JOHNS HOPKINS MEDICINE

DECEMBER 2021

PATHWAYS

JOHNS HOPKINS PATHOLOGY

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DIRECTOR'S CORNER

Perhaps the greatest philosopher of medicine, and the first chair of the department of medicine here at Johns Hopkins, Sir William Osler, wrote, "To have lived through a revolution, to have seen a new birth of science, a new dispensation of health, reorganized medical schools, remodeled hospitals, a new outlook for humanity, is not given to every generation." (*Johns Hopkins Hospital Bulletin*, 1913;24:167-71) These words keep reverberating in my mind as I think about the impact the COVID-19 pandemic has had on our department and alumni.

We were hit by something that, at least I, never imagined. Too many fell ill, too many died, too many had their work interrupted, and too many had their family lives changed forever. Our confidence was profoundly shaken.

While it is natural to focus on our loses, and there have been many, Osler's words lead me to realize that we should also be thinking of the pandemic in a historical perspective. Looking back, I am so deeply proud of our department. Our staff, trainees, and faculty helped shepherd our patients and our institution through an epic struggle. Everyone contributed in their own way. I so appreciate everyone's contributions, and, as we slowly start to look back (without jinxing things) and begin to marvel at what we have lived through, we should appreciate that we have come through—a once in a generation struggle. Although we were profoundly tested, we should celebrate that we somehow rose to the challenge, and there is now hope again.

Where did the energy, the drive, and the internal strength to get through this come from? Turning back to Osler, we recall that he often inscribed on gifts he gave to others these words from the poem "Abou Ben Adham" by Leigh Hunt: "Write me as one that loves his fellow men." I believe that it is a love of our fellow men and women that allows us to weather this storm.

In this *Director's Corner*, I write each of you as one that loves our fellow men and women. ■

"Looking back, I am so deeply proud of our department. Our staff, trainees, and faculty helped shepherd our patients and our institution through an epic struggle."

Dr. Ralph Hruban

Cover Photo: Dustin Santos and Jessica Kahler, from the Cytotechnology Division

Cytopathology:
Big Diagnoses from Small Specimens

CYTOPATHOLOGY is about "doing more with less" when it comes to tissue sampling for microscopic diagnoses and ancillary testing. It employs two key techniques to obtain diagnostic cellular material, "exfoliative" (brushing, scraping, washing or spontaneous shedding of cells) and fine-needle aspiration (FNA). FNA is minimally to noninvasive and furnishes rapid, accurate and comprehensive diagnoses. Cytopathology plays a pivotal role in the clinical management of our patients by providing critical information that not only relates to diagnostics but for prognostics and therapeutics ("targeted therapies") as well. Cytopathologists are at the forefront of patient care and interact closely and frequently with the clinical team, performing a critical function as member of the multidisciplinary team treating the sick patient.

Standing (from left to right): Rana Aldrees, Efrain Ribeiro. Seated (from left to right): Qing Kay Li, Syed Ali, Peter Illei, Christopher VandenBussche, Zahra Maleki.

The laboratory was established by the great Dr. John Kingsbury Frost in 1956, making it one of the first cytopathology laboratories in the US. A pioneer, Dr. Frost served as its first director until his death in 1990. To honor his enormous contributions to Hopkins, the lab was subsequently named as "The John K. Frost Cytopathology Laboratory." Ensuing divisional directors included Drs. Yener S. Erozan, Dorothy L. Rosenthal and Douglas P. Clark. Presently, the Cytopathology Division is directed by Dr. Syed Z. Ali, who took over the role in 2011.

The Cytopathology Division is served by five full-time faculty with diverse clinical and research interests, all of whom enthusiastically advance the tripartite mission of Johns Hopkins—delivering the best clinical care, promoting original research and discoveries, and passionately training the next generation of young pathologists. Dr. Syed Ali, professor, has major expertise in thyroid and pancreatic disease as well as in new and innovative teaching tools and digital imaging. Dr. Kay Li, professor, has strong clinical and research interests in molecular characterization of cancers and ways to separate aggressive from nonaggressive tumors using state-of-the-art molecular proteomics, as well as translational research in the histological subclassification of lung cancer. Dr. Zahra Maleki, associate professor, is an expert in cytopathology of salivary gland disease as well as a well-known expert studying the subtypes and behavior of HPV-related head & neck cancers. Dr. Peter Illei, associate professor, is a leading expert in thoracic pathology of both neoplastic and nonneoplastic lung disease, as well as a national expert on molecular analysis of lung samples for new and evolving targeted therapies. Dr. Christopher VandenBussche, associate professor, is internationally known for his expertise in genitourinary cytopathology and serous effusion cytology, as well as playing a leadership role as an effective educator.

The Cytopathology Division has produced many pioneers and leaders in the field. Drs. Frost, Erozan, Gupta, Rosenthal and Ali have all served as the president of the American Society of Cytopathology (ASC), the largest professional organization of the field in the world. Additionally, Dr. Rosenthal had also served as the president of the International Academy of Cytology (IAC), for which Dr. Ali currently is vice president. Several faculty have been honored with the two highest awards in the cytopathology world: the American Society of Cytopathology's Papanicolaou Award, (Drs. Frost, Erozan, Gupta and Rosenthal); and the International Academy of Cytology's Maurice Goldblatt Award (Drs. Frost, Gupta, Erozan, Rosenthal and Ali). Additionally, all present faculty serve as members or chairs of various key committees of the American Society of Cytopathology, the International Academy of Cytology, the College of American Pathologists, the American Society of Clinical Pathology, and the United States and Canadian Academy of Pathology.

CLINICAL SERVICE

In addition to the five full-time cytopathologists, the John K. Frost Cytopathology Laboratory also consists of 10 cytotechnologists, four cytopreparatory technicians, and five administrative staff members who are all dedicated to providing the highest level of patient care. The laboratory processes a varied caseload consisting of approximately 16,000 gynecologic, 7,000 nongynecologic and 5,500 fine-needle aspiration cases, as well as approximately 2,500 consultation cases from all over the world. It is this diverse mix of cases that ensures the daily workload is always diagnostically challenging and of key educational value for our trainees. The everyday clinical work is managed by three separate services—an in-house case sign out team, an FNA team and a third team managing consultation (second opinion) cases. The three teams work in tandem at the cytopathology sign out room, located across from the department's historic library.

The "backbone" of our clinical service is our strong team of 10 outstanding cytotechnologists. The cytotechnologist's job description at Johns Hopkins has evolved over the last ten years. We have been the pioneers in redefining their new role, a model that has been subsequently adopted by numerous other major cytopathology laboratories in the country. With the slow decline of the gynecologic Pap test volume, our cytotechnologists have been able to focus more of their efforts in providing rapid on-site evaluation (or "ROSE") for adequacy of the FNA procedures. Our cytotechnologists rotate through the ultrasound, CT imaging, the endocrinology and otolaryngology clinics, as well as attending EBUS-guided (thoracic/lung) and EUS-guided (pancreas and upper gastrointestinal tract) FNAs in the endoscopy suite. These are the places where they assume the role of the "Cytopathologists' Extender" and interact with our clinical colleagues when procuring cytologic specimens. It is not unusual for them to spend more time attending these procedures than evaluating cases at their own microscopes. On average, they attend 150 to 200 procedures per month.

Standing (from left to right): Syed Ali, Efrain Ribeiro, Rana Aldrees. Seated (from left to right): Christopher VandenBussche, Zahra Maleki, Qing Kay Li, Peter Illei.

These highly trained professionals now perform nearly 100% of the rapid onsite evaluations for adequacy of our FNAs, a step critical for ensuring not only a satisfactory sample but also for triaging the aspirates for ancillary testing, as needed (such as flow cytometry, molecular testing, serology, microbiology cultures, etc.). In the remainder of their time, our cytotechnologists perform their traditional role of meticulous "screening" of glass slides of all type of cytopathology cases, carefully "marking" the lesional cells for the cytopathologists to evaluate and sign out.

The diversity of cytopathologic cases (neoplastic, nonneoplastic, infectious, etc.) is a core strength of our clinical service. We evaluate more thyroid, pancreas, and lung cases than do most other laboratories in the country. Additionally, the consultation service gets many highly complex cases with many of them sent to various faculty as directed consults. One well-known fact about cytopathologists is that they are considered "generalists" in pathology, as they manage disease entities from most of the anatomic sites and organ systems of the body. This provides them with a unique advantage and edge over other pathologists, i.e., a frequent and close interaction with a diverse group of clinical experts from fields such as endocrinology, pulmonology, gynecology, etc. The menu of ancillary tests used in our practice is quite broad and hence we work very closely with other areas of pathology such as molecular, microbiology, flow cytometry, chemistry, and the immunohistochemistry lab.

The Cytopathology Division is located primarily on the fourth floor of the Pathology Building. The laboratory is currently undergoing a long overdue full-scale renovation project. Once completed, our "wet lab" (named approximately 10 years ago as "Gary Gill's Laboratory" after the famed scientist and cytotechnologist Mr. Gary Gill, a 1964 graduate of The Johns Hopkins Hospital School of Cytotechnology and famous for the invention of Gill's hematoxylin, the standard stain used worldwide for cytology and histology.) The lab will nearly double in size from 427 to 737 square feet. This larger "wet lab" will provide a safer and more comfortable work environment for the cytopreparatory technicians. There will also be sleek, modern finishes throughout resulting in a fresh update as well as increasing the overall efficiency of the daily workflow. The extra bench space will also ensure a likely introduction of new cutting-edge technologies, as needed. The aspiration service is managed from the FNA suite located on the mezzanine level of the Zayed building (adjacent to the Cancer Center's Weinberg building). The suite is strategically placed on the same floor as the endoscopy and bronchoscopy rooms as well as the ultrasound department located on the fourth floor of the Zayed building.

RESEARCH

The faculty in the Division of Cytopathology have diverse research interests. Dr. Ali's research interests in the cytopathology of thyroid and pancreatic tumors have resulted in many scientific papers elucidating the diagnostic pitfalls and challenges. Working with a multidisciplinary team of experts, he explores the critical role of various molecular tests in further enhancing the cytopathologic diagnoses in the "indeterminate" thyroid FNAs, helping avoid unnecessary and expensive surgical interventions such as thyroid lobectomy. His leadership roles in various cytopathology professional organizations have helped him standardize FNA diagnostic algorithms involving diseases at several anatomic sites. His major involvement is in updating nomenclature and creating a reporting system in thyroid cytopathology. The latter has been formulated to offer a uniform diagnostic and reporting approach, ultimately for better patient care. His major work is the editorship of "The Bethesda System for Reporting Thyroid Cytopathology (TBSRTC)," now in its second edition, with worldwide use, translation into seven different languages and with over 35,000 copies sold. Presently, he is revising TBSRTC with the third edition planned to be released in the summer of 2023.

