Immunology

General

- Recognition of self and not self structures
- Immunological memory
- Antigen, immunogen, tolerogen, immunogen, hapten
- Receptors of specific and nonspecific (adaptive and innate) immunity
- Nonspecific immunity - characteristics
- Specific immunity - characteristics
- Barrieres in immunity
- Physiological microflora
- Hematopoietic stem cell and its differentiation
- Complement and its function in immunity
- Phagocytosis
- Inflamation
- Immunoglobulins- molecules, isotype, allotype, idiotype
- Classes (isotypes) of immunoglobulines
- MHC I, MHC II molecules
- Lymphocytes – immunocompetent cells
- Tissues and organs of immune system
- TCR a IgG – specific receptors, structure, role,
- Isotype switch
- Differenciation of T cells
- Differenciation B cells
- Preeentation of antigen and its concequencies
- Activation of T cells
- NK cells, NKT cells,
- Activation of B cells
- Humoral immunity
- Cellular immunity
- TD a TI antigens – presentation and concequencies
- Regulation of immunity mechanism, cytokins
- Effector function of lymphocytes

Special immunity

- Immunity in viral infections
- Immunity in bacterial infections
- Immunity in fungi and parasit infections
- Escape of microbes from immunity mechanism
- How can the immunity be influenced
- Specific immunity induction - artificial
- Active immunisation
- Passive immunisation
- Antigens of vaccines
- Hypersensitivity reactions – sensibilisation, activation
- Type I hypersensitivity
- Type II hypersensitivity
- Type III hypersensitivity
- Typ IV hypersensitivity
- Immunedefficiencies - primary

- Immunedefficiencies – secondary
- Therapy of immunodefficiencies
- Autoimmunity - mechanism, tolerance,
- HLA and autoimmunity
- Transplantation – genetic bases
- Reaction of graft and immunity
- AB0, Rh, immunity of mother and child
- Grafts, tissues, organs transplantation – preparation, immunological concequencies
- Immunostimulation – therapeutical
- Immunosupression - therapeutical
- Tumor immunity
- Theory of immunological survey
- Immunity in different age (newborn, children, adult, elderly)
- Immunotherapy of tumors
- Immunopathological concequencies of infection

Laboratory diagnostical methods
- Detection of immunocompetent cells
- Identification of quantification of antibodies
- Detection of epitopes on cells - serotypisation
- Monoclonal antibodies
- Flow cytometry
- Serological reactions
- ELISA
- Western blot
- Immunofluorescence
- Detection of specific humoral immunity
- Detection of specific cellula immunity – in vivo (Mantoux test)
- - in vitro (Quantiferon), IGRA
- Phagocytosis and index of phagocytosis
- Tests of nonspecific immunity detection
- Separation and quantification of lymphcytes,
- Dynamics of antibody production, titer, dilution
- Tumor markers – role in diagnostical process
- Skin tests – specific immunity detection, allergy detection
- Immunedefficiencies and possibilities to test and identify them
- IgE in allergy
- Identification of complement molecules and function (CH50)
- Specificity and sensitivity of tests
- Detection and role of autoantibodies
- Immunological survey
- Postvaccination immunity detection
- Precipitation reaction
- Complement fixation reaction
- Important persons in immunity
- History of vaccination
- Antivaccination activities