JOHNS HOPKINS MEDICINE

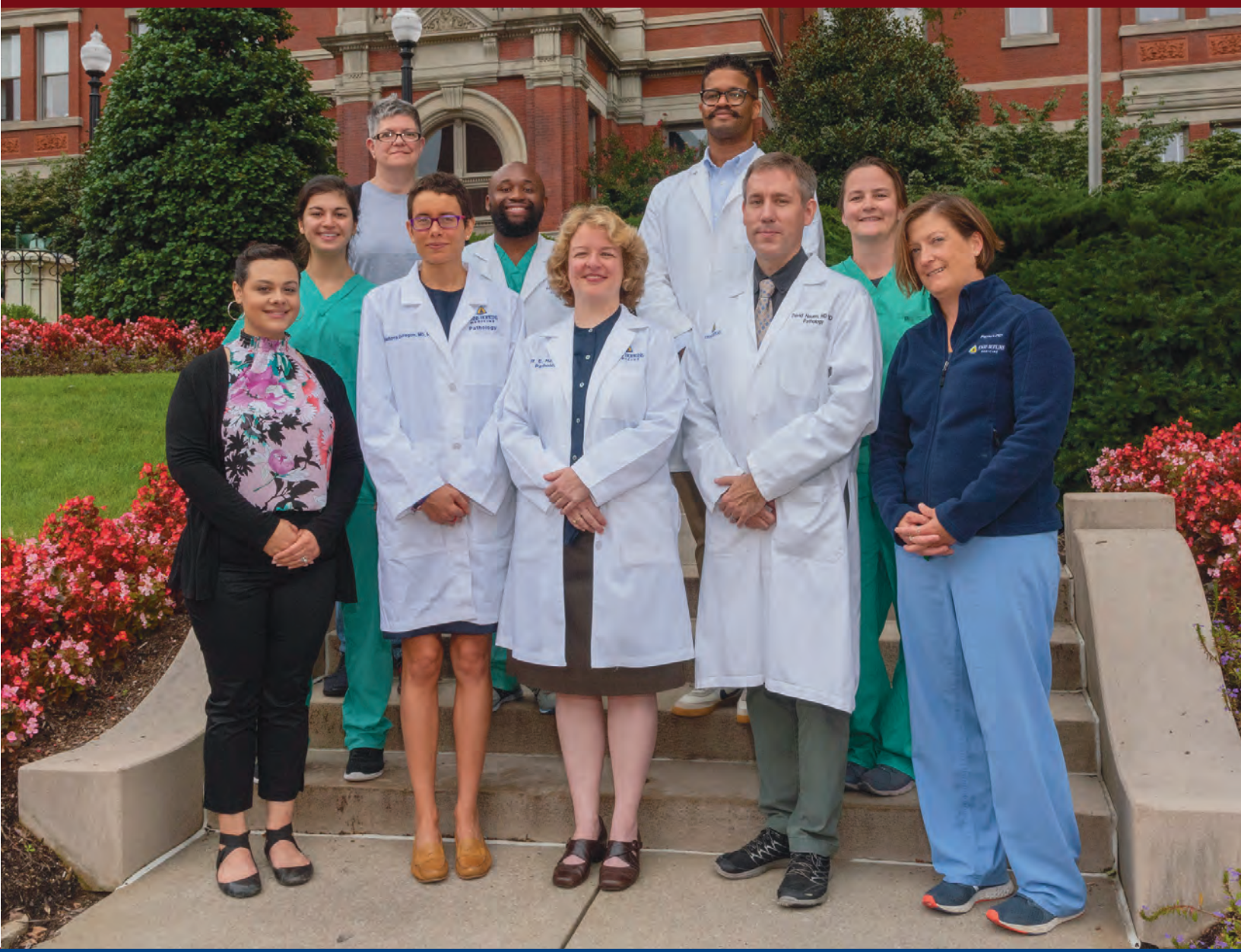
PathWays

NEWS AND INFORMATION FROM JOHNS HOPKINS PATHOLOGY

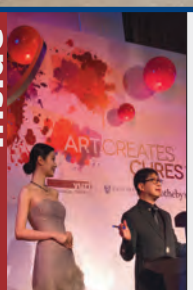
December 2018

AUTOPSY PATHOLOGY ENTERS THE MODERN ERA

CONTINUING THE LEGACY PASSED DOWN FROM DR. WELCH THROUGH THE PRESENT DAY



Inside



DIRECTOR'S CORNER

Exuberance - The Passion For Life!

I just finished rereading Kay Redfield Jamison's beautifully written book, *Exuberance: The Passion for Life*. In her book, she describes exuberance as "an abounding, ebullient, effervescent emotion. It is kinetic ... irrepressive." As I read Kay's book, I kept thinking of our department. Exuberance simply permeates every aspect of our department!

Exuberance drives exploration, and our researchers have exuberance in abundance. Again this year we led all pathology departments in NIH funding (www.MRIMR.org)(page 20). We have been #1 in NIH funding for ten of the last eleven years! More importantly, our researchers continue to make impactful discoveries. These discoveries help define disease entities, and advance our understanding of the fundamental drivers of disease. In so doing, our research fights human suffering. You can find a listing of our publications by year on the web (http://pathology.jhu.edu/department/research/publications.cfm). I am particularly excited that Nilabh Shastri, M.Sc., Ph.D., a world authority on antigen processing and presentation, has joined our faculty as a Bloomberg Distinguished Professor. Other exciting new hires onto our faculty include Claire Knezevic, Ph.D., in Clinical Chemistry, Marissa White, M.D., in Surgical Pathology, and Rena Xian, M.D., M.S., in Hematopathology and Molecular Pathology. Great things will come from this new talent!

Our educators also have exuberance! Kay writes that "Great teachers infect others with their delight in ideas, and such joy…" and our faculty certainly are inspirational educators who teach with great joy! In this mold, Marc Halushka, M.D., Ph.D., who it seems has won every possible teaching award the School of Medicine has to offer (page 22), has taken over as our new Deputy Director for Education. Marc, in addition to maintaining the high level of educational excellence established by Mike Borowitz, will aid our faculty in their education pursuits, and infuse our educational programs with "possibilities."

Ralph H. Hruban, M.D.

On the clinical side, our faculty and staff not only provide world-class service, but they are also always innovating. As Kay wrote, "Exuberance is a fermenting, pushing-upward-and-forward force…" Exemplifying innovation, Aaron Tobian, M.D., Ph.D., has taken over as our new Deputy Director for Clinical Affairs. Aaron's vision is to maintain Hopkins' standard of world-class clinical care, support innovation, and enhance collaboration among the JHM hospitals.

In her book, Kay states that resilience is a vital benefit of exuberance. Our exuberance gives us the strength to be resilient in these challenging financial times.

Kay ends her book with a 19th century hymn:

My life flows on in endless song
Above earth's lamentation.
I hear the sweet though far-off hymn
That hails a new creation.
Through all the tumult and the strife,
I hear the music ringing;
It finds an echo in my soul,
How can I keep from singing?

How can we keep from singing as we celebrate our department?

DR. EVAN BLOCH'S WONDERFUL OBSESSION

Evan Bloch, M.D., is an assistant professor in the Division of Transfusion Medicine. Beyond his professional interests in neglected and emerging infectious diseases, Evan is an avid scuba diver. He describes diving "more as an unhealthy obsession than a hobby." He started diving in his native South Africa when he was 16, and continued to dive weekly with his instructor throughout university, later becoming a divemaster. Diving in the cold Atlantic waters of Cape Town was some of his best diving—nothing quite like regular encounters with Cape fur seals, the occasional shark sighting and even the rare southern right whale. Evan has since dived extensively around the world from Papua New Guinea to Vancouver Island. His more unusual experiences include diving a glacial rift between the American and Eurasian continental plates in Iceland, cave diving in Majorca, and negotiating a school of several hundred eagle rays in the Galapagos Islands. From whale sharks to pygmy seahorses, there is always something new to see underwater, a parallel universe that remains relatively unexplored.

Evan Bloch diving in Silfra, Iceland in 2005, upper left.

AUTOPSY PATHOLOGY ENTERS THE MODERN ERA

The Johns Hopkins Division of Autopsy Pathology is a proud and vibrant service caring for deceased patients, family members, and physician clients. Although autopsy rates nationally have fallen to as low as 1-3% at many hospitals (or none at all in some cases), 25-30% of patients who die within the Hopkins System are autopsied. This amounts to 375-400 cases per year. The Autopsy Division performs autopsies for patients of The Johns Hopkins Hospital, the Johns Hopkins Bayview Medical Center, Suburban Hospital, Howard County General Hospital, and Sibley Memorial Hospital, as well as private autopsies for deceased patients outside of Johns Hopkins. An extraordinary total of over 55,000 autopsies have been performed at The Johns Hopkins Hospital since the inception of the Autopsy Program.

The history of the Autopsy Division stretches back through the entire past of Hopkins itself. Dr. William Welch performed the first autopsy, literally case number 1, in May of 1889 on a patient of Dr. William Osler, with the death found to be caused by obstruction from gallstones. Discoveries ranging from the initial descriptions of Whipple's disease and Hodgkin lymphoma to the modern delineation of the molecular characteristics of pancreatic and prostatic cancers have originated from Johns Hopkins autopsies.

Dr. Grover Hutchins was the Director of Autopsy from 1976-1998 and continued on active service until his death in 2010. He was a world-renowned researcher and educator, and a tireless champion of the autopsy. The Department's Grover M. Hutchins Award was established and is bestowed yearly in his honor, supported by his wife Loretta Hutchins. Dr. Barbara Crain succeeded Dr. Hutchins and served as Autopsy Director from 1998-2015. Upon Dr. Crain's retirement, Dr. Jody Hooper was named Director of Autopsy.

Autopsy Contributions

Clinical Care

The literature shows that autopsies continue to discover major discrepancies between pre- and postmortem diagnoses approximately 10-20% of the time. However, the reasons to perform autopsies go far beyond only unknown cause(s) of death, and include observation of long- and short-term treatment effects, education of trainees and physicians, quality assurance, and importantly, information, closure and assurance for families.

Education is an important aspect of Autopsy Pathology.

The Division provides unique specimens for laboratory research.