Dr. Illei's research interests focus on thoracic pathology. Cytopathology is critical for lung cancer management as most thoracic malignancies and, in particular, non-small cell lung carcinomas are diagnosed in cytology samples and small biopsies. A multidisciplinary approach is critical; therefore, Dr. Illei works closely with our clinical colleagues in radiology, interventional pulmonology, and gastroenterology to optimize the procedures and to ensure adequate tumor procurement for ancillary studies. To achieve this, he and others in the lab have optimized our collection techniques for EBUS FNA by utilizing the tissue coagulum/clot method. This type of clot is made during rapid on-site evaluation with essentially no additional costs and delay to the procedure. Dr. Illei has standardized handling tissue/cell blocks in the laboratory by introducing protocols for each specimen type. By utilizing these procedures, our lab has achieved one of the highest success rates for performing comprehensive biomarker analysis in NSCLC, including NGS, comprehensive fusion testing, FISH analysis, and IHC. In collaboration with our clinical colleagues, he has published several studies looking at the role of different biopsy techniques in optimizing bronchoscopic sample collection, and he participated in a multidisciplinary effort to publish guidelines on specimen acquisition and handling of thoracic lesions endorsed by eight professional societies.

From left to right: Dustin Santos, Molly Hughes, Amber Fussell, Jessica Kahler, Christina Adams, Susan Otell.

Dr. Li's research is more basic and translational. She has worked on molecular characterization of various cancers and has explored ways to separate aggressive from nonaggressive tumors using state-of-the-art molecular proteomics, such as Solid-phase Extraction of N-linked Glycoprotein (SPEG), isobaric tag for relative and absolute quantitation (iTRAQ) and liquid chromatography tandem mass spectrometry (LC-MS/MS), and data-independent acquisition (DIA)-MS. Collaborating with a leading mass spectrometry team, she has characterized protein profiles in bronchoalveolar lavage (BAL) samples from both cancer and benign lung disease patients and compared the glycoprotein signature in BAL fluid with lung tumor tissue and in tumor tissue microarrays using several sensitive high-throughput quantitative proteomics. Her research has demonstrated that glycoproteins in BAL fluid are useful biomarkers for classifying pulmonary nodules as benign or malignant. These biomarkers could play a role in the early detection of lung cancers, particularly in patients with small lung nodules. Dr. Li is also an investigator for the NIH/NCI Clinical Proteomic Tumor Analysis Consortium (CPTAC). Her team also has helped design a novel approach to analyze global, phospho- and glyco-proteomics sequentially using a limited number of clinical specimens and at the same time provided the multiomic data from the same exact specimens for data integration and comparison. In addition, Dr. Li has performed significant translational research in the histological subclassification of lung cancer.

Dr. Maleki is an accomplished expert in salivary gland cytopathology, and has published on this topic in major scientific journals. She is also a chapter author on the widely used "The Milan System for Reporting Salivary Gland Cytopathology." She is well-known for investigating and publishing on diagnostic pitfalls and spectrum of morphologic changes observed in head & neck HPV-associated carcinomas. Her work has demonstrated that the cells prepared from aspirated material and small core biopsies

provide adequate diagnostic material for HPV testing in head and neck squamous cell carcinomas. She has also described advantages and disadvantages of different methods of HPV detection and pitfalls on p16 immunostaining. Her research also aims to improve diagnostic utility of cytopathology for lung neoplasms, addressing specimen adequacy for cytologic diagnosis and molecular profiling. Her research focuses on correlation between cytomorphologic findings of lung cancer and actionable specific molecular alterations in ALK and BRAF.

Dr. VandenBussche predominantly focuses on the study of genitourinary cytopathology and has published eight books and over 100 peer-reviewed scientific papers. He is most interested in improving the diagnosis of bladder cancer using both cytomorphology and ancillary testing on urinary tract specimens. Several of his papers were cornerstones for The Paris System for Reporting Urinary Cytology, an international standardized system that pathologists use worldwide for assessing urinary tract cytology specimens. He serves on numerous editorial boards and is an Assistant Editor for the *American Journal of Clinical Pathology,* an Associate Editor for *Diagnostic Cytopathology*, and a Section Editor for the *Journal of the American Society of Cytopathology*. Dr. VandenBussche is a member of the College of American Pathologist's Cytopathology Committee, led the Pelvic Washings chapter of The International System for Reporting Serous Fluid Cytopathology, leads two chapters for the forthcoming updated second edition of The Paris System for Reporting Urinary Cytology, and is a chapter lead for the forthcoming third edition of The Bethesda System for Reporting Thyroid Cytopathology. He served on the American Society of Cytopathology's Scientific Program Committee for four years and is currently chair of the Clinical Practice Committee.

EDUCATION

The Cytopathology Division at Johns Hopkins has always led the field in education and training nationally and internationally. The pioneering and the famed course started by Frost, "The Johns Hopkins Postgraduate Institute for Pathologists in Clinical Cytopathology," ran for over 50 years and was considered the first ever formal specialized tutorial in Cytopathology. This course trained thousands of pathologists from all over the world. An innovative digital and online educational tool was created by Dr. Ali for second year medical students using a special Dean's grant with a novel case-based approach. Drs. Tatsas, Ali, and VandenBussche authored the Johns Hopkins iPad atlases for pancreas and thyroid pathology. There have been two separate book series published with our editorship—the Springer "blue book" series with over 10 volumes and the Demos atlas series with seven volumes. Dr. VandenBussche is heavily involved in trainee education and is a course director for the Mechanisms of Disease graduate course at the Johns Hopkins School of Medicine. He has twice won the yearly anatomic pathology faculty teaching award. Most of the faculty have an active presence on social media for educational reasons. This indirectly helps our visibility as a division and helps us in better recruitment efforts for our fellowship program. Dr. Ali presently chairs the International Board of Cytopathology of the International Academy of Cytology (IAC) and is involved in restructuring the fellowship examination using more modern and innovative testing tools. The board administers the fellowship examination (FIAC) for the academy all over the world.

The cytopathology division has an ACGME-accredited fellowship that typically trains two to three cytopathology fellows a year. During their one-year fellowship, fellows sign out in-house and consultation cases and independently perform rapid on-site evaluation. Fellows have two months of dedicated research elective during which they are quite productive; most fellows publish at least two first-author peer-reviewed scientific articles during their fellowship year. For fellows that continue a career in academic medicine, many hold leadership positions and continue to publish and participate in national and international organizations. The division also has sponsored international research fellows to help promote the practice of cytopathology globally. The Yener S. Erozan and Dorothy L. Rosenthal Fellowships in Cytopathology were established to honor Yener S. Erozan, M.D. and Dorothy L. Rosenthal, M.D., both past directors of the cytopathology laboratory. In August 2017, the Division of Cytopathology unveiled a special plaque recognizing donors who have made leadership contributions of $5,000 or more in support of the Yener S. Erozan Fellowship in Cytopathology Fund. Since 2000, more than 170 donors have contributed $843,000 to build this important endowment which helps train future generations of cytopathologists by supporting a postdoctoral clinical/research fellow.

Pathology residents rotate on the cytopathology service for two or three months during their time at Hopkins, where they work closely with the faculty, fellows, and cytotechnologists. Special educational sessions have been developed by our cytotechnologists in which they teach new residents a basic approach to the more common cytopathology specimens. Resident and fellow didactics include a monthly journal club presentation as well as a semi-weekly interesting case conference (ICC). The ICC has been a long-standing educational conference and is believed to have originated in some format during the time of our laboratory's founder, Dr. John K. Frost, and subsequently evolved into its modern, weekly format under the directorship of Dr. Erozan. For each session, a trainee is responsible for preparing a series of unknown cases that have known histologic follow up. The cases are reviewed and discussed in real time by an attending and trainee who are blinded to the diagnosis. This conference served as an early method for cytology-histology correlation and its existence predates modern day quality improvement measures in cytopathology laboratories. A more in-depth discussion of the ICC can be found in the ASC Bulletin (**https://bulletin.cytopathology.org/innovative-practices-in-cytopathology-education-the-johns-hopkins-interesting-case-conference/**)

The Cytopathology division in the Department of Pathology excels in fulfilling the tripartite mission of Johns Hopkins. ■

FACULTY CHANGES 2021-2022

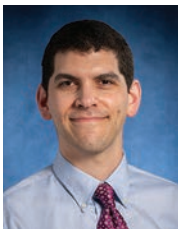
NEW FACULTY	Rank	Division
Cheng-Ying (Cherry) Ho, M.D., Ph.D.	Associate Professor	Neuropathology
Ezra Baraban, M.D.	Assistant Professor	Surgical Pathology
Jacqueline Birkness-Gartman, M.D.	Assistant Professor	Gastrointestinal/Liver Pathology
Elizabeth Crowe, M.D., Ph.D.	Assistant Professor	Transfusion Medicine
Jonathan Ling, Ph.D.	Assistant Professor	Neuropathology
Janielle Marynard, Ph.D.	Assistant Professor	Kidney-Urologic Pathology
Jaclyn Murry, Ph.D.	Assistant Professor	Molecular Pathology
Sarah Karram, M.D.	Clinical Associate	Bayview Pathology and Sibley Memorial Hospital
PROMOTIONS	**Rank**	**Division**
Thomas Kickler, M.D.	Professor Emeritus	Hematopathology
Edward McCarthy, M.D.	Professor Emeritus	Surgical Pathology
Serena Bagnasco, M.D.	Professor	Kidney-Urologic Pathology
Kiyoko Oshima, M.D., Ph.D.	Associate Professor	Gastrointestinal/Liver Pathology
Shuying Sun, Ph.D.	Associate Professor	Neuropathology
Deyin Xing, M.D., Ph.D.	Associate Professor	Gynecologic Pathology
DEPARTURES	**Rank**	**Current Location and New Role**
Fausto Rodriguez, M.D.	Professor	Chief of Neuropathology and Professor, UCLA Medical Center, Los Angeles, CA
Timothy Amukele, M.D.	Associate Professor	Vice President, Global Medical Director, ICON Laboratory Services, Farmingdale, NY
Denise Batista, Ph.D.	Associate Professor	Retired
Jody Hooper, M.D.	Associate Professor	Associate Professor and Director of Autopsy Services, Stanford University School of Medicine, Stanford, CA
Erika Rodriguez, M.D., Ph.D.	Assistant Professor	Associate Clinical Professor, UCLA Medical Center, Los Angeles, CA

Have you moved or are in the process of moving? Have you changed your email address?

