

Our Mission and Progress

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Surprising Benefits of Blood Donation



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Columbia Pathology and Cell Biology Report

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Illustration by Storyset

Our Mission and Progress



Kevin A. Roth, M.D., Ph.D., Chair
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THE Department of Pathology and Cell Biology last had an external review in 2014, one year prior to my appointment as Chair in 2015. External reviews provide an opportunity to reflect on the strengths and weaknesses of a department and to gain insights from outside experts that will inform future strategic planning. It is quite common at many institutions for departments to be reviewed every five years, although Columbia University Vagelos College of Physicians and Surgeons (VP&S) does not have a set schedule for departmental reviews. In discussions with interim Dean Anil Rustgi in the fall of 2021, we mutually agreed that an external review of our department in 2022 would be useful. Thus, we have been working with our new Dean, Dr. Katrina Armstrong, and her staff, to organize an external review that will be held sometime in late April. The precise organization and details of the review are at Dean Armstrong's discretion but will likely include the reviewers meeting with a broad array of departmental faculty, staff, and students, as well as representatives from other VP&S basic and clinical departments and with NewYork-Presbyterian leadership.

When I became Chair in 2015, I outlined several departmental goals, one of which I'd like to briefly highlight here since the progress we have made in achieving it reflects the incredible work of our faculty, students, and staff. Under Dr. Shelanski's leadership, in 2015 the department was already one of the largest and most successful research-intensive departments of pathology in the country. Over the last six and a half years, we continued to observe remarkable growth in our research programs and grant portfolio. Although NIH grant funding is not a perfect metric of scientific success, it is a quantifiable measure and permits comparisons across time and between departments of pathology nationally.

Based on NIH FY2021 data, our department ranks first nationally in the discipline of pathology for the number of NIH grants and number of Principal Investigators holding NIH grants, and third for total NIH funding. Over the last six years, we have increased our NIH funding by 63%, increased our national market share from 4.4% to 5.5% of all NIH department of pathology grant funding, and now represent 8.2% of the total NIH funding at VP&S. This is nearly twice the national average of 4.2% for the contribution of departments of pathology to the NIH funding of their respective medical school.

These accomplishments are the result of strategic investments, recruitment of talented new faculty,

retention and bridge funding when necessary for productive faculty members, and increased number of grant submissions (the average number of grant submissions per investigator increased 48% between 2015 and 2021, from 2.3 to 3.4 applications per investigator). Remarkably, this was accomplished despite the Covid-19 pandemic which shut down the vast majority of laboratory research over an extended period of time, departmental space shortages, and resource limitations which restricted departmental expansion. In total, the strategic decisions and investments made over the last six years to support and grow our departmental research programs have been very successful and I wish to commend everyone in the department for their shared commitment to scientific excellence.

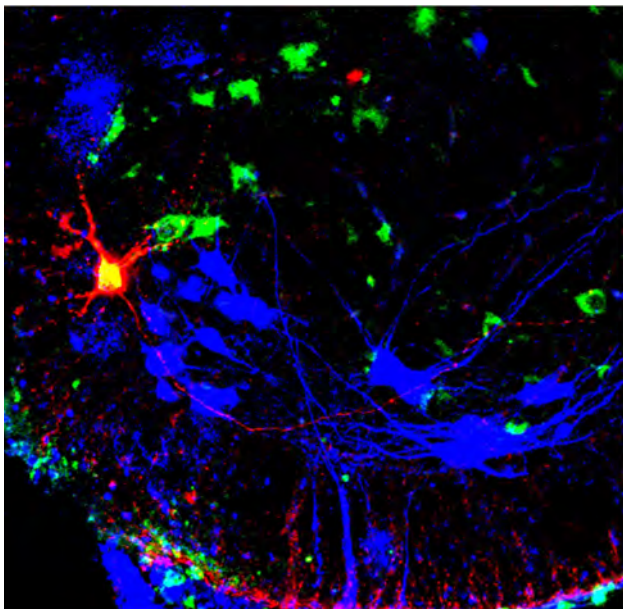
The upcoming review will provide an opportunity to reflect on our multiple departmental missions, not just our research programs. In particular, there is increasing awareness of the importance of community engagement and the role academic medical centers must play in addressing health inequities. Hopefully, the review will provide insights into how we can make progress in all of our missions. ♦

Best wishes,
Kevin A. Roth, M.D., Ph.D.

RESEARCH

NEUROSCIENCE

Spinal Cord Neurons Responsible for Locomotor Behavior Identified



Walking is an essential behavior for animal survival and important to move around in humans. It has long been established that neurons responsible for such behavior reside within the spinal cord. Although the central commands to initiate or stop walking originate from different brain regions, it is neurons within the spinal cord that execute these commands. However, whether a single neuronal type is responsible for orchestrating such complex behavior has remained elusive until recently.

Using mice as the experimental paradigm, George Mentis, an associate professor in pathology and cell biology (in Neurology), and his team has recently reported at *Cell*, that a select type of neurons, known as ventral spinocerebellar tract neurons – or simply, VSCTs – are essential for such behavior.

VSCTs were discovered in the 1940s by the renowned neuroscientist Sherrington, and in the early 1970s Lundberg proposed that their main function was to relay messages about neuronal activity from the spinal cord to the cerebellum. However, the new study reports that instead they control locomotor behavior both during development and in adulthood.

Joshua Chalif, a highly talented MD/PhD student and first author of the study, together with Dr. Maria Martinez-Silva, an experienced and gifted postdoctoral

research scientist in the Mentis Lab utilized a multitude of experimental approaches to dissect the function of VSCTs in mice. They utilized state-of-the-art mouse optogenetics, employing LED light to regulate certain proteins that were expressed selectively in VSCTs, introduced by viral means, to either activate or suppress the VSCTs' neuronal activity. Leveraging on the ability of intact spinal cords from newborn mice to function in isolation within a dish (*ex vivo*), they demonstrated that activation of VSCTs by light, induced locomotor behavior. When VSCT activity was suppressed, ongoing locomotor behavior was halted.

The team explored further the function of these neurons in freely moving adult mice (*in vivo*), using chemogenetics techniques. Chemogenetics is a process by which a chemical compound is used to activate synthetic ligands expressed artificially and selectively in these neurons, controlling their activity. Freely moving adult mice stopped moving when the activity of VSCT neurons was suppressed by injecting the drug CNO (clozapine), in mice in which inhibitory ligands were selectively expressed in VSCTs. Similarly, locomotor behavior was also tested by the ability of mice to swim. Mice were unable to swim and simply floated in the water when VSCTs were silenced.

