INSIDE PATHOLOGY

MICHIGAN MEDICINE
UNIVERSITY OF MICHIGAN

2018

CONTENTS

On the Cover

Photograph by Dustin Johnston. Director of the Neuropathology Fellowship, Dr. Sandra Camelo-Piragua serves on the Patient and Family Advisory Council.

Sections

M INSIDE PATHOLOGY

2018 ISSUE

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It's an exciting time in the Department of Pathology. The first phase of our Pathology Relocation and Renovation (PRR) project is nearing completion and non-stat clinical activities for Anatomic and Clinical Pathology, Pathology Informatics, MLabs, and Administration will move to the North Campus Research Complex (NCRC) this spring and summer. The move to NCRC brings faculty and staff at ten locations into five and, using lean design principles, optimizes the facilities for collaboration and efficiency. This means improvements to our already outstanding patient care.

As you read through this issue of *Inside Pathology*, you'll notice the theme of caring for patients. The nearly two-year-old Pathology Patient and Family Advisory Council has brought patient advisors into our fold, helping to change our mindset of doing to and for patients, and shifting to working *with* them. That, along with our move to NCRC, has spurred the creation of Path Track, a tracking system that will allow laboratorians and clinicians to follow precious patient specimens from the origin to the final report. You'll also get updates on the incredible research being done in pathology including that made possible by the Michigan Legacy Tissue Program, which connects patients with advanced cancers to clinicians and researchers, allowing them to have a lasting impact on improvements to care for future generations.

We're looking forward to the future, and with the move to NCRC, have room to grow and continue in our tradition of excellence in medical education, patient care, and research.

Photo by Elizabeth Walker

Charles A. Parkos, MD, PhD
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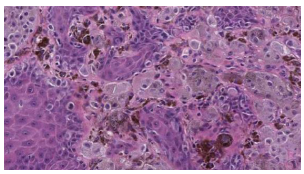
Department of Pathology
Michigan Medicine

On Social Media *@umichpath*

Our department is now on social media! Follow along to stay up-to-date with everything happening across the department. These platforms are allowing us to create more awareness about events, help grow the impact of our research, and continue to recruit the best faculty and trainees.

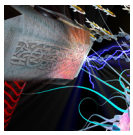
Interact with us online and challenge your diagnostic skills via our #DailyDx on Twitter and #CaseOfTheWeek on Facebook, and watch our fun and informative videos on Youtube.

Pathology On The Street

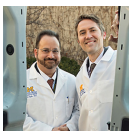


#CaseOfTheWeek
#DailyDX

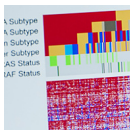
Featured On Our Website



How Defeating THOR Could Bring a Hammer Down on Cancer
December 14, 2017



Expanding Diagnostic Services in Ghana Through Ride-Sharing
March 6, 2018



How the Cancer Genome Atlas Will Shape the Future of Cancer Research
April 5, 2018

Building Better Bridges

by Leslie Stainton

Top Photo: Patient Brenda Berky views results of her bone marrow biopsy on a monitor in the lab.

A new U-M initiative aims to improve the patient experience by forging connections between pathologists and the people they serve.

When Jeffrey Myers walks through University Hospital on his way to work, he often sees people waiting for appointments or trying to find their way to a clinic, and he's reminded of why he does what he does. He's grateful for the reminder because, as he puts it, "in pathology, it can be especially challenging to stay connected to our purpose—our why." Lately, Myers, the A. James French Professor of Pathology, has become even more aware of how central patients are. It's a given, of course, that patients are at the heart of health care. But in pathology, the sheer volume of work—and the fact that it mostly takes place at a remove from actual patients—can sometimes cloud the fact. U-M's anatomic and clinical pathology labs conduct nearly six million tests a year. Every one of those tests is a person, says U-M pathologist Laura Cooling, "and I would hope we never forget the patient at the end of that blood specimen."

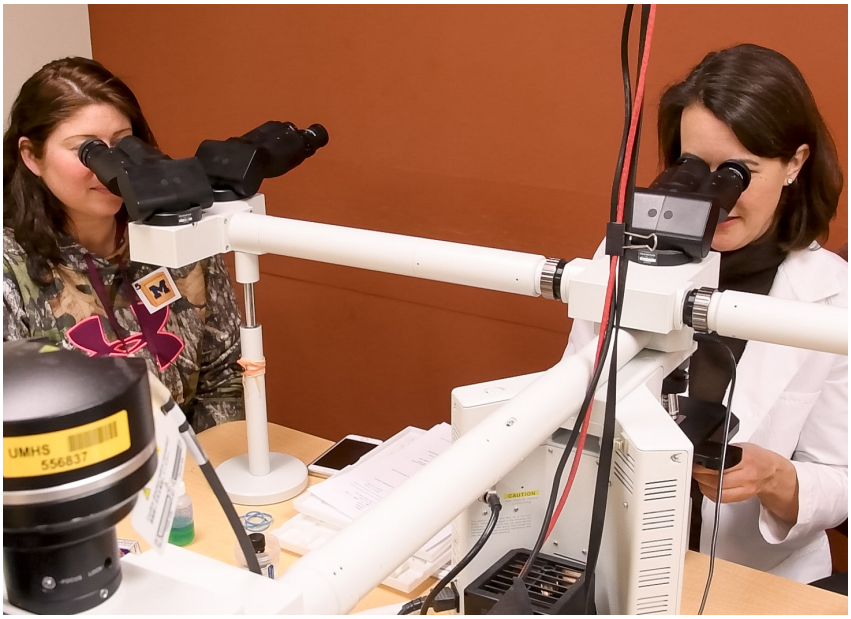
"Patients are infinite teachers."

Cooling, who specializes in transfusion medicine, often works directly with patients, and she long ago recognized that "patients are infinite teachers." It's one reason she signed up to take part in the Department of Pathology's new Patient and Family Advisory Council, or PFAC—a multidisciplinary initiative launched by Myers in 2016 with the aim of expanding and deepening the department's engagement with patients. Myers and Cooling are among more than 40 faculty, staff, and technicians from the Department of Pathology who are part of the council—along with seven volunteer patient and family advisors. One of those advisors is Michele Mitchell, who co-chairs the council with Myers. A self-described "talker" with bright blonde hair and a ready laugh, Mitchell was treated at U-M for breast cancer in 2006 and says that after her cancer journey, she had a "burning desire to give back to this institution that, quite frankly, saved my life." She leapt at the chance to join PFAC. The pathology council is one of nearly 30 Patient and Family Advisory Councils at U-M, all of them part of a system-wide effort

to ensure that patients and their families stay at the heart of everything Michigan Medicine does. While the concept of patient-and family-centered care is now common throughout the United States—particularly in specialties like oncology and pediatrics, where families are often deeply involved in caring for loved ones—the idea of a pathology council is novel. It's so novel, in fact, that last year when Myers took 22 members of PFAC to a national conference on patient-and family-centered care, people said to him, "Wait a minute! Pathologists—and people?" To which Myers cheerfully responds: "Why not?"

A Black Box

Like her fellow patient and family advisors in PFAC, Mitchell had almost no idea what pathologists did before joining the council. Even when she was undergoing her own cancer treatments, she never saw a pathology report, never talked to a pathologist. Fellow PFAC advisor Dennis Serras, also a cancer survivor, says the same. He never met a single pathologist during his care at U-M, despite the fact that "it was such a large part of my surgery and everything." But since joining PFAC, pathology has become his favorite specialty. Even though pathologists are "off by themselves in their labs, and nobody knows about them," Serras says, "patients and families need to know how important a role they play in their journey." "We are the big black box," says Cooling, who suspects most non-pathologists get their understanding of the field not from real-life experience but from forensic crime dramas on TV. Patients aren't the only ones in the dark, she adds. Clinicians and medical students don't always understand what takes place in the pathology labs, and that can make them uncomfortable talking to patients about pathology reports. Cooling hopes PFAC will help showcase "the breadth and opportunity of pathology in health care" and perhaps even help recruit medical students to the field. Like Myers, Cooling wants to see pathology play a larger role in patient care. To that end, she is overseeing one of PFAC's key projects—a 20-minute video, slated for completion in early 2019, that takes viewers behind the scenes of Michigan Medicine's pathology labs with 35-year-old Brenda Berky, a former leukemia patient now in remission. Berky was thrilled to volunteer for the project. She, too, knew nothing about pathology when she underwent treatment at U-M four years ago—except that people came into her hospital room two or three times a day to take blood from her when "I didn't have much to give!" she recalls."If I'd had a better understanding of what it was for, I probably wouldn't have had such an attitude about it."



Top Photo: Berky sits with Dr. Lauren Smith to view her slides at the multi-headed scope.

The video tracks Berky during a series of follow-up visits to Michigan Medicine. Viewers can see her go through a blood draw and then walk her sample down to the pathology labs for analysis. Berky says that while filming the video, it brought tears to her eyes to see how concerned the lab technicians were about the patients whose specimens they were testing. "Just knowing that other people who have never met you care—that helps." During one video session, Berky got to compare slides from her original diagnosis with her slides today. In the first slide, she remembers,"I was basically dying. And then I look at the next slide, and I realize that's why I feel the way I do today, that's why I'm here." She hopes the PFAC video will help make new patients feel less afraid, in part by helping them see "that each time they come and take your blood, or do a bone marrow biopsy or a spinal tap, it isn't for nothing. They have to do this to make you better."