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 by never sharing your name with other organizations.

NEW FACULTY



Ezra Baraban, M.D., received his medical degree from Yale School of Medicine in 2016, followed by residency training in anatomic and clinical pathology at the Hospital of the University of Pennsylvania in Philadelphia. Dr. Baraban completed an advanced fellowship in surgical pathology at The Johns Hopkins Hospital from 2020-2021, and subsequently was a fellow in genitourinary pathology. He will join the faculty in the Division of Surgical Pathology as an assistant professor in January 2022. Dr. Baraban has academic interests in genitourinary tumor pathology.

Jacqueline (Jackie) Birkness-Gartman, M.D., was born and raised in Lancaster County, Pennsylvania. She received her undergraduate degree at Johns Hopkins University and attended medical school at the University of Pittsburgh. She returned to Johns Hopkins to complete her anatomic and clinical pathology residency and an advanced fellowship in gastrointestinal and liver pathology. Dr. Birkness-Gartman joined the Division of Gastrointestinal and Liver Pathology as assistant professor in July 2021. Her research interests include esophageal, gastric, and appendiceal pathology. She also has developed online educational resources for patients, pathology trainees, and practicing pathologists.

Elizabeth (Liz) P. Crowe M.D., Ph.D., is a native of Philadelphia, Pennsylvania and graduated from Immaculata University in Pennsylvania with a B.S. in biology. She completed the M.D./Ph.D. program at Drexel University College of Medicine in Philadelphia, Pennsylvania. Her thesis work in the Molecular Cell Biology and Genetics program investigated cellular senescence in astrocytes for which she was awarded a National Research Service Award (NRSA) fellowship from the National Institute on Aging. She completed residency in anatomic and clinical pathology (AP/CP) at New York Presbyterian Weill Cornell Medicine in New York, followed by clinical fellowship training in transfusion medicine at Johns Hopkins. Dr. Crowe joined the faculty as an assistant professor of pathology, Division of Transfusion Medicine in July 2021. She is the medical director of the blood bank and will play an active clinical role in transfusion medicine and clinical apheresis services. Her research interests are in the areas of immunohematology and therapeutic plasma exchange for the treatment of neurologic disorders.

Cheng-Ying Ho, M.D., Ph.D., is a physician-scientist and board-certified neuropathologist. She received her medical degree from National Taiwan University and Ph.D. from Columbia University, followed by anatomic pathology residency and neuropathology fellowship training at the Johns Hopkins University School of Medicine. She will join the faculty in the Divisions of Autopsy Pathology and Neuropathology as an associate professor in January 2022. Her main research interest is in the pathogenesis of sensory neuropathy, with a focus on the impact of the skin microenvironment on the development of diabetic neuropathy. Her laboratory uses diverse approaches including molecular, cellular and genetic techniques to study the role of skin-derived signaling molecules in the maintenance of the cutaneous sensory nerve fibers. The lab also spends effort on development of novel therapeutics for diabetic neuropathy.

Janielle P. Maynard, Ph.D., completed her B.S. in biology and chemistry at Howard University. She earned a Ph.D. in translational biology and molecular medicine from Baylor College of Medicine where her thesis work investigated the dysregulation of P2 purinergic receptors in hepatocellular carcinoma. She joined our department as a postdoctoral fellow in 2016 where her work investigated P2 purinergic receptors in prostate cancer as well as the inflammatory tumor microenvironment and its association for prostate cancer racial disparities. Dr. Maynard joined the faculty as an assistant professor in July 2021. She will continue her work investigating immunobiological factors that contribute to cancer health disparities in racial/ethnic minorities and underserved populations as well as inflammation-associated P2 purinergic receptors and their role in cancer initiation and aggressiveness.

Jaclyn B. Murry, Ph.D., received her B.Sc. in biomedical sciences from Texas A&M University. She then completed a postbaccalaureate program in Clinical Laboratory Sciences with a specialization in Cytogenetics from the University of Texas Health Science Center at San Antonio, Texas. From there she was employed as a Cytogenetic Technologist at the Kleberg Cytogenetics Laboratory at Baylor College of Medicine. She subsequently completed her Ph.D. in the Department of Molecular and Human Genetics at Baylor College of Medicine focusing on gene-environment interactions. During your postdoctoral research at the Laboratory for Molecular Medicine at Harvard University, she sought to apply genomic sequencing in the newborn period. After completing her Laboratory Genetics and Genomics Fellowship at the David Geffen School of Medicine at UCLA, Jaclyn joined our faculty as an assistant professor in July 2021. Her clinical cytogenetics service will include prenatal and constitutional genetics and cytogenomics. Her research interests include copy number variation and chromosomal rearrangements in human disease.

NEW DEPUTY DIRECTORS

William Clarke, Ph.D., MBA, DABCC — Deputy Director, Quality and Regulatory Affairs

Dr. Clarke received his Ph.D. in Analytical Chemistry from the University of Nebraska in 2000, followed by a postdoctoral fellowship in Clinical Chemistry at the Johns Hopkins University School of Medicine. In addition, he received an MBA focused on medical services management from the Carey School of Business at Johns Hopkins in 2007. Following his fellowship training, he joined the faculty at Johns Hopkins, where he is currently a professor in the Department of Pathology, as well as the director of both Point-of-Care Testing and Clinical Toxicology for the hospital. His research interests include clinical mass spectrometry, method development and evaluation for therapeutic drug monitoring, clinical toxicology, point-of-care testing, and development/validation of biomarkers for use in drug management.

Dr. Clarke has been active in Quality Management and Regulatory Affairs for a number of years. As the Director for Point of Care Testing (POCT) for Johns Hopkins Medicine, Dr. Clarke is responsible for implementation of testing in a wide variety of settings, ensuring regulatory compliance for waived and moderate complexity testing, and working with each site for QA/QI activity in the context of POCT. In addition, he was a member of the American Association of Clinical Chemistry (AACC) Government Relations Committee from 2006-2010 (Chair, 2010) and from 2014-2019, was a member of the AMA Pathology Coding Caucus and CPT Editorial Advisory Panel, which works to establish new CPT codes. He has been a member of the CMS Advisory Panel on Clinical Diagnostic Laboratory Tests since its inaugural meeting in 2015, when it was established by the PAMA legislation, and is part of the Advanced Diagnostic Laboratory Tests (ADLT) Subcommittee of the CDLT Advisory Panel. Dr. Clarke has been a member of the CAP Toxicology Reference Committee since 2018.

As Deputy Director for Quality and Regulatory Affairs, Dr. Clarke will initially focus on maintenance of the existing quality infrastructure, while looking for opportunities to expand or enhance what already exists. In addition, he will emphasize the QI education component within the Department (including the residency special expertise track), as well as investigate ways to increase faculty/staff engagement for QI, and ensure that Pathology QI initiatives are aligned with Johns Hopkins Medicine QI priorities. A new focus for this position will be exploration of ways to engage in the area of regulatory affairs; as health care systems evolve, there will be new challenges and opportunities brought about by legislative and regulatory agency decisions. Dr. Clarke will foster interaction with the Office of Government and Community Affairs at Johns Hopkins, specifically the Federal Strategy group, to be more proactive in areas that will significantly impact Pathology practice, both with respect to proposed legislative action and regulatory agency activity.

Marissa White, M.D. — Deputy Director for Diversity, Equity, and Inclusion

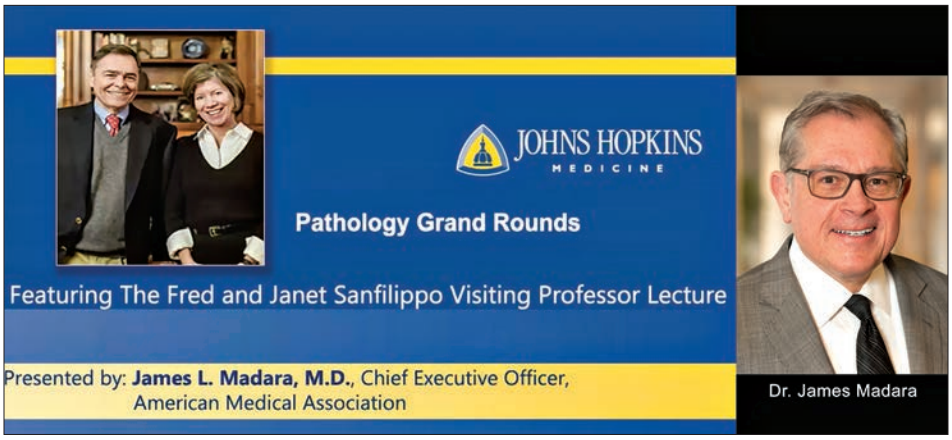
Dr. White obtained her B.A. from the University of Richmond followed by her M.D. from Morehouse School of Medicine. She then completed her anatomic and clinical residency training here at Johns Hopkins where she served as Chief Resident. She joined the Division of Surgical Pathology in 2018 after completing the Advanced Specialty Training Program in Surgical Pathology at Hopkins, and currently signs out general surgical pathology and breast pathology.

Dr. White has been a strong advocate for diversity, equity, and inclusion (DEI) in education and the workplace as means to improve health equity for the patients we serve. Through combined efforts with Dr. Alisha Ware and the Faculty and Trainee Diversity Committee members, she helped lead the expansion of the Department's funded pathology rotation for students underrepresented in medicine (UIM) and developed a companion outreach program. Her DEI-focused publications have expanded timely discussions about DEI in pathology, which include an analysis of historical trends in pathology workforce and trainee diversity. This analysis highlighted significant opportunities for increasing racial and ethnic diversity at both the pathology trainee and faculty levels.

