

**The Body Scientific:**

Why you should get a flu shot

**From the Chair:**

Funding Success and New Initiatives



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### Columbia Pathology and Cell Biology Report Newsletter

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## Funding Success and New Initiatives



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**T**he Department of Pathology and Cell Biology had a very successful 2019. Among its many achievements, the department established record highs in NIH funding (over \$35 M), number of NIH grants (89), national NIH department of pathology rankings (3rd for total funding and 1st for number of grants) and launched several new collaborative initiatives.

The Inter-Departmental Genetic Counselor Program (IDGCP) began operations this past summer as a collaboration between the Department of Pathology and Cell Biology and the Institute for Genomic Medicine, with financial contributions from NewYork-Presbyterian Hospital and the Vagelos College of Physicians and Surgeons, and with participation from the Departments of Medicine, Neurology, Pediatrics, Ophthalmology, and Obstetrics and Gynecology. Genetic counselors play a central role in the evolving field of genomic medicine, and demand for genetic counseling services often outstrips current capacity. In recent years, both the Laboratory of Personalized Genomic Medicine (PGM) and the Precision Genomics Laboratory (PGL) have developed clinical genomic sequencing capabilities that inform optimal therapeutic decision making for individual patients, i.e. personalized medicine, and participation in large scale genomic research initiatives.

In recognition of this shift, the IDGCP was founded to address the intersection of patient-focused care, scientific knowledge, genomics research, and innovative laboratory-based technologies. The mission of the IDGCP is to facilitate the appropriate, cost-effective ordering of genetic tests and ensure that Columbia University Irving Medical Center (CUIMC) patients have access to high quality, genetic counseling services. IDGCP counselors will carry out this mission by working with

CUIMC physicians, researchers and clinical teams to meet the needs of an expanding landscape in genetics and genomics.

The Columbia Precision Oncology Initiative (CPOI) began operations in November and aims to make personalized treatment the standard of care for all CUIMC cancer patients. Under the overall leadership of Dr. Anil Rustgi (Director of the Herbert Irving Comprehensive Cancer Center), the CPOI is co-directed by myself, Dr. Andrea Califano (Department of Systems Biology), and Dr. Richard Carvajal (Department of Medicine, Division of Hematology and Oncology). The CPOI is taking an integrative approach to novel cancer treatment by employing cutting-edge genetic sequencing, computational models that help physicians understand each patient's unique cancer, and world-class clinical teams that deliver top care to CUIMC patients. Weekly multidisciplinary molecular tumor boards attended by medical oncologists, molecular pathologist, genetic counselors, as well as medical students, residents and fellows are a key component of the CPOI. Utilizing all of the personalized data for each patient, CPOI physicians and scientists work together to identify the best treatment options for each patient including potential clinical trials and novel immunotherapies. In total, the CPOI promises significant advances in both clinical cancer care and oncology research and the Department of Pathology and Cell Biology will continue to play a significant role in assuring the success of this this important initiative.



## Honors and Awards



**Above:** Dr. Joseph (Yossi) Schwartz receives the 2019 Hemphill-Jordan Leadership Award at the AABB annual conference

### ***Dr. Schwartz Leading the Way in Cellular Therapies***

Joseph Schwartz, MD, MPH, professor of pathology and cell biology, received the 2019 Hemphill-Jordan Leadership Award from the AABB, a professional organization dedicated to advancing the fields of transfusion medicine and cellular therapies, for his leadership in the fields of transfusion medicine and cellular therapies. His dedication extends to his leadership roles in the AABB Cellular Therapies Section Coordinating Committee, including the regulatory affairs subcommittee. His contributions have enhanced both the AABB Blood Bank/Transfusion Services and Cellular Therapy Standards' Committees. Schwartz

has also dedicated his time to represent the transfusion medicine community in many other leading roles in several related organizations. He has frequently served as a valued mentor for junior faculty and has demonstrated his willingness to teach and pass on his expertise to the next generation of leaders in transfusion medicine. The Hemphill-Jordan Award, renamed in 2005 after Bernice Hemphill, W. Quinn Jordan, and Joel Solomon, honors leaders from the transfusion medicine and cellular therapy community. Congratulations to Dr. Schwartz for leading the way in the cellular therapy field. ♦

## Phynd Update

Columbia and its partner institutions will be launching Phynd, a next-generation profile management platform. This migration will mark the end of our proprietary system CUPS. Our website is currently managed by CUIMC Webs Services, and they are transitioning our website to the new Phynd system. The transition is being made behind the scene.

Below are important dates of the transition project:

**New Go Live Date for Implementation:** Thurs, Jan 23rd (instead of originally scheduled Dec. 10)

**CUPS Content Freeze:** Thurs, Jan 2nd through Jan 23rd. Editing functionality will be disabled at 9 a.m. Faculty won't be able to edit profiles.

**Emergency CUPS Data Changes:** Supported by Columbia Web Services on a case-by-case basis

# Honors and Awards

## **Krystalyn Hudson Selected to Receive 2019 NBF Award for Innovative Research**



Dr. Krystalyn Hudson, PhD, has been selected as the recipient of the 2019 National Blood Foundation Award for Innovative Research which will be presented at the 2019 AABB Annual Meeting scheduled for Oct. 19-22, in San Antonio, TX.

Recipients of this prestigious award are selected by the National Blood Foundation (NBF) Scientific Grants Review Committee with formal approval by the NBF Board of Trustees. The award (formerly known as the David B. Pall Prize for Innovative Research and the Jack Latham Memorial Award for Innovative Research) was established in 2016 to recognize a scientist whose original research resulted in an important contribution to the body of scientific knowledge in transfusion medicine or cellular therapies.

Dr. Hudson joined the department in March 2019. Her research focuses on autoimmune and alloimmune responses to antigens on RBCs, which will provide insight for better prophylactic and therapeutic treatments thereby leading to better patient care.



## **Rebecca Haeusler Wins JCI Lectureship Award**

Rebecca A. Haeusler, Ph.D., won the Journal of Clinical Investigation Lectureship Award. The award was presented by the executive editor of the JCI at the ASBMB-Deuel Conference on Lipids held from March 5 - 8, in Dana Point, California.

Dr. Haeusler presented her lecture titled "The Intersection of Bile Acid Composition and Metabolic Regulation". She is Assistant Professor of Pathology and Cell Biology. Her research interests focus on understanding the development of pro-atherogenic metabolic abnormalities in the natural history of diabetes and the metabolic syndrome.

## **OTHER HONORS AND AWARDS (SINCE MAY 2019)**



### **Swarnali Acharyya, PhD**

was selected as 2019 Schaefer Research Scholars for "Identifying Mechanisms of Brain Metastasis".



### **Michael Miller, MD**

Postdoctoral Residency Fellow, was the recipient of the APC Society of '67 Scholars Travel Award.



### **Michael Pesce, PhD**

was inducted into the Academy of Clinical Excellence, whose mission is to define, recognize and perpetuate excellence in clinical care among faculty and trainees.



### **Serge Przedborski, MD, PhD**

received the 2019 Charles W. Bohmfalk Award for Distinguished Contributions to Teaching in the Pre-Clinical Years.



