## Yale Center for Research on Aging (Y-Age) Inaugural Y-Age Symposium



Tuesday, October 24, 2023 New Haven Lawn Club New Haven, CT

Agenda

8:00am-9:00am Registration & Breakfast

9:00am-9:05am Welcome Remarks and Introduction: Dr. Vishwa Deep Dixit, DVM, PhD Director, Yale Center for Research on Aging (Y-Age)

9:05am-9:15am Dean's Remarks: Dr. Nancy J. Brown, MD Dean of the Yale School of Medicine

9:15am-9:30am Welcome: Dr. Chen Liu, MD, PhD Chair, Pathology

9:30am-10:15am Keynote Speaker: Anne Brunet, PhDStanford University School of MedicineMichele and Timothy Barakett Endowed Professor of GeneticsCo-Director of the Paul F. Glenn Laboratories for the Biology of Aging*"Understanding Aging and 'Suspended Animation'"* 

10:15am-10:30am Coffee Break

Session I: 10:30am-11:00am Dr. Vishwa Deep Dixit, DVM, PhD Yale School of Medicine, Pathology Waldemar von Zedtwitz Professor of Pathology and Professor of Immunobiology Director, Yale Center for Research on Aging (Y-Age) *"Immunometabolic Checkpoints of Aging"* 

11:00am-11:30am Dr. Rozalyn Anderson, PhDUniversity of Wisconsin School of Medicine and Public HealthProfessor, Geriatrics"Delayed Aging by Caloric Restriction in Nonhuman Primates"

11:30am-12:00pm Dr. Rafael de Cabo, PhD National Institute on Aging, National Institute of Health, USA Chief of the Translational Gerontology Branch *"Impact of Energy Balance on Aging"* 

12:00 pm-1:00pm Lunch

Session II: 1:00pm-1:30pm Dr. Andrew Dillin, PhD University of California, Berkeley, Department of Molecular and Cell Biology HHMI Investigator Thomas and Stacey Siebel Distinguished Chair in Stem Cell Biology Professor of Immunology and Molecular Medicine *"Proteome Integrity in Aging"*  1:30pm-2:00pm Dr. Albert C. Shaw, MD, PhD Yale School of Medicine, Infectious Diseases Professor of Medicine (Infectious Diseases), Y-Age *"Immune Dysfunction in Elderly"* 

2:00pm-2:30pm Dr. Cornelia M. Weyand, MD, PhD Mayo Clinic Professor of Immunology *"Mitochondrial Failure in Autoimmune Disease"* 

2:30pm-2:45pm Coffee Break

Session III: 2:45pm-3:15pm Elsie Gonzalez-Hurtado Yale School of Medicine, Dixit Lab, Pathology Graduate Student *"Nerve-Associated Macrophages in Aging Adipose Tissue"* 

3:15pm-3:45pm Dr. Ashani T. Weeraratna, PhD
John Hopkins Bloomberg School of Public Health
Bloomberg Distinguished Professor
E.V. McCollum Professor and Chair of Biochemistry & Molecular Biology *"Age Against the Machine: The Impact of Age on Tumor Progression"*

3:45pm-4:15pm Dr. Stephen Helfand, MD Brown University George D. Eggleston Endowed Professor of Biochemistry Vice-Chair for Research, Department of Neurology *"Retrotransposons as agents of aging and disease"* 

4:15pm-5:00pm Panel Discussion
Dr. Stephen Helfand, MD, Brown University, George D. Eggleston Endowed Professor of Biochemistry; Vice-Chair for Research, Department of Neurology
Dr. Donald K. Ingram, PhD, Pennington Biomedical Research Center, Adjunct Professor
Dr. Ronald Kohanski, PhD, National Institute on Aging, NIH, Director, Division of Aging Biology

Moderator: Dr. Vishwa Deep Dixit, DVM, PhD, Yale School of Medicine, Pathology, Waldemar von Zedtwitz Professor of Pathology and Professor of Immunobiology; Director, Yale Center for Research on Aging (Y-Age)

5:00pm Closing Remarks

Session Chairs:

I: Thomas M. Gill, MD, Humana Foundation Professor of Medicine (Geriatrics) and Professor of Epidemiology (Chronic Diseases) and of Investigative Medicine; Director, Yale Program on Aging II: Tamas Horvath, DVM, PhD, Jean and David W. Wallace Professor of Comparative Medicine and Professor of Neuroscience and of Obstetrics, Gynecology, and Reproductive Sciences; Comparative Medicine III: Heidi J. Zapata, MD, PhD, Assistant Professor

