

BTS511:IMMUNOLOGY

L:2 T:0 P:0 Credits:2

Course Outcomes: Through this course students should be able to

- CO1 :: enumerate the types and components of immune system
- CO2 :: describe the significance of antibody and its structural aspects
- CO3 :: interpret the effects of antigens and the responses of immune system
- CO4 :: evaluate the pathways of antigen processing and presentation
- CO5 :: assess the functions of cytokines and complement system
- CO6 :: express different aspects of hypersensitivity and autoimmunity

Unit I

Fundamentals of the immune system : types of immunity, differentiation of stem cells, cells of the immune system, primary lymphoid organs, lymphatic system, secondary lymphoid organs, humoral response

Unit II

Antigens : introduction to antigens, immunogen vs antigen, factors affecting immunogenicity, epitopes, haptens

Immunoglobulins (Antibodies) : basic structure, types of immunoglobulins and their roles, antigenic determinants, generation of antibody diversity

Unit III

Antigen - antibody interactions : strength of antigen antibody interaction, cross reactivity, precipitation, agglutination, radioimmunoassay, enzyme linked immunosorbent assay, immunofluorescence, immunoblot, immunohistochemistry

Unit IV

Major histocompatibility complex : introduction of MHC, types of MHC, cellular distribution of MHC molecules, antigen processing and presentation, B cell receptor and activation

T and B lymphocytes : T-cell receptors, T-cell maturation, thymic selection of T-cells, B-cell maturation

Unit V

Cytokines : overview of cytokines, properties and functions of cytokines, JAK-STAT pathway

The complement system : overview of the complement system, complement system pathways, regulation of the complement system, biological consequences of the complement system

Unit VI

Hypersensitivity : type I hypersensitivity, type II hypersensitivity, type III hypersensitivity, type IV hypersensitivity

Transplantation : immunologic basis of graft rejection, tissue typing, cell mediated graft rejection, clinical manifestations of graft rejection

Autoimmunity : introduction to autoimmune disorders, organ specific autoimmune disease, systemic autoimmune disease

Text Books:

1. TEXTBOOK OF IMMUNOLOGY by K SAI LEELA,SK MOHANTY, JAYPEE BROTHERS MEDICAL PUBLISHERS PVT. LTD.

References:

1. KUBY IMMUNOLOGY by JENNI PUNT,SHARON STRANFORD,PATRICIA JONES,JUDITH A OWEN, W. H. FREEMAN AND COMPANY

