Welcome to the Pathology Open House!

FILL in the Word Cloud with

how you would describe a pathologist:

www.menti.com/oovhhuoz25

(see link also in the Zoom chat box or the QR code below)

Perceptions of Pathologists and Pathology!

Training Pathways for Pathologists

- Medical School: 4 years
- Pathology Residency
  - Anatomic Pathology (AP) only: 3 years
  - Clinical Pathology (CP) only: 3 years
  - AP/CP combined: 4 years
  - AP/NeuroPathology combined: 4 years

American Board of Pathology
Board Certification – within 5 years from the end of training

- Pathology Research Track: includes 6 months of research in AP or CP residency + 1 year research
- Subspecialty Fellowships: 1 year

Meet Pathologists, Residents and Students today!

Amanda Herrmann, MD, PhD
PGY-2, AP/CP – BB/TM
UTHealth The University of Texas Health Science Center at Houston | McGovern Medical School

Cheryl Hanau, MD
Chair and Professor
Drexel University

What is Anatomic Pathology?

Kayla Elliott, MD
PGY-2, GI/Liver/Surg Path
The University of Vermont Medical Center

CJ Lucas, MD
PGY-3, Neuropath Fellow
UCSF University of California San Francisco

Nicole Jackson, MD, MPH
Assistant Medical Examiner
Cook County Medical Examiner's Office

What is Clinical Pathology?

Roya Zarpak, MD
PGY-1, AP/CP – BB/TM
Georgetown University School of Medicine

Robert Christian, MD, MS
PGY-2, AP/CP – BB/TM
OHSU Oregon Health & Science University

Why also a good fit for Research MD/PhD students?

Maryknoll Palisoc
4th Year MD/PhD Candidate
Cancer Research
PennState Health Milton S. Hershey Medical Center

The pathologist is a physician who specializes in the diagnosis and management of human disease by laboratory methods.

What is Anatomic Pathology?

- Whenever **tissue is removed from the body** (during **biopsy** and **aspiration** procedures, in **surgery**, or at **autopsy**), it must be examined to determine the precise cause of the illness that prompted its removal.
- **Gross and microscopic analysis** of tissue changes is the primary focus of anatomic pathology, aided by correlation with ancillary studies, such as immunohistochemical, molecular genetic, and flow cytometric analysis.

Subspecialties in Anatomic Pathology

- *Cytopathology*
- *Dermatopathology*
- *Medical Autopsy and Forensic Pathology*
- *Neuropathology*
- *Pediatric Pathology*
- *Surgical Pathology (subspecialties include Bone/Soft Tissue, Cardiac, GI, Gyn, Head/Neck, Pulmonary)*

What is Clinical Pathology?

- Specialty **laboratories** include hematology, microbiology, clinical chemistry/genetic sequencing, and blood bank (transfusion medicine).
- Pathologists are important **consultants to the clinician**, the **"doctor's doctor,"** recommending appropriate **lab tests** and interpreting their **results** for fellow physicians.

Subspecialties in Clinical Pathology

- *Blood Banking/Transfusion Medicine*
- *Chemical Pathology*
- *Hematology*
- *Medical Microbiology*
- *Molecular Genetic Pathology*
- *Clinical Informatics*

Why is Pathology a good fit for MD/PhD students?

- **Clinical laboratory experience synergizes with physician-scientist career goals.**
  - Enables basic research on disease mechanisms with possible translation to therapeutics.
  - Roles in biobanking and tissue-based research create opportunities for collaborations with other researchers and clinicians.
- **Research Track**:
  - Core residency tracks* ***include*** up to 6 months research
  - **ABP Research Track** adds additional year of research within residency [1]
  - Additional years of fellowship research may be added
- **Most Research Track trainees do AP only or CP only with a fellowship****, resulting in 3.5 years clinical training and several years of research training

American Board of Pathology-certified training pathways:

AP only: 3 years	AP/CP: 4 years
CP only: 3 years	AP/NP: 4 years

*** In many AP/CP subspecialties, generally 1 year clinical, research years may be added.*

[1] *Weiss & Johnson, 2016, Acad Pathol; Remick et al 2016, Acad Pathol*

Clinical Case: GI (Gastrointestinal) System

PATIENT SYMPTOMS:

- 48 year old woman
- Severe abdominal pain
- Nausea and vomiting for past 18 hours
- No past medical history (PMH), no screenings, dislikes physicians

LABS – blood sample:

- Electrolyte imbalance
- Negative pregnancy test
- Iron deficiency anemia
- Blood bank work up

IMAGING:

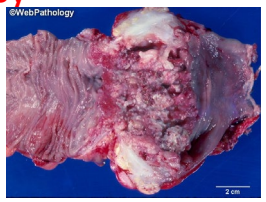
- CT Scan for abdomen and pelvis with contrast
- circumferential intraluminal mass in the sigmoid colon measuring 5 cm, involving pericolonic fat

SURGERY:

- Colonic lesion was palpated
- Segment of colon with lesion was excised (with a suture marker at the distal end) and sent to pathology – surgeon requests that a frozen section be performed on the mass and distal margin of the specimen

PATHOLOGY - SURGICAL

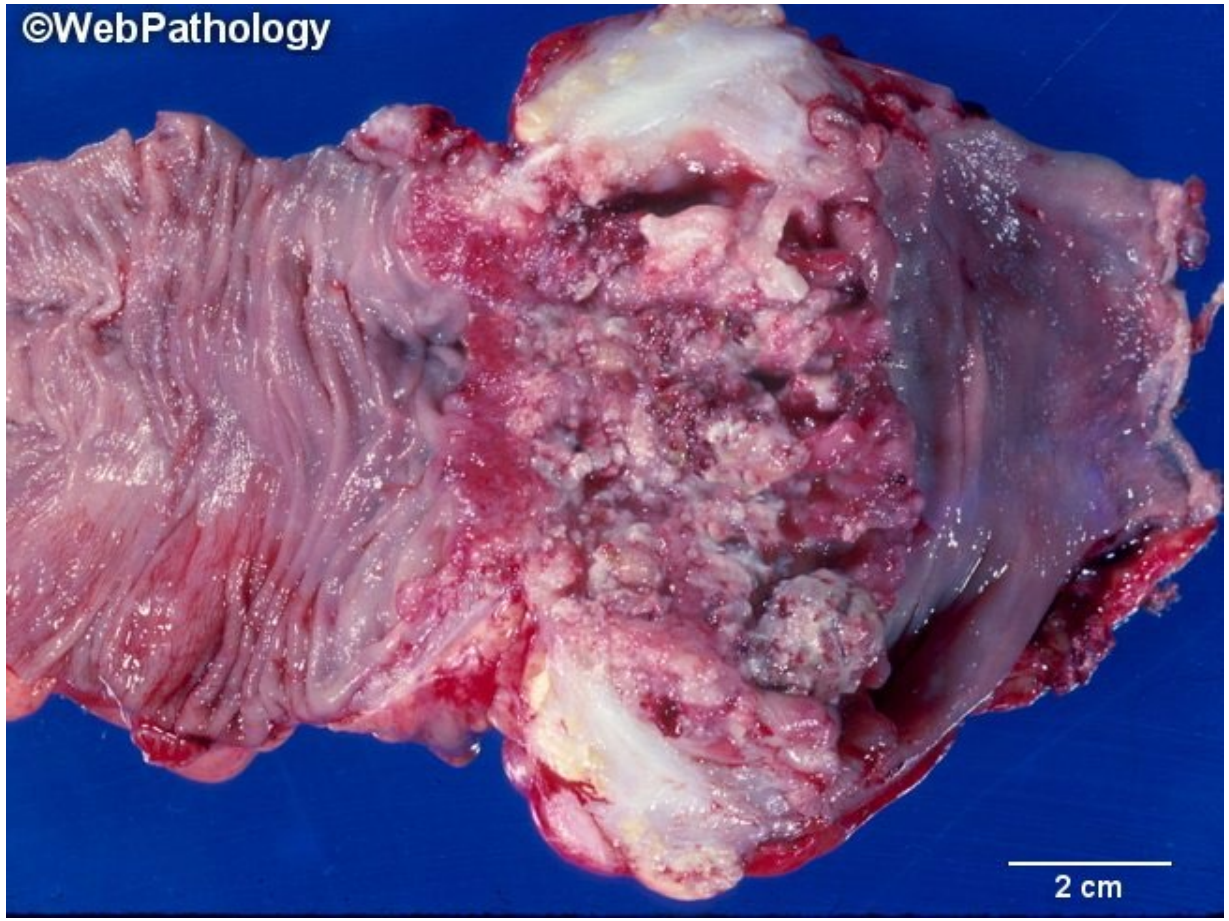
- frozen section biopsy - mass/tissue is:
  - measured
  - quickly frozen,
  - thinly sliced,
  - stained, and
  - analyzed under the microscope
  - Pathologist reports to surgeon that the distal margin is positive for adenocarcinoma