Education

The Autopsy Division faculty and staff participate in medical student teaching in Gross Anatomy for first-year medical students and in multiple second-year courses. The Division provides museum specimens for other laboratory sessions and instructs third-year students about to enter the wards on death certification and autopsy. In addition to the training of all Anatomic Pathology residents, the Autopsy Division participates in teaching visiting medical students, veterinary postdoctoral students, and physician assistant students, as well as clinical teams that come to the Autopsy suite for cases. Autopsy faculty also regularly present at Perinatal, PICU, Pediatric, Thoracic, Internal Medicine, and Surgical Mortality and Morbidity conferences, and a very successful and acclaimed Internal Medicine Grand Rounds about a patient with Crigler-Najjar syndrome was recently presented.

Research

Johns Hopkins autopsy consents provide permission for the retention of organs and tissues for research as well as for education. The Autopsy Division routinely provides tissue samples for fifteen different research groups, as well as controls for immunohistochemistry.

In addition, the Rapid Autopsy Program is an integral part of the Autopsy Division at Johns Hopkins. Rapid autopsies are performed on an urgent basis to collect organs and tissues for research, most frequently in cancer. Cell lines, animal xenografts, and genetic sequencing as well as other types of studies have been accomplished using Hopkins postmortem samples. Rapid autopsy has the power to sample large volumes of tissue from many different areas of the body at one time, in a way that is simply not possible in critically ill living patients.

CONTINUED ON PAGE 4

CONTINUED FROM PAGE 3

The Johns Hopkins Legacy Gift Rapid Autopsy program is one of only fourteen in the country that performs this important work and is one of a very few that supports research across all organ systems. Sixty-eight Legacy cases have been performed since September of 2014 when the program began in its current all organ systems approach. In addition to numerous Hopkins researchers, Legacy now collaborates with the Children's Cancer Therapy Development Group in Portland, Oregon, as well as the NCI. These collaborations include cases of melanoma, sarcomas, neurologic tumors, and cancers of the prostate, pancreas, kidney, ovary, liver, head and neck, breast, colon, and lung, as well as four cases of other genetic disorders. Legacy Gift also maintains a biorepository with over 1,700 frozen and formalin-fixed specimens for further future research. The Program operates as a Cancer Clinical Core with NIH funding and also has support from the Sidney Kimmel Comprehensive Cancer Center.

Front row, from left, Jody Hooper, David Nauen, Eleonora Duregon. Back row, from left, Jowaly Schneider, Katie Flickinger, Sofia Rooney, Alex Meadows, Moses Chappell, Pam Wight, Michelle Olson

Faculty

The clinical service is principally covered by Dr. Jody Hooper, director of the Division of Autopsy Pathology, and Dr. David Nauen, along with two other faculty members, Drs. Fred Askin and Ed Gabrielson, covering one week of service each, and one outside adjunct faculty member, Dr. Gary Pasternack, covering one weekend each month. In addition to his clinical service on the autopsy and neuropathology services, Dr. Nauen is building a research program to investigate the development of the hippocampus and how this brain region responds to injury, particularly as it relates to the pathogenesis of temporal lobe epilepsy. Recent open-source tools and publications are detailed on his lab website, http://labs.pathology.jhu.edu/nauen/.
Dr. Hooper is not only responsible for the clinical service, but also supervises and performs all research tissue collection on every case and serves as the attending physician for all rapid autopsies. She participates in study design with research collaborators, evaluating histologic slides, and interpreting clinic-pathologic correlations with sequencing and other testing results. She has presented talks about autopsy and rapid autopsy to ten Hopkins research groups, five groups of clinical residents and fellows, and six medical student groups, as well as numerous outside groups including the University of California, San Diego, and upcoming at the University of Washington. She has chaired the College of American Pathologists (CAP) Autopsy Committee since 2014, and has advocated for the autopsy as a member of the CAP Council on Scientific Affairs. Dr. Hooper also participated in the Association of Pathology Chairs Autopsy Working Group and the Autopsy Task Force (five pathologists) formed to shape the future of autopsy education and practice.

Fellows

The Autopsy Division supports the only research autopsy fellowship in the United States, to our knowledge. Coming from Turin, Italy, Dr. Eleonora Duregon, M.D., Ph.D., has become an essential part of the program, attending clinical and research autopsy cases including extensive availability after hours and weekends. She is responsible for all research specimen dissection, performs microscopic evaluations and photography, and participates in projects that utilize the postmortem specimens. She has been co-first author on one published paper and co-wrote a chapter on the practice of rapid autopsy for the upcoming book, *Autopsy in the 21st Century*, co-edited by Dr. Hooper.

Staff

The heart of the Autopsy Division is its extraordinarily skilled and dedicated staff. Katie Flickinger, M.S., PA(ASCP)^{CM}, is the administrator and managing pathology assistant for the Division and has been particularly invaluable in the creation of new autopsy protocols and procedures for the Epic Beaker build. Michelle Olson, M.S., PA(ASCP)^{CM}, is the Division's teaching pathology assistant, instructing residents and all other appropriate visitors in dissection and diagnosis, and she is also the curator of the teaching specimen collection. Alex Meadows, Moses Chappell,

Rapid autopsies are performed to collect organs and tissues for research.

CONTINUED ON PAGE 15

More Income for You, A Legacy for the Department of Pathology

Take advantage of higher payout rates when you establish a new Johns Hopkins charitable gift annuity.

A charitable gift annuity supports the future of the Department of Pathology and provides income to you or your loved one during your lifetime, along with these tax benefits:

- Partially tax-free income
- Favorable treatment of capital gains, when you donate appreciated securities
- An immediate income tax deduction

The chart shows rates for immediate payment.

For a personal proposal, contact:

Amy M. Helsel
Senior Director of Development
Department of Pathology
443-287-7943
ahelsel@jhmi.edu
giving.jhu.edu/giftplanning

Charitable Gift Age	Annuity Rates One-life rate
90	9.5%
85	8.3%
80	7.3%
75	6.2%
70	5.6%
65	5.1%

Seek advice from a tax professional before entering into a gift annuity agreement.

JOHNS HOPKINS
UNIVERSITY & MEDICINE

THE FOURTH ANNUAL FRED AND JANET SANFILIPPO VISITING PROFESSOR LECTURE

Mark L. Tykocinski, M.D., Provost and Executive Vice President for Academic Affairs at Thomas Jefferson University and the Anthony F. and Gertrude M. DePalma Dean of the Sidney Kimmel Medical College at Jefferson, gave the Fourth annual Fred and Janet Sanfilippo Visiting Professor Lecture on June 11, 2018. Dr. Tykocinski's talk, "The Future of Medical Education: Osler-Flexner Redux," outlined key landmark events in the evolution of medical education in the U.S., and painted an inspiring vision of the future of medical education. Dr. Tykocinski described the 21st century medical student as one who "thrives in a world of perpetual change, collaborates across knowledge domains, thinks critically, leverages data science, and evolves into a humanistic, impactful citizen of society."

Fred Sanfilippo (center) with the Fred and Janet Sanfilippo Award recipients Tasha Larman, Michael Haffner, Daniel Miller and Meghan Morris

Michael Borowitz, Mark Tykocinski, Fred Sanfilippo and Ralph Hruban

Claire E. Knezevic, Ph.D., received her B.A. in chemistry from Scripps College in Claremont, California. She pursued her Ph.D. in organic chemistry at the University of Illinois at Urbana-Champaign under the mentorship of Prof. Paul Hergenrother. She completed postdoctoral research in chemical proteomics at the Moffitt Cancer Center in Tampa, Florida. Claire joined the Johns Hopkins Department of Pathology as a clinical chemistry fellow in 2016, and joined the faculty as an assistant professor in 2018. Her research interests focus on the use of mass spectrometry for therapeutic drug monitoring as well as toxicology testing.

Nilabh Shastri, M.Sc., Ph.D., was born in the Himalayan valley of Dehra Dun in India. He received his B.Sc. (Honors) as a University medalist in chemistry in 1972 and an M.Sc. (Honors) in organic chemistry in 1973 from Panjab University in Chandigarh, India. He then went on to complete his Ph.D. in biochemistry from the All India Institute of Medical Sciences in New Delhi, India. After postdoctoral fellowships at the University of California, Los Angeles and Caltech, Pasadena, Nilabh was appointed as an assistant professor in the Molecular and Cell Biology Department at the University of California, Berkeley in 1987, and rose through the ranks to become a professor of immunology and pathogenesis. His honors include the National Science Talent Scholar (1968-1973), Research Fellow of the Leukemia Society of America, Senior Research Fellow of the American Cancer Society, the PEW Scholar in Biomedical Sciences, the campus-wide Distinguished Teaching Award from UC Berkeley (2000), The Lord Harris Senior Research Fellow, University of Oxford (2010), and the Head of the Division of Immunology and Pathogenesis at UC Berkeley (2010-2015). Nilabh researches mechanisms of immune surveillance.

Marissa J. White, M.D., is a Maryland native and earned her B.A. in biology from the University of Richmond. She then earned her M.D. from Morehouse School of Medicine and completed her residency training in anatomic and clinical pathology at Johns Hopkins. During her training at Hopkins, she served as chief resident for the 2016-2017 academic year and was active in resident and medical student education through her work with the department's rotation for medical students underrepresented in medicine. After residency, she completed the Advanced Specialty Training Program in Surgical Pathology. Marissa joined the Division of Surgical Pathology on July 1, 2018 where her clinical efforts focus on diagnostics in head and neck pathology, and her research efforts focus on graduate and undergraduate pathology medical education. She will also continue to work closely with the Pathology Diversity Committee to support the department's commitment to a diverse and inclusive learning environment.

Rena R. Xian, M.D., M.S., is from Toronto, Canada. She received her B.S. and M.S. degree in molecular and cellular biology from Johns Hopkins University and her M.D. from Northwestern University. She completed AP/CP residency at the University of Pennsylvania, a hematopathology fellowship at Johns Hopkins, and a molecular genetic pathology fellowship at UCLA. Rena then joined the faculty of the Department of Pathology and Lab Medicine at UCLA, where she served as the technical director of the molecular diagnostics laboratories for part of her time there. Rena joined our faculty as an assistant professor in the Division of Molecular Pathology and Hematopathology on May 1, 2018. In addition to clinical and teaching services, Rena's research will focus on genetic alterations of B cell lymphoma, mechanisms of lymphoma progression and recurrence, and the broader application of large-scale genomics and novel techniques to molecular oncology.

