

JOHNS HOPKINS PATHOLOGY

GASTROINTESTINAL AND LIVER PATHOLOGY

JOHNS HOPKINS

MEDICINE

page 3

NEW DEPUTY DIRECTOR Daniela Čiháková page 9

NEW PROFESSORSHIPS

Hruban and Kovler pages 10 & 14

SYMPOSIUM RENAMED

The Allen Valentine Symposium page 15

TECHNOLOG New Johns Hopkins Pathology iPad App page 23

DIRECTOR'S CORNER



What a year! We all so hoped that the COVID-19 pandemic would be behind us by now, but still, today, too many fall ill, and across the country, too

many die from SARS-CoV-2. And then on top of it all, we have experienced a terrible staffing shortage across the health care system! Our patience has been challenged as never before. It has taken grit, creativity and tireless effort, but we are making it. So, first and foremost, I want to extend a deep, heartfelt "thank you!" to our staff, faculty, students and trainees. You amaze me!

As I have visited many of the labs across the department this past year, I have enjoyed learning about the myriad of different ways people have handled the stresses and strains the pandemic has caused. Some have picked up painting, others yoga, and still others long walks in nature. Kimberly Charity in transfusion medicine even received a wellness grant from The Johns Hopkins Hospital to create a relaxation room in the blood bank equipped with a reclining massage chair!

For me, the pandemic got me thinking about our shared stories. Shared stories, as David Brooks highlighted in an article in *The New York Times*, can give us a sense of who we are, what we find admirable and what kind of a world we hope to build together. Never one to go half way, I ended up writing a book, *A Scientific Revolution: Ten Men and Women Who Reinvented American Medicine*. I wrote the book together with my friend Will Linder, with the goal of bringing us together through our shared stories.

Since its publication, I have discussed the book at dinners with friends, and given several talks about it, including one of our Pathology Grand Rounds, and a talk at our Pathology Symposium (now called the **Allen Valentine Pathology Symposium**!). At each I have asked the question, "What makes Hopkins special for you?" Many of the responses I received hit home, and each reminded me why I absolutely love working here. Although it is clear that we each derive our own meaning, there are some threads that run through the answers I received, and I thought that I would share some selected responses with you here.

"The unsung heroes...like those who work in the Core Lab, phlebotomists, processors." – LAMBERT ARCELLANA

"Johns Hopkins has shown that it can learn from its history and is not afraid to face it." – MARIA BARATA

- "Dedication to health and science." – RACHEL BATES
- "Love the mission, the diversity, and continued learning." DEBBIE BEHRENS
- "Opportunities to work with people who have vision and humility." LORRAINE BLAGG

"A huge candy store filled with all sorts of resources for people who are primed to take advantage of it." – MICHAEL BOROWITZ, M.D., PH.D.

"It is great to work at an institution with a rich history. To see the struggles of humanity and how they are overcome." – MELISSA BROWN

- "We are right on the Mason-Dixon Line. As such, Hopkins combines the collegiality of the South with the drive of the North." – JOHN CAMERON, M.D.
- "*People are collaborative.*" – BILL CLARKE, PH.D.
- "It has always been the people-the collaboration and an ability to work together. A diversity and a platform that the world is able to witness." – KELLY FEEHELY

"No matter what job you do at Hopkins you are always being educated." – KIMBERLY FICEK

"The commitment to research and discovery. To know so much, but to also stay in the posture of a student is a great thing." – DESIREE GEORGE "Cooperation and willingness to help among departments whenever I need to address patient problems." – SUZANNE HOFFMAN

"Hopkins is where I have always wanted to be. It has always exceeded my expectations. To be the place of excellence, I am very proud to work here." – CARRIE HOLDREN-SERRELL

"*Our heritage of excellence*." – KAY JAMIESON, PH.D.

"The willingness of leadership to embrace that there is always room for improvement." – CORDELIA LEE

"The people I work with are exceptional. Diversity is everywhere." – SHIRLEY LONG

"Interdisciplinary teams come together to improve the process and provide the best patient care from behind the scenes. – CHRISTI MARSHALL

"Recognized globally for excellence in medicine. I am proud to be a tiny part of this excellence." – AUGUSTINE MULBAH

"Great minds." – SUMAN NAGELIA

- "Unlimited learning opportunities, working with people that are dedicated to doing the best possible, and leadership that cares about you as a person and is very supportive." - CINDY ORTT
- "The desire for innovation. We keep looking forward. We have tenacity." – FINNLEY ROCCA
- *"There is place and purpose for everyone."* – MELODY RORABECK

"Our unique structure provides a sustainable competitive advantage. We also have a balanced mission and a culture of collegiality." – FRED SANFILIPPO, M.D., PH.D.

- "People are motivated to do good and to help others (above ego). Mentors and teachers put everything into training and teaching others." – KAREN SFANOS, PH.D.
- "When anyone thinks of medicine, Hopkins is always first and foremost. It is special to me that people come from all over the world to be treated here." – BARBARA THOMPSON

Continued on page 23

DIVISION FEATURE

Gastrointestinal and Liver Pathology

The Division of Gastrointestinal and Liver Pathology was one of the first GI/Liver Pathology Divisions in the United States. Originally led by Dr. John Yardley and Dr. John Boitnott, the Division has grown to encompass rigorous clinical care of patients with GI/Liver diseases, innovative educational programs for learners at all levels, and multi-disciplinary clinical and translational research programs.

The Division is directed by Dr. Laura Wood, a physician-scientist who leads a translational pancreatic cancer research laboratory and signs out gastrointestinal mucosal biopsy specimens. Dr. Lysandra Voltaggio serves as Clinical Director of Gastrointestinal Pathology, and Dr. Kiyoko Oshima serves as Clinical Director of Hepatic Pathology-both are renowned diagnostic experts in their fields and lead services that provide outstanding clinical care to patients at Johns Hopkins and around the world. The Division has fourteen faculty, each uniquely contributing to the clinical, research, and educational missions of the Division.

In addition to a core group of senior faculty, we have been fortunate to recruit several outstanding new faculty members to the Division recently. Dr. Jacqueline Birkness-Gartman is a clinician-educator who signs out GI/ Liver pathology cases, provides leadership in residency and fellowship training, and develops innovative educational tools. Dr. Tatianna (Tasha) Larman is a physician-scientist who signs out GI/Liver pathology cases and leads a translational research laboratory investigating the role of the microenvironment of early colonic tumorigenesis. Dr. Kevan Salimian, Director of Pathology at Bayview Medical Center, directs our medical student education in GI/Liver pathology, and participates in multiple translational research projects. Dr. Janielle Maynard leads a research group investigating the immunobiological factors that contribute to cancer health disparities and coordinates



First row: Jackie Birkness-Gartman, Laura Wood, Janielle Maynard; Second row: Robert Anders, Lysandra Voltaggio, Kiyoko Oshima, John Boitnott; Third row: Tatianna Larman, James Eshleman, Nicholas Roberts, Ralph Hruban, Kevan Salimian

the newly formed GI Health Disparities Working Group.

After more than 55 years of service in the Division, Dr. Boitnott recently retired from clinical service. In addition to providing outstanding clinical care to countless patients with liver disease, Dr. Boitnott has taught liver pathology to generations of pathologists who trained at Hopkins and will always remember his sharp clinical acumen, his commitment to education, and his amazing stories. We will be forever

After more than 55 years of service in the Division, Dr. Boitnott recently retired from clinical service.



John Boitnott

grateful to Dr. Boitnott for his indelible impact on Johns Hopkins and on the field of liver pathology.

The Division is proud of its history, committed to our current efforts across its missions, and excited about the contributions we will make in the future to alleviate patient suffering.

EDUCATION

The Division of GI/Liver Pathology provides training in gastrointestinal diseases to fellows, residents, medical students, and practicing pathologists.

Our GI/Liver Fellowship Program (also known as the "Faculty Assistant Program") typically trains three pathology fellows each year. These fellows serve as junior faculty members (and hence are now called "faculty assistants"), and are responsible for independently signing out gastrointestinal biopsies from endoscopy and colonoscopy procedures performed at Johns Hopkins. Fellows also get substantial training in hepatobiliary and pancreatic pathology as they work closely with faculty members on these services, and they see numerous unusual and challenging cases through our active consultation service. In addition to



Kevan Salimian and Jackie Birkness-Gartman

their excellent clinical training, our faculty assistants are actively involved in teaching and research. The fellows routinely teach our pathology residents at the microscope, and also teach small group virtual microscopy sessions at Johns Hopkins School of Medicine every year. Fellows are expected to work on an academic project with a faculty mentor during their time at Johns Hopkins. These collaborations often result in presentations at national meetings, and in peer-reviewed publications.

Two of the three fellowship positions are funded through named endowment funds. The John H. Yardley Fellowship honors Dr. Yardley, former Baxley Professor and Director of Pathology. This fellowship was designed to promote the clinical training and research activities of pathologists pursuing advanced training in the field of gastrointestinal pathology. Dr. Ryan Sappenfield is the recipient of the Yardley Fellowship for the 2022-2023 academic year. The John K. Boitnott Fellowship honors Dr. Boitnott, a pioneer of liver pathology who taught generations of residents and fellows. This fellowship was designed to support pathologists pursuing liver and gastrointestinal pathology training. Dr. Weihua Song is the recipient of the Boitnott Fellowship for the 2022-2023 academic year. A full list of past trainees can be found on our divisional website.