As the inaugural Deputy Director for Diversity, Equity, and Inclusion, Dr. White's vision is to weave DEI into the core fabric of the Department. To accomplish this vision, she will work with department leadership to ensure DEI are considered deliberately and consistently in all decision-making processes in collaboration with our diverse students, trainees, staff, and faculty. She is excited to collaborate with Deputy Director of Education, Dr. Karen Sfanos, and pathology education program directors to implement new DEI-initiatives including a health disparities-focused lecture series for the residency program. She will also continue to expand the pathology elective for students UIM and the UIM research fellowship and postdoctoral student recruitment initiative. Through these combined efforts, she hopes to implement tangible change within our Department and further strengthen our position as an international leader in education, research, and clinical care.

VISITING PROFESSOR FELLOWSHIPS

FRED AND JANET SANFILIPPO LECTURE



On April 19, 2021, the Department was delighted to welcome Dr. James Madara, Chief Executive Officer of the American Medical Association, as the 6th Annual Fred and Janet Sanfilippo lecturer. Dr. Madara was a very special guest, as he is one of very few, if not the only pathologist to ascend to this role, having previously served as the Chair of Pathology at Emory and Dean and CEO at the University of Chicago.

In his talk, Dr. Madara gave his perspective on what the AMA's focus will be as it helps to lead medicine over the next decades. The AMA has condensed all its various projects into three areas: chronic disease, to confront public health crises with particular emphasis on health inequities; professional development, reimagining training and promoting innovation in education; and removing obstacles that interfere with patient care. His talk contained numerous examples of new initiatives and new tools to advance these goals.

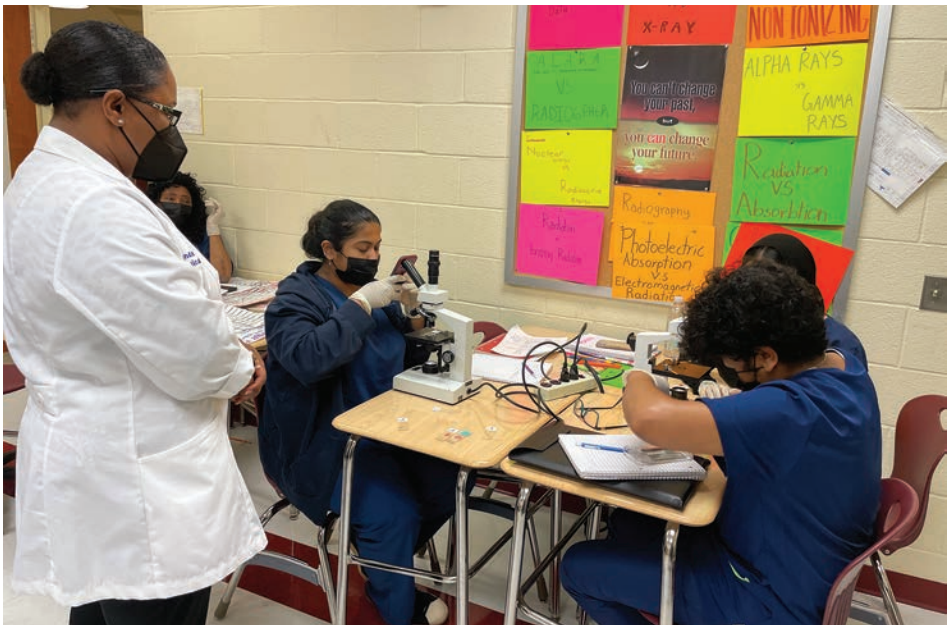
We are indebted to Fred and Janet for endowing this lectureship, one that has attracted many leaders in pathology to our department. Dr. Madara's visit, although virtual, was an important extension to this tradition. ■

JOSEPH C. EGGLESTON, M.D. VISITING PROFESSOR LECTURE

Gregory N. Fuller, M.D., Ph.D., Professor of Pathology and Neuroradiology and Chief Neuropathologist at the University of Texas MD Anderson Cancer Center, gave the eighth annual Joseph C. Eggleston, M.D. Visiting Professor Lecture in Surgical Pathology on Monday, October 4, 2021. In his presentation titled, "CNS PRISM and Miliary Metastasis: Understudied Entities/ Opportunities for Clinical Research," Dr. Fuller highlighted the unique biologic and clinical significance of miliary metastases to the brain. Following his lecture, Dr. Fuller also led an Unknowns session with the residents, where he presented clinical, radiographic, histologic, and molecular findings for 10 neuropathologic entities, which highlighted recent changes included in the upcoming fifth edition of the WHO Classification of Tumors of the Central Nervous System. Dr. Fuller also emphasized an integrative approach to oncologic diagnostic medicine, highlighting the need for careful consideration of all "data spheres," including those of the rapidly evolving field of molecular pathology.

Dr. Fuller's visit was a wonderful way to remember the life of Dr. Eggleston. Joe was an expert in lung pathology and educated a generation of outstanding surgical pathologists.■

YOUNG SCIENTIST IN TRAINING PROGRAM



Students looking at H&E and special stained slides under microscopes, taking pictures using their cell phones as our Pathology residents.

Pathology staff and faculty were thrilled to work with Baltimore City high school students in the Young Scientist in Training (YSIT) summer program at the Paul Lawrence Dunbar High School, directed by Ms. Mamie Green and Mr. Walter Musi. Pathology staff and faculty members developed and led interactive sessions on careers in pathology, pathology's role in the COVID-19 pandemic, microbiology, hematology, surgical pathology, cytopathology, transfusion medicine, and clinical chemistry. Hands-on activities included a "herd immunity" experiment and examining slides under the microscope. The students also developed recruitment ideas to host their own blood drive!

Dr. Laura Wake recalled her wonderful experience: "I had a blast working with high school students at the Dunbar Summer Jobs Program! The students, ranging in grades from freshman to senior, are motivated young people interested in entering the medical professional field. I and other Diversity Committee members joined their class to introduce them to microscopes and grossing, and to discuss pathology as a profession. We looked at lung, heart, and other organs as we talked about common medical diseases. The students were excited and full of questions. It was wonderful to talk to young adults interested in science, especially students who come from backgrounds that are traditionally underrepresented in medicine. The experience refueled my passion for teaching and reawakened my own sense of wonder at the beauty of the human body. I will definitely participate next year, and recommend that everyone in the pathology department experience this unique opportunity!"

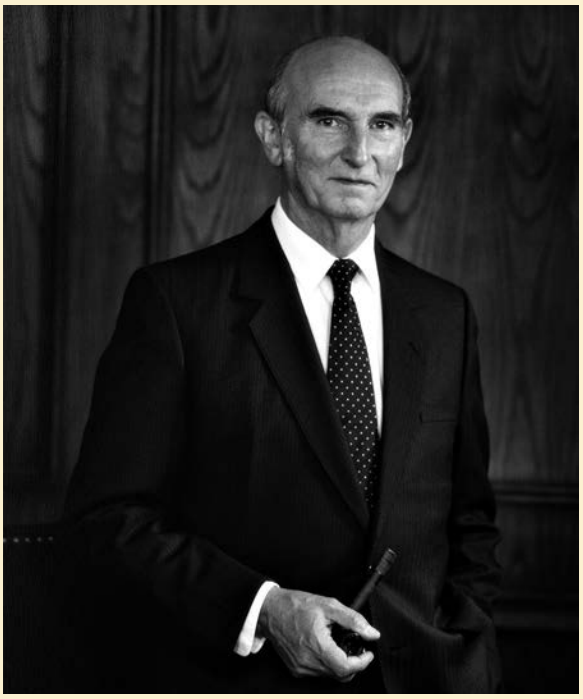
A HUGE thank you to our team members Lorraine Blagg, Lucy Pierre, Taylor Clinton, Aaron Mahomes, Ruth Umali, Paula Mister, Abigeal Babatunde, Kristy Ball, Kyle Forsythe, Christine Hostetter, Ghazal Khan, Yulanda Mitchell, and Drs. Marissa White, Laura Wake, and Zahra Maleki for volunteering their time to inspire the next generation of laboratory professionals! We plan to offer the YSIT program again. ■

Pathology faculty working with the students.

"The students were excited and full of questions. It was wonderful to talk to young adults interested in science, especially students who come from backgrounds that are traditionally underrepresented in medicine. The experience refueled my passion for teaching and reawakened my own sense of wonder at the beauty of the human body."

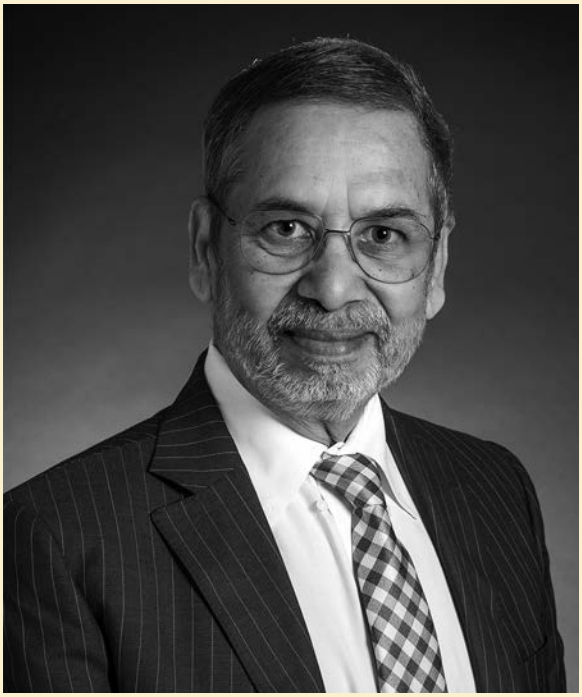
Dr. Laura Wake

IN MEMORIAM



Robert H. "Heppy" Heptinstall, M.D.
1920-2021

William G. Merz, Ph.D.
1941-2020



Nilabh Shastri, M.Sc., Ph.D.
1952-2021

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 2021-2022

John K. Boitnott Fellow
Fengming Chen,M.D., Ph.D.

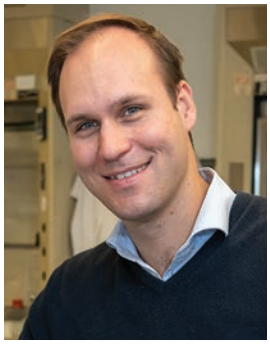
Michael J. Borowitz Fellow
Ankit Rajgariah, M.D.