In all of these experiments, Dr. Mentis and his team demonstrated that VSCTs alone were both necessary and sufficient for controlling locomotor activity—activating them was enough to induce activity while suppressing them was enough to stop it.

“These findings were a huge surprise,” Dr. Mentis states. “One of the key discoveries in our study was that apart from their connection to the cerebellum, these neurons make connections with other spinal neurons that are also involved in locomotor behavior via the VSCTs' axon collaterals.”

For their next steps, the Mentis Lab plans to identify and map precisely the neuronal circuits that VSCTs make with motor neurons and other spinal neurons. They also aim to identify select genetic markers and uncover potential subpopulations of VSCTs and explore their role in different modes of locomotion. Finally, they plan to explore how the function of VSCTs is altered in the context of pathology and neurodegenerative diseases.

ABOVE: Confocal image from a mouse spinal cord, showing motor neurons (blue), ventral spinocerebellar tract (VSCT) neurons (green). A single VSCT neuron was recorded and marked intracellularly with a red dye.

Additional Information:

The paper is titled “[Control of mammalian locomotion by ventral spinocerebellar tract neurons](#)”; (2022) *Cell*, 185:328-344.

All authors: Joshua I. Chalif (Columbia), María de Lourdes Martínez-Silva (Columbia), John G. Pagiazitis (Columbia), Andrew J. Murray (University College London), and [George Z. Mentis](#) (Columbia).

The research was supported by the NIH (grants R01-NS078375, R01-AA027079, R21-NS079981 to G.Z.M. and F30NS098551 to J.I.C.), the SMA Foundation, and Project-ALS.

RESEARCH

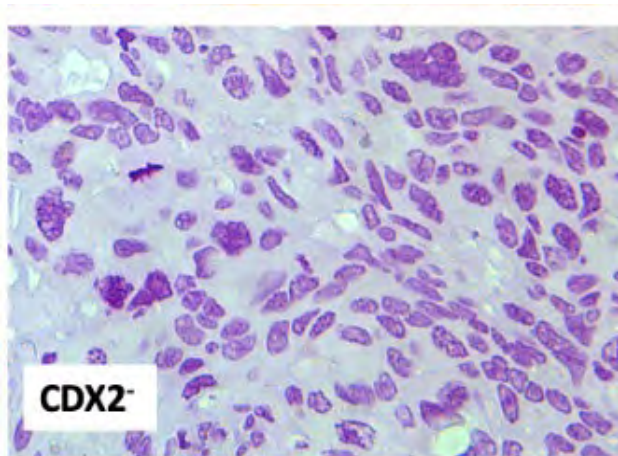
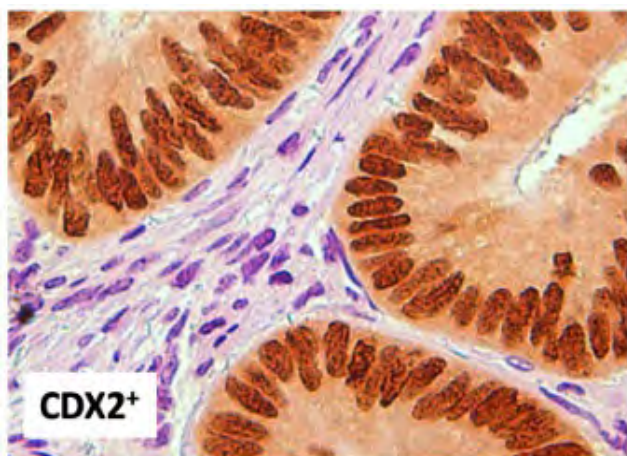
COLON CANCER

Editorial: Estimating the economic value of CDX2 as a predictive biomarker to guide treatment decisions in stage II colon cancer

Dalerba et al., Value in Health, 25:382-384 (2022) <https://pubmed.ncbi.nlm.nih.gov/35227449>



In this editorial, Dr. [Piero Dalerba](#) discusses the results of a recently published study investigating the cost-effectiveness (i.e., the pharmaco-economic value) of using CDX2, a master regulator of intestinal differentiation, as a biomarker to decide whether to administer adjuvant chemotherapy to colon cancer patients with locally advanced (Stage-II) disease. The study reveals that, because of the low costs associated with the analysis of CDX2 expression by immunohistochemistry (IHC), the systematic screening for CDX2 expression of all Stage-II colon cancer patients would likely result in cost-effective interventions under a wide range of realistic scenarios, with regard to both the prevalence of the CDX2-negative phenotype and the magnitude of its association with poor prognosis and preferential sensitivity to adjuvant chemotherapy.



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Useful Information

Updating online faculty profiles – Faculty members can update their online profiles at <http://columbiaprofiles.org/>. Regularly updating your profile is strongly encouraged. If you have any questions, please contact PathWebMaster@columbia.edu.

How to update website content – If you find any outdated, incorrect, or missing content on our department website (www.pathology.columbia.edu), and would like to have it updated, please contact PathWebMaster@columbia.edu.

How to post images on touchscreen directories – Have interesting images (research, events, people, celebrations, etc.) that you wish to post on our three touch-screen directories located near the main elevators of the P&S and PH buildings, please contact PathNews@cumc.columbia.edu.

GRANTS AWARDED (SINCE OCTOBER 2021)

