Welcome

Welcome to Pathology. The pathology course, running longitudinally through many modules, is intended to enable you to understand the basic concepts and mechanisms of disease and of equal importance to apply these to the practice of medicine. Disease processes involve the interplay between the patient’s genetic and acquired predisposing factors and the formal causal agent. The study of pathology requires the integration of anatomy, biochemistry, physiology, pharmacology and microbiology. Modern pathology has become an increasingly complex diagnostic specialty. In addition to the traditional essentials of morphologic diagnosis, pathologists employ sophisticated technology for analyses of tissues, body fluids and purified DNA and proteins and must be familiar with the diverse methods of immunofluorescence, histochemistry, flow cytometry, electron microscopy and molecular biology. How a patient is treated is frequently determined by the diagnosis the pathologist renders. An understanding of pathology puts clinical medicine on a firm scientific foundation.

In this course, you will not only learn about the causes and mechanisms of disease, but will begin to acquire skills in differentiating various groups of diseases and make correct diagnoses. The use of clinicopathologic case studies, lab sessions, small group discussions and autopsy pathology in this course is designed to model the analytic and synthetic process of arriving at a differential diagnosis and to develop your clinical diagnostic judgment.

As you progress through your studies in this course and others, you are likely to appreciate that your true goal in medical school is to develop the skills of self-education and problem solving, not merely the acquisition of facts for the sake of immediate academic success. I encourage you to come to class prepared and with questions, so that even in the formal lecture hall we can have informal discussions. A successful small group session is dependent on your active participation.

Educational Objectives

Pathology as a Medical Specialty

- Recognize Pathology as a curricular discipline as well as a medical specialty
- Describe the process by which human tissue is handled, processed and evaluated.
- Describe the role of the pathologist in patient care.
- Characterize the process and significance of the post-mortem examination.

Pathology as a Curricular Course

- Describe and characterize the general pathologic mechanisms involved in cellular injury, inflammation, hemodynamic perturbations and neoplasia.
- List and classify diseases in a particular organ system.
- Characterize the pathogenesis of each disease including immune, molecular or infectious mechanisms.
- Describe classic gross and microscopic features of each disease and involved organ.
- Integrate and correlate the clinical features associated with each disease or disorder.
- Discuss the outcome of each disease and potential treatment options.
- Demonstrate proficiency in spoken and written communication of medical terminology.
- Exhibit professionalism as demonstrated by preparedness and reliability in classes and at the medical examiner's office.
- Use this foundation to be an active thinker and diagnostician.

**ORGANIZATION**

The course is set up in a logical manner, is organ systems based and is coordinated with systems modules. The basic material presented in the Fundamentals module (First quarter) will be incorporated with every organ system that we will eventually cover throughout the remainder of the year. Basic topics include cell injury, inflammation, hemodynamics and neoplasia. These general principles establish a foundation that will be repetitively called upon and elaborated in the systemic pathology section of the course. Each organ system is presented in a slightly different manner and lectures are given by a variety of pathologists and clinicians. The following are modules that include pathology:

**First Quarter Modules**

- Fundamentals
- Hematologic Disorders

**Second Quarter Modules**

- Cardiovascular
- Pulmonary

**Third Quarter Modules**

- Central Nervous System I (Neurologic Disorders)
- Central Nervous System II (Psychiatric Disorders- Forensics)
- Renal/Genitourinary
- Reproduction

**Fourth Quarter Modules**

- Gastrointestinal/Hepatic
- Endocrine
- Orthopedic/Rheumatologic and Dermatologic disorders
- Pediatrics
LECTURES

Fundamentals and each subsequent organ system will begin with an introduction and then a series of lectures. For pathology, most of the new information will be presented in the didactic portion of the course; however, new topics may be presented in the laboratory and CPC’s.

A handout will be provided for every lecture preceded by objectives for that lecture or series of lectures. Please use the objectives as a guide as you study.

Recommended reading is listed for each lecture; **REQUIRED reading will be in BOLD** on each objectives page.

