Course Dates: April 6, 13, 20, 27
          Fridays, 2:00-4:00, 2:00-5:00 or 1:00-5:00 PM

Maximum Students: 6

Class Year: MS1

Course Director: Aatur D. Singhi, MD, PhD
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Registration: Betsy Nero, Office of Medical Education
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Description:
Anatomic pathology can be described as the use of tissue examination under a microscope to make diagnoses. It is what most pathologists do most of each workday. This mini-elective will show the students how diagnoses are rendered. It should provide an appreciation of the challenges of the specialty and highlight the rewards of a potential career in pathology. Students will emerge from the elective rotation with a basic knowledge of 6-8 diseases, many organ-specific, not covered in the first year curriculum. Likely diseases include leukemia, gastroesophageal reflux disease, Helicobacter pylori gastritis, pancreatic cancer, gastrointestinal stromal tumors, mucoepidermoid carcinoma of the salivary glands, and oral squamous cell carcinoma. Some sessions will include radiographs and the gross pathology before the slides to assist in developing a broader perspective on specific diseases. Transportation will be provided to and from the remote sites of the rotation.

During the course sessions, students will be actively engaged in making observations and interpreting information. Each student will cut and stain at least one frozen section during the first session and perform a fine needle aspiration of a tissue specimen during the third session. Comparable to the way in which residents and clinical year students learn through discussing cases, students, faculty and the course director will discuss cases in real time. Though the process of questioning, students will be encouraged to apply what they know and push ahead to develop deeper insights about the diseases, and hone their critical thinking skills (using the Socratic method). Students taking this elective must be ready for being asked challenging questions in front of the group.

Course Objectives:
- To prepare medical students to be astute users of biopsy results.
- To help medical students learn how and why it takes as long as it does to get a good diagnosis from a biopsy or cytology specimen.
- To give students an appreciation that every anatomic pathology diagnosis comes with a degree of uncertainty and fallibility, and with a differential diagnosis.
- To provide students with a basic knowledge of key features of at least 8 common and important diseases.
- To teach students some specific features of diseases they encounter in the form of tissue in a microscopic biopsy or cytology.

Requirements:
- Active participation in the four course sessions.
- Bring a pathology textbook and notebook to each course session, to look up information and record key observations.
COURSE OUTLINE:
INTRODUCTION TO ANATOMIC PATHOLOGY

Locations:
UPMC Presbyterian Department of Pathology
UPMC Shadyside Department of Pathology
UPMC St. Margaret's Department of Pathology

Session 1: April 6, 2018, 2:00-4:00 PM
Pancreaticobiliary Pathology and Head and Neck Pathology
Instructors: Aatur Singhi, MD PhD and Raja Seethala, MD
Location: UPMC Presbyterian Department of Pathology

Objectives
Students will gain an understanding of
1. How frozen section specimens are processed and diagnoses made
2. The important role of frozen section diagnosis of margins of resection
3. The challenges of diagnosing pancreatic cancer
4. The utility of precision medicine in the early diagnosis of pancreatic cancer

Format
The session will include cutting and staining a frozen section of a tissue specimen and interpreting it at a multi-headed microscope; each student will do at least one with Dr. Seethala. In addition, Dr. Seethala will review various head and neck pathologic entities that students may encounter within their clinical rotations. Surgical ramifications will also be discussed. The students will look at microscope slides/powerpoint images of pancreaticobiliary pathology with Dr. Singhi representing different types of tumors and inflammatory lesions. Dr. Singhi will also discuss precision medicine efforts in the early diagnosis of pancreatic cancer that has been adopted by the University of Pittsburgh Medical Center.

Session 2: April 13, 2018, 2:00-5:00 PM
Genitourinary Pathology, Sarcoma Pathology, and Cytology
Instructors: Thu Tran, MD, Anette Duensing, MD, Sara Monaco, MD
Location: UPMC Shadyside Department of Pathology

Objectives
Students will gain an understanding of
1. The challenge of making a diagnosis of prostate cancer on needle biopsy
2. The ability to make a diagnosis on fine needle aspiration cytology
3. The difficulty of a correct sarcoma diagnosis, yet its importance for successful therapy

Format
In this session, students will examine microscope slides at a multi-headed microscope with Dr. Tran. Students will each perform a fine needle aspiration of a tissue specimen, stain it and look at it at a multi-headed microscope with Dr. Monaco. They will see cytology slides of fine needle aspirations of patients with interesting diseases. In addition, students will learn about several (molecular) diagnostic methods and gain basic knowledge of sarcoma pathology with Dr. Duensing. They will learn why a correct diagnosis is important for successful therapy and will be introduced to the concept of targeted therapies. Students will finish the afternoon with a hands-on understanding of how fine needle aspirations are done and interpreted along with a new understanding of at least three diseases.