Compiled by Renee Peele, Senior Grants Manager

PI	Sponsor	
Alex Chavez, MD, PhD	Emerson Collective Cancer Research Fund	T-cell mediated regulation of tumor cell transcription
Osama Al Dalahmah, MD, PhD/James Goldman, MD, PhD	The William Rhodes and Louise Tilzer-Rhodes Center for Glioblastoma at NewYork-Presbyterian Hospital	Defining the astrocytic niche at the infiltrative margins of Glioblastoma using single Nuclei RNA sequencing (Continuation)
Gregg Gunderson, PhD	The William Rhodes and Louise Tilzer-Rhodes Center for Glioblastoma at NewYork-Presbyterian Hospital	The LINC Complex: A Novel Therapeutic Target in Glioblastoma
Lloyd Greene, PhD	The William Rhodes and Louise Tilzer-Rhodes Center for Glioblastoma at NewYork-Presbyterian Hospital	Preclinical in vitro and in vivo studies on glioblastoma treatment with a novel cell-penetrating decoy peptide
Alex Chavez, MD, PhD	National Human Genome Research Institute	Protein tagging at scale to enable functional genomic studies
Minah Kim, PhD	Neuroendocrine Tumor Research Foundation	Targeting angiotensin-2 to improve ICI therapy efficacy in pNET metastasis
Minah Kim, PhD	Melanoma Research Foundation Breakthrough Consortium (MRFBC) Pilot Translational Award	Identification of angiotensin-2/Tie signaling molecules as a predictive biomarker for checkpoint inhibitor resistance in melanoma
Jaewon Min, PhD	National Cancer Institute	Anti-cancer therapeutic approaches for targeting the ALT telomere maintenance mechanism
Laura Pasqualucci, MD	National Cancer Institute	Role of CREBBP missense mutations in lymphomagenesis
Markus Siegelin, MD/ Kevin Roth, MD, PhD	The William Rhodes and Louise Tilzer-Rhodes Center for Glioblastoma at NewYork-Presbyterian Hospital	Targeting Rab38 for Glioblastoma (GBM) Therapy (Continuation)
Gloria Su, PhD	National Cancer Institute	Repurposing Bazedoxifene for chemoprevention in pre-invasive pancreatic cancer IPMN
Andrew Teich, MD, PhD	National Institute on Aging	An investigation of Alzheimers Disease pathology, microglial immune response, and CSF proteomics in normal pressure hydrocephalus patients
Carol Troy, MD, PhD	Thompson Family Foundation Program for Accelerated Medicines Exploration in Alzheimer's Disease and Related Disorders of the Nervous System (TAME-AD) (Internal grant)	Non-invasive delivery of modulators of caspase-2 for treatment of AD
Hee Won Yang, PhD	Melanoma Research Foundation	Therapeutic Resistance to CDK4/6 inhibitors in BRAF-mutant Melanoma
Andrew Yates, PhD	National Institute of Allergy and Infectious Diseases	Modeling the development, structure and regulation of T cell memory (renewal grant)

New Faculty

Zakaria Grada, MD

Assistant Professor of Pathology and Cell Biology



[Zakaria Grada](#) is an anatomic and clinical pathologist specializing in cytopathology and surgical pathology at the Department of Pathology and cell biology. He completed medical school at Tripoli University Libya and clinical scientist training program master's degree from Baylor College of Medicine Houston, Texas. He worked as a postdoctoral fellow At Baylor and MD Anderson Cancer Center and engaged in translational research focusing on adoptive immunotherapy with gene-modified effector cells to improve cancer therapy using CAR-T cells and published several peer-reviewed articles in esteemed journals.

He completed his anatomic and clinical pathology training at Brown University/ Rhode Island Hospital and cytopathology training program at Geisel School of Medicine at Dartmouth College. He completed his surgical pathology training at Beth Israel Deaconess Hospital/Harvard University.

He held previous appointments as an Assistant Professor of Pathology and Laboratory Medicine at Robert Wood Johnson Medical School/Rutgers University and Director of the Cytopathology services at Monmouth Medical Center and Community medical center. His roles are to oversee and improve the quality and quantity of the lab's services.

New Staff

Susan Ceballo - Human Resources



Susan comes to us from the Department of Electrical Engineering where she managed the recruitment of faculty, employee life-cycle changes, payroll, and more. Susan is passionate about the study of organizational behavior, appreciates process, and has interests in data analysis. In our department, Susan will be focused on recruitment, employee engagement, HR reporting, and she will be involved in the many other services our Path HR team supports.

Staff Promotions

Geno Mainiero Promoted to Lead IT Support Analyst



Congratulations to Geno Mainiero on his recent promotion to the position of lead IT support analyst for the Department of Pathology and Cell Biology at CUIMC. On his new role Geno said that he is thrilled to be working with so many incredible doctors, technicians, and administrative staff that collectively progress the evolution of healthcare. He hopes to continue to grow in his position within the department, and specifically find new and exciting ways to utilize computers to improve the experience for both clinical and research pathologists. As healthcare (and every other field) becomes increasingly interconnected with the digital world, Geno is eager to work towards a stronger, more streamlined collaboration between CUIMC/NYP medical professionals and the technology available to them.

Campus News

Michael Gershon Wins AGA Distinguished Achievement Award in Basic Science

Source: [CUIMC Newsroom](#)



The American Gastroenterological Association (AGA) recently recognized [Michael Gershon](#), MD, professor of pathology and cell biology, with the AGA Distinguished Achievement Award in Basic Science, for his major accomplishments in basic science research, which have significantly contributed to the understanding of the enteric nervous system.

Created in 1968, the Distinguished Achievement Award in Basic Science recognizes an individual whose accomplishments in basic research have significantly advanced the science and practice of gastroenterology. Since 2013, the prize has been awarded annually.

There have been few if any areas of enteric neurobiology that have not been influenced by Dr. Gershon's research, who is considered by many to be the "father of enteric neurobiology." Dr. Gershon's discoveries around the role serotonin (5-hydroxytryptamine; 5-HT) plays in intestinal physiology have led to the development and application of some of the most commonly used drugs in the field of gastroenterology for treating adult gut motility disorders. Overall, his work has produced 437 peer-reviewed papers, influential reviews and his best-selling book "The Second Brain," published in 1998.

Congratulations to Dr. Gershon!

Kurenai Tanji and Helen Remotti Accepted into ACE



[Kurenai Tanji](#), MD, professor of pathology and cell biology, and [Helen Remotti](#), MD, associate professor of pathology and cell biology at CUMC, have been recently inducted as new members of the P&S Academy of Clinical Excellence.

The Columbia University Vagelos College of Physicians and Surgeons Academy of Clinical Excellence (ACE) was established in 2016 to define, recognize, and perpetuate excellence in clinical care by faculty, trainees, and students. It honors the clinical faculty who contribute to the Vagelos College of Physicians and Surgeons through patient care marked by evidence-based clinical science coupled with deeply compassionate humanism.

Congratulations to Dr. Tanji and Dr. Remotti on this remarkable honor!

Columbia Community Supports MLK Day of Service

Source: [CUIMC Newsroom](#)



On January 17, 2022, members of the CUIMC community volunteered to honor the legacy of Dr. Martin Luther King, Jr. at the Holyhood Church food bank, which provides free prepared meals through its ministry in Washington Heights. The volunteers helped to set up 150 bags of groceries, assisted with distribution, and reorganized the church's pantry.