ADDITIONAL PEDAGOGIES

1) Laboratory sessions
2) Clinicopathological conferences (CPC’s)
3) Small group sessions
4) Autopsy visit

The Pathology website that can be accessed through Dahlgren Library resources has been updated. We have consolidated most of our materials to one easily accessible site, the online “Pathology Manual”. Please refer to this for most of the information that you will need for this part of the course. In addition, general information is included here.

LABORATORY SESSIONS

Each one to two-hour session will visually illustrate specific examples of the particular pathologic reactions or organ/system diseases. The intent of these classes is to illustrate gross and microscopic lesions and correlate with both basic concepts and clinical information. We begin most systemic labs with a short review of normal histology.

All images are taken from the Webpath internet resource. This is copyrighted material and is accessible on an in house computer and from elsewhere, when you log in using a Georgetown address (use your user ID and password). In addition, the required images for each lab can be found in the Laboratory Manual along with a brief introduction to each lab, objectives and pertinent terminology.

CLINICO-PATHOLOGIC CONFERENCES (CPC's)

CPC's are one of the major teaching activities for undergraduate, graduate and postgraduate medical education in most academically-oriented hospitals. Faculty from many departments such as Internal Medicine, Surgery, Oncology, and Pediatrics join us to present interesting cases.

A CPC will commence with the ‘Clinical Case’ which is included in this manual. This consists of the patient presentation, clinical history, physical findings, laboratory data and hospital course. This case will be discussed by a clinician and will include a review of systems, laboratory data, the hospital course and a discussion of the differential diagnosis.
Typically, there are a few unanswered questions and these should be clearly enunciated. The pathologist will review the findings from any surgical specimens or autopsy. This will give insight into the underlying disease and the clinical course and most importantly explain patho-physiological mechanisms at play. This allows for a scholarly, organized approach to understanding of the disease.

To facilitate clinical problem solving, selected cases from the files of the Department of Pathology have been adapted to a format suitable for students. Although Georgetown University Hospital, as a tertiary referral and academic center, tends to encounter complex and more unusual cases than smaller community hospitals, we try to provide cases that are representative of the patients you will see in most settings. The entire class will meet as one large group.

The pathology images of these cases are posted within the Online Pathology Manual on the Dahlgren Library Website, also on blackboard and are included in this manual.

SMALL GROUP SESSIONS

We will continue our program of small group discussions again this year. The course has been formatted such that a given system will begin with didactic lectures to be followed sequentially by a laboratory, CPC and by a small group discussion. Small groups are designed to culminate the teaching of a particular system.

Small groups will consist of a discussion of a specific case which will highlight the important concepts in a clinical context and bridge the gap between the basic science and clinical medicine. The discussion will be lead by a faculty member from the department of Emergency Medicine. You are expected to be actively involved in the case discussion.

The cases to be discussed are available in this manual as well as on the internet either through the main Online Pathology Manual website (direct links) or DML/educationalsoftware/second year/Interactive Case Study Companion to Robbins Pathologic Basis of Disease. The software is licensed to GU and access is limited by password:

Login ID: User ID
Password: (your own)

The website is very good and easy to use. The discussions are meant to be clinical; however, it may be helpful for you to review the online objectives and questions.

You are responsible for reviewing the online images on your own. Images will appear on exams.

Attendance: Attendance will be taken for each small group session. Each session is worth three points for a total of 24 points that are part of the final grade.
We obviously encourage students to attend for numerous reasons, but realize that you will not be given points if you do not attend. The cases are listed below and can also be found online. Specific dates are included in your syllabus/schedule and room assignments will be posted separately. Please review the images online.

