

# M INSIDE PATHOLOGY

**M** MICHIGAN MEDICINE  
UNIVERSITY OF MICHIGAN

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Photo by Camren Clouthier  
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Photo by Dustin Johnston



Education is one of the tripartite missions of the Department of Pathology, along with patient care and research. Within our department, exceptional educational opportunities abound for medical students, residents, fellows, graduate students, postdoctoral researchers, faculty and staff. Our pathology residency program is ranked number 1 among public academic medical centers in the nation, and has been for four of the past five years.

This year's *Inside Pathology Magazine* is dedicated to our educational mission. In this publication, you will meet Dr. Carol

Farver, our new Director of Educational Programs. Dr. Farver is a world-class educator and physician who joined us late last summer from the Cleveland Clinic. In addition, you will be introduced to trainees and educators as they relate their experiences within the Department of Pathology's educational programs.

The stories in this publication predate the COVID-19 outbreak and thus highlight pre-pandemic life. However, we are extremely proud of our faculty, trainees and staff for their unwavering commitment to serve our communities during this time. Our microbiology/virology lab developed and validated a PCR-based test for SARS-CoV-2, the virus that causes COVID-19, within 1 week of the first case being diagnosed in Michigan. Our clinical labs can now perform thousands of tests per week! The laboratory has also developed and validated high throughput serological assays to identify SARS-CoV-2 IgG antibodies in patients who have had COVID-19 symptoms as well as Michigan Medicine patients, health care workers and staff. Plans are underway to roll out testing to the larger regional community. All of these efforts greatly increased awareness of the critical role pathology plays in delivering patient care.

Meanwhile, faculty, residents, and fellows stepped up to volunteer in providing medical care to COVID-19 patients in our hospitals. As you

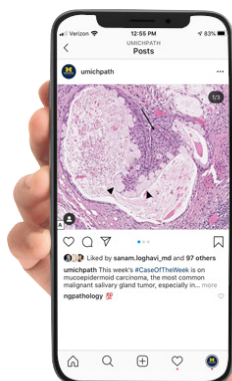
would expect, this is not part of a pathologist's normal responsibility. Yet our team was willing to risk exposure and possible infection to support patients. Simultaneously, our laboratories continued to operate effectively while many faculty, trainees, and staff participated in pandemic response planning for the Department. This time has been an unprecedented educational opportunity for our trainees.

As you read through the articles in this magazine, I trust you will have a better understanding of the educational mission of the Department of Pathology at the University of Michigan. In addition to the devastating impact the pandemic has had on the health of so many peoples, the economic losses to the health system and the department have been immense. Your generous support to our department will help to ensure that the educational efforts in the department of pathology remain at the top as we train future pathologists to be leaders and the best in the field.

**Charles A. Parkos, MD, PhD**

*Carl V. Weller Professor and Chair*  
Department of Pathology  
Michigan Medicine

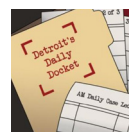
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**"Detroit's Daily Docket"**  
Podcast Sheds Light on the  
Medical Examiner Process

February 3, 2020



**Liron Pantanowitz, MBBCh**  
Named New Director of  
Anatomic Pathology

July 6, 2020



**Above:** Second year House Officer, Justin Kelley looking over slides with Dr. Lew.

Joe Fantone, MD, remembers how it was in the early 1980s, before the University of Michigan Pathology Department had a stand-alone education division. While the department had a long and distinguished record of teaching, residency training was separate from medical student education, and there was no formal graduate program. What's more, the medical curriculum was evolving into a more integrated, organ-system model. As the curriculum evolved, Fantone says, teaching assignments became more *ad hoc* and less coordinated. A course director would ask, "Joe, can you teach this?"

"And I'd say sure, happy to. Or no, I'm too busy, but Sharon [Weiss] might."

All that changed in 1986, when the department created its first-ever Division of Education Programs. Fantone, now Senior Associate Dean for Educational Affairs in the Department of Pathology at the University of Florida College of Medicine, was the founding director. His biggest job, he recalls, was "getting systems into place." Systems for teaching, so that faculty were employed most effectively, capitalizing on their areas of expertise and teaching skills. And systems for documenting faculty teaching effectiveness and meeting accreditation requirements for residency and fellowship programs. Under Fantone's leadership, the department significantly expanded its educational mission over the course of the next two decades,

adding, among other things, a new graduate program in cellular and molecular pathology and multiple sub-specialty fellowships.

Today the department's Division of Education Programs is 34 years old and under the leadership of its third director, Carol Farver, MD. A pulmonary pathologist and past director of the Pathology Residency Program at the Cleveland Clinic, Farver came to Ann Arbor last September and is already envisioning new programs and initiatives. She brings a wealth of experience with her, including a four-year tenure as Vice-Chair of Education for the Institute of Pathology and Laboratory Medicine and stints on the education committees of the United States and Canadian Academy of Pathology and the International Society for Heart and Lung Transplantation.

At Cleveland, where she also led a complex, multi-year process of transitioning the pathology department into a subspecialty program, Farver says she found herself "thinking harder and harder about the whole cycle of being an educator." She expected to finish out her career at Cleveland. But Michigan reached out—and when a place with the reputation of Michigan gets in touch, "you've got to take a look," Farver says brightly.

In Ann Arbor she discovered a breadth of expertise that astonished her. "People who are faculty development people, people who measure outcomes in every possible way, people who help



# A Holistic Approach

by Leslie Stainton

develop curricula. I thought, wow, you go to one big place and you have everything.”

Since joining the U-M faculty last fall, Farver has devoted herself largely to what she calls “connecting dots.” She’s met with colleagues throughout the Medical School and across campus. With faculty in the Ross Business School, School of Education, and sociology department, she’s exploring potential collaborations aimed at refining outcomes research and strengthening project development.

“The greater discussion around education in general these days—and not just health care education,” she says, “is that the paradigm around which one measures outcomes is not a financial one, but a capabilities one. How are we changing the lives of people who get educated? How do we measure their success? The University of Michigan has been in the forefront of trying to do that.”

Building on the work of her predecessor, Barbara McKenna, MD, who retired in 2017, Farver wants to create a division that educates everyone in U-M pathology—not just the traditional cohort of medical students, residents, and fellows, but also the more than 1,100 professionals who staff the department’s labs. “I want to give those people the capabilities to all have a meaningful career,” she says. “It’s more of a holistic message around education.”

“Barbara developed an incredibly strong core of

great medical school residency and scholarship,” Farver says of McKenna. “So now the opportunities are really to extend all of that to everybody else.”

Her single most important job, Farver believes, “is making sure that people see education as important to having the best pathology department in the country.”

## A Leader in Education

Faculty join the U-M pathology department knowing they’ll be expected to teach. In fact, many learn to teach as Michigan residents and fellows and then stay on to become faculty. While they’re increasingly rewarded for this work—chiefly through promotions—education has long been “a kind of poor stepchild of academic medicine,” says McKenna, who ran the department’s education division from 2009 to 2017. Typically, education doesn’t bring in the funding and reputation that research and clinical practice do, so faculty “don’t get nearly as many strokes for worrying about it,” she says. “The people who teach do it because they love it, and there’s something very special about that.”