- Surgeon removes additional tissue and sends second sample to pathologist for another frozen section and analysis resulting in being clear of carcinoma
- Surgeon stitches up the patient for recovery!

MORE PATHOLOGY…

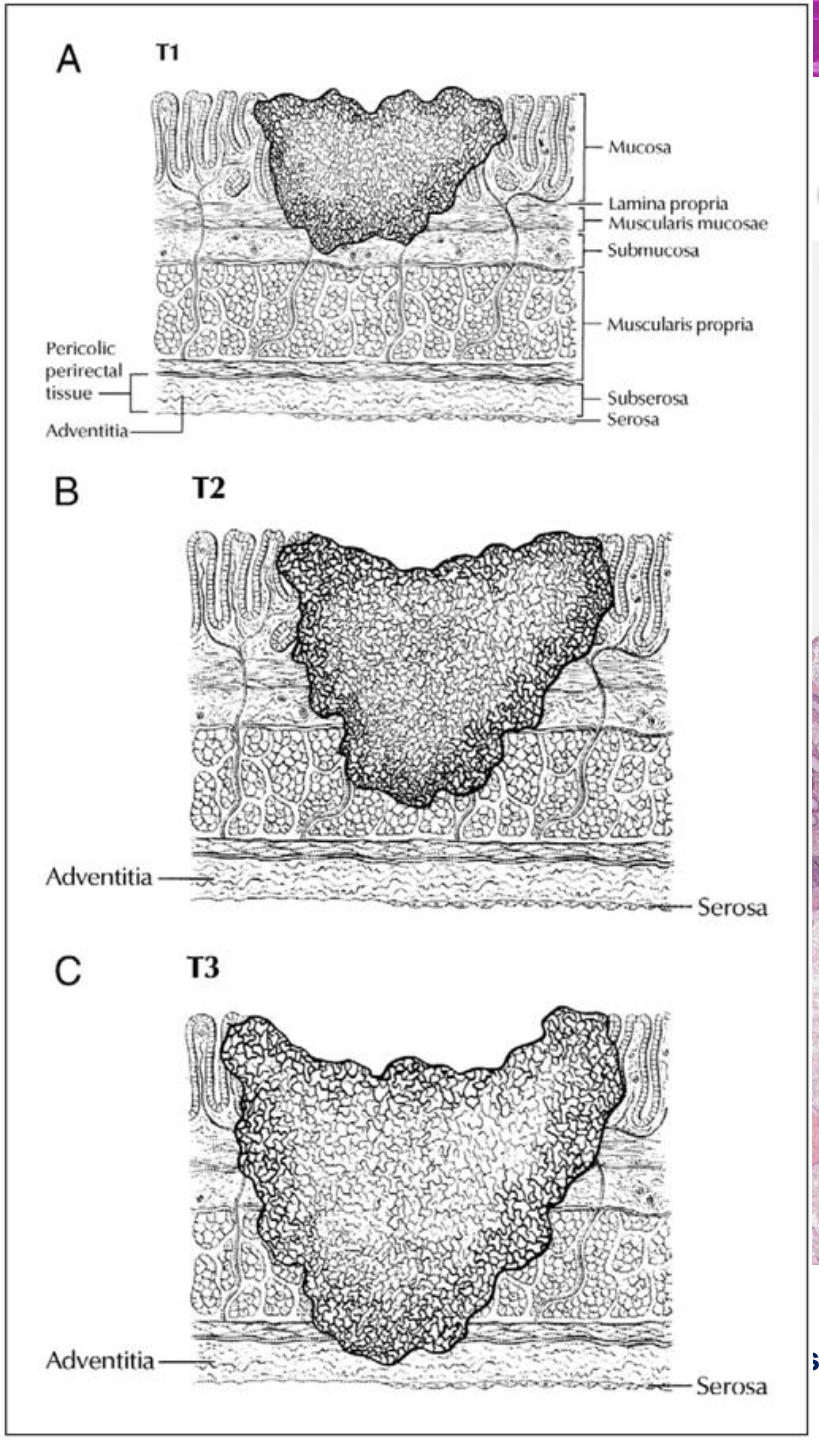
- Pathology synoptic **reporting and staging of cancer**
- Submission of tissue for **molecular markers** (genomic/DNA sequencing for specific mutations in sample)
- Presentation of case at a **"Tumor Board"** with multiple specialists, such as radiology oncologists, hematology oncologists, surgical oncologists, radiology, and GI specialists