Pathology residents at Johns Hopkins have two four-week rotations in the Division

of GI/Liver Pathology. During each rotation, residents spend three weeks on the gastrointestinal mucosal biopsy service and one week on the liver service. Resident training is supplemented with several conferences, including a daily quality assurance conference, a weekly interesting case conference, and a monthly journal club. Residents also learn how to gross liver explants on our service. As many firstyear residents rotate on our service, this supervised experience often serves as an introduction to grossing.

To further supplement resident education, Dr. Birkness-Gartman and Dr. Voltaggio developed four online learning modules covering esophageal, gastric, small intestinal, and colonic pathology, which are available on our internal departmental website. These modules are geared toward first-year pathology residents and cover introductory gastrointestinal pathology concepts including normal histology, patterns of inflammation, and the basics of grading and staging gastrointestinal cancers. Our modules have also been incorporated into a virtual surgical pathology rotation organized by Dr. Marissa White in the Division of Surgical Pathology.

Dr. Salimian serves as a course director for the four-week second-year medical student gastroenterology and hepatology course. Medical students receive over 20 pathology lectures and engage in eight "virtual microscopy" sessions where they spend time together in small groups reviewing digital slides of common GI and liver diseases. In 2020, the COVID-19 pandemic forced a dramatic change in the way we teach medical students; the entire course needed to shift to a "virtual" format. Dr. Salimian took this opportunity to completely refresh the course content. He reformatted and enhanced the 20+ lectures to optimize them for virtual delivery. Additionally, with the significant help of our pathology residents Drs. Katelynn Davis, Ashleigh Graham and Michael Mikula, the entire GI and liver virtual microscopy curriculum was overhauled. The newly improved digital slide modules allow medical students to view whole slide images with extensive annotations that teach the students the important features of common disease processes. Most importantly, it teaches them how to think like a pathologist! These major changes to the course have been very well received and course evaluations have significantly improved, with many students saying the pathology portion of the course is by far the best.

Each year, our faculty provide Continuing Medical Education for practicing pathologists through our Annual Current Topics in GI/Liver Pathology, now in its 22nd year. The course includes presentations from many of our faculty on a variety of clinically relevant topics in gastrointestinal, liver, and pancreatic pathology, as well as talks from expert visiting faculty. The course has gained significant popularity in recent years with the implementation of a virtual format with pre-recorded lectures and a live Zoom Q&A session. From 2018 to 2021, registration increased by 146% and last year our course saw a record-breaking 170 registrants from across the globe. More information about this yearly event is available on our divisional website.

A newly released iPad application, the Johns Hopkins Atlas of Appendiceal Pathology, was created by Drs. Birkness-Gartman, Oshima, and former Hopkins faculty member, Dr. Elizabeth Montgomery. This app covers neoplastic and non-neoplastic appendiceal pathology (see page 23). The app features an annotated image gallery, an interactive quiz, and a flash card module. It is part of a series of iPad apps released by the Department and edited by Dr. Toby Cornish, Norm Barker and Dr. Ralph Hruban. The first app in this series was the popular Johns Hopkins Atlas of Pancreatic Pathology. We anticipate releasing several additional atlases covering pathology of the esophagus, stomach, small intestine, and colon. The current apps are available in the iTunes Store.

PATIENT CARE

Dr. Voltaggio directs the Gastrointestinal Pathology clinical service at The Johns Hopkins Hospital. This service offers unparalleled care for patients on the East Baltimore, Howard County, and Sibley campuses. The team provides diagnoses based on H&E evaluation, an increasingly broad list of immunohistochemical stains, and emerging molecular diagnostic tests, all of which are integrated into our final reports to enable key steps in patient care. Our active consultation service sees biopsy and resection samples from the tubular GI tract, liver, and pancreas as well as soft tissue cases. This service offers trainees the opportunity to see challenging, sometimes one-of-a-kind cases that defy current classification and foster independent thinking and problem-solving skills. Our in-house mucosal service sees a wide variety of samples from all parts of the GI tract in both adults and children. In addition to providing excellent patient care for patients at Johns Hopkins, the material on this service enhances our trainees' professional development through the variety of diagnoses encountered, including both common diseases and rare entities. The clinical care on our in-house service is further strengthened by the exceptional relationship and open communication with our outstanding gastroenterology clinical colleagues. Our Quality Assurance (QA) GI/Liver Conference serves as a stage where faculty share both teaching and QA cases on a daily basis. Trainees get feedback on their own cases and also benefit from discussions on cases presented by others.

Led by Dr. Oshima, the Liver Pathology clinical service handles adult and pediatric neoplastic and non-neoplastic diseases, including those related to transplantation,

and has been growing steadily. Liver pathology is a highly specialized anatomic pathology discipline that requires clinical correlation and was established at Johns Hopkins by Dr. Boitnott. The hepatopathology service provides diagnoses for all medical liver biopsies across the Johns Hopkins Health System, including Johns Hopkins Hospital, Bayview Medical Center, Howard County General Hospital, Sibley Memorial Hospital, and Suburban Hospital. Twice a month, our pathologists hold a conference with clinical hepatology colleagues to discuss challenging cases and correlate clinical and histologic features. This collaborative discussion of difficult or unusual cases guides patient therapy. In addition to internal Johns Hopkins needs, the hepatopathology service provides consultation services on cases originating from other institutions; these expert consultations are sought from throughout the country and around the world.

Our liver pathology faculty also contribute to multiple, clinical multidisciplinary efforts at Johns Hopkins. These include the hepatobiliary multidisciplinary tumor board, which provides treatment options for patients with primary liver cancers. Pathologists play a critical role in establishing accurate diagnoses and guiding further treatment after surgery for patients with liver cancer. In addition, liver pathology is crucial in the care of patients undergoing liver transplantation, which has been growing steadily at Johns Hopkins with 138 liver transplantations performed in 2021. The hepatopathology service presents all explants at the monthly transplant conference where the discussion contributes to patients' post-transplant management. Hepatopathology also helps with the management of post-transplant patients by providing a significant number of rush liver biopsy interpretations for the diagnosis of possible rejection or other disease processes that could injure the liver allograft. Finally, our liver pathologists provide critical expertise in the care of children with liver diseases. Pediatric hepatology is a challenging area requiring special expertise because congenital diseases are common in the pediatric population. The hepatopathology service provides complex ancillary tests such as electron microscopy analysis, sending out frozen

tissue for enzyme assays, and maintaining a hepatoblastoma registry to aid patient care.

Dr. Hruban and Dr. Liz Thompson provide deep expertise in pancreatic pathology, reviewing consultations from around the world on challenging inflammatory and neoplastic pancreas cases. In addition, they play a crucial role in the care of patients with pancreatic diseases at Johns Hopkins. Dr. Thompson reviews many of the intraoperative frozen sections from patients undergoing surgery for pancreatic neoplasms, and both Drs. Hruban and Thompson assist with challenging surgical resection and biopsy cases on the Surgical Pathology service.

RESEARCH

The faculty in GI/Liver pathology are moving the field forward through a variety of research programs, ranging from basic science to clinical translation.

Dr. Robert Anders currently focuses his research program on tumor immunology. He traces this shift to a day in 2009 when he sat down at his microscope to look at a biopsy from the first human patient treated in an anti-PD-1 checkpoint inhibitor phase one toxicity trial. He was shocked to see the tissue overrun with lymphocytes—this was the beginning of immune based anticancer therapy and would develop into a massive success for many cancer types. His research currently interrogates cancer samples with a sophisticated multi-color antibody-based detection system in order to uncover predictive biomarkers, those that determine the best personalized anticancer therapy. Many clinical trials are now set up to deliver immune-based anti-cancer therapy prior to surgical resection, opening up the possibility to investigate the tumor samples by multiple investigators and protein-, RNA-, and DNA-based assays.

Dr. James Eshleman's research is focused on the hypothesis that the gene editing tool CRISPR-Cas9 can be adapted as a sequence-specific cancer cell killing tool. Specifically, Dr. Eshleman and his team have shown that if multiple cancer-specific (somatic) mutations are targeted at the same time, gene editing can overwhelm the ability of the cell to repair all of the double strand breaks. His group discovered that



Tatianna Larman and Maged Zeineldin

most cancers contain hundreds of such mutations, indicating that this approach could be applied to a broad range of tumor types.

Dr. Michael Goggins directs the Pancreatic Cancer Early Detection Research Laboratory and is the principal investigator of the multicenter Cancer of the Pancreas Screening-5, or "CAPS5" study, supported by the National Cancer Institute through the Pancreatic Cancer Detection Consortium. The CAPS5 team recently reported in the Journal of Clinical Oncology that patients who develop pancreatic cancer while under surveillance are most often diagnosed with Stage I disease and the majority of these patients achieve long-term survival. This is a major step forward in implementing pancreatic cancer screening in high-risk patients.

Dr. Tasha Larman investigates microenvironmental contributors to the normal-neoplastic transition in colorectal cancer. The vision of her research program is to leverage insights from clinical GI pathology to dissect mechanisms of sporadic and colitis-associated colorectal cancer initiation, as well as mediators of colonic mucosal homeostasis. Her lab leverages patient-derived human intestinal organoids (3D mini-guts) as a powerful tool to model disease-relevant phenotypes. Ongoing projects relate to how colonic epithelium adapts to sustained perturbations to the microenvironmental niche, such as altered growth factor dependencies, chronic injury/repair, and hypoxia, and investigating how these adaptations synergize with genetic drivers

to create a cancer-permissive state. She also collaborates with other groups on campus, including projects focused on early onset colorectal cancer, lymphocytic colitis, and nucleolar biology across disease states.

