Fall
2021

COLUMBIA PATHOLOGY AND CELL BIOLOGY REPORT

A Mission to Educate

Featured Article
Huntington Disease Insights

Education
New Graduate Students & Thesis Defenses

Campus News
Columbia and the UNF: Building Links

IN THIS ISSUE

Columbia Pathology and Cell Biology Report

Chair
Kevin A. Roth, MD, PhD
Donald W. King, M.D. and Mary Elizabeth King, M.D. Professor of Pathology and Cell Biology
Chair, Department of Pathology and Cell Biology
Pathologist-in-Chief, CUIMC

Department Administrator/CFO
Joann Li, MPA, MPH

Editor and Layout Designer
Milan Fredricks

Copy Editor and Webmaster
Ping Feng

Contributing Writers
James Goldman, MD

Address correspondence to:
PCB Reports, Editor
c/o Milan Fredricks
Columbia University
Department of Pathology and Cell Biology
630 W. 168th St., Box 23
New York, NY 10032

E-mail: pathology@columbia.edu
Website: https://pathology.columbia.edu

ON THE COVER:
Illustration by Storyset

Education at our Core

Kevin A. Roth, M.D., Ph.D., Chair
karoth@columbia.edu

WE often declare the three missions of an academic pathology department as clinical care, research, and teaching. Of these three missions, our commitment to teaching often goes unheralded and underappreciated, yet it is the one mission of the three that we are most qualified to achieve. Excellent clinical care can and is delivered in many community-based hospitals and clinics. Outstanding scientific research is performed by numerous institutes, biotechnology firms, and private enterprises outside of academic medical centers. However, educating, mentoring, and preparing the next generation of physicians, scientists, and academic leaders in our unique purview, and we excel at it.

I am extremely proud of our many faculty members who commit countless hours to graduate and medical student education as course directors, lecturers, small group leaders, thesis committee members, and mentors. For many, perhaps all, this "work" is more than a simple obligation; rather, it is a passion to share knowledge, challenge constructs, inspire others, and help shape the careers of the extremely bright students that we are fortunate enough to interact with at Columbia University.

Our educational mission isn't limited to Columbia University graduate and medical student teaching. We have numerous opportunities to educate and learn from each other across the department and importantly, with individuals throughout the Columbia University Irving Medical Center. Indeed, our educational boundaries extend well beyond CUIMC.

An example of our far-reaching educational efforts is the Columbia International Collaboration and Exchange Program. The Columbia ICE Program (Home | Columbia International Collaboration Exchange Program) partners with over 20 universities on four continents to promote the improvement of global healthcare through educational exchange. Similarly, the annual Columbia Renal Biopsy course has had an enormous global educational impact. This course has been offered for over 40 years and this past year, over 250 participants from approximately 30 U.S. states and 30 countries attended virtually.

These efforts, and numerous others, are testaments to the sustained commitment of our faculty and department to our educational mission. ◆

Best wishes,

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

Honors and Awards

Dr. Govind Bhagat Recognized as an Expertscape Expert in Celiac Disease

We are pleased to announce that Govind Bhagat, MD, professor of pathology and cell biology at CUMC and director of the hematopathology division, was recognized on the Celiac Disease Awareness Day (September 13, 2021) as an Expertscape Expert in Celiac Disease. Dr. Bhagat received this recognition for being in the top 0.24% of over twenty-one thousand published authors worldwide on Celiac Disease over the past 10 years (2011-2021). This is the second time he was recognized as an Expertscape Expert in two consecutive years. Last year, in the Blood Cancer Awareness Month (September), he was recognized as an Expertscape Expert in Peripheral T-Cell Lymphoma for being in the top 1% of scholars writing about Peripheral T-Cell Lymphoma from 2010-2020 (see our 9/29/2020 article here).

