

UVA PATH REPORT

News from the UVA Department of Pathology



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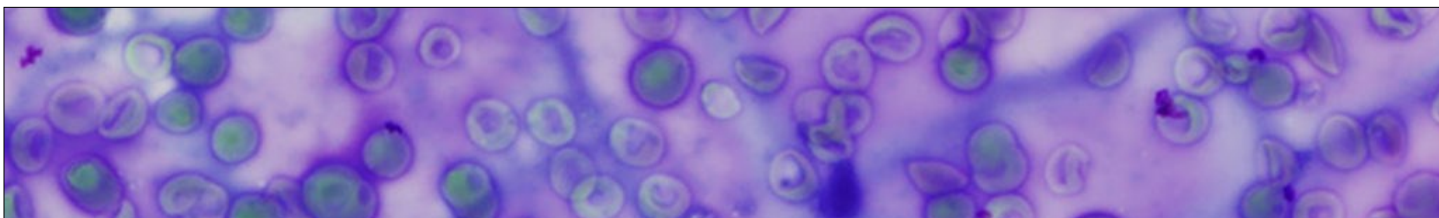
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A Message from the Chairman



The UVA Pathology newsletter resumes this year after a year's hiatus. It is somewhat ironic that we were able to turn out newsletters during the height of the COVID-19 pandemic, but that post-pandemic issues of under-staffing and catching up on delayed projects and initiatives just exceeded our bandwidth last year. But we are back with renewed vigor and resolve. This is due in part to an infusion of energy from an extraordinary group of new faculty (twelve!) that we have hired in the past two years and are eager to introduce to you in these pages. In a department of a little over 40 faculty members this is a major infusion of new blood, but luckily among our new recruits are two transfusion medicine experts who'll help ensure a smooth transition. We are also introducing you to two years' worth of resident physicians and graduate students who are greatly contributing to the dynamism and diversity of our department. You'll see from the caliber of our new colleagues that UVA Pathology continues to attract the best and brightest and we look forward in future newsletters describing their accomplishments. Our researchers have been busy in the past two years, with seven new NIH grants added to our portfolio which brings our total annual research funding to over \$11 million dollars annually. Several more NIH grants are expected to be awarded in the next few months, so we are on a roll. We have hired two new research-intensive faculty both interested in molecular mechanisms of leukemia, which bolsters our growing research theme in hematology and blood transfusion. On the clinical side, UVAHealth has made a multi-million dollar commitment to bring digital pathology capability to our anatomic pathology service, including several high capacity slide scanners, a state of the art digital image management system and a server farm dedicated to our digital file storage. Mick Crawford has been hired as faculty to take the lead on this endeavor and in this newsletter he describes our plans for the future with this technology.

While we are always focused on the future, improving medical diagnostics locally and for our fields, educating the next generation of pathologist and research leaders and creating new scientific knowledge in our research labs, we do need to pause and remember with gratitude the lives and careers of departed faculty members who have contributed much to our department and their disciplines. We highlight in this edition Dr. John Cousar and



Dr. Tom Braciale who we sadly mark their passing but celebrate their accomplishments, remember how they taught us and greatly contributed to the vitality and reputation of our department.

So please turn the page and celebrate with us all of the wonderful people who make and made up the UVA Department of Pathology.

Christopher A. Moskaluk, M.D., Ph.D.

Walter Reed Professor and Chair,
UVA Department of Pathology

In Focus: Anatomic Pathology

Looking Beyond Diagnosis: Guiding Treatment with Immunohistochemical Predictive Biomarkers



Anne Mills, M.D.

Immunohistochemistry has been routinely used for the diagnosis and prognostication of malignancies for over thirty years. However, immunohistochemical stains are not only diagnostic and prognostic: they can also be predictive, indicating therapeutic targets to which a cancer may be vulnerable. Moreover, while molecular features are increasingly important for understanding and treating cancer, in many cases immunohistochemical surrogates are the most cost-effective and efficient

methods to identify clinically actionable underlying molecular features.

Predictive immunohistochemical stains were largely limited to hormone receptor and HER2 stains in breast cancer for many years, but the last five years have seen an explosion of FDA-approved companion diagnostic biomarkers which are tied to specific therapeutics. As access to cutting-edge cancer therapy is increasingly contingent on results readout on specific immunohistochemical assays, anatomical pathologists have begun to spearhead not only cancer's diagnosis, but also its treatment. This is evident not only in the proliferation of predictive biomarkers on our sign-out trays, but also by the proliferation of pharmaceutical representatives at our National Meetings: more and more, pathology conferences resemble oncology conferences with big-name drug companies overtaking the vendor tables and taking keen interest in our work. While the enhanced impact on patient care is a welcome responsibility for our profession, the

In Focus: Anatomic Pathology cont.

burden of bringing up new assays and testing platforms can be time consuming and costly.

Thanks to the hard work of our faculty and staff and financial support from the Medical Center, the UVA Anatomic Pathology Labs have risen to that challenge. Over the last year, we have been able to transition the majority of our PD-L1 testing to our new in house PharmDx 22C3 assay thanks to the addition of a new Dako Autostainer Link 48 instrument. This allows us to quickly and accurately identify candidates for anti-PD-1/PD-L1 checkpoint inhibitor therapy using the FDA-approved companion diagnostic linked to the vast majority of commercially available drugs in this class. Moreover, we have retained the ability to perform testing with alternate assays should those be required for an individual patient's clinical trial or drug access.

The immunohistochemistry lab's impact on guiding targeted therapy goes beyond PD-L1 testing. We have expanded our HER2 testing to meet the growing number of indications for anti-HER2 treatment in a variety of solid tumors. In addition to routine testing on breast cancers, we now perform this assay reflexively on gastroesophageal, colorectal, and uterine serous carcinomas to ensure that all patients who could benefit from anti-HER2 therapy are given access to the drugs they need.

We have also validated pan-TRK immunohistochemistry, a sensitive and specific stain for tumors bearing *NTRK1/2/3* translocations. While uncommon, this molecular signature can be found in a wide range of carcinomas and sarcomas and renders these malignancies vulnerable to tyrosine kinase inhibition. Our ALK antibody, which has long been utilized for diagnostic purposes, is now also regularly enlisted as a surrogate for *ALK* translocations which carry similar therapeutic implications. In addition to selective testing on a host of other tumor types, both these tests are routinely performed on all non-small cell lung carcinomas to facilitate timely identification of candidates for tyrosine kinase-focused therapy.

Most recently, we initiated testing for folate receptor alpha through the Ventana FOLR1 RxDx assay, which is the newly FDA-approved companion diagnostic in high-grade ovarian carcinomas being considered for new drugs blocking this receptor. FOLR1 overexpression is linked to enhanced survival in a wide range of tumor types and is likely to be a viable drug target for additional tumor types in the future. With FOLR1 immunohistochemistry up and running, UVA pathology will be ready to help patients gain access to those drugs as quickly as possible.

With so many important new indications for predictive immunohistochemical testing, it's critical that our team meets regularly to prioritize which assays we want to validate next. This year, we convened an Immunohistochemistry Working Group which meets every other week to discuss ongoing projects and next steps in the immunohistochemistry arena. With representation from Dermatopathology, Hematopathology, Neuropathology, and Surgical Pathology faculty, we ensure that we consider the needs of all our patients. Of course, none of these developments would be feasible without the partnership and hard work of incredible immunohistochemistry lab staff. Their innovation and dedication is instrumental for helping UVA Pathology deliver cutting-edge immunohistochemical biomarkers to our patients, which in turn give those patients timely access to emerging therapies that are optimally suited for their tumors. It is precision medicine in action, and UVA Path's Immunohistochemistry Lab is proud to be at the forefront in this arena.

Integrated Diagnosis for Central Nervous System (CNS) Tumors at UVA

by: M. Beatriz Lopes, MD, PhD; Jim W. Mandell, MD, PhD; Jinbo Fan, PhD; Eli Williams, PhD

Molecular diagnostics have been increasingly integrated in central nervous system (CNS) tumor classification to reflect the fundamental role of genomic alterations in tumor biology and prognosis. CNS tumor classification has long been based on histopathological features supported by ancillary tissue-based tests including immunohistochemistry. However, since the release of the CNS tumors The Cancer Genome Atlas (TCGA) in 2008 [1], molecular biomarkers have gained importance in providing both diagnostic features and prognostication in CNS tumors. The latest edition of the WHO Classification of Tumors of the Central Nervous System (WHO CNS5) incorporates numerous molecular alterations with clinical and pathological significance, crucial for precise CNS neoplasm classification [3].

The recognition of mutations in the isocitrate dehydrogenase (IDH) genes in gliomas as an early distinct prognostic alteration defining two separate pathways for diffuse gliomas has fundamentally changed the practice of Neuro-Oncology [2]. Molecular profiling has expanded the understanding of biologic subgroups within diffuse gliomas, circumscribed gliomas, medulloblastomas, and a growing category of CNS tumors that are based on molecular alterations [3]. These advances, along with new effective targeted therapies, have improved overall survival and have provided new perspectives on treatment of patients with brain tumors [4].

Neuropathologists and surgical pathologists in general have adapted their practice to answer these new paradigms for patient treatment. The UVA Neuropathology Division and Clinical Cytogenetics/Genomics Laboratories have increased their ancillary methodologies and diagnostic pathways for an integrated histopathological and molecular diagnosis of CNS tumors.

Notably, an initial evaluation of CNS tumors is performed with a set of immunohistochemical surrogates for the most common genetic alterations. For instance, in gliomas a selected panel of markers including IDH1 (R132H), ATRX, p53, H3 K27M, H3 K27me3, and BRAF V600 is performed. More specific markers for CNS embryonal tumors (medulloblastomas, atypical teratoid/rhabdoid tumors, etc.) may also be initially applied. In some tumors, an expanded molecular analysis may be needed, such as fluorescent in situ hybridization (FISH) for 1p/19q co-deletions and/or OncoScan microarray for genome-wide copy number abnormality detection such as homozygous deletion of CDKN2A/B, which is associated with poor prognosis in IDH-mutant astrocytomas. Finally, comprehensive genomic profiling may be performed on our in-house PGDx solid tumor gene panel assay, which investigates a variety of genomic variants across 505 target genes. This gene panel includes single nucleotide variants (SNVs), small indels, amplification, translocations, microsatellite instability (MSI) status, and tumor mutational burden (TMB) score.

Current treatment for grade 4 gliomas includes maximal surgical resection, followed by temozolomide (TMZ) and radiotherapy. Methylation of the O(6)-methylguanine-DNA-methyltransferase (MGMT) gene promoter has been shown to increase chemotherapy efficacy and, therefore, highly recommended for determination of optimal front-line therapy for these patients. Therefore, a

In Focus: Anatomic Pathology cont.

pyrosequencing-based methylation diagnostic assay is ordered for all grade 4 gliomas to classify the MGMT gene promoter region methylation status.

The integration of the histopathological, immunohistochemical, and molecular genetics findings is discussed on a case-by-case basis by the Neuropathology and Clinical Cytogenetics/Genomics teams in a combined conference for better summation of the data

and decision of the final diagnosis. Through this integrated approach, we are providing our patients with a comprehensive, accurate, and up-to-date evaluation of their disease to help improve their outcome.

Figure 1. Simplified diagnostic algorithm for diffuse gliomas in adults - from Torp et al [5].

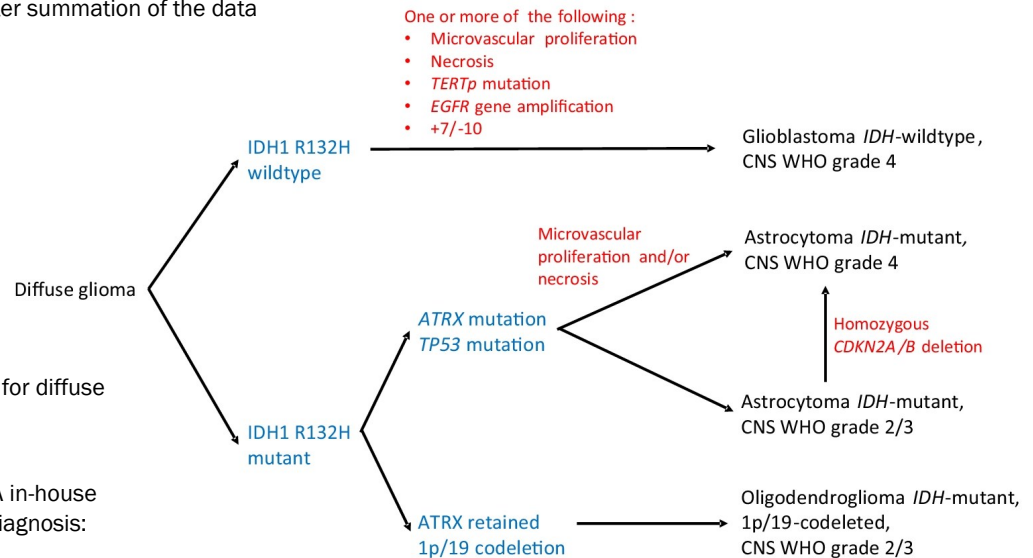
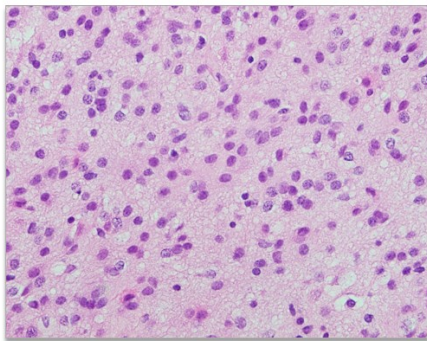
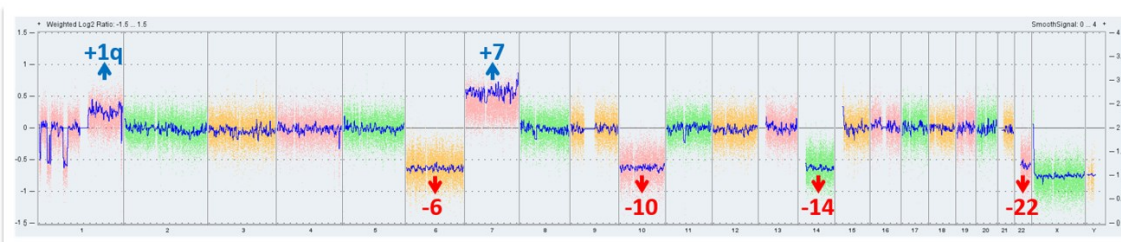


Figure 2. An illustrative case utilizing UVA in-house resources for an integrated CNS tumor diagnosis:



A non-enhancing right parietal lobe tumor involving a 69-year-old man. Histologically, the tumor is an infiltrating astrocytic glioma with low cellularity, mild nuclear atypia, and lacks increased mitotic activity, microvascular proliferation and necrosis (left). Initial immunohistochemistry work-up showed lack of IDH1 (R132H) expression, intact nuclear ATRX expression, and weak and focal p53 expression, suggestive of an IDH-wildtype astrocytic glioma. Mutational analysis for other areas of codon 132 of IDH1 and codon 172 of IDH2 did not detected mutations. OncoScan microarray analysis (below) revealed complex profile with gain of chromosome 7 and loss of chromosome 10 (+7/-10) consistent with a Glioblastoma, IDH-wildtype, CNS WHO grade 4.