Dr. Maynard investigates the immunobiological factors that contribute to cancer health disparities and disease aggressiveness. She uses molecular pathology techniques to characterize the inflammatory landscape of cancer tissues from patients with varied genetic ancestry, including cytokines, immune cells, and inflammation-associated P2 purinergic receptors. Dr. Maynard is committed to generating the tools necessary to characterize the molecular and genetic factors associated with GI cancer health disparities and leads the GI Health Disparities Working Group, which is comprised of a diverse team of experts at Johns Hopkins Medicine.

Dr. Nicholas Roberts leads a research program focused on understanding the genetic and biological basis of pancreatic cancer risk to advance patient care through improved risk assessment, clinical surveillance, and personalized therapy. To achieve this goal, his lab uses their deep expertise in DNA-sequencing, RNAsequencing, functional assays to aid variant classification, and experimental models of pancreatic cancer and precursor lesions. Selected recent research highlights include determining the prevalence of inherited disease-causing variants in patients with intraductal papillary mucinous neoplasms, identifying increased survival in pancreatic cancer patients with an inherited

disease-causing variant in the *ATM*, and characterizing the functional impact of inherited *CDKN2A* variants to determine disease risk in patients with familial pancreatic cancer.

Dr. Salimian has broad-ranging research interests in the field of gastrointestinal pathology. His work in diagnostic GI pathology has focused on establishing diagnostic criteria for Barrett's esophagus and on refining criteria for diagnosing dysplasia in esophageal and gastric biopsies. He has initiated numerous collaborations with gastroenterologists and surgeons in academia and industry to develop novel animal models that mimic sequalae of Crohn's disease (fistulas and strictures) with the goal of advancing novel therapeutics. He also works closely with gastroenterology colleagues to develop advanced endoscopy techniques to prevent and cure obesity.

Dr. Wood leads a translational research laboratory focused on pancreatic neoplasia and was awarded the Ramzi S. Cotran Young Investigator Award in 2019 from the United States and Canadian Academy of Pathology. Her group uses multiregion sequencing approaches to define the important evolutionary features in initiation and progression of pancreatic precancers. In addition, they developed a three-dimensional organoid culture model of human pancreatic neoplasms, which they deployed to culture normal duct and precancer in vitro to determine the molecular and cellular drivers of invasion in pancreatic cancer cells. Her group, in collaboration with Dr. Hruban and Dr. Denis Wirtz, also developed techniques to analyze human pancreatic tissue in three dimensions, enabling 3D analysis of venous invasion in pancreatic cancer, the critical moment when pancreatic cancer cells gain the ability to metastasize. Her group is currently building a pipeline for 3D multi-omic analysis of human pancreatic tissue specimens to interrogate key clinically important transitions in pancreatic tumorigenesis.

With the vast expertise of our faculty and diverse efforts across education, patient care, and research, the Division is thriving, continuing its long legacy of diagnostic and translational excellence in GI/Liver diseases.

FACULTY CHANGES 2022

NEW FACULTY	Rank	Division	
Ashley Kiemen, Ph.D.	Assistant Professor	Informatics	
Calixto-Hope G. Lucas, Jr., M.D.	Assistant Professor	Neuropathology	
Benjamin Mazer, M.D., M.B.A.	Assistant Professor	Bayview Pathology	
Heerleen Rai, M.D.	Assistant Professor	Transfusion Medicine	
Sandeep Wonkatal, M.D., Ph.D.	Assistant Professor	Bayview Pathology	
Clayton Yates, Ph.D.	John R. Lewis Professor	Urologic Pathology	
PROMOTIONS	Rank	Division	
Paul Ness, M.D.	Professor Emeritus	Transfusion Medicine	
Chien-Fu Hung, M.S., Ph.D.	Professor	Gynecologic Pathology	
Aaron W. James, M.D., Ph.D.	Professor	Surgical Pathology	
Mark Marzinke, Ph.D.	Professor	Clinical Chemistry	
Kate Grabowski, Ph.D.	Associate Professor	Transfusion Medicine	
Chuan-Hsiang "Bear" Huang	Associate Professor	Gynecologic Pathology	
H. Benjamin Larman, Ph.D.	Associate Professor	Immunopathology	
Heba Mostafa, M.D., Ph.D.	Associate Professor	Medical Microbiology	
Lisa Rooper, M.D.	Associate Professor	Surgical Pathology	
DEPARTURES	Rank	Current Location and New Role	
Anne Le, M.D.	Associate Professor	Gigantest, Inc., Baltimore, MD	
Alena Savonenko, M.D., Ph.D.	Associate Professor	Scientific Review Officer, Integrative, Functional and Cognitive Neuroscience Review, NIH, Bethesda, MD	
Alisha Ware, M.D.	Assistant Professor	Assistant Professor of Hematopathology and Director of Clinical Diversity, Equity, and Inclusion, University of North Carolina, Chapel Hill, NC	
Mark Zarella, Ph.D.	Assistant Professor	Senior Associate Consultant Artificial Intelligence, Division of Computational Pathology and Artificial Intelligence, Mayo Clinic, Rochester, MN	
Christine Berkley, M.D.	Clinical Associate	Retired	
Tom Fluery, M.D.	Clinical Associate	Retired	
Aruna Kumar. M.D.	Clinical Associate	Retired	

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If so, please email **HopkinsPathology@jhmi.edu** to provide your new mailing and email addresses. We don't want you to miss an issue of *PathWays* or communication from the Department of Pathology.

We respect your privacy and never share your name with other organizations.



NEW FACULTY



Ashley Kiemen, Ph.D., received her bachelor's degree in engineering from the University of Michigan, her master's degree in philosophy from the

London School of Economics and Political Science, and her Ph.D. in chemical and biomolecular engineering from Johns Hopkins University. In her graduate studies, she developed a computational platform for 3D tissue mapping using deep learning applied to histological images. She used this technique to study the microanatomy, inflammatory patterns, and genetics of pancreatic pre-cancer and cancer. She also worked on projects mapping lung, prostate, heart, liver, skin, intestines, fallopian tubes, and kidneys in 3D. She joined the faculty as an assistant professor in the Division of Informatics in October 2022. Her group will continue their work leveraging novel computational pathology approaches to study diseases in three dimensions.



Calixto-Hope (CJ) G. Lucas Jr., M.D., was born and raised in Honolulu, Hawaii. He earned his B.S. in

molecular and cellular

biology, and the history of science, medicine, and technology from Johns Hopkins University, and his M.D. from University of California, San Francisco. He continued at University of California, San Francisco to complete his anatomic pathology residency and neuropathology fellowship while also serving as pathology chief resident. He returned to Johns Hopkins in August 2022 to join the faculty in the Division of Neuropathology as an assistant professor. CJ's main academic interest is in brain tumor pathology. He has prior experience with next-generation sequencing, DNA methylation profiling, and spatial proteomic and transcriptomic techniques. He hopes to continue to leverage multiplatform sequencing techniques to refine existing codification schemes and, in parallel, develop assays that can be translated to clinical neuropathology and neurooncology practice.



Benjamin Mazer, M.D., M.B.A., received his undergraduate degree at Swarthmore College, followed by his M.D. and M.B.A. from University of

Rochester. He trained in anatomic and clinical pathology at Yale New Haven Hospital. He then completed his surgical pathology fellowship at Johns Hopkins and his GI/Liver pathology fellowship at Yale. He has clinical expertise in general surgical pathology and gastrointestinal pathology. His academic interests include cancer



screening and overdiagnosis, evidencebased medicine, and health policy. He is also a freelance journalist writing about medical topics and controversies for the public. He joined the faculty at Bayview Hospital as an assistant professor in the Division of Surgical Pathology in July 2022.



Herleen (Sofi) Rai,

M.D., is an assistant professor in the Division of Transfusion Medicine, joining the faculty in August 2022. Dr. Rai's research interests are

primarily in the area of cellular therapy and transfusion. She has been involved in the development of protocols to guide cell therapy manufacturing for both clinical and research products. Her long-term goals are to help develop processes that allow for the future decentralization of manufacturing and the widespread availability of these therapies. She received her undergraduate degree from Ohio State University and earned her M.D. from Ross University School of Medicine. She then completed her clinical pathology residency at University Hospitals/Case Western Reserve University, followed by a two-year fellowship in transfusion medicine at the National Institutes of Health.



Sandeep N. Wontakal, M.D.,

Ph.D., is a native New Yorker and a proud product of the NYC public school system. He received

his undergraduate degree from Rutgers University majoring in molecular biology and biochemistry with minors in philosophy and mathematics. He earned his combined M.D./Ph.D. at the Albert Einstein College of Medicine. Using various genomic approaches, his graduate work was focused on understanding transcriptional regulation of erythropoiesis. He completed his residency training in clinical pathology and molecular genetic pathology at New York Presbyterian Hospital–Columbia University Irving Medical Center with an emphasis on genomic testing of rare inherited diseases. He joined the faculty in August 2022

as an assistant professor in the Division of Transfusion Medicine and serves as Director of Clinical Pathology at the Johns Hopkins Bayview Medical Center. In addition to his clinical responsibilities, he will be directing a research group focusing on harnessing model organisms to search, establish, and understand novel disease genes associated with rare inherited diseases.