Two Pathology Faculty Members Win Early-Stage Grants to Advance Critical Cancer Research

Two Pathology faculty members were named 2020 Velocity Fellows and awarded pilot grants to support early-stage cancer research. The seed funding for the winning pilot projects stem from Velocity: Columbia's Ride to End Cancer to benefit the Herbert Irving Comprehensive Cancer Center (HICCC) at NewYork-Presbyterian/Columbia University Irving Medical Center. The two Velocity Fellows from the department of pathology and cell biology and their winning projects are as follows:

Laura Pasqualucci, MD, Professor of Pathology and Cell Biology (in the Institute of Cancer Genetics) at CUMC

"Hypermutated super-enhancers identify novel therapeutic targets in diffuse large B cell lymphoma".
Lead Investigator: Laura Pasqualucci, MD
Co-investigators: Riccardo Dalla-Favera, MD; Alberto Ciccia, PhD

Diffuse Large B-cell Lymphoma (DLBCL) is the most common, aggressive blood cancer and remains incurable in some 30% of patients. One barrier to success is the remarkable heterogeneity of these tumors, which comprise multiple subtypes reflecting in part the involvement of distinct coding-genes (i.e. genes containing the information to produce proteins). However, the non-coding portion of the DLBCL genome (~98% of all cell DNA) remains largely unexplored. Dr. Pasqualucci and colleagues discovered a pervasive mutational activity that introduces DNA changes in specific non-coding regions, known as super-enhancers and delegated to switch-on critical genes that potentially facilitate tumor development. This project aims to dissect the consequences of these mutations and identify unique weaknesses of the lymphoma cells that are dependent on mutated super-enhancers and could be used for the design of more effective targeted therapies in DLBCL.

Hee Won Yang, PhD, Assistant Professor of Pathology and Cell Biology

"Hypermutated super-enhancers identify novel therapeutic targets in diffuse large B cell lymphoma".
Lead Investigator: Hee Won Yang, PhD
Co-investigators: Gary Schwartz, MD; Hanina Hibshoosh, MD, PhD; and Minah Kim, PhD

Breast cancer is the second most common cause of death from cancer in women. Metastatic breast cancer is responsible for the vast majority of those deaths. Historically, metastatic breast cancer has rarely been curable, but recently FDA-approved cyclin dependent kinase 4 and 6 (CDK4/6) inhibitors have shown promising clinical outcomes. However, the development of resistance to CDK4/6 inhibitors has severely limited the success of these agents. Dr Yang and his team are studying mechanisms that lead to therapeutic resistance in patients with metastatic breast cancer and drug combinations that could overcome resistance.

For more details, read the whole story at the HICCC Newsroom.

Other Honors and Awards

Ibrahim Batal, MD, assistant professor of pathology and cell biology, recently won Nelson Faculty Development Award to study Genomic and Immune Predictors of Recurrent Immune-Mediated Glomerulopathy of the Kidney Allograft. Congratulations!

Simona De Michele, MD, a GI fellow in pathology and cell biology, has been granted the Google Research Credit Award. The award consists of up to 20,000 hours of Google Cloud data center usage. The credit will be used to apply modern techniques of Machine Learning to automate and improve accuracy in the scoring system of Nonalcoholic Fatty Liver Disease (activity scoring and fibrosis staging).

Staff Highlights

Joel Pichardo, manager of operations, at the 2021 NYC Marathon that took place on November 7, 2021. "This was my 8th NYC Marathon and probably the one I enjoyed the most. The crowds were incredible! NYC was so alive. It felt like a 26.2-mile block party." said Joel.

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.

FEATURED ARTICLE

Huntington's Disease: Insight into Disease Mechanisms

***Dr. James E. Goldman**, Professor of Pathology and Cell Biology at Columbia University, describes gaining more insight into disease mechanisms by comparing mouse genetic models with the human disease when it comes to Huntington's Disease.*