At Michigan, as elsewhere, physicians are being asked to learn more and more, and that poses additional challenges—among them ongoing tweaks to the medical school curriculum. It’s part of an overall push in health care, Farver says, “to achieve the best quality of care for the least amount of



Barbara McKenna, MD

money. Education has to find a way to stay alive in that space.”

Unlike other medical specializations, pathology touches virtually every part of a physician’s education—basic science, classroom training, patient care. U-M medical students no longer take a stand-alone course in pathology in their second year, as they once did, but instead study pathology as part of an integrated, systems-based curriculum. While learning about the cardiovascular system, for example, they’ll be exposed to pathology in such areas as anatomy, biology, biochemistry, and physiology. From an educational standpoint, this

*“I want to give those people the capabilities to all have a meaningful career. It’s more of a holistic message around education.”*



means greater coordination is needed.

In their second year, U-M medical students now do a mandatory week-long clinical rotation in pathology. The rotation—developed by Madelyn Lew, MD, an

associate professor of pathology who oversees the medical school pathology curriculum for the department—is a first for the department and possibly the first in the nation, Farver says proudly. The rotation means that instead of meeting pathologists exclusively in the classroom, students spend time in the laboratory, too.

“A lot of students don’t know what pathology looks like in terms of a clinical practice,” says Lew. “Not every medical student will opt to go into pathology, of course, but the rotation may get them to realize that pathologists are people they can talk to in order to optimize the chances of making a diagnosis, or to explore the best way to approach a sample or test.”

In both their third and fourth years, medical students can also take a four-week elective in pathology. And they can seek one-on-one mentorship with pathologists—even if they’re not planning on specializing in pathology.

Besides classroom and laboratory training, U-M

students can take part in small group sessions in clinical pathology, and they have access to online modules and other resources “to help them get an idea of how pathology integrates into the larger picture of health-care delivery,” says Lew.

Changing technologies drive additional adjustments to the curriculum. For example, Lew was involved with delivering a new radiology-pathology correlation session within a radiologic elective. The new session integrates radiology findings with autopsy findings so that students see how radiographic images translate into actual macroscopic findings. Lew is also working with colleagues to develop toolkits involving both technological and non-technological platforms, which faculty can use to engage students more fully.

The pathology residency program has also changed. With the department’s move from the main U-M hospital to the North Campus Research Center (NCRC) in 2018, residents no longer take foundational and surgical pathology at the Veterans Administration hospital in Ann Arbor but instead commute between the NCRC and the U-M hospital.

Rotations are different too, says Allecia Wilson, MD, director of both the pathology residency program and autopsy and forensic services. Wilson works closely with co-associate program directors Kristine Konopka, MD, and Sean Li, MD, PhD, to implement pathology programs at U-M. All first-year residents participate in a brief pathology “onboarding” that introduces them to the foundations of U-M’s system—including a brief overview of both anatomic and clinical pathology and such fundamentals as basic histology and patient safety.

The Division of Education Programs hosts a weekly eight a.m. lecture series for residents, as well as a weekly unknown-microscopic slide conference conducted by faculty members or fellows. But it’s not just residents who attend. Henry Appelman, MD, a member of the U-M pathology faculty since 1969, goes to as many of these sessions as he can. “It’s great,” he says. “I get a chance to hear what other people are doing, what my colleagues are doing, what residents are learning.”

As part of its oversight responsibilities, the education division carefully monitors the number of hours pathology residents work, what they’re asked to do, and how they’re evaluated. It’s part of complying with nationally mandated guidelines, many of which were first introduced in the early 2000s in an effort to improve quality of care.

Currently the pathology department has 26 residents and a similar number of fellows—another area that’s changed drastically in the past two



decades. When Farver was a resident, almost no one did fellowships. Today, she says, it's unusual not to do one if you want to be competitive. Farver sees fellowships as a critical pipeline for faculty hiring at U-M, in part because pathologists who train at Michigan see such a formidable volume of material—notably the kinds of tertiary, complicated, unusual cases that seldom show up outside a major research institution. “When our fellows and residents tell prospective employers about the kinds of things they’ve seen,” Farver says, “people are stunned.”

## A Pathway to Advancement

Farver's vision for the division's future extends well beyond the foundational work of educating medical students, residents, and fellows. The department is also ramping up its role in training physician scientists—MD/PhDs who want to focus on lab research as well as clinical practice.

Continuing medical education is also key to the division's mission, and Farver sees new potential for growth in this area. She envisions increased engagement with pathologists and laboratories across Michigan—not just clinical interactions but also formal courses in Ann Arbor and a robust program of virtual education. “We’re probably the only pathology department in the country that has its own IT department,” she says, “and that opens up the possibility of building what every pathology department wants—more online education. Pathology is uniquely set up for it.”

Outside of Michigan, the department is partnering with colleagues in Croatia to offer continuing pathology education. And U-M faculty routinely give lectures at professional meetings around the world.

Farver is equally excited about expanding educational opportunities for the 1,100 professionals who staff U-M's pathology labs. “Only 200 or so of them are MDs,” she says. The rest range from high school graduates to PhDs, from lab technicians and phlebotomists to anatomic pathologists and histotechnologists. Farver believes the job of the education division “is to help organize educational experiences where we can reach out to these people and help build a real pathway around advancement.”

She's currently working with residency director Allecia Wilson to formalize this aspect of pathology education by building official relationships with institutions like Washtenaw Community College, Eastern Michigan University, and local high schools, as well as U-M. The goal is to set up experiential internships so that high schoolers and

undergrads, among others, can get exposed to pathology early in their studies. “Once they come in and do their internship, they say, wow, wouldn't it be a great place to stay,” says Farver.

Plans are underway for the Pathology Department to offer its first-ever introductory session on pathology for an application group that will include high school students and undergrads from Michigan and elsewhere. The session will feature tours, observations, lectures, and small group sessions designed to showcase various career pathways in pathology at Michigan.

“We want to show that there are a lot of opportunities within the field itself, even if you don't go to medical school,” says Lew, who's also involved in the program.

As she settles into her new life in Ann Arbor, Farver is newly thrilled that she chose to come to

Michigan. The pathology faculty and staff are “the best,” she says. And the city is a delight. Last fall her daughter came in to visit from Chicago. “We went kayaking on the Huron River,” Farver says, “And I thought, you've landed in Oz.”

She cherishes being part of the Michigan tradition. That tradition includes people like Henry Appelman, who came to Michigan in 1954 as an undergraduate and is still here. People like Joe Fantone, who launched the Division of Education in 1986, and Barbara McKenna, who built on Fantone's work by strengthening the division's role in medical school, residency, and fellowship training. And younger faculty like Allecia Wilson, who did her residency at U-M and stayed on to become faculty. Wilson credits the pathology faculty at Michigan with having “planted the seed when I was a first-year resident. And here I am now,” she says, “planting those seeds in people's minds and helping them to develop. Paying it forward.”



