FUNDAMENTALS OF OSTEOPATHIC MEDICINE

The Fundamentals of Osteopathic Medicine (FOM) course (OMS-1 Fall Semester) presents concepts that comprise the basic science foundation of clinical medicine. During their first semester in medical school, students learn the core topics of biochemistry, anatomy, physiology, histology, embryology, genetics, pharmacology, pathology, and microbiology that are necessary to study the organ and tissue systems of the body that are presented later in the curriculum.

The FOM course is organized into the following Themes, which integrate all of the relevant basic science disciplines:

THEME 1. INTRODUCTION TO HUMAN BODY AND HUMAN DEVELOPMENT. The Fundamentals Intensive Anatomical Tour (F-IAT) serves as an introduction to anatomical terminology and the anatomical sciences including embryology that begins the two-year gross anatomy sequence. Serves as preparation for subsequent concepts presented in FOM, Integrated Systems, Doctoring and OMM courses.

THEME 2. MOLECULAR BASIS OF MEDICINE AND BIOCHEMISTRY. Overview of basic metabolism including mechanisms involved in generation and storage of energy and biosynthetic intermediates from the food we eat and their application to medicine.

THEME 3: CELL BIOLOGY AND PHYSIOLOGY. Structure of the cell at the microscopic level is studied including the components of the extracellular matrix. Basic principles of cell physiology are also presented including topics focused on physiological homeostasis, membrane transport, electrical membrane and action potentials, synaptic transmission, and signal transduction.

THEME 4: FOUNDATION OF THERAPEUTICS. The foundations of pharmacology are presented including pharmacodynamics and pharmacokinetics. Students begin to learn how drugs affect the body and how the body affects the drugs.

THEME 5: GENETICS. Introduces medically relevant genetics necessary to understand the mechanisms of descent and modification. Students learn how genes induce morphology and how physiology and can cause disease.

THEME 6: CELL INJURY AND IMMUNE SYSTEM. Introduces the various causes and mechanisms of cell injury, the adaptive changes that permit survival and maintenance of function, and the steps which eventually lead to cell death. Various causes of cell injury are introduced in the following themes, namely immunological, infectious and neoplastic along with
how the body reacts to cell injury through the inflammation process and how this is managed pharmacologically.

**THEME 7: NEOPLASIA.** Basic concepts of neoplasia (“new growth”) are introduced including general microscopic characteristics of benign and malignant tumors. Mechanisms of the changes occurring at the tissue and organ level in response to injury are presented including carcinogenic agents leading to neoplasia along with various pharmaceutical interventions against neoplasia.

**THEME 8: DISEASES OF THE IMMUNE SYSTEM.** The mechanisms of how disorders in the immune system result in cell injury as well as the therapeutic interventions are presented.

**THEME 9: FUNDAMENTALS OF INFECTIOUS DISEASES-MICROBIOLOGY AND ANTIMICROBIAL THERAPY.** Mechanisms of disease development due to microbial infection and treatment of microbial infection are presented. Bacterial cell structure, metabolism and genetics and how antibiotics help to eliminate these pathogens are discussed. The ability of different organisms (bacteria, viruses, fungi and parasites) to cause disease as well as various antiviral and antifungal agents are also introduced.

**THEME 10: HEMATOPOIETIC AND LYMPHOID SYSTEM – BLOOD.** Begins with how blood cells are formed by the body (hematopoiesis) followed by discussion of non-cellular components of blood (hemoglobin and plasma proteins). Other topics include the nature of blood groups, metabolism of Vitamin B12, folic acid and iron in relation to blood cell formation, lymph, lymphoid organs, hemostasis (related disorders and the pharmaceutical interventions), disorders affecting blood cells including diagnosis and treatment of anemia, leukemia and lymphoma.

FOM Course Coordinators:
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