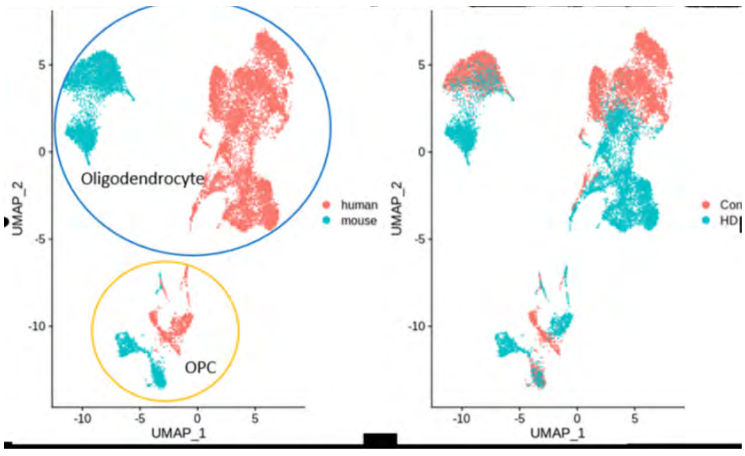
Huntington's Disease (HD), a progressive neurodegenerative disorder, is characterised by involuntary movements, often with cognitive and psychiatric manifestations. It is caused by mutations in a single gene, HTT, which can be transmitted from parent to child. Usually, HD patients have one copy of the normal HTT and one copy of the mutant HTT (mHTT), so that a child's chances of inheriting the mHTT from a parent are 50%.

In a previous Open Access Government article, two of us (Drs Osama Al Dalahmah and Goldman), describe a new technology, single nucleus RNA sequencing (snRNAseq), that has allowed us to look at the expression of genes in single-cells in HD brains. In comparing the genes that individual cells express in the HD brain to those in the brains of patients who do not have neurological disease, we found large numbers of changes. Some genes were expressed more highly, while others were expressed at much lower levels.

Huntington's Disease research

We have examined different areas of the HD brains, including an area called the striatum, deep within the cerebral hemispheres. This area is markedly affected as HD progresses, suffering a loss of nerve cells, and accounting for the movement disorder. Other areas of the HD brain are also affected, such as the cerebral cortex, the outer layer of the brain, which helps to manage cognitive and emotional functions. We have found different changes in different areas of the HD brains.

Many human genetic diseases have been modelled in mice by adding the mutated human gene or fragments of the gene that causes the disease directly into the mouse DNA. These mouse models recapitulate many aspects of disease features that occur in humans. Genetic studies are easier in mice because their lifespan is much shorter than humans and we can modulate the disease through specific genetic and chemical treatments. Mouse models are useful in investigating the pathogenesis of a disease, for looking at the evolution of the disease over time, for understanding what drives disease, and for testing therapies. Although mouse models of disease show clinical and pathological similarities to the human disease there are also often differences. This is not surprising, given the many differences between species. It is, therefore, very important to compare mouse models of diseases with their human counterparts. The snRNAseq technology has allowed us to investigate the comparison at a single-cell level. To do this, Drs Al Dalahmah and Goldman have been collaborating with Drs Leslie Thompson, Ryan Lim, and Jenny Wu at the University of California, Irvine. Dr Thompson and her group have been working with a mouse model of HD. The R6/2 mice were generated by incorporating the first part of the mutated human HD gene into the mouse DNA. This piece of the mutant HTT gene is enough to cause a progressive neurological disease in which the mice experience involuntary, jerky movements and seizures (patients with juvenile, early-onset HD often experience seizures). The mice die prematurely.



In this figure, we show the nuclei, each represented by a dot, of oligodendrocytes and immature, precursor oligodendrocytes (OPC) taken from human and mouse brains, diseased (HD) and not diseased (control, CON). Here, we look at nuclei from the caudate nucleus of humans and the striatum of the mouse, an equivalent area. Nuclei that have similar gene expression patterns are clustered together. Note that oligodendrocytes cluster separately from OPCs, and the human nuclei cluster separately from the mouse nuclei, which is to be expected. Also note that in both human and mouse, the nuclei from the HD brains cluster to a large extent separately from nuclei from the control brains, showing that gene expression patterns change significantly due to the disease. A detailed analysis of specific genes has shown us that many of the changes in the human and mouse brains are similar.