**Above:** Batoul Aoun, a first-year House Officer, speaking during a training session.

by Elizabeth Walker

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**M**adelyn Lew, MD, was only two years into her faculty appointment when the medical school initiated a massive overhaul to the curriculum, for which she would oversee changes in the pathology content. “It was a little intimidating,” she explains, “but I had a lot of support from departmental leadership, who encouraged me to engage in the opportunity to participate in something new and exciting.”

The traditional lecture-based didactic curriculum was condensed from 19–20 months down to 13, making every second count. Lew was interested in enhancing student engagement with pathology content and introduced large group interactive pathology sessions utilizing technology platforms in the first year curriculum.

In the majority of medical school curricula, pathology is not a required rotation during the clerkship year. However, the new Surgery and Applied Sciences clerkship in Michigan Medical school allows for a unique opportunity for medical students to gain exposure to the clinical practice of pathology. In the 3 month clerkship, 2 months are spent on surgical rotations and 1 month is dedicated to “Applied Sciences,” which is made up of one-week rotations through anatomy/simulation center, radiology, anesthesiology, and pathology. “So now we get the opportunity to show an entire class of med students what pathology is, with the hopes that they get the idea not only of what pathology looks like across different facets but also how we integrate into the larger picture of healthcare delivery,” says Lew.

In their 3rd and 4th years of medical school, students are welcome to visit the department for a 4-week elective in pathology; an opportunity that 3rd-year medical student, Bryana Bayly took advantage of this February. Bayly was enticed by the amazing experience she had during the week-long rotation. “All of the pathologists that I worked with took a lot of time to teach me what was going on and all just had a really great sense of camaraderie and teamwork within their cohorts,” she recalls.

During her 4-week rotation, Bayly was able to experience 5 services. She spent a week on autopsy service and a few days in the blood bank doing clinical pathology, the rest of the time was spent at the North Campus Research Complex in sign out and conferences. “I had no idea that there were so many fellowships and subspecialties in pathology and just what a broad clinical context it covered,” Bayly explains. “I have to say that I had a blast and I learned so much during every rotation.”

While Bayly hasn’t yet decided what her career path will be, she was impressed by the commitment to students that those in the Department of Pathology have shown her — always excited to have a student to teach, always giving her opportunities to contribute to discussions, encouraging her to keep in touch, and offering to create a customized elective for her should she want to explore pathology more. “They just want what’s best for their medical students,” she reflects.



# Throwing Open the Doors to Pathology







# First-Class Team Guides Trainees To Success

by Lidija Fremeau

A third-year medical student has to make some pretty substantial decisions. Where will they want to spend their residency and in what specialty? In their fourth year of medical school, they create a profile on the Electronic Residency Application Service (ERAS®) system. This is a service of the Association of American Medical Colleges through which MD and DO graduates apply to residency programs in the United States. In September, residency programs can access applications and extend interviews. Typically, October through January of their 4th year at medical school they interview where invited, then rank their preferred institutions. The institutions then rank their preferred medical students and through an algorithm, matches are determined. Each eagerly awaits to learn of their matches through the National Resident Matching Program (NRMP).

Those results are computed and released in mid-March of the year they would start residency. It is known as “Match Day,” the day residents and institutions find out what’s coming next for them. It seems like a pretty technologically infiltrated process. However, sitting on either end of the computers are people. The institutions have a team. For the Department of Pathology, enter Pamela





(Pam) Howard, GME Program Administrator for the residency program.

Pam typically sees 450 applications come in for the Department of Pathology Residency Program. There are about six to eight spots to fill each year, and approximately 10 medical students are interviewed for each spot. You may wonder how second year medical students would even begin to consider pathology for a residency. Desire' Baber, Medical Student Programs Coordinator, ensures that at U-M, each second-year medical student fulfills their pathology rotation requirement. Fourth-year students can enroll in pathology electives for a more focused experience. About half of those students are headed into a pathology residency.

When Pam joined the team ten years ago, interviews were conducted daily, one candidate at a time. This required multiple days of faculty scheduled to interview and was a logistical nightmare as well as an inefficient use of time and resources. It was determined that interviews would be conducted one day a week with multiple candidates. As a result, Pam created an interview system that smoothly allows for six to eight personalized candidate interviews to be conducted on interview day, typically October through January.

During "interview season" the team easily walks

10,000 steps on Mondays, guiding interviewees to and from appointments throughout the day. The guides keep track of time so the interviewees can focus on their conversations and experiences at U-M. Their schedule is full beginning with a welcome address by Drs. Allecia Wilson, Residency Program Director; and Sean Li, and Kristine Konopka, Associate Program Directors. Each interviewee is then guided to multiple interviews with various faculty members. They also get to spend time in sign out with a working pathologist looking at slides. Their busy day ends with a message from department chair Dr. Charles Parkos and a sendoff from Dr. Wilson.

Once the match is complete in March, Pam's job gears up again as she credentials and onboards new residents, while simultaneously preparing to graduate residents and send them off to their next adventures. Pam handles so many details for the residents while they are in her care.

Former chief resident, Theodore T. Brown, MD, Associate Professor at Western Michigan University, described his experience with Pam as fortunate. "Pam went out of her way to ensure that all of my questions were answered, and because of her, I felt completely prepared to start this exciting part of my life as a pathology resident. Little did I

**Left to right:** Pam Howard and Marie Goldner looking over an application; Desire' Baber helps in the Match Day planning.

know, I was about to embark on a lifelong friendship with Pam. She was my most favorite person to see at work during the four years of my residency. I recently listened to a speech given by Lou Holtz, a former college football coach, wherein he asked, “If you didn’t show up, who would miss you and why?” For me, Pam is a person whose mere presence made me feel better. She is kind, thoughtful, and dedicated to supporting her residents achieve their goals. All of us resident pathologists are better people because we get to work with Pam.”

*“I found U-M to be one of the places that put education on the top of the agenda. All the faculty and staff are very dedicated to education.”*

Despite declining numbers of pathologists across the globe, U-M fills its match cohort. When asked why they think that is, Marie Goldner, Education Program Manager stated, “The faculty interact with the residents. Nobody acts superior to one another. It’s an environment of positive teaching. The faculty love to teach, and the applicants can feel that.” Pam mentioned that applicants “feel comfortable doing their interviews here.” Jiaqi Shi, MD, PhD, now an Assistant Professor at U-M, separately echoed that sentiment stating, “I found U-M to be one of the places that put education on the top of the agenda. All the faculty and staff are very dedicated

to education. As a resident who wanted to learn as much as I could during residency, I found that this is the most attractive aspect of the U-M pathology department.”



Once residents are considering fellowships, that becomes Marie Goldner’s domain. She describes, “They’re not inexperienced anymore. They start with Pam and transition to fellowships. A good percentage of our residents do their fellowships here.” Her guess was about 80%.

Fellowship applications roll in the second year of residency. Marie curates nearly 400 applications looking to fill nine accredited fellowship programs and eight non-accredited fel-

lowships for a total of about 20 positions. Dr. Shi, who also completed a gastrointestinal pathology fellowship said, “Marie made me feel at ease and at home. She has a very calm and warm personality which made me feel welcomed.”

