# Introduction to Clinical Pathology
## Mini-Elective
### Spring 2011

**Course Dates:**
February 14, 21, 28, March 21, 28
Mondays, 1:00-3:00 PM

**Maximum Students:**
6

**Class Year:**
MS1 and MS2

**Course Director:**
Trevor Macpherson, MD

**Faculty:**
- Jeffrey Kant, MD, PhD
- Bruce Rabin, MD, PhD
- Lydia Contis, MD
- Nadia Habib-Bein MD, PhD
- Mohammed Virji, MD, PhD

**Contact Information:**
Trevor Macpherson, MD
tmacpherson@mail.magee.edu, 412-641-4655

**Registration:**
Betsy Nero, Office of Medical Education
betsy@medschool.pitt.edu

**Description:**
The field of pathology consists of anatomic pathology (tissue and cell pathology) and clinical pathology (laboratory medicine). Clinical pathology, for the most part, involves laboratory tests on body fluids versus anatomic pathology, which involves the examination of tissues and cells. This mini-elective will focus on clinical pathology. The purpose of this course is for students to interact with the faculty who direct the various clinical pathology laboratories, to get acquainted with the different laboratory environments in clinical pathology, and to have the opportunity to ask questions about the laboratory tests that will have an impact on the care of their patients. Each of the five sessions described below will require pre-review of one or more case studies in preparation for the discussion with the pathologist.

Upon completing the course, students should have a better understanding of how to interact with the clinical pathology laboratories and of the role of the clinical pathologist as an expert available for consultation.

**Course Objectives:**
- To help students develop an understanding of the appropriate use and interpretation of patient care tests in four sub-specialty areas of clinical pathology – clinical chemistry, microbiology, immunology and molecular diagnostics
- To become familiar with the consultation role of the clinical pathologist in patient care and research
- To provide students with a glimpse of the current state of the art technology and equipment of laboratory testing in clinical chemistry, microbiology, immunology and molecular diagnostics
- To enable students to understand the medical director role of the pathologist in the clinical laboratory

**Requirements:**
Active participation in all five course sessions.
Course Outline

Introduction to Clinical Pathology:
The Role of the Laboratory in the Care of Your Patient

Course Director:
Trevor Macpherson, MD
Residency Director, Department of Pathology

Faculty:
Jeffery Kant, MD, PhD
Division Director, Molecular Diagnostics

Bruce Rabin, MD, PhD
Division Director, Clinical Immunopathology

Mohammed Virji, MD, PhD
Division Director, Clinical Chemistry

Lydia Contis, MD
Faculty, Clinical Hematopathology

Nadia Habib-Bein, MD, PhD
Chief, Clinical Microbiology, VA

Course Objectives:
- To help students develop an understanding of the appropriate use and interpretation of patient care tests in four sub-specialty areas of clinical pathology – clinical chemistry, microbiology, immunology and molecular diagnostics
- To become familiar with the consultation role of the clinical pathologist in patient care and research
- To provide students with a glimpse of the current state of the art technology and equipment of laboratory testing in clinical chemistry, microbiology, immunology and molecular diagnostics
- To enable students to understand the medical director role of the pathologist in the clinical laboratory

Location:
Various locations as noted in each session schedule.

Session 1: February 14, 2011
Immunopathology
Instructor: Bruce Rabin, MD, PhD, Division Director, Clinical Immunopathology
Location: Clinical Laboratories, 5th Floor South Tower Presbyterian (PST), Room 5725

Objectives
Students will:
- Appreciate the equipment that is found in an immunopathological laboratory.
- Become familiar with some diseases for which immunopathological tests are employed.
- Understand the characteristics of specific immunopathological laboratory tests.

Format
This session will be held at the Clinical Immunopathology laboratory, and students will be given a tour of this facility. Students will work through a series of case studies where the laboratory has provided assistance in diagnosing or managing a patient. Included will be a discussion of the disease and the immunopathogenesis of disease; the relevant laboratory test and its characteristics (technique, costs, turn-around time, sensitivity, specificity); and how the test was used clinically in the patient.
Session 2: February 21, 2011
Chemistry
Instructor: Mohammed Virji, MD, PhD, Division Director, Clinical Chemistry
Location: Clinical Laboratories, 5th Floor South Tower Presbyterian (PST), Hematology Conference Room 5924 PST

Objectives
Students will gain an understanding of:
- The functions and organization of the clinical chemistry laboratory in a hospital.
- The range of tests done in a clinical chemistry laboratory and their relevance to health care.
- Appropriate use and interpretation of clinical chemistry tests for diagnosis and clinical care of patients.

Format
This session will begin with a half-hour tour of the chemistry laboratory facilities, highlighting various aspects of laboratory functions from sample management through analyses and data handling. The impact of near patient testing will be discussed in context of the continuity of laboratory services for effective patient care. The remainder of the session will focus on discussion of selected clinical cases that illustrate the utility of laboratory tests for effective care of patients with different diseases. Students will discuss patient presentation, clinical findings, diagnosis, disease management, and patient care, with laboratory tests as an integral part of patient evaluation and care.

Session 3: February 28, 2011
Hematopathology
Instructor: Lydia Contis, MD, Faculty Clinical Hematopathology
Location: Clinical Laboratories, 5th Floor South Tower Presbyterian (PST), Specimen Receiving Window

Objectives:
- Students will gain an understanding of:
  - The functions and organization of a Hematopathology laboratory in a hospital
  - The range of tests done in hematopathology
  - The role of the medical director in a hematopathology laboratory
  - Interpretation of select hematopathology tests including microscopic findings

Format:
Students will begin with a tour of the hematopathology laboratory highlighting automated robotics systems and flow cytometry instruments from sample management through analyses and data handling. The remainder of the session will focus on discussion of selected cases that illustrate the use of laboratory tests in providing information to clinicians to take care of their patients. The role of the pathologist as a consultant to clinicians will also be discussed.

Session 4: March 21, 2011
Microbiology
Instructor: Nadia Habib-Bein MD, PhD, Chief of Microbiology
Location: Pittsburgh VAMC, Department of Pathology (2nd Floor), Conference Room 2NW105

Objectives
- Students will gain an understanding of:
  - How the microbiology lab contributes to patient care.
  - How to test for antibiotic susceptibilities and interpret the results.
  - The interface between the clinical microbiology lab and clinical research.

Format
This session will include several case studies designed to illustrate the role of the microbiology lab in the diagnosis and treatment of patients. Case studies will illustrate identification of bacterial and fungal infectious agents, susceptibility testing, and the interpretation of results, particularly in how this information pertains to the care of the patient.
**Session 5: March 28, 2011**  
**Molecular Diagnostics**  
Instructor: Jeffery Kant, MD, PhD, Division Director, Molecular Diagnostics  
Location: Room S728 Scaife Hall

**Objectives**  
Students will:  
- Become familiar with the field of Molecular Diagnostics (MDx) and its role in 21st century healthcare.  
- Review specific examples of test results including interpretation, quality assurance, implications for patient management, and the role of the pathologist as a consultant.  
- Develop insight into the future of MDx applications in medicine.

**Format**  
This session will begin with a tour of the MDx laboratory facilities. This will be followed by review and discussion around the development of this relatively new field along with current and near-future applications of MDx to patient care. Sample test results will be used to illustrate assays and stimulate dialogue.

**Course Evaluation:**  
All students and faculty involved in the first time this mini-elective is taught will be asked to attend a round-table luncheon for the purpose of providing feedback on the course. Time and location TBA.