Bottom: A slide containing Berky's tissue sample.

"I Wanted to See the Enemy"

Shortly after she joined PFAC, Mitchell, too, got to see the original slides that led to her breast cancer diagnosis in 2006. She wept at the sight. People had told her at the time that her cancer, stage 1, was "no big deal." But the slide told another story. Mitchell couldn't believe how many cancer cells it held—a sight at once humbling and gratifying. She's not sure she'd have wanted to see those cells at the start of her treatment, but she's glad to have seen

Top Photo: Dr. Jeffrey Myers and Patient Family Advisory Council Patient Chair, Michele Mitchell, hold a discussion about the PFAC initiative.

them later. "I wanted to see the enemy," she says. "I wanted to see how big it was." Not every patient is as curious as Mitchell, who likens herself to "a big old funnel." But for those who are, information can be empowering.

Robyn Bishop, another PFAC advisor, recalls how bewildered she was 16 years ago when she gave birth to premature triplets who were rushed into the Neonatal Intensive Care Unit. Bishop had never spent much time in a health care setting, and she was overwhelmed. It's why she's especially admiring of a recent PFAC initiative, run by pediatric pathologist Raja Rabah, that puts pathologists in touch with families who've lost infants, so that the families can get a more detailed understanding of their child's autopsy report. These kinds of conversations can be difficult, but they're crucial, says Myers. In his own practice, he's found that the days when he has one-on-one talks with patients are his best days."I don't feel drained as a consequence of those conversations—I feel energized." Patient conversations aren't just "touchy-feely," Myers emphasizes. They can help pathologists do a better job. Myers recalls one case where a conversation with a patient led him to go back to his colleagues at U-M and revisit their diagnosis. Having learned more from the patient about her medical history, Myers thought they may have misinterpreted her slides—and it turns out they had. "We have to get better at engaging patients further upstream in their interactions with the health system," Myers believes. He envisions a day when pathologists confer up front with clinicians about the wisdom of even doing a biopsy in the first place, or of doing surgery. He can imagine pathologists meeting with patients after diagnosis to help them better understand the ramifications of their condition and make appropriate plans.

The Power of Stories

In all his years of shepherding children and later aging parents through Michigan Medicine, PFAC advisor Dale Perry never had any encounters with pathology—or at least that's what he thought. "It turns out pathology touches everything," he smiles. Perry joined PFAC with an eye toward giving back to the system that had helped his family so much, and now the field he once regarded as a "stealth specialty" is dear to his heart. He was especially "blown away" by a tour of U-M's facilities last year. When he learned how many specimens pass through the labs annually, Perry gasped. The quantity alone—115,000 specimens, not including autopsies, in the anatomic pathology labs; 5.8 million tests in clinical pathology—was staggering. Even more stupefying was the thought that every one of those analyses had to be "of the very highest quality. People make life decisions based on the results of these tests." A former journalist for the Detroit Free Press, Perry is using his communication skills to help launch one of

PFAC's most ambitious outreach projects, Story Corps, aimed at capturing audio conversations that can illuminate the patient experience at U-M. The endeavor is part of the nationwide Story Corps Legacy project, and Perry and his colleagues at U-M will receive on-site training from Story Corps mentors on how to record, preserve, and disseminate patient stories. Although the specifics of the project are still in flux, Perry can imagine recording conversations between patients and their pathologists, for example, or among family members remembering what it was like to wait for a biopsy report. U-M's StoryCorps recordings will be made available online to patients and their families, and stories collected during the program's initial phase will be permanently filed at the Library of Congress. "People can't always be present to tell their own stories, so we want to find a way to get their stories in front of people and to have those stories live forever," Perry says.

A Life's Dream

During monthly meetings of the council, PFAC members explore new ways to hear patient voices and build bridges. There's talk of a more robust department website, a more informative online patient portal, increased bedside and clinical interactions between pathologists and patients, new spaces where these interactions can take place. In one pilot PFAC program, patients at the Cancer Center's Multidisciplinary Lymphoma Clinic were given the option of talking with a pathologist. Sixteen patients did, and "they really loved it," Myers says. "And the clinicians really loved it." The program was so popular it's now advertised on the clinic's website. Myers acknowledges the challenges ahead. New financial models will have to be developed. Physician training will have to change as well, though perhaps not as much as one may think. The department's impending move to U-M's North Campus Research Complex, slated for later this year, is a big concern. Myers worries that when he and his colleagues are farther away from University Hospital, they'll miss those random patient encounters that are so vital a reminder of their "why." But council members are working to address that—and projects like Story Corps and the PFAC video will do much to keep faculty and staff mindful of the patients they serve. As for Myers himself, who as a kid growing up in North Dakota dreamt of becoming a minister or social worker before opting to be a pathologist, PFAC is a dream come true. "I've believed for a long time that pathology can change the patient experience in very meaningful ways," he grins. "To me that's why we're here." The council, he adds, is "the thing that excites me most. I pinch myself every day that I'm able to do this."

Medicine, Humility, Respect, and Beyond

by Rohit Mehra

The author thanks the patients and their families for participation in the rapid autopsy program at Michigan Medicine; we are extremely indebted to the patients and this narrative is dedicated to them and their selfless contribution to further the cause of medicine and to advance cutting-edge cancer research.

During my post-doctoral training under my mentor, Dr. Arul Chinnaiyan, Director of the Michigan Center for Translational Pathology (MCTP), I had my first opportunity to participate in the team which performed rapid autopsies carried out under the auspices of Michigan Legacy Tissue Program (MLTP). Despite heroic therapeutic attempts (e.g. prostatectomy, chemotherapies, hormonal manipulation), our patient had died from complications of metastatic castrate resistant prostate cancer, with a heavy burden of disease. I had previously heard about MLTP while I was training in the laboratory.

A result of a multi-disciplinary team effort currently being made by various institutions and hospitals across the globe, all working with one goal in mind.

I thought I was prepared to understand the scope of the autopsy procedure, but underestimated the immense respect, awe, and admiration my first experience would generate in me. Respect for the patients and families contributing to this program, awe for the infrastructure, resources, and coordination provided by the Department of Pathology to make such programs possible. Admiration for the passion and unconditional dedication of all the faculty, staff, trainees and colleagues participating in the program. What could have been a unique and perhaps a one-time experience, became a lifelong passion and quest for me – to contribute to MLTP, and learn as much as possible from the selfless donations of our patients, in a hope to help our future patients.

The field of cancer biology is rapidly evolving. A frameshift change has been brought about by precision medicine which allows utilization of knowledge of a specific driving molecular aberration in individual patients for diagnostic or prognostic classification, therapeutic choice, or enrollment in a clinical trial. And all of this has been possible as a result of a multi-disciplinary team effort currently being made by various institutions and hospitals across the globe, all working with one goal in mind—to surmount the morbidity and mortality unleashed by cancer. Each donation given under MLTP allows access

to invaluable information through cellular and genetic analysis of the tissue - not just at Michigan but beyond. The tissue itself is shared, cell lines created for the community and organoid cultures, and patient derived xenografts made. It is this information that is so essential in creating a brighter future for the patients and families whom cancer so profoundly affects.

To facilitate the goals and aims of MLTP, several departments at Michigan Medicine have joined hands for the cause. Such an effort to learn from incurable diseases is only possible by the unconditional interest, effort and collaboration from diverse groups of physicians, scientists, staff and faculty engaged in different subspecialties like Medical Oncology, Radiation Oncology, Surgical Oncology and others. Through collaboration with faculty members, including Dr. Arul Chinnaiyan, Drs. Zachery Reichert and Ajjai Alva in the Department of Medical Oncology, Dr. Daniel Spratt in the Department of Radiation Oncology, Forensic Pathologists Drs. Jeffrey Jentzen and Allecia Wilson, Drs. Aaron Udager and Andrew Sciallis (Anatomic Pathology), Neuropathologist Dr. Sandra Camelo-Piragua, and others, MLTP has already contributed to several important discoveries and publications in the field of oncology. Such efforts toward changing the future of cancer and its impact on humankind are impossible without the visionary leadership in the Department of Pathology, provided by Drs. Charles Parkos, Jeffrey Myers, David Lucas, and Arul Chinnaiyan.

One of the experiences I gained while working with MLTP ended up being a very personal and long-lasting memory for me. The humanistic nature of this program, rooted in the historical context of learning from touching and studying the human body, is unique and has humbled me immensely. We are connected to Virchow and Rokitansky through a passion to both learn and ultimately heal people by touching and studying them directly. This intimate interaction between pathologist, patient, and cancer is profound. I was the lead pathologist for a patient enrolled in our program when we came across a very heavy metastatic disease burden (unexpectedly) involving multiple sites throughout the body. I had spoken with the medical oncologist during her enrollment process and knew the difficulties they had in managing her pain and suffering – and the reason for that was in my hands. I will never forget dissecting through endless tumor within the abdomen, which invaded and obliterated anatomical planes. A deluge of cancer disregarding natural boundaries. The despondent feelings I know my oncology colleagues had felt in trying to care for the patient invaded me. I wondered how we could tackle such widely metastatic disease. I was heartened, though, knowing this patient and family understood that they put in MLTP's hands the hope that, through this work, we will be able to. Despite the odds, we cannot stall or hesitate to attack the hardest problems in cancer. We need to hit back at this disease, earlier and harder. A very important message moving forward, for all of us, is to work earnestly for this cause to eliminate cancer (through prevention and treatment) completely, so no patient ever has to face insurmountable disease.