©WebPathology
2 cm

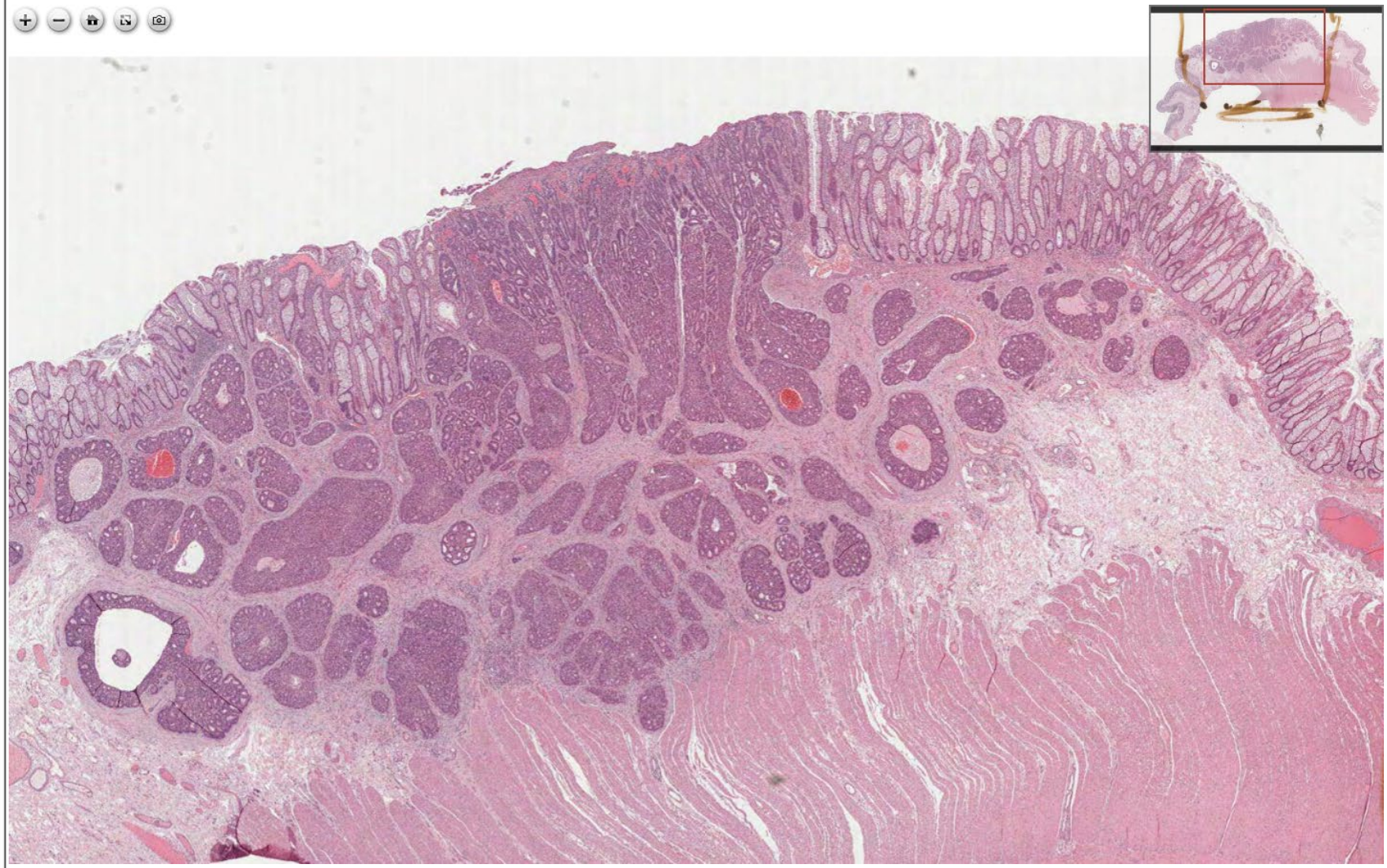
Staging the tumor in the TNM System:

- **T** – refers to size and extent of the main (primary) **Tumor**
- **N** – refers to the number of nearby lymph **Nodes** that have cancer
- **M** – refers to whether the cancer has **Metastasized**

https://www.cancer.gov/about-cancer/diagnosis-staging/staging



Zoom poll: Which T stage?



Photos courtesy of AJCC (left) and Univ of Michigan Virtual Slide Box (Right)

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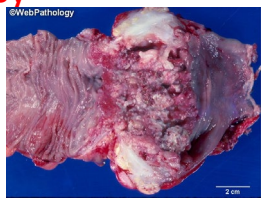

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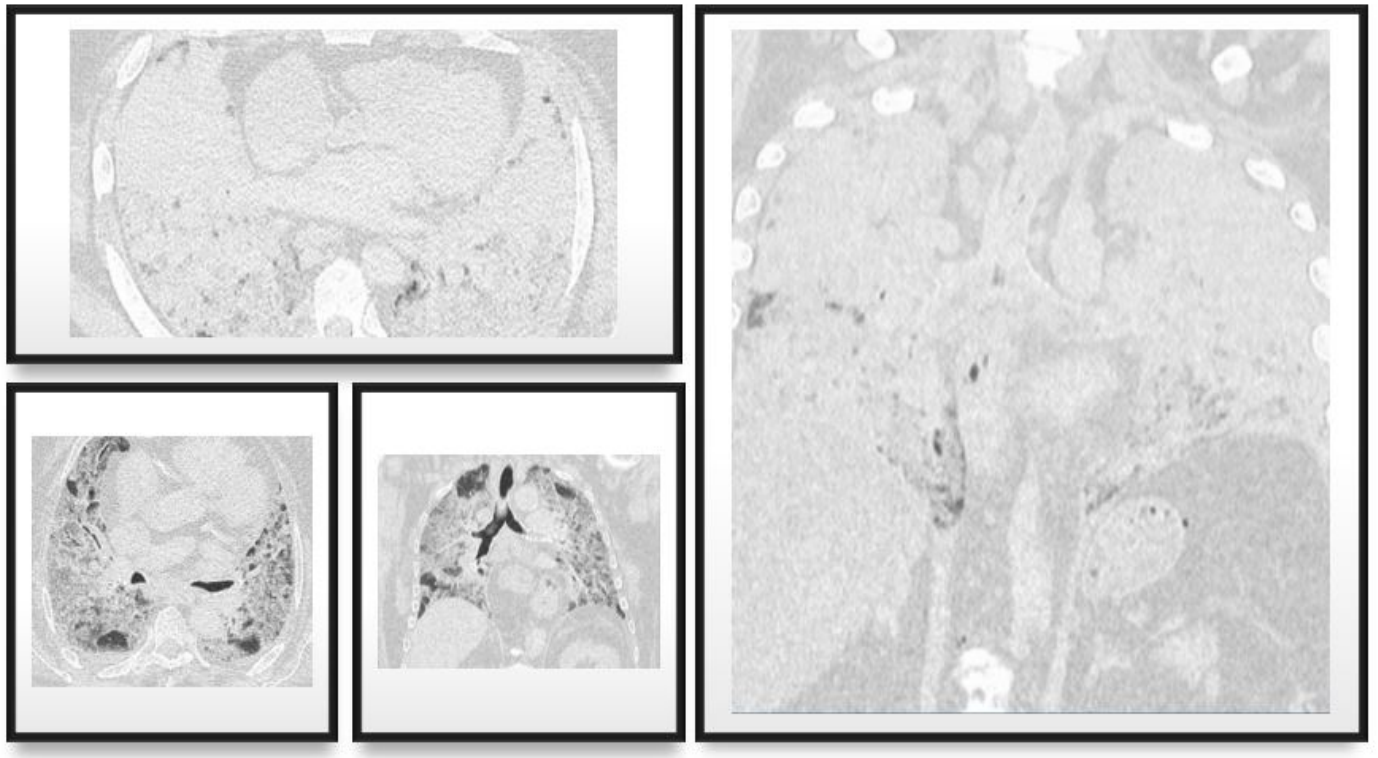
Clinical Case: Autopsy