Speakers



Keynote Speaker Dr. Anne Brunet, PhD Stanford University School of Medicine Michele and Timothy Barakett Endowed Professor of Genetics Co-Director of the Paul F. Glenn Laboratories for the Biology of Aging

"Understanding Aging and 'Suspended Animation"

**Dr. Anne Brunet** obtained her B.Sc. from the Ecole Normale Supérieure in Paris and her Ph.D. from the University of Nice, France. She did her postdoctoral training with Dr. Michael Greenberg at Harvard Medical School. Dr. Brunet is interested in the molecular mechanisms of aging and longevity. Dr. Brunet's laboratory has developed an original line of investigation to understand aging based on the integration of model organisms with diverse lifespans – worms, fish, and mice. Using the worm Caenorhabditis elegans, the Brunet lab has identified pathways involved in delaying aging in response to external stimuli such as availability of nutrients and availability of the opposite sex. She made the exciting discoveries that lifespan extension can be regulated by chromatin modifiers and inherited in a transgenerational epigenetic manner. Her lab also uses mouse models to address complex questions about mammalian aging, notably mechanisms regulating neural stem cell aging. Importantly, the Brunet lab has pioneered the naturally short-lived African killifish as a new model to identify principles underlying aging and 'suspended animation'. Dr. Brunet has published over 100 peer-reviewed papers and reviews. She has received several awards, including the Pfizer/AFAR Innovation in Aging Research Award and the Vincent Cristofalo "Rising Star" Award in Aging Research. She received a Pioneer Award and a Transformative Award from the NIH Director's fund, which supports scientists who propose pioneering and transforming approaches to major challenges in biomedical research. In 2022, together with Dr. Andrew Dillin, she received the Lurie Prize in Biomedical Sciences.



Dr. Vishwa Deep Dixit, DVM, PhD Yale School of Medicine, Pathology Waldemar Von Zedtwitz Professor of Pathology and Professor of Immunobiology Director, Yale Center for Research on Aging (Y-Age)

"Immunometabolic Checkpoints of Aging"

**Dr. Vishwa Deep Dixit**: Son of teachers, Deep grew up in Hisar (Northwest India). He studied Veterinary Medicine in India, did PhD research in University of Hannover, Germany and postdoctoral research in Morehouse School of Medicine, Atlanta and the National Institute on Aging (NIH) in Baltimore. He currently holds Waldemar Von Zedtwitz endowed chair and is a Professor in the Departments of Pathology, Comparative Medicine and Immunobiology at Yale University. Dr. Dixit is also the director of Yale Center for Research on Aging (Y-Age) at the Yale School of Medicine. In addition, the Dixit Lab studies Immunometabolism and aging. His team help establish NLRP3 inflammasome as a key mechanism of 'inflammaging' and immunosenescence that leads to age-related chronic diseases including metabolic dysfunction. Dr. Dixit and his collaborators have identified that switch from glycolysis to ketogenesis deactivates the inflammasome and reduces immunopathology. The ongoing work in his laboratory is interrogating how the nutrient and energy sensing mechanisms in a host can be harnessed to identify immunometabolic checkpoints to enhance health and lifespan.



## Dr. Rozalyn Anderson, PhD University of Wisconsin School of Medicine and Public Health Professor, Geriatrics

"Delayed Aging by Caloric Restriction in Nonhuman Primates"

**Dr. Rozalyn Anderson** is a Professor of Medicine and faculty member of the Division of Geriatrics and Gerontology, and the Division of Endocrinology, Diabetes and Metabolism in the Department of Medicine at the University of Wisconsin Madison SMPH. Her research investigates the biology of aging and what creates the age-associated increase in vulnerability to a spectrum of diseases and disorders. A primary focus is on the mechanisms of delayed aging by caloric restriction in mice and in monkeys, with a special emphasis on metabolism as a driver in aging and as a target for interventions to prevent age-related functional loss. Dr. Anderson is Director of the Metabolism of Aging program, Associate Director of the Biology of Aging and Age-Related Diseases T32 training program, and Associate Director of Research at the William S Middleton Memorial Veterans Hospital GRECC. She is a Fellow and current Chair of the Biological Sciences section of the Gerontological Society of America and Fellow and former President of the American Aging Association. She a recipient of the Nathan Shock New Investigator Award, the Biological Mechanisms in Aging Award, and the Breakthroughs in Gerontology Award.