Not all pathology trainees enter the arena through medical school. Laura Labut has acted as the Administrative Specialist Intermediate for the last eight years. Her job title doesn’t exactly explain what she does. She supports the Molecular and Cellular Pathology (MCP) PhD program. MCP is one of 14 programs under the Program in Biomedical Sciences (PIBS) umbrella.

Once PhD candidates join the MCP program, Laura is responsible for their funding, making sure they have their GSRA appointment established, tuition paid, etc. In essence, she’s making sure the candidates are hitting the milestones they need to hit in order to graduate in five years, which is the goal.

From the PhD program, some go into a post-doctoral fellowship. They are encouraged to go into industry, whether as entrepreneurs or scientific writers; options are more diverse in terms of career aspirations. Laura encourages the candidates to attend seminars and lunch with the speakers to build up their networks. She thinks that’s a benefit here at U-M, “They have done a lot to increase career development and help to explore what options are available when they graduate. PIBS has a dedicated Career and Professional Development team. There are many talks and opportunities for networking.”

Whether we meet our trainees at the residency, fellowship, or PhD level, the goal is an exemplary educational experience with world renowned faculty. Here they are guided, reminded, and welcomed by a first-class team to support them. The whole of the human experience goes beyond the classroom or the laboratory. The education staff works to nurture the individual by meeting their needs while helping the candidates achieve their academic goals.





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### **New Frontiers in Pathology**

#### *Fall Season*

Annual two-and-a-half day, state-of-the-art conference, designed to meet the educational needs of pathologists, residents, and fellows. AMA PRA Category 1 CME and SAMs credits offered.

### **17th Annual Pathology Research Symposium**

#### *Fall Season*

This Molecular and Cellular Pathology graduate student event showcases research within the department by faculty, postdoctoral fellows, and PhD students. Platform talks and posters are given and the day is highlighted with an invited keynote presentation.

### **Advances in Forensic Medicine & Pathology**

#### *Spring Season*

Two-day symposium, held yearly, designed to meet the needs of practicing pathologists, medical examiners, law enforcement personnel, coroners, health care professionals, and district attorneys. CME and MColes credits offered.

### **Current Topics in Blood Banking**

#### *Spring Season*

Educational program for medical lab scientists, residents, fellows, and faculty, designed to discuss topics related to blood banking, hemostasis, quality, and management. CE credits offered for medical lab scientists.

### **CHAMPS Research Symposium**

#### *Spring Season*

One-day event showcasing scientific platform and poster presentations by department clinical faculty and trainees with open discussions for applying lessons learned to attendees' areas of interest. The day culminates in a keynote speaker presentation.

### **Clinical Pathology Symposium**

#### *Spring Season*

This educational event for Pathology medical laboratory scientists and staff, geared towards a variety of lab topics, occurs on the first day of Medical Laboratory Week. A featured speaker delivers the Annual John G. Batsakis Lecture. CE credits are applied to the Certification of Maintenance Program (CMP).



# Towards the Future of Biomedical Graduate Education

by Zaneta Nikolovska-Coleska, PhD

The Department of Pathology is home to the Molecular and Cellular Pathology (MCP) graduate program founded in 1989 and it is one of the fourteen graduate programs offered within the umbrella Program in Biomedical Sciences (PIBS) at the University of Michigan. The mission of the MCP PhD program is to promote innovation and excellence in graduate education, to cultivate a vibrant, diverse student community, and to impact the public good through the scholarship and discoveries of its students and alumni. The excellence of the MCP graduate program is characterized by a strong curriculum, exceptional faculty mentors with diverse expertise in basic, clinical and translational research providing an intensive training experience, and an array of career development opportunities. The faculty members of the Department have exceptional research programs, with the Department presently ranked 5th in NIH funding for pathology departments, with approximately \$29.7 million in annual awards. This contributes significantly to the robust research and educational environment to train the next generation of leading scientists with a focus on the pathogenesis of human diseases, their pre-

vention, diagnosis and treatment.

In 2013, I was appointed as the Director of the MCP doctoral program. This has been an exciting addition to my professional portfolio and a continuation of my commitment and passion for graduate education, which predates my arrival in Michigan, when I served as Assistant Professor of Pharmaceutical Chemistry in the School of Pharmacy, University of Ss. Cyril and Methodius, Skopje, Republic of North Macedonia. Being a dedicated teacher and mentor is one of my career goals and a fundamental component of my academic portfolio at the university.

As the director of the MCP program, I have strongly advocated for the continuous reevaluation of the educational goals and the implementation of improvements to PhD training based on the challenges, opportunities, and current needs of graduate students. This includes competency-based curriculum tailored to students' research interests and career goals, enhancing research rigor and reproducibility, keeping up with shifting trends in the job market, and offering better preparation and awareness of a wide range of science-related career paths encompassing academia, industry, clinical



laboratories, science communication, government and policy positions.

To date, the MCP program has 84 PhD degrees awarded, of which 66 are PhDs and 18 are MD/PhD dual degrees. The program currently has 41 faculty mentors and 20 graduate students working in diverse areas of research. MCP students are immersed in a diverse research environment that offers broad opportunities in cutting-edge interdisciplinary science on topics that span all areas of pathology, including cancer biology, inflammation/immunology, neurobiology, aging, stem cell and developmental biology, epigenetics, omics technology, biomarkers, and experimental therapeutics. MCP graduate students have been productive and academically successful, publishing their work in high-impact journals and presenting it at regional, national, and international conferences. They have received prestigious awards from the National Science Foundation, National Institute of Health, Department of Defense, as well as scholar awards from professional associations such as American Association for Cancer Research, American Society of Hematology, American Society for Clinical Laboratory Science, American Association of Immunologists. Our graduates pursue diverse careers as researchers in academia and industry, physician scientists, software developers, pharmaceutical scientists, food and drug administration scientists, journal editors, and others. These wide-ranging career options highlight the quality of the education received in the MCP program and, together with the outstanding MCP faculty mentors, we take great pride in these students' careers and successes.

The Department of Pathology, led by Chair, Dr. Charles Parkos, is fully committed to supporting the MCP Program by providing essential resources on multiple levels including a foundation of outstanding research, integrated and established academic platform, and critical financial support. To leverage the training and clinical expertise of the department and exceptional opportunities for training in translational research, the Pathology Department invested in a Pilot Predoctoral Training Program in Translational Pathology, which successfully led to the NIH-funded T32 Training Program in Translational Research in 2016. This training program, led by Dr. Andrew Lieberman and me as co-directors, builds on departmental strengths and is an outgrowth of MCP's track record of accomplishment in preparing PhD scientists to work at the interface of basic science and clinical medicine as future leaders in translational science.

The MCP leadership is in constant communication with the students to ensure and deliver a strong sense of community, an engaging and collaborative environment, and to allow students to play a greater role in their own learning and in the education of their peers. Student feedback is used to improve the training environment as we continue to evaluate educational activities to provide the best possible preparation of trainees to be highly competitive in their future career opportunities.

We look forward to continue working together with graduate students and outstanding faculty to further improve on the excellence of the Molecular and Cellular Pathology graduate program.