CONTINUE ON NEXT PAGE

FEATURED ARTICLE CON'T

Final remarks on HD

By using snRNAseq from our human HD brains and Dr Thompson's HD mouse brains, we have been able to directly compare the changes in gene expression in all of the different central nervous system cell types. We have found many similarities in both neurons and glial cells between human and mouse HD, although there are some differences as well. As one example, we have found similar changes in oligodendrocytes, the cells that make myelin, the fatty insulating substance that wraps around the axonal processes of neurons, allowing for rapid conduction of information through the brain. Interestingly, both radiology and autopsy studies of patients with HD have discovered abnormally low myelination in the HD brain, and studies of mouse models have found similar pathology. Thus, our studies of single-cell gene expression in human brains and this mouse model helps to illuminate the basic molecular causes that underlie the
myelination defects. Furthermore, our observations allow us to understand in-depth how this particular mouse model replicates the human disease, a comparison that is extremely important in using mice to simulate human disorders. Now that we have identified that this important cell-specific feature of the disease occurs in both mouse and the human
brain, we can use these mice to understand further how these cells become abnormal over time and test treatments that could lessen the overall disease.

IN THE MEDIA

Scientists begin to unravel the mysteries of the coronavirus and brains

Source: The Washington Post

In the coronavirus pandemic's early weeks, in neuropathology departments around the world, scientists wrestled with a question: Should they cut open the skulls of patients who died of covid-19 and extract their brains?
Autopsy staff at Columbia University in New York were hesitant. Sawing into bone creates dust, and the Centers for Disease Control and Prevention had issued a warning about the bodies of covid patients — airborne debris from autopsies could be an infectious hazard.
But as more patients were admitted and more began to die, researchers decided to "make all the efforts we could to start collecting the brain tissue," Columbia neuropathologist Peter D. Canoll said.
In March 2020, in an isolation room, the Columbia team extracted a brain from a patient who had died of severe covid-19, the illness caused by the coronavirus. During the next months, they would examine dozens more. Saw met skull elsewhere, too. In Germany, scientists autopsied brains — even though medical authorities recommended against doing that.

Read the full Washington Post story here.

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.

COVID-19 Related Publications

SINCE AUGUST 2021

A Postmortem Portrait of the Coronavirus Disease 2019 (COVID-19) Pandemic: A Large Multiinstitutional Autopsy Survey Study
Hooper JE, Padera RF, Dolhnikoff M, da Silva LFF, Duarte-Neto AN, Kapp ME, Lacy JM, Mauad T, Nascimento Saldiva PH, Rapkiewicz AV, Wolf DA, Felix JC, Benson P, de Almeida Monteiro RA, Shanes E, Gawelek KL, Marshall DA, McDonald MM, Muller W, Priemer DS, Solomon IH, Zak T, Bhattacharjee MB, Fu L, Gilbert AR, Harper HL, Litovsky S, Lomasney J, Mount SL, Reilly S, **Sekulic M**, Steffensen TS, Threlkeld KJ, Zhao B, Williamson AK.
Archives of Pathology & Laboratory Medicine

Trophoblast damage with acute and chronic intervillositis: disruption of the placental barrier by severe acute respiratory syndrome coronavirus 2
Larisa Debelenko, Igor Katsyv, Alexander M Chong, Leonore Peruyero, **Matthias Szabolcs**, Anne-Catrin Uhlemann
Human Pathology

Carbapenemase-producing Enterobacterales causing secondary infections during the COVID-19 crisis at a New York City hospital
Gomez-Simmonds A, Annavajhala MK, McConville TH, Dietz DE, Shoucri SM, Laracy JC, Rozenberg FD, Nelson B, Greendyke WG, Furuya EY, **Whittier S**, Uhlemann AC.
The Journal of Antimicrobial Chemotherapy