Dr. Rafael de Cabo, PhD National Institute on Aging, National Institutes of Health, USA Chief of the Translational Gerontology Branch

"Impact of Energy Balance on Aging"

**Dr. Rafael de Cabo** earned his Ph.D. in 2000 from the Department of Foods and Nutrition at Purdue University. He received a postdoctoral position in the Laboratory of Neurosciences at the National Institute on Aging in Baltimore, Maryland. In 2004, he was appointed as a tenure track investigator in the Laboratory of Experimental Gerontology. He is now a senior investigator and Chief of the Translational Gerontology Branch at NIA. His research has focused on the effects of nutritional interventions on basic mechanisms of aging and age-related diseases, the effects of caloric restriction on aging, and pharmacological interventions for healthy aging. Ultimately his research aims to identify interventions that will improve healthspan and lifespan with translational potential to benefit human aging.



Dr. Andrew Dillin, PhD University of California, Berkeley, Department of Molecular and Cell Biology HHMI Investigator Thomas and Stacey Siebel Distinguished Chair in Stem Cell Biology Professor of Immunology and Molecular Medicine

"Proteome Integrity in Aging"

Dr. Andrew Dillin is the Faculty Co-Director of the Robinson Life Science, Business, and Entrepreneurship program on behalf of the Molecular and Cell Biology Department where he is a Professor of Immunology and Molecular Medicine. He is also a Howard Hughes Medical Investigator, and in Spring 2022, he was awarded the Lurie Prize in Biomedical Sciences for his work on the aging process. As an entrepreneurial scientist, Dr. Dillin mentors LSBE students interested in life science commercialization and helps connect students to research opportunities. He lectures in both the freshman Intro to Biotech seminar and the senior capstone course.

Dr. Dillin is interested in why an aging organism begins to lose control over the integrity of its proteome, and how this loss is communicated across its various tissues. Working in model systems ranging from stem cells to nematodes to mice, his team has developed and applied techniques that allow manipulation of signaling pathways or proteins within a tissue, a single cell, or a single organelle, so they can observe the effect of that small perturbation on the physiology of a whole organism. His work aims to shed light on the developmental processes of human neurodegenerative diseases, such as Alzheimer's, Huntington's, and Parkinson's diseases.



Dr. Albert C. Shaw, MD, PhD Yale School of Medicine, Infectious Diseases Professor of Medicine (Infectious Diseases) Member Y-Age Center

"Immune Dysfunction in Elderly"

**Dr. Albert Shaw** is a graduate of Harvard College who completed his M.D. training at Harvard Medical School and his Ph.D. in the laboratory of Philip Leder. After completing his clinical training in Internal Medicine and Infectious Diseases at Massachusetts General Hospital, he was a postdoctoral fellow in the laboratory of Fred Alt. Dr. Shaw joined the faculty at Yale in 2001 and is currently Professor of Medicine in the Section of Infectious Diseases. His research focuses on the immunology of aging, and his laboratory has interests in age-associated alterations in innate immune function and vaccine response in humans, as well as circadian regulation of immune response and mechanisms of inflammatory dysregulation in medication-associated treatment of opioid use disorder. He was a Howard Hughes Postdoctoral Physician Research Fellow, Brookdale National Fellow, and T. Franklin Williams Scholar, and he is a Fellow of the Infectious Disease Society of America and member of the Interurban Clinical Club.



## Dr. Cornelia M. Weyand, MD, PhD Mayo Clinic Professor of Immunology and Medicine

"Mitochondrial Failure in Autoimmune Disease"

Dr. Cornelia Weyand holds an appointment as Professor of Medicine and Immunology at Mayo Alix School of Medicine and as Professor Em. of Medicine at Stanford University, School of Medicine. She has recently taken on the Directorship of the Immunity and Inflammation Program, a program in Translational Immunology embedded into the Mayo Healthcare System. Dr. Weyand is a physician-scientist with a special interest in tissue-damaging immune responses in autoimmune and in chronic inflammatory disease, including rheumatoid arthritis, atherosclerosis, and large vessel vasculitis.

