

Topics	Lectures
Characteristic features of the immune system: recognition, discrimination, memory; atypical cellular components ($\gamma\delta$ T cells, MZ B cells, intraepithelial lymphocytes etc) and their overall role in immune regulation	3
Immune recognition: Pattern recognition receptors, PAMPs and DAMPs	2
Hyperactivity of the Immune system: Self: nonself discrimination: mechanism and failure (thymic selection, central versus peripheral tolerance, B and T cells with regulatory functions) , systemic and organ specific autoimmunity	6
Mucosal Immune system : mucosa-specific immune cells and their interaction with pathogens, commensals and innocuous antigens	6
Contribution of environmental and genetic factors towards hyperactivity of immune system; Treatment strategies: immune suppression and beyond	3
Deficient Immune System: Primary Immune deficiency: genetic defects, severe combined immunodeficiency (SCID), defects in specific immune system components (T cell, B cell, NK cell); Treatment strategies: Hematopoietic Stem Cell transplantation, gene therapy	4
Transplantation Immunology: Transplantation of tissue and organs: A historical perspective Types of grafts: autograft, allograft, xenograft; Immunobiology of rejection, genetic background, mechanism of rejection, Clinical stages of rejection; Transplant tolerance: Immunosuppression; Ethical aspects	4
Immunological Memory: B cell memory and T cell memory	2
Animal models to study hyperactivity and deficiency of immune system: SCID mice, transgenics, NOD mice, humanized mice, gnotobiotic mice etc	2
Immunotherapeutics: definition and history, goals of immunotherapy, augmentation and attenuation of immune response	2
Immunotherapeutics: Challenges and progress: humanized antibodies, nanobodies, manipulation of specific immune pathways by structure-guided protein engineering; Systemic versus targeted immunotherapeutic strategies and vehicles of delivery; Future perspective: Personalized Immunotherapy based medicine	6
Total	40