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

Daniel W. Chan Fellow
Kyanna Garza, Ph.D.

Jonathan I. Epstein Fellow
Aisha Fatima, M.D.

Yener S. Erozan Fellow
Rana Abdulatif Aldrees, M.D.



Alex Damanakis, M.D.
Sol Goldman Fellow in Pancreatic Cancer

Constance A. Griffin Fellow
Karen Miller, M.D.

Paul M. Ness Fellow
Victoria Costa, M.D.

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

Lorraine Parent Racusen Renal Fellow
Alana Donaldson Dasgupta, M.D.

Dorothy L. Rosenthal Fellow
Efrain Ribeiro, M.D., Ph.D.

John H. Yardley Fellow
Ozlem Kulak, M.D., Ph.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, 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 422
Baltimore, MD 21287-6417

PATHOLOGY INCOMING HOUSE STAFF 2021-2022

Laetitia Daou, M.D., is from Beirut, Lebanon. She holds a B.S. in biology and a M.D. from the American University of Beirut where she also completed a residency in Clinical Pathology. She then moved to Baltimore to pursue a clinical and research fellowship in Blood Banking and Transfusion Medicine at Johns Hopkins. Her interest in laboratory medicine originated while she was an exchange medical student in the genetics laboratory at Charles University in Prague, and it developed through research in the field of molecular diagnostics as well as clinical rotations in the molecular laboratory at Emory University Hospital in Atlanta. Beyond the clinical service, Dr. Daou has a long-standing passion for economics and business management. She joined a number of hospital quality improvement committees, was a member of the blood utilization committee and served on the laboratory cost containment task force in the wake of the 2019 economic crisis in Lebanon. Outside of medicine, Dr. Daou enjoys traveling and exploring new cultures. She has participated in dance performances and competed in national swimming events. Dr. Daou is pursuing CP training.

Katherine Fomchenko, M.D., was born and raised in New Jersey. She attended The College of New Jersey and graduated with a B.S. in chemistry. She enjoyed tutoring fellow students and performing research in biophysical chemistry during her time in college. Dr. Fomchenko then earned her M.D. from the Johns Hopkins University School of Medicine. She participated in a variety of extracurricular activities from revitalizing the previously dormant pathology interest group to teaching cooking classes to peers through the Student Teaching Kitchen. She performed research in pathology investigating differential protein expression between slow- and fast-twitch skeletal muscle fibers. She deeply enjoyed her pathology elective rotations during medical school and received the William H. Welch Award in 2020. Dr. Fomchenko enjoys cooking, baking, and crocheting, as well as spending time with family (including her parents' five cats and German Shepherd) and friends. Dr. Fomchenko is pursuing AP/CP training.

Sam Harvey, M.D., Ph.D., grew up in Salem, Virginia nestled in the Blue Ridge Mountains. He attended the College of William & Mary in Williamsburg, Virginia where he engaged in research investigating signal transduction pathways in the gastric pathogen Helicobacter pylori. After graduating with a B.S. in biology, he attended the MSTP program at Northwestern University Feinberg School of Medicine in Chicago, Illinois. His doctoral research focused on bioinformatics investigations into the role of RNA binding proteins and alternative splicing in the epithelial-mesenchymal transition; his work was supported by an NRSA Individual Predoctoral MD/PhD Fellowship (F30) from the National Cancer Institute. Dr. Harvey's current academic interests include bioinformatics, digital pathology, and artificial intelligence. In his free time, Dr. Harvey enjoys gaming of all kinds including video games, board games, and Dungeons and Dragons. He also enjoys the great outdoors, especially hiking trips with his wife and dog. Dr. Harvey is pursuing AP/CP training and the informatics certificate track.

Chen Lossos, M.D., Ph.D., was born in Jerusalem, Israel and lived there until the age of eight before moving with his family to the United States. He attended Stanford University, where he received a B.S. in biology with a minor in psychology. His research there focused on identifying features predicting patient immune and clinical responses to anti-idiotype vaccinations in lymphoma as well as studying the nature of acquired B-cell receptor mutations as they pertain to malignant and autoimmune processes. After graduation, he spent a year working on developing a new mouse model of multiple myeloma before commencing his M.D./Ph.D. studies at Harvard University. There, he studied how lymphomas develop resistance to antibody therapy and how to use chemotherapy and the immune system to overcome this resistance. In his free time, Dr. Lossos enjoys swimming, reading, playing chess and rooting for his favorite sports teams. Dr. Lossos is pursuing AP/CP training.

Khoa Pham, M.D., was born and raised in SocTrang, a small town in southern Vietnam. After receiving his M.D. from CanTho University of Medicine and Pharmacy in Vietnam, Dr. Pham practiced as a general practitioner for five years before coming to the United States to pursue research training. Dr. Pham's research interests focus on brain metabolism under physiologic and pathologic conditions. Since late 2019, Dr. Pham has been working as a postdoctoral fellow studying brain cancer at Johns Hopkins. During his training, he was able to identify the important metabolic pathways in high MYC medulloblastoma tumor compared to normal brain by employing LC/MS and moleculary labeled glucose and glutamine. Targeting these pathways showed the benefit survival in a preclinical model. Dr. Pham was awarded a prize at the Pathology Department Young Investigators' Day at Johns Hopkins, and his work was presented at SNO-NCI joint symposium. Dr. Pham enjoys spending time in the park or on trails with his wife and kids. He loves practicing meditation, cooking, and trying new cuisine. Dr. Pham is pursuing AP/NP training.

Sandra Vazquez Salas, M.D., was born in Morelos, Mexico. At the age of 10, she packed her bags and moved to Phoenix, Arizona. She attended the University of Arizona as a first-generation student and graduated with a B.S. in biology with a concentration in forensics. Dr. Vazquez Salas earned her M.D. at the University of Arizona College of Medicine – Tucson with distinctions in Community Service,

Rural Health and Medical Spanish. She was actively involved in free clinics aimed to serve the local socioeconomically disadvantaged communities. She received the Commitment to Underserved People Award and was elected to Alpha Omega Alpha. Dr. Vazquez Salas enjoys spending time with her two dogs and four cats which she rescued over the years. She also cares for her tropical plant collection which includes more than 200 plants. If you ever have any plant questions, she is your go-to girl! Dr. Vazquez Salas is pursuing AP/CP training.

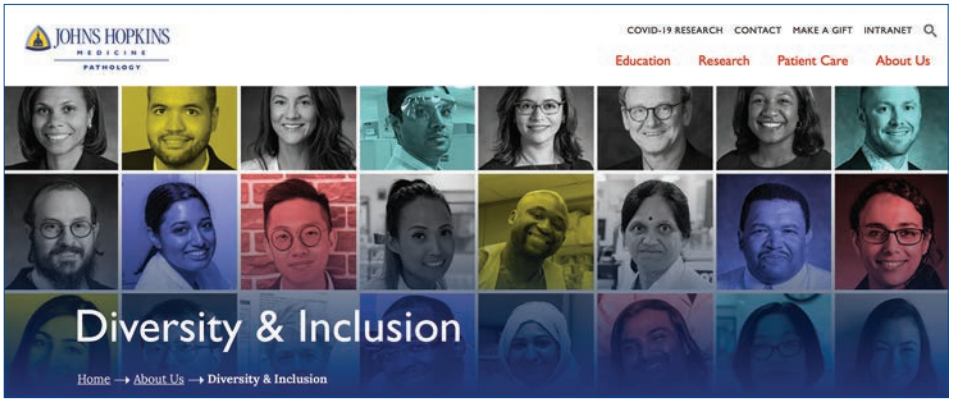
Rebecca Wingfield, M.D., was born and raised in Ona, West Virginia. She earned her B.S. in biochemistry from Marshall University in Huntington, West Virginia. During college, Dr. Wingfield participated in a Learning Assistant Program where she facilitated small group tutoring sessions for introductory biology courses. Through this work, she discovered a love for teaching. In the interim between college and medical school, Dr. Wingfield worked as a medical intern at SCORE International in the Dominican Republic. She went on to earn her M.D. degree from Marshall University Joan C. Edwards School of Medicine. As a medical student, she continued to pursue her passion for medical education by tutoring and serving on the Curriculum Committee. She further contributed to curriculum development through the curriculum student task force responsible for examination of the legacy curriculum's content and pedagogy in preparation for a new 18-month curriculum redesign. Outside of these committees, Dr. Wingfield applied her love for teaching in her role as a co-leader of "Let's Get Moving," a medical student-led initiative to teach elementary students about living a healthy, active lifestyle. In her free time, Dr. Wingfield enjoys reading, listening to podcasts, doing jigsaw puzzles, hiking, skiing, and snowboarding. She enjoys spending as much time as possible outdoors. Dr. Wingfield is pursuing AP/CP training.

PATHOLOGY WEB NEWS

We saw many improvements to our Pathology websites this year.