Clayton Yates, Ph.D.,

an Atlanta native, earned both his B.S. and M.S. from Tuskegee University and his Ph.D. in molecular pathology from University of

Pittsburgh School of Medicine. He then completed his certificate of training in tissue engineering and regenerative medicine from McGowan Institute of Regenerative Medicine and his postdoctoral fellowship in Emory University School of Medicine's Department of Urology before joining the faculty at Tuskegee University in the Department of Biology and Center for Cancer Research where he rose to the rank of professor. An internationally recognized expert in health disparities research, cell biology, molecular biology, and molecular pathology, he joined the Division of Urologic Pathology in the Department of Pathology in October 2022 as the inaugural recipient of The John R. Lewis Professorship in Pathology. He also serves as Director for Translational Health Disparities and Global Health Equity Research. He holds joint appointments in Oncology, serving as Program Co-Leader for Cancer Genetics and Epigenetics in the Sidney Kimmel Comprehensive Cancer Center, and in Urology.

NEW DEPUTY DIRECTOR

Daniela Čiháková, M.D., Ph.D., D(ABMLI) Deputy Director for Faculty Development



Dr. Čiháková received her M.D. and Ph.D. from the Charles University in Prague, Czech Republic, and she also completed post-

graduate clinical training in pediatrics in Prague. In 2002, she came to the Johns Hopkins University School of Medicine for her postdoctoral fellowship and joined the Pathology faculty in 2008. Dr. Čiháková is currently an Associate Professor in the Division of Immunology and is Associate Director of Diagnostic Immunology.

Dr. Čiháková has a strong researchoriented background with a history of NIH RO1 funding, as well as funding from the American Heart Association and many other foundations. Her research focuses on cardiac immunology, investigating the role of immune cells and mediators in myocarditis, pericarditis, myocardial infarction, and cardiac transplantation. Her other research interests include autoimmune diseases.

Since coming to Johns Hopkins, Dr. Čiháková has been a part of the mentoring committees of several faculty and a co-investigator on several junior faculty first grants. She plays an active role in three graduate programs—Immunology, Pathobiology, and Molecular Microbiology and Immunology. She has also been successful in mentoring and advising 19 graduate and 10 postgraduate students. For the past three years, Dr. Čiháková has chaired the Department of Pathology's Research Advisory Committee (RAC). The RAC meets with every newly-hired faculty member in the first year of their tenure track

position in the Department. The committee advises junior faculty on their research progress, grant plans, collaborations, and future directions of their research.

Dr. Čiháková has innovated the way the RAC operates. Among other things, she has implemented written summaries and a process of follow up with oneon-one meetings with new faculty to go over the committee's recommendations. The RAC also helps identify research directions for new faculty, and the RAC reviews applications for Departmental grants, including the annual Grover M. Hutchins, M.D. Memorial Research Award, the Fred and Janet Sanfilippo Research Award, and the Mabel Smith Resident Education and Research Award.

As Deputy Director for Faculty Development, Dr. Čiháková will continue Dr. Charles Eberhart's efforts to establish a robust and individualized mentoring program supporting junior faculty across the Department of Pathology. Junior faculty face many challenges, including finding effective mentorship, identifying the main research goals for their labs, securing grant funding, and obtaining resources to support career development and research. Dr. Čiháková plans to create mentoring committees for new junior faculty members with a focus on their career needs and scholarship path. She works with new hires and struggling faculty to identify grant opportunities, and also works with members of the Department's promotions committee to provide analysis of candidates' strengths and weaknesses before they go before the university-wide promotion committee.

HRUBAN PROFESSORSHIP



From left to right: Ron Daniels, James Eshleman, Ralph Hruban, John Cameron, Antony Rosen





On November 2, 2022 the Department of Pathology celebrated the installation of James Eshleman, M.D., Ph.D., as the inaugural recipient of the Ralph H. Hruban, M.D. Professorship in Pancreatic Cancer Research. The ceremony, held in the West Reading Room of the Welch Library, the historic room where John Singer Sargent's portrait of Mary Elizabeth Garrett and his painting of the "four doctors" reside, was hosted by Antony Rosen, M.B.Ch.B., M.S., Vice Dean of Research for the School of Medicine. Other speakers at the ceremony included Ron Daniels, J.D., LL.M., President of the University; Theodore DeWeese, M.D., Interim Dean of the Medical Faculty of the School of Medicine; John L. Cameron, M.D., the Alfred Blalock Distinguished Service Professor of Surgery; and Drs. Hruban and Eshleman.

The Hruban Professorship, established through the generosity of 10 donors from around the world, celebrates both Dr. Hruban's and Eshleman's significant contributions to pancreatic cancer research, clinical care, and medical education at Johns Hopkins for more than a quarter century. Dr. Eshleman has established himself as a prominent pancreatic cancer scientist, known for his creative science, his dedication to mentoring the next generation, and his clinical work in the Molecular Diagnostics Laboratory. He is a vital member of the pancreatic cancer research team. Dr. Hruban is recognized for his leadership of the Department of Pathology and the Sol Goldman Pancreatic Cancer Research Center.





From left to right: Alexis Bennett, Hong Liang, Selina Teh, James Eshleman, Kirsten Bowland, Alexis Norris, Marija Debeljak

Private philanthropy is critical to our educational and research missions. The smiling faces of the fellowship recipients below tell the story. In addition to these fellowships, there are several funds that support trainee and junior faculty research.

FELLOWSHIP RECIPIENTS 2022-2023



John K. Boitnott Fellow in Liver Pathology Weihua (Grace) Song, M.D., Ph.D.



Michael J. Borowitz Fellow in Hematopathology J. David Peske, M.D., Ph.D.



Breast Pathology Fellow Qiqi Yu, M.B.B.S., M.S.



Peter C. Burger Fellow in Neuropathology Bharat Ramlal, M.D.



Daniel W. Chan Fellow in Clinical Chemistry Ashley R. Rackow, Ph.D.



Patricia Charache Fellow in Medical Microbiology Robert B. Hamilton, M.D.



Jonathan I. Epstein Fellow in Urologic Pathology Chien-Kuang Ding, M.D., Ph.D.



Yener S. Erozan Fellow in Cytopathology Hansen Lam, M.D.



Sol Goldman Fellow in Pancreatic Cancer Research Selina Shiqing Teh, Ph.D.



Constance A. Griffin Fellow in Molecular Pathology Eitan Halper-Stromberg, M.D., Ph.D.



Paul M. Ness Fellow in Transfusion Medicine Tayler Van Denakker, M.D.



Virginia O'Leary & John C. Wilson Fellow in Autoimmune Disease Research Solmaz Roshanmehr, M.D.



Dorothy L. Rosenthal Fellow in Cytopathology Carla Saoud, M.D.



John H. Yardley Fellow in Gastrointestinal Pathology Ryan Sappenfield, M.D.

FUNDING OUR FUTURE

Please consider supporting one or more of our funds or fellowships. If you have any questions, please contact **Dr. Ralph Hruban (rhruban@jhmi.edu** or 410-955-9791). If you would like to donate to one of these funds, please visit our secure site at **https://secure.jhu.edu/form/pathol**, scan the QR code to the right, or send your tax-deductible contributions payable to "Johns Hopkins University" to:



Department of Pathology | Attn: Rob Kahl | The Johns Hopkins Hospital | 600 North Wolfe Street, Carnegie 417 | Baltimore, MD 21287-6417

PATHOLOGY INCOMING HOUSE STAFF 2022-2023



Waqar Arif was born in Florida but grew up in Toledo, Ohio. He graduated from the University of Toledo with a bachelor's degree in biochemistry

and physics. As an undergraduate, he conducted research investigating the biophysical properties of mitoNEET, an outer mitochondrial membrane protein. Waqar then went on to complete his M.D./ Ph.D. training at the University of Illinois at Urbana-Champaign. His Ph.D. research focused on studying post-transcriptional gene regulatory mechanisms involved in facilitating liver regeneration during injury. His doctoral work was supported by an NRSA Individual Predoctoral M.D./ Ph.D. Fellowship (F30) from the NIDDK. Waqar's current research interests include gastrointestinal cancers, stem cell biology, and bioinformatics. Waqar is pursuing AP training.



Diana Fang spent her early years in China, then moved to Charleston, South Carolina where she spent most of her childhood. The first in her family

to go to college, Diana obtained her B.S. in biochemistry and genetics at Clemson University, where she was involved in research on how *Cryptococcus neoformans* develops resistance to the antifungal drug, fluconazole, as well as research on the differential bioenergetics expressed in cancer cells as a druggable target.

While earning her M.D. at the Medical University of South Carolina, Diana developed interests in nephrology and pathology. She wrote a case detailing the use of hypertonic saline in conjunction with continuous renal replacement therapy in a critically ill patient to limit neurologic sequalae. Diana also mentored premedical and medical students at MUSC. Additionally, she received various awards and distinctions for her dedication to academic pathology, becoming a Society of '67 Kinney Scholar, awarded by the Association of Pathology Chairs, and receiving the ASCP Medical Student Award, given by the American Society of

Clinical Pathology. Diana is pursuing AP/ CP training.



Julia Gales was born and raised in Mason City, Iowa. She graduated from St. Louis University with a B.S. in public health and minors in and biology. During this

health care ethics and biology. During this time she did volunteer work developing and teaching after-school music programs for kids in St. Louis. She then worked as an EMT in an emergency department in St. Louis during the year following college graduation. Julia received her M.D. from University of Iowa Carver College of Medicine. During medical school, she volunteered with the Iowa Harm Reduction Coalition and the Iowa City Free Medical Clinic. She also completed a research project regarding end-of-life surgical outcomes in pediatric patients. Between her second and third years of medical school, she completed a one year externship in the pathology department, where she further participated in teaching and curriculum development for an introductory pathology course and worked on research projects regarding surgical pathology and digital image analysis. Julia is pursuing AP/CP training.