**Left:** Dr. Nikolovska-Coleska presenting.



## Our Mission

The Department of Pathology is advancing the future of health care through education, patient care, and research missions. We are committed to achieving the highest standard of service excellence to ensure an ideal experience for our patients and their families.

## Support Leaders & Best

In the pursuit of continued excellence in our educational training, clinical care, and scientific discovery, the Department of Pathology has always been grateful for private support. Gifts from individuals, foundations, corporations, and associations play a key role in medicine at Michigan.

## Available Funds

Pathology Faculty Research Fund - 324557  
[victors.us/pathologyfaculty](https://victors.us/pathologyfaculty)

Pathology Resident Research Fund - 324555  
[victors.us/pathologyresident](https://victors.us/pathologyresident)

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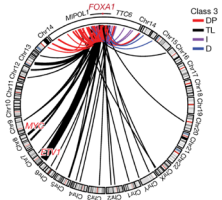
## Research Highlights

Our faculty were very productive this year, publishing over 450 manuscripts in peer-reviewed journals! These publications represent successful research efforts undertaken. Some of the key highlights of particularly impactful research of late have included the following studies:

### FOXA1 has 3 distinct structural classes found in advanced prostate cancers



Abhijit Parolia, an MCP student in the Chinnaiyan Lab, along with several collaborators, discovered that Forkhead box A1 (FOXA1), a transcription factor essential for normal development of several organs, including the prostate gland, is found in 3 distinct structural classes in prostate cancers. This study affirms the central role of FOXA1 in mediating oncogenesis driven by androgen receptor and provides insights into how the three classes of FOXA1 alteration promote the initiation and/or metastatic progression of prostate cancer.

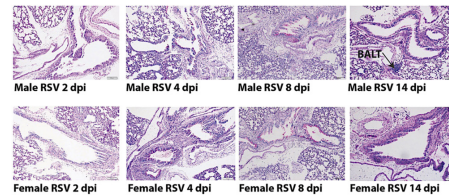


*Nature Journal* 2019; 571, 413-418  
[/chinnaiyan-lab](https://chinnaiyan-lab)

### Research uncovers potential therapeutic target for allergic asthma in boys



Carrie-Anne Malinczak, an MCP student in the Lukacs Lab, along with several collaborators, investigated why a severe RSV infection in early life resulted in an enhanced likelihood of developing childhood asthma, particularly among boys. They discovered that TSLP



is persistently expressed following early-life RSV, altering the immune environment, which then leads to more severe allergic responses in males, although females appear to be protected. Thus, TSLP may be a clinically relevant therapeutic target early in life.

*Mucosal Immunology* 2019; 12:969-979  
[/lukacs-laboratory](https://lukacs-laboratory)

### 3D cellular model developed to study biological processes

Sabra I. Djomehri, an MCP student in the Kleeer Lab, along with members of the lab, successfully developed a 3D cellular model of a large, scaffold-free, highly spherical organoids in a one drop-

one organoid format. This platform is envisioned to be useful as a standardized 3D cellular model to study how microenvironmental factors influence breast tumorigenesis, and to potential therapeutics.

*Journal of Cell Communication and Signaling* 2019 Mar; 13(1):129-143  
[/kleeer-lab](https://kleeer-lab)

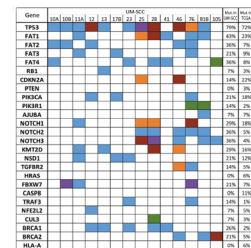
### Molecular profiles for laryngeal squamous cell carcinomas mapped



Jacqueline E. Mann, an MCP student in the Brenner Lab completed exome and transcriptome sequencing and copy number analysis of a panel of laryngeal squamous cell carcinoma cell lines that were established at the University of Michigan and used

world-wide. The molecular profiles indicated that, as a whole, this panel recapitulates the molecular diversity observed in patients and will serve as useful guides in selecting cell lines for preclinical modeling.

*Head & Neck* 2019 Sept; 9:3114-3124



# A Metric Ton of Challenges

by Elizabeth Walker

It was during a visit with a friend in Ann Arbor 14 years ago that Jamison Lundy landed in the emergency room with acute chest syndrome. Lundy, now 36, was born with sickle cell disease and is no stranger to hospitals. That visit, though, was his first experience with apheresis. He immediately switched all his care to Michigan Medicine.

“Sickle cell disease is a spectrum of diseases caused by inheritance of genetic mutations in a person’s genes for hemoglobin, the protein in red blood cells that carry oxygen throughout our body,” says Sean Li, MD, PhD, assistant professor of pathology. “The abnormal hemoglobin, hemoglobin S, can aggregate into a long dysfunctional polymer, leading to the characteristic ‘sickle’ shape of affected red blood cells.” The abnormal sickle cells affect blood flow in small vessels, starving affected tissues of oxygen. This decrease in oxygen is thought to cause recurrent and sometimes excruciating bone pain. Blockage in the small vessels in the brain can cause stroke while blockage of small vessels in the lungs can lead to life-threatening acute chest syndrome.

“Apheresis is an automated technique that allows us to treat a targeted component of a patient’s blood, such as plasma, white blood cells, red blood cells, or platelets,” says Li. During apheresis, the patient is connected to a specialized instrument and their blood is treated while continuously flowing through the machine.

Automated red blood cell exchange is a type of apheresis that allows patients with sickle cell disease to receive several donor red blood cell units. At the same time, a large portion of the patient’s blood that contains the hemoglobin S is removed. This keeps hemoglobin S levels lower than simple transfusion, decreasing the risk of stroke and acute chest syndrome. This type of apheresis is generally only recommended for patients who are at high

risk for organ damage or life-threatening events.

Lundy visits the Department of Pathology for apheresis every 3 to 4 weeks. He tries to talk about life with sickle cell disease as much as possible. He jumps at the opportunity to talk to medical students about his experience, hoping they will take what he says and use it as a tool the next time they are caring for a patient with sickle cell. “I want people to see that there are people with sickle cell out there who live relatively normal lives and have jobs. They’re not all in the hospital 90% of the time. They’re like everybody else and they just have a very difficult hurdle.”

Dealing with hospitalizations and the exhaustion of day-to-day life with sickle cell is mentally challenging. Then, there is the very real possibility of a decreased life span. There is also dealing with the stigma around the prescription opioids that he uses to help manage his pain. He worries about people thinking he is flaky when he has to cancel plans, about people thinking he uses his disease as an excuse, and about leaving a legacy. To cope, Lundy pours his frustration and emotions into music and other creative outlets. He writes daily, deejays, and produces a podcast.

While Lundy dreamt of becoming a pilot in the military, he was told he couldn’t due to his disease. He is happy with where his life has taken him. He has taught history and robotics to children and currently works at Michigan Medicine as a patient attendant. He says that life with sickle cell has made him extremely empathetic and understanding and that has helped him in his work. “I didn’t think things were going to be nearly as good as they are now, but I still have a metric ton of challenges.”

Lundy believes that apheresis has saved his life. “That’s how strongly I feel that this clinic in particular and U-M Hospital has been beneficial.”



