

(BT536) IMMUNOTECHNOLOGY

Objectives of the Course:

1. Acquire knowledge and understanding of theoretical concepts of Immunology.
2. Acquire skills and competence in specialized immunological techniques in the diagnosis and management of health related disorders.
3. Acquire knowledge and understanding of research methods employing immunological techniques for application in biomedical and clinical research

UNIT I : Introduction :

Cells of immune system; innate and acquired immunity; primary and secondary lymphoid organs; antigens: chemical and molecular nature; haptens; adjuvants; types of immune responses; theory of clonal selection.

UNIT II: Cellular Responses :

Development, maturation, activation and differentiation of T-cells and B-cells; TCR; antibodies: structure and functions; antibodies: genes and generation of diversity; antigen-antibody reactions; monoclonal antibodies: principles and applications; antigen presenting cells; major histocompatibility complex; antigen processing and presentation; regulation of T-cell and B-cell responses.

UNIT III: Infection and Immunity :

Injury and inflammation; immune responses to infections: immunity to viruses, bacteria, fungi and parasites; cytokines; complement; immunosuppression, tolerance; allergy and hypersensitivity; AIDS and Immunodeficiencies; resistance and immunisation; Vaccines.

UNIT IV: Transplantation and Tumor Immunology:

Transplantation: genetics of transplantation; laws of transplantation; tumor immunology, Autoimmunity; Autoimmune disorders and diagnosis.

UNIT V: ImmunoTechniques :

ELISA, Immuno-electrophoresis, RIA, SDS-PAGE, non-isotopic methods for detection of antigens, chemiluminescence assay, immunohistochemistry, monoclonal and polyclonal antibody production.

TEXT BOOKS :

1. Roitt I, Male, Brostoff, "Immunology", Mosby Publ., 2002.
2. Kuby J, "Immunology", WH Freeman & Co., 2000.

REFERENCE BOOK :

1. Ashim K. Chakravarty, "Immunology", TataMcGraw-Hill, 1998.