> "We truly want to ensure he continues to help others. He was devoted to helping people both during his life and through his death from cancer."
>
> *- From a patient's family member*

Each member of the MLTP at Michigan Medicine understands and appreciates the importance of this donation. Time around death is emotionally charged, for everyone involved. Nothing can ever make up for the loss of a patient's life at the hands of a lethal and often debilitating, painful disease; but what all of us can attempt to do, hopefully, in all our humility and respect, is to learn from such honorable donations and help others with cancer. For many cancer patients, helping others is an important aspect of their journey. They participate in clinical trials, answer questionnaires, and lean on each other for support in groups. MLTP is another path facilitating this direction, and together, we will work toward eliminating cancer altogether.

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For more information about MLTP, visit our website: *www.pathology.med.umich.edu/mltp*

Helping Patients and Families in Ghana—*A Staff Perspective*

Photo by **Nathaniel Tetteh**

Physicians in the Michigan Medicine GYN surgical group and Department of Pathology have collaborated in the past to bring quick diagnoses to GYN patients in Ghana. Our own Dr. Richard Lieberman has worked with Dr. Carolyn Johnston of the U-M GYN oncology department, who has a strong relationship with the surgical group in Ghana, to provide rapid/preliminary diagnoses on cases that would normally require a frozen section. The hospital in Ghana does not have a working cryostat, so in the past technical challenges were encountered during these collaborations. This year, the U-M group was able to utilize touch and squash preps so that a preliminary diagnosis could be rendered within an hour of the request. In addition, Lieberman showed the local pathologists and histology technicians how simple smartphone adapters could be attached to the eyepiece of a microscope so that photos could be taken for future "store-and-forward" consultations. Lieberman gave each of the local pathologists one of these adapters so that they could keep the lines of communication open for future collaborations.

Here we present the perspective of Stephanie Allen, Senior Histotechnologist in the Anatomic Pathology Laboratory describing her experiences as she accompanied the team to Ghana. She provided invaluable technical expertise and education to local technicians to facilitate rapid diagnosis in an environment with no cryostat for frozen sections.

Q: Who was the original contact for this project and how did you become involved?

S.A:. My original contact for this project was Dr. Lieberman. He contacted me by email to ask if I was interested in accompanying him on the trip to Ghana.

Q: When did you go to Ghana and would you do it again?

S.A.: We went to Ghana January 19th through January 28th. I really hope I get the opportunity to go again!

Q: Can you tell us the number and the type of samples you touched/ squashed preps on?

S.A.: We did touch prep/squash prep samples on 13 cases. Tissue was from ovary, uterus, vagina, colon, and lymph nodes. We were working very closely with the surgical team but did not retrieve our own tissue.

Q: Were you able to teach the Ghanan technicians the touch/ squash prep method and what was the clinic like?

S.A.: Yes we did teach the lab staff our method for touch/squash prep. They had never been exposed to this technique or even seen the inside of an operating room so this was a unique experience for them. Their lab was not as up to date as our lab but I was surprised to see that they did have updated equipment. Some of the machines that they have are meant to be automatic but have since broken down and now they use them manually.

Q: Is there still an ongoing relationship with the physicians in Ghana?

S.A.: Yes, Dr. Johnston and Dr. Lieberman still talk with the GYN oncologists frequently. I still keep in contact with the lab staff through "WhatsApp."

Q:. What was your most rewarding part of this experience?

S.A. I loved working with the lab staff and observing their work arounds for not so ideal situations or broken equipment. Everyone was so warm and welcoming it really made the trip special.

Q:. How has this affected your work here at Michigan Medicine?

S.A.: Seeing how other labs are set up and what challenges they face always makes me very grateful to work in a place with so much support and urgency. It really is a blessing to have working machines and to know that if a machine breaks it will be fixed as quickly as possible.

Understanding the Living

by Elizabeth Walker

When John H. Finger, MD was growing up, there were directions for donating a body to science, hand-inscribed by his father, posted near the phone. While other children were making snow angels with their dads and being read bedtime stories, John's father taught him how to make Y-shaped incisions in snow banks and read him excerpts from *Where Death Delights*, the story of Medical Examiner Milton Helpern. Five-year-old John thought it was creepy and wondered why. "I'm a pathologist," his dad replied. "We deal with the dying and the only way you can really learn about the living, is to understand the dying."

The need for forensic pathologists is increasing. While the Department of Pathology at U-M produces two new forensic pathologists each year, by way of its fellowship program, it can be a challenge to retain them as many choose jobs away from Michigan to be closer to family.

Finger's father, John E. Finger, MD, grew up in Saginaw, MI and graduated from U-M with his undergraduate degree in 1950 and his medical degree in 1954. After serving in the Army Medical Corps for a few years, he returned to U-M in 1960 to do his residency in pathology and was the Assistant Chief of Pathology at the Ann Arbor VA. He spent the duration of his career in many leadership roles at both St. Luke's Hospital in Saginaw and at Midland Medical Center before retiring in 1999. Several years later, he was diagnosed with esophageal cancer. "I think that anybody who's in the business knows that's basically a death sentence," Finger says. He was worried his father wouldn't pursue treatment, but he did. He wanted to go back to U-M.

For seventeen months, father and son made trips back and forth to U-M hospital. "It was during those drives that I learned he was not a creepy, weird pathologist. He was a really good human being," Finger says. They would take walks to pass the time, Finger pushing his father in the halls in a maize and blue wheelchair, visiting the Medical School class pictures and sharing stories along the way. "We ended up in Pathology all the time. He was in his element there," Finger recalls. "That's when I decided what we needed to do."

When Finger received the call that his father had died, he contacted Anatomical Donations. Then, he and his family made arrangements to contribute to the Department of Pathology establishing the Dolores M. and John E. Finger, MD Forensic Lecture. Their gift will introduce trainees to the importance and appeal of a career in forensic pathology, through invited lecturers. The inaugural lecture, *The Investigation of Undocumented Border Crossers: The Tucson Triangle*, was given by Dr. Gregory Hess, Chief Medical Examiner at the Pima County Office of the Medical Examiner in Tucson, Arizona.

Top Photos: John H. Finger (son of the late John E. Finger) receives vase from Charles Parkos, as a gesture of appreciation for his father's work and family's charity.

Dr. Jeffrey Jentzen, U-M Director of Autopsy and Forensic Services, says that the work being done by the Pima County office was the perfect example for students. "I couldn't think of anything better to demonstrate how forensic pathology is a public health entity and how we work, as we talk about how death helps the living," he says. "How we as forensic pathologists help identify lost family members and how we assist other agencies."

Finger was proud to represent his family as Hess gave his lecture. "It's the Circle of life," he said. "He started here, he's back here. My dad never had a funeral, never had a eulogy. This is what he'd want. He'd want to pass this on."

Bottom: Portrait of John E. Finger.

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

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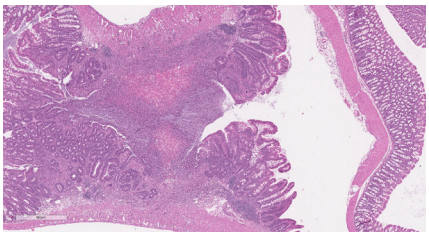
Research Highlights



Role of Innate Immunity and the Microbiota in Host Defense and Inflammatory Disease

Dr. Gabriel Nuñez's laboratory is focused on understanding the mechanisms regulating innate immunity, microbial-host interactions, and the pathogenesis of inflammatory disease. A major effort of the laboratory is focused on the role of the Nod-like receptors(NLRs) that act as critical intracellular sensors of microbes. Mutations in NOD2, a NLR family member, are major susceptibility factors for the development of Crohn's disease. Studies to understand how mutant NOD2 promotes susceptibility to Crohn's disease are a major effort of the laboratory. Several NLR family members play critical roles in the activation of the inflammasome, a molecular platform that activates caspase-1 and the release of IL-1ß and IL-18. Aberrant production of IL-1ß has been implicated in the pathogenesis of several inflammatory disorders. Understanding the mechanism that activates the inflammasome is another major effort of the laboratory. The skin and the intestine are highly exposed to environmental insults including invasion by microbial pathogens. The laboratory is investigating how the intestine and the skin sense bacterial pathogens and activate immune responses to eradicate bacteria. Finally, the role of the microbiota, the collection of microbes that normally reside at mucosal sites of the body, in the colonization of enteric pathogens is being studied using genetic approaches and germ-free animals.