Major highlights include:

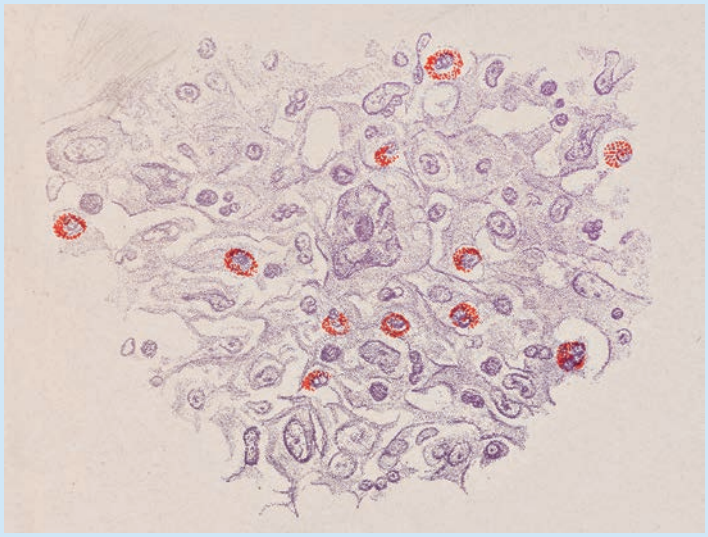
- A new and improved pancreatic cancer website **https://pathology.jhu.edu/pancreas** built by our Department Director, Dr. Ralph Hruban. Updated information. Stunning graphics. A better experience for thousands of patients each month looking to learn about this disease.
- A new look for our faculty profiles: **https://pathology.jhu.edu/about/faculty**. With the ability to filter by division, this new page makes it easier than ever to find and contact our faculty members.
- New consult pages streamline the process for patients who need a second opinion in Pathology: **https://pathology.jhu.edu/patient-care/second-opinions**
- Our new Deputy Director for Diversity, Equity, and Inclusion, Dr. Marissa White, led the charge to update our diversity website, which showcases our diversity efforts and underscores how we as a department cherish diversity. The result is beautiful! **https://pathology.jhu.edu/about/diversity**



The new Pathology diversity homepage, spotlighting familiar faces from across our department

BLAST FROM THE PAST

Who drew this figure, and what does it show? *Answer on page 17.*



GRADUATE TRAINING PROGRAM IN PATHOBIOLOGY 2021-2022

Jade Alvarez is originally from the Dominican Republic. She received her B.S. in biology from Rowan University in 2019. During her undergraduate experience, Jade was awarded a NASA-sponsored fellowship which allowed her to join Dr. Michael Henry's lab at the Rowan University Graduate School of Biomedical Sciences during the summer of 2017. There, Jade investigated dysfunctions in the mitochondrial genome that are linked to mitochondrial diseases. Her desire to engage in a full-time research experience led her to pursue an M.S. degree at Towson University. Throughout her time as a Master's student, Jade also became very intrigued about the field of cancer immunology, although her fascination for viruses remains. Jade's research interests in further understanding viral-host interactions and navigating the field of cancer immunology urged her to pursue further training. Jade is thrilled to begin her journey as a graduate student in the Pathobiology program where she is hoping to continue her research and professional training. Outside of academics and research, Jade enjoys traveling and exercising. She also enjoys mentoring and advocating for younger students of underrepresented backgrounds who want to pursue careers in STEM.

Jun (Tony) Choe grew up in Suwanee, Georgia and received his B.S. in biochemistry and molecular biology from the University of Georgia in 2019. As an undergraduate, his research focused on how undergraduate science students respond in the face of academic failures in upper-level science classes. After graduating, he moved to Rockville, Maryland and started working at the Early Translational Branch of the National Center for Advancing Translational Sciences as an NIH IRTA research fellow. Tony was a part of several high-throughput compound screening efforts, including inhibitors of CpG island cytosine methylation, multiple ubiquitin-specific proteases, and proteins involved in SARS-CoV-2 entry. In his spare time, he likes listening to music and practicing the piano.

Cheng-Chieh Huang is from New Taipei City, Taiwan and completed his bachelor's degree in life science at National Chung Hsing University. He investigated how protein kinase regulate lamin assembly in laminopathies, and it inspired him to apply to the master's program of biochemistry and molecular biology at National Taiwan University. He joined the proteomic core lab of Dr. Lu-Ping Chow where he focused on exploring the relationship between pancreatic cancer and type 2 diabetes, elucidating how a family of proteins called galectins affected insulin resistance and energy metabolism in detailed mechanism. After graduation, he became a research associate in the Institute of Biomedical Sciences at Academia Sinica to continue studying the role of galectins in an inflammatory disease called psoriasis. Cheng-Chieh's research interest lies in the broad discipline of cancer biology, metabolism, inflammation and immunity. In his free time, Cheng-Chieh enjoys reading, hiking and watching movies.

Chun Huai (Alex) Luo is from Taipei, Taiwan. He first came to the United States in 2012 to study English in an ESL program. He attended the University of Wisconsin-Stevens Point and obtained a B.S. in biology with a minor in chemistry. During his undergraduate career, he studied various aspects of life-history evolution using lizards as a model organism. Alex went on to obtain a M.S. in bacteriology from the University of Wisconsin-Madison. For his thesis research, he engineered "infectivity switches" in bacteriophages that control their infectivity against the host bacteria using inducers in a dosage-dependent manner. After Alex successfully passed his thesis defense, he moved to Baltimore and started working as a research technologist at Johns Hopkins. Alex has been using high-throughput next generation sequencing to conduct surveillance studies to better understand the circulating strains (variants) of SARS-CoV-2. In his free time, Alex enjoys outdoor activities, fishing, traveling, cooking and playing with his dog. Alex is a Margaret Lee student.

Sharon Onggo grew up in San Diego, California and graduated from Massachusetts Institute of Technology (MIT) with a B.S. in biology in spring 2021. Sharon first began her journey in biological research in Dr. John Essigmann's lab at MIT, where she studied environmental toxin induced hepatocellular carcinoma (HCC). Sharon assisted a postdoctoral researcher with her in vivo studies establishing a chemical mutational spectra for HCC. Due to a growing interest in developmental biology, Sharon spent the summer of 2018 investigating ascidian development in Robert Zeller's lab at San Diego State University. She studied peripheral nervous system (PNS) development in Ciona intestinalis. In 2019, Sharon studied erythropoiesis under the direction of Dr. Harvey Lodish at the Whitehead Institute and Dr. Hojun Li Lab at the Koch Institute. In the Lodish and Li labs, Sharon studied the molecular pathogenesis of Diamond-Blackfan anemia (DBA), which is characterized by a significant reduction in red blood cells, while other cell types remain mostly unperturbed. Sharon investigated the mechanism of this cell specific deformity within the hematopoietic compartment by examining the mechanisms that govern translational efficiency of the erythroid master transcription factor, GATA1. Sharon is interested in regulation of gene expression and mechanisms of disease pathogenesis. Outside of the lab, Sharon enjoys baking bread, biking, and bouldering.

Bailey West is from Stockton Springs, Maine and graduated with a B.S. in biochemistry from the University of Maine in spring 2021. As an undergraduate, she worked in the lab of Dr. Julie Gosse studying the effects of the popular personal-care antimicrobial agent cetylpyridinium chloride (CPC) on mast cell degranulation and signaling. For this work, Bailey received the Society of Toxicology Undergraduate Research Award. Bailey also participated in summer research internships at the MDI Biological Laboratory, Maine Medical Center Research Institute, and the Jackson Laboratory. During the summer of 2017, Bailey worked at the MDI Biological Laboratory investigating the intron-exon conservation of nicastrin, a component of the γ-secretase complex implicated in Alzheimer's disease. The following summer, she conducted clinical research on opioid-related cardiac arrest at Maine Medical Center. During her senior year of high school and during the summer of 2021, Bailey worked with a scientist from the Jackson Laboratory conducting a bioinformatic analysis of genes involved in congenital diaphragmatic hernia and addiction, respectively. Outside of the lab, Bailey enjoys pilates, traveling, and spending time outdoors.

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.

BLAST FROM THE PAST *From page 15.*

The figure is from Dorothy Reed Mendenhall's paper describing what is today called the "Reed-Sternberg cell." As a fellow in pathology, Dr. Reed wrote a 64-page single-author paper on Hodgkin disease. In the paper, published in 1902 in *The Johns Hopkins Hospital Reports*, she not only described the characteristic cell of Hodgkin disease, but she also disproved Sternberg's theory that Hodgkin disease was an unusual form of tuberculosis. She wrote that she could not "understand his... conception...of the tubercle bacillus, which he suggests is the cause of such a growth... the two processes are easily distinguished." Dr. Reed also made the important observation that patients with Hodgkin disease had a weakened immune system.

Unusual Obsessions – Peter C. Burger

Dr. Burger describes himself as a linguaphile, a lover of language and words. He points, as evidence, to boxes of flash cards he produced to expand his English vocabulary during his two-year stint as a general medical officer in the United States Air Force during the Vietnam War. Reading the print version of the dictionary was another form of entertainment while stationed in Texas. To ensure that his interest had a legacy, he had what he says was a successful vocabulary-building program for his daughter Elizabeth, then a student in the Bryn Mawr School in Baltimore. His obsession with words found a more tangible expression in his retirement years: a screenplay! This labor of love filled many happy hours while he was creating (and recreating) characters, visualizing and placing (and replacing) scenes, and the endless editing of dialogue. This effort was accomplished largely in his backyard or at Starbucks where creativity was fueled by triple expressos. As compelling as the work was, another obsession, the desire to learn Spanish, suddenly intruded and sidelined the screenplay. To a linguaphile, he says, tackling a new language is a dream come true. Stacks and boxes of homemade

Spanish flash cards litter his office. Grammar, a chore for many students, is to him a pleasure, especially irregular verbs and the subjunctive mode, perhaps reflecting his Latin studies in high school. Peter has not abandoned the screenplay, however. Inspirations about characters and plot that appear to him spontaneously from time to time are duly recorded in a screenplay file. But for the moment, "El lingua español reina." One obsession at a time. ■

Family Bond

John R. G. Baker and his cousin, Elizabeth Laposata, were born three months apart and raised as siblings in the Washington, D.C. area. From a young age, they both exhibited a curiosity to learn how things worked. While Elizabeth was dissecting her deceased pet gold fish; John was disassembling a clock and in later years, computers.

It is understandable that their passion for discovering what was happening inside influenced their career choices. John became a computer consultant pursuing his curiosity for technology, while Elizabeth became a forensic pathologist exploring human medical disease.

To maintain their lifelong bond in perpetuity, John Baker made provisions through his estate plans to establish an endowment fund in his and his cousin's names to support autopsy pathology in the Johns Hopkins Department of Pathology. Sadly, John died in 2018. His generous contribution of $500,000 established The Elizabeth Laposata M.D. and John R. G. Baker Endowment for Advancement of Autopsy Pathology to support innovation in the Division of Autopsy Pathology.

John was extremely proud of Elizabeth, her career, and her commitment to helping others through autopsy pathology and forensics.

After obtaining her medical degree at the University of Maryland, Elizabeth completed her internship and residency in anatomic pathology in 1981 in the Johns Hopkins Department of Pathology. After a fellowship in forensic pathology at St. Louis University School of Medicine in Missouri, Elizabeth served on the pathology faculty at the University of Pennsylvania. While in Philadelphia, she established the Forensic Pathology Fellowship Program at the City of Philadelphia Medical Examiner's Office. She also worked as an Assistant Medical Examiner for the City of St. Louis, the City of Philadelphia, and the State of Delaware.