References:

1. Cancer Genome Atlas Research Network. Comprehensive genomic characterization defines human glioblastoma genes and core pathways. *Nature*. 2008 Oct 23;455(7216):1061-8. doi: 10.1038/nature07385. Epub 2008 Sep 4. Erratum in: *Nature*. 2013 Feb 28;494(7438):506. PMID: 18772890; PMCID: PMC2671642.
2. Yan H, Parsons DW, Jin G, McLendon R, Rasheed BA, Yuan W, Kos I, Batinic-Haberle I, Jones S, Riggins GJ, Friedman H, Friedman A, Reardon D, Herndon J, Kinzler KW, Velculescu VE, Vogelstein B, Bigner DD. IDH1 and IDH2 mutations in gliomas. *N Engl J Med*. 2009 Feb 19;360(8):765-73. doi: 10.1056/NEJMoa0808710. PMID: 19228619; PMCID: PMC2820383.
3. Louis DN, Perry A, Wesseling P, Brat DJ, Cree IA, Figarella-Branger D, Hawkins C, Ng HK, Pfister SM, Reifenberger G, Soffietti R, von Deimling A, Ellison DW. The 2021 WHO Classification of Tumors of the Central Nervous System: a summary. *Neuro Oncol*. 2021 Aug 2;23(8):1231-1251. doi: 10.1093/neuonc/noab106. PMID: 34185076; PMCID: PMC8328013.
4. Mellingshoff IK, van den Bent MJ, Blumenthal DT, Touat M, Peters KB, Clarke J, Mendez J, Yust-Katz S, Welsh L, Mason WP, Ducray F, Umemura Y, Nabors B, Holdhoff M, Hottinger AF, Arakawa Y, Sepulveda JM, Wick W, Soffietti R, Perry JR, Giglio P, de la Fuente M, Maher EA, Schoenfeld S, Zhao D, Pandya SS, Steelman L, Hassan I, Wen PY, Cloughesy TF; INDIGO Trial Investigators. Vorasidenib in IDH1- or IDH2-Mutant Low-Grade Glioma. *N Engl J Med*. 2023 Aug 17;389(7):589-601. doi: 10.1056/NEJMoa2304194. Epub 2023 Jun 4. PMID: 37272516.
5. Torp SH, Solheim O, Skjulsvik AJ. The WHO 2021 Classification of Central Nervous System tumours: a practical update on what neurosurgeons need to know-a minireview. *Acta Neurochir (Wien)*. 2022 Sep;164(9):2453-2464. doi: 10.1007/s00701-022-05301-y. Epub 2022 Jul 26. PMID: 35879477; PMCID: PMC9427889.

In Focus: Anatomic Pathology cont.

From Glass to Pixels: The Digital Pathology Revolution at UVA

Co-authored by Mick Crawford, MD and ChatGPT 3.5



We are on the cusp of a groundbreaking transformation, gearing up for a comprehensive transition to digital pathology. This initiative is poised to redefine the way we deliver pathology services and revolutionize patient care, research, and collaboration. We will still be making glass slides and staining them with H&E, but we're trading our microscope eyepieces for computer monitors.

With this transition, we are embracing the future of pathology services. This strategic shift paves the way for leveraging the power of machine learning and artificial intelligence to augment the capabilities of pathologists. The focus also extends to significantly accelerating turnaround times, reducing physical handling of slides, and hopefully reducing paper waste.

Transitioning to digital pathology comes with a large set of challenges. Multiple teams are collaborating closely, including the laboratory (spearheaded by Ms. Marilou Maglione), pathologists, the IT, and product vendors. Storage is another critical challenge, as a single scanned slide can consume more than a gigabyte of storage space!

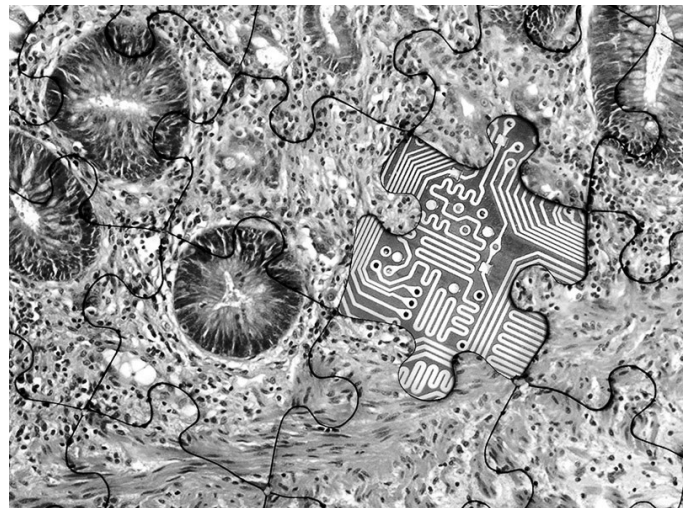
Why go through all the trouble to make this work? The adoption of digital pathology is set to enhance collaboration and communication among healthcare professionals and pathologists. This technology enables instant intramural consultation, slide annotation, and facilitates multiple users to simultaneously view the same slide from different locations. Preparing interdepartmental tumor boards becomes a breeze, as the time-consuming task of hunting for physical slides is eliminated. Additionally, it simplifies the process of sharing images with our

clinical colleagues.

The shift to digital pathology is a catalyst for unlocking new research opportunities, allowing digital access to the extensive scanned slide archive. The utilization of digitized slides has opened doors for cutting-edge research in the fields of AI and machine learning. These technologies are now assisting in the discovery of novel tumor features and, in some instances, predicting molecular alterations in cancers from the H&E slides only. Science fiction is quickly becoming Science Fact!

Ultimately, this transition is expected to bring substantial improvements in patient care. It will result in faster turnaround times, increased diagnostic accuracy, and an overall enhancement of collaboration in patient cases. The benefits of digital pathology extend beyond the department's internal processes: they directly impact the quality and speed of patient care delivery at the UVA.

The go-live for this monumental transition is scheduled for early next year, starting with our renal pathology service. This marks the initial step toward a future, and we look forward to quickly taking more services through The Pixel Pathway.



Faculty: Moving In

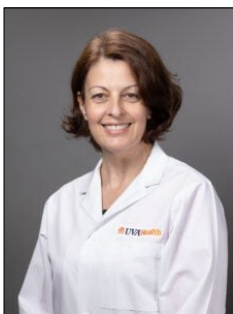


Jeffrey W. Craig, M.D., Ph.D., received his Bachelor's and Master's degrees in Biophysics from Johns Hopkins University in 2005. He subsequently enrolled in the Weill Cornell/Rockefeller/Sloan Kettering Tri-Institutional MD/PhD program in New York City, defending his PhD thesis in 2011 (RU) and earning his Medical Doctorate in 2013 (WCMC). After medical school, he spent the next 5 years completing his residency in anatomical and clinical pathology and fellowship in hematopathology at Brigham and Women's Hospital in Boston. He then joined BC Cancer's Lymphoma Pathology Group in Vancouver, Canada in 2018, staying there for over 4 years before moving with his family to Virginia. He joined the UVA Hematopathology Division in October 2022 and assumed Directorship of the UVA Hematology Laboratories this past July. His research is focused on the biological underpinnings of lymphoid cancer, as well as biomarker discovery in lymphoma and associated clinical diagnostics. He spends most of his free time with his wife (Bridget) and young children (Alice & William). His hobbies include traveling, hiking, collecting vintage baseball cards, fantasy basketball, and enjoying an eclectic assortment of films and TV shows.

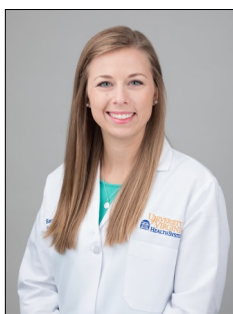
Faculty: Moving In cont.



Mick Crawford, M.D., received his Bachelor of Arts in Chemistry and Classics, as well as his Master of Science in Applied Anatomy from the Case Western Reserve University in Cleveland, OH. He received his MD from Northeast Ohio Medical University. After medical school, he completed pathology residency, cytopathology fellowship, and breast & gynecologic pathology fellowship at The University of Virginia. His research interests include gynecologic pathology, digital pathology, and artificial intelligence. His hobbies include board games, hiking, reading sci-fi & fantasy novels, birding, and photography (mostly of birds, but sometimes astrophotography).



Ana Karina de Oliveira, Ph.D., received her master of science in biotechnology (2009) and Ph.D. in biochemistry (2015) from the University of Sao Paulo, Brazil. She started her career in 2005 studying the effect of snake venom-derived toxins on extracellular matrix and plasma proteins. In her postdoctoral fellowship, she moved her scientific interest to immune oncology, studying extracellular vesicles in cell communication using mass spectrometry. In 2019, she trained in iPSC technology at UVA Stem Cell Core. Ana is an Assistant Professor at the Department of Pathology and Director of the Spatial Biology Core. Her research focuses on identifying candidates as human cancer markers using spatial transcriptomics, proteomics, and immune phenotyping approaches. Ana enjoys spending time with her family and friends outside of UVA, traveling, cooking, and staying home caring for her flowers.



Sarah Gradecki, M.D., received her Bachelor of Science from the University of Notre Dame and her MD from the University of Virginia School of Medicine. After medical school, she completed pathology residency and dermatopathology fellowship at the University of Virginia. Her research interests include applications of immunohistochemistry in dermatopathology and the tumor microenvironment in melanoma. Outside of the hospital, her interests include listening to podcasts and audiobooks, visiting local breweries and wineries, and spending quality time with her friends, fiancé, and pets.



Marshall Kadin, M.D., received his BA and MD at Northwestern University in Evanston and Chicago IL respectively. He did a clinical internship at the Medical College of Wisconsin followed by NIH sponsored fellowship in Surgical Pathology at Stanford. Following precontracted military service, he completed a fellowship in clinical hematology and 5-year faculty appointment in clinical pathology and medicine at UCSF. He then accepted an appointment as associate professor at the University of Washington and Fred Hutchinson Cancer Center in Seattle where he established the first fellowship in hematopathology. After 7 years in Seattle, he accepted a position at Harvard and director of hematology laboratory at Beth Israel Deaconess Medical Center where he also established a hematopathology fellowship program. He became Associate Director of the Cutaneous Lymphoma clinic at BIDMC. After his wife, Martha Hutchinson, Ph.D., M.D., became director of Cytopathology at Women and Infant's Hospital in Providence, he moved to Roger Williams Medical Center and then to Brown as research professor in pathology and plastic surgery where he developed lateral flow assays for the diagnosis of BIA-ALCL. After arriving in Charlottesville at the beginning of October, he has been able to resume playing tennis.



Jenna Khan, M.D., hails from Silver Spring, Maryland. She received her Bachelor of Arts in Chemistry from Carleton College in Northfield, MN and received her MD from the University of Maryland in Baltimore, MD. She completed a Clinical Pathology residency at the University of Washington in Seattle and then a Transfusion Medicine Fellowship at Dartmouth-Hitchcock Medical Center in New Hampshire, after which she stayed on as the Assistant Medical Director of the Transfusion Medicine Service at DHMC. She moved to Charlottesville with her husband (Bill), her 10 year old daughter (Petra), and her 6 year old son (Nikos). They rescued a 2 year old shepherd/husky mix (Thira) shortly after moving to C-ville and enjoy attending Venable Elementary, scootering around town, climbing at Rocky Top, and visiting friends/family in the VA/MD/DC and DE beach areas.

Faculty: Moving In cont.