### **Antonia Sepulveda, MD, PhD/Susan Hsiao, MD, PhD**

were elected to the Association of Molecular Pathology 2019 Leadership Positions. Antonia Sepulveda was elected as President-Elect of the AMP, and Susan Hsiao was elected to the Solid Tumors Clinical Practice Committee.



# Honors and Awards



## ***Brynn Levy Elected to the Board of Directors of the ACMG Foundation for Genetic and Genomic Medicine***

Brynn Levy, MSc. (Med), PhD, FACMG, professor of pathology & cell biology at Columbia University Irving Medical Center, has been elected to the board of directors of the ACMG Foundation for Genetic and Genomic Medicine, together with David Tilstra, MD, MBA, CPE, president emeritus of CentraCare Clinic.

The [ACMG Foundation](#) is a national nonprofit foundation dedicated to facilitating the integration of genetics and genomics into medical practice. The board members are active participants, serving as advocates for the Foundation and for advancing its policies and programs.

"I am very pleased to welcome Drs. Levy and Tilstra to the ACMG Foundation Board of Directors. Both are seasoned and highly experienced geneticists who will bring important perspectives to help the Foundation fulfill its mission in support of activities of the College," said ACMG Foundation President Bruce R. Korf, MD, PhD, FACMG.



## ***Serge Cremers Named Editor-in-Chief of British Journal of Clinical Pharmacology***

On August 5th, the British Pharmacological Society announced that Serge Cremers, PhD, PharmD, associate professor of pathology & cell biology and medicine at Columbia University, will be the new Editor-in-Chief of the British Journal of Clinical Pharmacology (BJCP).

BJCP is a leading international clinical pharmacology journal published by the British Pharmacological Society (BPS). It bridges the gap between the medical profession, clinical research and the pharmaceutical industry by addressing all aspects of drug action in humans: invited review articles, original papers and correspondence.

Dr. Cremers has been on the journal's editorial board since 2016. He will be taking over the helm on January 1st, 2020 from Adam Cohen, MD, PhD, Professor of Clinical Pharmacology at Leiden University who has been running BJCP since 2015.

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## **ABTA Fellowship Awarded to Dr. Trang Nguyen**



It is with great pleasure to announce that Trang Nguyen, a postdoctoral research scientist in the lab led by Markus Siegelin, associate professor of pathology and cell biology at Columbia University Medical Center, was among the six postdoctoral researchers selected nationwide to receive the prestigious Basic Research Fellowship from American Brain Tumor Association (ABTA) in 2019. Dr. Nguyen received the award for her research entitled LXR agonists combined with BH3-mimetics as a novel treatment for glioblastoma, which was accepted for publication in EMBO Molecular

Medicine, a leading journal in the field of biomedicine (IF 10.6) in August 2019.

Established in 1973, the American Brain Tumor Association supports young scientists to find solutions to prevent and treat brain tumors in patients. Recipients of the fellowship are recognized to have the highest potential to make a difference. Basic Research Fellowships are two-year, mentored grants of \$100,000 that support postdoctoral fellows who are conducting laboratory or field-based research projects that focus on brain tumors.

To read more, visit the [Pathology website](#).



# Event Highlight

## ***Antonia Sepulveda's Farewell: New Chair at George Washington***

After seven years of dedicated service and leadership in the Department of Pathology and Cell Biology, Antonia R. Sepulveda, MD, PhD, has been selected to serve as chair of the Department of Pathology at the George Washington University (GW) School of Medicine and Health Sciences. She will also serve as the Ralph E. Lowey Professor of Oncology, as well as chief of pathology service and clinical laboratory director at GW Hospital.

Dr. Sepulveda received her PhD in cell biology and performed her postdoctoral training in molecular virology at Baylor College of Medicine in Houston. She also completed her residency training in anatomic pathology at Baylor College of Medicine. She received her MD at the University of Lisbon Medical School in Lisbon, Portugal. She is board certified in anatomic pathology and holds a New York State Certification of Qualification in Molecular Oncology.

Dr. Sepulveda is an expert in gastrointestinal pathology and molecular diagnostic pathology of cancer and a leader in personalized genomics for precision medicine. As the vice chair for translational research and director of the Division of Gastrointestinal Pancreas and Liver Pathology in the Department of Pathology and Cell Biology, she spearheaded clinical and research programs for genomic and biomarker testing of gastrointestinal cancers. Before coming to Columbia, she was the director of surgical pathology and the medical director and founder of molecular anatomic pathology and molecular test development at the Hospital of the University of Pennsylvania in Philadelphia.

Dr. Sepulveda's research laboratory and translational research program receives National Institutes of Health (NIH) and National Cancer Institute (NCI) funding and utilizes innovative genomics, transcriptomics, and computational image analyses to discover novel regulatory pathways and early biomarkers of cancer and precancer lesions of the esophagus, stomach,



colorectum, and pancreas. She has authored over 160 publications, including 122 original peer-reviewed papers, and over 40 reviews, editorials, guidelines, book chapters, and books. Sepulveda has been invited to lecture and share her expertise in pathology and biomarker testing in cancer around the world.

We thank Dr. Sepulveda for the many years of excellence at Columbia University and wish her all the best in her future at George Washington University. ♦

## 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](mailto:PathWebMaster@columbia.edu).

**How to get your news story published on department website/newsletter** – For interesting news stories that you wish to get published on our website and/or in our newsletter, submit to <https://form.jotform.com/pathnews/news-submission-form>. Contact [PathNews@cumc.columbia.edu](mailto:PathNews@cumc.columbia.edu) if you have any questions.

**How to update website content** – If you find any outdated, incorrect, or missing content on our department website ([www.pathology.columbia.edu](http://www.pathology.columbia.edu)), and would like to have it updated, please contact [PathWebMaster@columbia.edu](mailto: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](mailto:PathNews@cumc.columbia.edu).

**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>.



## Worldwide Initiative for Rh Disease Eradication (WIRhE)

As a result of the regulatory approval of Rh(D) immune globulin in 1968 for prophylaxis against Rh disease of the fetus and newborn, this disease has virtually disappeared from Western Europe, Canada, the United States, and Australia. Nonetheless, even more than 50 years later, due to a lack of awareness and access to appropriate care, Rh disease remains prevalent in other parts of the world, leading to hundreds of thousands of families affected by repeated miscarriages, stillbirths, and neonates with hyperbilirubinemia-related adverse outcomes. Indeed, it is estimated that ~50% of the pregnant women around the

world who need Rh(D) immune globulin do not receive it, amounting to ~2.5 million women each year.

To address the continuing challenges of Rh disease, a new, multidisciplinary organization was founded in 2019: the Worldwide Initiative for Rh Disease Eradication (WIRhE). Drs. Steven Spitalnik and Brie Stotler are the Executive Director and Deputy Director, respectively, of this new organization. WIRhE aims to eradicate Rh disease by “connecting the world to protect mothers and babies.” To this end, it intends to encourage, enable, and empower the efforts of diverse groups of individuals and organizations; to

serve as a clearinghouse for cooperative and collaborative projects; to provide a centralized source of information about Rh disease for patients, physicians, and health-care organizations; and to advocate for affordable access to Rh(D) immune globulin.