PRIMARY FACULTY CHANGES - 2018-2019

New Faculty

Faculty Name	Rank	Division
Nilabh Shastri, M.Sc., Ph.D.	Professor	Immunopathology
Claire Knezevic, Ph.D.	Assistant Professor	Clinical Chemistry
Marissa J. White, M.D.	Assistant Professor	Surgical Pathology
Rena Xian, M.D., M.S.	Assistant Professor	Molecular and Hematology Pathology
Jessica Dillon, M.D., M.S.	Assistant	Gynecologic Pathology
Judd Fite, M.D., MBA	Assistant	Surgical Pathology
Elise Gelwan, M.D.	Assistant	Surgical Pathology
Zena Jameel, M.B.Ch.B.	Assistant	Surgical Pathology
Tatianna Larman, M.D.	Assistant	Gastrointestinal/Liver Pathology
James Adam Miller, M.D.	Assistant	Gastrointestinal/Liver Pathology
Jorge Novo, M.D.	Assistant	Gynecologic Pathology
Annika Windon, M.D.	Assistant	Surgical Pathology
Yang Zhang, M.D.	Assistant	Gastrointestinal/Liver Pathology

Promotions

Faculty Name	Rank	Division
Barbara Detrick, Ph.D.	Professor Emerita	Immunopathology
Kathleen Burns, M.D., Ph.D.	Professor	Hematopathology
William Clarke, Ph.D., MBA	Professor	Clinical Chemistry
Marc Halushka, M.D., Ph.D.	Professor	Cardiac Pathology
Aaron Tobian, M.D., Ph.D.	Professor	Transfusion Medicine
Hui Zhang, Ph.D.	Professor	Clinical Chemistry
Alexander Baras, M.D., Ph.D.	Associate Professor	Informatics
Jody Hooper, M.D.	Associate Professor	Autopsy Pathology
Peter Illei, M.D.	Associate Professor	Cytopathology
Aaron James, M.D., Ph.D.	Associate Professor	Surgical Pathology
Nicole Parrish, Ph.D.	Associate Professor	Clinical Microbiology
Patricia Simner, M.Sc., Ph.D.	Associate Professor	Microbiology
Laura Wood, M.D., Ph.D.	Associate Professor	Gastrointestinal/Liver Pathology

Departures

Faculty Name	Rank	Current Location and New Role
Alexandra Valsamakis, M.D., Ph.D.	Professor	Vice President and Chief Medical Officer Roche Molecular Diagnostics, Pleasanton, CA
Yi Ning, M.D., Ph.D.	Associate Professor	Assistant Professor of Pathology and Laboratory Medicine (Interim), Weill Cornell Medical College, New York, NY
Deborah Belchis, M.D.	Assistant Professor	Adjunct Assistant Professor, JHU SOM
Amanda Carina Barrett, M.D.	Assistant	GI Pathology Fellow, Emory University, Atlanta, GA
Kathleen Byrnes, M.D.	Assistant	Assistant Professor, Pathology & Immunology, Washington University School of Medicine, St. Louis, MO
Michael E. Kallen, M.D.	Assistant	Assistant Professor of Pathology, University of Maryland School of Medicine, Baltimore, MD
Jason B. Kern, M.D.	Assistant	Pathologist, St. Louis Pathology Associates, St. Louis, MO
Chengbao Liu, M.D.	Assistant	Pathologist, ProPath, Dallas, TX
Rifat Mannan, M.D.	Assistant	Assistant Professor Pathology, University of Pennsylvania Perelman School of Medicine, Philadelphia, PA
Abby M. Richmond, M.D.	Assistant	Pathologist, University of Colorado, Aurora, CO

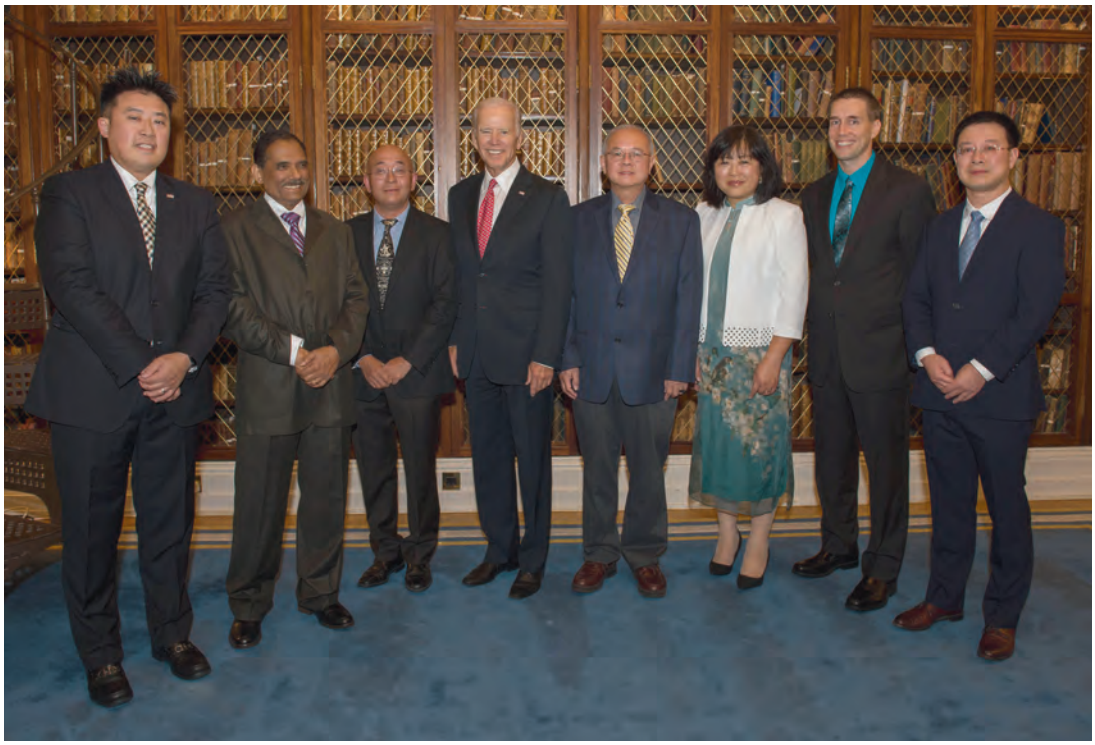
JOHNS HOPKINS ALL CHILDREN'S HOSPITAL

Initially founded in 1926 as the American Legion Hospital for Crippled Children to care for children with polio, Johns Hopkins All Children's Hospital (JHACH) in St. Petersburg, Florida has grown into a leading pediatric academic health system. Since joining the Johns Hopkins Health System in 2011, JHACH has expanded educational opportunities for trainees. The inaugural pediatric residency class began training in 2014. Fellowship training is currently available in neonatal-perinatal medicine, pediatric hospice and palliative medicine, pediatric hospital medicine, pediatric neurosurgery, and general pediatric surgery, with plans to launch fellowship programs in pediatric cardiology and pediatric surgical critical care in 2020.

The Department of Pathology and Laboratory Medicine at JHACH is comprised of anatomic and clinical pathology sections, as well as a variety of specialized laboratories including blood bank, cytogenetics, electron microscopy, molecular genetics, immunogenetics, and immunology. The pathology faculty at JHACH has specialty training and certification in pediatric pathology and hematopathology, and expertise in neuropathology.

Resident interest led to an educational partnership between the pathology residency program at The Johns Hopkins Hospital and the Department of Pathology at JHACH. Since the fall of 2017, the faculty at JHACH have contributed to resident didactics through teleconference lectures. These lectures utilize case material as digital slides, gross specimen images, and radiology to review fundamentals practice and skills of pediatric and adolescent pathology, and highlight interesting cases seen on service at JHACH. Curriculum for a general pediatric pathology elective rotation was also developed, and the first resident travelled to St. Petersburg to complete the elective in April 2018. Resident activities included participation in all patient care services, review of daily surgical pathology cases, and participation in multidisciplinary conferences with oncology, neurosurgery, and general surgery. The faculty also provided focused didactics including topics in neuropathology, hematopathology, and clinical pathology, with a focus on aspects of care unique to the pediatric population. In addition to a general pediatric pathology elective, electives in pediatric hematopathology or pediatric neuropathology are also available for interested trainees.

NCI-CPTAC TEAM HONORED IN DUBLIN, IRELAND

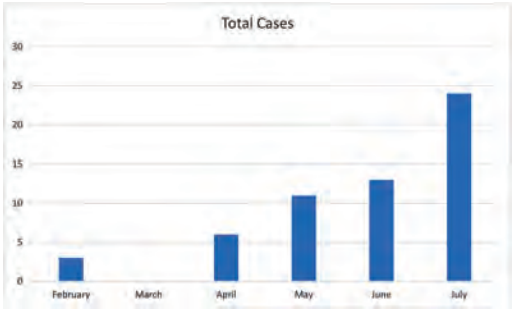


Third from left, Zhen Zhang, Joe Biden, Daniel W. Chan, and Hui Zhang, with other NCI scientists.

NCI-CPTAC Team

Former Vice President Joe Biden initiated the National Cancer Institute's Cancer Moonshot program. The NCI Clinical Proteomic Tumor Analysis Consortium (CPTAC) is a national effort to accelerate the understanding of the molecular basis of cancer through the application of large-scale proteome and genome analysis, or proteogenomics. Our JHU CPTAC team was honored at a gala dinner during the 2017 HUPO World Congress in Dublin, Ireland, with former Vice President Joe Biden.

JOHNS HOPKINS INTERNATIONAL TELEPATHOLOGY CONSULT SERVICE WITH CHINA



Telepathology cases by month during the first six months of service.

The Department started a telepathology consult service with several leading medical institutions in China in early 2018. The volume of cases submitted for consultation is increasing steadily, with 74 cases reviewed and reported by the end of the first semester. The most common subspecialty consults have been for soft tissue, followed by hematopathology, and head and neck pathology. We also received consults for almost all subspecialties, including neuropathology, GU, GI, liver, pancreas, bone, pulmonary, gynecologic, and breast.

The average turnaround time (TAT) was five days, with twelve cases reported within twenty-four hours of being received. The most common reason for prolonged TAT is delay in uploading slides with requested immunohistochemistry stains by the submitting institutions. In most cases, a definitive diagnosis was rendered. Some of the reasons for not rendering a definitive diagnosis include inability by the submitting institution to perform certain immunohistochemistry stains, molecular tests, or to submit radiologic images. In such situations, a descriptive diagnosis with a note explaining the diagnosis is rendered.