PATIENT (deceased)

- 55 year old obese man
- Found dead in bed following several days of fever, cough, shortness of breath, and diarrhea
- No evidence of trauma to the body.
- History of chronic alcohol use and poorly controlled diabetes

IMAGING:

- Full body CT scans:
  - Diffuse consolidations in both lungs



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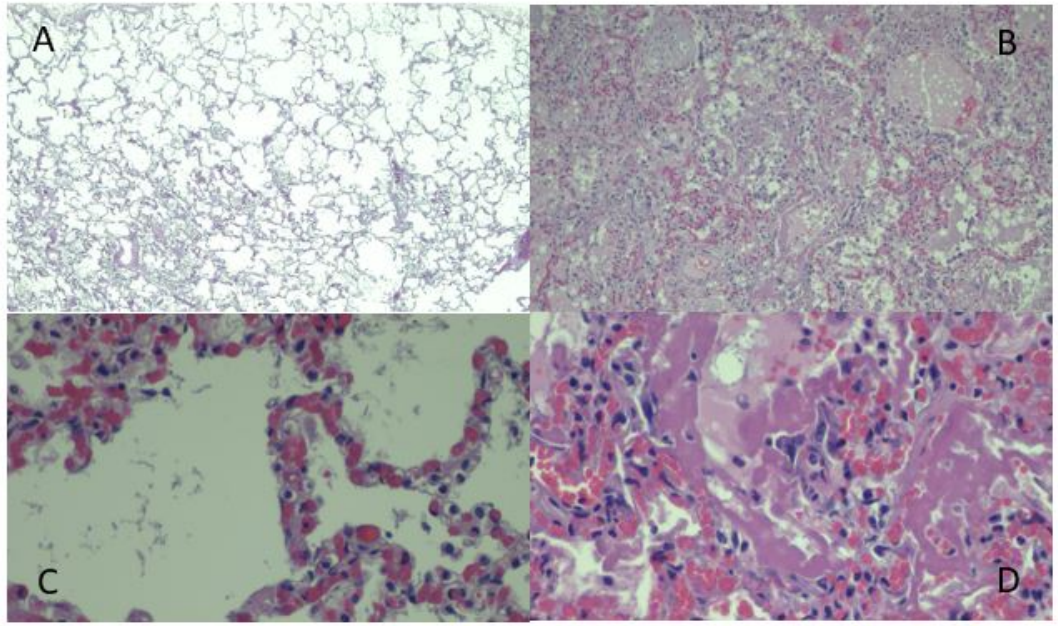
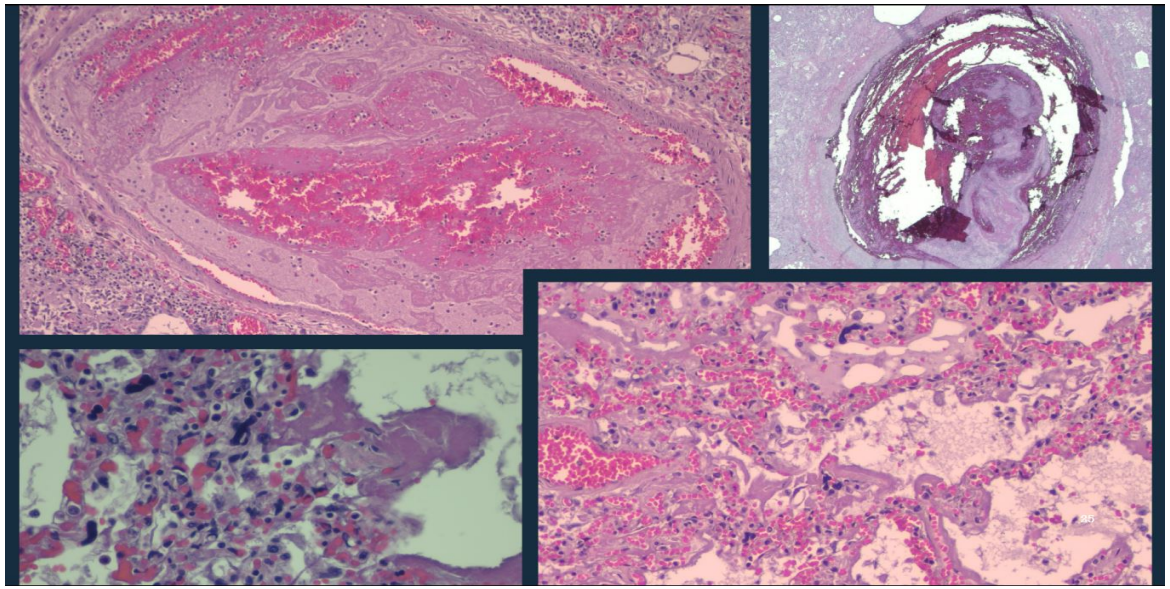
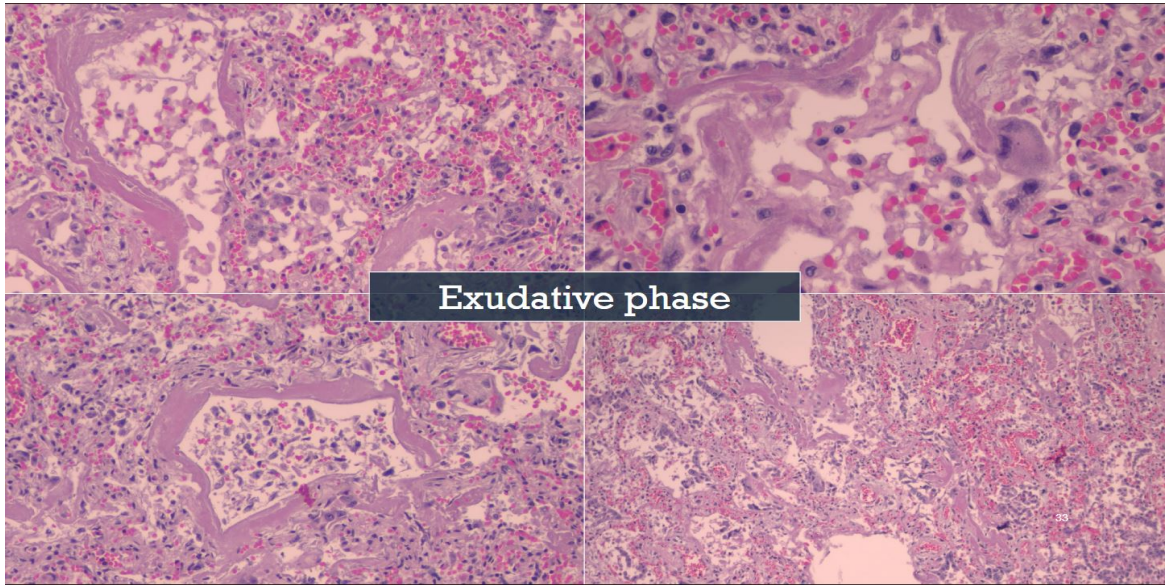
ORGANS:

- Lungs weighed 3x expected value, severely-fluid-logged and slippery, contained large blood clots.