Jeremy Johnson was raised in Bluefield, Virginia, a small town nestled in the Blue Ridge Mountains. He attended Roanoke College in Salem,

Virginia, and received a B.S. in chemistry and a minor in math. While there, he developed a passion for basic scientific research by working with Dr. Vern Miller to synthesize bisamine boron cations. He presented posters at two national meetings of the American Chemical Society and received the Goldwater Scholarship.

Upon graduation in 2013, he joined the M.D./Ph.D. Program at the University of Kentucky College of Medicine. He completed his dissertation under Dr. Mark Evers, and his work involved targeting metabolic proteins (Akt and AMPK) to improve therapeutics of triple negative breast cancer. He has published three firstauthor manuscripts and presented posters at four annual meetings of the American Association for Cancer Research. Jeremy is pursuing AP training.



Samuel Law was born in Houston, Texas and moved to Milwaukee, Wisconsin before settling in sunny Southern California. He went to University

of California Irvine and graduated with a B.S. in biology, then went to pharmacy school for one year at the University of California San Diego, where he realized a passion for histology through a pharmacy school course on histopathology. He attended California Northstate University College of Medicine and completed a preliminary intern year at St. Mary Medical Center. During medical school, he investigated the relationship between oncogenic protein downregulation in corneal neovascularization, studied the pitfalls of Wnt agonists in the study of the Wnt signaling pathway, and spearheaded a research study on the association between cigarette smoking and glaucoma in the United States and South Korean populations. Samuel currently is leaning towards the fields of neuropathology, gastrointestinal pathology, head and neck pathology, and ophthalmic pathology, but would like to take a keen eye at blood banking/transfusion medicine as a future career, inspired through his prelim IM training. Samuel is pursuing AP/CP training.



Molly McGowan grew up in Valparaiso, Indiana where she cultivated a passion for classical music and playing the cello. After earning her undergraduate degree

in Music Theory from the Hartt School at the University of Hartford in Connecticut, she began working for Whole Foods Market and held many leadership positions over the following nine years, eventually bringing her to Texas. After deciding to finish her medical school prerequisites, she earned admission to the John Sealy School of Medicine at the University of Texas Medical Branch in Galveston, Texas. Her grocery career and medical school career, she cultivated her enjoyment of mentoring, celebrating her mentees' successes both in the retail and medical worlds, and eventually serving as an official Step 1 Mentor through her medical school. As a fourth-year medical student she was awarded the William Todd Midgett, M.D. Award for Superior Clinical Practice and was elected to AOA. Molly is pursuing AP/ CP training.



Brian Pedro was born and raised in Portland, Maine and received a B.A. in biochemistry from Tufts University. As an undergraduate, Brian discovered his

passion for cancer research, leading him to enter the M.D./Ph.D. program at Emory University. His dissertation focused on characterizing the mechanisms of collective invasion and metastasis in lung cancer. Brian's interest in pathology grew throughout his M.D./Ph.D. training, as he realized the impact he could have on patients while also pursuing a research career. Brian is pursuing AP-only training as part of the Physician Scientist Research track, where he plans to continue working to better understand solid tumor metastasis.



Keysabelis Rivera

Alvarez was born in Mayagüez and raised in San Sebastián, Puerto Rico. She grew up playing volleyball, surrounded by nature,

and going to the beach. She graduated with honors from the University of Puerto Rico, Rio Piedras Campus, where she received her B.S. in general science. Seeing the healthcare disparities in her hometown inspired her to pursue a career in medicine. Keysa moved to the Midwest to earn her M.D. from Wright State University. For the last four and a half years, Keysa has worked at Hopkins as a Research Data Analyst. She has been involved in several projects including the AACR Project GENIE consortium; she has reviewed thousands of pathology reports and clinical charts to fulfill an unmet need in oncology by providing the statistical power necessary to improve clinical decision-making. She has had a critical role in the implementation of various digital pathology systems in the department and completed a validation study for the remote digital pathology system allowing pathologists to have the flexibility to do signout remotely. Keysa has adopted Maryland as her "second home" where she lives in Pasadena with her husband Miguel and two dogs. Keysa is pursuing AP/CP training.



was born and raised in Fayetteville, North Carolina. She attended North Carolina A&T State University (NCAT) and obtained her BS

Mahalia Robinson

in biology premedical concentration. She then went to Campbell University School of Osteopathic Medicine (CUSOM) and obtained her master's degree in biomedical science and shortly matriculated into the DO curriculum. At CUSOM, she spent her free time mentoring the youth in the surrounding area as well as being present on panels at Historically Black Colleges & Universities (HBCUs) to help inspire the future of medicine. Diversity, Equity, and Inclusion are very important to Mahalia, and she takes pride in being a role-model. She also helped start a diversity taskforce at CUSOM. She was a huge asset in starting a pathway program from her alma mater, NCAT, to CUSOM for students interested in medicine. Mahalia is also highly interested in teaching. Outside of medicine, Mahalia is co-owner of a catering company and restaurant with her partner, in her hometown, which she started while in medical school. Mahalia is pursuing AP/ CP training.



Rachel Schendzielos was born on Fort Carson

was born on Fort Carson in Colorado Springs, Colorado, but spent the majority of her childhood growing up in Chantilly, Virginia. She

attended college at Christopher Newport University in Newport News, Virginia, where she received a Bachelor of Science in biochemistry and in cellular, molecular, and physiological biology. During her time at CNU, she researched the 3xTg-AD trangenic mouse model, specifically focusing on its ability to model the behavioral and histological changes seen in Alzheimer's Disease. She additionally had the opportunity to complete a summer internship in Surgical Pathology at a local hospital, which first sparked her interest in pathology. Rachel earned her medical degree from the Virginia Commonwealth University School of Medicine, where she served as a society leader, the Pathology Student Interest Group President, and in multiple Medical Student Government roles. In medical school, Rachel honed her passion for education by serving as an individual peer-to-peer tutor, as a teaching assistant for the Foundations of Disease Course, and as a dedicated teaching assistant for a group of M1 students identified by the curriculum office as needing additional assistance. Rachel is pursuing AP/CP training.



Malavika Pia Sengupta was born in Mumbai, India but grew up between the Midwest and southern Canada. She attended University of

Michigan for her undergraduate education, studying neuroscience and linguistics. She then enrolled at Case Western Reserve University, where she earned a master's degree in medical physiology. Taking time off from school, she worked at the Cleveland Clinic as a research assistant investigating tools to aid in early diagnosis of cognitive impairment while she applied to medical school. She soon found her way back to Dayton, OH for medical school at Wright State University Boonshoft School of Medicine. Throughout all of her education, Pia has been passionate about research and about using it to improve medical education in evidence-based ways. She has also been honored with the James L. Funkhouser Scholarship for medical students pursuing pathology. Pia is pursuing AP/CP training.

Continued page 14

PETER AND JUDY KOVLER PROFESSORSHIP

From page 13



Annie Wu was born and raised in Baltimore, Maryland. She graduated with a B.S. in molecular and cellular biology from the Johns Hopkins University

and earned her M.D. and Ph.D. degrees in immunology from the Johns Hopkins University School of Medicine. For her doctorate work, Annie utilized multiplex immunohistochemistry to investigate how the tumor microenvironment is influenced by novel immunotherapies given to patients. At the start of the COVID-19 pandemic, she returned to medical school, where she served as president of the Pathology Interest Group and was the recipient of the William H. Welch Medical Student Award. Annie is pursuing AP training.



Kevin Zhang was born and raised in China and moved to California at the age of eleven. He attended the University of California San Diego and

earned dual degrees in biochemistry and economics. After undergrad, he spent several years conducting basic research on immunometabolism at the Salk Institute in La Jolla before attending Creighton University School of Medicine in Omaha, Nebraska. Prior to finishing medical school, Kevin moved to Baltimore with his wife. He spent two years pursuing research at Johns Hopkins University in the laboratory of Thomas V. Johnson, M.D., Ph.D. and investigated the use of stem cell transplantation in treating optic neuropathies. Kevin is pursuing AP/NP training. On October 19, 2022 family, friends, and Sibley Memorial Hospital and Johns Hopkins leadership gathered for the dedication of the Peter and Judy Kovler Professorship in Breast Cancer Research in the Department of Pathology and the installation of Andrea Richardson, M.D., Ph.D. as its inaugural recipient.

The Kovler Professorship is the first endowed professorship given to a faculty member at Sibley.

The dedication ceremony—at which Dr. Richardson was presented with the professorship medallion—celebrates Judy and Peter Kovler's long relationship with the Department of Pathology, Johns Hopkins, and Sibley. Sibley has benefitted from Judy's dedicated leadership as Chair of the Sibley Memorial Hospital Foundation Board of Trustees, and Peter is a member of the Kimmel Cancer Center's Advisory Council.



Andrea Richardson, M.D., Ph.D. (center) with Judy and Peter Kovler

The Department of Pathology extends sincere gratitude to Judy and Peter Kovler whose long-standing generosity has supported novel research in the Department. The department also recognizes the impact Dr. Andrea Richardson has had at Sibley and through her research.