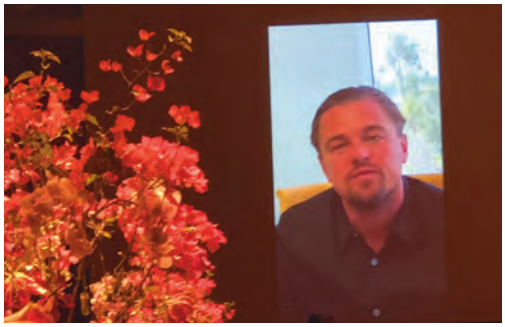
Our Chinese colleagues have emphasized that they appreciate detailed reports with an explanatory note and disfavor brief reports with no explanation. Our faculty have enjoyed a very intuitive system with excellent speed and no connectivity interruptions.

Sample screen shot of user-friendly digital pathology platform.

ART CREATES CURES

Inspired by his own battle with pancreatic cancer, art entrepreneur Budi Tek was moved to establish the Art Creates Cures Foundation (ACC) to give those diagnosed with this deadly disease every possible chance. Art Creates Cures brings together leaders in the art and science communities, and in so doing aims to accelerate and transform cancer research by uniting the creativity and ingenuity of artists and that of biomedical scientists. Joining together with partners Sotheby's and Johns Hopkins Pathology, ACC held a gala fundraiser on March 28, 2018 in Hong Kong. The fundraiser took place at the elegant Four Seasons Hotel in conjunction with Art Basel Hong Kong. Leonardo DiCaprio even sent an inspiring video message and contemporary artworks were donated by collectors and world-renowned Asian artists including Zhang Huan, Hu Junjun, Xu Bing, Zhao Bandi, and Yang Fudong. A wonderful experience for all in attendance, successfully raising more than $600,000 in support of pancreatic cancer research in the Department of Pathology.

Art auctioned at the event.



Actor Leonardo DiCaprio addressing the audience by video.

Model displaying auction item.

Ralph Hruban with Patti Wong, Chairman of Sotheby's Asia, and Tad Smith, President and CEO of Sotheby's.

Yembur Ahmad, M.D., was born and raised in Houston, Texas. She attended the six-year combined B.A./M.D. program at University of Missouri-Kansas City (UMKC), where she earned her B.A. in liberal arts and M.D. At UMKC, she spent her free time as a volunteer at a local hospice, as well as the No One Dies Alone program for dying patients, which culminated with her induction into the Gold Humanism Honor Society. She also assisted in various research projects, including the role of beta oligomers in secondary amyloidosis in Alzheimer's disease, and the role of the renin-angiotensin system in fat embolism. Yembur participated in a Global Health and Social Issues course in Cape Town, South Africa, which led to her interest in the global health track at Hopkins. Outside of medicine, Yembur enjoys indulging in vegetarian cuisine (especially Thai food), hiking and traveling. She loves languages and speaks English, Kashmiri, Hindi-Urdu and Spanish, as well as some basic French. She is also the proud owner of an impressive earring collection. Yembur is pursuing AP/CP training.

Kelly Craven, M.D., Ph.D., was born and raised in South Bend, Indiana. She attended Indiana University in Bloomington where she received her B.Sc. degrees in biology and computer science. After college, she worked as a bioinformatician at Eli Lilly and Company in Indianapolis for five years, where she developed numerous computer applications that Lilly Research Laboratories utilized for drug discovery. She then returned to school to pursue further training as part of Indiana University's Medical Scientist Training Program in Indianapolis. As part of her doctoral work, she utilized human genomic data from The Cancer Genome Atlas to identify important angiogenic pathways in a subset of pancreatic ductal adenocarcinoma patients. Kelly has received various awards, including the Lilly Research Laboratories President's Award, an NRSA Individual Predoctoral MD/PhD Fellowship (F30), and a Woman in Cancer Research Award from the American Association of Cancer Research. Kelly enjoys visiting local restaurants with her husband Andrew, as well as biking, golfing, and computer programming. Kelly is pursuing AP/CP training.

Katelynn Davis, M.D., was born and raised in Des Moines, Iowa and received a B.S. in biology from Iowa State University where she discovered an interest in conducting research and tutoring and mentoring fellow college students. She participated as a Summer Undergraduate Research Fellow at the University of Michigan and studied molecular alterations in a mouse model of traumatic brain injury. Katelynn earned her M.D. with Teaching Distinction from the University of Iowa Carver College of Medicine. She completed the Pathology Externship (a one-year fellowship in Pathology) after M3 year, working primarily in surgical and autopsy pathology. During medical school, Katelynn studied the expression of NAMPT in pancreatic ductal adenocarcinoma and wrote up cases on appendiceal signet-ring cell carcinoma and a lightning death. She continued to develop her teaching skills as a teaching assistant and coordinator for Introduction to Medical Education at Iowa, a pre-M1 introductory course, and as a small group facilitator for dental students in their Introduction to Human Pathology course. As a senior, she served as chair of the Student Education Committee, a committee tasked with creating initiatives for curriculum improvement and providing student input on institutional education committees. Katelynn enjoys going on walks with her husband and dog, bicycling (rain or shine), practicing yoga, trying new recipes, and watching TV shows. Katelynn is pursuing AP/CP training.

Curtis Gravenmier, M.D., is a native of Orlando, Florida, where he grew up playing soccer, camping, and going to the beach. As an undergraduate, he attended Florida State University and earned degrees in chemistry and biological science. He contributed significantly to studies of cell cycle regulation and received the University's Helen Louise Lee Award for undergraduate cancer research. Curtis married his high school sweetheart Catherine, prior to starting medical school. He earned his medical doctorate at the University of South Florida. Many of his clinical rotations were completed at the Moffitt Cancer Center, where he composed mathematical models to explain the evolution of cancer hallmarks including the Warburg effect. He was elected to Alpha Omega Alpha and won a Carolyn L. Kuckein Fellowship. His academic interests include microenvironmental niche construction and stem-like behavior of human malignancies, microscopy, and applied mathematics. During his free time, Curtis enjoys craft beer, brewing, cooking, outdoors activities, video games, and computer programming. Curtis is pursuing AP/CP training.

THE PATHOLOGY HOUSESTAFF 2018-2019

Monica Hill, M.D., was born and raised in Gainesville, Florida, home of the Florida Gators. She received her B.S. in nutritional sciences and her M.D. at the University of Florida. Monica left Gainesville briefly for a summer abroad to study Spanish art and architecture in Barcelona, Spain. In medical school, Monica discovered her passion for education, serving as an individual tutor and assisting in the development of a peer group-tutoring program. Her research interests focused on medical student health and wellness, including the exploration of factors contributing to career ambivalence. Monica enjoys running, putting together jigsaw puzzles while watching Netflix, experimenting with cookie recipes, and playing with other people's dogs. Monica is pursuing AP/CP training.

Robert Kruse, M.D., Ph.D., was born and raised in Houston, Texas. He attended college at Yale University in New Haven, Connecticut, where he received a B.S. in molecular biophysics and biochemistry. During his time at Yale, he researched renewable energy using algae and later HIV therapy using red blood cell traps. After graduating, he spent a year studying piggyBac transposons for gene therapy and designing new chimeric cytokine receptors for immunotherapy. Robert earned his medical degree from Baylor College of Medicine. As a member of the Medical Scientist Training Program, he also earned a Doctor of Philosophy in translational biology and molecular medicine for his work in developing a new animal model and immunotherapies for chronic hepatitis B virus infection. He presented his research on a travel award at the International HBV Meeting in Seoul, South Korea. Robert enjoys spending time with his large family, including four siblings with a twin sister. He also has a love for sports, history, trivia, and traveling. Robert is pursuing CP-only training.

Alice Meiss, M.D., was born and raised in Atlanta, Georgia. She split her undergraduate studies between Princeton University and the Savannah College of Art and Design (SCAD). She took a year off from college to work at St. Elizabeth Homeless Shelter in Santa Fe, New Mexico. After college, she worked for SCAD as an international student recruiter, traveling extensively throughout East and Southeast Asia. Along the way, she decided to become a physician and enrolled in the postbaccalaureate premedical program at the University of Virginia. She worked as a teaching assistant for several pre-med courses and as an HIV tester and counselor before attending the University of Virginia School of Medicine. Incredible pathologist-educators inspired her to enter pathology, an area of medicine perfectly suited to her visual arts training. She worked on several medical education projects and studied the histopathology of breast cancers in patients with non-BRCA hereditary mutations. She was involved in medical humanities activities through the Hook Scholars Program and joined the Gold Humanism Honor Society. Alice enjoys hiking, cooking, illustrating, and reading with her cat Matilda in her lap. She is seeking teammates for the Baltimore Kinetic Sculpture Race. Alice is pursuing AP-only training.

Clark Robinson, M.D., was born in Abilene, Texas, raised in San Antonio, and moved to Denton, Texas at the age of 16 to attend the Texas Academy of Mathematics and Science, an early entrance college program. He attended the University of Texas in Austin, where he received his B.S. in microbiology and B.A. in English. He earned his medical degree from the Texas A&M College of Medicine, where he was the president of the Pathology Student Interest Group for over three years. During his time at Texas A&M, he studied the effects of traumatic brain injury on the hippocampus in mice, as well as cardiovascular pathology at the Baylor Heart and Vascular Institute. Clark enjoys music, cooking, and traveling. Clark is pursuing AP/CP training.

Sintawat Wangsiricharoen, M.D., whose name is much easier to pronounce than it may first appear, was born in Uttaradit, Thailand. After receiving his M.D. from Chulalongkorn University in Bangkok, he worked as a general practitioner for three years, and then came to the United States for an internal medicine residency at the Cleveland Clinic. This led to two important events in his life: the discovery of his passion for pathology and meeting his future partner. Sintawat returned to Thailand for training in anatomic pathology at Chiang Mai University. In 2017, he moved to San Diego to live with his spouse John. Like many Thai, Sintawat loves cooking and eating spicy food. Luckily, his interests include swimming, hiking, kayaking, and biking, so he has (sort of) been able to maintain his weight over the years. Sintawat is pursuing AP/CP training.

FUNDING OUR FUTURE

With the uncertainties caused by decreased NIH funding and rapidly changing clinical practices, private philanthropy has become critical to our educational and research missions. The smiling faces of the fellowship recipients (opposite page) tell the story. In addition to these fellowships, we have several funds that support trainee and junior faculty research.