Over the last decade, she has devoted special emphasis to the remodeling of the immune system with aging, how chronic disease ages the immune system, and how aged immune cells cause inflammation. She has defined molecular defects underlying the premature aging process in patients with rheumatoid arthritis, implicating metabolic control in T cell behavior. The work has identified metabolic signatures that cause diversion of protective towards pro-inflammatory T cell immunity. Dr. Weyand's team has mechanistically linked the differentiation of pathogenic T cells to the failure of mitochondrial DNA repair, the reprogramming of mitochondrial metabolite production, the misrouting of energy-sensing enzymes away from the lysosomal surface and the misregulation of protein synthesis at the endoplasmic reticulum. More recent studies explore metabolic cues delivered by the tissue microenvironment to shape the interactions, the survival and functional commitment of immune cells in chronic tissue inflammation.



Elsie Gonzalez-Hurtado Yale School of Medicine Pathology Graduate Student Member Y-Age Center

"Nerve-Associated Macrophages in Aging Adipose Tissue"

**Elsie Gonzalez-Hurtado** is a native of California who completed a B.S. in Biochemistry at the University of California Riverside. Upon graduation, Elsie spent two years at the Johns Hopkins University School of Medicine working in the laboratory of Dr. Michael J. Wolfgang where she studied the role of fatty acid oxidation in macrophage polarization and its role in brown adipose tissue maintenance and programming. Elsie then joined the MD-PhD program at the Yale School of Medicine in 2017 and started her pre-doctoral training in the Yale Immunobiology Graduate Program upon joining the laboratory of Dr. Vishwa Deep Dixit in 2019. Elsie is interested in identifying metabolic regulators of inflammation to better understand how metabolic programing modulates inflammation at the cellular and whole organism level. Elsie is also interested in exploring neuro-immune interactions and learning more about their role in inflammation and chronic diseases of aging.



Dr. Ashani T. Weeraratna, PhD John Hopkins Bloomberg School of Public Health Bloomberg Distinguished Professor E.V. McCollum Professor and Chair of Biochemistry & Molecular Biology Professor

"Age Against the Machine: The Impact of Age on Tumor Progression"

**Dr. Ashani Weeraratna** is the Bloomberg Distinguished Professor of Cancer Biology, E.V. McCollum Chair of Biochemistry and Molecular Biology at the Johns Hopkins Bloomberg School of Public Health, as well as the Associate Director for Laboratory Research at the Sidney Kimmel Cancer Center, Johns Hopkins School of Medicine. She is the immediate Past President of the Society for Melanoma Research and was recently appointed by President Biden as a member of the National Cancer Advisory Board. Prior to joining Johns Hopkins, she was the Ira Brind Professor and Co-Program Leader, Immunology, Microenvironment & Metastasis Program Member at the Wistar Institute. Born in Sri Lanka and raised in Lesotho in Africa, Dr. Weeraratna first came to the United States in 1988 to study biology at St. Mary's College of Maryland. She earned a Ph.D. in Molecular and Cellular Oncology at the Department of Pharmacology of George Washington University Medical Center. From 1998 to 2000, she was a post-doctoral fellow at The Sidney Kimmel Comprehensive Cancer Center at Johns Hopkins Oncology Center, before joining the National Human Genome Research Institute as a staff scientist. In 2003, she moved to the National Institute on Aging, where she started her own research program, before joining the Wistar Institute from 2011-2019.



Dr. Stephen L. Helfand, MD Brown University George D. Eggleston Endowed Professor of Biochemistry Vice-Chair for Research, Department of Neurology

"Retrotransposons as Agents of Aging and Disease"

Dr. Stephen L. Helfand is the George D. Eggleston Endowed Professor of Biochemistry, Professor in the Department of Molecular Biology, Cell Biology and Biochemistry, member of the Executive Committee for the Center for Translational Neuroscience and Vice Chair for Research in the Department of Neurology at Brown University.

Dr. Helfand received his BS at Stanford University with Distinction and Honors, his MD from Albert Einstein College of Medicine, performed his Medical Internship at Montefiore Medical Center, his Neurology Residency at the Massachusetts General Hospital and is Board Certified in Neurology and Psychiatry. He did his Postdoctoral training at Stanford University with Corey S. Goodman and David S. Hogness and with John Carlson at Yale University. He became a faculty member at UConn Health Center in 1990 and since 2005 has been a Professor in the Department of Molecular Biology, Cell Biology and Biochemistry at Brown University.