Autopsy Co-Directors, Drs. Charles Steenbergen and Edward Gabrielson

From 1993 to 2005, Elizabeth served as the Chief Medical Examiner for the State of Rhode Island. In a federal investigation that lasted more than two years, Elizabeth managed the examination and identification of more than 5,000 fragments of human remains of victims recovered from the crash of EgyptAir 990 off the coast of Massachusetts. In 2003, she managed an around-the-clock operation to complete the autopsies and identifications of 96 victims recovered from a tragic night club fire in West Warwick, Rhode Island. Elizabeth currently serves on the faculty of Pathology and Laboratory Medicine at Brown University School of Medicine and in Biomedical Forensic Sciences at Boston University School of Medicine. She also manages Forensic Pathology and Legal Medicine, Inc., an independent consulting practice.

Elizabeth believes "performing autopsies is a privilege that cannot be overstated—we are the last doctor that patients have. The discipline of forensic autopsy is based on the anatomic autopsy. It is important that this is passed onto students so patients and their families will be treated to professional standards and that justice for the accused, innocent or guilty, will be served. During my time at Johns Hopkins, Dr. Grover Hutchins was my mentor. He upheld high standards, insisting on extreme thoroughness and precise documentation. He strongly influenced me in my career." Dr. Hutchins served as the Director of Autopsy at Johns Hopkins from 1976 to 1998.

> ***"His generosity will benefit this important specialty in our department. It is a unique gift and I am so very pleased that it recognizes one of our alumni."***
>
> *Dr. Ralph Hruban*

Dr. Ralph Hruban, Director of the Johns Hopkins Department of Pathology, expressed deep gratitude for Mr. Baker's foresight, "his generosity will benefit this important specialty in our department. It is a unique gift and I am so very pleased that it recognizes one of our alumni." ■

Everything grows when everyone gives.

A gift from your will, trust or retirement plan will help ensure that the Johns Hopkins Department of Pathology remains a leader in teaching, patient care, and advancing research 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

JOHNS HOPKINS
UNIVERSITY & MEDICINE

NEW GRANTS AND CONTRACTS AWARDED TO PATHOLOGY FACULTY

10/13/2020 - 10/7/2021

Faculty Member	Award Type	Agency	Dates	Total Funding
Anchoori, Ravi	Grant	TEDCO	10/27/20 - 09/27/21	115,000
Anders, Robert	Contract	Bristol-Myers Squibb	11/5/20 - 11/5/21	268,521
Anders, Robert	Contract	Bristol-Myers Squibb	12/18/20 - 12/17/22	25,000
Bagnasco, Serena	Grant	CareDX	04/13/21 - 04/12/22	59,264
Carroll, Karen	Contract	Meridian Bioscience	05/20/21 - 12/31/21	89,006
Carroll, Karen	Contract	Tufts Medical Center	06/07/21 - 06/06/22	10,000
Carroll, Karen	Contract	Becton-Dickinson	07/02/21 - 07/01/22	12,466
Chan, Daniel	Contract	Abbott	06/1/21 - 08/16/22	33,657
Cihakova, Daniela	Grant	American Heart Association	1/1/21 - 12/31/23	300,000
Cihakova, Daniela	Contract	Cantargia AB	06/2/21 - 06/1/22	400,946
Clarke, William	Contract	Thermo Fisher Scientific	08/9/20 - 08/8/22	144,392
Clarke, William	Contract	Lumiradx UK	09/9/20 - 12/31/20	16,565
Clarke, William	Contract	Detact Diagnostics BV	12/16/20 - 07/31/21	688,727
Clarke, William	Contract	Roche Diagnostic Systems	01/13/21 - 01/12/24	420,325
Clarke, William	Contract	Ativa Medical	03/9/21 - 01/31/22	482,242
Clarke, William	Contract	Becton-Dickinson	07/1/21 - 06/30/22	272,145
Clarke, William	Contract	Instrumentation Laboratory	08/25/21 - 08/24/22	26,442
Eberhart, Charles	Grant	Childrens Cancer Foundation	11/06/21 - 11/05/22	75,000
Eshleman, James	Grant	The Stringer Foundation	07/1/21 - 06/30/22	150,000
Eshleman, Susan	UM1 Grant	NIH/NIAID	12/01/20 - 11/30/27	43,253,707
Fowler, Mary	UM1 Grant	NIH/NIAID	12/01/20 - 11/30/27	7,711,093
Grabowski, Kate	R01 Grant	NIH/NIAID	04/13/21 - 03/31/25	2,477,786
Hung, Chien-Fu	R21 Grant	NIH/NCI	07/1/21 - 06/30/23	421,042
James, Aaron	Grant	TEDCO	06/30/21 - 06/29/23	345,000
Koliatsos, Vassilis	R01 Grant	NIH/NINDS	01/01/21 - 11/30/25	2,379,860
Larman, Harry	Contract	NIH/NIAID	07/6/20 - 07/5/21	149,000
Larman, Harry	R21 Grant	NIH/NIAID	06/1/21 - 05/31/23	450,313
Li, Tong	R21 Grant	NIH/NIA	09/30/21- 08/31/23	450,313
Ling, Jonathan	Contract	Takeda Pharmaceuticals North America	04/19/21 - 04/18/23	232,908
Lotan, Tamara	Grant	Department of Defense	09/15/20 - 09/14/22	655,000
Lotan, Tamara	T32 Grant	NIH/NCI - Training Grant	09/1/21 - 08/31/26	1,669,135
Matoso, Andres	Contract	CG Oncology	04/26/21 - 04/25/22	45,000
Morris, Meaghan	K08 Grant	NIH/NIA	02/01/21 - 01/31/26	855,900
Mostafa, Heba	Contract	Bio-Rad Laboratories	02/25/21 - 02/24/22	39,892
Mostafa, Heba	Contract	Maryland Department of Health	02/15/21 - 01/31/22	639,730
Mostafa, Heba	Contract	Centers for Disease Control	05/17/21 - 05/16/23	1,358,321
Mostafa, Heba	Grant	College of American Pathologists	05/17/21 - 05/16/22	16,200
Mostafa, Heba	Contract	Hologic Inc.	07/09/21 - 07/08/22	119,324
Nachman, Sharon	UM1 Grant	NIH/NIAID	12/01/20 - 11/30/27	55,553,465
Nachman, Sharon	Contract	Gilead Sciences	02/05/21 - 06/30/23	832,794
Parrish, Nikki	Contract	Thermo Fisher Scientific	06/03/21 - 06/02/22	2,000
Roden, Richard	Contract	2Apharma APS	07/1/20 -12/31/21	109,486
Rosenberg, Avi	Contract	Bristol Myers Squibb	09/23/21 - 11/22/21	2,704
Simner, Trish	Contract	Becton-Dickinson	11/30/20 - 11/30/21	169,929
Simner, Trish	Contract	Becton-Dickinson	12/07/20 - 03/31/21	97,699
Simner, Trish	Contract	JMI Laboratories	04/13/21 - 07/31/21	2,500
Sokoll, Lori	Contract	Biokit SA	11/30/20 - 11/29/21	17,573

NEW GRANTS AND CONTRACTS, CONTINUED

Faculty Member	Award Type	Agency	Dates	Total Funding
Sun, Shuying	R21 Grant	NIH/NIA	05/01/21 - 04/30/23	450,313
Troncoso, Juan	Contract	NIH/NIA	09/27/20 - 09/26/21	24,999
Wang, Tian-Li	Grant	TEAL Medical Research Program	01/1/21 - 12/31/21	25,000
Wong, Philip	Grant	TARGET ALS	11/01/20 - 10/31/21	130,000
Wong, Philip	UG3 Grant	NIH/NINDS	09/01/21 - 08/31/23	2,237,856
Wood, Laura	Grant	Robert Fine Cancer Research Foundation	12/9/20 - 12/31/22	250,000
Zhang, Hui	Contract	Leidos, Inc. - Service Agreement	07/22/21 - 05/31/22	48,300
Zhang, Sean	Contract	Affinity Biosensors	07/21/20 - 07/20/21	7,972
Zhang, Sean	Grant	Cystic Fibrosis Foundation	08/01/21 - 07/31/22	127,298
			TOTAL	**$126,949,109**

Meet Tina Mancini-Flegel: Clinical Lab Director

Tina Mancini-Flegel

The Department of Pathology welcomes Tina Mancini-Flegel in the role of Clinical Laboratory Director. She comes to us from Howard County General Hospital where she was manager in the Department of Pathology. Many may remember Tina from her first 20 years working in the Core Lab, mainly Chemistry, on the East Baltimore campus before she transitioned to Howard County.

In her new role, she will serve as project manager for upgrading the surgical pathology suites at Greenspring and at Belward Farm (I-270 project), and helping to design new suites that maximize sample workflow. She will be the contact person for management oversight of the Howard County General Hospital Lab and Outreach sites as well as supporting all of the pathology laboratories within the Johns Hopkins Health System.

As we know, the COVID road has been long and tenuous for many and especially the pathology laboratories. Tina will bring her insight and support in building relationships with ongoing COVID testing initiatives as well as research an ongoing project of establishing a Pathology Reference Lab. She will be involved in CQI within the laboratories, mapping and improving workflow for each lab to include billing/finance and Epic.

Tina has a passion for excellence and will be an integral part of the Pathology Department team. Tina spends her free time with her husband Ron, her two grown children Kyle and Nicole, their two cats and one dog. ■

PATHOLOGY EDUCATION ADVISORY COMMITTEE

As Co-Directors of the Department of Pathology Education Advisory Committee (EAC), Drs. Laura Wake and Marissa White work with faculty, students and trainees pursuing careers in medical education scholarship. The EAC, established in 2018 by Drs. Wake and White, is comprised of pathology faculty, including Drs. Kiyoko Oshima, Zahra Maleki, Lois Arend, Alisha Ware, Evan Bloch, and at least half a dozen residents. The EAC's goal is to mentor and support those interested in education by encouraging scholarly activity, including publishing educational initiatives.

By creating exposure to foundations of education scholarship and empowering members with the resources necessary to engage in education research and initiatives, the EAC strives to provide its members with conceptual and practical skills necessary to become master educators. There are many learning opportunities offered to faculty, students and trainees interested in education scholarship. The Institute for Excellence in Education (IEE) sponsors several courses, including the Foundations of Teaching and Learning Course, the Foundations of Educational Scholarship Course, and the Summer Teaching Camp. Additional courses are available with tuition remission through the Office of Faculty Development, including Principles & Practice of Curriculum Development and Introduction to Curriculum Development Concepts. Various small grants are available to faculty through the IEE. Departmental funds are also available to residents engaged in scholarly activity, including The Mabel Smith Fund for Resident Research and Education and The Risa B. Mann, M.D. Fund. ■

RETIREMENTS

Denise Batista, Ph.D.