The kickoff meeting for WIRhE occurred on September 27-28, 2019 in Florence, Italy, with representation from 21 countries, 15 medical associations, and 8 non-governmental organizations. The international consortium was tasked with discussing the current state of, and future strategies for combatting, Rh disease in their communities. ♦



### Danielle Pendrick, DrPh to Present Poster on IDGCP at ACMG

The 2020 Annual Clinical Genetics Meeting will be hosted March 17-21st in San Antonio, Texas, by The American College of Medical Genetics and Genomics (ACMG). The meeting offers the opportunity for the medical genetics community to come together and learn the about latest research, therapies and practical implementation. Dr. Danielle Pendrick will

be presenting a poster titled “The Inter-departmental Genetic Counseling Program: A New Model To Provide Genetic Counseling Services At Columbia University Irving Medical Center”. The presentation will highlight the IDGCP as a new healthcare delivery framework with a strong emphasis in clinical and laboratory collaboration.



# Genetics and Genomics



IDGCP counselors and program leadership. From left to right: Dr. Laureen Hill, Maureen Mulhern, Anya Revah-Politi, Dr. Danielle Pendrick, Megan Soucy, Brooke Johannes, Kelsie Bogyo, Michele Disco, Dr. Kevin Roth

## Launch of the Inter-Departmental Genetic Counselor Program (IDGCP)

The Inter-Departmental Genetic Counselor Program (IDGCP) was launched in 2019 as a collaboration between the Department of Pathology and Cell Biology and Institute of Genomic Medicine, with participation from NewYork-Presbyterian and the Dean's Office as well as the Departments of Pediatrics, Ophthalmology, Medicine, Neurology and OB-GYN. At Columbia University Irving Medical Center (CUIMC), genetic counselors play a central role in the evolving field of genomic medicine, and demand for genetic counseling services often outstrips current capacity. In recent years, the CUIMC scientific community has developed a robust assessment of the optimal indications for clinical genomic sequencing in numerous subspecialties, and funding opportunities have increased in parallel, allowing large-scale clinical sequencing initiatives to be carried out. In recognition of this shift, the IDGCP was founded to address the intersection of patient-focused care, scientific knowledge, research, and innovative laboratory-based technologies. The mission of the IDGCP is to facilitate the appropriate, cost-effective ordering of genetic tests and ensure that all patients at CUIMC have access to high quality, genetic counseling services. IDGCP counselors will carry out this mission by working with CUIMC physicians, researchers and clinical teams to meet the needs of an expanding landscape in genetics and genomics.

### IDGCP Counselors:



**Maureen Mulhern, MS, MAT, CGC**

Neurogenetics, Laboratory Genetic Counseling  
Email: mm4757@cumc.columbia.edu



**Brooke Johannes, MS, CGC**

Reproductive Genetics, Laboratory Genetic Counseling  
Email: bj2300@cumc.columbia.edu



**Kelsie Bogyo, MS**

Adult Genetics, Laboratory Genetic Counseling  
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**Michele Disco, MS, CGC**

General Genetics, Laboratory Genetic Counseling  
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**Megan Soucy, MS, CGC**

Ophthalmologic Genetics, Laboratory Genetic Counseling  
Email: mes2350@cumc.columbia.edu



**Danielle Pendrick, DrPH**

Administrative Director, Precision Pathology and Genomics, Department of Pathology and Cell Biology  
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## New Administrative Staff



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**Ramonita Ferreira** has joined the Department of Pathology and Cell Biology as the Residency Program Coordinator, effective October 2019. Ramonita is responsible for the coordination of the day-to-day administrative activities of the Department's residency and fellow program.

Ramonita received her Bachelor's degree in Business Administration from The College of Westchester. Ramonita brings to the Department almost 20 years of experience working in healthcare, with 10 of the years working directly with medical education. Ramonita joined us from Westchester Medical Center.

We welcome Ramonita to the Pathology and Columbia community.

**Joel Pichardo** has recently been promoted to the Operations Manager for the Department of Pathology. Joel joined the Pathology Central HR team in 2015 and has been a tremendous team player since his arrival. As of November 2019, Joel's new role will consist of working closely with the Departmental Administrator relating to capital projects for the Department. Joel is also responsible for space management, facility activities, and other day-to-day activities, such as providing oversight of our international employee and visitors process.

Joel has over ten years of operational experience, ranging from Goldman Sachs to New York-Presbyterian Hospital.

Congratulations to Joel on his promotion.



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## Staff Highlights: *Kristy Brown Retires After 32 Years*

**Kristy Brown** retired this Autumn after 32 years of service as Director of the Electron Microscope Facility of the Department of Pathology and Cell Biology. Kristy grew up in Montana and (briefly) in Sweden. We started to work together when she joined the Department of Pharmacology at NYU as an electron microscopy specialist. Prior to this she had worked in the Department of Pathology at Hahnemann Medical School in Philadelphia on Legionella.

At NYU she played a critical role in the application of ultrastructural analysis to cell biology, to neuronal development and disease. She was a meticulous worker who could orient single cells on end for serial section and did early work in immuno-electronmicroscopy.



Kristy moved to Columbia with our group from NYU (Carol Mason, Ron Liem, Fred Maxfield, Mary Beth Hatten, Carol Troy and Lloyd Greene) in 1987. Over her years of direct involvement in research she was the co-author of over 20 papers and has a more than respectable "H" index. In the past decade, Kristy made the transition to running an EM service that was open to everyone at CUMC. She trained technicians and faculty in EM techniques, maintained the microscope and soothed more than few battered egos.

Kristy is a good friend and she will be missed by all of us who have spent almost 4 decades working with her. The skills that she had honed over this time will be hard to replicate, but her warm daily presence in our work will be irreplaceable. ♦

# New Administrative Staff



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**Ms. Yasmeen Majoka, MBA** has joined the Department of Pathology and Cell Biology as Senior Finance Director. She is responsible for overall finances for the Department of Pathology and Cell Biology.

Yasmeen earned her BA from Boston University, and her MBA in Finance & Sustainability from Baruch College Zicklin School of Business. She joined us from Memorial Sloan Kettering Cancer Center (MSK) where she had most recently served as the Senior Finance Manager in the Department of Neurology. She is skilled in clinical administration, budget and finance, business analytics, and both pre- and post-award grants administration.

We welcome Yasmeen to the Pathology and Columbia community.

**Ms, Courtney Sinn** has joined the Department of Pathology and Cell Biology as the new Academic and Faculty Affairs Manager, effective November 2019. She is responsible for the day-to-day operational management of Faculty HR-related activities. Courtney will also partner with the Medical Education team as an HR business partner.

Courtney received her Bachelor of Science in Health Science from Stony Brook University and is currently pursuing her Masters of Science in Human Capital Management at Columbia University. Courtney brings to the Department seven-plus years of progressive HR experience and joins us from CUIMC's Department of Medicine after three years of working with the leaders in that Department.

We welcome Courtney to the Pathology and Columbia community.



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## Non-canonical Wnt Signaling through Ryk Regulates the Generation of Somatostatin- and Parvalbumin-Expressing Cortical Interneurons



In this issue of *Neuron* (Volume 103, Issue 5, September 4, 2019, pages 853-864), McKenzie et al. describe graded Wnt-Ryk signaling along the rostral-caudal axis of the progenitor domain responsible for producing the majority of cortical interneurons. High levels of signaling result in the generation of somatostatin+ cells, while low levels are required for parvalbumin+ interneurons. Cajal, taken by the varied and complex morphologies of cortical neurons, poetically described them as the "butterflies of the soul."