Valery Kogler, M.D., received her Bachelor of Science in Biomedical Engineering from Columbia University and her MD from State University of New York at Downstate Medical Center. She completed her Internal Medicine residency at NYPresbyterian-Weill Cornell Medical Center and fellowships in Hematology and Transfusion Medicine/Blood Banking at the University of Washington/Fred Hutchinson Cancer Center and Bloodworks Northwest. Outside of work, she enjoys reading, listening to opera, snowshoeing, and hiking with her husband and son.



Linglie Ma, M.D., received her MD from Beijing Medical University and PhD in Biochemistry at the Johns Hopkins University. She completed her Anatomic Pathology residency at Yale University and Dermatopathology fellowship at New York University. Her research interests include melanocytic tumors and cutaneous lymphomas. Outside of work, she enjoys traveling, hiking, running, and photography.



Matthew McCord, M.D., received his Bachelor of Science in biology from Florida Institute of Technology in 2012, and attended medical school at the University of Florida. Before his final year of medical school, he completed the Medical Research Scholars Program at the NIH, which sparked his interest in brain tumor research. He completed his anatomic pathology residency and neuropathology fellowship as well as a post-doctoral research fellowship at Northwestern University. His clinical interests include surgical neuropathology, autopsy neuropathology, neurodegenerative disease, neuromuscular pathology, and ophthalmic pathology. His research focuses on molecular pathogenesis of brain tumors and mechanisms of therapy resistance. Outside of the hospital and research lab, Matt enjoys spending time with his lovely wife Chanda as well as hiking, cycling, cooking, and American folk music.



Jianguo Tao, M.D., Ph.D., received his MD from Henan Medical College and PhD from Molecular and Cellular Pharmacology, University of Miami, then followed by a research post-doctoral training at Brigham and Women's Hospital, Harvard Medical School. He completed pathology residency at The Long Island Jewish Medical Center, Albert Einstein Medical College and Hematopathology fellowship at University of Pennsylvania. His research interests are lymphoma biology and therapy resistance. His research laboratory has been supported by awards from NIH National Cancer Center for over a decade. Outside of the hospital service and lab research, he has many interests including playing tennis, walking and hiking in trails, and spending quality time with family and friends.



Bon Trinh, Ph.D., received his Bachelor of Science in Biotechnology from the Vietnam National University, Hanoi and his Ph.D. from the University of Texas Graduate School of Biomedical Sciences. After graduate school, he completed his postdoc training at the MD Anderson Cancer Center and Beth Israel Deaconess Medical Center. Subsequently, he was appointed to the faculty of Harvard Medical School as an instructor of medicine. His research lab at UVA focuses on understanding protein and RNA regulations of gene expression via chromatin structure in myeloid cell development and diseases. Outside research activities, Dr. Trinh enjoys learning about computer languages to be used in his genome-wide analyses and molecular structures as well as outdoor activities with his wife, children, and friends.

Faculty: Moving In cont.

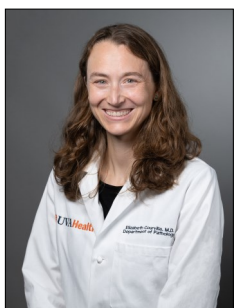


Yubo Wu, D.O., received his Bachelor of Science in Germanic Languages and Literature from the University of Michigan-Ann Arbor, where he was also a part of the Residential College. After medical school, he completed AP/CP residency at Beth Israel Deaconess Medical Center/Harvard Medical School and stayed on for a cytopathology fellowship. He then completed a genitourinary pathology fellowship at Johns Hopkins Hospital. Outside of work, his hobbies include making confections (baked or otherwise), trying out new restaurants, brushing up on his languages, and playing with his drone.

Faculty: Moving Up



Timothy Bullock, Ph.D., was promoted to tenured Professor of Pathology. He has been on the UVA faculty since 2003. He is a co-leader of Lung Cancer Translational Research Team Cancer Center, and a co-director of Molecular and Cellular Basis of Disease Graduate Program. He has authored more than 60 papers, in journals that include "Journal of Clinical Oncology", "Science Immunology", "Journal of Immunology", "Journal of Experimental Medicine" etc. He has mentored 5 graduate students to completing their doctorates, and a plethora of undergraduate students, most of whom have proceeded to attend professional schools. He serves as lead editor, guest editor, review board and ad hoc reviewer of more than 30 journals, including "Nature Communications," "Science Immunology" "Nature Immunology" "Cancer Research," "Immunity," "Journal of Immunotherapy for Cancer" etc. He is on the peer review committee of NIH study section, DOD Study Section, and study sections for a variety of international and philanthropic funding agencies. He has over 20 grants and contracts in total, 3 active grants. Sources include "NCI," "Melanoma Research Alliance," "Cancer Research Institute," and "DOD". Beyond research, he enjoys still plays soccer, runs and hikes and is down to just the one child he has to ferry to and from sports events!



Elizabeth Courville, M.D., was promoted to tenured Associate Professor of Pathology. She has been on the UVA faculty since 2019, moving to Charlottesville after 6 years on faculty at the University of Minnesota. Dr. Courville is a member of the hematopathology section, with her clinical work encompassing bone marrow, peripheral blood, lymph node, and extranodal hematolymphoid tissue signout as well as flow cytometry interpretation. She is the medical director of the UVAHealth clinical flow cytometry laboratory, which is currently performing validation for new leukemia/lymphoma panels. Dr. Courville has an interest in graduate medical education, serving as one of the associate program directors for the UVA AP/CP residency program, contributing to the CCC and PEC committees, and coordinating the resident hematopathology rotation. She has received multiple resident teaching awards. Dr. Courville is also involved in continuing medical education, presenting regularly at national pathology conferences and creating interactive education modules for the Society for Hematopathology website. Dr. Courville has published over 45 peer-reviewed articles with a research focus on diagnostic hematopathology and has contributed book chapters and invited review articles in the field. She has been guest editor for "Seminars in Diagnostic Pathology" and is as assistant editor for "Laboratory Medicine". She has served on multiple national committees and is currently the Chair of the Society for Hematopathology Education Committee.



James Harrison, M.D., Ph.D., was promoted to professor of pathology. He has been at UVA since 2005 and served as Director of the Division of Biomedical Informatics in the Department of Public Health Sciences for twelve years with a secondary appointment in Pathology before joining the Department of Pathology full time in 2017. He has authored 45 peer-reviewed publications, authored or edited 10 books and book chapters, and served as PI or co-PI on more than 30 Federal, state, and foundation research grants. He is Director of Clinical Laboratory Informatics and an Associate Director of Clinical Chemistry, and he serves as Quality and Safety Officer for the Department. Dr. Harrison has over 30 years of experience in the field of medical informatics, including work in clinical laboratory information systems, electronic health records, clinical data analysis, World Wide Web development, and 4 years of NCI-funded participation in the Cancer Biomedical Informatics Grid (caBIG). He has received funding as PI for R-01 and T-15 grants from the NLM and NCI. Recently he led the NCI-funded development of the UVA biorepository system (an extension of the open source Caisis clinical research system) that supports biorepository activities at UVA and collaborating sites in Virginia. He is chair of the Informatics Committee of the College of American Pathologists (CAP), prior chair of the CAP Machine Learning Workgroup, and a member of the CAP Information Technology Leadership Committee. He is active in medical data standards development and is CAP liaison to the Pathology and Laboratory Medicine Workgroup of the IHE (www.ihe.net) and the Pathology Innovation Collaborative Community (<https://www.digitalpathologyalliance.org>). He also serves on the All-Payer Claims Database (APCD) Advisory Committee and the APCD Data Release Committee of the Commonwealth of Virginia.

Faculty: Moving Up cont.



Anne Mills, M.D., was promoted to tenured associate professor of pathology. She has been on the UVA faculty since 2015 and serves as the AP/CP Residency program director and Gynecologic and Breast Pathology Fellowship director. She has authored more than 70 peer-reviewed research manuscripts and 15 review articles and textbook chapters, including contributions to the most recent edition of the *World Health Organization's Classification of Tumors of the Female Genital Tract* and the upcoming edition of *Mills & Sternberg's Diagnostic Surgical Pathology*. She has mentored over 30 medical students, residents, and fellows in research, resulting in more than 30 trainee-driven original manuscripts. She serves on the editorial board for *The American Journal of Surgical Pathology*, *Archives of Pathology and Laboratory Medicine*, and *International Journal of Gynecological Pathology*. Her expertise centers on biomarkers of immunotherapeutic vulnerability, heritable cancer syndromes, and HPV-associated neoplasia, and she speaks nationally and internationally on these subjects. Beyond the microscope, she enjoys trail running, scuba diving, reading, and spending time with her husband and children.

Faculty: Moving Out



Helen Cathro, M.B.Ch.B., M.P.H., professor of pathology, retired in June 2022, after serving on faculty in surgical pathology, cytopathology, and renal pathology. After spending her childhood in South Africa and Kenya she completed her medical school training at the University of Dundee in Scotland. After a decade of nonhealthcare pursuits, she re-entered medicine at UVA as a resident, then a cytology fellow, and then as faculty. She quickly found her career calling in renal pathology and was instrumental in increasing renal pathology outreach, collaborating with a quickly growing transplant service, and adding to the renal pathology research. Dr. Cathro also brought her holistic approach to life to the department and served as the first faculty for the trainee Wellness Committee. She is now happily traveling with her partner, Dr. Fred Hutchinson, biking with friends, walking with her beloved dogs, and gardening year round.

First- & Second-Year Trainees

First-Year Residents



Kyle Carlson, M.D. M.P.H., grew up in Fredericksburg, Virginia and attended George Washington University in Washington, DC for medical school. He is a career-changer who joined medicine after working for several years in the federal government. He is interested in women's health pathology (GYN/breast/cyto). In his free time, he loves watching reality TV, going to the movies, listening to podcasts, eating out, and outdoor running. He lives with his partner, Lee, who is a statistician. They just bought their first home together in Charlottesville and spend their weekends trying to get the grass to grow.



AnnaVi Jones, M.D., I am a gatherer of hobbies...I love the arts and outdoors, baking, and reading. I enjoy making things and appreciating beauty in the world. I chose UVA because I wanted an academic program with a community feel and I wanted to train somewhere that served rural populations, as I initially chose medicine to work in rural health. My co-residents are my friends and I've found an environment where I can grow personally and professionally in the ways I had hoped. I spend most of my time with my husband and 13-year-old German Shepherd, Chloe. I also have a 14-year-old cat named Jupiter. I love a good old squamous cell!

Trainees cont.



Jacob Kaplan, M.D., grew up in Sioux City, Iowa and attended the University of Chicago where he majored in chemistry and biochemistry. After college, he pursued a Master's Degree and took a job at the NIH before returning home to attend medical school at the University of Iowa. In his free time, he enjoys hiking, skiing, and occasionally brewing beer. He can often be found after work exploring the local breweries and bars with his co-resident Alex Luniewski.



Alex Luniewski, M.D., grew up in Warsaw, Poland. During his high school years, he was always interested in biology and entomology, which eventually led him to pursue a medical degree at the Pomeranian Medical University in Szczecin, Poland. As he pursued his degree, he visited a number of countries as an exchange student, including Spain, the United Kingdom, and Germany. Eventually, he applied for a Fulbright Biolab Scholarship at UVA and subsequently applied for a pathology residency at UVA. He can often be found exploring the local breweries and bars with his co-resident, Jacob Kaplan.



Nouran Sinada, M.B.B.Ch.B., is a Sudanese native who grew up in Qatar before pursuing her medical education at the Royal College of Surgeons in Ireland-MUB. After earning her degree, she moved with her family to the United States, and settled in Virginia. In her free time, she enjoys fashion design and is learning to sew and stitch under the guidance of her talented mother. She also loves reading, DIY projects and spending time with her furry feline companion, Boogie."



Alex Yanko, M.D., was born in Eastern Ukraine, and completed his medical education at Zaporizhzhia State Medical University. He was a pathology resident at the National Medical University (Kyiv), and has worked as a molecular technician. He enjoys traveling (he even has a cat who has visited six countries), spending time with his family, eating out, and trying to recreate restaurant recipes at home.

Second-Year Residents



Shade Adekunle, M.D., was born and grew up in the bustling city of Lagos, Nigeria. Subsequently made her way to Russia to pursue her medical education, and later settled here in the United States. She is proficient in three languages: Russian, English and Yoruba, and has aspirations to learn Spanish and French. She has a diverse range of interests, such as listening to various music, following DIY fashion and makeup tutorials. When it comes to outdoor activities, she takes pleasure in cycling, walking and swimming, which are all perfectly suited for the Virginia climate. However, she primarily considers herself an indoors enthusiast, relishing her time dedicated to studying and cherishing moments with her family."

Trainees cont.



Andrew Biesemier, M.D., grew up in Lynchburg, Virginia and attended the University of Virginia for undergraduate studies. He worked as a Histotech in Lynchburg and Jackson Mississippi prior to medical school. He attended medical school at the University of Mississippi Medical Center in Jackson. He and his wife Molly, of Greenville MS, have their hands full raising three children, John (5) and William (3), and Lainey (5mo) as well as their Cairn Terrier Odin and German Shorthaired Pointer Freya. In his free time he enjoys flyfishing, camping, and weightlifting, and also dabbles in cookery, homebrewing, and pickling vegetables.



Manda Gibbs, M.D., is originally from Las Vegas, NV but has loved life in Charlottesville these past few years. In her free time, she enjoys exploring the local trails and wineries with her partner, Lyndsay, and their dog, Pinot. She is always up for a round of golf, water skiing, and cheering on her favorite NHL team, the Vegas Golden Knights!