The Joseph Eggleston Award in Surgical Pathology

The Joseph Eggleston Fund in Surgical Pathology, established by colleagues, family and friends, honors one of the true giants in the field of surgical pathology. Dr. Eggleston was not only a leading authority on the pathology of lung cancer, but he also educated a generation of outstanding surgical pathologists. This year's grantee is ***Regina Kwon, M.D., M.P.H.*** – ***"Characterization of unclassified adult renal cell carcinoma."***

Gary S. Hill, M.D. Renal Pathology Research Award

The Gary S. Hill, M.D. Renal Pathology Fund was established by family and friends in memory of Gary S. Hill, and provides support to medical students, residents, fellows and junior faculty for their research in renal pathology. This year's recipient is ***Avi Rosenberg, M.D., Ph.D.*** as a junior faculty in Renal/Kidney Pathology.

The Grover M. Hutchins, M.D. Award

The family and friends of Grover Hutchins have joined together to establish The Grover M. Hutchins, M.D. Memorial Fund. Grover spent 56 years at Johns Hopkins and had a profound impact on our residency training program, and greatly advanced the understanding of cardiovascular and pediatric diseases. The most recent recipient was ***Eleonora Duregon, M.D., Ph.D.*** – ***"Quality assessment of tissues collected during rapid autopsy procedures."***

Catherine and Constantinos J. Limas Research Award

Catherine Limas, M.D., former Johns Hopkins Pathology fellow and faculty member, donated this award which supports a faculty member. This year's recipient is ***Amy Duffield, M.D., Ph.D.***, who is pursuing her study of **"*Novel molecular mechanisms for engineering bone regeneration*."**

Risa B. Mann Residents Award

The family, colleagues, and friends of Risa B. Mann, M.D. joined together to create the Risa B. Mann Fund for Residents to honor the life and contributions of Risa to the Department. This fund provides support for resident research and education in the Department of Pathology. This year's recipients are ***Elise Gelwan, M.D., David M. Borzik, Jr., M.D., and Regina Kwon, M.D., M.P.H.*** – ***"Pathology grossing instructional videos and digital checklists."***

Nancy M. Nath Pathobiology Teaching Award

This award was established in 2016. This award is selected by the students and given to a faculty member for outstanding teaching. This year's award recipient is ***H. Benjamin Larman, Ph.D.***

Quality Initiatives and Performance Improvement Research Award

The Quality Initiatives Award was established by the Department of Pathology and is given to the resident with the best quality improvement project for that academic year. Projects are judged by investigation of a baseline measure, application of an intervention, and measurement of results, as well as impact to the Department. This year's recipient is ***Casey M. Phan, M.D.***

The Fred and Janet Sanfilippo Research Award

The Fred and Janet Sanfilippo Research Fund honors the many contributions of the former director, Fred Sanfilippo, M.D., Ph.D., to the Department of Pathology, as well as his many contributions to the field of organ transplantation pathology. The fund, established by the Sanfilippos, supports innovative research by our residents and fellows. This year's recipient is ***Daniel L. Miller, M.D., Ph.D.*** – ***"Deep algorithms in cytology specimens from fine needle aspiration of the pancreas."***

The Mabel Smith Endowment for Resident Research and Education Award

The Mabel Smith Fund, established by colleagues and friends in the Department of Pathology, is used to support special courses, research projects, travel, and other needs of our residents. This year's grantee is ***Michael Haffner, M.D., Ph.D.*** – ***"In situ detection of DNA repair alterations in cancer."***

Gerald S. Spear JHU-UCI Medical Student Pathology Fellowship

This program was established in 2005 to commemorate Dr. Spear's retirement. The Spear Fellowship provides a UC Irvine student with the opportunity to participate in a one-month elective in the Department of Pathology at Johns Hopkins. The goal is to inspire respect for, and possibly a career in pathology.

2018-2019 FELLOWSHIP RECIPIENTS

John K. Boitnott Fellow
Yang Zhang, M.D.

Michael J. Borowitz Fellow
Alisha Ware, M.D.

Peter C. Burger Fellow
Bartholomew White, M.D.

Daniel W. Chan Fellow
Stefani Thomas, Ph.D.

Patricia Charache Fellow
Alexander J. Fenwick, M.D.

Jonathan I. Epstein Fellow
Michael Haffner, M.D.

Yener S. Erozan Fellow
Sara Mustafa, M.D.

Sol Goldman Fellow in Pancreatic Cancer
Matthäus Felsenstein, M.D.

Constance A. Griffin Fellow
Jennifer Bynum, M.D.

Paul M. Ness Fellow
Kimberly Lally, M.D.

Virginia O'Leary and John C. Wilson Autoimmune Disease Research Fellow
Pauline Chalan, Ph.D.

Lorraine Parent Racusen Fellow
Francesca Costigliolo, M.D.

Dorothy L. Rosenthal Fellow
Derek Allison, M.D.

John H. Yardley Fellow
Tatianna Larman, M.D.

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 online, please visit our secure site at http://pathology.jhu.edu/department/giving.cfm, or please 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 424
Baltimore, MD 21287-6417

Karen E. King, M.D.
1962 - 2018

Richard L. Humphrey, M.D.
1935 - 2018

CONTINUED FROM PAGE 4

and Sofia Rooney are our very capable autopsy technicians who perform eviscerations and keep supplies and spaces in top shape. Pam Wight is the Autopsy medical records coordinator and Jowaly Schneider is the study coordinator for the Research Autopsy Program. This incredible team of staff keeps our Division running smoothly and we are most pleased to have them support the work of the Division.

Facility Improvements

Renovations were recently completed on a former storage room that now contains a fully enclosed office space for future assistants or fellows, as well as an additional fellow cubicle and the Legacy Gift Program study coordinator office. In addition, the room houses a multi-headed microscope which is in frequent use for sign-out and consensus conferences, as well as a conference table area with full IT capability. Continuous quality improvement meetings for the Division now include telephone and computer conferencing with representatives from affiliate hospitals, and future lunchtime CME conferences for staff are also planned.

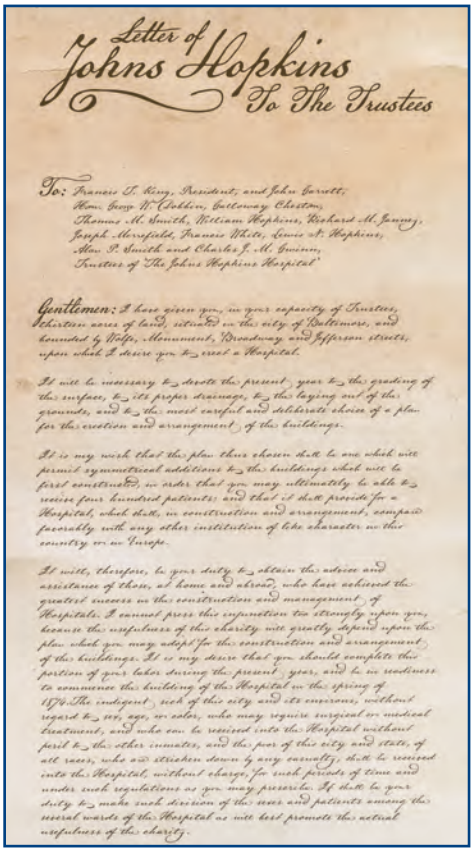
National Recognition for the Division

This year has seen new media exposure for the Legacy Gift Rapid Autopsy Program, including a *Wall Street Journal* interview, an article through Kaiser Health that was linked to TIME Health online, cnn.com, and a feature article and online video in the *Baltimore Sun*. A *Washington Post Magazine* article is upcoming, and a multipart series on the autopsy is under discussion with the BBC. Hopkins-based autopsy platforms and posters were presented at national meetings including USCAP in 2017 and 2018. Dr. Hooper has taught short courses on autopsy at CAP in 2018, USCAP in 2017 and 2018, with one upcoming in 2019.

The Autopsy Division carries the torch passed down from Dr. Welch through to the present day, and we all look forward to participating in our new roles in the emerging areas of autopsy and rapid autopsy into the future.

CELEBRATING 125 YEARS OF THE SCHOOL OF MEDICINE

From the day the Johns Hopkins University School of Medicine opened its doors in 1893 to eighteen students—three of them women—it has pursued a mission to transform medical education, research, and patient care. Our 125th anniversary has been celebrated at alumni reunions, through pop-up museums, and through celebrations of diversity as reflected in Johns Hopkins' original letter. Faculty Ralph Hruban and Paul Ness were selected by their peers as individuals who personify Johns Hopkins Medicine's mission to improve the health of the community and the world, as highlighted on page 22.



Letter of Johns Hopkins To The Trustees

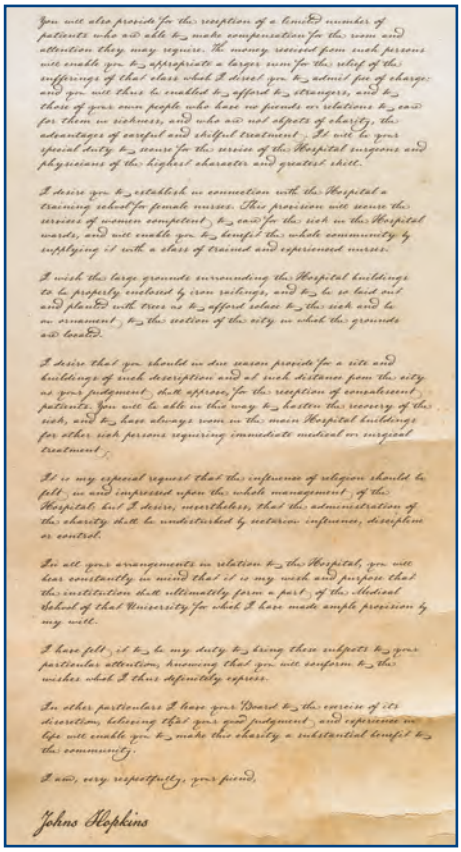
To: Francis T. King, President, and John Garrett, Hon. Geo. W. Dobbin, Calloway Clinton, Thomas M. Smith, William Hopkins, Richard M. Janney, Joseph Merryfield, Francis White, Louis N. Hopkins, Alex. P. Smith and Charles J. M. Gwinn, Trustees of The Johns Hopkins Hospital

Gentlemen: I have given you, in your capacity of Trustees, certain acres of land, situated in the city of Baltimore, and bounded by Wolfe, Monument, Broadway and Jefferson streets, upon which I desire you to erect a Hospital.

It will be necessary to devote the present year to the grading of the surface, to its proper drainage, to the laying out of the grounds, and to the most careful and deliberate choice of a plan for the erection and arrangement of the buildings.