The team was lucky enough to win the cover submission. On the cover, origami butterflies constructed with different patterns represent the diversity of cortical interneuron subtypes. In the background, the butterflies pass over a watercolor gradient to illustrate the relationship between interneuron diversity and graded Wnt-Ryk signaling in progenitors.



## GRANTS AWARDED

PI	Sponsor	Title
Corey Abate-Shen	National Cancer Institute	Mitochondrial and Nuclear Functions of NKX3.1 in Regulating Oxidative Stress in Prostate Cancer
Swarnali Acharyya	National Cancer Institute	Modulating dietary zinc to prevent cachexia and improve survival in cancer
Ottavio Arancio	National Institute of Neurological Disorders and Stroke	The Role of SUMOylation in Tau-Mediated Pathology
Richard Baer and Alberto Ciccia	National Cancer Institute	Restoring Genome Stability and Tumor Suppression in BRCA1-Deficient Cells
Karen Duff	National Institute on Aging	Differential Vulnerability to Tauopathy in Alzheimer's Disease and Frontotemporal Lobe Dementia
Piero Dalerba	Data Science Institute and Irving Institute for Cancer Dynamics	Recipient Epidemiology and Donor Evaluation Study-IV-Pediatric (REDS-IV-P) Domestic Hubs
Piero Dalerba	National Institute of Dental and Craniofacial Research	Dissecting Cell Composition and Drug Sensitivity in Human Adenoid Cystic Carcinomas (ACCs)
Piero Dalerba	Army Medical Research and Materiel Command	Biodegradable Cationic Nanoparticles as a Push Chemo-Drug Carrier and a Pull CFDNA Scavenger Against Breast Cancer Metastasis
Andrew Dwork	National Institute of Mental Health	Application of Advanced Quantitative Methods to Schizophrenia Research in Macedonia
Amin Ghabrial	National Institute of General Medical Sciences	Competition and Morphogenesis in Tip Cell-Mediated Branching of Tubular Networks
Eldad Hod	National Heart, Lung, and Blood Institute	Modeling the Dynamics of Young Onset Colorectal Cancer using Big Population Data
Eldad Hod	National Heart, Lung, and Blood Institute	Harmful Effects of Transfusion-Induced Iron Overload

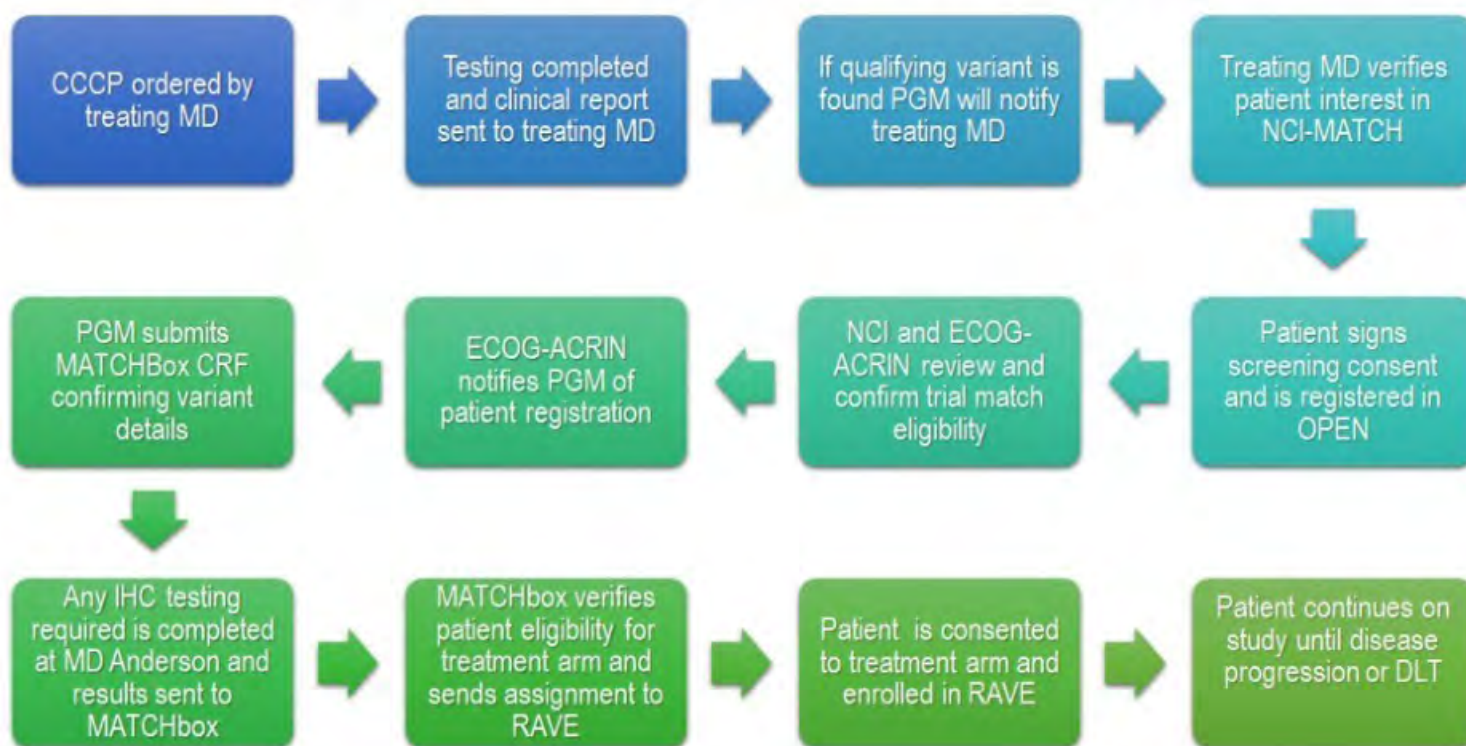
PI	Sponsor	Title
Gregg Gundersen	National Institute of General Medical Sciences	Integrin Recycling and Adhesion Formation in Cell Migration
Gregg Gundersen and Howard Worman	National Institute on Aging	Nucleoskeleton-Cytoskeleton Connections and Cell Polarity in Aging
Rebecca Leeman-Neill	Army Medical Research and Materiel Command	The Role of Activation-Induced Cytidine Deaminase in Pesticide-Related Lymphomagenesis
Umrao Monani	National Institute of Neurological Disorders and Stroke	Spinal Muscular Atrophy: Mechanisms & Treatment Strategies
Russell Nicholls	National Institute of Neurological Disorders and Stroke	Exploring the Contribution of Viral PP2A Inhibition to Tau Pathology in Alzheimer's Disease
Serge Przedborski	National Institute of Neurological Disorders and Stroke	Focused ultrasound and synucleinopathy
Serge Przedborski	Parkinson's Disease Foundation	Differential Neuronal Susceptibility as an Avenue Toward Disease-Modifying Therapy for Parkinson's
Serge Przedborski	National Institute on Aging	A Transcriptomic Atlas of Immune Cells in a Model of Synucleinopathy
Ira Tabas	National Heart, Lung, and Blood Institute	A Mechanistic and Translational Research Program Linking Impaired Resolution, Defective Efferocytosis, and Clonal Hematopoiesis to the Formation of Clinically Dangerous Atherosclerotic Plaques
Tiffany Thomas	National Blood Foundation	The Effect of Dietary Lipids on Red Cell Lifespan and Recovery
Stephen Tsang	National Eye Institute	Gene Silencing and Gene Editing in Phototransduction
Stephen Tsang and Janet Sparrow	National Eye Institute	Precision Genome Surgery in Autologous Stem Cell Transplant