Sean Li, MD, PhD







# Embracing the Chaos

by Elizabeth Walker

**A**llecia Wilson, MD, likes a bit of chaos. It's a good thing, as the Director of Autopsy and Forensic Services and former director of the Department of Pathology's Residency Training Program's day can get quite hectic. From morning residents' conference, to the morgue, to court, calls with patient families, and even the occasional homicide scene, Wilson is unstoppable.

Growing up in a poverty-stricken area in Detroit, Wilson knew from an early age that the expectation was for her to be the first in her family to attend and graduate from college. She also knew she wanted to have a job where people would pay her to think. However, medical school was never part of her plan.

After high school, she joined the army and served 4 years active duty and 4 years in the reserves. She attended Michigan State University for undergrad and planned to become an infectious disease epidemiologist. She repeatedly told her college advisors that medical school wasn't in her future but finally gave in and applied.

Enrolled at the University of Michigan, the first few months weren't what she expected, and she considered not completing her first year. Then, she heard the late Department of Pathology Professor Gerald Abrams, MD's, booming voice lecturing about nutmeg liver, complete with nutmegs as props. "He was explaining the congestion of the liver and had these awesome pictures and it was like that eureka moment. I was like, 'Oh! I'm a pathologist!' And everyone laughed," Wilson

recalls. "It just felt right. It summed up everything I loved about science and also summed up everything I learned about medicine in terms of understanding how disease affects a body. I love that pathology gives me the opportunity to think and analyze information in almost an individual way." She'd found her path.

It was former U-M Department of Pathology Director of Autopsy Services, Dr. Daniel Remick, now at Boston University, who tied together Wilson's interests in both medicine and law and suggested a career in forensics. She took advantage of every opportunity to observe, and participate in, medical examiner cases during medical school and even became a Medical Examiner Investigator while a resident. After residency, she worked in Genesee County for 4 years before U-M called asking her to join the Wayne County Medical Examiner's Office in Detroit. It was at that time she also decided to do a U-M pediatric pathology fellowship.

Wilson loves testifying in court. "People are a little afraid of court and testifying but I think it tests you in a real environment. It's taking everything I've ever learned and forming an opinion immediately right there on the stand and having to have people believe you and believe your opinion. I think it's really an art."

*"I love that pathology gives me the opportunity to think and analyze information in almost an individual way."*

While Wilson found pathology in her first year of medical school, she understands how students can be discouraged by the opinions of others who consider those choosing pathology to be “oddballs.” “I was used to being different from my peers so that was fine with me, but I know that I’ve even mentored students who are thinking about pathology but maybe get enticed by some of the



other subspecialties,” she says. She recommends those students stay focused and find a mentor who can help them with their career goals.

As for those she mentors, Wilson hopes they learn they can achieve anything that they can envision. “It’s really about making sure that they become who they are meant to be and fulfill whatever purpose they were meant to fulfill; so for me it’s helping them to achieve that,” she explains. She hopes the work she does with students will increase the pipeline to pathology, but even if it doesn’t, she values the opportunity to influence improving students’ lives overall.

Wilson herself has had many mentors, however, she considers her mother and daughter the most important people in her life. The best part of Wilson’s day is picking up her 10-year-old daughter from school. She tries to devote most evenings to family time. Her mother, she says, has brought out her strength in character. “Even though I was very shy, my mom knew there was a lot more in me. She’s the only one who can get me a little feisty to go back out there and fight and do

what’s right,” she says. “I think one of the keys that I try to instill in my daughter and other people I mentor is there are a lot of things in our society that are not fair. We all know this, we all see it, and I think one of the things my mother taught me was not to let that affect who you become.”

In her work as director of residency, Wilson took great care in assembling residency cohorts. “I

*“It’s really about making sure that they become who they are meant to be and fulfill whatever purpose they were meant to fulfill; so for me it’s helping them to achieve that.”*

looked for people who want to be here; who have a desire to be a part of the Michigan team because that’s sometimes the hardest hurdle. If they’re not happy being here in Michigan, it can affect their performance overall.” She looked for individuals who work well independently but also can work well as part of the team. Wilson says that almost everyone she has interviewed has the academic or intellectual ability to be at U-M, so it’s really about how well they work as part of the team and what they can add to the team. She was also looking for someone who has a life outside of medicine and who has probably at least started some kind of scholarly activity as far as writing case reports or publishing papers.

Wilson wishes that more people understood that pathologists have a strong connection with their patients and the community. That pathologists are empathic individuals who care deeply for what we do and the people we serve. “I’m always amazed when I do autopsies, to me it’s an act of compassion. I’m their final voice. I’m the one that gets to tell their story. I’m the one that gets to share with their family member, the jury, the judge, what happened to them in those final hours.”

# Renaissance Man

*U-M Pathology Alumnus John Goldblum*

by Leslie Stainton

Google John Goldblum, and you learn some impressive facts. He's the Chair of Cleveland Clinic's Department of Pathology and Professor of Pathology at the Clinic's Lerner College of Medicine. He co-authors the leading textbook on soft tissue pathology, co-edits the world's most highly read general surgical pathology textbook, and is co-editor of the biggest textbook in GI pathology. He's been married to his wife, Asmita, for 30 years, and they have four kids.

Goldblum is also cousin to actor Jeff Goldblum and tennis pro Aaron Krickstein and uncle to LPGA player Morgan Pressel. And as of 2020, he's attended over 70 Bruce Springsteen concerts.

"I was eight years old," Goldblum says of his first-ever Springsteen concert in 1972. A counselor at his summer camp in Maine took him to hear the singer. "And I was, like, wow, that was the best. And that was it."

Music is a big part of who John Goldblum is. When he's working by himself at the microscope, he usually has a playlist going. At home, he can sit down at the piano and play Springsteen for two hours straight. As an undergrad pre-med major at the University of Michigan, he studied music, along with art and creative writing. "In some ways I have an alternate universe where I'm either a musician or an actor or a writer," he admits.

But pathology is Goldblum's key work. He fell in love with the field in his second year of medical school at Michigan. Back then, pathology was a stand-alone course, and Goldblum found he had an aptitude for it. "There'd be 30 people in the lab," he says, "and typically what happens is no one has any idea what they're looking at, and there's one dude who's got to go around and show everyone what they're supposed to be seeing. For whatever reason, I was that guy."

That's when he knew pathology was for him.

Goldblum was also inspired by a teacher—the late Gerald Abrams, "probably the best person I've ever heard lecture." Abrams, a member of the pathology faculty, gave the first lecture Goldblum heard as a U-M medical student, and he was hooked.

As an educator himself, Goldblum channels the great teachers he had at Michigan. Among them is U-M Professor Henry Appelman, who inspired Goldblum to specialize in GI pathology. Appelman remembers Goldblum as "an extraordinarily smart guy, remarkably efficient. I'm not sure I've

ever seen anybody quite so efficient."

Goldblum's gifts caught the eye of another Michigan pathologist, Sharon Weiss, now Professor of Pathology at Emory University. When Weiss decided

it was time to share authorial responsibilities for Enzinger and Weiss's *Soft Tissue Tumors*, the text she'd written for years with Dr. Franz Enzinger, she turned to Goldblum. "John was a logical choice," she says.