It is my wish that the plan thus chosen shall be one which will permit symmetrical additions to the buildings which will be first constructed, in order that you may ultimately be able to receive four hundred patients; and that it shall provide for a Hospital, which shall, in construction and arrangement, compare favorably with any other institution of like character in this country or in Europe.

It will, therefore, be your duty to obtain the advice and assistance of those, at home and abroad, who have achieved the greatest success in the construction and management of Hospitals. I cannot press this injunction too strongly upon you, because the usefulness of this charity will greatly depend upon the plan which you may adopt for the construction and arrangement of the buildings. It is my desire that you should complete this portion of your labor during the present year, and be in readiness to commence the building of the Hospital in the spring of 1870. The indigent sick of this city and its environs, without regard to sex, age, or color, who may require surgical or medical treatment, and who can be received into the Hospital without peril to the other inmates, and the poor of this city and state, of all races, who are stricken down by any casualty, shall be received into the Hospital, without charge, for such periods of time and under such regulations as you may prescribe. It shall be your duty to make such division of the men and patients among the several wards of the Hospital as will best promote the utmost usefulness of the charity.



You will also provide for the reception of a limited number of patients who will be able to make compensation for the room and attention they may require. The money received from such persons will enable you to appropriate a larger sum for the relief of the sufferings of that class which I direct you to admit free of charge; and you will thus be enabled to afford to strangers, and to those of your own people who have no friends or relations to care for them in sickness, and who are not objects of charity, the advantages of careful and skilful treatment. It will be your special duty to insure for the service of the Hospital surgeons and physicians of the highest character and greatest skill.

I desire you to establish in connection with the Hospital a training school for female nurses. This provision will secure the services of women competent to care for the sick in the Hospital wards, and will enable you to benefit the whole community by supplying it with a class of trained and experienced nurses.

I wish the large grounds surrounding the Hospital buildings to be properly enclosed by iron railings, and to be so laid out and planted with trees as to afford relief to the sick and to ornament, to the utmost of the city in which the grounds are located.

I desire that you should in due season provide for a site and buildings of such description and at such distance from the city as your judgment shall approve, for the reception of convalescent patients. You will be able in this way to hasten the recovery of the sick, and to have always room in the main Hospital buildings for other sick persons requiring immediate medical or surgical treatment.

It is my especial request that the influence of religion should be felt in and impressed upon the whole management of the Hospital; but I desire, nevertheless, that the administration of the charity shall be undisturbed by sectarian influence, discipline or control.

In all your arrangements in relation to the Hospital, you will bear constantly in mind that it is my wish and purpose that the institution shall ultimately form a part of the Medical School of that University for which I have made ample provision by my will.

I have felt it to be my duty to bring these subjects to your particular attention, knowing that you will conform to the wishes which I thus definitely express.

In other particulars I have your Board to the exercise of its discretion, believing that your good judgment and experience in life will enable you to make this charity a substantial benefit to the community.

I am, very respectfully, your friend,

Johns Hopkins

Sharon Weiss and Ralph Hruban

Madison James comes from Flower Mound, Texas. She received her B.S. in chemical engineering in 2017 and her M.S. in biomedical engineering in 2018 from the University of Oklahoma. Her undergraduate research and master's research focused on modeling blood flow using computational fluid dynamics to predict damage, specifically hemolysis, caused to cells by artificial heart valves. During an undergraduate summer research program, she worked on a project which used infrared imaging to map the human brain prior to surgery. Madison would like to focus her studies on neurological disorders, specifically neurodegenerative diseases. In her free time, Madison enjoys playing soccer, trying new restaurants, exploring new cities, and attending concerts and festivals.

Ana Jenike is from the Pacific Northwest area of the United States. She graduated from Portland State University with a B.S. in biology in 2018. For several years as an undergraduate, she performed research in a materials lab which specialized in the synthesis and use of metal nanocrystals. Ana worked on a solutions-based green synthesis of copper nanowires for their antibiotic effect, as well as in copper interconnects. Ana is particularly interested in molecular pathology and how that can be applied not only in research but also in practice. Ana hopes to investigate uses of pathogen proteins in nanotechnologies and research how nanotechnologies affect viral or bacterial proteins. Another of Ana's passions is helping young women become invested in STEM careers, an area that Ana hopes to develop while in graduate school. Ana is looking forward to exploring the Baltimore area with her dog to find new and fun places to eat.

Katie Mulka is originally from Troy, Michigan. She received a B.S. in psychology from the University of Michigan, a B.S. in biology from Western Michigan University, and a D.V.M. from Michigan State University. During undergraduate and graduate school, she worked in a variety of research labs and studied ecology, animal models of human disease, and infectious diseases. Katie's interest in pathology developed during veterinary school as she learned about mechanisms of disease and saw the effects that they have at the tissue and cellular levels. Katie is currently a postdoctoral fellow in the Department of Molecular and Comparative Pathobiology at Johns Hopkins. In her free time, she enjoys spending time with family, her dog and cat, movies, hiking, camping, and music.

Kristen Nicholes is from Salt Lake City, Utah, and received her B.S. in chemical engineering from Brigham Young University. After three years of volunteer work, she began her Ph.D. work at Johns Hopkins Homewood in the Chemical and Biomolecular Engineering Program, where she worked in the lab of Dr. Sharon Gerecht on the differentiation of stem cells into endothelial cells. Kristen is interested in the possibilities of peptide-based nanoparticles for improved drug delivery and diagnosis in ovarian cancer. Kristen also enjoys singing, dancing, playing instruments, and reading.

Jina Park comes from Seoul, South Korea. She studied biological sciences at Seoul National University during her undergraduate years and joined the Jongkyeong Chung lab for her master's degree in 2015. During her master's degree research, she focused on the identification of novel regulatory mechanisms of cell signaling pathways, including mTOR signaling and Hippo signaling in mammalian cells. Jina is interested in research that elucidates the roles of signaling pathways in physiology and human diseases. In particular, she hopes to investigate how cells undergo dysregulation of signaling pathways during tumorigenesis and metastasis. Outside the laboratory, she enjoys playing tennis, practicing yoga, reading books, and cooking.

Harley Parker grew up in Reynoldsburg, Ohio, on the east side of Columbus. She attended Youngstown State University, earning her B.S. in biochemistry. As an undergraduate, she worked as the supplemental instruction leader for Organic Chemistry and was president of the American Chemical Society Student Chapter. She also worked as an after-school counselor for at-risk youth at the local elementary school. Harley spent the summer of 2017 at Texas A&M University where she researched methods to remove endotoxin from bacteriophage lysates during a research experience for undergraduates under Dr. Ryland Young of the Biochemistry and Biophysics Department. The phages were studied for applications as targeted bacterial infection treatments. During her senior year at Youngstown State, Harley researched the characterization of chitosan beads as a method for protein immobilization. This work has applications in industry for making catalytic enzymes removable and reusable. Harley enjoys reading, skiing, baking, and has recently taken up yoga.

Monali Praharaj comes from Mumbai, India. She received her master's degree in molecular microbiology and immunology from the Johns Hopkins Bloomberg School of Public Health in 2018. With an immense interest in immunology and infectious diseases, she chose to work at the TB Research Center in the School of Medicine. As a graduate thesis fellow, Monali specialized on a study on genetic manipulation of Mycobacterium bovis bacille Calmette–Guérin (BCG) to reengineer it as a potent immunotherapeutic tool to treat nonmuscle invasive bladder cancer. In her free time, she enjoys playing ping-pong, painting, exploring, and traveling with family and friends.

CELEBRATING DIVERSITY

Since 2013, the Pathology Diversity Committee has hosted twelve medical students and one resident into the Department's one-month elective rotation for trainees underrepresented in medicine. During their time at Hopkins, the trainees are welcome to the full breadth of the Department. They rotate on various anatomic and clinical pathology services, attend resident didactics, and meet with faculty to provide an immersive introduction to our specialty. To date, several program alumni have matched into pathology residency programs, and the Committee is humbled to have played at least a minor role in their professional development. A testament to the rotation's impact was nicely summarized by Dr. Jolee Hernandez Suddock who shared, "My participation in the program represents a crucial and seminal moment during medical school which solidified my decision to not only become a pathologist, but to strive to cultivate and emulate the positive traits of the pathologists at Johns Hopkins whom I encountered…" The success of the rotation is the result of the Committee's many visits to regional medical schools and the Student National Medical Association Annual Medical Education Conference. In an effort to reach even younger students interested in STEM careers, the Committee continues its community outreach efforts. Most recently, Dr. Tricia Murdock led the Committee's second presentation to National Native American Youth Initiative high school students, and Dr. Marissa White presented to Science Club and Honor Society students at Hammond High School in Columbia, Maryland.

THE WOMEN DOCTORS LUNCHEON

On June 5, 2018, women residents and fellows gathered with women professor colleagues for an end of year celebration luncheon and networking event. Now in its third year, the gathering provides trainees the opportunity to reflect and share accomplishments and challenges they have faced as women with rising careers in pathology. Women professors offered their encouragement and perspectives on strategies to successfully surmount barriers. This year's special focus was mentoring – the importance of mentors, how to find them, and how to build mentor networks. The Pathology women professors look forward to continuing this tradition to celebrate and network with our incredible women residents and fellows in 2019.

NEW PAVILION ON GREEN SPRING STATION CAMPUS TO OPEN

Johns Hopkins at Green Spring Station is expanding its campus and patient services. The new Pavilion III, currently under construction and slated to open in June of 2019, will consist of three floors with approximately 110,000 square feet of space. The new pavilion's address is 10803 Falls Road, Lutherville, Maryland 21093.

The Johns Hopkins Medical Laboratory & Testing, Imaging, and Medical Oncology will be located on the first floor. The second floor will be comprised of Musculoskeletal & Orthopedics, Otolaryngology, and Facial Plastics. The third floor will consist of an Ambulatory Surgery Center and a Urology practice. The Medical Laboratory, with an estimated 1,600 square feet, will continue to provide laboratory services/testing for our IVF and oncology patients. The outreach lab will consist of a small waiting room, a registration kiosk, three phlebotomy bays, private restroom, employee breakroom, and a lab processing/testing area with a pneumatic tube station for Oncology.

The Medical Laboratory will share the suite with the Preoperative Center, which will conduct physical examinations and order laboratory tests for patients scheduled for surgery.