## GRANTS AWARDED

PI	Sponsor	Title
Clarissa Waites	National Institute of Neurological Disorders and Stroke	Uncovering the Roles of Ubiquitination and the ESCRT Pathway in Degradative Sorting of SV Proteins
Clarissa Waites	Michael J. Fox Foundation for Parkinson's Research	Development of image-based probes for Rab GTPase activation
Harris Wang	Bill and Melinda Gates Foundation	Azithromycin's Impact on Microbiome Re-assembly and Re-configuration in Mice
Harris Wang	Defense Advanced Research Projects Agency	A Multimodal Oral Non-viral CRISPR-Cas Medical Countermeasure to Enhance Ionizing Radiation Resilience and Survival
Stuart Weisberg	National Institute of Diabetes and Digestive and Kidney Diseases	Tissue Resident Immune Cells in Human Pancreas
Hynek Wichterle	National Institute of Neurological Disorders and Stroke	Multiplex Modeling of ALS with Barcoded Human Pluripotent Stem Cell Lines
Hynek Wichterle	National Institute of Neurological Disorders and Stroke	Distal Enhancers Controlling Motor Neuron Gene Expression Program Alzheimer's Disease
Ai Yamamoto	National Institute of Neurological Disorders and Stroke	Modulating selective autophagy to modify Huntington's disease
Darrell Yamashiro	Hyundai Hope on Wheels	Quantum Collaboration Award
Xin Zhang	National Eye Institute	Regulation of FGF Signaling in Lacrimal Gland Development



## CUIMC NCI-Match Schema

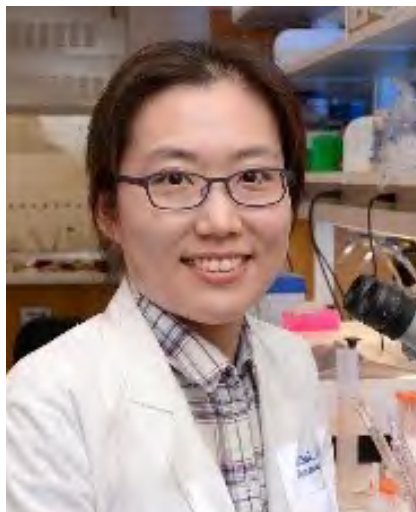


### Laboratory of Personalized Genomic Medicine Selected to Participate in the NCI-MATCH Precision Medicine Trial

Columbia University's Personalized Genomic Medicine Laboratory (PGM) in the Department of Pathology & Cell Biology is proud to announce that it has been selected to participate as a CLIA-certified laboratory for the NCI-Molecular Analysis for Therapy Choice (NCI-MATCH) precision medicine trial. NCI-MATCH was co-developed by the ECOG-ACRIN Cancer Research Group (ECOG-ACRIN) and the National Cancer Institute (NCI) and is being led by ECOG-ACRIN through its Biomarker Sciences Program. NCI-MATCH, also known as EAY131, is the largest trial to date that seeks to determine whether therapies targeting specific gene mutations will be effective regardless of cancer type. Tumor gene testing by a designated lab is the only pathway for patients to enroll in the trial.

Under the terms of this new collaboration, when Columbia Combined Cancer Panel (CCCP) testing is ordered as part of a patient's standard clinical care, and it identifies a qualifying genetic alteration abnormality (such as a mutation or amplification), PGM will notify the treating physician of the possible qualifying genetic alteration. If the treating physician and the patient are interested in participating in the NCI-MATCH study, NCI and ECOG-ACRIN trial leaders will centrally review PGM's trial match. If they verify the referral, they will formally assign the patient to the treatment arm. To read a summary of the process, visit <https://ecog-acrin.org/nci-match-eay131-designated-labs>. Patients with advanced solid tumors, lymphomas, or myeloma may be eligible for MATCH, once they have progressed on standard treatment for their cancer or if they have a rare cancer for which there is no standard treatment. There are several treatment arms that are open to patients at any given time, for current trial availability please visit <https://ecog-acrin.org/trials/nci-match-eay131>.

## New Faculty



### Eunhee Choi, PhD

Assistant Professor of Pathology and Cell Biology at CUMC

Eunhee Choi obtained her Ph.D. from Seoul National University under the guidance of Dr. Hyunsook Lee, where she focused on a key control mechanism in cell division called the spindle checkpoint and its role in tumorigenesis. She then pursued her postdoctoral research with Dr. Hongtao Yu at UT Southwestern Medical Center. There she established unexpected functions of cell division regulators in insulin signaling and opened new avenues for research in insulin signaling and cell division. She plans to apply her expertise in cell division and metabolism to understand how systemic signaling controls cell division to maintain genomic stability and metabolic homeostasis. Her research may lead to insights for the treatment of both cancer and metabolic diseases.



### Adela Camic, MD

Assistant Professor of Pathology and Cell Biology at CUMC

Adela Camic earned her medical degree from the University of Sarajevo and is board-certified in anatomic pathology and cytopathology. She completed her anatomic pathology residency at Wake Forest University, Winston Salem, NC and two fellowships in gynecological pathology and cytopathology at Weill Cornell Medicine. She joins Columbia faculty as a gynecologic/placental pathologist and cytopathologist.



### Richard Hickman, MD

Assistant Professor of Pathology and Cell Biology at CUMC

Richard Hickman qualified in medicine from the University of Birmingham, UK in 2011 and spent his early postgraduate years training in general medicine and surgery in Oxford. He left the UK to pursue a residency in anatomic pathology at New York University. He then completed his neuropathology fellowship training at Columbia University, during which time he trained in brain banking and neurodegenerative disease with Dr. Jean-Paul Vonsattel. Besides his diagnostic work in neuropathology, his research activity relates to the use of human brain tissues to study the pathogenesis of neurodegenerative diseases. Attention is largely centered on understanding the protein aggregation present in the brains of patients with Huntington's Disease. This work relies upon the thorough characterization of brains received at the New York Brain Bank with Jean-Paul Vonsattel and the scientific collaboration and mentorship of Ai Yamamoto's laboratory. Richard has grant support from the Hereditary Disease Foundation and Huntington's Disease Society of America to follow these goals.

