to Immune system: Memory, specificity, diversity, innate and acquired immunity, self vs. non-self discrimination, structure and functions of primary and secondary lymphoid organs |
| 27-31 Jan, 2015 | Cells involved in immune responses: Phagocytic cells and their killing mechanisms: T and B-lymphocytes, differentiation of stem cells and idiotypic variations. |
| 2-7 Feb, 2015 | Nature of antigen and antibody: Antigen Vs Immunogen, Hapten, Structure and Function of immunoglobulins, Isotypic , Allotypic and Idiotypic Variations. |
| 9-14 Feb, 2015 | Humoral and Cell mediated immune responses: Kinetics of primary and secondary immune response, Complement activators and its biological consequences. |
| 16-21 Feb, 2015 | Antigen processing and presentation, Cytokines and co-stimulatory molecule in immune responses; T and B-cell interactions |
| 23-28 Feb, 2015 | Major Histocompatibility complex (MHC) genes and products: polymorphism of MHC genes, role of MHC antigens in immune responses, MHC antigens immune responses, MHC antigens in transplantation |
| 9-14 Mar, 2015 | Generation of diversity in immune system: clonal selection theory, concept of antigen specific receptor, organisation and expression of immunoglobulin genes – generation of antibody diversity |
| 16-21 Mar, 2015 | Organisation and expression of T- cell receptor gene – generation of T- cell receptor diversity. |
| 24-31 Mar, 2015 | Agglutination and precipitation techniques |
| 1-4 Apr, 2015 | Immunization: Active and passive immunization, vaccines and their types, role of vaccines in the prevention of disease |
| 6-11 Apr, 2015 | Tolerance Vs Activation of Immune System: Immune tolerance, immunosuppression |
| 13-18 Apr, 2105 | Hypersensitivity ( Type I, II, III and IV) |
| 21-25 Apr, 2015 | Immune response to infection diseases- viral, bacterial and protozonal: Cancer and immune system. |
| 27-30 Apr, 2015 | Immunodeficiency disorders and autoimmunity |

**(Dr. Imteyaz Ahmad)**

Dept. of Biochemistry

**Lesson plan for BCH - 09 (Nutritional and Clinical Biochemistry)**

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| --- | --- |
| **Dated** | **Topic to be taught** |
| 21.01.15 | Composition of human body, energy content of foods |
| 21.01.15 | Measurement of energy expenditure, BMR, SDA, dietary fibre |
| 22.01.15 | Nitrogen balance, concept of protein quality |
| 28.01.15 | Vitamins: dietary source |
| 28.01.15 | Vitamins: structure and functions |
| 29.01.15 | Deficiency disease associated with fat and water soluble vitamins, Hypervitaminosis symptoms of fat soluble vitamins |

**Lesson plan for BCH - 21 (Basic Biotechnology)**

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| **Dated** | **Topic to be taught** |
| 19.01.15 | Animal Cell culture – Laboratory facilities foe tissue culture |
| 23.01.15 | Animal Cell culture –different substrate for growth, media for mammalian cell culture, importance of serum in culture media, desgning serum free media |
| 02.02.15 | Animal Cell culture – problems and solution to contamination in tissue culture work, disintegration of tissues by mechanical and enzymatic method |
| 06.02.15 | Animal Cell culture – primary culture, passaging, primary cell lines, established cell lines, applications of animal cell culture |