JHM RECEIVES CLSI EXCELLENCE IN MEMBER ORGANIZATION LEADERSHIP AWARD

Johns Hopkins Medicine was honored as recipient of the 2018 "CLSI Excellence in Member Organization Leadership Award" on April 24, 2018. This award is presented to a member organization that offers exemplary support to Clinical and Laboratory Standards Institute (CLSI) and its mission to maintain leadership in the domain of standards development. The Pathology Department has been an active member of CLSI for over 20 years.

Glen Fine, CLSI Chief Executive Officer, and
Jody Hooper, who received the award on behalf of Johns Hopkins.

BLAST FROM THE PAST

What is this?

Answer on page 23

IMPLEMENTATION OF EPIC IN PATHOLOGY

Our sincere gratitude to John Boitnott who has given countless years to our patients through his tireless support of PDS.

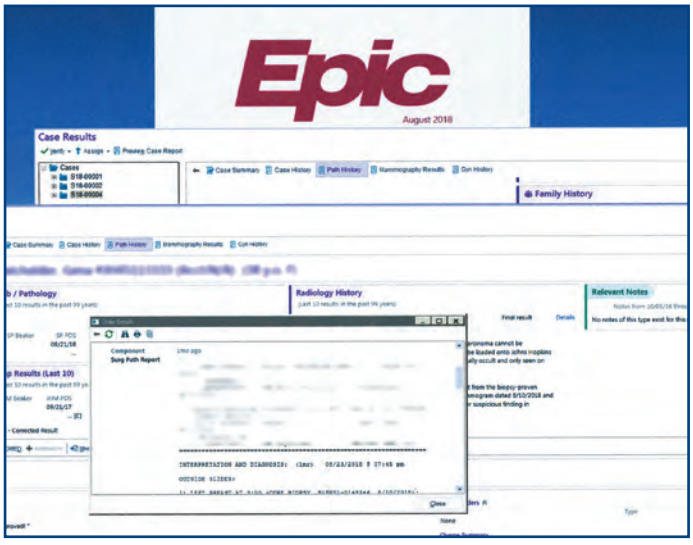
The Pathology Data Systems (PDS) Lab Information System (LIS) dates back to 1984. This system has been both our Clinical LIS (C-PDS) and Anatomic Pathology LIS (A-PDS) for many decades. In 2009, we started implementation of the SCC Soft LIS to replace functionality in the C-PDS. The primary objective was to obtain more advanced functionality in Microbiology. Our direction soon changed with the implementation of the Epic Hospital Information System (HIS) across the enterprise. The need for an enterprise LIS was required, but the Beaker LIS in 2010 was not mature enough for our complex lab needs. This multisite CP-LIS deployment had many challenges, but that is well behind us. We never fully deployed an enterprise Surgical Pathology Lab Information System, but we are about to start an entirely new direction.

The integrated Epic Beaker LIS was first released in 2008. Early adopters had minimal functionality, however, Epic continued to add new features with each new release to be competitive in the LIS marketplace. On February 10, 2019, we will upgrade to the Epic 2018 third release, while replaces our PDS AP LIS at The Johns Hopkins Hospital, Johns Hopkins Bayview, and Howard County General Hospital. There have been many challenges, but we are excited to implement an LIS that tightly integrated within the Epic HIS. Gone will be the days of registering in Epic and linking orders into the LIS. Users will do 100% of the work in one system. We are also backloading every anatomic pathology and autopsy case from 1984 to the present, along with the detailed slide and block content. This will allow the patients' previous history to be associated with the active case and will allow users to perform comprehensive searches of surgical pathology data. Providers and researchers can use more advanced search tools to correlate data across multiple platforms since operative notes, radiologic findings, and the pharmacy history are in Epic.

Some of the integrated benefits include a direct correlation of the tissues ordered in OpTime to the specimens received in the Laboratory. Nursing in the operative space can monitor the receipt of each tissue in the case by the lab, and the lab can accurately account and track each specimen barcode labeled and collected in the operating room. On go-live, we have established multiple tracking stops as tissues and slides move between accessioning, grossing, histology, Weinberg, the Pathology Reference Lab, and the sign-out rooms. Cytology and Autopsy also have tracking locations. This new tool is similar to functionality contained in the Soft CP-LIS. Over the years, we have learned the tool is only good if the end users initiate the tracking scans. We are targeting implementation of an almost paperless workflow where any external papers are scanned into the case and visually display on the sign out dashboard. Links to the OpTime case details, histologic details, and interim sign-out notes are prominently displayed on the Pathologist dashboard. By using smart phrases, smart links, and/or Nuance Dragon Medical One, we hope that a majority of cases can be signed out real time at review.

We anticipate some challenges with this implementation, but we look forward to next spring as we optimize and enhance our workflows!

1977



2019

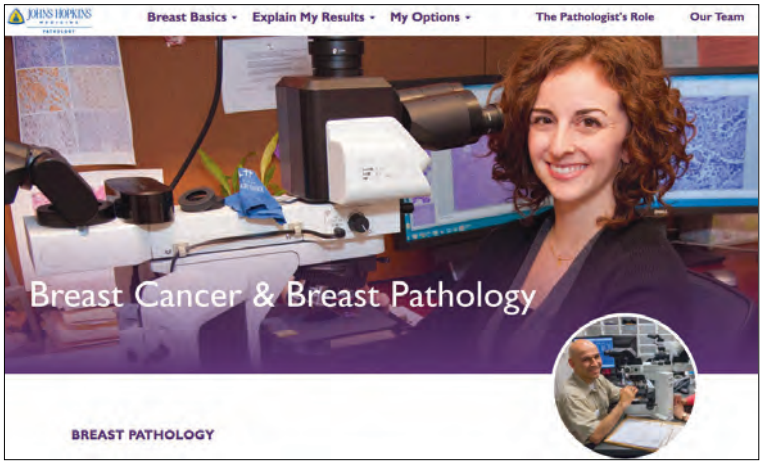
NEW GRANTS AND CONTRACTS AWARDED TO PATHOLOGY FACULTY - 10/13/17 - 9/26/18

Faculty Member	Award Type	Agency	Dates	Total Funding
Asnaghi, Laura	R21 Grant	NIH/NCI	7/1/18 - 6/30/20	392,042
Bagnasco, Serena	Contract	Hansa Medical AB	3/1/18 - 3/1/19	19,968
Burns, Kathleen	Grant	Burroughs Wellcome Fund	11/1/17 - 4/03/18	30,000
Carroll, Karen	Contract	Genmark Diagnostics	6/30/17 - 6/29/19	98,821
Carroll, Karen	Contract	Curetis AG	10/3/17 - 6/30/19	8,746
Carroll, Karen	Contract	GenMark Diagnostics	5/1/18 - 4/30/19	10,000
Carroll, Karen	Contract	Singulex	6/6/18 - 12/31/18	85,266
Caturegli, Patrizio	Grant	Queensland Institute of Medical Research	3/12/18 - 3/11/23	282,460
Cihakova, Daniela	R01 Grant	NIH/NHLBI	12/9/17 - 10/31/21	1,637,133
Clarke, William	Contract	Instrumentation Laboratory	3/15/18 - 9/30/18	54,002
Das, Sam	Contract	TEDCO	6/30/18 - 6/29/20	299,996
De Marzo, Angelo	Grant	Department of Defense	09/30/18 - 09/29/20	736,876
Eberhart, Charles	Grant	Childrens Cancer Foundation	11/3/18 - 11/2/19	75,000
Epstein, Jonathan	Contract	PathAI, Inc	10/17/17 - 10/16/18	57,127
Eshleman, James	Grant	The Stringer Foundation	7/1/18 - 6/30/19	150,000
Fowler, Mary Glenn	R01 Grant	NIH/NICHD	09/01/18 - 06/30/23	2,597,195
Hruban, Ralph	Contract	Wu Jieping Medical Foundation	9/1/18 - 8/31/19	120,000
Illei, Peter	Grant	Department of Defense	8/1/18 - 7/31/19	163,750
James, Aaron	Contract	TEDCO	6/30/17 - 6/29/18	345,000
James, Aaron	Grant	Department of Defense	7/1/18 - 12/31/19	322,680
James, Aaron	Grant	American Cancer Society	7/1/18 - 6/30/22	792,000
James, Aaron	Grant	Department of Defense	7/15/18 - 7/14/21	1,357,063
James, Aaron	Grant	Department of Defense	9/30/18 - 9/29/23	1,364,077
Lai, Shenghan	U01 Grant	NIDA	6/1/18 - 3/31/23	8,476,122
Larman, H. Benjamin	Contract	TEDCO	8/13/18 - 5/12/19	115,000
Larman, H. Benjamin	R01 Grant	NIH/NIGMS	8/15/18 - 7/31/22	1,434,997
Le Thi, Quy Hoa	S10 Grant	NIH/OD	8/1/18 - 7/31/19	561,582
Lotan Tamara	Contract	Ventana Medical Systems	8/1/17 - 10/31/18	13,000
Roden, Richard	Grant	Emerson Collective	6/1/18 - 5/31/20	200,000
Rodriguez, Fausto	Grant	Department of Defense	8/15/18 - 8/14/21	859,688
Sadegh-Nasseri	Contract	Bristol-Myers Squibb	8/20/18 - 2/28/19	100,000
Schneck, Jonathan	Contract	AstraZeneca UK	11/15/17 - 4/14/19	272,157
Sfanos, Karen	Grant	Department of Defense	09/30/18 - 09/29/20	736,876
Shih, Ie-Ming	Grant	The Honorable Tina Brozman Foundation	1/1/18 - 12/31/20	225,000
Shih, Ie-Ming	P50 Grant	NIH/NCI	9/18/18 - 7/31/23	12,405,781
Simner, Trish	Contract	Accelerate Diagnostics	5/1/18 - 4/30/19	21,109
Simner, Trish	Contract	OpGen, Inc	7/2/18 - 7/1/23	28,140
Sun, Shuying	Grant	ALS Association	10/1/17 - 9/30/20	300,000
Sun, Shuying	R01 Grant	NIH/NINDS	7/1/18 - 3/31/23	1,791,015
Tobian, Aaron	Grant	Department of Defense	09/30/18 - 09/29/22	8,151,587
VandenBussche, Chris	Contract	Genentech Corporation	5/23/17 - 12/31/18	14,125
Vang, Russell	Contract	Inovio Pharmaceuticals	5/11/18 - 5/10/21	7,000
Wang, Tian-Li	Contract	Natera Inc	6/1/17 - 2/28/19	92,366
Wang, Tian-Li	Grant	TEAL	11/1/17 - 10/31/18	10,000
Wang, Tian-Li	Contract	TEDCO	7/1/18 - 3/31/19	115,000
Wang, Tian-Li	Contract	OmniSeq Corporation	1/5/18 - 1/4/19	3,750
Wong, Phil	Contract	Merck	12/1/17 - 5/31/19	173,601
Wong, Phil	Grant	ALS Association	10/1/17 - 9/30/20	300,000
Wood, Laura	Grant	Emerson Collective	6/1/18 - 5/31/20	200,000
Wu, TC	Contract	AbbVie	12/1/17 - 11/30/21	1,720,000
			Total	**49,327,098**

PATHOLOGY WEB TEAM NEWS

The Pathology web team welcomed a new member this year, Suman Nagelia. Suman is a senior software engineer who has worked at Johns Hopkins for 15 years and came from the Pathology Data Systems group. Welcome, Suman!

