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## MI Microbiology and Immunology

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- MI 494G IMMUNOBIOLOGY. (3)**  
A survey of theories and mechanisms of immunity, including: nature of antigens and antibodies, antigen-antibody reactions, immunocompetent cells, immunogenetics, allergic reactions, tumor immunology and transplantation immunology. Prereq: BCH 401G (may be taken concurrently) and BIO 208 or BIO 308 or consent of instructor. (Same as BIO 494G.)
- MI 590 CELLULAR AND MOLECULAR PHYSIOLOGY. (4)**  
This course will focus on the cellular and molecular physiology of inter- and intracellular communication. In particular, it will provide an overview of established and emerging intracellular signaling mechanisms which utilize i) cyclic nucleotides (cAMP; cGMP), ii) calcium (phosphatidylinositol metabolism: cyclic ADP-ribose), iii) transmembrane ion fluxes (voltage- and receptor-operated channels), iv) tyrosine kinases, and v) nuclear transcription factors. The material will be presented in a number of formats including didactic lecture and group discussions of selected readings. Prereq: PGY 412G, PGY 502 or consent of instructor. (Same as PGY 590.)
- MI 595 IMMUNOBIOLOGY LABORATORY. (2)**  
Laboratory in immunology and serology. Preparation, standardization, and uses of biological products; serology. Laboratory; four hours. Prereq: BIO/MI 494G or concurrently; or consent of instructor. (Same as BIO 595.)
- MI 598 CLINICAL MICROBIOLOGY. (3)**  
An introduction to the concepts of clinical microbiology through a survey of the microbial diseases of man using an organ system approach. Prereq: BIO 208 and 209, BIO 476G recommended, CHE 230 or 236, or consent of instructor. (Same as PAT 598.)
- MI 601 SPECIAL TOPICS IN MOLECULAR AND CELLULAR GENETICS. (1)**  
Each semester five distinguished scientists visit the UK campus to deliver a series of three formal lectures each and participate in numerous informal contacts with graduate students. The emphasis is on the presentation of the most current advances (often unpublished) in selected topics in molecular and cellular genetics. May be repeated to a maximum of six credits. (Same as BCH/BIO/PLS/PPA 601.)
- MI 604 EXPERIMENTAL GENETICS. (3)**  
An introductory molecular genetics course designed to expose first-year graduate students to contemporary concepts and methods in genetics and genomic analysis. Model systems and classic papers will be presented as paradigms for important genetic principles. Prereq: CHE 105, 107, 230 and 232; BIO 150 and 152; or equivalents. (Same as IBS 605.)
- MI 611 BIOPATHOLOGY. (3)**  
The course will examine the mechanisms by which various biological, chemical and physical agents injure susceptible hosts and the complex biochemical and immunological reactions which occur in response to injury. The host defense mechanisms will be illustrated by an analysis of selected human diseases and animal model systems with particular emphasis on the events at the molecular and cellular level. Prereq: BCH 502 or concurrent, BIO/MI 494G or equivalents and consent of instructor. (Same as BIO 611.)
- MI 615 MOLECULAR BIOLOGY. (3)**  
An integrative and functional approach to the regulatory aspects of DNA, RNA and proteins in prokaryotic and eukaryotic cells. Lectures and discussions with readings in original literature. Prereq: A course in genetics (e.g. BIO 304) and a course in nucleic acids and elementary molecular biology (e.g. BCH 502) or consent of instructor. (Same as BCH/BIO 615.)
- MI 616 BIOLOGY AND THERAPY OF CANCER. (3)**  
Biology of cancer will be discussed at the molecular, cellular and organismic level. Emphasis will be placed on cellular signaling, apoptosis and cell cycle unique to cancer cells, which affects tumor cell behavior and its interactions with the host immune system. The biology of hematopoietic cells will also be included. Clinicians active in treatment and research of various types of cancer will be invited to participate in the lectures. Prereq: BCH 502, 502, BIO 685. (Same as MED/PHA 616.)