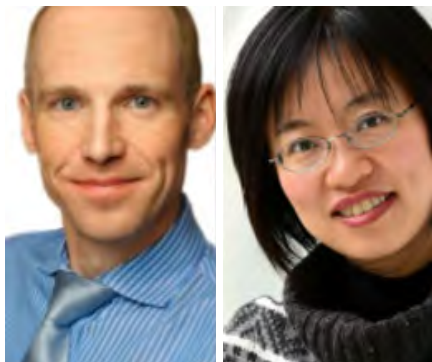
Each year, Columbians make time to volunteer on the Martin Luther King Jr. holiday, which is also a national day of service. On this day, Columbia employees joined Americans across the United States who engage with their communities to distribute meals, clean parks, and provide much-needed services for kids, seniors, and the homeless.

Yasmeen Majoka (3rd from right), Senior Finance Director, volunteers on MLK Day.

Three Columbia Physicians Named to American Society for Clinical Investigation

Markus David Siegelin and Shan Zha among the three Columbia physician-scientists elected for their contributions at a relatively young age to the understanding of human disease.

Source: [CUIMC Newsroom](#)



Markus David Siegelin (left), Anne-Catrin Uhlemann (not pictured), and Shan Zha (right) are among 95 physician-scientists elected for their contributions, at a relatively young age, to the understanding of

“Markus is an outstanding physician-scientist who has distinguished himself in the field of brain tumor research. He has built a highly productive NIH-funded research program and is poised to make significant advances in our understanding of brain tumor formation, progression, and treatment,” says [Kevin Roth](#), MD, PhD, the Donald W. King, MD, and Mary Elizabeth King Professor of Pathology and Cell Biology and chair of the Department of Pathology and Cell Biology.

Shan Zha, MD, PhD
James A. Wolff Associate Professor of Pediatrics

Cancer is a disease driven by changes in DNA, and defects in DNA repair machinery often lead to immunodeficiency diseases and increase the risk for lymphomas and leukemias in children.

[Shan Zha](#) works to understand how cells sense DNA damage, mount efficient and precise repair pathways to fix the damage and prevent cancer-causing transformations. Zha is also a skillful innovator. She and her lab have created more than 30 new mouse models, including a series of catalytically inactive kinase models to demonstrate the difference between inhibition versus deletion in DNA damage response pathways.

Uncovering the mechanisms by which cells protect their DNA may lead to new treatments for many cancers and childhood diseases.

For her work, Zha has received the Gabrielle’s Angel Foundation Medical Research Award and an Irma T. Hirsch Research Award. She is a scholar of the St. Baldrick’s Foundation for Pediatric Cancer, the Leukemia & Lymphoma Society, and the American Cancer Society.

“Shan’s work is simply inspiring and is transforming the understanding of DNA repair and how we might utilize that understanding to develop new therapies,” says Jordan Orange, MD, PhD, the Reuben S. Carpentier Professor of Pediatrics, and chair of the Department of Pediatrics at VP&S. “The Department of Pediatrics at Columbia is proud to host her and, given the number of pediatric diseases linked to DNA damage, we hope to see her work ultimately improve outcomes for children.”

Zha is also associate professor of pathology and cell biology and of microbiology and immunology (in the Institute for Cancer Genetics and in the Herbert Irving Comprehensive Cancer Center).◆

human disease.

All three are physician-scientists at Columbia University Vagelos College of Physicians and Surgeons.

The [American Society for Clinical Investigation](#) seeks to support the scientific efforts, educational needs, and clinical aspirations of physician-scientists to improve the health of all people. Membership is by election only, and only researchers who are 50 years of age or younger are eligible.

Markus David Siegelin, MD
Associate Professor of Pathology & Cell Biology

[Markus Siegelin](#) is a physician-scientist who studies glioblastoma, the most common malignant brain cancer in adults, with the goal of identifying more effective treatments. Siegelin investigates how glioblastoma becomes resistant to current treatments, how cell death pathways could be exploited to kill tumor cells, and how the metabolism of tumor cells contributes to glioblastoma growth.

His most recent work shows that histone deacetylases (HDACs) are important regulators of energy metabolism in model systems of glioblastoma, and he is investigating the use of HDAC inhibitors as a potential treatment.

Siegelin has received several awards, including the 2016 BCURED Fighting Brain Cancer Award and the 2017 ABTA Discovery Grant. In 2017, he was named a Louis V. Gerstner Jr. Scholar and, in 2020, a Schaefer Research Scholar.

He has been highly successful as a mentor, with his trainees securing several fellowships and developing successful independent careers.

Incoming Residents

Match 2022



Zhe Ran "Susan" Duan – AP/CP

MD/PhD – Weill-Cornell Medicine

Research – Tri-Institutional MD-PhD Program with WCMC, Rockefeller University and MSKCC working with Assemblies of Perisomatic GABAergic Neurons in the Development of Barrel Cortex and GABAergic Restriction of Network Dynamics Regulates Interneuron Survival in the Developing Cortex.



Miriam Holzman MD – AP/CP

MD – Rutgers New Jersey Medical School

Research – Work in Dr. Jennifer Mansfield lab involving investigating how HBOX5 is involved in the development of brown adipose tissue, the expression of pro-adipose genes and size of lipid droplets within brown fat cells. Published on Detection of Gene and Protein Expression in Mouse Embryos and Tissue Sections.



Esma Karlovich MD – AP/NP

MD – Hacettepe Universitesi

Research – Work in Dr. John Crary's lab including the discovery and validation of novel neuropathological markers of tauopathies, including chronic traumatic encephalopathy, primary age-related tauopathy, and argyrophilic grain disease, differentiating age-related tauopathies from Alzheimer's Disease, transcriptomic analysis of the human hippocampal subfields using single nuclei RNA sequencing, and identifying selective vulnerability of human hippocampal subfields to hyperphosphorylated tau in primary age-related tauopathy.



Vladislav Korobyenikov, MD/PhD – AP/NP

MD – Novosibirsk State University, Russia

PhD – Columbia University, New York

Research – Columbia University, Neil Schneider's lab focused on exploring the phenomenon of multiple RNA-binding proteins' insolubility and its functional consequences on RNA metabolism in ALS and the pathogenesis of ALS caused by mutations in the FUS gene.

Incoming Residents

Match 2022



Tianye Liu MD/PhD – AP/CP

MD/PhD – Zucker School of Medicine at Hofstra/Northwell

Research – Studied the regulation of monocyte to macrophage differentiation with Dr. Betty

Diamond at the Feinstein Institute for Medical Research. Work focused on identifying mechanisms to suppress disease phenotypes in a mouse model of systemic lupus erythematosus.