Ceremony speakers/leadership photo: (left to right) Ethan D. Leder, Trustee, Johns Hopkins University; Peter Kovler; Ralph H. Hruban, M.D., Baxley Professor and Director of Pathology, Johns Hopkins Medicine; Judy Kovler; Andrea L. Richardson, M.D., Ph.D., Inaugural Peter and Judy Kovler Professor in Breast Cancer Research; Landon S. King, M.D., Executive Vice Dean, Johns Hopkins University School of Medicine; Carolyn C. Carpenter, M.H.A., F.A.C.H.E., President, National Capital Region, Johns Hopkins Health System; Hasan A. Zia, M.D., M.B.A., F.A.C.S., President and Chief Operating Officer, Sibley Memorial Hospital

THE ALLEN VALENTINE PATHOLOGY EDUCATIONAL SYMPOSIUM

The Johns Hopkins Department of Pathology held its tenth annual education symposium from September 13-15, 2022, with more than 650 virtual attendees. To mark this milestone and recognize the leadership, guidance, and support needed to successfully implement and sustain this department-wide educational event, the symposium has been renamed "The Allen Valentine Pathology Educational Symposium," in honor of Al's vision and dedication to staff enrichment. Dr. Redonda Miller bestowed this welldeserved recognition on Al at the start of our keynote presentation-Our Shared Stories-by Dr. Ralph Hruban.

A big round of applause also goes to the dedicated members of the symposium

UNUSUAL OBSESSIONS

Dr. Jonathan I. Epstein

There is a natural affinity between the way a photographer sees through the lens and how a pathologist looks under the microscope. When we analyze cases microscopically, we first look at the slide at low magnification for patterns and then proceed to higher magnification for specific details. This is similar to photography where the photographer identifies a composition that is photogenic, yet then looks at the potential image in greater depth to see if the quality of the lighting, color, and other details work to make it a memorable photograph.

Through his photography, Dr. Jonathan Epstein has also gained much experience using Photoshop to "clean up" photomicrographs for the pathology textbooks he has authored. What is generally not known is that Ansel Adams and other giants of photography also utilized techniques to improve their images. For example, in the darkroom they used extensive dodging and burning to lighten or darken areas of their photographs. Photoshop is the modern darkroom. Mastering and applying various aspects of Photoshop's techniques planning committee, chaired by Lorraine Blagg and Mickayla Karikari, for their outstanding work to produce and support three days of professional and informative programming. As it has been since 2020, this year's symposium was again a virtual event covering a wide variety of topics with robust participation from our laboratory staff, faculty, residents, fellows, and leadership. The findings from a study of COVID-19 antibodies in healthcare workers were presented as were new advances in immunohematology, hematology, troponin, and toxicology testing. Also highlighted were the important roles of pathology assistants and histology technicians play in the Department, as well as reflections on our



Ralph Hruban, Al Valentine and Redonda Miller

history and the significant contributions made to microbiology by women at Hopkins. Other sessions ranged from practicing yoga breathing exercises to discussing the effect of the pandemic on our children.



Jonathan Epstein getting the perfect shot.

to his travel images compliments Dr. Epstein's photography, although he doesn't use photomanipulation to alter the essence of the image. In this regard, he is indebted to have worked, and still closely work with Norm Barker who has helped him over the years with improving his skills in Photoshop. Dr. Epstein is also forever grateful to Norm for creating some incredible poster-sized composite photographs that hang in his house along with many other of his favorite photos that he now displays as metal prints.

When Dr. Epstein travels, he always make a point to set aside extra time to take advantage of the unique sites, culture, and people that each country has to offer. He is always looking out the windows when being driven in a car, and will occasionally ask the driver to stop when he sees an image that catches his attention, which is what happened with a photo of a woman in the rice field in Vietnam. On some trips, he will specifically plan a side-trip for an opportunity to take unique photographs. As part of a trip to Japan in the winter, he flew to Hokkaido in northern Japan to photograph red-crowned cranes in subzero weather. Several photographs of these graceful magnificent birds now adorn his bedroom which he feels was worth his near frostbitten hands at the time. In addition to photography of nature, Dr. Epstein loves taking photos of people in other countries. At first, he was uncomfortable doing so, but over the years he has developed several techniques to do so as a culturally sensitive photographer. He gets tremendous joy and gratification from his photography and he is grateful that his profession has enabled him to fuel this passion.

PATHOBIOLOGY GRADUATE PROGRAM



Carolina Duques,

B.S., grew up in Canada and earned her B.S. from Cornell University in 2018. In college, Carolina became interested in

host-pathogen interplay, joining Dr. Elia Tait-Wojno's lab to investigate the role of ILC2s in allergy and helminth infection. During summer breaks, she worked in Dr. Elena Verdú's lab at McMaster University to further explore the hostpathogen interplay from the pathogen perspective, investigating the effects the proteolytic activity of microbiota on the development of various enteropathies. After graduating, Carolina spent a year working at the Universidad de Antioquia in Colombia, evaluating the mechanism of action of various potential antileishmanial drugs. This work sparked her interest in neglected tropical diseases and, in 2020, brought her to Johns Hopkins to pursue her M.D. At Hopkins, she began working with Drs. Robert Gilman and Monica Mugnier to identify potential biomarkers for Chagas disease progression. Her passion for research grew and she was inspired to further her training and research experience and pursue her Ph.D. in the Pathobiology program.

Our Pathobiology Ph.D. students are trained rigorously in human disease pathology, basic cell biology, molecular biology, genetics, microbiology and mechanisms using real human specimens; their research is continuously benchmarked against this "gold standard" of clinical disease.

This training approach leverages our clinical roots in the Department of Pathology at Johns Hopkins—the #1 NIH-funded Pathology department in the country—which gives our students unparalleled access to human tissues and specimens. Thus, the work of our students remains grounded in human disease pathology from start to finish.



Tasnim Syakirah, M.S., is from Malaysia and completed her B.S. at the University of Birmingham, United Kingdom. Her undergraduate research

focused on infectious disease pathology and surveillance through studying immune modulating viral proteins as well as the detection of viral DNA in the environment. She earned her master's degree in immunology at the University of Oxford where her thesis research was on the pathogenic role of neutrophil extracellular traps in COVID-19. After graduating, Tasnim worked at Imperial College, London, as a research assistant in the Singanayagam Lab in the Department of Medicine to elucidate the role of the respiratory microbiome on the early, innate immune response to viral infection. Tasnim's research interests are in understanding infectious disease host-pathogen interactions. She is also passionate about STEM education and mentorship for women, people of color, and international students. Tasnim is the Margaret Lee student for the 2022-2023 academic year.



Aaron Lewkowicz, B.S., originally from Africa, worked on the frontline of healthcare at Hennepin County Medical Center in Minnesota for five

years, inspiring him to gain a better understanding of disease and complete his bachelor's degree in clinical laboratory science from Northern Michigan University (NMU). While at NMU, he completed a clinical internship at the Organization of Saint Francis Hospital to obtain his ASCP Medical Laboratory Technician license, and he also discovered his passion for research, studying nasal bacterial colonization in the lab of Dr. Paul Mann. Aaron then began independent research under the mentorship of Dr. Mann, developing novel molecular assays that can be used at a patient's point of care to increase the safety of individuals prior to hospital admission or invasive procedures. In 2017, Aaron worked as a summer undergraduate researcher at the

Mayo Clinic, where he assisted Dr. Andrew Rule with morphometric analysis study of kidney biopsies to elucidate the effects of aging and disease on the kidney. After graduating from NMU, he joined the lab of Dr. Daniela Verthelyi at the U.S. Food and Drug Administration as an ORISE Fellow, studying newly emerging diseases and assisting in developing animal models for pathogens, including SARS-CoV-2, Zika virus, and Ebola, to understand their pathology, identify biomarkers of disease progression, and evaluate therapeutics. In 2020, Aaron began leading a study, supported by the FDA's Perinatal Health Center of Excellence, to identify the tropism of Ebola virus in the placenta and assessing whether antibody therapeutics can clear infection from this immuneprivileged site. He is excited to continue his training in the Pathobiology program at Hopkins.



Jin Liu, M.D., is from Gansu Province, China, and earned her medical degree from Wuhan University School of Medicine in 2019. She then came

to Johns Hopkins as a postdoctoral fellow in the lab of Dr. Irina Burd investigating CD8+ T-cell heterogeneity in the placenta during maternal inflammations and infections, also learning to appreciate the value of immuno-homeostasis in fetal brain and placenta. Jin decided to pursue further training in immunopathology and is intrigued by the integrative discipline and translational rotations of the Pathobiology program. She is excited to work on her Ph.D. and to continue investigating the mechanisms of disease dysregulation and dysfunction.



Kin Israel Notarte, M.D., M.S., is from the Philippines. He earned his B.S. from Silliman University, and both

his M.S. and M.D.

from the University of Santo Tomas (UST) in Manila. He has published several research papers in areas encompassing medicinal chemistry and pharmacology, particularly in the discovery of bioactive compounds with



ELLA OPPENHEIMER LIBRARY

Patsy Perlman, the daughter of Dr. Ella Oppenheimer, and her family visited the department and exchanged many memories with Dr. John Boitnott. Here she is pictured with Drs. Hruban and Boitnott in the Ella Oppenheimer Library.

neuroprotective, anticancer, anti-infective, and immunomodulatory properties. His master's thesis explored the cytotoxic and trypanocidal activities of marine fungi. During the COVID-19 pandemic, he worked under Professor Allan Patrick Macabeo at UST to identify natural products that could antagonize SARS-CoV-2 host cell entry and replication, employing computational techniques. While in medical school, Kin used evidence-based medicine to uncover the effects of age, sex, serostatus, and underlying comorbidities on humoral response post-SARS-CoV-2 mRNA vaccination, under the mentorship of Dr. Brandon Michael Henry of Texas Biomedical Research Institute in San Antonio. Kin was also a visiting researcher at the School of Advanced Science and Engineering at Waseda University in Tokyo, Japan, and at Seoul National University in Korea. Prior to medical school, he was a lecturer in the Department of Biological Sciences at both UST and the De La Salle University Manila.