We are proud to announce that we launched our first website with our new content management system, CraftCMS. This system will allow us to share data between our many sites and provides editing capabilities to our content editors. It also enables us to implement mobile-responsive design on our more than 20,000 department web pages. Stay tuned to see more of our Pathology Department sites transition to CraftCMS, complete with a beautiful new look! The new site aims to emphasize the human aspect of pathology . . . to introduce site visitors to live pathologists as the "faces behind the microscopes." To visit the new Breast Cancer & Breast Pathology site, visit https://pathology.jhu.edu/breast or scan the QR code.



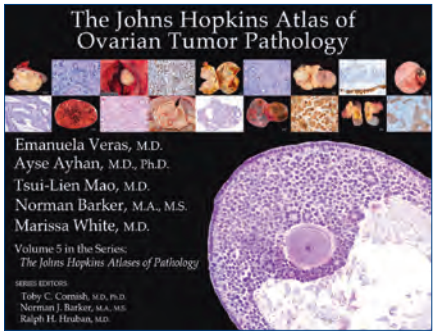
This year, we also focused on online educational offerings for pathology clinicians. We put together a landing page, http://pathology.jhu.edu/department/training/clinicians.cfm, which lists our many offerings and is updated regularly. More than 7,000 pathology clinicians worldwide have signed up to receive emails when our department launches a new educational iPad app, website, or event. Sign up today to join this exciting new initiative!

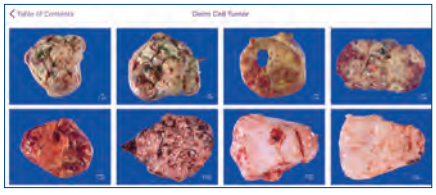
Please email pathwebteam@jhmi.edu with website-related questions or suggestions.

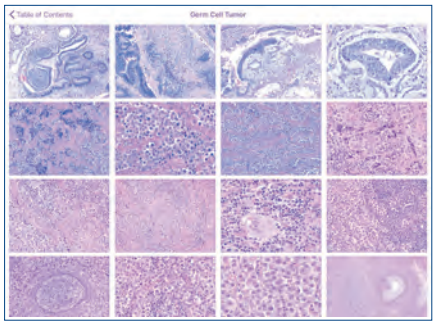
NEW JOHNS HOPKINS PATHOLOGY IPAD APPS

We have created a new educational iPad app!

Dr. Emma Veras developed **The Johns Hopkins Atlas of Ovarian Tumor Pathology.**







Each of these profusely illustrated apps contain hundreds of stunning images, an educational algorithm, a "Quiz Me" section, and comprehensive diagnoses albums. Many are now available through the iTunes Store.

We hope you enjoy these teaching tools, and please watch for these topics to be covered in future JHU Atlases: **Anus, Appendix, Esophagus, Eye, Large Intestine, Renal Transplant, Stomach, Small Intestine, and Thyroid.**

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

- **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**

AWARDS / RECOGNITION

Pedram Argani, M.D., was featured as one of 100 pathologists in The Pathologist's Power List in the September 2018 issue of The Pathologist. This list recognizes some of the best and most influential colleagues and mentors in pathology and laboratory medicine.

Norm Barker, M.A., M.S., RBP, received an award of excellence for his photomicrography at the 88th annual meeting of the BioCommunications Associations in Savannah, Georgia. He was also recognized as a winner in the International Nikon Small World Competition for his photomicrographic image of a human teardrop, which will appear in the 2019 Nikon calendar.

Michael Borowitz, M.D., Ph.D., as a member of the Johns Hopkins Health High Value Care Committee, received the 2018 Award of Excellence in Teamwork in Quality Improvement from the Society of Hospital Medicine.

Kathleen Burns, M.D., Ph.D., was elected as a member of the American Society of Clinical Investigation (ASCI) in April 2018. The ASCI is one of the nation's oldest and most respected medical honor societies. It is made up of more than 3,000 physician-scientists from all medical specialties who are elected for outstanding scholarly achievements in biomedical research.

Angelo De Marzo, M.D., Ph.D., was inducted into the Association of American Physicians. The association is an honorific, elected society of America's leading physician-scientists who exemplify the pinnacle of pioneering and enduring, impactful contributions to improve health.

Jonathan Epstein, M.D., received the 2018 Fred W. Steward Award from Memorial Sloan Kettering Cancer Center. This award honors a pathologist who has made outstanding contributions that have advanced our knowledge of human cancer.

Marc K. Halushka M.D., Ph.D., received the Johns Hopkins University School of Medicine's Scholarly Concentrations Mentoring Award for 2018. He was also awarded the W. Barry Wood, Jr. Award for Excellence in Teaching in the Pre-Clinical Sciences from the Johns Hopkins University School of Medicine Class of 2019. The Barry Wood Award is given annually to two faculty members in the pre-clinical curriculum who were thought to be the most inspirational and/or effective teachers by students.

Ralph Hruban, M.D., and Paul Ness, M.D., were nominated and selected by their peers as part of the celebration of the 125th anniversary of the Johns University School of Medicine. They are amoung the 125 current faculty members, fellows, postdocs, staff members, and students who serve as a shining example of our core values through their work. Dr. Hruban was also recognized again this year by Clarivate Analytics as a Highly Cited Researcher.

Karen E. King, M.D., was posthumously awarded the 2018 Emily Cooley Memorial Award and Lectureship which recognizes an individual who has demonstrated teaching ability and has made a major contribution to the field of transfusion medicine or cellular therapies. Dr. King was a mentor and friend to many, and her influence on the American Association of Blood Banks and the field is vast.

Elizabeth Montgomery, M.D., was featured as one of 100 pathologists in The Pathologist's Power List in the September 2018 issue of The Pathologist. This list recognizes some of the best and most influential colleagues and mentors in pathology and laboratory medicine.

THE SIXTH ANNUAL PATHOLOGY EDUCATIONAL SYMPOSIUM

The Pathology Educational Symposium was initiated in 2013 to give Pathology employees the opportunity for a three-day continuing education event with various speakers from Johns Hopkins. The keynote speaker for the 2018 Symposium was Dr. Redonda G. Miller, president of The Johns Hopkins Hospital. She emphasized that healthcare will continue to evolve and change and innovation must be the norm, and Pathology will continue to play a critical role in caring for patients as we adapt to 21st century healthcare needs. Other Symposium speakers included faculty, residents, fellows, and employees of our department, as well as speakers from other Hopkins departments. Nearly 40 chemistry, immunology, surgical pathology, hematology, molecular, blood bank/hemapheresis, microbiology, phlebotomy, and general interest talks were presented during the Symposium, which was held October 23–25, 2018.

BLAST FROM THE PAST (from page 18)

What is it?

Dr. William H. Welch's well-traveled, well-worn suitcase. Dr. Welch was a notorious globetrotter who enjoyed the camaraderie of foreign colleagues. His suitcase and other items belonging to Dr. Welch were among the memorabilia displayed in the JHM 125th anniversary pop-up museum.

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

If so, please email Ellen Winslow at ewinslo1@jhmi.edu, and let her know your new address and updated email address. We don't want you to miss an issue of PathWays.

We respect your privacy by never sharing your name with other organizations. If you prefer not to receive mail from us, please send us a note or email telling us so and we will promptly remove you from our mailing list.

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.

Editors:
Vanessa Rodas-Eral, M.S.
Sandy Markowitz, B.M.E.

Technical Advisor/Graphic Arts:
Rick M. Tracey, R.B.P.

Photography:
Pathology Photography Staff

Copy Editor:
Renata Karlos, B.A.

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

CALENDAR OF EVENTS

March 18, 2019, 5:30 – 7:30 p.m.
Pathology Alumni Reception
United States and Canadian Academy
of Pathology
Gaylord National Resort & Convention Center
National Harbor, Maryland

March 27, 2019, Noon – 4:00 p.m.
2019 Pathology Young Investigators' Day
Turner Concourse
Johns Hopkins University School of Medicine
Baltimore, Maryland

April 24, 2019, 5:30 p.m.
Pathology Awards Presentation
Chevy Chase Auditorium and Arcade Room
The Johns Hopkins Hospital
Baltimore, Maryland

May 3, 2019, 7:00 p.m.
Pathology Awards Dinner
Royal Sonesta Harbor Court Hotel
550 Light Street
Baltimore, Maryland

October 19 – 20, 2019
19th Annual Current Topics in
Gastrointestinal and Liver Pathology
Chevy Chase Auditorium
The Johns Hopkins Hospital
Baltimore, Maryland

2018 PATHOLOGY YOUNG INVESTIGATORS' DAY AWARDEES

Congratulations to the Top Award Recipients

Basic: Daniel Ardeljan, B.S.
Clinical: Danielle Hutchings, M.D.
Translational: Bradley A. Poore, Ph.D.

For Excellence in Basic Research

Daniel Ardeljan, B.S.
Jacqueline Brosnan-Cashman, Ph.D.
Mindy Graham, Ph.D.
Xuezhou (Snow) Hou, B.S.
Janelle M. Montagne, M.S.
Mohanraj Sadasivam, Ph.D.
Srona Sengupta, B.S.
Robin Welsh, M.Sc.
Byung Woo Kim, B.S.
Nikolas Ziogas, M.D.

For Excellence in Clinical Research

Danielle Hutchings, M.D.
M. Herman Chui, M.D.

For Excellence in Translational Research

Bradley A. Poore, Ph.D.
Allison R. Hanaford, Ph.D.
John Hickey, Ph.D.
Stefani Thomas, Ph.D.