Sarah Merl (née Sabrudin) MBBS – AP/CP

MBBS – Melaka-Manipal Medical College

Post-Doc – Columbia University

Research – Lead researcher for Orthotopic Intestinal Transplantation funded by NIH and Mixed Chimera in Bone Marrow and Stem Cell Transplantation supported by the Department of Defense.



Aslihan Sen MD – AP/CP

MD – Rutgers New Jersey Medical School

Research – Modified existing cloning techniques and developed five unique strains of genetically modified mice; Investigated the roles of various genes in vascular growth and stability using cell culture and mouse models; assessed role of lymphatic vessel development in lung compliance and neonatal respiration in mice; Assisted in completion of ongoing projects using various techniques, including immunohistochemistry and immunofluorescence of whole embryos and tissues, confocal imaging, optical projection tomography, Western and Southern blots, PCR, and other molecular techniques

45TH ANNUAL POSTGRADUATE MEDICINE COURSE

THE COLUMBIA RENAL BIOPSY COURSE

RECORDED CONTENT AVAILABLE: JULY 2, 2022

LIVE ZOOM SESSION DATES:

Friday, July 8, 15 & 22, 2022

This activity is approved for AMA PRA Category 1 Credit™



The course is designed to assist nephrologists and nephropathologists in diagnosing and managing the most common forms of medical renal disease, including diseases that target the glomerulus, tubules, interstitium and blood vessels.

The activity will span three weeks and will include a combination of pre-recorded lectures and live Zoom sessions covering the following content areas:

45 - 60 minutes of Q&A/panel discussion with faculty focusing on the lectures for the week.

45 minutes of 2 CPC cases, with pathologist and clinicians

45 minutes of "show & tell" renal pathology lab – 7-10 cases per day

[REGISTER HERE](#)

Faculty Promotions

[Gregory Berry, PhD, D\(ABMM\)](#) promotion to associate professor of pathology and cell biology at Columbia University Medical Center

[Teresa Palomero Vazquez, PhD](#), promotion to full professor of pathology and cell biology (in the Institute for Cancer Genetics) at Columbia University Medical Center

[Dominick Santoriello, MD](#), promotion to associate professor of pathology and cell biology at Columbia University Medical Center

Education

Anette Wu Inducted into Virginia Apgar Academy of Medical Educators



The Virginia Apgar Academy of Medical Educators has recently accepted [Anette Wu](#), MD, MPH, associate professor of medical science and pathology and cell biology, as its new member. Dr. Wu has been recognized for her innovative educational contributions, and joins a group of distinguished medical educators at VP&S.

The Virginia Apgar Academy of Medical Educators is a community of educators at VP&S dedicated to promoting, supporting, and rewarding outstanding education of our medical students, residents, fellows, and faculty. Membership in the Academy represents recognition of excellence as an educator and commitment to contributing to the educational life of our medical community at VP&S.

Dr. Wu has been a member of the teaching faculty in the Clinical Anatomy course since 2007. Dr. Wu is the founder and director of the "International Collaboration and Exchange program – Preparing Global Leaders for Healthcare" at VP&S - a unique international, interdisciplinary student

exchange and networking program that is based in the anatomy course (globally), with content that incorporates global health, public health, and health law and ethics. The program partners over 20 leading medical and health sciences schools on four continents, to impart leadership skills, convey international and interdisciplinary teamwork and collaboration skills, cultural competency skills, and provide a professional network for future global leaders in healthcare. In addition, Dr. Wu initiated and directs a novel fourth year elective for medical students at VP&S integrating cultural diversity, food, nutrition, and planetary health. Her educational research focuses on the internationalization of medical education to promote the improvement of Global Health. She has authored multiple articles on this topic, including internationalization of medical education "at home" approaches. Dr. Wu leads a team of thirty international faculty members for educational research and international collaboration, and she works with 350-400 international students per semester.

Congratulations to Dr. Wu on this remarkable distinction!

Useful Information

There are many tax advantages to giving appreciated stock to the Department of Pathology and Cell Biology. In donating appreciated securities, you avoid capital gains tax and qualify for a charitable income tax deduction for the full value of the securities.

Please visit www.giving.cuimc.columbia.edu/ways-give/gifts-securities for more information.

Anniversaries

As of March 2022

5 Years

Subrata Chowdhury
Yessica De Leon
Helen Fernandes
Verona Gonzales
Nick Paris
Sebastian A. Quintremil
William Raab
Abhishek Sinha
Courtney Sinn
Emer Smyth
Sara Viragova
Junfei Zhao

20 Years

Peter Dohanich
Vaidehi Jobanputra

10 Years

Mark Erlich
Milan Fredricks

15 Years

Nicholas Barasch
Serge Cremers
Angeliki Mela
Leonore Peruyero
Julie Yi
Christine Yuen

25 Years

Melvin Acevedo, JR.

30+ Years

Istvan Boldogh
Alcmene Chalazonitis-Greene
Irene D'Silva
Evelyn Garcia
Gregg Gundersen
Eugene Marcantonio
Wanda Setlik
Sunilda (Sunny) Valladares-Silva

Other Honors and Awards

Wen-Hsuan Lin, a postdoctoral clinical Fellow in the Department of Pathology and Cell Biology, was recently awarded ASCO* Young Investigator Award. The Young Investigator Award (YIA) provides funding to promising investigators to encourage and promote quality research in clinical oncology. The purpose of this grant is to fund physicians during the transition from a fellowship program to a faculty appointment. Congratulations to Dr. Lin!

*ASCO: American Society of Clinical Oncology

Congratulations to Dorothy Wong, an employee in Anatomic Pathology, who was recently recognized by the Patient Safety Recognition Committee for her recent "Great Catch." We thank Dorothy for her attention to detail and for identifying a labeling discrepancy in a specimen sample. We encourage all employees to report safety events. This is a wonderful example of an intervention that prevented patient harm.

Medical Laboratory Professionals Week, April 24-30, 2022



This is an annual celebration of medical laboratory professionals and pathologists who play a vital role in health care and patient advocacy!

Honor Your Staff. Celebrate Lab Week to honor yourself and your colleagues as a vital part of the lab community and have some fun while doing it! Lab Week is a great time to generate new awareness and excitement about the laboratory medicine profession while having some fun with your lab team.

Featured Article

PUBLIC HEALTH

The Surprising Benefits of Donating Blood

NewYork-Presbyterian experts explain how donating blood not only helps someone in need, but also offers health benefits for the donors themselves.

Source: [NewYork Presbyterian Health Matters](#)



Every two seconds, someone in the U.S. requires a blood transfusion, according to the American Red Cross. The benefits of donating blood include helping people injured in accidents, undergoing cancer treatment, and battling blood diseases, among other reasons.