Natalie Hillerson, M.D., is from Minnesota, but has been in Charlottesville since 2018 attending medical school and stayed on for pathology residency. UVA Pathology is a wonderful place to train — our residents are fantastic and some of her closest friends; our faculty are approachable, kind, skilled teachers; and Charlottesville is a lovely town with excellent restaurants and easy access to outdoor activities. If given the choice to apply to residency all over again, she would choose UVA every time. She is most interested in a surgical pathology subspecialty, medical autopsy, and medical education. Outside of work, she is an avid reader (mainly contemporary fiction), frequent baker, occasional runner and weightlifter, and she loves to explore the bounty of walking trails in Cville.



Heidi Vaughan, M.D., is from northern California and received her medical degree from University of California, San Francisco. She enjoys spending time with her husband and two toddlers and being outdoors whenever possible.



Selveras Zayed, M.B.B.Ch.B., was born in Egypt where nobody knew how to pronounce her name correctly so don't feel bad if you don't either. She received her medical degree from RCSI-Bahrain and worked for a couple of years in Malta after graduating. She loves transfusion medicine, teaching and this department.

In her spare time, she enjoys hanging out with her husband, playing tennis, board games, watching stand-up comedy, and hiking. She's currently working on trying to send emails without exclamation marks!

Trainees cont.

Fellows



Abdul Abid, M.B.B.S., (Cytopathology) grew up in Pakistan, attended medical school there and arrived in the United States seven years ago. He completed an AP/CP pathology residency at the University of Texas Medical Branch at Galveston, Texas and a year-long surgical pathology fellowship with emphasis on GI pathology at the University of Pittsburgh Medical Center. He used to write for national newspapers in Pakistan, on topics ranging from medical education to modern history.



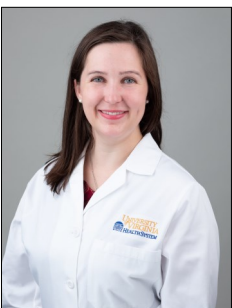
Jigisha Chaudhari, M.B.B.S., (Cytopathology) grew up in Gujarat, India. After completing her medical school and anatomic and clinical Pathology residency training from the M.S. University, Baroda, India she moved to the UK and experienced the pathology practice in the NHS. She then completed her AP/CP residency from the University of Pennsylvania and Virginia Commonwealth University. She loves watching movies, cooking, and going on road trips with her husband and kids.



Ashley Craddock, M.D., (Dermatopathology) grew up in Charlottesville, VA (a townie!) . She attended medical School at Virginia Commonwealth University in Richmond, VA and completed AP/CP residency at UVA from 2019-2023. She is thrilled to be staying at UVA for her dermatopathology fellowship and can't wait to join the field! Outside of work, Ashley enjoys hiking, running, yoga, paddle boarding, reading, and pickleball.



Amrit Singh, M.D., (Dermatopathology) a first-generation physician from Punjab, India, has charted a unique path in the medical field, merging his interests in dermatopathology and hematopathology. His educational path began at the University of Virginia and later took a scenic detour to the American University of the Caribbean in Sint Maarten. Amrit navigated his medical journey with introspection, particularly fascinated by the complexities of cutaneous lymphomas. When not peering through a microscope, he enjoys the simple pleasures of cooking, caring for his plants, and hiking. His leisure time is often spent in the company of his partner Luis, their cat, and a good movie, reflecting a life that balances professional dedication with serene, heartfelt moments.



Megan Dibbern, M.D., (Gynecologic and Breast Pathology) is from Rapid City, South Dakota. She attended Cornell College in Mount Vernon, Iowa, where she received a BA in biochemistry/molecular biology and Spanish language/literature in 2012. Prior to attending medical school, she worked as a research assistant at the University of Iowa, during which time she met her partner Cong at a social salsa dancing event. She received her MD from the University of Iowa Carver College of Medicine in 2018, where she also completed a post-sophomore fellowship in pathology. She completed her pathology residency training at UVA in 2022, and loved it so much she stayed for an additional two years of fellowship training in cytopathology (2022-2023) and gynecologic/breast pathology (2023-2024). Outside of the hospital, she enjoys gardening, cooking, crochet projects, hiking, brainstorming new home improvement projects with Cong, and hanging out with their two cats, Pip and Jack.

Trainees cont.



Marge Moore, M.D., (Hematopathology) has lived in Virginia her entire life, growing up in the Hampton Roads area and in Nelson County. She attended UVA for medical school, stayed for AP/CP residency, and stayed again for hematopathology fellowship. Outside of work, she love spending time with her family, hiking, biking, reading, and cooking.



Jonathan Wilcock, D.O., (Hematopathology) is from rural Southern Utah near Zion National Park. He earned a B.S. in microbiology from Brigham Young University. He attended medical school at Kirksville College of Osteopathic Medicine in Missouri. He completed residency in Anatomic and Clinical Pathology at the University of Vermont Medical Center followed by a fellowship in Medical Microbiology at Mayo Clinic. He has a passion for consulting on infectious disease pathology cases. His wife Kristy is a full-time mom to their two girls, Clara and Emmie. They enjoy hiking, watching movies, and performing music and dance together.



Ozgur Rosti, M.D., (Lab Genetics & Genomics) After completing his medical genetics residency in Istanbul, his goal to gain research experience in human genomics led him to California. Several years into variant interpretation from next-generation sequencing and animal modeling, he transitioned back to a clinical setting. Having worked as a bioinformatics supervisor in an academic clinical grade genome center, he is now pursuing his goal to become a clinical lab director. This is his second and final year of Laboratory Genetics and Genomics fellowship at University of Virginia. He is very much enjoying living in the picturesque city of Charlottesville and the great work environment at UVA.



Thomas Fennell, M.D., (Transfusion Medicine) hails fom St. Clair Shores MI (suburb of Detroit) and received his BS in Horticulture from Michigan State University. Prior to medical school he worked in Plant Pathology for several large greenhouses in Michigan and Colorado. He went to medical school at Wayne State University in Detroit Michigan, and did AP/CP residency and Hematopathology fellowship at Beaumont Health System in Royal Oak, MI. He worked in Hematopathology for 11 years, 1 of which was spent at Quest Diagnostics in Chantilly, VA, prior to coming to UVA for a Transfusion Medicine fellowship.

Trainees cont.

Graduate Students



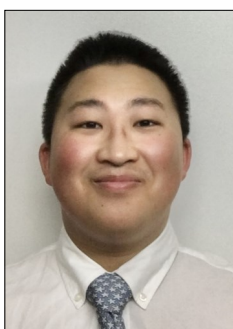
Claire Conarroe is from Cincinnati, OH and received her B.S. in Biology from Washington and Lee University. As an undergraduate, she led a conservation genetics project exploring the population structures of rare salamander species in the Blue Ridge Mountains (which have the highest salamander biodiversity in the world). After graduation, she worked at NIAID as a postbaccalaureate researcher under the supervision of Dr. Dragana Jankovic in Dr. Alan Sher's lab, using the parasite *Toxoplasma gondii* to elucidate immunological processes. After joining UVA's Biomedical Sciences program in 2021, she started her doctoral work exploring dendritic cell function in the context of brain tumors under the mentorship of Dr. Timothy Bullock. In her free time, she enjoys playing tennis, cooking, and exploring museums.



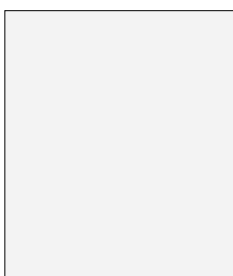
Adelaide Fierti is from Ghana and received her B.S. in Biochemistry, Cell and Molecular Biology from the University of Ghana, Legon in 2020. She did an exchange program in Biochemistry in her junior year at Tufts University, Medford, MA. After completing her bachelor degree, she worked as a teaching assistant at the department of Biochemistry, Cell and Molecular Biology and as a research assistant at the West African Center for Biology of infectious pathogens. Adelaide joined the UVA Biomedical Sciences Program in July 2021 and started her doctoral work in Dr. Hui Li's lab in February 2022. Adelaide is interested in targeted therapy in glioblastoma and likes cooking new recipes.



Joe Olivieri hails from San Diego, CA, where he earned a B.S. in Biology from San Diego State. He joined the Gelfand team in 2022 as a graduate student in the Biomedical Sciences program. His research interests are centered around the impact of spaceflight on human health, as he previously studied the effects of hypergravity on *Drosophila melanogaster* immunity. He aims to develop an understanding of ocular health that will accelerate progress in treating terrestrial pathologies and spaceflight-related vision changes. His lab research focuses on the effects of shear stress on choroidal endothelial cell health and function. His interests outside of science include playing football and collecting sports cards and historical relics.



Brett Ransegnola is a second-year MSTP graduate student in the McNamara Lab. Following his undergraduate training at Cornell University and post-baccalaureate training at the NY Blood Center, he joined the UVA MSTP in 2020 with the goal of studying immunology. Currently, he study how marginal zone B cells modulate atherosclerosis. As a graduate student in Experimental Pathology, he enjoys the benefits from interactions with both outstanding basic science and clinical experts.



Anam Tajammal is a 2nd-year PhD student at Li Lab in the Experimental Pathology program at UVA BIMS. She received her Masters in Biochemistry from COMSATS, Islamabad, Pakistan in 2019. Currently, she is studying the function of a sex-specific chimeric RNA in Dr. Hui Li's Lab. She enjoys living in Charlottesville with her family. Cooking is her favorite hobby along with reading texts on history.

Trainees cont.



Zach Dawson is a Missouri State University graduate and St. Louis native. Before coming to UVA he worked at Washington University in St. Louis in the Luke/Pak/Silverman lab. During this time, he was able to investigate proteostasis models in *C. elegans* paired with high throughput drug discovery concerning autophagy modulators. Here, he also aided the Undiagnosed Disease Network (UDN worm core) in identifying de novo variant presentations in surfactant dysfunction disorders (RAB5B). As a first-year graduate student co-mentored by the Ma lab and Moore lab, he has started working on the intestinal-myocardial axis in metabolic disease contexts. Zach hopes to look at these questions through a translational lens with degenerative, regenerative, and developmental perspectives. After completing his PhD, Zach plans to work in biodefense with the Federal government and consulting with the United Nations. In his free time, he enjoys exploring different food scenes, wine tasting, gardening, and playing with his two kitties from the SPCA.



Zeguela Kamagate is from Clinton MD and received her B.S. and M.S. from Towson university in Maryland. She started in the BIMS program in August of 2022 and is currently working in Dr. Loughran's lab studying the impact of various STAT3 mutations in Large granular lymphocytic leukemia. She also enjoys writing poetry, baking, and knitting.



Patrycja Oleniacz: has her B.S. in Neurobiology in the framework of Studies in Mathematics and Natural Sciences from Jagiellonian University in Poland, I was concentrated on computational neuroscience. Took sabbatical during my master studies and came to the UVA in 2020 to work in Doug Bayliss lab as part of Fulbright's Visiting Graduate Research Training Program (BioLab). I finished my M.S. in Bioinformatics with Applied Biophysics in Jagiellonian University in 2022 and came back to the UVA to start my P.h.D work in Sontheimer's lab, working on epilepsy. Fun fact: I enjoy amateur astronomy and occasional historical fencing, also love board games, fantasy books and exploring folklore and mythology of different regions of the world.



Samir Zuberi grew up in Northern Virginia. He studied nanomedicine at Virginia Tech. His research interests include designing, developing and testing nanoparticle-based drug delivery vehicles for different cancers in the Hematology/Oncology Division. He dreams of starting his own biotech company in the future. Outside the lab he likes to play soccer and ping pong, watch movies and cook. He loves to travel and experience other cultures. He has been to 13 countries and aspires to go to many more.



Vicki Remley is from Wyoming, PA. She received her B.S in Molecular Biology from the University of Pittsburgh in 2020. She then completed a postbac research position at the NIH, working on translation CAR T cell and other immunotherapy clinical trials in the Center for Cellular Engineering. After entered UVA's BIMS program she is studying in Dr. Todd Bauer's lab while being co-mentored by Dr. Dave Kashatus of the MIC department. Her research aims at understanding the biology of the acute loss of Drp1 and mitochondrial fission in pancreatic adenocarcinoma, and how this affects metabolite crosstalk to the TME. In her free time, she enjoys hiking, cooking, and spending time with her cat she adopted from the Charlottesville SPCA.