Inflammation and Repair  Case 1- Acute Salpingitis
Cardiovascular Diseases  Case 2- Hypertension and Dissection
Respiratory Diseases  Case 2- Chronic Obstructive Pulmonary Disease
Central Nervous System  Case 1- Cerebrovascular Disease
Renal Diseases  Case 4- Pyelonephritis
Gastrointestinal Diseases  Case 2- Peptic Ulcer Disease
Hepatic/Gallbladder  Case 4- Cholecystitis and Pancreatitis
Endocrine Diseases  Case 6- Diabetes Mellitus

AUTOPSY

Autopsies have been the cornerstone of medicine for the past two centuries and continue to provide critical insights into difficult clinical problems. Approximately, 70 autopsies are performed annually at Georgetown. The pathology labs and CPC’s make extensive use of visual materials which are posted on the internet. Autopsies will supplement these with a ‘hands on’ experience in pathology. Approximately 1300 autopsies are performed annually at the ME.

We ask all students to attend an autopsy performed at the Medical Examiner’s office in Washington DC. This involves traveling to the ME office on one weekday morning between mid-October and mid-March and submitting a completed autopsy report (15 points toward final grade).

THE DISTRICT OF COLUMBIA MEDICAL EXAMINER’S OFFICE

Where: The ME office in DC resides at 1910 Massachusetts Ave. SE (17th and Mass). Please go to building 27. Parking is available in the lot adjacent to the building if you choose to drive. The nearest Metro Station is the Stadium Armory on the Orange line or Blue line; exit on the DC General Hospital side and follow the sidewalk down the hill, walk pass the Metro bus stop, continue following the side walk along the middle parking lot to the rear. Look for a 2-story brown building with a large gray medallion over the entrance.

Dr. Marie Pierre-Louis is the Chief Medical Examiner for the District of Columbia. Staff: Dr. Sarah Colvin, Dr. Lois Goslinoski, Dr. Carolyn Revercomb, Dr. Joseph Pesteran and Dr. Sunil Prashar.
**Schedule:** Rotations will commence in the second quarter, on October 11th through the mid-March. Georgetown students can attend on Tuesdays, Wednesdays and Thursdays. Please arrive by 8:30; the case should end before noon - you will not miss mandatory afternoon sessions.

**Sign-up:** Your class officers will direct the online sign up process. A maximum of eight students can attend on one day.

**Materials:** Please print the Autopsy Form which can be found in the Pathology Website or use the one in your manual and take it with you to be signed by the Medical Examiner.

You are required to have the following materials before going to the ME:

1. Scrubs and shoes (your own). Please note open toed sandals/shoes are unacceptable and violate OSHA regulations – so please do not wear them.
2. Georgetown ID - The ME office will not permit students to attend without this.
3. Fit testing (specialized respiratory mask): this is also a requirement of OSHA. This is done through the Dean's office during orientation.
4. Disposables (face mask with shield, shoe covers, gloves, an apron and cap) will be given to you at the time of fit-testing.

*A completed autopsy report will be worth 15 points toward your final grade. It is in your best interest to complete the report as soon as possible. A final deadline will be posted after the last group has attended (typically in March).*

The *autopsy report* should consist of the following components:

1. **Introduction:** Including the patient’s age, sex and any pertinent history. Do not include the patient’s name or date of birth.
2. **Findings:** Including description of the body and gross organs.
3. Make critical and methodical observations
4. **Pathophysiologic Correlation:** This is the most important part section of the report and MUST be included. Correlate clinical and physical findings and what you have learned about a particular disease. You do not need to worry about the final cause of death if it is not definitively known; however, a succinct discussion of underlying disease mechanisms for your case is mandatory.

The case format above should be followed. Microscopic examination may not be germane to establishing a final anatomic diagnosis for medico-legal cases and this should be reviewed at the discretion of the medical examiner performing the autopsy. The ME should sign the appended form.

Please include your name and email address on the report and email to Dr. Furlong.
GROSS CONFERENCE

We have incorporated a ‘gross’ conference into the pathology curriculum. This is a one day (one and a half hour) session toward the end of the academic year; it provides a cumulative review of pertinent pathologic specimens in association with disease processes and clinical information.

Date: Monday, March 26

Time: Two sessions: 1-2:30 and 2:30-4PM (You should attend only one session- see below).

Where: ILC

Attendance: Students who attend will receive 5 points

Goals and objectives:

- Review gross pathologic findings (fixed and/or plasticized)
- To review pertinent disease processes
- Correlate pathologic findings with clinical features
- Mini pathology board review

Logistics:

One half of the class will attend from 1-2:30PM and the second half from 2:30-4PM.