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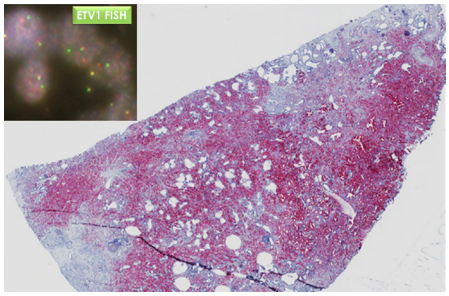
http://bit.ly/nunezlab



Novel Techniques to Aid in the Diagnosis of GU Cancers

Dr. Kunju's research focuses on the pathologic evaluation of tumors, assessment and validation of biomarkers deregulated in cancer. She is involved in transformative Team Science studies, using high through put next generation sequencing on advanced tumors and is part of the team in the landmark discovery of NAB2-STAT 6 gene fusions in solitary fibrous tumors(SFTs), characterizing the mutational landscape of advanced prostate cancers(PCa) and response of PARP inhibitors on PCa. Her work on an immunopanel approach to distinguish urothelial carcinomas from high-grade renal cell carcinomas, utility of monoclonal ERG/FLI1 antibody in Ewing's tumor and expression of PAX2 and PAX8 in a subset of SFTs are routinely used in surgical pathology practice. Her research also includes evaluation of RNA in-situ hybridization based assays for in situ detection of ETS(ETV1, ETV4 and ETV5) and PCA3 genes in tissue, ERG immunohistochemistry including demonstrating a strong correlation between urine T2: ERG and total ERG + PCa burden. Her recent work include assessing metastasis to the kidney, evaluating oncocytic renal neoplasms on core biopsies as well as ongoing collaborations on the utility of MRI guided prostate biopsies.

Epigenetic mechanisms Involved in Kidney Disease

A recurring theme in the Dressler lab is the relationship between embryonic development and human disease. The mechanisms that drive cell proliferation, tissue remodeling,

differentiation, and cell death during development of the mammalian embryo are complex and utilize most every genetic and biochemical pathway. Many embryonic control genes and pathways are silenced in healthy adults, but become reactivated in chronic and acute disease. The lab has identified highly conserved genes that are essential for the development of the kidney and contribute to the initiation and progression of renal disease. Such genes encode transcription factors that determine the kidney epithelial cell lineage, proteins that connect transcription factors to histone methylation and epigenetic imprinting, and secreted signaling proteins that promote chronic kidney fibrosis. Experimental approaches utilize genetically engineered mice and cells to study the effects of regulatory pathways on the stability of the epigenome in development and in adults. Strategies also include screens for inhibitors that may prevent the reactivation of embryonic pathways in adult disease. In addition to illuminating basic biological mechanisms of stem cells, development, and differentiation, this work has practical applications in fields as diverse as tissue regeneration, chronic renal disease, and cancer.

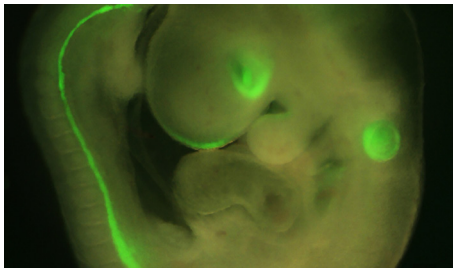


Image –A genetically engineered mouse strain has Green Fluorescent Protein inserted into the Pax2 gene to reveal expression of the Pax2 gene in a mouse embryo at 10 days gestation. This allows the visualization of gene expression in live animals in real time and can be bred to make a mutant that lacks the normal Pax2 gene and fails to develop kidneys.

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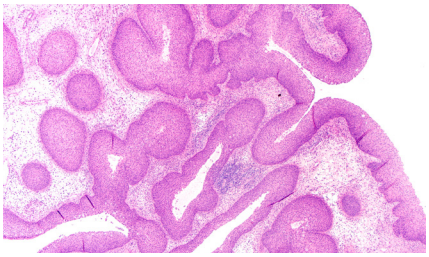
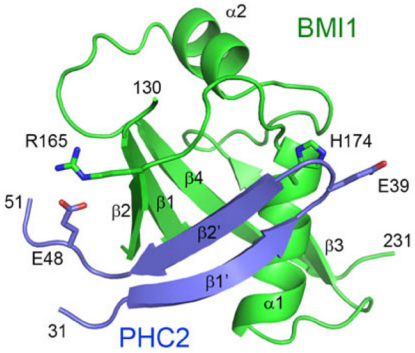
http://bit.ly/dresslerlab

Mechanisms involved in the Oncogenesis and Progression of Sinonasal Papillomas

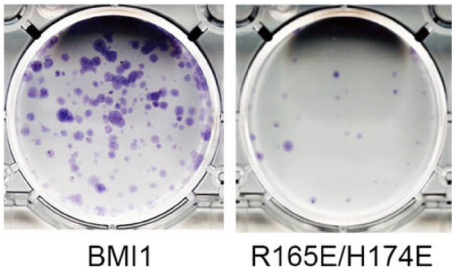


Sinonasal papillomas are uncommon benign neoplasms of the nasal cavity and paranasal sinuses, which may be associated with a synchronous or metachronous sinonasal carcinoma in up to 15% of cases. Over the past several years, Drs. Aaron M. Udager and Noah A. Brown have jointly led a number of seminal studies on the molecular pathology of these uncommon tumors, and their work has established a new model of sinonasal papilloma oncogenesis: 1) exophytic papilloma = infection by a low-risk human papilloma virus (HPV) subtype; 2) inverted papilloma = somatic *EGFR* mutation or infection by a low-risk HPV subtype; and, 3) oncocytic papilloma = somatic *KRAS* mutation. Recently, in collaboration with Dr. Scott A. Tomlins, molecular profiling of sinonasal papilloma-associated sinonasal carcinomas using targeted next-generation DNA sequencing has identified *TP53* mutations and *CDKN2A* alterations as fundamental molecular events involved in malignant progression from sinonasal papilloma to sinonasal carcinoma. Ongoing work by Dr. Udager in the Tomlins laboratory seeks to define other essential genomic, transcriptomic, and epigenetic mechanisms of malignant progression of sinonasal papillomas.

Seeking Small Molecular Inhibitors of Cancer



Research in Tomasz Cierpicki lab is focused on studying structure and function of proteins involved in cancer. We are using biochemical, biophysical and structural biology methods to understand how these proteins interact and function,and our goal is to develop small molecule inhibitors blocking their activity. Bmi1 is a polycomb protein that plays an essential role in cancer stem cells. We have determined a structure of Bmi1 in complex with polyhomeotic protein PHC2 and uncovered key interactions required for Bmi1 activity. These results are being explored to develop Bmi1 inhibitors. Bmi1 constitutes a core component of PRC1 complex, and we



have also developed small molecule inhibitors blocking PRC1 activity. We are testing activity ofthese inhibitors in various cancer models and our long term goal is to develop novel epigenetic drugs targeting cancer stem cells.

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http://bit.ly/cierpickilab

She Designed a Life She Loves

by Dustin Johnston

Everything is changing constantly," Dr. Cho said, "It applies to both research and clinical practice: you have to be able to self-teach or you will find yourself obsolete." This was true back when she was a pathology resident and it remains true today, even though she is established as a leading authority on ovarian cancer.

Dr. Kathleen Cho was, of course, never in threat of becoming obsolete. She's a lifelong learner, confident about what she knows and curious about what she doesn't. She knows her strengths and focuses on how she can leverage them to help herself and her colleagues understand and fight ovarian cancer. These strengths, a love and knack for surgical pathology, a relentless work ethic as a researcher, as well as a commitment to education, have positioned her for success.

"Kathy is truly a triple threat in every way." Department of Pathology Chair Dr. Charles Parkos, said of Cho. "She has established an international reputation for her groundbreaking research in models of ovarian cancer, is a renowned diagnostic gynecologic pathologist and has worked tirelessly in the department, institutionally, and nationally in the area of academic affairs."

Cho would call her rise as a physician scientist serendipitous, but her success is due more to focus and determination than luck. During residency at Johns Hopkins, she was initially working in general surgical pathology. As chief resident and surgical pathology fellow, she learned first-hand what it would be like to work as full-time faculty, signing out frozen sections and surgical cases at full speed all day, and often covering night calls. The heavy workload did not diminish her interest in surgical pathology or the gratification she felt in patient care, but the rapid pace of diagnostic pathology did not allow much time to satisfy her curiosity about the basic underpinnings of disease.

At that time molecular biology was just beginning to work its way into the clinical mainstream, and faculty at Johns Hopkins were leading the way. Working in the proximity of researchers focused on understanding the genetics of cancer, Cho was motivated to stay on top of all the latest advances in the field. "I felt ill-equipped to critically evaluate some of the exciting research that was coming out in the literature, and I realized I wanted to spend time getting research training," she explained.

A member of the Hopkins faculty, Bert Vogelstein, MD, was working to understand the molecular pathogenesis of colon cancers, studying the genetic changes associated with the progression of normal colon cells to adenomas and cancers. A novel idea at the time, Vogelstein collaborated with a gastrointestinal pathologist, Stan Hamilton, MD, to carefully microdissect colon tissues, so that they could confidently compare DNA samples from normal and tumor cells. Although Vogelstein had never taken on a pathology trainee before, Cho was able to convince him, as well as her department chair, to allow her to pursue a one-year research fellowship in the Vogelstein laboratory after completing her surgical pathology fellowship. One year turned into three, and by the time she left the lab, Cho was poised to start her own independent research program.

Although she was excited by cancer research, Cho remained reluctant to leave her clinical work behind. During her years in the Vogelstein lab she seized another golden opportunity to sign out cases in gynecological surgical pathology at the hospital, and she's been focused on that clinical specialty ever since.

Her roles as a surgical pathologist and cancer researcher were harmonious rather than conflicting. As her diagnostic skills sharpened while signing out gynecological cases, she gained a first-hand understanding of what the pressing clinical questions were in gynecologic oncology. Similar to her mentor's work on colon cancer, her focus was now on characterizing the molecular alterations in gynecologic tumors and using this information to better classify them. Most of her early career was spent on building the foundation

Research did not lead Cho on a linear path, of course. There have been dead ends and times when it was difficult to know when to stop and change direction.

on which her current research is built.