Grants and Contracts

New Grants and Contracts

PI: Timothy Bullock, PhD

Melanoma Research Alliance

Armoring CD8+ T cells against energetic deficiency in melanoma

06/01/2023 – 05/31/2026

Total Budget: \$375,000

2023 Budget: \$125,000

PI: Hui Li, PhD

Ben and Catherine Ivy Foundation

Targeted Therapy for Glioblastoma Using

Small Molecule Inhibitors against AVIL

07/01/2023 – 06/30/2025

Total Budget: \$599,999

2023 Budget: \$599,999

National Cancer Institute

Targeting AVIL, a novel oncogene in rhabdomyosarcoma

01/01/2023 - 12/31/2027

Total Budget: \$2,511,543

2023 Budget: \$496,947

PI: John Luckey, MD, PhD

National Heart, Lung, and Blood Institute

Molecular determinants of anti-RBC

alloantibody evanescence

09/13/2022 - 08/31/2023

Total Budget: \$798,296

2023 Budget: \$798,296

PI: Mani Mahadevan, MD

National Heart, Lung, and Blood Institute

The role of TGFβs and cFAPs in Cardiac

Pathology from RNA Toxicity

07/01/2023 – 05/31/2027

Total Budget: \$3,227,992

2023 Budget: \$806,998

National Heart, Lung, and Blood Institute

RNA Toxicity and Cardiac Pathology

09/21/2022 – 08/31/2024

Total Budget: \$754,977

2023 Budget: \$754,977

PI: Bon Trinh, PhD

National Cancer Institute

Enhancer RNA-mediated Tumor Suppressor

Gene Expression in Normal and Malignant

Hematopoiesis

12/20/2022 – 08/31/2023

Total Budget: \$73,632

2023 Budget: \$73,632

American Cancer Society

The role of long noncoding RNAs in Acute

Myeloid Leukemia

12/19/2022 – 12/18/2023

Total Budget: \$30,000

2023 Budget: \$30,000

PI: James Zimring, MD, PhD

University of California at San Francisco

(NHLBI-R35)

Immune Mechanisms in Normal and

Injured Lung

01/01/2023-12/31/2028

Total Budget: \$145,836

2023 Budget: \$42,596

Other Active Grants and Contracts (Federal Funding)

PI: Thomas Braciale, MD, PhD

National Institute of Allergy and

Infectious Diseases

Control of Influenza Infection by Lipid

Mediators and Macrophages

01/10/2018-12/31/2023

Under NCE

PI: Timothy Bullock, PhD

Department of Defense

Enhanced Melanoma Vaccine against

Neoantigens and Shared Antigens by CD40

Activation and TLR Agonists

07/15/2019-07/14/2024

Under NCE

PI: Adam Goldfarb, MD

National Institute of Diabetes & Digestive

& Kidney Diseases

Dissection and Manipulation of the Cellular

Response to Iron Restriction

09/09/2019-06/30/2024

2023 Budget: \$477,832

National Heart, Lung and Blood Institute

Targeting Dyrk1a to Promote Donor-

independent Platelet Production

02/20/2020-01/31/2024

2023 Budget: \$699,189

PI: Hui Li, PhD

National Cancer Institute

Targeting AVIL in Glioblastoma

03/01/2020-02/28/2025

2023 Budget: \$486,646

National Institute of General Medical Science

Genome-wide Investigation of cis-splicing

between Adjacent Genes

09/03/2019-07/31/2023

2023 Budget: \$441,613

National Cancer Institute

Chimeric RNAs and their implication in

lymphatic metastasis of bladder cancer

03/01/2020-02/28/2025

2023 Budget: \$ 201,794

PI: Chris Moskaluk, MD, PhD

National Cancer Institute

Biospecimen Procurement & Tissue

Microarray Manufacture for the CHTN

04/01/2019-03/31/2024

2023 Budget: \$969,371

PI: Scott VandePol, MD, PhD

National Institute of Allergy and

Infectious Diseases

Papillomavirus E6 cellular targets

09/17/2021 – 08/31/2025

2023 Budget: \$517,850

PI: James Zimring, MD, PhD

National Heart, Lung and Blood Institute

Immunobiology of Alloimmunization by

Platelet Transfusion

08/15/2019-06/30/2023

Under NCE

Regents of the University of Colorado
(NHLBI-R01)

PIMT1 in Red Blood Cell senescence and

aging

08/01/2019-04/30/2024

2023 Budget: \$602,798

The Trustees of Columbia University in
the City of New York (NHLBI-R01)

The Impact of Oxidative Stress on Erythrocyte

Biology

09/25/2019-02/29/2024

2023 Budget: \$469,231

University Of Colorado (NHLBI-R01)

Interactions between the ADORA2b/Sphk1

axis and the AE1-Hb switch in red blood cell

aging in vivo and in vitro

03/15/2020-02/29/2024

2023 Budget: \$322,037

Total Annual Federal Funding:

\$8,916,806

Other Active Grants and Contracts (Non-Federal Funding)

PI's:

Timothy Bullock, PhD

Robin Felder, PhD

James Gorham, MD, PhD

Hui Li, PhD

Chris Moskaluk, MD, PhD

Melinda Poulter, PhD

Eli Williams, PhD

Jianguo Tao, MD, PhD

James Zimring, MD, PhD

Total Annual Non-Federal Funding:

\$2,070,878

Publications and Awards

Selected Faculty Publications

Journal Articles

The changing landscape of pediatric histiocytoses: Birth, life, and transdifferentiation of pediatric histiocytes
Auerbach A, **Aguilera NS**.

Semin Diagn Pathol. 2023 May 20:S0740-2570(23)00061-8. PMID: 37258365
DOI: [10.1053/j.semdp.2023.05.003](https://doi.org/10.1053/j.semdp.2023.05.003)

Recruiting the future of pathology

LeGallo R, Atkins KA.

D, Cancer Cytopathol. 2022 Aug;130(8):576-578. PMID: 35679145
PMCID: [PMC9544134](https://pubmed.ncbi.nlm.nih.gov/35679145/)
DOI: [10.1002/cncy.22606](https://doi.org/10.1002/cncy.22606)

Ready for Prime Time? Dendritic Cells in High-Grade Gliomas.

Conarroe CA, **Bullock TNJ**.

Cancers (Basel). 2023 May 25;15(11):2902. PMID: 37296865 PMCID: [PMC10251930](https://pubmed.ncbi.nlm.nih.gov/37296865/)
DOI: [10.3390/cancers15112902](https://doi.org/10.3390/cancers15112902)

Interrogating the CD27:CD70 axis in α CD40-dependent control of pancreatic adenocarcinoma

Gamache A, Conarroe C, Adair S, Bauer T, Padilla F, **Bullock TNJ**.

Front Cell Dev Biol. 2023 Apr 2;11:1173686. PMID: 37123403 PMCID: [PMC10130518](https://pubmed.ncbi.nlm.nih.gov/37123403/)
DOI: [10.3389/fcell.2023.1173686](https://doi.org/10.3389/fcell.2023.1173686)

Correction: CD40 stimulation as a molecular adjuvant for cancer vaccines and other immunotherapies

Bullock TNJ.

Cell Mol Immunol. 2022 Jul;1(7):866. PMID: 35655097 PMCID: [PMC9243120](https://pubmed.ncbi.nlm.nih.gov/35655097/)
DOI: [10.1038/s41423-022-00865-2](https://doi.org/10.1038/s41423-022-00865-2)

Profiling of the immune landscape in murine glioblastoma following blood brain/tumor barrier disruption with MR image-guided focused ultrasound

Sheybani ND, Witter AR, Garrison WJ, Miller GW, Price RJ, **Bullock TNJ**.

J Neurooncol. 2022 Jan;156(1):109-122. PMID: 34734364 MCID: [PMC8714701](https://pubmed.ncbi.nlm.nih.gov/34734364/)
DOI: [10.1007/s11060-021-03887-4](https://doi.org/10.1007/s11060-021-03887-4)

CD40 stimulation as a molecular adjuvant for cancer vaccines and other immunotherapies

Bullock TNJ.

Cell Mol Immunol. 2022 Jan;19(1):14-22. PMID: 34282297 PMCID: [PMC8752810](https://pubmed.ncbi.nlm.nih.gov/34282297/)
DOI: [10.1038/s41423-021-00734-4](https://doi.org/10.1038/s41423-021-00734-4)

Kikuchi-Fujimoto Disease Following COVID-19 Vaccination: Experience at a Population-Based Referral Center

Craig JW, Farinha P, Jiang A, Lytle A, Skinnider B, Slack GW.

Am J Clin Pathol 2023 Aug 1;160(2):114-118. PMID: 37526500
DOI: [10.1093/ajcp/aqad032](https://doi.org/10.1093/ajcp/aqad032)

Classic Hodgkin lymphoma in young people

Gupta S, **Craig JW**.

Semin Diagn Pathol. 2023 Jun 30:S0740-2570(23)00076-X. doi: 10.1053/j.semdp.2023.06.005. Online ahead of print. PMID: 37451943

DOI: [10.1053/j.semdp.2023.06.005](https://doi.org/10.1053/j.semdp.2023.06.005)

Advances in Monitoring and Prognostication for Lymphoma by Flow Cytometry

Singh AP, **Courville EL**.

Clin Lab Med. 2023 Sep;43(3):351-361. PMID: 37481316

DOI: [10.1016/j.cl.2023.04.010](https://doi.org/10.1016/j.cl.2023.04.010)

Reactive Lymphadenopathy in the Pediatric Population with a Focus on Potential Mimics of Lymphoma

Mariani RA, **Courville EL**.

Semin Diagn Pathol. 2023 Jun 1:S0740-2570(23)00062-X. PMID: 37295994
DOI: [10.1053/j.semdp.2023.05.004](https://doi.org/10.1053/j.semdp.2023.05.004)

Diagnostic Flow Cytometry in the Era of Targeted Therapies: Lessons from Therapeutic Monoclonal Antibodies and Chimeric Antigen Receptor T-cell Adoptive Immunotherapy

Obiorah I, Courville EL.

Surg Pathol Clin. 2023 Jun;16(2):423-431. PMID: 37149367
DOI: [10.1016/j.path.2023.01.006](https://doi.org/10.1016/j.path.2023.01.006)

Isolated Light Chain-restricted Germinal Centers are Common in Follicular Hyperplasia by Ultrasensitive In Situ Hybridization

Obiorah IE, Aguilera NS, Gru A, Courville EL.

Am J Surg Pathol. 2023 Jun 1;47(6):694-700. PMID: 36939044
DOI: [10.1097/PAS.0000000000002035](https://doi.org/10.1097/PAS.0000000000002035)

Work-up of Patients with Decreased Hemoglobin A2 Identified by Capillary Zone Electrophoresis: A North American Institutional Experience

Moore M, **Courville EL**.

Lab Med. 2023 May 2;54(3):235-240. PMID: 36239634
DOI: [10.1093/labmed/lmac114](https://doi.org/10.1093/labmed/lmac114)

Patients without cutaneous T-cell lymphoma frequently harbor CD4 T-lymphocytes that lack CD26 and/or CD7

Grzywacz B, Yohe S, Shivers P, Linden MA, **Courville EL**.

Cytometry B Clin Cytom. 2022 Sep;102(5):412-414. MID: 34791785
DOI: [10.1002/cyto.b.22041](https://doi.org/10.1002/cyto.b.22041)

Mapping the Immune Cell Microenvironment with Spatial Profiling in Muscle Tissue

Injected with the Venom of *Daboia russelii*

de Oliveira AK, Pramoongjago P, Rucavado A, Moskaluk C, Silva DT, Escalante T, Gutiérrez JM, Fox JW.

Toxins (Basel). 2023 Mar 10;15(3):208. PMID: 36977099 PMCID: [PMC10057198](https://pubmed.ncbi.nlm.nih.gov/36977099/)
DOI: [10.3390/toxins15030208](https://doi.org/10.3390/toxins15030208)

Editorial: Tumor microenvironment (TME) and tumor immune microenvironment (TIME):

New perspectives for prognosis and therapy
Ramos RN, Amano MT, Paes Leme AF, Fox JW, **de Oliveira AK**.

Front Cell Dev Biol. 2022 Aug 22;10:971275. PMID: 36072339
PMCID: [PMC9442672](https://pubmed.ncbi.nlm.nih.gov/36072339/)
DOI: [10.3389/fcell.2022.971275](https://doi.org/10.3389/fcell.2022.971275)

Epithelial Sodium Channel Alpha Subunit (α ENaC) Is Associated with Inverse Salt Sensitivity of Blood Pressure

Xu P, Sudarikova AV, Ilatovskaya DV, **Gildea JJ**, Akhter M, Carey RM, Yue W, Jose PA, **Felder RA**.

Biomedicines. 2022 Apr 23;10(5):981. PMID: 35625718 PMCID: [PMC9138231](https://pubmed.ncbi.nlm.nih.gov/35625718/)
DOI: [10.3390/biomedicines10050981](https://doi.org/10.3390/biomedicines10050981)

Inverse Salt Sensitivity of Blood Pressure Is Associated with an Increased Renin-Angiotensin System Activity

Gildea JJ, Xu P, Schiermeyer KA, Yue W, Carey RM, Jose PA, **Felder RA**.

Biomedicines. 2022 Nov 4;10(11):0. PMID: 36359330 PMCID: [PMC9687845](https://pubmed.ncbi.nlm.nih.gov/36359330/)
DOI: [10.3390/biomedicines10112811](https://doi.org/10.3390/biomedicines10112811)

Inverse Salt Sensitivity of Blood Pressure: Mechanisms and Potential Relevance for Prevention of Cardiovascular Disease

Felder RA, Gildea JJ, Xu P, Yue W, Armando I, Carey RM, Jose PA.

Curr Hypertens Rep. 2022 Sep;24(9):361-374. PMID: 35708819
PMCID: [PMC9728138](https://pubmed.ncbi.nlm.nih.gov/35708819/)
DOI: [10.1007/s11906-022-01201-9](https://doi.org/10.1007/s11906-022-01201-9)

Relieving DYRK1A repression of MKL1 confers an adult-like phenotype to human infantile megakaryocytes

Elagib KE, Brock A, Clementelli CM, Mosoyan G, Delehanty LL, Sahu RK, Pacheco-Benichou A, Fruit C, Besson T, Morris SW, Eto K, Jobaliya C, French DL, Gadue P, Singh S, Shi X, Qin F, Cornelison R, Li H, Iancu-Rubin C, **Goldfarb AN**.