## Pathology Promotions



### Markus Siegelin, PhD

Promotion to Associate Professor



### Phyllis Faust, MD/PhD

Promotion to full Professor



### Stephen Lagana, MD

Promotion to Associate Professor

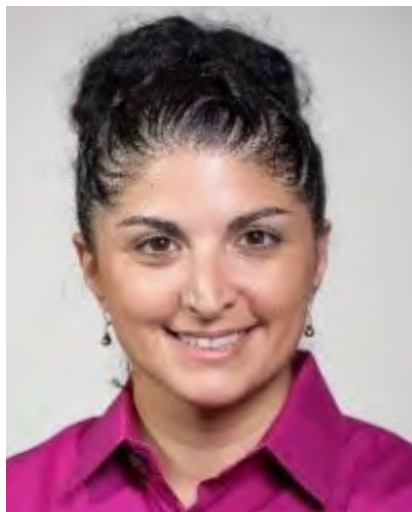
# New Faculty



## Alison Taylor, PhD

Assistant Professor of Pathology and Cell Biology in  
Herbert Irving Comprehensive Cancer Center

Dr. Alison M. Taylor received her undergraduate degree from Massachusetts Institute of Technology and her PhD degree from Harvard University Medical School. She pursued her PhD thesis research in the lab of Dr. Len Zon, and completed a postdoctoral fellowship in the lab of Dr. Matthew Meyerson at Dana Farber Cancer Institute investigating fundamental aspects of aneuploidy (chromosome 1p loss) in cancer initiation and progression, yielding publications in *Cancer Cell*, *Cell Reports*, and *Cell*, as well as co-authored publications in *Cancer Discovery*, *Nature Genetics* and *Nature Communications*. As recipient of an NCI K22 career development grant, she will be establishing her lab in the Irving Cancer Research Center with her primary appointment as Assistant Professor of Pathology and Cell Biology and as a member of the Herbert Irving Comprehensive Cancer Center.



## Sarah Vossoughi, MD

Assistant Professor of Pathology and Cell Biology at CUMC

Sarah Vossoughi is the new Medical Director of Apheresis at Columbia and the new Medical Director of Clinical Pathology at Lawrence Hospital. She completed her Clinical Pathology residency at Columbia University Medical Center in New York, NY in the summer of 2018 and subsequently a Transfusion Medicine fellowship at the New York Blood Center-Columbia program. Prior to becoming a physician, Dr. Vossoughi served as a military officer, medical crew director, and trauma nurse in the United States Air Force in South Korea, Iraq, and Afghanistan where she evacuated >900 soldiers out of combat zones earning 6 medals and separated honorably at the rank of Captain. This experience inspired her to pursue a career in medicine, and she obtained her medical degree from the University of Vermont College of Medicine in Burlington, VT. Her research interests are in hemovigilance and pediatric transfusion medicine.



## Yao Yang, PhD

Assistant Professor of Pathology and Cell Biology at CUMC

Dr. Yao Yang received his PhD at Southeast University in China. He completed his postdoctoral and clinical molecular genetics fellowship training at Icahn School of Medicine at Mount Sinai, and is board certified in Clinical Molecular Genetics and Genomics. He joined Columbia faculty as an Assistant Professor of Pathology and Cell Biology and assistant director of Precision Genomics Laboratory. Along with his clinical interests, his research continues to be focused on applying advanced NGS technologies and bioinformatic solutions into genetics/ pharmacogenetics study and clinical molecular genetic testing.

## Pathology Promotions



### Steven Tsang, PhD

Promotion to full Professor



### Katia Basso, PhD

Promotion to Associate Professor



## New Residents



**Amy Ku, MD/PhD  
(AP/CP)**

B.S. UCLA, Biochemistry. M.D., Ph.D. Jacobs School of Medicine and Biomedical Sciences at the University at Buffalo. Multiple publications on tumor immunity and immunotherapy. Thesis: Tumor-induced MDSC act via remote control to inhibit L-selectin-dependent adaptive immunity in lymph nodes. Enjoys cooperative board games and creative writing.



**Chinwe Madubata, MD  
(AP/CP)**

B.A. Harvard University, Molecular and Cell Biology. M.S.C.I, M.D. Washington University in St. Louis School of Medicine. M.S. topic: Comparing treatment and outcomes of ductal carcinoma among women in Missouri by race. One year of pediatric residency at University of Pittsburgh Medical Center. Learning classical guitar and enjoys singing, acting, and drawing.



**Jeremy Miyauchi, MD/PhD  
(AP/NP)**

B.S. (Magna cum laude) Cornell University, Biological Sciences. M.D., Ph.D. Stony Brook University School of Medicine. Thesis: Interactions of microglia with glioma cells determining tumor progression and peripheral immune activation. Multiple publications on microglia and immune responses to, and immunotherapy of, gliomas. Enjoys capoeira, Brazilian jiu jitsu, judo, muay thai kickboxing, guitar, snowboarding, and hiking, among other things.

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### Pathology Promotions



**Larisa Debelenko, MD/PhD**  
Promotion to Associate Professor



**Eldad Hod, MD**  
Promotion to Associate Professor (with tenure)

## New Residents



**Yu Sun, MB, MS, PhD  
(AP/NP)**

M.B. Second Military Medical University, China. Ph.D. Albany Medical College, Center for Neuropharmacology & Neuroscience. Thesis: Asymmetric distribution of EGF receptor during mitosis generates diverse CNS progenitor cells. Dana-Farber Cancer Institute: Led a multi-departmental translational team for targeted therapy in pediatric low-grade astrocytoma patients. Multiple publications on CNS progenitor cells, gliomas and glioma treatments. Enjoys reading, gardening and traveling



**Maxwell Weidman, MD/PhD  
(AP/CP)**

A.B. Princeton University, Molecular Biology/Computational Neuroscience. M.D., Ph.D. Albert Einstein College of Medicine. Thesis: The Role of Mena-INV in promoting tumor cell invadopodium maturation. Multiple publications on mechanisms of invasion and metastasis of breast carcinoma. Enjoys running, hiking and camping, creative writing and mindfulness meditation.



**Mine M. Yilmaz, MD  
(AP/CP)**

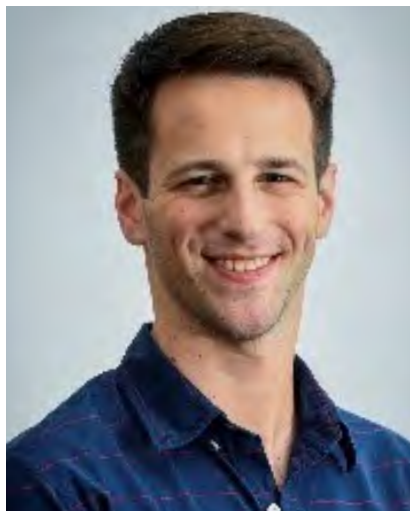
M.D. Hacettepe University, Turkey. Postdoctoral Research Fellow (2016, 2017), Brigham and Women's Hospital: Regulatory molecules in the activation of alloreactive and autoreactive immune cells with additional publications on IL-6 and ischemia-reperfusion injury. Postdoctoral Research Fellow (2018, 2019), Northwell Health: Development of an assay for the non-invasive diagnosis of endometriosis. Enjoys badminton, swimming, piano, and water marbling art.

## New Graduate Students



**Ester Calvo Fernández**

Ester Calvo Fernández received her Bachelor's and Master's degrees in Pharmacy from the University of Barcelona in Spain in 2017. After graduation, Ester became a research assistant and St. Baldrick Research fellow at the University of Michigan, where she studied the role of L3MBTL (Lethal(3)malignant brain tumor-like protein) in breast cancer and medulloblastoma. Ester is interested in brain cancer studies and is doing her first rotation in the laboratory of Dr. Peter Canoll.