This year, however, the United States is facing its worst blood shortage in more than a decade, the [Red Cross says](#).

“Donating blood saves lives,” says [Dr. Robert DeSimone](#), director of transfusion medicine at NewYork-Presbyterian/Weill Cornell Medical Center, who is encouraging people to do their part and make an appointment to donate.

“For as long as medicine has been around, we’ve had to rely on the goodness of other people to give us blood when we need it,” says [Dr. Sarah Vossoughi](#), the medical director of apheresis and associate director of transfusion medicine and cellular therapy at NewYork-Presbyterian/Columbia University Irving Medical Center. “We really need people who want to come and donate. The fact that we can store blood and use it when we need it in parts—whether you need the red cells, the plasma, or the platelets—has been a huge medical advance.”

While blood donors don’t expect to be rewarded for the act of kindness, rolling up your sleeve comes with some surprising health benefits.

Here’s what you get when you give blood:

A Free Health Screening

“By going to donate blood, you are getting a mini-physical,” says Dr. DeSimone.

Before you are allowed to donate, your vital signs will be checked to make sure you are fit enough for the procedure. This exam might turn up a condition that needs medical attention, such as high blood pressure or a heart arrhythmia like atrial fibrillation. In addition, you’ll be screened for infectious diseases you may be unaware of.

“If we detect an issue with your vital signs or another health issue, we will direct you to go to a physician at that point to be checked,” Dr. DeSimone says.

The health screening will also reveal if you have a rare blood type. This information can be useful if you ever face surgery or another medical situation in which a transfusion may be required. Plus, you’ll have the satisfaction of knowing your donation is particularly needed.

A Healthier Heart and Vascular System

Regular blood donation is linked to lower blood pressure and a lower risk for heart attacks. “It definitely helps to reduce cardiovascular risk factors,” says Dr. DeSimone.

What’s the connection? “If your hemoglobin is too high, blood donation helps to lower the viscosity of the blood, which has been associated with the formation of blood clots, [heart attacks](#), and [stroke](#),” Dr. DeSimone says. “Interestingly, these benefits are more significant in men compared to women. We think maybe it’s because women have menstrual cycles, so they do it naturally without donating blood.”

People with a condition called hereditary hemochromatosis must have blood removed regularly to prevent the buildup of iron. Fortunately, this blood can benefit others.

FEATURED ARTICLE CON'T

"These are essentially healthy patients who are otherwise normal, but they have a gene mutation where they make too much blood, and they make too much normal blood," Dr. Vossoughi says. "So we can use that blood."

The New York Blood Center Hereditary Hemochromatosis Program allows people with hemochromatosis to donate blood rather than have it removed and thrown away. "Instead of having to go to a clinic or go to one of our phlebotomy centers every few months to reduce their blood volume, they can go to any local blood drive," Dr. Vossoughi says. "That blood will then be used for somebody who needs it."

A Happier, Longer Life

One blood donation can save up to three lives, according to Dr. DeSimone. People usually donate because it feels good to help others, and altruism and volunteering have been linked to positive health outcomes, including a lower risk for depression and greater longevity.

"Giving blood is a way to engage in the immediate community and help people around you," Dr. Vossoughi adds. "People who do these types of things and engage in their community in this way tend to have better health and longer lives."

It is also a way to feel that you have positively helped during the COVID-19 crisis. Donating blood is safe if you have had the [COVID-19 vaccine](#). It is also safe if you have had COVID-19, though you must be symptom-free for two weeks and have not had a positive [diagnostic test](#) for COVID-19 in the last 14 days, Dr. DeSimone says. If you have any COVID-19 symptoms like a fever or cough, do not give blood. Donating blood is safe as donors are socially-distanced and required to wear a face mask covering their nose and mouth, regardless of vaccination status.

"Creating moments of kindness during a time of need does wonders for your mental health and [feeling of well-being](#)," Dr. DeSimone says.

Added Bonus: A Calorie-free Snack

"For one blood donation, it takes your body about 500 calories to replace it," Dr. Vossoughi says. Thus, the juice and cookies you're offered after giving blood are a "zero-calorie snack," she says. If you prefer, go for a fancy dessert instead!

Blood Donation Tips

If you plan to give blood, follow these steps:

- **Drink plenty of water.** Staying hydrated makes it easier to find your veins and prevents you from becoming light-headed after donating, Dr. Vossoughi says.
- **Eat well beforehand.** Don't skip breakfast and be sure to eat snacks offered to you. "These things will help you tolerate the donation well and feel like yourself the rest of the day," she says.
- **Exercise before donating blood, not afterward.** It's okay to go to the gym before you donate blood but not so wise afterward. "We don't want people getting dizzy," Dr. Vossoughi says. "You've basically done your workout for the day once you've donated blood."
- **Take iron tablets.** The American Red Cross recommends that individuals who donate blood frequently take an iron supplement or a multivitamin with iron. "More and more, we're recommending that teenage donors in particular take iron, because it's been shown that teenage donors may become iron deficient after blood donation," Dr. DeSimone says.

Useful Information

How to get your news story published on department website/newsletter – For interesting and relevant news stories that you wish to get published on our department website and/or in our newsletter, please use our online submission form at <https://form.jotform.com/pathnews/news-submission-form>. Contact PathNews@cumc.columbia.edu if you have any questions.

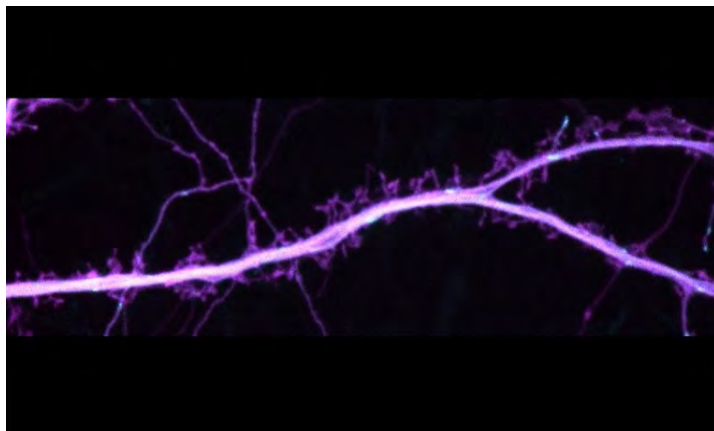
How to reserve a conference room – To reserve a Pathology conference room, please refer to our general room reservation and use policy at <https://www.pathology.columbia.edu/conference-room-reservation>.