J Clin Invest. 2022 Oct 3;132(19):e154839. PMID: 35925681
PMCID: [PMC9525118](https://pubmed.ncbi.nlm.nih.gov/35925681/)
DOI: [10.1172/JCI154839](https://doi.org/10.1172/JCI154839)

Publications and Awards cont.

- Liver kinase B1 (LKB1) in murine erythroid progenitors modulates erythropoietin setpoint in association with maturation control White Z 3rd, **Elagib KE, Gru AA, Goldfarb AN.** Blood Cells Mol Dis. 2022 Nov;97:102688. PMID: 35717902 PMCID: [PMC9436178](#) DOI: [10.1016/j.bcmd.2022.102688](#)
- Normal and dysregulated crosstalk between iron metabolism and erythropoiesis. *eLife.*, Ginzburg, Y., An, X., Rivella, S., **Goldfarb, A.** 12:e90189, 2023. PMCID: PMC10425177.
- Histopathology of primary cutaneous adenoid cystic carcinoma of the scrotum presenting with predominantly solid growth **Gradecki SE, Gru AA, Rieger KE, Raghavan SS.** J Cutan Pathol. 2022 Sep;49(9):761-764. PMID: 33314272 DOI: [10.1111/cup.13928](#)
- There and back again: the once and current developments in donor-derived platelet products for hemostatic therapy **Kogler VJ, Stolla M** PMID: 35482959 PMCID: [PMC9247361](#) DOI: [10.1182/blood.2021014889](#)
- Effect of bedside filtration on aggregates from cold-stored whole blood-derived platelet-rich plasma and apheresis platelet concentrates **Li (Kogler) VJ, Bailey SL, Miles J, Usaneerungrueng C, Fang LY, Corson J, Osborne B, Özpolat T, López JA, Wu Y, Stolla M.** PMID: 34778992 DOI: [10.1111/trf.16741](#)
- Educational Case: Pseudomembranous colitis attributable to *Clostridioides difficile* Maniaci JL, **LeGallo RD.** Acad Pathol. 2023 Apr 18;10(2):100076. PMID: 37124362 PMCID: [PMC10140785](#) DOI: [10.1016/j.acpath.2023.100076](#)
- CTNNBIP1-CLSTN1 functions as a housekeeping chimeric RNA and regulates cell proliferation through SERPINE2 Chen C, Qin F, Singh S, Tang Y, **Li H.** Cell Death Discov. 2023 Oct 7;9(1):369. PMID: 37805599 PMCID: [PMC10560238](#) DOI: [10.1038/s41420-023-01668-8](#)
- The Potential for Targeting AVIL and Other Actin-Binding Proteins in Rhabdomyosarcoma Cornelison R, Marrah L, Fierti A, Piczak C, Glowczyk M, Tajammal A, Lynch S, **Li H.** Int J Mol Sci. 2023 Sep 17;24(18):14196. PMID: 37762498 PMCID: [PMC10531751](#) DOI: [10.3390/ijms241814196](#)
- Rhabdomyosarcomas are oncogene addicted to the activation of AVIL Xie Z, Janczyk PL, Shi X, Wang Q, Singh S, **Cornelison R,** Xu J, Mandell JW, Barr FG, **Li H.** Proc Natl Acad Sci U S A. 2022 Jun 14;119(24):e2118048119. PMID: 37146302 PMCI: [PMC9214494](#) DOI: [10.1073/pnas.2118048119](#)
- Chimeric RNAs Discovered by RNA Sequencing and Their Roles in Cancer and Rare Genetic Diseases Sun Y, **Li H.** Genes (Basel). 2022 Apr 22;13(5):741. PMID: 35627126 PMCID: [PMC9140685](#) DOI: [10.3390/genes13050741](#)
- Impact of histopathological classification of non-functioning adenomas on long term outcomes: comparison of the 2004 and 2017 WHO classifications Chatrath A, Kosyakovsky J, Patel P, Ahn J, Elsarrag M, Young LC, Wu A, Sokolowski JD, Taylor D, Jane JA Jr, **Lopes MBS.** Pituitary. 2022 Dec;25(6):988-996. PMID: 36261697 DOI: [10.1007/s11102-022-01281-5](#)
- Genetic and epigenetic characterization of posterior pituitary tumors. Schmid S, Solomon DA, Perez E, Thieme A, Kleinschmidt-DeMasters BK, Giannini C, Reinhardt A, Asa SL, Mete O, Stichel D, Siewert C, Dittmayer C, Hasselblatt M, Paulus W, Nagel C, Harter PN, Schittenhelm J, Honegger J, Rushing E, Coras R, Pfister SM, Buslei R, Koch A, Perry A, Jones DTW, von Deimling A, Capper D*, **Lopes MB*.** Acta Neuropathol. 2021 Dec;142(6):1025-1043. doi: 10.1007/s00401-021-02377-1. Epub 2021 Oct 18. PMID: 34661724; PMCID: PMC8568760.
- Clinical Biology of the Pituitary Adenoma. Melmed S, Kaiser UB, **Lopes MB,** Bertherat J, Syro LV, Raverot G, Reincke M, Johannsson G, Beckers A, Fleseriu M, Giustina A, Wass JAH, Ho KKY. Endocr Rev. 2022 Nov 25;43(6):1003-1037. doi: 10.1210/edrv/bnac010. PMID: 35395078; PMCID: PMC9695123.
- Class switching is differentially regulated in RBC alloimmunization and vaccination Prakash A, **Medved J,** Arneja A, Niebuhr C, Li AN, Tarrah S, Boscia AR, Burnett ED, Singh A, Salazar JE, Xu W, Santhanakrishnan M, Hendrickson JE, **Luckey CJ.** Transfusion. 2023 Apr;63(4):826-838. PMID: 36907655 DOI: [10.1111/trf.17301](#)
- Class switching is differentially regulated in RBC alloimmunization and vaccination Prakash A, Medved J, Arneja A, Niebuhr C, Li AN, Tarrah S, Boscia AR, Burnett ED, Singh A, Salazar JE, Xu W, Santhanakrishnan M, Hendrickson JE, **Luckey CJ.** bioRxiv. 2023 Jan 12:2023.01.11.523608. PMID: 36712006 PMCID: [PMC9882062](#) DOI: [10.1101/2023.01.11.523608](#)
- Somatic mutations show no clear association with red blood cell or human leukocyte antigen alloimmunization in de novo or therapy-related myelodysplastic syndrome Adkins BD, Mehta A, Selesky M, Vittitow S, Smolkin ME, Ratcliffe SJ, **Luckey CJ.** Transfusion. 2022 Dec;62(12):2470-2479. PMID: 36278434 DOI: [10.1111/trf.17155](#)
- Reducing Repeat Blood Cultures in Febrile Neutropenia: A Single-Center Experience Robinson ED, Keng MK, Thomas TD, Cox HL, Park SC, **Mathers AJ.** Open Forum Infect Dis. 2022 Oct 14;9(11):ofac521. PMID: 36408469 PMCID: [PMC9669456](#) DOI: [10.1093/ofid/ofac521](#)
- Disk Correlates for Revised Clinical and Laboratory Standards Institute *Enterobacteriales* Piperacillin-Tazobactam MIC Breakpoints Humphries R, Tamma PD, **Mathers AJ.** J Clin Microbiol. 2022 May 18;60(5):e0024322. PMID: 35443782 PMCID: [PMC9116183](#) DOI: [10.1128/jcm.00243-22](#)
- Tracking Klebsiella pneumoniae carbapenemase gene as an indicator of antimicrobial resistance dissemination from a hospital to surface water via a municipal wastewater treatment plant Loudermilk EM, Kotay SM, Barry KE, Parikh HI, Colosi LM, **Mathers AJ.** Water Res. 2022 Feb 3;213:118151. PMID: 35167966 DOI: [10.1016/j.watres.2022.118151](#)
- Setting Antimicrobial Susceptibility Testing Breakpoints: A Primer for Pediatric Infectious Diseases Specialists on the Clinical and Laboratory Standards Institute Approach Pierce VM, **Mathers AJ.** J Pediatric Infect Dis Soc. 2022 Feb 23;11(2):73-80. PMID: 34888640 DOI: [10.1093/ipsids/piab106](#)

Publications and Awards cont.

Somatic Sequencing and Microsatellite Instability Results From Mismatch Repair-deficient Endometrial Carcinoma Patients Without Lynch Syndrome ("Lynch-like" tumors): Implications for Heritable Cancer Screening, Molecular Prognostication, and Immunotherapeutic Vulnerability
Makia NL, Thomas M, Ring KL, **Moskaluk CA, Mills AM.**

Am J Surg Pathol. 2023 Aug 1;47(8):878-888. PMID: 37248962 DOI: [10.1097/PAS.0000000000002064](https://doi.org/10.1097/PAS.0000000000002064)

Interobserver Agreement on the Interpretation of Programmed Death-ligand 1 (PD-L1) Combined Positive Score (CPS) Among Gynecologic Pathologists
Makia NL, Thomas M, Ring KL, **Moskaluk CA, Mills AM.**

Am J Surg Pathol. 2023 Aug 1;47(8):878-888. PMID: 37272261
DOI: [10.1097/PAS.0000000000002058](https://doi.org/10.1097/PAS.0000000000002058)

HER2 Overexpression and Amplification in Uterine Carcinosarcomas With Serous Morphology

Jenkins TM, Cantrell LA, Stoler MH, Mills AM.
Am J Surg Pathol. 2022 Apr 1;46(4):435-442. PMID: 35125452

DOI: [10.1097/PAS.0000000000001870](https://doi.org/10.1097/PAS.0000000000001870)

PD-L1 and MHC Class I Expression in High-grade Ovarian Cancers, Including Platinum-resistant Recurrences Treated With Checkpoint Inhibitor Therapy
Griesinger L, Nyarko-Odoom A, Martinez SA, Shen NW, Ring KL, Gaughan EM, **Mills AM.**
Appl Immunohistochem Mol Morphol. 2023 Apr 1;31(4):197-203. PMID: 36812389
DOI: [10.1097/PAI.0000000000001108](https://doi.org/10.1097/PAI.0000000000001108)

Immunohistochemical Screening for Mesonephric-like Endometrial Carcinoma: Morphologic and Molecular Features of Screen-Positive Cases.

AM Mills, TM Jenkins, BE Howitt, J Fan, KL Ring, I Cook.

Am J Surg Pathol 46(7):921-932. IF: 6.155, Rank 6 of 76 in Pathology journals, 7 of 203 in Surgery journals.

Dataset for the reporting of carcinoma of the cervix: recommendations from the International Collaboration on Cancer Reporting (ICCR)
KJ Park CI Selinger, I Alvarado-Cabrero [et al including **AM Mills**].

International Journal of Gynecological Pathology. In J Gyn Pathol 2022 in press. IF: 1.797, Rank 48 of 78 in Pathology journals, 53 of 82 in Obstetrics and Gynecology journals.

MMR and MSI testing for immune checkpoint inhibitor therapy: Guideline from the College of American Pathologists (CAP) in collaboration with the Association for Molecular Pathology (AMP) and Fight Colorectal Cancer.

AN Bartley, **AM Mills**, E Konnick et al. Arch Pathol Lab Med 2022 in press. IF: 4.094, Rank 13 of 191 Pathology and Forensic Medicine Journals, 3 of 28 Medical Laboratory Technology Journals.

PRAME Expression in Endometrioid and Serous Endometrial Carcinoma: A Potential Immunotherapeutic Target and Possible Diagnostic Pitfall

Coppock JD, **Gradecki SE, Mills AM.**
Int J Gynecol Pathol. 2023 Jan 1;42(1):35-42. PMID: 35512215

DOI: [10.1097/PGP.0000000000000864](https://doi.org/10.1097/PGP.0000000000000864)

Targeting immune checkpoints in gynecologic cancer: updates & perspectives for pathologists

Mills AM, Bullock TN, Ring KL.
Mod Pathol. 2022 Feb;35(2):142-151. PMID: 34493822

DOI: [10.1038/s41379-021-00882-y](https://doi.org/10.1038/s41379-021-00882-y)

The Immune Checkpoint Inhibitor LAG-3 and Its Ligand GAL-3 in Vulvar Squamous Neoplasia

Cocks MM, **Mills AM.**
Int J Gynecol Pathol. 2022 Mar 1;41(2):113-121. PMID: 33782343

DOI: [10.1097/PGP.0000000000000782](https://doi.org/10.1097/PGP.0000000000000782)

MLH1/PMS2-deficient Endometrial Carcinomas in a Universally Screened Population: MLH1 Hypermethylation and Germline Mutation Status
Kurpiel B, Thomas MS, Mubeen M, Ring KL, Modesitt SC, **Moskaluk CA, Mills AM.**
Int J Gynecol Pathol. 2022 Jan 1;41(1):1-11. PMID: 33577226

DOI: [10.1097/PGP.0000000000000767](https://doi.org/10.1097/PGP.0000000000000767)

Proteogenomic analysis of lung adenocarcinoma reveals tumor heterogeneity, survival determinants, and therapeutically relevant pathways.