Research did not lead Cho on a linear path, of course. There have been dead ends and times when it was difficult to know when to stop and change direction. But there have also been landmark discoveries. After years of work to identify markers that characterize specific subtypes of ovarian cancer, Cho's recent research has focused on the finding that the most common and lethal type of "ovarian" cancer (high-grade serous carcinoma) does not originate in the ovaries, but in the fallopian tubes. It's now understood that early high-grade serous carcinomas are in fact so small that there is no effective diagnostic tool for early detection. The tiny cellular beginnings of this deadly cancer take the highly trained eye of a pathologist to recognize and study. Cho not only has the diagnostic expertise to recognize these miniscule lesions, she is creating powerful mouse models to help understand these cancers, and to test new strategies to prevent, diagnose and treat them.

She is not simply someone who is passionate about work, she is someone who is passionate about life.

This critical step of building genetically modified mice as living tools also relies heavily on researchers like Cho, as it requires careful histopathological analysis of the mouse tissues in order to confirm that the model is, in fact, a useful one. After years of diagnosing and classifying ovarian cancers, she is uniquely qualified to credential these models and confirm that they faithfully model the histopathology, genetics and biology of their human disease counterparts.

In 2017 her group reported on the development and characterization of genetically engineered mice that develop tumors that closely mimic human high-grade serous carcinomas. Mice developed by the Cho lab have now been sent across the globe and some have been deposited in a central repository to make them widely available to the rest of the research community. Referring to the mice she's created as well as others she is currently developing, Cho said, "We've been heavily into the development and credentialing of the models and now we're well poised to start to do the good stuff, which is the part we hope will actually have an impact on human health."

Somehow, amidst all of this work, Cho was able to take on more responsibility. In 2013 and 2014, she served as Interim Chair of the Department of Pathology, a position that she did not take lightly. "She cares deeply for our department," said Dr. Andy Sciallis. "Everything is done to the best of her ability and no one gets short-changed." Reflecting on her 14-month span as Interim Chair, as well as her current administrative roles, Cho continued to look outward. "It's another way I can have an impact on other people's lives." she said, "This time, instead of patients, it's colleagues, which can be really rewarding in ways I did not expect."

While it's easy to focus on Cho's professional accomplishments and dedication, this narrow view of her does not paint the entire picture. She is not simply someone who is passionate about work, she is someone who is passionate about life. Cho emphasizes her work-life balance and even attributes her productivity to her children. "Having children during my residency and fellowship was challenging but I learned to be highly efficient." She said. "Now that they're older, things are much easier because I'm not juggling as much. Life is simpler." Her husband, Dr. Eric Fearon, Director of the University of Michigan's Rogel Cancer Center, gives all the credit to her. "Kathy has always had an outstanding ability to balance her professional and personal commitments and focus on the tasks at hand." he said. "She has a great passion for her family and friends, her Weimaraners, and living life to the fullest."

Cho's schedule continues to be extremely full. She is on the brink of finalizing the next phase of her research, and still signs out cases. Although she is no longer Chair, she remains active in education and administration with her position as Vice Chair for Academic Affairs. She is heavily involved in the department's move to the North Campus Research Complex and is excited about what the next year will bring. In a field that's constantly growing and changing with the newest technologies and discoveries, Cho is uniquely qualified to help the Department of Pathology lead the way.

Hidden Gems

by Elizabeth Walker

Catch up with U-M residency program alumna, Dr. Güliz Akdaş Barkan and learn how the mentorship of Dr. Bernard Naylor shaped her career.

On a recent afternoon, Loyola University Medical Center's Dr. Güliz Akdaş Barkan was in the clinic with a cancer patient who had developed a new lump. Barkan is a dually appointed professor in the Departments of Pathology and Urology and is Vice Chair of Education and Director of both cytopathology and its corresponding fellowship. She also serves as pathology faculty advisor to the medical school. Yet, her favorite place to be is in the clinic. There, she enjoys talking to patients and providing answers on the spot, via fine needle aspiration.

When Barkan was a third-year medical student in Istanbul, Turkey, she was encouraged by Dr. Sevgi Küllü, Marmara University's Chair of Pathology, to visit U-M for the summer. Trained under Dr. Bernard Naylor, Küllü believed it would be a good way for Barkan to see if she was interested in pursuing pathology as a career. She arrived in July of 1991 and spent the majority of her time in the cytology sign-out. "Dr. Naylor would just have a blast when he was signing out. He truly enjoyed what he did, and he loved teaching. It was infectious," Barkan recalls. From Naylor, and others, like Drs. Gerald Abrams, Henry Appelman, and Harold Oberman, she learned to enjoy her work while striving to be the best she possibly could be in her chosen field.

At Naylor's advice, Barkan enrolled in the Transitional Year Program at St. Joseph Mercy Hospital in Ypsilanti the year after she graduated from medical school. It would give her a good background in medicine before delving into pathology. "I got a taste of everything while I was doing the medical rotations and learned how clinicians need pathologists," Barkan recalls. From there, she was sold, and entered the pathology residency program at U-M.

Following residency, Barkan continued with a surgical pathology fellowship at U-M and then spent a year at MD Anderson Cancer Center doing a fellowship in cytopathology. With her training completed, she was required by the United States Citizenship and Immigration Services to serve in her home country for two years. "It made it a little bit difficult for us," she recalls. Her American-born husband didn't know any Turkish and she was in the final trimester of her first pregnancy. However, the experience turned out to be a valuable one. Barkan spent her time in Turkey practicing pathology in her native language. This made her a bi-lingual pathologist, a skill that not many have. It also made her realize her heart was in academics. She wanted to teach. Two years later, Barkan and her husband (fluent in Turkish) returned to the U.S. and settled in Chicago.

In addition to teaching and administrative duties at Loyola University, Barkan focuses her time on translational research including morphology and quality and how to help patients. Much of that research is focused on urine cytology and genitourinary pathology. Prior to 2015, there was no standardized way of reporting urine cytology and atypia rates were very high – reportedly up to 50%. This was very anxiety provoking for patients, who didn't understand what this equivocal diagnosis meant. Furthermore, clinicians were unsure how to proceed with treatment. "As physicians, one of our major attributes should be the skill to empathize with, understand and help our patients. As pathologists, we should strive to make our reports be as clear and as unequivocal as possible. This could ultimately prevent or minimize confusion and anxiety in both providers and patients, and hopefully prevent overtreatment of the patients," Barkan explains. In an effort to reduce this equivocal diagnosis, Barkan joined colleagues in cytopathology and urology from around the world in Paris and worked to develop the Paris System of Reporting Urine Cytology, which is now used as a universal reference to provide more definitive, unequivocal diagnoses.

Barkan is often an invited speaker and serves on many professional committees, including the editorial board of the American Society of Cytopathology. She has worked with them to establish the *Dr. Bernard Naylor Excellence in Cytomorphology Award*, which will be awarded for the first time in 2019. "When Dr. Naylor passed, it was heartbreaking," Barkan says. "He was not only a mentor, but like a family member to me. I really want his name to keep on living."

Back in the clinic, she draws the fine needle aspiration and is able to give her patient the good news. The results are negative. He gives her a giant hug and his wife does the same. In her job, nothing makes her happier. "This is the epitome of what I do," she says. "We are behind the scenes, but a very important part of the team taking care of the patient. We are a hidden gem!"

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Read more about the effect that Naylor had on Barkan's life and career at:
http://bit.ly/bernardnaylor
http://bit.ly/naylorpipe.

Contribute to the *Dr. Bernard Naylor Excellence in Cytomorphology Award* at
http://bit.ly/naylordonations.

P4THOLO6Y BY THE NUM8ERS, FY 2017

#1 Pathology Residency Program ranking among large public universities (#6 among all programs)

10% Increase in Hemaglobin A1C testing in the last year in Special Chemistry

18 Patents issued to Pathology faculty

28 Pathology residents

70% Turn around time Same day as receipt on cytometer specimens

200 Number of faculty members, active, emeritus, adjunct

752 Number of MLabs accounts

3,944 Tests performed in the Cytogenetics Lab

21K Number of FedEx packages received yearly containing outside referrals and testing requests

30,905 Units of RBCs transfused from Blood Bank

545,038 Number of Glucose tests done by Point of Care

New residents for 2018/# applicants **6/430**

Number of Antibodies in a panel for B&T cell neoplasms in a single tube... begun in 2016, yielding savings in reagent cost and technologist time **13**

Graduate students in PhD Program in Molecular and Cellular Pathology **26**

New grants awarded to Pathology faculty in 2017 **39**

MLabs Client Services calls answered personally, 95% in <30 sec **100%**

Number of Pathology Education Series seminars offering CME credits **189**

Number of publications by Pathology faculty and staff **480**

Adult and pediatric patients undergoing clinical sequence gene analysis by the Michigan Oncology Sequencing Center **~2,000**

Number of orderables handled daily by Specimen Processing **9K-12K**

Average number of Inpatient Phlemotomy blood draws per month in UH, UHS and CVC **25K**

Number of all Surgical Pathiology Cases **114,278**

Clinical Pathology tests performed at the AA and Toledo VAMC laboratories **3,260,869**

For comparison, these are some 30 year old Path numbers from 1987. Peter Ward, MD was Chair, and we had just occupied the "new University Hospital."

