

- I. Basic Immunology
 - A. Immune Mechanisms
 - 1. Innate versus adaptive immunity
 - a. Natural Antimicrobial Agents
 - i. Releasable granule proteins
 - 2. Immunogenetics – gene rearrangements in the generation of immune system diversity
 - 3. Gell and Coombs Classification of Immune Responses
 - 4. T cell mediated immunity
 - a. T cell mediated immune response – participating cells. Properties and functions of antigen presenting cells
 - 5. B cell mediated immunity
 - a. Maturation of the antibody response
 - b. Biologic process initiated by antibody: opsonization, complement fixation, antibody dependent cell mediated cytotoxicity
 - c. IgE mediated immediate and late phase reactions
 - 6. Other immune and inflammatory mechanisms
 - a. Lymphokine activated killer cells and their effects
 - B. Immunoregulatory Mechanisms
 - 1. Tolerance
 - 2. Apoptosis
 - 3. Anergy
 - C. Laboratory Measurements
 - 1. Methodology and interpretation: measurements of immunoglobulin levels, immunoglobulin classes and subclasses
 - a. Serologic testing
 - i. RAST inhibition techniques
 - b. Genetic techniques including TRECs, PCR and use of probes
 - c. Hybridoma and monoclonal antibody technology
- II. Anatomy and Physiology
 - A. Normal Anatomy and Physiology
 - 1. Lower airway
 - B. Pathology of Primary Atopic Disorders
 - 1. Rhinitis and rhinosinusitis
 - a. Allergic
 - 2. Early and late responses to allergen challenge
 - a. Nasal challenge
 - b. Bronchial challenge
- III. Pharmacology
 - A. Allergenic Proteins and Extracts for Diagnosis and Treatment
 - 1. Allergen extract preparation and standardization methods
- IV. Research Principles
 - A. Research Ethics
- V. Clinical Sciences
 - A. Allergic Diseases and Related Disorders
 - 1. Upper airway disease

- a. Clinical skills and interpretive strategies for diagnosis of upper airway diseases: skin testing (epicutaneous and intracutaneous); cytology of nasal secretions; understanding of indications for and methodology of nasal challenges; rhinoscopy; nasal and ear examination; gross assessment of upper airway imaging studies
 - i. Skin testing
 - 2. Lower respiratory tract disease
 - a. Specific skills and practical management: chest exam, interpretation of pulmonary function testing, bronchial challenges, sputum and exhaled breath analysis, and gross interpretation of imaging studies.
 - i. Long acting beta agonists
 - ii. Genetic polymorphisms and beta agonists
 - 3. Drug allergy (see dermatologic disorders and anaphylaxis)
 - a. General reviews and susceptibility states
 - 4. Anaphylaxis and anaphylactoid reactions
 - 5. Insect hypersensitivity
 - a. Skin prick, intradermal and in vitro testing to stinging insects
 - b. Predictive value of clinical history and testing for adult and pediatric population
 - c. Venoms, formulation, schedule and duration of immunotherapy
- B. Transplantation Medicine
 - 1. GVHD: acute and chronic
- C. Immune System Related Malignancies and Cellular Disorders
 - 1. B cell and plasma cell neoplasms
 - 2. T cell neoplasms
 - 3. Mast cell dyscrasias
 - 4. Eosinophilic disorders
 - 5. Cryopathies and amyloid
- D. Established and Evolving Immune-based Treatment Modalities
 - 1. Glucocorticoids and immunosuppressants
 - 2. Nucleic acid based therapies (DNA vaccines, CpG, gene insertion, antisense nucleotides)
 - 3. Cytokine receptors and receptor antagonists (IFN, antiTNF, etc)
 - 4. Probiotics