RESEARCH

NEUROSCIENCE

In Alzheimer's, Aged "Railroad Tracks" Within Neurons May Impair Memory

Source: [CUIMC Newsroom](#)



One of the most common proteins within cells—which act as microscopic railroad tracks—may play a role in Alzheimer's disease, according to a new study by scientists at Columbia University Vagelos College of Physicians and Surgeons and other research institutions.

These cellular railroad tracks, known as microtubules, maintain cell shape and are required for the transport of cargo. The new study shows that microtubules become too stable during early stages of Alzheimer's disease, and that alters neuronal activity and impairs memory.

The work, published in the current issue of the journal [Brain](#), also points toward a novel strategy for treating Alzheimer's disease and other neurodegenerative disorders.

Stable, but old, railroad tracks

The researchers first noticed that neurons from people who had died from Alzheimer's contained microtubules that were more aged than in neurons from individuals without the disease.

ABOVE: In this image, the blue flashes mark new or rejuvenated microtubules. In Alzheimer's disease, microtubules are not as dynamic, which leads to memory impairment.

More Information:

The paper is titled "Tubulin tyrosination regulates synaptic function and is disrupted in Alzheimer's disease."

Part of the work was performed at Grenoble Institut Neuroscience Photonic Imaging Center (part of the IBISA-accredited ISdV core facility) and in CEA-IRIG animal facility (GRAL, ANR-17-EURE-0003). This work was supported by INSERM; CEA; CNRS; University Grenoble Alpes; France Alzheimer (CAPAlz-AAP SM 2018) and ANR (SPEED-Y, ANR-20-CE16-0021) grants; NIH grants RO3 AG060025, RO1 AG050658, R21 NS120076-01, and RO3 AG060025); the Henry and Marilyn Taub Foundation; the Thompson Foundation; the Italian Academy at Columbia University; the Alzheimer's Association (AARF-20-685875; and a postdoctoral fellowship from Ramón Areces Foundation.

The authors report no competing interests.

It is normal for neurons to have microtubules that are stable and long-lived to support cell structure, analogous to the bones that support our bodies. But for neurons to maintain functional connections with each other, a portion of these microtubules must remain young and dynamic.

Indeed, for the brain to form new memories, neurons must have a perfect mix of stable and dynamic microtubules. To create that perfect mix, neurons employ a means to rejuvenate or regenerate young, dynamic microtubules from older ones.

Effect of microtubules on neurons and memory

The researchers turned to mice to examine the effect of old and stable microtubules on neurons and memory.

By inhibiting the cycle of microtubule regeneration, the team created mice with more long-lived microtubules within their neurons. These animals displayed memory deficits and had fewer synapses (communication connections between neurons).

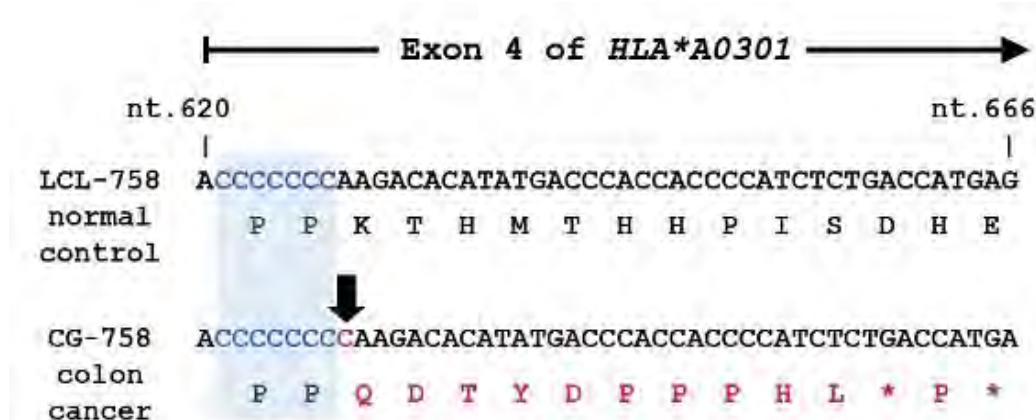
"This was very interesting to us, because it proved that it is enough to unbalance the microtubule regenerating cycle to create synaptic dysfunction," says [Francesca Bartolini](#), PhD, associate professor of pathology & cell biology at Columbia University Vagelos College of Physicians and Surgeons and a senior author of the new paper.

"And perturbation of this cycle seems to be a hallmark of Alzheimer's disease."

Bartolini and her collaborators now hope to develop compounds that will target the microtubule-modifying enzymes and restore their normal activity in Alzheimer's disease and other neurodegenerative conditions.

GRADUATE RESEARCH PUBLICATION

Title: A Microsatellite in the Coding Sequence of HLA-A/B Is a Mutation Hotspot in Colon Cancer with Microsatellite Instability



Summary: This study reports that, in human colon cancer with microsatellite instability (MSI), the expression of HLA-A and/or HLA-B molecules is frequently lost because of recurrent frameshift mutations targeting a very specific mutational “hotspot” (i.e., a conserved microsatellite in the coding sequence of HLA-A and HLA-B). The presence of these mutations is predicted to cause reduced sensitivity to T-cell immunotherapies (e.g., anti-PD1/PDL1 monoclonal antibodies) and thus to represent a predictive biomarker in the clinical management of colon cancers with MSI.

Authors: William J Raab*, Arabella Mazzocchi, Paolo Radice, Debashis Sahoo, Chiara Castelli, Piero Dalerba**, Colon Cancer Immunology and Immunotherapy (CCII) study group.



William Raab

Piero Dalerba, MD

*As the first author of this article, [William Raab](#) is a PHD student and CSCI trainee in the Dalerba Lab. **[Piero Dalerba](#) is an assistant professor of pathology and cell biology.

Anette Wu Co-Chairs AAA Minority Women Workshop



[Anette Wu](#), MD, MPH, associate professor of medical science and pathology and cell biology, co-chaired a very well received workshop at the annual meeting of the American Association for Anatomy (AAA) (as part of the Experimental Biology 2022 meeting) in Philadelphia on April 2, 2022. The workshop was titled: “Women Ascendant – We are different; We are unique; We are diversity! Underrepresented minority women and women with non-traditional and/or international backgrounds in anatomy”. She co-chaired with Shaun Logan, PhD, who was past AAA Board member.

Dr. Wu is a member (and subcommittee chairperson) of the Diversity, Equity and Inclusion Committee within the American Association for Anatomy.