34 - # of MLabs clients
42 - # of active grants and contracts
63 - # of Faculty members (active, emeritus & adjunct)
722 - # Electron Microscopy specimens processed
1200 - # of CHD lipid profile samples done by Gen. Chem/month
20,710 - # cytologic specimens processed

Advances in Forensic Medicine & Pathology

May 10-11, 2018

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. A distinguished and diverse group of forensic pathology specialists serve as faculty. Lectures, poster session and interactive workshops will highlight current topics in the Forensic Pathology field. The Dolores M. and John E. Finger, MD Forensic Lecture will be given by an invited speaker. CME and MColes credits offered.

Current Topics in Blood Banking

May 12, 2018

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.

New Frontiers in Pathology

September 27-29, 2018

Annual two-and-a-half day, state-of-the-art conference, designed to meet the educational needs of pathologists, residents and fellows. For the first time, it will be held in the new Department of Pathology building at the NCRC. AMA PRA Category 1 CME and SAMs credits offered. U-M Pathologists lead lectures and breakouts with several acclaimed speakers giving plenary and keynote presentations. Attendees are encouraged to bring cases for consultation.

16th Annual Pathology Research Symposium

November, 2018

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.

CHAMPS Research Symposium

February 2019

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

Clinical Pathology Symposiums

April 22, 2019

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).

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Find More Events

Visit our website to find more upcoming events and symposiums: *www.pathology.med.umich.edu/conferences*

Dr. Henry Appelman presents at New Frontiers in Pathology.

Striving for Zero

by Sarah Talpos

Top Photo: Team members *(left to right)* Brian Royer, Amy Mapili, Todd Kandow, and John Hamilton.

Each year, Department of Pathology laboratories perform millions of clinical tests. For each test, a care provider places an electronic order, and then waits for the results. It may sound simple, but in a large health system like Michigan Medicine's, with over two dozen laboratories that receive a wide array of specimens—blood, urine, cervical cells, sputum, stool, moles, and more—there's always a small chance that a given sample could go missing along the way.

"We're striving for zero defects," says Duane Newton, PhD, associate director of the Division of Clinical Pathology. He contrasts this with other industries, such as the automotive industry, where "low defects" is considered acceptable. Meeting the Department's goal will be a challenge, he says, but at the end of the day, it's important to get as close to zero missing specimens as possible.

The Department's upcoming move to the North Campus Research Complex will add an additional layer of complexity to the movement of specimens. Given this, in 2017, the Division of Quality and Health Improvement (DQHI) spearheaded the Patient Asset Management Initiative in order to develop an approach to precisely track specimens as they travel throughout the health system. Early in the process, the project team reached an important conclusion: The Department would need to design and launch its own web-based application. This new app, called PathTrack, now has the potential to markedly improve patient safety.

"I think there is a perception that we can always collect another specimen: 'Well, it's just urine or blood. If it gets lost, we'll collect another one,'" says Amy Mapili, who serves as the initiative's project manager. From a patient's perspective, however, that second sample "can be a big inconvenience." It might require a return-trip from far away, or an additional needle poke, which is particularly unpleasant for babies and young children. Then, too, some specimens are simply irreplaceable: a lymph node removed during surgery, for example, that pathologists will use to assess the severity of a patient's cancer.

As a starting point, Mapili and her colleagues conducted focus groups with laboratory staff to document the complexity of the Department's workflow. "We didn't want to create a system where someone comes down from above and tells everyone what to do," says Mapili. "The laboratory staff needed to have a voice."

Mapili knew from the outset that specimens travel very different routes from collection to delivery. Consider a woman whose cervical

Mar 2017
Tracking system requirements defined

Sep 2017
PathTrack application launched

Oct 2017
PathTrack lab acquired

Nov 2017
Superuser group formed

Dec 2017
Small groups in Simulation Lab

cells are collected for a Pap smear at East Ann Arbor Health and Geriatrics Center, off of Plymouth Road. Those cells will travel by courier to University Hospital's specimen processing center. The cells will then be sent down the hall to the Cytology Laboratory for evaluation. If irregularities are detected, that specimen would then be transferred to the Clinical Microbiology Laboratory, where the cervical cells would undergo testing for HPV. On the other hand, a patient at the Cancer Center will have blood drawn there. The blood sample will then travel via pneumatic tube to the specimen processing center, then onto the Hematology Laboratory. Following specimens from these types of disparate locations would require a flexible and robust tracking system. During the focus groups, the team also identified "pain points" that currently make laboratory work unnecessarily difficult. For example, scanning: with the laboratory information system (LIS), you can scan a specimen's barcode, but if the computer's cursor is in the wrong place, the scans might not be entered into the system. "We wanted to build our tracking system so that when the scanner beeps, you know that it will have done something on the screen," says John Hamilton, a department business analyst. "It takes away the frustration."

Hamilton joined the project early last year, at the suggestion of Ulysses Balis, MD, director of the Division of Pathology Informatics. By that point, the PathTrack team had created an extremely detailed and accurate map of user requirements for the new system. Because these requirements were so disparate across the Department, and because they incorporated appliances such as barcode scanners and label printers, the team knew they needed a web-based application. The Department also needed a program that could interface well with LIS, as well as with the clinicians' system, MiChart. At the time, such an application did not exist. Informatics leadership determined that the best approach was to build one in-house.

Hamilton was tapped to serve as the lead software architect for engineering the app, and quickly realized that the scope of the project was going to require a team of Informatics experts. "We really needed all the people in Informatics to do the piece they are experts in," he explains. "The database people would create the database pieces. The web people would build the web pieces. I'd be the person who understands what the finished product should look like, how all the pieces should work together based on what we learned from the focus groups."

"As a software engineer, the greatest challenge in building an application is creating something that actually answers the need," says Balis. "Too many times, I've seen situations where the application is built 'correctly,' but when deployed in the field, it completely fails because the need wasn't correctly or fully understood." Thanks to the team's many hours working with the frontline staff, PathTrack is positioned to work well once it's rolled out later this year. And because it is a homegrown application, it can be monitored and adjusted if necessary.

"We felt that if done well, this could make people's jobs easier and improve patient safety," says Hamilton. He adds, "With the resources and talent we have here, we can take things to the next level in a way that an external vendor can't."

Meet the Team

Amy Mapili acts as the project manager and coordinates with both end users and the technical team, where she ensures that the processes followed within the different laboratories are used to inform the development of the application.

John Hamilton is the technical lead and takes the requirements of business logic, user experience, and technical dependencies and combines the multiple disciplines of the team while ensuring each component is factored into the final vision of the application.

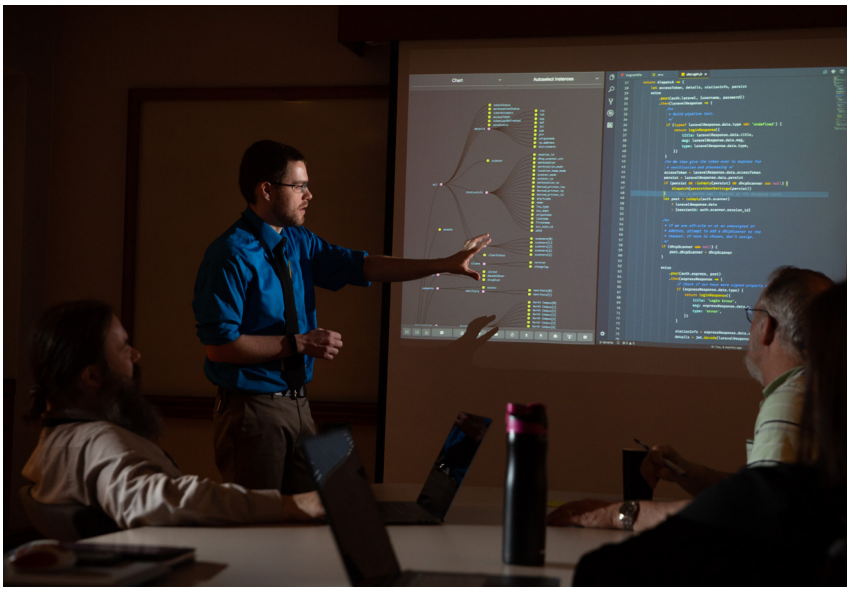
Bill Hubbard and **Todd Kandow** collaborate as the database architects and developers. By connecting the IBM interface engine to the PathTrack database, they are able to find, store, format, and push the clinical patient data needed to the web server.

Brian Royer is the main developer and uses React.js to deliver high-volume data to a responsive interface using advanced algorithms. He enables PathTrack to seamlessly deliver secure payloads of data and create a robust user experience, all while maintaining real-time feedback to the user.

Mar 2018
PathTrack Pilots

May 2018
PathTrack Training

Jun 2018
First specimens to move



Perhaps ultimately, other hospitals may even want to purchase the application. The problem of specimen tracking gets raised at professional conferences, says Hamilton. "The need is out there," and the new PathTrack application can be scaled, making it a potential fit for any institution with specimens that move between sites.

For now, though, everyone involved in the project is looking forward to its launch here at Michigan Medicine, where patient- and family-centered care are at the forefront, even in a department like Pathology, where faculty and staff work mostly behind the scenes. Says Newton, "We may not be sitting in front of the patient discussing their care, but we are caretakers of their specimens, all along the way."