He was my former resident at Michigan—bright, ambitious, easy to work with, and with an avowed interest in soft tissue." The text is now in its 7th edition, and Weiss says, "I feel I now leave the book in excellent hands."

Goldblum also co-edits Rosai and Ackerman's *Surgical Pathology* (11th edition). In addition to his textbook work, he does clinical research, teaches, gives lectures around the world, and for the past 19 years, has chaired his department.

He's still devoted to U-M—where he did his undergrad, med school, residency, and fellowship, and where he met his wife, Asmita, as a first-year undergrad while playing the piano at Markley dormitory.

One of his closest colleagues at Cleveland was, until recently, Carol Farver, the new head of U-M Pathology's Education Division. When Farver told Goldblum she was moving to Ann Arbor, he felt a pang of envy. "You're going to love it," he told her. "Those are great people."

But he'll be visiting. Goldblum's oldest son, Andrew, just finished medical school and is about to start his residency in physical medicine and rehabilitation at Michigan. "It gives me an excuse to keep coming up there," he laughs, "to keep going to Zingerman's!"

And if Bruce Springsteen happens to play Detroit while he's here—even better.





# Fellowship Q&A

by Camren Clouthier

**W**hen you think about the Department of Pathology's hierarchy, perhaps you consider the faculty, the residents, perhaps even the support staff, but outside of those roles lies the hidden gem of the fellowship. Oftentimes, the fellow is a fully licensed physician who is responsible for a number of clinical and research-oriented tasks but may be seeking additional training in a specific discipline or subspecialty of Pathology.

There are a number of questions surrounding the roles, responsibilities, and unique work-life situations within the fellowship, which is why we sat down with some of our own fellows to discuss what things are like here in the U-M Department of Pathology. Featured in the story are [Kyle Conway, MD](#), of Neuropathology, [Teresa Nguyen, MD](#), of Forensic Pathology, [Jonathan Mowers, MD](#), of Molecular Genetic Pathology, and [Jacob Abel, MD](#), of Pathology Informatics.

## **Q: When did you first know that the area of Pathology was for you?**

*Kyle:* The first thing that really interested me about Pathology is when I saw my first autopsy. For me, it was a really fascinating way to culminate everything that I had learned about medicine to that point.



## **Q: What has been the most rewarding aspect of your fellowship experience?**

*Kyle:* What has been most rewarding to me is working with a really diverse group of faculty, all of whom are very committed to education. In addition, we see a wide range of cases including tumors, autopsy cases, nerve and muscle biopsies, and all of the attending physicians I've worked with really emphasize building you to the point where you're independent.



**Q: What does the future hold for you beyond your fellowship?**

*Teresa:* After my fellowship, I'm lucky enough to stay with the University of Michigan. I've actually signed off to become a medical examiner specifically here at Wayne County. I'm very excited to be a part of the U of M family.



**Q: What do you enjoy most about the North Campus Research Complex?**

*Teresa:* I really enjoyed working at the NCRC in large part because the way the fellows are set up. You have a room of the fellows in conjunction with the residents, so it's really a great way to interact with other fellows, residents, share cases and I've really enjoyed that.

**Q: What initially appealed to you about U-M's Department of Pathology?**

*Jonathan:* I arrived at Molecular Genetic Pathology after all my time in the laboratory. I had done PhD concurrently with my MD in the University of Michigan's medical school and really saw no reason to go anywhere else.



**Q: What has been a project or research initiative that you have enjoyed being a part of?**

*Jonathan:* I really enjoyed working on a particular project that spanned gastrointestinal and molecular pathology, in which we looked at testing for microsatellite instability, which relates to patients qualifying for immunotherapy. To be a part of a study that deals with such a cutting-edge issue was really interesting to me.

**Q: How did you select your fellowship specialty?**

*Jacob:* What attracted me to Pathology Informatics was that early on in my life I was very interested in computers. In college, I worked in a bioinformatics lab where I got to do computational analysis of molecular data. When I became interested in Pathology, I thought it would be a great way to take all of my interests and merge them together at this wonderful institution.



**Q: Why should a resident or medical student consider the fellowship program here at U-M's Department of Pathology?**

*Jacob:* What I would suggest to prospective applicants is because we have so many different fellowship choices here, having such a wide selection and then the potential to stay at the institution for 1-2 years makes it a great choice.







by Lynn McCain

We often see a philanthropic response following natural disasters like tsunamis, hurricanes or earthquakes. People seem to have an instinctive desire to help relieve overwhelming circumstances and assist those in need. Philanthropic foundations also tend to direct attention to respond to crises. And although we often think of the wealthy when discussing philanthropy, the truth is that all persons are capable of some form of giving. Philanthropy is about generosity in all its many forms, commonly phrased as gifts of “time, talent, and treasure”.

To combat the impact of COVID-19, philanthropy might be more important than ever, and perhaps needed on a different scale than ever before. At the time of writing this, we are facing a pandemic that is bringing most of the world to a halt and drastically changing behavior. Covid-related expenses combined with reduced clinical revenues have combined to create an economic impact that is already apparent, and at Michigan Medicine all discretionary

spending has ceased as we continue to weather the storm. As the long-term effects of COVID-19 are just beginning to show, one can only imagine the new challenges in the years to come.

Prior support to the Department of Pathology helped prepare us to lead during this crisis, and we are proud of the way our faculty and staff are responding, caring for patients, ramping up testing efforts, and advising the public and policymakers. Experts throughout Michigan Medicine and the university are doing all they can to help mitigate the impact of COVID 19 in our state, nation, and world. At its core, Philanthropy brings people together, lifts spirits, and makes a positive impact on our patients, trainees, and researchers.

Although business travel and celebratory events are understandably on hold as we “flatten the curve”, the development office remains available to you should you have any questions about how philanthropy can make an impact in the Department of Pathology at the University of Michigan.

*Interested in making your own impact on our patients, trainees or research through a financial or estate gift? Contact Jason Keech, Assistant Director of Development for the Department of Pathology at [jkeech@umich.edu](mailto:jkeech@umich.edu) or by phone at (734) 763-0866. To make a donation online, visit our giving website: [giving.medicine.umich.edu/areas-to-support/pathology](https://giving.medicine.umich.edu/areas-to-support/pathology)*





**[1]** Support given from patients to those working at the University Hospital during the COVID19 pandemic.

**[2]** Group photo of the many workers at the hospital's Blood Draw Station.

**[3]** The MSTAR Synchronization Retreat was held on Thursday, March 12 at Frutig Farms in Ann Arbor. Led by Drs. Jeffrey Myers and Julia Dahl, the day-long event featured a number of creative activities, breakout sessions, and formal discussions in order to develop and strategize a plan for the new MSTAR initiative at Michigan Medicine."

**[4]** Dr. David McClintock (*center*) speaking during a tour August 20, 2019 for the Congressional Staffer visit.

**[5]** The year 2020 marked the first year for the Mucosal Immunology Pathology Symposium that was held on March 6th at the University of Michigan's Palmer Commons.