Clinical Case: Autopsy







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IMAGING:

- Full body CT scans:
  - Diffuse consolidations in both lungs

TOXICOLOGY:

- Negative for any common substances of abuse

ORGANS:

- Lungs weighed 3x expected value, severely-fluid-logged and slippery, contained large blood clots.
- Heart, kidneys, liver, brain, and bowel showed no evidence of altered pathology aside from known natural disease (i.e., liver cirrhosis and some scarring of glomeruli in the kidneys).
- Nose and lung swabs were sent to a diagnostics (pathology) laboratory:
  - negative for Influenza A and B
  - positive for SARS-CoV-2

MICROSCOPE:

- lungs showed diffuse alveolar damage (DAD) consisting of:
  - thick, bright pink, hyaline membranes lining the walls of the alveolar airspaces,
  - intra-alveolar fibrin deposition,
  - type II pneumocyte hyperplasia, and
  - increased prominence of megakaryocytes in the walls of the airspaces.

PUBLIC HEALTH IMPACT

- Contact tracing and symptom recognition (family, emergency responders, body transporters, and/or law enforcement agents in contact with the body)

VAERS Vaccine Adverse Event Reporting System
www.vaers.hhs.gov

About VAERS | Report an Adverse Event | VAERS Data | Resources | Submit Follow-Up Information

Completion Status

- [ ] **Patient Information**
- [ ] Reporter Information
- [ ] Facility Information
- [ ] Vaccine Information
- [ ] Additional Information

Report an Adverse Event - Patient Information

Instructions | en Español

Note: Fields marked with an * are essential and should be completed.

Item 1

Patient first name:

Patient last name:

Street address:

City:

State: Select State

County:

Zip code:

Phone:

Email:

Item 2

* Date of birth (mm/dd/yyyy or mm/yyyy)

mm/dd/yyyy

Item 3

* Sex:

Male Female Unknown

COVID and Clinical Pathology

- Molecular Pathology
  - Mapping of Sars-CoV-2 genome
  - PCR primers and development of COVID PCR/amplification assay
  - Antibody assay development
- Clinical/Laboratory Pathology
  - Navigating testing kit, viral media, and reagent issues
  - Testing platforms
  - Validation of tests
  - Space issues

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4th Year MD/PhD Candidate
Cancer Research
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MAIN ROOM: Busting the Myths and Applying to a Pathology Residency
Nicole Jackson, Cheryl Hanau, and Specialty Pathologists in Practice

Residents and Trainees:

Breakout Room #1	Breakout Room #2	Breakout Room #3
Robert Christian Maryknoll Palisoc	Kayla Elliott C J Lucas	Amanda Herrmann Roya Zarpak

Organizations with Resources, Awards, and/or Free Memberships for Medical Students

Breakout Room #4	Breakout Room #5	Breakout Room #6
ASCP – American Society for Clinical Pathology	**CAP** – College of American Pathologists	**NAME** – National Association of Medical Examiners

Subspecialties

- *Blood Banking/Transfusion Medicine*
- *Chemical Pathology*
- *Clinical Informatics*
- *Cytopathology*
- *Dermatopathology*
- *Forensic Pathology*
- *Hematopathology*
- *Medical Microbiology*
- *Molecular Genetic Pathology*
- *Neuropathology*
- *Pediatric Pathology*
- *Selective (Surgical) Pathology*

The Top 5 Pathology Myths BUSTED

Pathology is a mystery to the average clinician and general public. Because of the lack of exposure to our specialty, many rumors surround our field. Here we address the top 5 myths about pathology that couldn't be further from the truth.

MYTH		TRUTH
1 Don't Do Pathology		If people ask, "You are such a people person—why be a pathologist?" Know that with all the roles pathologists play we need to be good with people
2 The Job Market is Terrible		New-in-practice pathologists have described a perceived decrease in difficulty finding a pathology position over the last five years. In fact, the majority accepted jobs in their desired practice setting and were satisfied or very satisfied with their position.
3 Lack of Respect from Other Medical Specialties		Although this myth appears on blogs, in practice, it is the opposite. Any specialty that interacts with pathologists greatly values the role pathologists play in patient care.
4 The Only Thing Pathologists do are Autopsies		The truth is, autopsies are a small portion of an anatomic pathology residency. Residents in anatomic pathology must perform a certain number of autopsies to become board-certified. The field is so large you can choose how big an autopsy scope you want to have.
5 Artificial Intelligence is Taking Over Pathology		Artificial Intelligence will change the practice of pathology, as it will many specialties in medicine, but it will not render the pathologist obsolete.

COLLEGE of AMERICAN PATHOLOGISTS

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