Right Photo: Brian Royer explains the architecture and mapping of the PathTrack application with the team.

Finishing the First Phase

The major Michigan Medicine $160M project to relocate and renovate clinical pathology is on track to finish the first phase during the spring and summer of 2018. The relocation of administration, clinical faculty, education and non-stat labs (all Molecular labs, Microbiology lab, and Anatomic Pathology labs) to the North Campus Research Complex will happen from late May to mid September 2018.

The process became the first full scale Lean Facility Design project at Michigan Medicine, from concept to design to activation, beginning over four years ago and capitalizing on the work of many faculty and staff in the department.

Pathology will host an Open House on June 1 for the general public. The first clinical samples are scheduled to arrive on June 11. The NCRC labs will be in full swing, and Vice Chair Dr. Jeff Myers says it best, "Our new Pathology space is an opportunity to do better what we already do well today….for a future we can't entirely imagine." We are confident that it will be great.

Front of the newly remodeled North Campus Research Complex.

PRR Update

From Christine Baker,
Senior Project Manager

Plan summarized as the C6s:

- **Consolidate** – relocate scattered labs into one space, improving operational efficiencies and decreasing expenses
- **Create**–innovative thinking in making flexible spaces to adapt to future needs, providing new faculty offices that do not currently exist, incorporating lean principles for optimal lab designs
- **Communicate** – encourage interactions with fewer silos, enabling connections without inhibiting quiet/focused space needed for specialized work, incorporating technology to facilitate communication with UH colleagues
- **Coordinate** – housing staff and testing labs together
- **Care** – designing for improved patient care, safety and quality, decreasing the risk of lost specimens
- **Collaborate** – locating faculty together in one suite to facilitate working together, supporting the new personalized medicine initiatives and teamwork by placing synergistic labs together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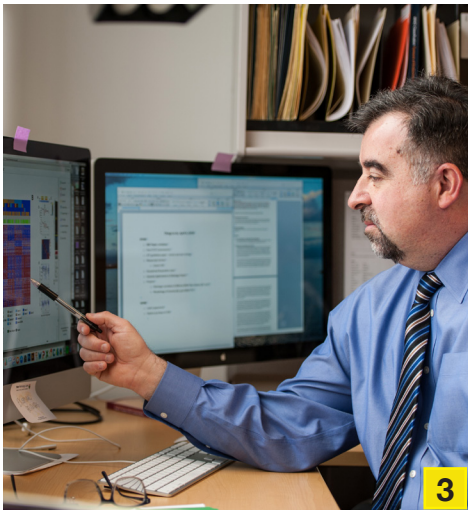
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[1] Chang Kim, PhD joined our faculty and became the first Kenneth and Judy Betz Family Research Professor in Food Allergy Research at U-M's Food Allergy Center. He's pictured here with Carol R. Bradford, MD, Executive Dean for Academic Affairs.

[2] Professor, and Director of the Division of Education, Barbara McKenna, MD retired. She's seen here with Henry Appelman, MD and Karen Choi, MD.

[3] Thomas Giordano, MD, PhD published data from The Cancer Genome Atlas, a ten-year project which describes thirty-three different tumor types, ten from rare cancers, using tissue sets collected from 11,000 patients.

[4] The Resident Class of 2021 joined the department. *Left to right* – Ania Owczarczyk, Laura Greisinger, Alex Taylor, Cisley Hines, Ashley Smith, and Krista Chain.

[5] Our 2017 – 2018 fellows. *Left to right* – Stacy Arnold, Mark Ettel, Yulei Shen, Michael Carter, Osman Yilmaz, Kenneth Hughes, Tanmay Shah, Jayson Miedema, Adam Covach, Drew Pratt, Kristina Davis, Keluo Yao, and Shoreh Eliaszadeh
Not pictured – Sarah Avedschmidt, Cody Carter, Nathan Charles, Ellen East, Forest Huls, Zaid Mahdi, John Sherbeck, Reena Singh, and Michael Wang.

[6] Laura Lamps, MD, became the inaugural recipient of the Godfrey Dorr Stobbe Professorship in Gastrointestinal Pathology.

[7] Riccardo, Valdez, MD, became our new Director of the Division of Clinical Pathology.

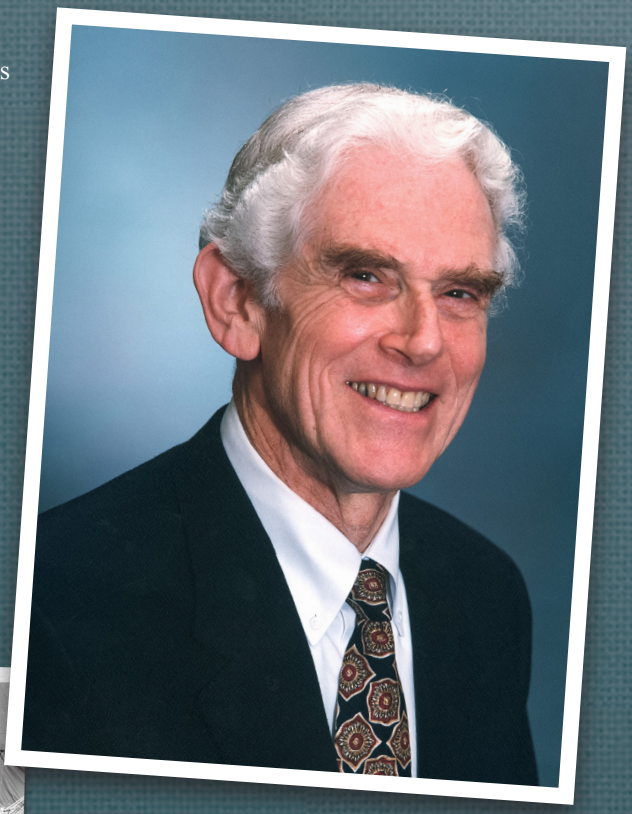
Gerald D. Abrams, MD
(1932 - 2017)

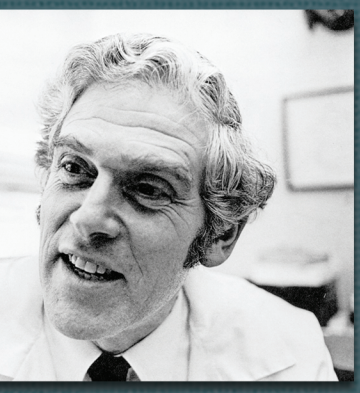
Dr. Gerald D. Abrams made an indelible mark on the Medical School and the Department of Pathology, as a keen diagnostician, skilled researcher, and beloved teacher of nearly 10,000 medical students. Abrams was a Michigan man for life, graduating from the University of Michigan Medical School in 1955, followed by an internship and residency in pathology. He was appointed as faculty in 1959.

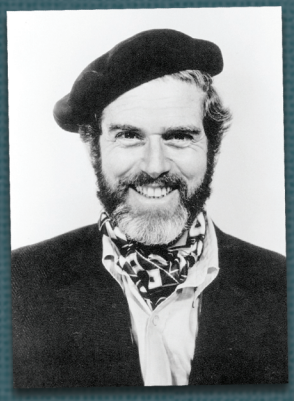
Abrams became an expert in both gastrointestinal and cardiovascular pathology, serving as the director of the Division of Anatomic Pathology from 1985 – 1989. Nationally, he served as the president of the Gastrointestinal Pathology Society from 1989 – 1990.

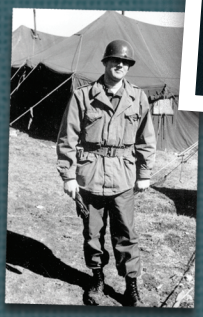
Abrams contributed to the education of nearly 10,000 graduates of U-M Medical School and served on the Dean's Committee on Curriculum Improvement. He was the director and a lecturer of the Mini-Med School for over a decade. Abrams received many teaching awards in the Medical School, including the Lifetime Achievement Award in Medical Education in 2002. The Medical School's West Lecture Hall, located in Medical Science II, is named after him.

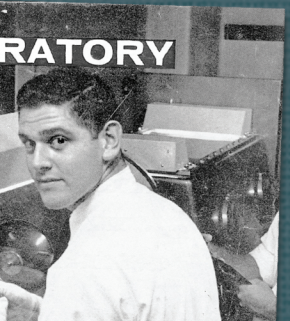
In 2014, the Department of Pathology established the Gerald D. Abrams Collegiate Professorship through donations made by former medical students and residents in honor of his teaching career.