**[6]** Third-year resident, Laurie Griesinger, MD (*left*), was awarded by Dr. Charles Parkos (*right*) as the 2020 Philip Giesen Award recipient at the 11th Annual CHAMP research Symposium.

**[7]** This year marked 50 years with the department for Dr. Henry Appelman (*center*). The department had a large gathering to celebrate his time with us.



## Residents



**John Kennedy, MD**  
Genitourinary Pathology Fellowship  
*Memorial Sloan Kettering*  
*New York, NY*



**Shula Schechter, MD**  
Surgical Pathology Fellowship  
*Michigan Medicine*



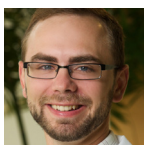
**Caroline Simon, MD**  
Surgical Path/Pediatric Fellowship  
*Michigan Medicine*



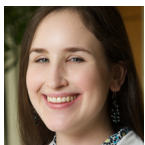
**Brian Soles, MD**  
Cytopathology Fellowship  
*Michigan Medicine*



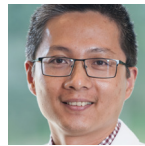
**Lauren Stanoszek, MD, PhD**  
Hematopathology Fellowship  
*Michigan Medicine*



**Steven Weindorf, MD**  
Hematopathology Fellowship  
*Stanford University*  
*CA*



**Helen Worrell, MD**  
Breast Fellowship  
*Michigan Medicine*



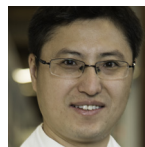
**Dongmin Gu, MD**  
Assistant Professor  
*Robert Wood Johnson Medical School*  
*New Brunswick, NJ*



**Sara Hall (Hawes), MD**  
Clinical Lecturer  
*Michigan Medicine*



**Kenneth Hughes, MD**  
Pathologist  
*UT Health San Antonio*  
*San Antonio, TX*



**Jian Jing, MD, PhD**  
Assistant Professor  
*University of Colorado School of Medicine*  
*Aurora, CO*



**Zhichun Lu, MD**  
Assistant Professor  
*Boston University School of Medicine*  
*Boston, MA*



**Jonathan Mowers, MD, PhD**  
Molecular Genetic Pathology Fellowship  
*Michigan Medicine*



**Tanmay Shah, DO**  
Pathologist  
*Spectrum Health*  
*Grand Rapids, MI*



**Keluo Yao, MD**  
Clinical Instructor  
*University of California*  
*San Francisco, CA*

## Clinical Lecturers



**Cody Carter, MD**  
Assistant Professor  
*Loma Linda University Medical Center*  
*Loma Linda, CA*



**Kristina Davis, MD**  
Assistant Professor  
*Michigan Medicine*



**Ellen East, MD**  
Pathologist  
*St. Joseph Mercy*  
*Ipsilanti, MI*

## ACGME Fellows



**Eman Abdulfatah, MD**  
Clinical Lecturer  
*Michigan Medicine*



**Shweta Chaudhary, MD**  
Pathologist  
*Appalachian Regional Healthcare*  
*Hazard, KY*



**Sarmad Jassim, MD**  
Pathologist  
*Beth Israel Deaconess Medical Center  
Boston, MA*



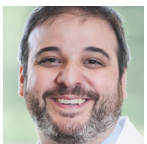
**David Manthei, MD, PhD**  
Chemical Pathology Fellowship  
*Michigan Medicine*



**Nicholas Olson, MD**  
Bone & Soft Tissue Pathology Fellowship  
*Mayo Clinic  
Rochester, MD*



**Drew Pratt, MD**  
Assistant Professor  
*Michigan Medicine*



**Miguel Rufail, MD, PhD**  
Surgical Pathology Fellowship  
*Pennsylvania Hospital  
Philadelphia, PA*



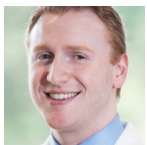
**Stephanie Skala, MD**  
Assistant Professor  
*Michigan Medicine*



**Grace Wang, MD**  
Assistant Professor  
*Virginia Commonwealth University  
Richmond, VA*



**Milad Webb, MD, PhD**  
Assistant Professor  
*Michigan Medicine*



**Joseph Zahn, MD**  
Assistant Professor  
*Washington University  
Washington, DC*

## Molecular & Cellular Pathology - PhD



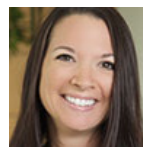
**Andi Cani, PhD**  
Defended / December 6, 2019  
Mentor / Drs. Scott Tomlins & Arul Chinnaiyan  
Postdoctoral Research Fellow  
*UM Dept. of Internal Medicine*



**Sabra Djomehri, PhD**  
Defended / December 18, 2019  
Mentor / Dr. Celina Kleer  
Postdoctoral Fellow  
*Stanford University Stem Cell Bio Regenerative  
Medicine Institute*



**Carl Engelke, PhD**  
Defended / November 22, 2019  
Mentors / Drs. Arul Chinnaiyan & Theodore Lawrence  
MSTP Program  
*University of Michigan*



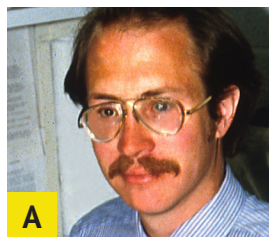
**Carrie-Anne Malinczak, PhD**  
Defended / October 21, 2019  
Mentors / Dr. Nicholas Lukacs  
Postdoctoral Fellow  
*UM Dept. of Pathology*



**Jacqueline Mann, PhD**  
Defended / December 19, 2019  
Mentor / Drs. Chad Brenner & Alexy Nesvizhski  
Postdoctoral Research Fellow  
*UM Otorhinolaryngology Dept.*

## FLASH FROM THE PAST

Can you guess who these individuals are? They are all currently working in the Department of Pathology here at Michigan Medicine.



**A**



**B**



**C**

A. Stephen Chensue; B. David Gordon; C. Bruce Friedman





## CONSULTATION SERVICES ANATOMIC AND HEMATOPATHOLOGY

18

SUBSPECIALTIES

15k

REFERRALS  
ANNUALLY

24-48

HOUR  
TURNAROUND\*

60

EXPERT  
CONSULTANTS



### OUR SERVICES

- Bone and Soft Tissue Pathology
- Breast Pathology
- Cardiovascular Pathology
- Cytopathology
- Dermatopathology
- Endocrine Pathology
- Forensic Pathology
- Gastrointestinal/Hepatic Pathology
- General Surgical Pathology
- Genitourinary Pathology
- Gynecologic Pathology
- Head and Neck Pathology
- Hematopathology
- Ophthalmic Pathology
- Neuropathology
- Pediatric and Perinatal Pathology
- Pulmonary Pathology
- Renal Pathology

\*ADDITIONAL STUDIES MAY DELAY A DIAGNOSIS.

PHOTO FEATURING  
**Asma Nusrat, M.D.**  
F. Peyton Rous Professor of Pathology  
Gastrointestinal/Hepatic Pathology Consultant

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