

CME in Immunology under the aegis of Indian Immunology Society

Target Recipients: Medical and non-medical UG, PG students and Research Scholars

Aim: To enable students understand the basic concepts of Immunology and its applications so that they have foundation knowledge to appreciate the landmark discoveries and ongoing research in the subject and subsequently are triggered to learn more and carry out meaningful research in the field of Immunology.

Topics: Framed by: Nibhriti Das, Satya N Das, Alpana Sharma

Part I:

Basic Immunology

1. Overview of immune system

Importance of immunology in health/life sciences; innate and adaptive immunity. Organs, tissues, cells and humoral components of the immune system; mucosal immunity, Terminology (Ag, Immunogen, hapten, adjuvant, antibody, cytokines, chemokines, CD, MHC, HLA etc.). Basic concepts of immune response (Innate and Adaptive) primary, secondary immune responses; immunological memory, hypersensitivity, tolerance, autoimmunity, vaccines and vaccinology) *Two Lectures of 45 Min. each (90 minutes)*

2. Innate Immunity, characteristics, components and functions.

- *Reticuloendothelial system: Biology of dendritic cells monocytes and macrophages, toll like receptors and other immune receptors *(45minutes)*
- Granulocytes, Natural killer cells *(30 minutes)*
- *Complement system, functions, activation and regulation, *(45 minutes)*

3. Adaptive immunity, characteristics, components and functions

3.1 *Cell mediated Immune Responses

- MHC and Ag presentation
- T-cell biology, induction of T-cells response and effector mechanisms *(45Min.)*

3.2* Humoral Immune Responses

- Structure and functions of immunoglobulins *(45 Min.)*
- Generation of of Ab diversity *(45Min.)*
- B-cell biology, Induction and effector mechanisms of humoral immune response *(45Min.)*

4. Immune regulation , Immune-unresponsiveness, tolerance and autoimmunity *(90Min.)*

5.* Immuno-inflammatory mechanisms and Hypersensitivity reactions. *(45Min.)*

- 6.* Immuno-deficiency, AIDS a prototype (45Min.)
7. Infection and immunity (45 Min.)
8. Tumor immunology (45 Min.)
9. Key features of Immune signaling, cytokines, chemokines and their receptors (45 Min.)

Part-II

Applied Immunology, basic and advanced Immunological Techniques .

- 1.*Transplantation immunology and stem cells (60 Min.)
- 2.* Immunological markers,diagnostics, Immunotherapy, Drug targeting (60 Min.)
- 3.* Principle and strategies of vaccine development against emergent pathogens (45Min.)
- 4.* Principles and modalities of Immunodiffusion techniques;RIA; ELISA,ELISPOT and Western blotting . (60Min.)
- 5.. *Flow-cytometry and Immuno-histochemistry (45Min.)
- 6 .Animal models in Immunology Research (45Min.)

*Depending upon the theme and convenience,some topics may be eliminated. For eg. Topic 4. Immune regulation , Immune-unrsponsiveness, tolerance and autoimmunity and Topic5 and topic 6 can not be eliminatd if the theme is autoimmunity. However, * ones are essential to understand any development in the field of Immunology and hence can not be eliminated whatever may be the theme.Each speaker after talking on the basics can speak on his/her work or recent advances within the time frame as much as possible.*