Subject Code : P8MB9

Core Course IX (CC) – Immunology

Unit I: Immune System

Historical perspective – Discovery, early theories, Immunodeficiency conditions, Lymphocyte Traffic, Hematopoiesis, Innate and adoptive immune response in protection.

Unit II: Antigen and Antibody Molecules

Antigen engineering for better immunogenicity, Use for vaccine development, whole-organism vaccines, recombinant vaccines, DNA vaccines, synthetic peptide, multivalent subunit and anti-idiotype vaccines. Antibody engineering, Antibody for diagnosis, Antibody for therapy, Hybridoma Technology.

Unit III: MHC, Cytokines and Complements

Structure of MHC molecules, Antigen presentation, Antigen presentation by non MHC molecules, Cytokine structure and their receptors, Cytokine therapy, Complements, Lymphocyte Migration and Inflammation, Hypersensitivity reactions, auto immunity.

Unit IV: B and T Cell Activation

B cell receptor complex, B cell maturation, Generation of antibody diversity, Understanding self-nonself discrimination, TH Cell subpopulation, Organisation of T cell receptor, Cell mediated effector responses.

Unit V: Immunotechnology and its applications

Precipitation techniques, agglutination techniques, radiology in immunotechniqes, Enzyme-Linked immunosorbent assay (ELISA), Western blotting, immunofluorescence, Flowcytometry and immunoelectron microscopy. Infectious diseases - immune system in AIDS, transplantation immunology, cancer and the immune system.

References:

Ivan M. Roit (1994) Essential Immunology – Blackwell Scientific Publications, Oxford

Kuby J (2001) Immunology Fourth Edition – WH Freeman and Company, New York

Chapel H and Halbey M (1986) Essentials of Clinical Immunology, ELBS London

Donal M. Weir, John Steward (1993) Immunology – VII edition. ELBS, London

Richard M. Hyde (1995). Immunology III edition. National Medical series, Williams and Wilkins, Harward Publishing company.

Hue Davis (1997) Introductory Immunology Chapman &Hall Publisher, London.