Session 3: April 20, 2018, 2:00-4:00 PM
Gastrointestinal Pathology and Hematopathology
Instructors: Jon Davison, MD and Miroslav Djokic, MD
Location: UPMC Presbyterian Department of Pathology

Objectives
Students will gain an understanding of
1. The common diseases involving the gastrointestinal tract including gastroesophageal reflux, Barrett’s esophagus, colon cancer and other entities
2. The emerging ancillary studies performed in gastrointestinal pathology that may affect patient management
3. The appearance of cells in a normal blood smear and smear with leukemia
4. The appearance of normal bone marrow and of bone marrow with leukemia
Format
The session will include a thorough review of common diagnostic entities encountered in clinical practice involving the gastrointestinal tract with Dr. Davison. If a suitably educational surgical specimen comes to the laboratory, the students will also be able to see review representative gross specimens. Dr. Davison will also briefly review commonly ordered ancillary studies used to evaluate gastrointestinal disease including cancers. Students will finish the afternoon by reviewing peripheral blood smears and bone marrow biopsies of a leukemia with Dr. Djokic and will compare these findings to corresponding normal specimens. Students will gain knowledge of how to interpret a blood smear and bone marrow biopsy and with a new rudimentary understanding of at least three additional diseases.

Session 4: April 27, 2018, 1:00-5:00 PM**
Community Hospital Pathology
Instructors: Jagjit Singh, MD, Smiljana Istvanic, MD, Evan Baker, MD, Sonal Kamat, MD
Location: UPMC St. Margaret’s Department of Pathology

Objectives
Students will gain an understanding of
1. The variety of tissue types submitted for diagnosis in community hospital pathology
2. The workflow of a busy laboratory and time pressure under which pathologists make diagnoses.

Format
The students will be engaged in observing specimen processing and examining microscope slides project-ed from a double-headed microscopes with the staff pathologists, including slides of biopsies, cytology specimens and surgical resections. Since the community hospital has a full range of specimens, diseases they have not seen in the previous three sessions will be selected for presentation. Students will finish the afternoon with a new rudimentary understanding of at least two additional diseases.

References:
The recommended textbook to bring to each session is Robbins Pathologic Basis of Disease, Eighth Edition.
Other recommended non-medical reading:
Blink: The Power of Thinking Without Thinking, Malcolm Gladwell
The Final Diagnosis, Arthur Hailey

Course Evaluation:
Each student will be asked to complete an evaluation of the course at its conclusion.

**WARNING: Transportation to and from the remote sites is required and the need to prepare students before each session means that the students who take this elective have to come to pathology at 1 PM and get back as late as 5 PM, so the time commitment is from 1 PM to 5 PM rather than 2 PM to 4 PM. See attached directions to St. Margaret.
Directions to UPMC St. Margaret

From the North via Route 28
Proceed southbound on Route 28. Take Exit 8 (Fox Chapel Road). Turn right onto Fox Chapel Road. At the second traffic light turn right onto Freeport Road and follow to UPMC St. Margaret. 815 Freeport Road.

From the North via Route 8
Take Route 8 South to Route 28 North. Follow Route 28 North to Exit 7 (Delafield Avenue). Turn left onto Delafield Avenue and left again onto St. Margaret Drive.

From the East
Take the Pennsylvania Turnpike to Exit 48 (Allegheny Valley), to Route 28 South. Take Exit 8 (Fox Chapel Road). Turn right onto Fox Chapel Road. At the second traffic light turn right onto Freeport and follow to UPMC St. Margaret, 815 Freeport Road.

From Penn Hills
Travel north on Route 130. Route 130 is Coal Hollow Road, then becomes Sandy Creek Road. From Sandy Creek Road, turn left onto Allegheny River Boulevard. On Allegheny River Boulevard, follow the signs for the Highland Park Bridge. Cross the bridge, stay in the right lane, and follow the signs for Route 28 North. Take the first exit, Delafield Road. At the end of the exit ramp, bear left and then turn left at the stop sign. Then turn left onto St. Margaret Drive.

From Penn Hills
Travel north on Route 130. Route 130 is Coal Hollow Road, then becomes Sandy Creek Road. From Sandy Creek Road, turn left onto Allegheny River Boulevard. On Allegheny River Boulevard, follow the signs for the Highland Park Bridge. Cross the bridge, stay in the right lane, and follow the signs for Route 28 North. Take the first exit, Delafield Road. At the end of the exit ramp, bear left and then turn left at the stop sign. Then turn left onto St. Margaret Drive.

PARKING
Take ticket and go to the paystations at Entrance A, B, or C in the hospital, and lobbies of the Medical Arts Buildings.