CUIMC Inclusive Hiring Effort, Project PossABILITY, Receives City Award

Source: [CUIMC Newsroom](#)



The Mayor's Office for People with Disabilities and the Consortium for Customized Employment have recognized CUIMC for its inclusive hiring program, Project PossABILITY, with a 2022 Customized Employment Award. Project PossABILITY, which launched in 2021, connects workers who have intellectual or developmental disabilities like autism, Down syndrome, and cerebral palsy with employment opportunities at the medical center.

To date, the program has helped hire and onboard three employees, one each in the Department of Surgery, the Department of Pathology, and the Center for Behavioral Cardiovascular Health in the Department of Medicine. Project PossABILITY was created by the CUIMC Disability Employee Resource Group, led by director Keith Diaz, PhD, assistant professor of behavioral medicine at VP&S. Diaz co-leads Project PossABILITY alongside Tonya Richards, chief diversity, equity, and inclusion officer for staff at CUIMC.

"People with intellectual and developmental disabilities are an untapped talent pool with enormous potential," Diaz says. "Research shows that individuals with intellectual and developmental disabilities have high retention rates, are highly productive, dependable, and motivated, and have strong work quality that is as good and often better than their non-disabled co-workers. They are hungry for work, are good at their work, and stick around longer."

But according to the National Report on Employment Services and Outcomes, 63% of people with intellectual disabilities are unemployed. Another 17% work in sheltered workshops, where they are segregated from

the community and often paid less than minimum wage. Only 20% have a paid job in the community.

Diaz, the father of a five-year-old son with an intellectual disability, wants to do his part in improving those statistics. "People with disabilities need more than charity, they need jobs," he says. "Not only can hiring individuals with disabilities improve your workforce, but it can help address a major societal issue: the marginalization of individuals with disabilities."

The program has been a success so far, and the Project PossABILITY team plans to greatly expand hiring efforts to other departments.

"Project PossABILITY and the Disability Employee Resource Group have added tremendous value to our community by advancing CUIMC's workplace inclusion and accessibility efforts," Richards says. "It is our goal to create and sustain dozens of placements within the next three years to help diversify and strengthen our workplace through varied perspectives."

CUIMC was one of two honorees at this year's Customized Employment Awards, alongside Contento, a Harlem restaurant. Past award recipients include the Brooklyn Academy of Music, Brooklyn Prospect Charter School, The New School, and corporate partners like CVS, Shake Shack, and Trader Joe's.

The annual awards are hosted by [The Consortium for Customized Employment](#), a collaboration among 14 agencies in New York City that help adults with developmental disabilities obtain and thrive in mainstream jobs. The consortium was founded by Job Path in 2012 and has since collaborated with the [Mayor's Office for People with Disabilities](#) in stewarding employment opportunities around the city. The consortium is a community partner for Project PossABILITY.

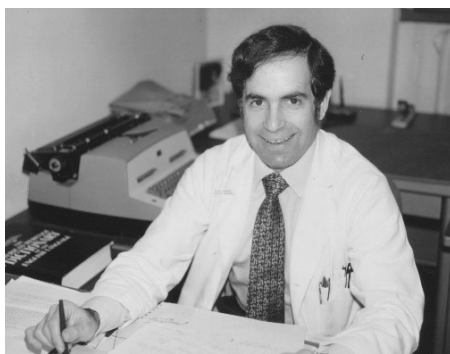
For more information on Project PossABILITY or CUIMC's Disability Employee Resource Group, contact Tonya Richards, Chief Diversity, Equity and Inclusion Officer for Staff at custaffdiversity@cumc.columbia.edu.

ANNUAL LECTURESHIP: To recognize Dr. Marboe's long and distinguished career in the department, we have established an annual lectureship in his honor. The annual Dr. Charles Marboe Lecture will continue Chuck's history of sharing his expertise in cardiovascular pathology, cardiology, and heart transplantation. This endowed lecture will ensure quality education within the department by supporting Columbia's most important assets: its accomplished educators and faculty members who shape the future leaders in the field.

SUPPORT EDUCATION! To make a tax-deductible gift in Dr. Marboe's honor, please click the link [here](#).

In Memoriam

Salvatore Raymond Gambino, A Giant in Pathology and Clinical Chemistry



We were sad to learn that Salvatore Raymond Gambino, M.D., once a full professor of pathology with tenure at Columbia

University's College of Physicians and Surgeons, passed away at the age of 95 on January 1, 2022.

Dr. Ray Gambino received his residency training at Columbia-Presbyterian in NYC and finished at St. Luke's Hospital in Milwaukee, Wisconsin. In 1961, he became Chief Pathologist at Englewood Hospital in New Jersey. In 1969 he was appointed full professor of pathology with tenure at Columbia University's College of Physicians and Surgeons, before he was appointed in 1978 as Chief Pathologist and Director of Laboratories at St. Luke's-Roosevelt Hospital in NYC.

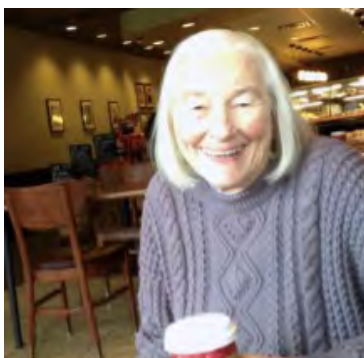
In 1983, Dr. Gambino joined MetPath as Chief Medical Officer where he helped guide its national growth from MetPath to Corning Clinical Laboratories and then to Quest Diagnostics where he worked until he retired in 2014 at the age of 88.

He was co-author of *Beyond Normality: Predictive Value and Efficiency of Medical Diagnosis*, which was considered by many as a classic book that changed medicine and has a place in the history of the field of pathology and clinical chemistry.

He was regarded as a giant in the field of clinical pathology and a great mentor. He trained many successful pathologists and influenced many more. One of the most influential among them was Dr. Richard Axel, a Nobel Prize Laureate.

Click [here](#) for Dr. Gambino's full obituary.

Joan Todor (February 21, 1930 – January 31, 2022)



It is with heavy hearts that we announce the death of our friend and former colleague, Joan Todor. Although Joan retired ~7 years ago, she worked with us for many years in our Core Laboratory and then our Automated Laboratory. She was a warm and wonderful person, who was passionate and dedicated to ensuring that we provided the best possible patient care, and who was a good friend to many of us. She will definitely be missed.

If you are interested in learning more about her and/or providing some thoughts to her family, you can find her obituary [here](#).