**Ryan Hobson**

Ryan Hobson graduated from Hamilton College in 2016, where he majored in Biology. Following graduation, he took a position as a research technician in the Cardiovascular Research Center at the Massachusetts General Hospital. He studied the role of Activin signaling in heart failure. He is second author on a paper that is published in Science Translational Medicine. Ryan is particularly interested in studying Alzheimer's disease and he is doing his first rotation in the laboratory of Dr. Clarissa Waites in the Taub Institute.



**Lucie Zhu**

Lucie Zhu received a Bachelor's degree in 2017 and a Master's degree in 2019 majoring in Biochemistry from the University of Toronto. Lucie's Master's thesis focused on the polymerization activity of members of formins on the isoform specific polymerization of actin. Lucie is interested in various aspects of mechanisms of disease, and is doing her first rotation in the laboratory of Dr. Livio Pellizoni.



## RECENT THESES DEFENDED

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**Joao Carlos Goncalves**, Richard Vallee Lab, May 9, 2019

"New Dynein Regulatory Mechanisms in Neurogenesis and Neuronal Migration"

**Maryann Platt**, Dritan Agalliu Lab, May 14, 2019

"Immune Mechanisms of Brain Dysfunction in a Mounse Model of Autoimmune Encephalities"

**Xiaoyi Qu**, Bartolini Lab, May 21, 2019

"Microtubule Dynamics in Tau-dependent Synaptotoxicity"

**Margo Brandt**, Lappalainen Lab, June 14, 2019

"Characterizing Human Regulatory Genetic Variation Using CRISPR/Cas9 Genome Editing"

**Yong Zi Tan**, Carragher, Potter and Mancina Labs, June 26, 2019

"Solving Challenging Structures Using Single-Particle Cryogenic Electron Microscopy"

**Linda Williams**, Snoech Lab, July 2, 2019

"Role of Mitofusin 2 in the Biology of Hematopoietic Stem Cells"

**Daniela Georgieva**, Egli Lab, July 22, 2019

"Brcal and 53BP1 Mediate Reprogramming by Altering DNA Repair Pathway Choice"

**Ling Feng Ye**, Stockwell Lab, December 17, 2019

"Discovery of New Cancer Therapeutic Contexts for Ferroptosis"

**Jerome Kahiapo**, Lomvardas Lab, December 18, 2019

"ATF5 Links Olfactory Receptor Induced Stress Response to Proper Neuronal Function"



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**columbia.edu**

# Why you should get a flu shot:

## Fortune favors the prepared immune system



BY RICHARD H. KESSIN, PHD

Professor Emeritus and Special Lecturer, Pathology and Cell Biology

E-mail: Richard.Kessin@gmail.com

**E**very year, influenza comes in November, peaks in late February or early March, and then subsides to a low but steady number of cases. The Centers for Disease Control (CDC.gov/influenza) collects and studies influenza viruses from patients in all states to find out which versions of the virus are circulating. The influenza virus evolves rapidly and spreads quickly so the CDC effort is important for predicting the severity of the outbreak, learning how well the existing vaccine or drugs will cope with it, and for predicting what the next year will bring. Some years the response to a vaccine is good; some years it is disappointing. You might think we would be doing better by now.

Influenza viruses are lipid shells containing RNA instructions for making new viruses. (RNA is a slight variant of DNA, often used by viruses.) Poking out of the viral spheres are two spike-shaped proteins, Hemagglutinin and Neuraminidase, abbreviated H and N. H and N vary every year. There are 16 forms of H and 9 forms of N among the various flu viruses that infect humans, birds, pigs, bats or other animals.

Flu is deadly because of its enormous variability. In the population of flu viruses around the world, there are always some that have mutated, or worse, exchanged genes with other flu viruses: a bit of bird flu, a bit of swine, maybe a gene from a bat flu virus. No human immune system would have seen such new viruses, and so, settling deep into a lung of the first humans they encounter, they are free to infect

lung cells and reproduce. The immune system responds, sending cells called neutrophils and macrophages into the air sacs of the lungs where they accumulate and make breathing difficult, but do not control the infection well. Fever, chills and muscle ache result. Then we cough millions of new viruses over to other lungs. If the changes in a virus are small, then the immune system rallies. The naïve immune system takes a week or two to produce antibodies specific for a new virus. If a similar virus has previously infected a patient, the response may be faster. If the change in the virus is major and the human immune system fails to recognize it at all, then the virus can spread around the world and cause a pandemic. There were catastrophic pandemics in 1918, 1968, 1977 and 2009-2010. The 1918-1919 epidemic was caused by an H1N1 virus and killed many young people, including soldiers. One speculation is that people who were older in 1918 had been exposed to a mild H1N1 virus in the late 19th century and were protected. Everyone else was born too late.

Usually the elderly are more vulnerable to flu because immune systems decline with age. For years, I taught histology, the study of tissues, to first-year medical students and we would look at stained tissue slices of the thymus from a young person and from senior citizens. Under the microscope, the young thymus was a thing of order and beauty. The 70-year-old thymus looked like a shipwreck, although it still more or less worked, providing essential T immune cells to the body. Thousands of flu related deaths occur in nursing homes every winter,

which is why Sanofi-Pasteur, a French vaccine maker, produces a fortified vaccine for people over 65. One large study I read indicated that the fortified vaccine was 30% more effective than the standard vaccine in reducing flu cases. These large clinical trials are difficult and I am not completely convinced, but I got the fortified vaccine anyway.

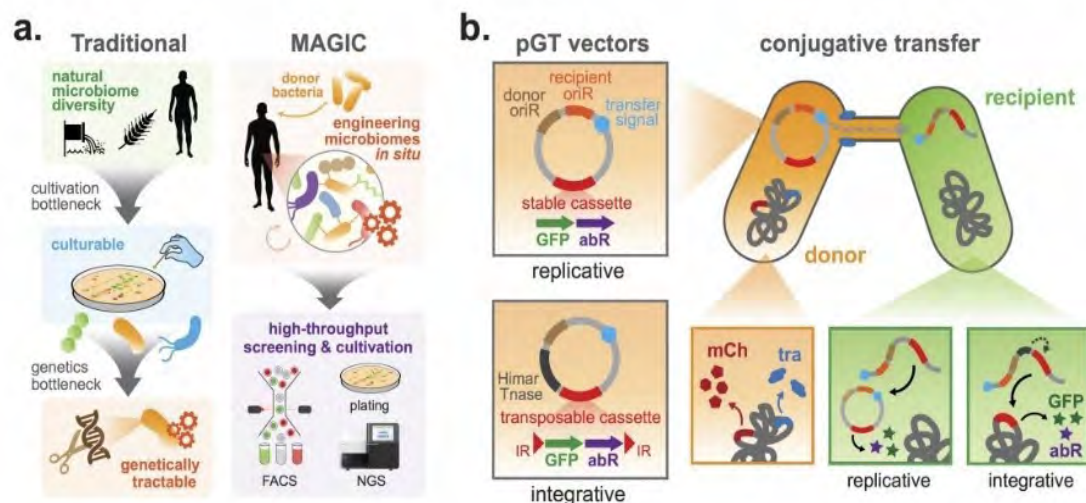
Viruses that cause measles, mumps, polio, chickenpox or other diseases don't vary; their genomes are relatively stable, making them sitting ducks for our vaccines. Influenza, being unpredictable, requires a vaccination every year. But could that change? Could influenza become like measles and other infections that require less frequent inoculations?