- MI 618 MOLECULAR NEUROBIOLOGY. (4)**  
This course provides knowledge base and analytical skills in the field of molecular neurobiology. An in-depth introduction to current technologies, their rationale and limitations, will be the focus to address normal brain function and neuropathological conditions. Prereq: BCH 501, 502, NEU 605, or consent of instructor. (Same as ANA/BIO/PGY 618.)

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- MI 685 ADVANCED IMMUNOBIOLOGY. (3)**  
 An introductory level graduate course surveying current trends in immunology including the organization and structure of cells relevant to immunity, immunochemistry, types of immune responses, cellular immunology, immunogenetics and immunopathology. Prereq: BCH 401G, or BCH 501 or 502 or equivalent, or consent of instructor. (Same as BIO 685.)
- MI 707 CONTEMPORARY TOPICS IN IMMUNOLOGY. (3)**  
 This course will deal with controversial and evolving areas of immunology. Lectures in a given topic will be accompanied by student discussion of contemporary literature. Prereq: MI 685 or equivalent or consent of instructor. (Same as BIO 707.)
- MI 710 SPECIAL TOPICS IN MICROBIOLOGY. (2)**  
 A variety of topics relating to modern molecular and cell biology. Prereq: Consent of instructor.
- MI 720 MICROBIAL STRUCTURE AND FUNCTION. (3)**  
 Molecular basis of structure and function in unicellular microbes. Molecular genetic and structural approaches to the analysis of bacterial architecture growth, division, and differentiation. Prereq: (to reflect appropriate IBS course). (Same as BIO 720 and OBI 720).
- MI 748 MASTER'S THESIS RESEARCH. (0)**  
 Half-time to full-time work on thesis. May be repeated to a maximum of six semesters. Prereq: All course work toward the degree must be completed.
- MI 749 DISSERTATION RESEARCH. (0)**  
 Half-time to full-time work on dissertation. May be repeated to a maximum of six semesters. Prereq: Registration for two full-time semesters of 769 residence credit following the successful completion of the qualifying exams. (Same as MB 749.)
- MI 767 DISSERTATION RESIDENCY CREDIT. (2)**  
 Residency credit for dissertation research after the qualifying examination. Students may register for this course in the semester of the qualifying examination. A minimum of two semesters are required as well as continuous enrollment (Fall and Spring) until the dissertation is completed and defended.
- MI 768 RESIDENCE CREDIT FOR MASTER'S DEGREE. (1-6)**  
 May be repeated to a maximum of 12 hours. (Same as MB 768.)
- MI 769 RESIDENCE CREDIT FOR THE DOCTOR'S DEGREE. (1-12)**  
 May be repeated indefinitely. (Same as MB 769.)
- MI 772 SEMINAR IN MICROBIOLOGY. (0-1)**  
 Review of current literature in microbiology; presentation of papers on work in progress in the department or on assigned topics; reports on meetings of national and international scientific and professional societies and symposia. Required of all graduate students. Two hours per week. May be repeated nine times for a maximum of 10 credits. (Same as BIO 772.)
- MI 798 RESEARCH IN MICROBIOLOGY. (1-9)**  
 May be repeated to a maximum of 24 credits. Prereq: Consent of instructor. (Same as BIO 798.)
- MI 815 FIRST-YEAR ELECTIVE, MEDICAL MICROBIOLOGY AND IMMUNOLOGY. (1-3)**  
 With the advice and approval of his or her faculty adviser, the first-year student may choose approved electives offered by the Department of Medical Microbiology and Immunology. The intent is to provide the student an opportunity for exploration and study in an area which supplements and/or complements required course work in the first-year curriculum. Pass-fail only. Prereq: Admission to first year, College of Medicine.
- MI 816 CELLULAR STRUCTURE AND FUNCTION/GENETICS. (4)**  
 The course combines small group meetings, lecture, clinical correlations, problem-based learning, and problem-solving sessions in providing an understanding of the relationship of human genetics to human health and disease. Close integration with biochemistry topics provides a better picture of how biochemistry, genetics and molecular biology contribute to normal human development and medicine. Lecture, 20 hours per week. Prereq: Admission to Medical School (first year). (Same as MD 816.)