Soltis, A.R., Bateman, N.W., Liu, J., Nguyen, T., Franks, T.J., Zhang, X., Dalgard, C.L., Viollet, C., Somiari, S., Yan, C., Zeman, K., Skinner, W.J., Lee, J.S.H., Pollard, H.B., Turner, C., Petricoin, E.F., Meerzaman, D., Conrads, T.P., Hu, H., Network, A.R., Shriver, C.D., **Moskaluk*, C.A.**, Browning, R.F., Jr.*, and Wilkerson, M.D*. *Cell Rep Med* 3, 100819. 2022. *co-senior authors

The Effectiveness of Dual-Staining Immunohistochemistry in the Detection of Mantle Cell Lymphoma in the Bone Marrow
Obiorah IE, Wang HW, Ma D, Martin E, Wilson WH, Braylan R.

Am J Clin Pathol. 2022 May 4;157(5):709-717. PMID: 35512254 MCID: [PMC9071283](https://pubmed.ncbi.nlm.nih.gov/35512254/)
DOI: [10.1093/ajcp/aqab179](https://doi.org/10.1093/ajcp/aqab179)

Aggressive non-Hodgkin lymphoma in the pediatric and young adult population; diagnostic and molecular pearls of wisdom
Singh A, **Obiorah IE.**

Semin Diagn Pathol. 2023 Jun 22:S0740-2570(23)00072-2. PMID: 37400280
DOI: [10.1053/j.semdp.2023.06.002](https://doi.org/10.1053/j.semdp.2023.06.002)

Overlapping Features of Primary Cutaneous Marginal Zone Lymphoproliferative Disorder and Primary Cutaneous CD4 + Small/Medium T-Cell Lymphoproliferative Disorder : A Diagnostic Challenge Examined by Genomic Analysis

Obiorah IE, Karrs J, Brown L, Wang HW, Karai LJ, Pham TH, Pham TA, Xi L, Pittaluga S, Raffeld M, Jaffe ES.

Am J Surg Pathol. 2023 Mar 1;47(3):344-353. PMID: 36598455 PMCID: PMC997453
5 (available on 2024-03-01)

Molecular classification of Diffuse large B cell lymphoma; impact on prognosis and treatment.

Rachel Whitehair, Rasim Ozgur Rosti and **Ifeyinwa Obiorah.**

Advances in Molecular Pathology. 2023;6(1);25-37. DOI:<https://doi.org/10.1016/j.yamp.2023.06.001>

Germline predisposition to myeloid neoplasms: diagnostic concepts and classifications.

Ifeyinwa E. Obiorah, Kalpana Upadhyaya, and Katherine Calvo.

Clinics in Laboratory Medicine. August 8 2023. DOI:<https://doi.org/10.1016/j.cll.2023.06.004>

Microsecretory adenocarcinoma of the external ear canal
Dibbern ME, **Gru AA, Stelow EB.**

J Cutan Pathol. 2023 Feb;50(2):106-109. PMID: 35710690 PMCID: [PMC10084110](https://pubmed.ncbi.nlm.nih.gov/35710690/)
DOI: [10.1111/cup.14277](https://doi.org/10.1111/cup.14277)

MCL1 as a therapeutic vulnerability in Burkitt lymphoma

Yuan R, Wang MY, Bi C, Zhao X, **Tao J.**
Leukemia. 2023 Apr;37(4):934-937. PMID: 36732564

DOI: [10.1038/s41375-023-01827-x](https://doi.org/10.1038/s41375-023-01827-x)

Publications and Awards cont.

Response and resistance to CDK12 inhibition in aggressive B-cell lymphomas

Gao J, Wang MY, Ren Y, Lwin T, Li T, Yan JC, Sotomayor EM, Duckett DR, Shah BD, Shain KH, Zhao X, **Tao J**.

Haematologica. 2022 May 1;107(5):1119-1130. PMID: 34162179

PMCID: [PMC9052927](#)

DOL: [10.3324/haematol.2021.278743](#)

PU.1 - c-Jun interaction is crucial for PU.1 function in myeloid development.

Zhao X, Bartholdy B, Yamamoto Y, Evans EK, Alberich-Jordà M, Staber P, Benoukraf T, Zhang P, Zhang J, **Trinh BQ**, Crispino JD, Hoang T, Bassal MA, Tenen DG.

Communications Biology.

2022, PMID: [36104445](#). <https://pubmed.ncbi.nlm.nih.gov/36104445/>

[pubmed.ncbi.nlm.nih.gov/36104445/](#)

Proximity Sequencing Enables Measurement of Protein Complexes in Single Cells

Rosti RO, **Williams ES**.

Clin Chem. 2023 Jun 1;69(6):665-666.

PMID: 37258486

DOL: [10.1093/clinchem/hvad024](#)

Use of Ultrasensitive RNA In Situ

Hybridization for Determining Clonality in Cutaneous B-Cell Lymphomas and Lymphoid Hyperplasia Decreases Subsequent Use of Molecular Testing and Is Cost-effective
Craddock AP, Kane WJ, **Raghavan SS**, **Williams ES**, **Gru AA**, **Gradecki SE**.

Am J Surg Pathol. 2022 Jul 1;46(7):956-962. PMID: 35067516

DOL: [10.1097/PAS.0000000000001868](#)

Human papillomavirus type 16 E6 induces cell competition

Brimer N, **Vande Pol S**.

PLoS Pathog. 2022 Mar 23;18(3):e1010431.

PMID: 35320322 PMCID: [PMC8979454](#)

DOL: [10.1371/journal.ppat.1010431](#)

Hemolysis and Metabolic Lesion of G6PD Deficient RBCs in Response to Dapsone Hydroxylamine in a Humanized Mouse Model
Dziewulska KH, Reisz JA, Hay AM, D'Alessandro A, **Zimring JC**.

J Pharmacol Exp Ther. 2023 Sep;386(3):323-330. PMID: 37348965

DOL: [10.1124/jpet.123.001634](#)

The role of PIMT in Alzheimer's disease pathogenesis: A novel hypothesis

D'Alessandro A, Lukens JR, **Zimring JC**.

Alzheimers Dement. 2023 May 8.

PMID: 37157118 DOL: [10.1002/alz.13115](#)

Alloantigen Copy Number as a Critical Factor in RBC Alloimmunization

Patel SR, Maier CL, **Zimring JC**.

Transfus Med Rev. 2023 Jan;37(1):21-26.

PMID: 36725483 PMCID: PMC10023450

(available on 2024-01-01)

DOL: [10.1016/j.tmr.2022.12.009](#)

The role of RBC antigen transgene integration sites on RBC biology in mice

Jash A, Hay AM, Collins JB, Heo J, **Luckey CJ**, Hudson KE, **Zimring JC**.

Transfusion. 2023 Jan;63(1):239-248.

PMID: 36436200 DOL: [10.1111/trf.17197](#)

Identification of multiple genetic loci

associated with red blood cell

alloimmunization in mice

Jash A, Howie HL, Hay AM, **Luckey CJ**, Hudson KE, Thomson PC, Ratcliffe SJ, Smolkin

M, **Zimring JC**.

Haematologica. 2023 Mar 1;108(3):905-908

PMID: 36373252 PMCID: [PMC9973466](#)

DOL: [10.3324/haematol.2022.281767](#)

The senescent antigen hypothesis of RBC evanescence: 50 years of correlation without causation

Zimring JC, Spitalnik SL, Hudson KE.

Transfusion. 2022 Nov;62(11):2414-2415.

PMID: 36346084 DOL: [10.1111/trf.17095](#)

Transfusion Medicine in the 21st Century:

Beyond Rebalancing the Humors

Hudson KE, **Zimring JC**.

Transfus Med Rev. 2022 Oct;36(4):173-174.

PMID: 36244930

DOL: [10.1016/j.tmr.2022.09.003](#)

Ph.D. Dissertations

Towards Personalized Medicine: Identifying, Characterizing, and Targeting Drivers of Aggressive Cancers.

Morris, Benjamin

University of Virginia, Experimental Pathology - School of Medicine, PHD (Doctor of Philosophy), 2022, 2022, [doi.org/10.18130/d0qh-rj89](#).

Investigating Atherosclerosis and

Chemotherapy-Induced Cardiomyopathy At the Single-Cell Resolution.

Ma, Wei Feng.

University of Virginia, Experimental Pathology - School of Medicine, PHD (Doctor of Philosophy), 2023, 2023, [doi.org/10.18130/f60t-ax59](#).

The Role of Liver Kinase B1(LKB1) In Erythropoiesis.

White III, Zollie.

University of Virginia, Experimental Pathology - School of Medicine, PHD (Doctor of Philosophy), 2022, 2022, [doi.org/10.18130/b763-pm32](#).

Cellular and Molecular Regulators of RBC Alloimmunization.

Prakash, Anupam.

University of Virginia, Experimental Pathology - School of Medicine, PHD (Doctor of Philosophy), 2023, 2023, [doi.org/10.18130/7kq3-n769](#).

Awards

Kristen Atkins is a member of the research team chosen for the 2023 Research Collaboration Award by the University of Virginia Research Achievement Awards committee This award recognizes a team of faculty researchers (3 or more individual scholars) who have collectively made unique and significant contributions through their research collaboration.

Robin Felder was inducted into the National Academy of Inventors,

Robin LeGallo has been awarded the Preclerkship Teaching Award by vote of the graduating medical school class. This is her fifth time receiving this award, tying the record held by Don Innes

Hui Li named a Pinn Scholar in the School of Medicine. The Pinn Scholars Program seeks to recognize and reward research faculty whose scientific expertise and productivity, mentorship, and service have resulted in significant contributions to the School of Medicine and greater research community.

Hui Li was awarded the Harrison Distinguished Teaching Professor of Pathology. Recognition for his distinguished research accomplishments, teaching of graduate and undergraduate students and his service to the University

Anne M. Mills, was awarded the College of American Pathologist Lifetime Achievement Award which recognizes and honors members of the College of American Pathologists (CAP) who have made a broad and positive impact on the pathology profession through contributions to one or more areas of the organization over an ended period.

Melinda Poulter received the [Dean's Clinical Excellence Award](#)

National Presentations

2023 CAP Meeting Report

by: Anne Mills

UVA Pathology had another year of robust contributions to the 2023 Annual Meeting of the United States and Canadian Academy of Pathology. Trainees Mick Crawford, Yong-Sang Park, Srishti Gupta, and Marge Moore presented research posters in the prestigious Stowell-Orbison Poster session; topics ranged from cervical cytology in Lynch syndrome patients to histologic findings of CLL/SLL with features of acceleration/transformation. Mick Crawford's work on ER-positive breast cancers treated with endocrine therapy was featured in a special moderated poster session showcasing the most highly ranked trainee projects at the meeting. As the meeting went on, additional research in immunotherapeutic biomarkers from resident Ngome Makia and UVA medical students (and former Department of Pathology Innes Fellows!) Nancy Shen and Santos Acosta Martinez was featured, and garnered plenty of interest from both pathology colleagues and pharmaceutical representatives at the meeting.

Faculty were also busy both engaging at and contributing to the intellectual festivities. Kristen Atkins, Elizabeth Courville, and Anne Mills served as primary research mentors for trainees presenting their work. Additionally, Sara Zadeh shared her own project on pan-TRK in breast carcinomas, and Anne Mills presented an inter-institutional study on PD-L1 in cervical carcinoma. Bea Lopes gave a short course on pituitary tumors, as well as a complementary session on pituitary adenomas and neuroendocrine tumors at the American Association of Neuropathologists Companion Meeting. Finally, Elizabeth Courville delivered not one but two Short Courses on cutting edge topics in hematopathology, one of which was co-presented with UVA Path colleague Ifey Obiorah.

As always, the most enjoyable part of the meeting was the lively UVA dinner, which included a special appearance from Dr. Stacey Mills who shared pearls of wisdom with the current crop of trainees about the Department's rich history. Having just submitted another crop of exciting abstracts for the upcoming 2024 USCAP meeting, UVA Pathology looks forward to another fun and productive year of clinically relevant research!

2023 ACLPS Meeting Report

by: Jim Gorham and Lindsay Bazdlo

On June 8-10, 2023, the University of Virginia Department of Pathology co-hosted the Annual ACLPS Meeting. The conference drew some 200 experts and trainees in Laboratory Medicine from around the country to the DoubleTree hotel in Charlottesville for a series of seminars and cutting edge abstracts in the field, covering a wide variety of topics in clinical chemistry, clinical laboratory microbiology, transfusion medicine, informatics, molecular genomics, laboratory utilization, and others.

Early birds arriving on Wednesday were able to avail themselves of shuttles to take attendees from the Conference hotel (the DoubleTree by Hilton) to the UVA campus for personalized guided tours of the campus, including the famous Rotunda that oversees UVA's "Academical Village," as well as to downtown Charlottesville.

Thursday was chock-full of exciting seminars given by leaders and experts in Laboratory Medicine, and the day's sessions closed with a short presentation by Columbia's Department of Pathology and Laboratory Medicine, to introduce attendees to ACLPS24, taking place in the Big Apple. The Thursday night welcome reception was at the DoubleTree. Friday morning, the Young Investigator Oral Parallel Abstract presentations took place in breakout conference rooms at the DoubleTree; Young Investigators were also featured at well attended and interactive poster sessions. At noon, the ACLPS Business Meeting (with lunch) took place in the DoubleTree ballroom. In the afternoon, attendees heard from UVA's own Dr. Amy Mathers, this year's awardee of the Ernest Cotlove Award Lectureship, with a timely and exciting talk "The 'next' pandemic: antibacterial resistance".