Dr. Helfand's laboratory focuses on understanding the molecular genetic mechanisms underlying aging and longevity using the model system, Drosophila melanogaster. He is a recipient of a MERIT award from the NIA, an Ellison Medical Foundation Senior Scholar and two Glenn Awards for research in Biological Mechanisms of Aging and the Glenn/AFAR Breakthroughs in Gerontology Award. He is a charter member of Faculty of 1000, a charter member of the Cellular Mechanisms in Aging and Development Study Section at NIH, a former Editor-in-Chief of Aging Cell and a founding Editor of Aging. His work on the molecular genetics of aging has been published in many journals including Science, Nature, PNAS, Cell Metabolism, Current Biology, Nature Communications, Genetics and Aging Cell. He is a Fellow of the AAAS and Gerontological Society of America (GSA) and former Chair of the Biological Sciences Section of the GSA.

Panelists



Dr. Stephen L. Helfand, MD Brown University George D. Eggleston Endowed Professor of Biochemistry Vice-Chair for Research, Department of Neurology

**Dr. Stephen L. Helfand** is the George D. Eggleston Endowed Professor of Biochemistry, Professor in the Department of Molecular Biology, Cell Biology and Biochemistry, member of the Executive Committee for the Center for Translational Neuroscience and Vice Chair for Research in the Department of Neurology at Brown University.

Dr. Helfand received his BS at Stanford University with Distinction and Honors, his MD from Albert Einstein College of Medicine, performed his Medical Internship at Montefiore Medical Center, his Neurology Residency at the Massachusetts General Hospital and is Board Certified in Neurology and Psychiatry. He did his Postdoctoral training at Stanford University with Corey S. Goodman and David S. Hogness and with John Carlson at Yale University. He became a faculty member at UConn Health Center in 1990 and since 2005 has been a Professor in the Department of Molecular Biology, Cell Biology and Biochemistry at Brown University.

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Dr. Ronald Kohanski, PhD National Institute on Aging, NIH Director, Division of Aging Biology

**Dr. Ronald Kohanski,** Ph.D. is the Director of the Division of Aging Biology at the National Institute on Aging, NIH. Trained as a biochemist, he obtained a Ph.D. in Biochemistry from the University of Chicago in 1981. After a postdoctoral fellowship with M. Daniel Lane at the Johns Hopkins University School of Medicine, he held a faculty position at the Mount Sinai School of Medicine for 17 years before returning as a faculty member at Johns Hopkins. His fields of research included enzymology and developmental biology of the insulin receptor. Dr. Kohanski joined the Division of Aging Biology, NIA in 2005 as a Program Officer, and became Division Deputy Director in 2007. Dr. Kohanski has promoted aging research in the specific areas of stem cell biology and cardiovascular biology. More broadly he promotes research efforts to expand studies beyond laboratory animals, to address the basic biology of aging explicitly in human populations and non-laboratory animals (domestic and wild populations). Dr. Kohanski is also a co-founder and co-leader of the trans-NIH Geroscience Interest Group (GSIG).