BLAST FROM THE PAST From page 8

Perhaps a trick question, this Johns Hopkins Pathology building (the below is circa 1919) no longer exists. A fire broke out on the fifth floor of the building on January 19, 1920, and as described by W.G. Macallum:

"Although it was extinguished, the whole laboratory was much damaged by the streams of water poured down through all the rooms. The pathological records were saved, but most of the old bacteriological records were destroyed. Nevertheless, most of the work was continued there for the next two years. In the meanwhile, the General Education Board of the Rockefeller Foundation gave \$400,000.00 toward a total of \$625,000.00 to be raised by the University for a new pathological laboratory and, in 1922, the whole laboratory was torn down and a new building begun. For this I prepared all the plans, drawing them to scale, and the architect, Mr. Joseph Evans Sperry, was good enough to follow these plans precisely.

In November 1923, the new building was formally opened, as described in a reprint published a little later (1925), and work has continued there without any changes in the building up to the present time except that the museum which was housed in the large room designed for that purpose, has been distributed in the ten teaching rooms on the ground floor and the large room arranged for clinical pathological conferences, etc., with lantern demonstrations. The fiftieth anniversary of the Johns Hopkins University was held October 22 and 23, 1926, and on the evening of October 22, 1926, there was a reunion of the Pathological Staff, as far as it was possible to reassemble the former members, at a supper in the library of the new building. Professor Andrew J. Balfour, Director of the London School of Hygiene and Tropical Medicine, and R. T. Leiper, one of his associates, were guests."



Please visit the Pathology website for more history of this building. https://pathology.jhu.edu/department/about/history/1885-1931.cfm

Everything grows when everyone gives.

A gift from your will, trust or retirement plan will help ensure that the Department of Pathology remains a leader in advancing research and making new discoveries for generations to come.

To learn more, please contact: Amy Helsel, Senior Director of Development and Alumni Relations Department of Pathology 410-292-4396 ahelsel@jhmi.edu giving.jhu.edu/giftplanning



NEW GRANTS AND CONTRACTS AWARDED TO PATHOLOGY FACULTY

10/08/2021 - 10/07/2022

Faculty Member	Award Type	Agency	Dates	Total Funding
Asrani, Kaushal	Grant	Department of Defense	07/01/2022 - 06/30/2025	982,500
Baras, Alexander	Contract	Path AI Inc	12/03/2021 - 02/02/2024	907,500
Bettinotti, Maria	Contract	Inova Health Care Service - Service Agreement	02/23/2022 - 12/31/2023	15,316
Carroll, Karen	Contract	Becton-Dickson	07/01/2022 - 06/30/2023	17,459
Carroll, Karen	Contract	Great Basin Scientific Inc	06/15/2022 - 06/14/2023	61,794
Carroll, Karen	Contract	Meridian Bioscience	02/11/2022 - 12/31/2022	44,786
Carroll, Karen	Clinical Trial	Scanogen	12/10/2021 - 12/09/2022	5,883
Cihakova, Daniela	Contract	CSL Behring	12/08/2021 - 12/07/2024	1,129,521
Clarke, William	Contract	Becton-Dickinson	09/20/2021 - 09/19/2022	101,335
Clarke, William	Contract	Becton-Dickinson	08/30/2021 - 12/31/2022	110,998
Clarke, William	Contract	Thermo Finnigan, LLC	08/18/2022 - 08/17/2024	165,550
De Marzo, Angelo	U54 Grant	NIH/NCI	09/15/2022 - 08/31/2027	7,373,115
Eshleman, James	Grant	Stringer Foundation	07/01/2022 -06/30/2023	150,000
Goggins, Michael	U01 Grant	NIH/NCI	09/09/2022 - 08/31/2027	3,614,371
Ho, Cheng-Ying	K08 Grant	NIH/NINDS	01/01/2022 - 02/28/2023	192,456
James, Aaron	R21 Grant	NIH/NIAMSD	08/18/2022 - 07/31/2024	404,048
Larman, Harry	Contract	Immuneid	10/19/2021 - 10/19/2022	26,254
Larman, Tatianna	Grant	Basic Cancer Research Foundation	07/01/2022 - 06/30/2023	118,000
Ling, Jonathan	Grant	Technology Development Corporation	02/10/2022 - 11/10/2022	115,000
Lotan, Tamara	Grant	Prostate Cancer Foundation	11/11/2021 - 11/10/2024	1,340,000
Lotan, Tamara	Grant	Department of Defense	07/01/2022 - 06/30/2025	1,031,055
Lotan, Tamara	Grant	Department of Defense	07/01/2022 - 06/30/2025	818,750
Maynard, Janielle	Grant	Pacreatic Cancer Action Network	07/01/2022 - 06/30/2024	250,000
Mostafa, Heba	Contract	Qiagen	07/01/2022 - 06/30/2023	101,927
Parrish, Nicole	Contract	Doterra International	02/17/2022 - 02/16/2023	128,653
Parrish, Nicole	Contract	Janssen Research and Development	07/06/2021 - 07/05/2026	7,500
Roberts, Nicholas	Grant	Department of Defense	09/01/2022 - 08/31/2025	818,750
Roden, Richard	Grant	Department of Defense	07/01/2022 - 06/30/2024	409,375
Ronnett, Brigitte	Contract	Merck Sharp and Dohme LLC	02/18/2022 - 12/31/2026	300,000
Schneck, Jonathan	Contract	Sanofi-US	04/15/2022 - 04/14/2023	148,481
Shih, le-Ming	Grant	The Honorable Tina Brozman Foundation	01/01/2022 - 12/31/2023	300,000
Simner, Patricia	Contract	MDC Associates LLC	08/06/2021 - 12/22/2022	148,721
Simner, Patricia	Grant	DHHS/CDC	09/30/2021 - 09/29/2026	369,984
Simner, Patricia	Contract	Biomerieux Inc	02/10/2022 - 03/09/2024	77,102
Simner, Patricia	Contract	APIS Assay Technologies LTD	05/05/2022 - 11/04/2023	118,721
Sokoll, Lori	Contract	Abbott	09/08/2022 - 09/07/2023	13,266
Tobian, Aaron	R01 Grant	NIH/NIDDKD	04/01/2022 - 03/31/2027	3,647,878
Wong, Philip	R33 Grant	NIH/NINDS	09/01/2022 - 08/31/2024	1,267,418
Wood, Laura	Grant	Department of Defense	09/15/2022 - 09/14/2025	620,588
Wood, Laura	Contract	IPMN Global Research Foundation	08/19/2022 - 08/18/2024	150,000
Wood, Laura	Grant	Lustgarten Foundation, Inc.	09/01/2022 - 08/31/2025	2,397,114
Wood, Laura	U01 Grant	NIH/NCI	09/15/2022 - 08/31/2027	2,704,222
Zhang, Hui	U24 Grant	NIH/NCI	06/01/2022 - 05/31/2027	5,715,583
Zhang, Hui	Contract	Univ of Arkansas for Medical Sciences	02/08/2022 - 02/07/2023	5,180
Zhang, Sean	Contract	IMMY	07/25/2022 - 07/24/2023	62,216
Zhang, Zhen	U2C Grant	NIH/NCI	08/01/2022 - 07/31/2027	4,433,186
			TOTAL	\$42,921,556

PATHOLOGY WEB NEWS

Since last winter, many older ColdFusion web pages and sub-sites have been converted to the new design in Craft. Major highlights include:

- A new modern design for the News page: https://pathology.jhu.edu/ about/news. It is easy to navigate and mobile friendly with the ability to navigate to the last five years of archives with a dropdown on the page.
- A new look for Featured Publications: https://pathology.jhu.edu/research/ publications. The improved design uses an accordion that allows all publications for each division to appear on one page with a dropdown to easily navigate to past years' publications.
- Redundant and multiple pages for Grand Rounds were consolidated into a single page: https://pathology.jhu. edu/education/grand-rounds. The new page includes a simple tabular format for information about future and past sessions.
- A completely redesigned Internal Users page: https://pathology.jhu.edu/ internal-users/. This page now uses content restriction logic based on access from a Hopkins device vs. a non-Hopkins device.



 The Division of Neuropathology has a newly designed, responsive division website https://pathology.jhu.edu/ neuropathology/. This is a sister site to Department website with streamlined content and menu.



YOUNG SCIENTIST IN TRAINING PROGRAM

The Pathology Department collaborated with the Paul Lawrence Dunbar High School to work with Baltimore City high school students in the Young Scientist in Training (YSIT) summer program. Pathology staff and faculty members prepared sessions on pathology careers, a "day in the life" of a pathologist, and hands-on activities. Pathologists Charles Steenbergen, Marissa White and Laura Wake and medical technologist Yulanda Mitchell led the interactive sessions with the students, including examination of gross specimens and examining slides under the microscope. Thank you to all the volunteers who made this year's program a success!

Art in Science – Science in Art

An Exhibition of Scientific Photographs from Medical Illustrators

A new exhibit located on the first floor of the Pathology Building highlights the beautiful work of medical illustrators. The main goal of good medical/scientific illustration is to teach a concept to a specific audience with accuracy and clarity. What's different about this exhibit is that it shares the work of illustrators who have given up their traditional pencil and paint brush and are using the camera lens to capture and communicate science. This exhibit showcases the photography work of graduate students in the Department of Art as Applied to Medicine's Communications Media course taught by faculty member Norm Barker, M.A., M.S.