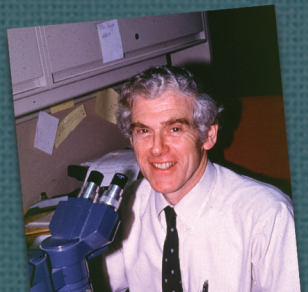


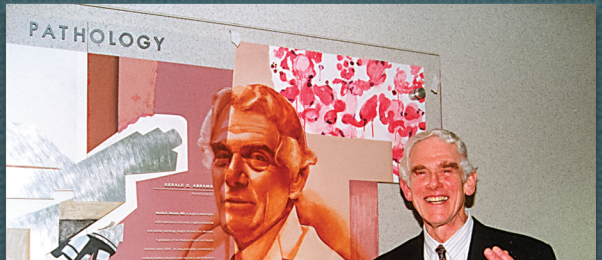


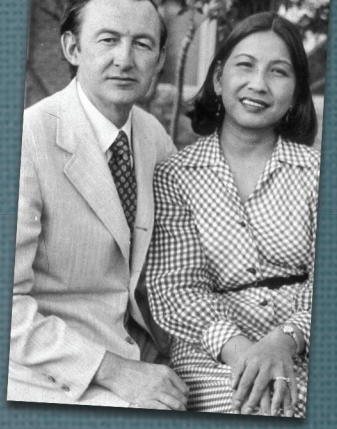


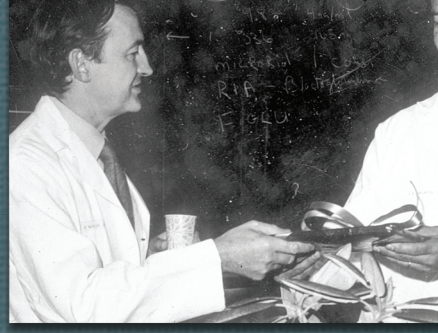


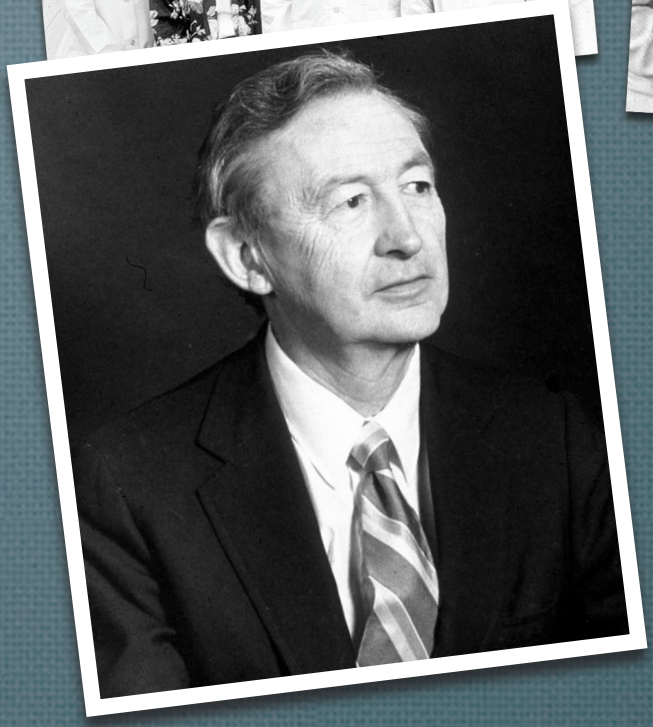






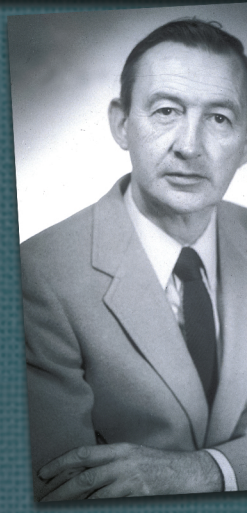






Bernard Naylor, MD

(1926 - 2017)



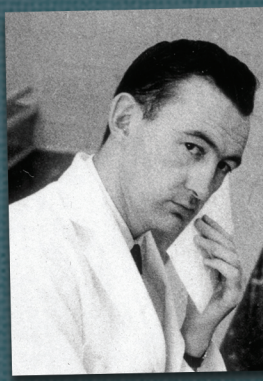
Dr. Bernard Naylor first came to the University of Michigan as a pathology resident in 1956. He was appointed as an instructor in pathology in 1957, promoted to assistant professor in 1959, associate professor in 1964, and full professor in 1968.

Naylor was proud of his work with Dr. Georgios N. Papanicolaou, inventor of the Pap smear, and from 1961-1962, he served as acting director of the Papanicolaou Cancer Research Institute.

Naylor was named Director of Cytology at U-M in 1981 and was internationally revered in the field of cytopathology. Perhaps his most impactful medical legacy is his co-authorship of the paper, Prevalence of “Asbestos” Bodies in Human Lungs at Necropsy. Linking asbestos to cancer, it led to the global ban of asbestos and helped save countless lives.

Widely recognized as an outstanding teacher, the U-M Medical School awarded him the Elizabeth Crosby Award for Outstanding Teaching in 1981 and commendations for excellence in teaching from the Medical School classes of 1988, 1989, and 1990.

In 1973 Naylor received a Certificate of Merit from the International Academy of Cytology and in 1985 from the American Society of Cytopathology in recognition for outstanding services as their president. In 1990, for meritorious contributions in cytopathology, the ASC awarded him the field’s highest honor - the Papanicolaou Award.



Residents

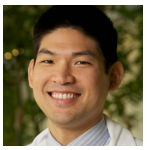
Sarah Avedschmidt, MD
Forensic Pathology Fellowship
Michigan Medicine

Cody Carter, MD
Gynecologic Fellowship
Michigan Medicine

Ellen East, MD
Surgical Pathology Fellowship
Michigan Medicine

Martin Magers, MD
Urologic Pathology Fellowship
Indiana University Health

John Sherbeck, MD
Blood Bank and Transfusion Medicine Fellowship
Michigan Medicine



Michael Wang, MD, PhD
Dermatopathology Fellowhip
Michigan Medicine

Clinical Lecturers

Bronwyn Bryant, MD
College of Medicine
University of Vermont Medical Center

Cameron Dowlatshahi, MD
Northwest Pathology Consultants
St. Joseph Mercy Oakland, Pontiac, MI

Joel Friedman, DO
TOPA Diagnostics
Thousand Oaks, CA

Tao Huang, MD
GYN Clinical Lecturer
Michigan Medicine

Cathryn Lapedis, MD
GO Clinical Lecturer, Michigan Medicine
VA Special Fellow at the VAMC, Ann Arbor, MI

Kristen Muller, DO
Dartmouth–Hitchcock Medical Center, NH

Reena Singh, MD
Bone/Soft Tissue Clinical Lecturer
Michigan Medicine

ACGME Fellows

Nathan Charles, MD, PhD
Molecular Genetic Pathology Fellow
Michigan Medicine

Stephanie Chen, MD
Assistant Professor
University of Iowa Hospitals and Clinics Iowa City, IA

Avneesh Gupta, MD
Assistant Professor
Wayne County Medical Examiner's Office
Michigan Medicine

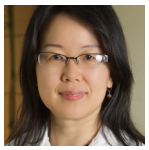
Charles Harmon, MD
Helena Laboratory Physicians
Mountain West Pathology, Helena, MT

Vivian Hathuc, DO
Pathologist
Genesys Regional Medical Center Grand Blanc, MI

Forest Huls, MD
Hematopathology Fellow
Michigan Medicine

Martin Ishikawa, MD
Pathologist
Clinical Labs of Hawaii Honolulu, HZ

Andrew Koopmeiners, MD
Associate Medical Examiner
Volusia County Medical Examiner's Office
Daytona Beach, FL



Michelle Li, MD
Associated Pathologists, Inc.
Bowling Green, OH

Pawel Mroz, MD, PhD
Assistant Professor
University of Minnesota,
Minneapolis, MN

Carlos Murga, MD
Research Investigator
Department of Internal Medicine
Michigan Medicine

Nathan Shaller, MD
Forensic Pathology Fellow
Wake Forest Baptist Medical Center
Winston-Salem, ND

Emily Smith, MD
Assistant Professor
University of Missouri
Columbia, MO

Molecular & Cellular Pathology - PhD

Emmalee Adelman, PhD
Defended: April 9, 2018
Mentor: Maria Figueroa, MD

Talha Anwar, PhD
Defended: April 6, 2018
Mentor: Celina Kleer, MD
MSTP program 3rd Year
Michigan Medicine

Allison Johnson, PhD
Defended: September 7, 2017
Mentor: Anuska Andjelkovic-Zochowski, MD, PhD
Staff Writer
BioCentury, Inc.

Rebekah Martin, PhD
Defended: July 6, 2017
Mentor: Michael Bachman, MD, PhD
Assistant Professor
Oakland University

Mary Rogawski Morgan, PhD
Defended: March 26, 2018
Mentor: David Ferguson, MD, PhD

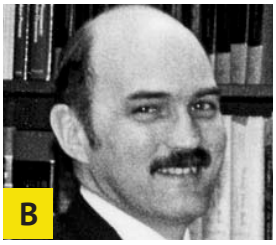
Justin Serio, PhD
Defended: October 17, 2017
Mentor: Andrew Muntean, PhD
Research Scientist

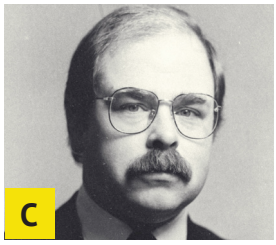
Yuqing Sun, PhD
Defended: July 14, 2017
Mentors: Yali Dou, PhD and Jay Hess, MHSA, MD, PhD
Medical Student
Johns Hopkins University School of Medicine

Hung-An "Anna" Ting, PhD
Defended: February 21, 2018
Mentor: Nicholas Lukacs, PhD
Postdoctoral Fellow
Department of Immunology
University of Washington

FLASH FROM THE PAST

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





A. Celina Kleer; **B.** Tom Morrow; **C.** Paul Killen

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