Shuttles left DoubleTree in early evening to bring attendees to the Cocktail Hour and Awards Banquet at Montalto (the "high mountain") that is part of Thomas Jefferson's historic estate, Monticello. *Repose*, the 11,000-square-foot house atop Montalto, is a gracious 1908 American Country house restored by the Thomas Jefferson Foundation in 2011. The event was memorable, with sweeping views of Charlottesville and the Blue Ridge Mountains. Featured at the event were signature Blue and Orange Cocktails, representing the colors of UVA, founded by Mr. Jefferson. At the awards banquet, young investigators received their awards, and the evening was highlighted by Dr. Jorge Sepulveda (George Washington Univ. School of Medicine) receiving the Evans award.

Saturday morning's sessions opened with the Ellis Benson Award and Lecture, delivered by Dr. Sarah Wheeler of U Pittsburgh Medical Center, who spoke on "Using data to improve laboratory medicine for special populations." After additional morning sessions in laboratory medicine, the ACLPS meeting was adjourned.



UVA Pathology In the News

[Adam N. Goldfarb, MD Discovery Could Power Up Platelet Production On Demand](#)

Medicine in Motion News | September 22, 2022 by ita6n@virginia.edu

James Gorham was named Inaugural President of the [Association for the Advancement of Blood and Biotherapies \(AABB\) Foundation Board of Directors](#). Formerly the National Blood Foundation (NBF), the AABB Foundation focuses on research and advancing the careers of pathology's top researchers who create lifesaving discoveries.

[Anne M. Mills, awarded College of American Pathologist Lifetime Achievement Award](#)

Philanthropy

Innes Fellowship

In memory of Dr. Don Innes, the Department of Pathology established the "Innes Fellowship." This initiative, now in its 8th year, commemorates Dr. Innes's legacy by sponsoring two rising second-year students in our 7-week summer program is designed to provide students with clinical skills, education, and research opportunities spanning all areas of anatomic and clinical pathology.

The Innes Fellowship has proven to be an instrumental tool for pathology recruitment. The first ten participants have either entered the field of pathology or are presently in the interview process. Five out of the initial eight participants have chosen to continue their training at UVA for residency, subsequently assuming roles as chief residents and fellows.

Beyond its impact on recruitment, the Fellowship extends its influence through the leadership provided by former participants. These individuals lead our student pathology interest group, have won travel grants and have served on committees in national organizations and advocate for the subspecialty among their peers.

The Innes Fellows receive a stipend in alignment with the Medical School Summer Research Program. The financial support for the Fellowship is generously provided by pathology alumni donations, underscoring the commitment and generosity of our alumni community.

Cytogenetics and Molecular Genetics Fellowship

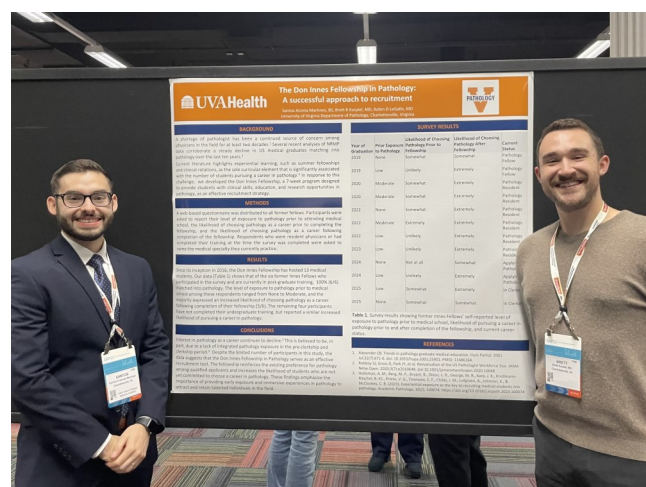
A major missing piece to our training programs has been specialized training in molecular diagnostics. Eli Williams, PhD has taken on the task of creating this two-year fellowship program and the department has decided to self-fund this program without institutional support. We could use your help in supporting this fellowship to enhance UVA's role in shaping the burgeoning fields of molecular diagnostics and clinical genomics.

Sponsor a Pathology Summer Fellowship

The eight-week summer enrichment program in pathology provides second-year medical students with hands-on experience in disease diagnosis. Each intern rotates through all AP and laboratory medicine services. Please consider supporting our profession by contributing a donation to support a medical student in this program. The cost of hosting each student is \$2,500. With your support, we hope to provide two student stipends in 2024.

Global Outreach

We are pleased to announce several global outreach initiatives in pathology. Please consider a generous donation to assist us in providing these pathology outreach opportunities to our faculty and trainees. Professor of Pathology Henry Frierson, M.D. and pathology residents are spearheading pathology clinical outreach and cervical screening campaigns in Guatemala.



Former Innes Fellows recently presenting the program as poster at the 2023 College of American Pathologists annual meeting in hopes to spark other institutions to make this educational investment.

Donations can be made online by clicking on the "Make a Gift" button on the UVA Pathology website at med.virginia.edu/pathology.

Final Notes

In Memory of Tom Braciale, M.D., Ph.D.



Dr. Thomas J. Braciale was cherished as a loving father, grandfather, brother, friend, colleague, and mentor. His legacy will be fondly remembered by his children Kara, Michael, and Laura, his beloved grandchildren Pia, Asha, Rishi, Mira, Ezra, Zoey, and Jesse, and his devoted sisters Barbara, Mary, and Yael.

Dr. Braciale was a globally esteemed scientist whose journey spanned over four decades, as a prominent immunologist at Washington University in St. Louis (Wash. U) and the University of Virginia (UVA). For him, science was not merely a job but a way of life, weaving together the threads of knowledge and curiosity. After earning his M.D. and Ph.D. from the University of Pennsylvania in 1975, Dr. Braciale pursued his residency in pathology at Wash. U. His journey then took him to the Australian National University for a noteworthy post-doctoral fellowship. In 1978, he continued his academic pursuits at WashU, later joining UVA in 1991 to lead the newly established Beirne B. Carter Center for Immunology Research. His dedication to uncovering the intricacies of the immune system was unparalleled. His research has laid the foundation for understanding the respiratory, and immune systems and their role in health and diseases. His work has provided insights into the world of antigen presentation, T cells, dendritic cells,

and their pivotal roles in our immune defense against pathogens.

As an educator, Dr. Braciale was both an inspiration and a guide. His teaching touched upon many subjects, from cellular immunology to the nuances of the influenza virus. He was a pillar of support to his graduate students and postdocs, always providing invaluable insights and guidance. They will forever remember his unwavering dedication and mentorship.

Dr. Braciale received several prestigious honors, including The Eijkman Medal for Immunology and Infectious Diseases, the title of UVA Eminent Scholar, and the NIH Merit Award. He was a key member of various advisory boards and committees at fellow institutions, national entities, and the Federal Government. This includes advisory roles for the National Institute of Allergy and Infectious Disease and the Board of Scientific Counselors at the NIAID Vaccine Research Center. During his leadership, the UVA Immunology community saw remarkable expansion and progress toward national and international acclaim. Dr. Braciale's legacy includes about 180 publications, with many still frequently cited in his fields, showcasing the enduring impact of his pioneering research.

Dr. Braciale believed in the adage "actions speak louder than words." His life, a blend of vigor, dedication, and purpose, is an eloquent testament to this belief. His contributions, both in the realm of science and in the hearts of those he touched, will be remembered in the UVA Immunology Community for generations to come.

- by: Coleen A. McNamara, M.D.

In Memory of John Bradley Cousar, Jr., M.D.



John "Bud" Bradley Cousar Jr. died peacefully surrounded by family in his home in Charlottesville, Virginia on November 17, 2023.

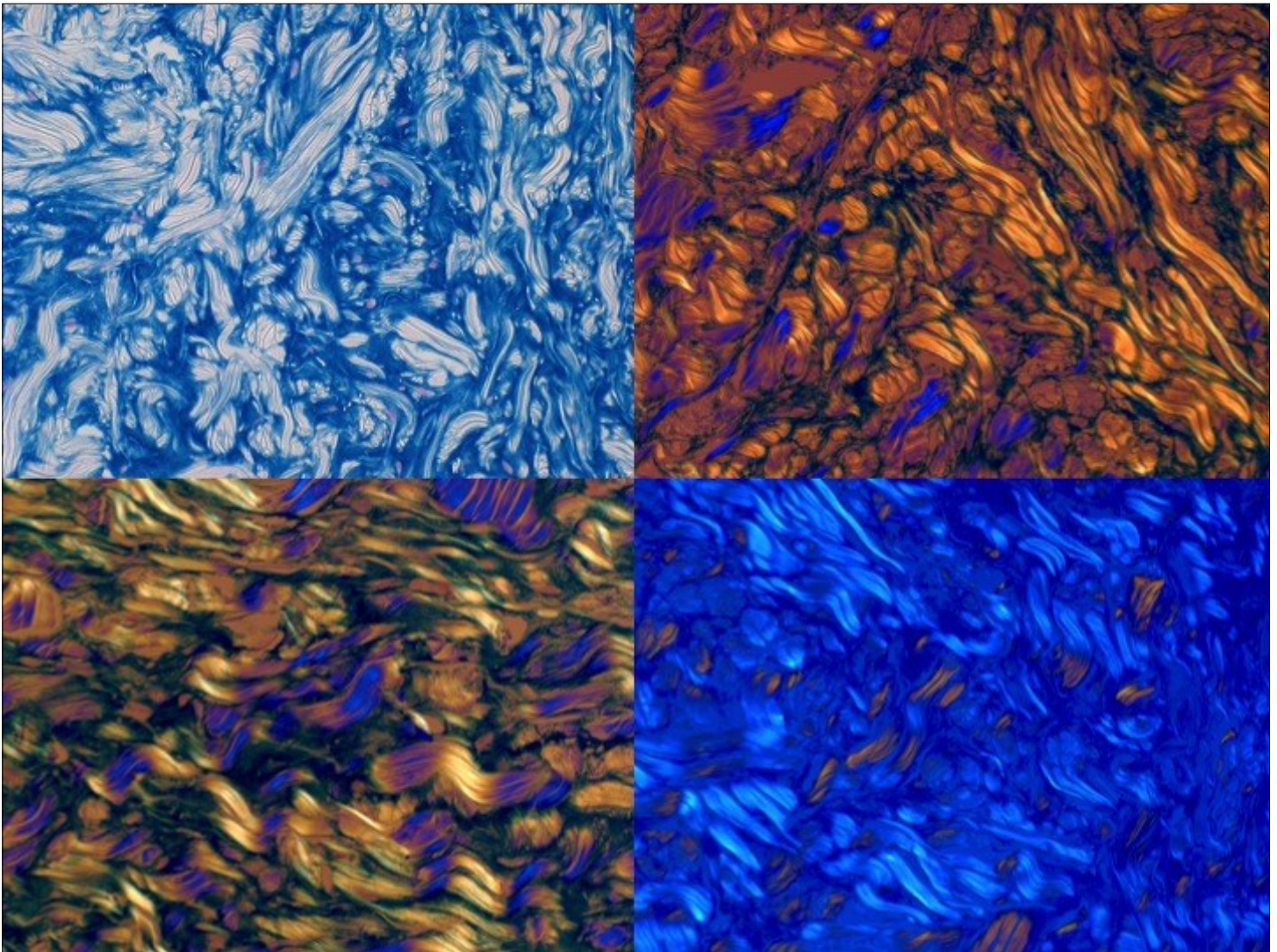
John was born on November 21, 1946 to John Bradley Cousar Sr. and Helen McMillian Cousar in Sumter, South Carolina. After the loss of his father when he was only nine, John went on to graduate from A.C. Flora High School in 1965 and Davidson College in 1969. Following in his father's footsteps, John became a doctor, graduating from the University Of Virginia School Of Medicine in 1973. He practiced pathology for 38 years, serving as Director of Clinical Laboratories, Director of Hematopathology and Professor of Pathology at Vanderbilt University. In 2002, John joined the Pathology Department at the University of Virginia where he served as Professor and Director of Hematopathology as well as founding Director of the Hematopathology Fellowship Training Program until his retirement in 2011.

A culinary wizard, John could make a mean pot roast, rack of ribs, and jalapeño cornbread. He loved to fish and hunt with friends and even canoed competitively, though by his own account he was once lapped by a band of whistling girl scouts. He was deeply connected to nature and could rattle off the age, sex, and mating quirks of any bird that visited his homemade platform feeder. But John's most accomplished art was surely comedy. Never one to miss a party, he was known for his deadpan punchlines that regularly left the room in tears of laughter.

Despite his many talents and professional accomplishments, John never boasted and always put others first. A true Southern gentleman, he was extraordinarily kind, humble, and wise, taking joy in simple, albeit eccentric, routines- compulsively mowing the grass, blurring out expletives to the "idiot" contestants on Wheel of Fortune, and staring blissfully for hours at wild turkeys with his friend Tess, the late standard poodle. Above all, John loved his family and his life's joy was to make his wife, children, and grandchildren happy.

John is preceded in death by his sister, Helen Wells, and his parents, John Bradley Cousar Sr. and Helen McMillian Cousar. He is survived by his wife, Leslie Reed; his daughters, Lauren Cousar and Anna Mechem (Tyler); his stepsons, Reed Espinosa (Lauren) and Charlie Espinosa (Sierra); his grandsons, Milo Downie, Henry Mechem, Charlie Mechem, and Samuel Mechem; his nephew, Brad Wells (Alyssa); his sister-in-law, Jane Reed; and his first wife, Ellen Cousar.

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Winning image, titled "Building Blocks," by Margaret Cocks, MD, PhD, one of our dermatopathology fellows for 2018-2019.