Students will be initially assigned to a room where they will sign-in. A facilitator will review 1-3 gross specimens in the 15 minute allotted time. Then students will move to the three additional rooms to review other specimens moving every 15 minutes or so.

Please use the room assignment that you have had for small groups.

Those who are typically scheduled to come to small groups on the first day should come to the early session (1-2:30PM) and those who have been assigned to come on the second day of small groups throughout the year should come to the second session (2:30-4PM).

TEXT

The text that we will use and refer to in this course is as follows:

Robbins and Cotran Pathologic Basis of Disease 8th ed

This series also produces a review book which is helpful as you prepare for exams: Robbins Review of Pathology 3rd ed

The text and review book are available in the medical school book store for purchase. The text is in Dahlgren Library and online.
SELF STUDY MATERIALS

There will be materials (handouts) that you will occasionally be asked to read on your own either in the text, as a separate handout or covered in an article within your syllabus or online. There will be an objectives page for any additional self study materials.

OLD EXAMS

Old pathology exams will be posted on the course website for your review.

EXAMINATION QUESTIONS

Examination questions will be included in each module exam and will reflect your knowledge of lecture material and the incorporation of clinical information and pathologic images (both gross and microscopic).

Students should review the following for each ‘disease’ that we cover in the course:

- Clinical presentation (classic signs and symptoms, age etc)
- Pathogenesis (molecular and cellular factors and mechanisms of injury)
- Gross and histologic features
- Outcome (typical or potential)
- Treatment options (briefly, medical or surgical etc)

GRADING

Final grades will include points for examination questions, 24 points for attendance at all small group sessions, 15 points for completing an autopsy report on time, 5 points for gross conference attendance and points assigned for the shelf exam. Final grading for the course will be based on the class mean. The final cutoff for passing has ranged in the past 5 years from 68-70%; in the past 2 years it has been at 70%. The cutoff would never be higher than 70%.

The top 10% of the class will receive honors. High pass, pass and low pass are determined by the class mean. A few words about the pathology shelf exam (worth 5% of the grade):

1. Students who pass the course, based on exam and other assigned points, will pass the course regardless of their performance on the shelf exam.
2. No passing grade is established for the shelf exam. Instead, points are assigned based on the class mean.
3. A given student’s points are then added on to the student’s accumulated points for the course for a final grade.
COURSE and FACULTY EVALUATION

Quarterly evaluations are available online through the office of Evaluation and Assessment. You will receive an email reminder; your feedback is encouraged. We welcome constructive analysis and make annual changes based on student input. Please take time to be thoughtful, concise and professional with your comments.

STUDY TIPS

1. **Preparation**: Students who preview the relevant material (syllabus or section in Robbins) prior to lecture will find their time to be spent in a much more rewarding fashion as they will be prepared for the vocabulary and major concepts when discussed in class. Take 15 minutes to preview; it is well worth the time.

2. **Attendance**: We strongly encourage you to attend all sessions. Attendance is taken at small group sessions and the gross conference.

3. **Focus and consistency**: Your understanding of pathology builds as the course progresses. If you are having difficulty with any aspect of the course, please schedule an appointment to discuss the issue. Keep up with the material; cramming is generally ineffective.

4. **Review with a group**: Group study can be very valuable for some students in terms of clarifying concepts and complex points. Active dialogue and collaborative analysis may enable you to learn much more effectively from case studies and laboratory materials than rote memorization. Consider this option.

5. **Individual counseling**: Students should assess their performance every quarter and if necessary, modify their approach. Students are encouraged to seek guidance should they be near a 70% range during the academic year and should any other concerns arise.

CONTACT INFORMATION

Mary A. Furlong, MD
Course Director
SW 205 Med Dent Building
furlonma@georgetown.edu
784.3636

Margarita Abaunza
Course Coordinator
NE 105 Med Dent Building
mma43@georgetown.edu
687.5917