In 2011, I wrote a column titled "The Flu Again but Maybe Not Forever", which suggested that a vaccine could control all variants of the influenza virus. I recently read a 2018 review that explained all of the approaches that have been taken since then. Most of them take advantage of the fact that the Hemagglutinin protein varies among strains, but it is a big molecule and certain parts of it do not vary. The studies provoked the immune system with the unchanging bits of Hemagglutinin and that seems to protect against multiple viruses. So far there have been 14 human clinical trials all over the world and there seems to be protection. When do we replace the semi-reliable yearly injections with a new and relatively untested new vaccine? Not yet, I think, but stay tuned.



## RESEARCH

### Team Led by Harris Wang Engineered Bacteria to Benefit and Improve Overall Health of Gut Microbiome



A team of researchers, led by Dr. Harris Wang of the Department of Systems Biology and Pathology and Cell Biology, has engineered bacteria to benefit and improve the overall health of our gut microbiome. In a proof-of-concept paper published in *Nature Methods*, Dr. Wang and his team demonstrate MAGIC, an innovative gene delivery system that 'hacks' the gut microbiome to perform any desired function, from harvesting energy from food and protecting against pathogen invasion to bolstering anti-inflammatory properties and regulating immune responses (Columbia System Biology News). For more information, visit the [CUIMC Newsroom](#). ♦

### Piero Dalerba and Teresa Palomero Vazquez Among Six Columbia Cancer Researchers To Receive Seed Funding from Velocity



[Vazquez, PhD](#). Each

Six Columbia cancer researchers will share \$500,000 in seed funding to support early-stage research projects. The new grants were made possible by proceeds raised last fall in [Velocity, Columbia's Ride to End Cancer](#).

The recipients, who have been designated Velocity Fellows, are [Piero Dalerba, MD](#); Charles Drake, MD, PhD; Richard Ha, MD, who will share the award with co-principal investigator Katherine Crew, MD; Gulam Manji, MD, PhD; and [Teresa Palomero Vazquez, PhD](#). Each

"The researchers selected as Velocity Fellows are doing work that has the potential to have a real impact on patients' lives, by testing new ideas for treatment or deepening our understanding of how to best utilize current treatments," says Anil K. Rustgi, MD, Irving Professor of Medicine at Columbia University Vagelos College of Physicians and Surgeons and director of the Herbert Irving Comprehensive Cancer Center.

"Recent advances in our understanding of cancer are allowing us to approach cancer diagnosis and treatment in new ways," says Lee Goldman, MD, Dean of the Faculties of Health Sciences and Medicine and Chief Executive of Columbia University Irving Medical Center. "Thanks to the thousands of people who participated in Velocity, we are able to fund the work of six researchers who are pursuing a range of novel and innovative projects." ♦



## Clinical Pathology Lab Event



LAB WEEK 2019

### ***National Medical Laboratory Professionals Week 2019 Celebrated April 21 - 27***

Medical Laboratory Professionals Week is an annual celebration of medical laboratory professionals and pathologists who play a vital role in health care and patient advocacy. Each year, there are week-long events that consist of lectures, informational fairs, lab tours, luncheons and dinners.

This year, during the lab week from April 21 to 27, NYPH-CUIMC celebrated our clinical laboratory personnel, and we had the opportunity to increase the understanding of, and appreciation for, all clinical laboratory professionals by other members of the Hospital and the Medical Center. At the luncheon on April 24, 10 exemplary clinical laboratory professionals (see below) were recognized by being presented with the Nathan Lane Award. Each winner received a framed certificate and a gift card worth \$100.

### ***Connecting Anatomists and Global Health***

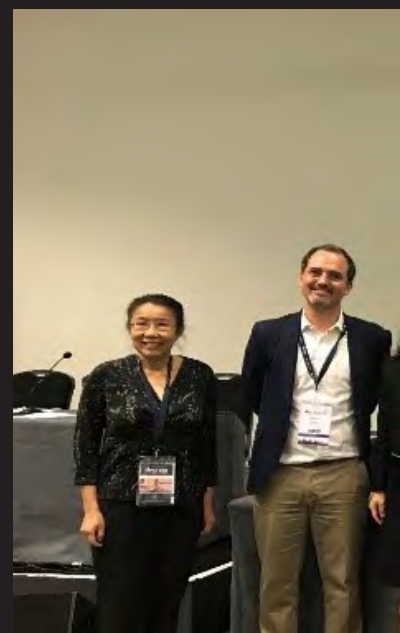
**Anette Wu, MD, MPH, PhD**, assistant professor of medical sciences (in medicine) and pathology and cell biology, Columbia University Vagelos College of Physicians and Surgeons, chaired a unique symposium-workshop regarding anatomists and global health at the 19th Congress of the International Federation of Associations of Anatomists (IFAA), in London, UK, from 8/9-8/11/2019.

The IFCC was established in 1903 and is one of the largest professional alliances of Associations of Anatomy from around the world. The IFAA provides a platform for strong scientific debate, advancement of teaching, and biomedical research in the anatomical disciplines.

Dr. Wu chaired the symposium session entitled "International Anatomy Workshop: Connecting Anatomists and Global Health", designed to

connect anatomists, scientists, and educators to the field of global health, and to inspire them to work on Global Health projects. The goal of the workshop was to give insight into the breadth of international work that anatomists can be involved in, provide skills and advice related to initiating and maintaining global health projects, and to launch new collaborations via a networking session.

Seven panelists from Brazil, Canada, India, Taiwan, the UK, and the US, provided an overview of different international projects (i.e., educational student exchanges, international faculty teaching, international disaster responses, international work using technology, international art and anatomy projects, and global online repositories), followed by skills instruction, and a subsequent networking session.



## Epic Honor Board

### Mabel Rosario Wins Epic Excellence Recognition Award

**Mabel Rosario**, Lab Information System/Co-Path coordinator of anatomic pathology, has recently won the Epic Excellence Recognition Award for her continuing efforts to encourage excellence in the Epic Together implementation and striving for a successful go live. She was particularly recognized for playing an integral role in the Epic Together lab order and report testing and build.



The Epic Excellence Recognition Program acknowledges colleagues who are going above and beyond to help their teams prepare for the ongoing Epic change.

It recognizes a variety of efforts including:

- Contributions to mission-critical work
- Great ideas for addressing workflows in Epic
- Creating a smart set that helps the team

The department thanks Mabel for her dedication to the transition to the new electronic medical record and congratulates her on receiving this outstanding award.

Above: Mabel Rosario accepting her award

## PathologyPictures



Musicians Eleanor Dubinsky (vocals) and Wesley Amorim (guitar) serenading the Apheresis patients and staff as part of the "Feel the Music!" program invited to perform by faculty members Dr. Eldad Hod and Dr. Sarah Vossoughi.



Photo taken by Dr. Anjali Saqi during her recent visit to Morocco.

### International Anatomy workshop: Connecting Anatomists and Global Health

Chairs:  
Anette Wu, MD MPH PhD  
Geoffroy Noel, PhD  
IFAA 2019  
Friday, August 9, 2019