## Dr. Donald K. Ingram, PhD Pennington Biomedical Research Center, Louisiana State University Adjunct Professor

Dr. Donald K. Ingram is currently Adjunct Professor at the Pennington Biomedical Research Center (PBRC) in Baton Rouge, Louisiana, USA, a component of Louisiana State University (LSU). He retired from PBRC in 2015 after serving as Professor and Chief of the Nutritional Neuroscience and Aging Laboratory and Director of the Animal Phenotyping Core since 2007. Prior to these appointments, Dr. Ingram held several positions at the National Institute on Aging (NIA), National Institutes of Health (NIH), in Baltimore, Maryland, retiring in 2006 as Chief of the Laboratory of Experimental Gerontology, which he organized in 2002. He received his B.A. in psychology from Louisiana State University in 1970 and his doctorate in psychology and gerontology from the University of Georgia (UGA) in 1978 followed in 1979 by a NIH Postdoctoral Fellowship at the Jackson Laboratory, Maine, before joining the NIA in 1980. Dr. Ingram has served on editorial boards of several biomedical journals, including the Journals of Gerontology, and is the past editor of Gerontology and AGE (Journal of the American Aging Association, now GeroScience). He is a Past President of the American Aging Association (1999) and the Gerontological Society of America (2011). Currently Dr. Ingram serves as Chief Scientific Officer for two companies he co-founded: GeroScience, Inc. and Prolongevity Technologies, Inc., as well as past and current positions as scientific adviser to several nutritional and pharmaceutical companies, including Proctor & Gamble; Welch's, Inc.; QR Pharma, Inc.; CanCog, Inc., Suntory Wellness, Inc., and Isagenix, Inc. He has received several honors including the 1978 Zimmer Award from the Department of Psychology, UGA; a 1996 Merit Award from NIH; the 2002 Harman Research Award from the American Aging Association, and the 2013 Distinguished Graduate Alumni Award from UGA. Dr. Ingram has conducted pioneering research focused on nutritional and pharmacological interventions designed to attenuate aging, age-related disease, and functional decline. As a major research area, his lab was the first to investigate the development of calorie restriction mimetics. The objective is to identify compounds that mimic effects of calorie restriction by targeting metabolic and stress response pathways affected, but without actually restricting caloric intake. Other major lab activities involved developing and conducting behavioral assays of aging in rodents with focus on motor and memory performance. The objective was to identify mechanisms of age-related functional decline. As a primary objective of this research, investigations were directed toward preclinical development of pharmacological, hormonal, genetic, and nutritional interventions that improve behavioral function. His resume includes over 500 scientific publications, and his research has produced patented drugs for treating Alzheimer's disease as well as patents on nutraceuticals. Most recently, he has conducted extensive studies on the health benefits of whole foods, particularly blueberries and avocado.

YSM Leadership



Dr. Nancy J. Brown, MD Yale School of Medicine Jean and David W. Wallace Dean of the Yale School of Medicine C.N.H. Long Professor of Internal Medicine

**Dr. Nancy Brown** graduated from Yale College, where she majored in molecular biophysics and biochemistry. She earned her medical degree from Harvard University. She completed internship and residency programs in medicine at Vanderbilt University, where she also did a fellowship in clinical pharmacology. Dr. Brown joined the faculty of Vanderbilt in 1992 and held a number of leadership positions, serving as chief of the Division of Clinical Pharmacology, associate dean for clinical and translational scientist development, and Robert H. Williams professor before becoming the Hugh J. Morgan Chair of Medicine and physician-in-chief of Vanderbilt University Hospital in 2010.

In 2020, she became Jean and David W. Wallace Dean of Medicine and C.N.H. Long Professor of Internal Medicine at Yale School of Medicine. Dr. Brown has long been committed to medical education and mentorship. At Vanderbilt, she established the Elliot Newman Society to support the development of physician-scientists and co-founded the Vanderbilt Master of Science in Clinical Investigation program. Her research has defined the molecular mechanisms through which commonly prescribed blood pressure and diabetes drugs affect the risk of cardiovascular and kidney disease. In her clinical practice, she has treated patients with resistant and secondary forms of hypertension. Dr. Brown has served as a member of the NIH National Advisory Research Resources Council and the National Heart, Lung, and Blood Advisory Council. She was president of the Association of Professors of Medicine. In 2019, she was elected a Master of the American College of Physicians. Her numerous awards include election to the American Society for Clinical Investigation, the Association of American Physicians, and the National Academy of Medicine. She is a member of the American Association of Arts and Sciences.



Dr. Chen Liu, MD, PhD Yale School of Medicine, Pathology Anthony N. Brady Professor of Pathology Chair, Pathology Chief of Pathology, YNHH, Pathology

Dr. Chen Liu is an expert in viral hepatitis, liver cancer immunotherapy, graft-versus-host disease, and cancer epigenetics. Dr. Liu is Chair of the Department of Pathology and Chief of Pathology at Yale New Haven Hospital.

After obtaining his medical degree at Tong Liao Medical College at Inner Mongolia University of Nationality and completing his postgraduate training at Peking Union Medical College in China, Liu received his PhD in pathology from the University of Pennsylvania School of Medicine. He completed his residency in anatomical and clinical pathology at Medical College of Pennsylvania, held an oncological pathology fellowship at M.D. Anderson Cancer Hospital, and had postdoctoral training at Scripps Clinic. Before his appointments at Rutgers in 2015, he was professor and vice chair of pathology, immunology, and laboratory medicine at the University of Florida, where he also held an endowed chair in gastrointestinal and liver research.