The modern medical illustrator is trained to use several different types of media to best communicate their message, whether it be a traditional pen and ink drawing, full color illustration, computer animation, photograph, or video. As biocommunicators, medical illustrators use the most appropriate tool for the scientific idea they are trying to communicate.

The camera is an extremely powerful instrument in the artist's toolbox. Whether using the camera for making quick notes or documenting specimens for accurate size, shape, and color, familiarity with the controls of the camera is imperative for quality image capture. Many of these extremely talented artists have never taken a photography course and don't even own a camera, other than the one in their cell phone. The emphasis of the course is hands-on. With the aid of image assignments, lectures, demonstrations, and readings, students get to use their experience as illustrators in a different mode of communication—photography. Using all of the traditional strategies of design, scale, and lighting, along with informative text, they communicate to the viewer what's important and create the feel of three-dimensional objects on a two-dimensional surface. Imagine a fullpage infographic in an issue of *National Geographic Magazine* and that's what you will see in this exhibit.



The Artists The Science of Candles, Gilbert Chen Aloe Vera, Jenny Wang Integumentary System of Chickens, Kellyn Sanders Sundew, Morgan Summerlin







If you are interested in seeing more fantastic art work, take a short walk over to the first floor of the Phipps Building and enjoy the annual Graduate Exhibition with more than one hundred stunning examples of art that communicates science.

2022 AWARDS



Syed Z. Ali, M.D., received the 2022 *L.C. Tao Educator* of the Year Award from the Papanicolaou Society of Cytopathology. This award is presented to

a pathologist in recognition of his/her meritorious service and contributions to the field of cytopathology education. Dr. Ali was also selected as the first recipient of the Distinguished Service Award presented by the Pakistani-American Pathologists' Society (PAPS). The society's highest honor, it recognizes a PAPS member who has sustained and prominent impact in the field of pathology.



Norm Barker, M.A., M.S., R.B.P., received

the 2022 Ranice W. Crosby Distinguished Achievement Award at this year's Johns Hopkins School of

Medicine Convocation. The Crosby Award is presented for scholarly contributions to the advancement of art as applied to the medical sciences. Mr. Barker also received a Judge's Choice Award and an Award of Excellence in the Still Image Division–Natural Science Photography for his image of *Calycocerase tarrantens*, which was exhibited at the 2021 BioImages Salon sponsored by the BioCommunications Association.



Jackie Birkness-Gartman, M.D.,

received the *67*' *Open Access Award.* The Association of Pathology Chairs (APC) established the Society

of '67 to support programs that foster the development of academic pathology and future leaders in academic practice, education, and research. The award seeks to promote the publication of high-quality original scholarship in a peer-reviewed journal by authors at an early stage of academic development.



Michael J. Borowitz, M.D., Ph.D., was awarded the *Michele Raible Distinguished Teaching Award* in Undergraduate Medical Education by the

APC. The Raible Distinguished Teaching Award honors pathology educators who demonstrate a range of contributions at local, regional, and national levels in undergraduate medical education.



Angelo De Marzo, M.D., Ph.D., was the 2022 winner of the School of *Medicine's Professors' Award for Excellence in Teaching* in Biomedical Sciences.

The award, presented at graduation, was established in 1981 by the Advisory Board of the Medical Faculty and honors a member of the faculty whose teaching is judged to have had a profound effect on students in the School of Medicine.



Scott Krummey, M.D., Ph.D.,

was named to the *American Journal of Transplantation* Editorial Fellowship Program, a year-long editorial

experience in the publication and peerreview process for fellows and junior faculty in transplant-related fields. Each fellow will spend time developing peerreview skills and knowledge by assessing and describing manuscripts' significance while enhancing their verbal and writing skills through a series of experiences.



Heba Mostafa, M.D., Ph.D., D(ABMM), was the 2022 recipient of the Pan American Society for Clinical Virology's

Young Investigator Award. The Young

Investigator Award recognizes a scientist who has made significant contributions to the field of clinical or diagnostic virology in the early years of their career.

Avi Rosenberg,

M.D., Ph.D., received the 2022 *Gloria Gallo Research Award* from the Renal Pathology Society. The award is presented annually

to an investigator who made significant research contributions to the field of renal pathology.



Allen Valentine,

M.B.A., was presented with the *Ronald R*. *Peterson Achievement Award*. This award is presented annually to a leader at Johns

Hopkins Medicine who exemplifies exceptional dedication and outstanding career contributions, as well as unwavering integrity and enduring mentorship.



Christopher VandenBussche, M.D., Ph.D., received

a *Johns Hopkins Catalyst Award* from the Office of the Provost. These awards support the

research and creative endeavors of early career faculty across Johns Hopkins. The goal of the Catalyst Award is to launch these faculty members on a path to a sustainable and rewarding academic career.

Marissa White,



M.D., received the Johns Hopkins University 2022 Diversity Leadership Council's *Diversity Leadership Award* for

her outstanding commitment to diversity and inclusion. This award is given annually to exceptional individuals or groups who have fostered diversity in their institutions or divisions. In September, Dr. White also accepted the Society of Black Pathologists *Vivian W. Pinn Award* for Excellence in Leadership in Pathology and Laboratory Medicine presented at the American Society for Clinical Pathology's annual meeting. This award is presented to a pathologist or laboratory professional who epitomizes those underrepresented in medicine.

NEW JOHNS HOPKINS PATHOLOGY APP

We have created a new educational iPad app! Drs. Jacqueline Birkness-Gartman, Elizabeth Montgomery, and Kiyoko Oshima developed **The Johns Hopkins Atlas of Appendiceal Pathology.** This app, as well as our other iPad apps, is available through the Apple App (iTunes) Store.

This app features more than 300 annotated, high quality photos covering a variety of neoplastic and non-neoplastic diagnoses, as well as an interactive quiz and flashcards.

We hope you enjoy our new app! Please watch for the following topics to be covered in future JHU Apps: Esophagus, Stomach, Small Intestine, Large Intestine, Anus, and Eye Pathology.

Additional Johns Hopkins Pathology Atlases currently available in the Apple App Store include:

- The Johns Hopkins Atlas of Pancreatic Pathology
- The Johns Hopkins Atlas of Pancreatic Cytopathology
- The Johns Hopkins Atlas of Neuropathology
- The Johns Hopkins Atlas of
 Prostate Pathology
- The Johns Hopkins Atlas of Ovarian Pathology
- The Johns Hopkins Atlas of Thyroid Pathology
- The Johns Hopkins Atlas of Kidney Transplant Pathology











Director's Corner from page 2

"The possibilities and the colleagues." – AARON TOBIAN, M.D., PH.D.

"Compassion of teams and diversity!" – VARSHA TOMAR

"Great opportunities." – NATALIE WALLACE

"Because of negative selection factors. If you work at Hopkins, you work for a salary that is not very high, you move to a city that you never thought you would live in, and you come to work every day in a neighborhood with its challenges. What kind of person does that? A person who wants to make a difference with their life." – PATRICK WALSH, M.D.

"Diversity and approachability of all staff. Such a beautiful learning environment." – BRENDA WELTY

"Humility and diversity." – MARISSA WHITE, M.D.

Diversity, collegiality, collaboration, and dedication to research, to teaching, to patient care, and to supporting each other. Exceptional people and a rich (but not perfect) heritage. It all adds up to hope and possibilities. What an absolutely wonderful place to work!

Ralph Hruban, M.D. Baxley Professor and Director

+An important note— I do not receive royalties for the book. This was a "labor of love forHopkins."



Department of Pathology

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Department of Pathology website: http://pathology.jhu.edu

CALENDAR OF EVENTS

March 11, 2023 Fellowship Fair United States and Canadian Academy of Pathology 112th Annual Meeting New Orleans Ernest N. Morial Convention Center New Orleans, Louisiana

March 12, 2023, 5:30 p.m. – 7:30 p.m. Pathology Alumni Reception

United States and Canadian Academy of Pathology New Orleans Ernest N. Morial Convention Center New Orleans, Louisiana

March 28, 2023 2023 Pathology Young Investigators' Day

Turner Auditorium Johns Hopkins University School of Medicine Baltimore, Maryland

June 6, 2023, 5:30 p.m. Pathology Awards Presentation Turner Auditorium The Johns Hopkins Hospital Baltimore, Maryland

2022 Pathology Young Investigators' Day Awardees

CONGRATULATIONS TO THE TOP AWARD RECIPIENTS

Basic: Diego A. Lema, M.D., Ph.D. Clinical: Harsimar Kaur, M.B.B.S. Translational: Liwei Cao, Ph.D.

FOR EXCELLENCE IN BASIC RESEARCH

Yunong Bai Diego A. Lema, M.D., Ph.D. Chansu Park, Ph.D. J. David Peske, M.D., Ph.D. Cornelia Peterson, D.V.M., Ph.D. Monali Praharaj, B.S. Nianbin (Nelson) Song, Ph.D. Robin Welsh, Ph.D., M.Sc.

FOR EXCELLENCE IN CLINICAL RESEARCH

Harsimar Kaur, M.B.B.S. Michael W. Mikula, M.D. Taejoon Won, Ph.D.

FOR EXCELLENCE IN TRANSLATIONAL RESEARCH

Liwei Cao, Ph.D. Carli Jones, B.S. Kristen Malebranche, B.S. Puwanat ("A") Sangkhapreecha, B.S. Yeh Wang, M.D.