After over 24 years of service at Johns Hopkins, Dr. Denise Batista, Associate Professor of Pathology and Genetic Medicine stepped down on June 30, 2021 as Co-Director of the Cytogenetics and Cytogenomics Laboratory. Dr. Batista's first appointment was with Gynecology and Obstetrics from 1991 to 1998, followed by her appointment in Pathology and Genetic Medicine from 2004 to 2021. She led a distinguished career as a teacher, clinician, scientist and mentor. Her collaborations across Hopkins, including the School of Medicine and the Kennedy Krieger Institute, were valued greatly. The Department expresses its deep appreciation to Dr. Batista and we wish her success in her future endeavors.

Thomas Kickler, M.D.

After 42 years in the Department of Pathology, Dr. Thomas Kickler retired on October 1, 2021. Dr. Kickler joined Hopkins in July 1980 in the Hospital Blood Bank after receiving his medical degree from West Virginia University and having been trained in internal medicine at the Mayo Clinic in Rochester, in hematology & transfusion medicine at the University of Rochester, and in clinical pathology at Johns Hopkins. During his tenure in the blood bank, he established an internationally recognized research program in platelet alloimmunization. His early studies provided the first successful means in selecting compatible platelets for transfusion in alloimmunized patients. He later developed strategies to circumvent alloimmunization and to prevent alloimmunization to platelets, playing a key role in platelet filtration science. He also studied important platelet alloimmune diseases and mechanisms of platelet immune destruction. These studies led to recognizing the first agreed upon marker of platelet hyperreactivity; a polymorphism of platelet glycoprotein IIIa. He and his fellow, Jean Lamadue M.D., Ph.D. were the first to show that cytokines activate platelets, now a recognized determinant in thrombosis and inflammation.

In 1995, Fred Sanfilippo recruited Dr. Kickler to become director of the hematology laboratory. At this time, he was charged with consolidating all the hematology-testing laboratories in Medicine, Pediatrics, Oncology and Anesthesia into one central laboratory, and with creating the Core Laboratory with Dr. Dan Chan. Along with this centralized laboratory, a customer service and quality assurance unit were created to support the testing services in the Core Laboratory. Dr. Kickler also became Director of Phlebotomy. While directing the creation of the Core Laboratory, he also served as first executive director of the hospital's bloodless medicine program. For a few years, he was acting Director of Adult Hematology, which gave him the opportunity to mentor many of the current faculty of that division. He is a recognized educator at the medical student, resident and fellow levels, and mentored dozens of academic leaders in hematology and blood banking. His coagulation manual, in its fifth edition, is acclaimed for its clarity and usefulness as a learning tool.

Dr. Kickler also served as Physician Advisor. In this position, he developed our program of credentialing and evaluation of pathologists. He was also a charter member of the American Association Blood Bank Inspection and Accreditation Program, and served for many years as their Area Chairman accrediting all east coast hospitals' blood banks.

Dr. Kickler plans to participate in the Johns Hopkins Academy, and continue his volunteer work in Baltimore and in Franklin, Pennsylvania where he maintains a second residence. The Department of Pathology is grateful to Dr. Kickler for his many invaluable contributions to the Department and especially the success of the Core Lab! We wish Tom all the very best and thank him for his many years of service in Pathology.

Edward McCarthy, M.D.

On June 30, 2021, Ed McCarthy retired from the Department of Pathology after 50 years of diagnosing bone and joint diseases. He was trained at the University of Iowa in both pathology and orthopedic surgery. In 1976, he joined the Pathology Department at Baltimore's Sinai Hospital where he was mentored by Dr. Howard Dorfman. He worked there for 18 years during which time he also had an adjunct appointment at Johns Hopkins. In 1994, he joined Hopkins full-time as a surgical pathologist. Dr. McCarthy is an internationally recognized bone pathologist who has written four textbooks and over 200 articles. He is a senior member of the International Skeletal Society, an organization which honored him in 2007 with its prestigious Medal of the International Skeletal Society.

Dr. McCarthy is most proud of his teaching activities. For 15 years he directed the Hopkins Pathology residency training program. During this time, he got to know numerous young pathologists, many of whom he has stayed in contact with. Several of his former residents are now his colleagues on the Hopkins surgical pathology team. He also directed the sophomore pathology course in the medical school for five years. Over the years, Dr. McCarthy has received several teaching awards from medical students and orthopedic surgery residents.

Dr. McCarthy plans to stay connected to the Hopkins Pathology Department, teaching, helping junior colleagues with their research, and committee work as needed. In sum, he plans to continue contributing to what he believes is the best pathology department in the country.

2021 AWARDS

Norm Barker, M.A., M.S., R.B.P., received a Citation of Merit from BioCommunications Association for his submission of *Agua Nueva Agate* and *Basking Shark Vertebra.* He was also recognized as a Top 100 Close-Up Photographer of the Year by Affinity Photo. Seven of his scientific images were selected from 6,500 entries from 52 countries. His image *Calimites* received the Gallery Directors Choice Award by the A. Smith Gallery in Johnson City, Texas. Mr. Barker's work also appeared in the group exhibition at the Science + Industry Museum in Manchester, England through the Royal Photographic Society.

Evan Bloch, M.B.Ch.B., M.S., has been awarded the American Society for Clinical Investigation's 2021 Young Physician-Scientist Award. The ASCI Council Young Physician-Scientist Awards recognize physician-scientists who are early in their first faculty appointment and have made notable achievements in their research.

Robert Kruse, M.D., Ph.D., was chosen as one of the "40 Under Forty Honorees" by the American Society of Clinical Pathology. The award was given in recognition of his leadership and extraordinary contributions to the profession of pathology or laboratory medicine.

Marc Halushka, M.D., received the 2021 W. Barry Wood Jr. Award for Excellence in Teaching. This award is given annually by the Johns Hopkins medical students to the teachers they have found to be the most inspirational and/or effective in the preclinical years. This is the third time he has received this coveted award (2017, 2019, 2021). Dr. Halushka also has been elected president of the Society for Cardiovascular Pathology (SCVP). In this two-year role, Dr. Halushka has begun expanding the activity and educational outreach of SCVP to ensure the relevance and training of future generations of cardiovascular pathologists.

Ralph Hruban, M.D., was honored by Baltimore Magazine as a Top Doctor for 2021. Dr. Hruban was also recognized again this year by Clarivate as a Highly Cited Researcher (top 0.1% of all scientists).

Lorraine Racusen, M.D., was awarded the 2021 Robert H. Heptinstall Lifetime Achievement Award from the Renal Pathology Society. This award was named after Dr. Heptinstall in 2011, and recognizes lifetime accomplishments in the field of renal pathology.

Lisa Rooper, M.D., FASCP, was also chosen as one of the "40 Under Forty Honorees" by the American Society of Clinical Pathology. The award was given in recognition of her leadership and extraordinary contributions to the profession of pathology or laboratory medicine. Dr. Rooper was also honored by Baltimore Magazine as a Top Doctor for 2021. The list is voted on by peers and represents about 5 percent of the roughly 12,000 physicians licensed to practice in the Baltimore area.

Marissa White, M.D., FASCP, was also chosen as one of the "40 Under Forty Honorees" by the American Society of Clinical Pathology. The award was given in recognition of her leadership and extraordinary contributions to the profession of pathology or laboratory medicine.

Laura Wood, M.D., Ph.D., was named a finalist for the 2021 President's Frontier Award from Johns Hopkins University. This award in recognition of her pancreatic cancer research, comes with an $80,000 award towards her research.

Rena Xian, M.D., was elected to the Association for Molecular Pathology as the 2021 representative for the Hematopathology Clinical Practice Committee.

Department of Pathology
The Johns Hopkins University
School of Medicine
600 North Wolfe Street, Carnegie 417
Baltimore, MD 21287-6417
410-955-9790

Director:
Ralph H. Hruban, M.D.

Editor:
Sandy Markowitz, B.M.E.

Designer:
Karen Klinedinst
Art as Applied to Medicine, Graphic Arts Division

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

CALENDAR OF EVENTS

March 20, 2022
Fellowship Fair
United States and Canadian Academy of Pathology
111th Annual Meeting
Los Angeles Convention Center
Los Angeles, California

March 21, 2022, 5:30 – 7:30 p.m.
Pathology Alumni Reception
United States and Canadian Academy of Pathology
Los Angeles Convention Center
Los Angeles, California

March 30, 2022, Noon – 4:00 p.m.
2022 Pathology Young Investigators' Day
Turner Concourse
Johns Hopkins University School of Medicine
Baltimore, Maryland

April 20, 2022, 5:30 p.m.
Pathology Awards Presentation
Chevy Chase Auditorium and Arcade Room
The Johns Hopkins Hospital
Baltimore, Maryland

April 29, 2022
Pathology Awards Dinner
Royal Sonesta Harbor Court Hotel
550 Light Street
Baltimore, Maryland

2021 Pathology Young Investigators' Day Awardees

CONGRATULATIONS TO THE TOP AWARD RECIPIENTS

Basic: Shaopeng Wang, Ph.D.
Clinical: Gabrielle Bailey, M.D.
Translational: Ariel Isser, B.S.

FOR EXCELLENCE IN BASIC RESEARCH

Shaopeng Wang, Ph.D.
Rizwan Ahmed, Ph.D.
Kusuma Ananth, B.A.
Wei-Yu Chi, M.D.
Lionel Chia, M.Sc.
Ye Eun Jeong, Pharm.D.
Hannah Kalinoski, B.S.
Yini Li, Ph.D.
Katie Marshall, B.S.
Daniel Monaco, B.S.
J. David Peske, M.D., Ph.D.
Megan Wood, B.S.

FOR EXCELLENCE IN CLINICAL RESEARCH

Gabrielle Bailey, M.D.

FOR EXCELLENCE IN TRANSLATIONAL RESEARCH

Ariel Isser, B.S.
Cherub O. Kim. M.D.
Robert Kruse, M.D., Ph.D.