Identification of Immunohistochemical Reagents for In Situ Protein Expression Analysis of Coronavirus-associated Changes in Human Tissues
Szabolcs M, Sauter JL, Frosina D, Geronimo JA, Hernandez E, Selbs E, Rapkiewicz AV, Rekhtman N, Baine MK, Jäger E, Travis WD, Jungbluth AA.
Applied Immunohistochemistry & Molecular Morphology

At-Home Testing for Sexually Transmitted Infections During the COVID-19 Pandemic
Carnevale C, Richards P, Cohall R, Choe J, Zitaner J, Hall N, Cohall A, **Whittier S, Green DA**, Sobieszczyk ME, Gordon P, Zucker J.
Sextually Transmitted Disease

Third-trimester placentas of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)-positive women: histomorphology, including viral immunohistochemistry and in-situ hybridization
Smithgall MC, Liu-Jarin X, Hamele-Bena D, Cimic A, Mourad M, **Debelenko L, Chen X**.
Histopathology

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.**

Michael Miller Wins 2021 Shelanski Research Innovation Award in Pathology

We are pleased to announce that Michael Miller, MD, PhD, a postdoctoral neuropathology fellow, is the winner of the 2021 Shelanski Research Innovation Award in Pathology for his proposal titled: "Rosette-forming glioneuronal tumors (RGNT) are rare brain tumors primarily seen in children and young adults".

The Shelanski Research Innovation Award in Pathology was established in 2017 with an eye to supporting the development of innovative research ideas and concepts contributed by fellows and residents within the Department of Pathology and Cell Biology in their research projects that further our understanding of mechanisms of biology and pathophysiology of disease. So far, besides Dr. Miller, the following pathology fellows/residents have received the award:

2017 - **Osama Al Dalahmah**, for his proposal titled: ***Glial Heterogeneity in Health and Huntington's Disease***;
2018 - **Paul (Chun Chieh) Lin**, for his proposal titled: ***Deciphering Multifactorial Genetic Contributions for Motor Neuron Development***;
2020 - **Marie Smithgall**, for her proposal titled: I***nvestigation of Discrepant MMR IHC and MSI PCR Test Results for Gynecologic Cancers***
Congratulations to all of them!

More Information
Supported by gifts from the Ralph Abrams Fund (from Anatomy and Cell Biology) and the Herman Shelanski Memorial Fund, this competitive award program is designed to support the development of innovative research ideas and concepts contributed by fellows and residents within the Department of Pathology and Cell Biology. Funds are made available for Residents and Fellows in Pathology to support innovative research projects that further our understanding of mechanisms of biology and pathophysiology of disease. Applications are accepted on an open/rolling basis. Once documents are received the application is reviewed and rated by a committee of faculty and staff. Final decision is made and applicant is advised if awarded.

The award provides up to $5,000 to defray the cost for supplies and services for research projects to be conducted during the fiscal year of the award.

Applications are accepted and evaluated each fiscal year on an open/rolling basis. Interested applicants may submit as research teams or individuals, a 3-4 page (no more than 3000 words) proposal (excluding references) including background, central hypothesis, detailed specific aims, and a discussion of the expected outcome, significance, novelty, impact, and possible anticipated pitfalls to the approach. Applicants must also submit their current CV and a letter of support from their mentor(s) that provides a statement describing their support for the research and how participation and successful completion of the proposed research will be important for the career development of the applicant(s).

Please address inquiries to tl2811@cumc.columbia.edu.

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.

Rapid At-Home COVID Tests: What You Need to Know

Source: CUIMC Newsroom

FEATURED ARTICLE

Gregory J. Berry, PhD, associate professor of pathology and cell biology at CUMC, explains what rapid at-home tests can—and cannot—do to help keep us and those around us safe from COVID.

Vaccination, masking, and physical distancing remain the best bets for protecting yourself and others from COVID.

Another important tactic to prevent the spread of SARS-CoV-2 — frequent and rapid testing — is also possible with the increasing availability of over-the-counter COVID tests, making it more convenient to test at home.

What's the best way to use these tests? We spoke with Gregory J. Berry, PhD, co-director of the Clinical Microbiology Service at Columbia University Irving Medical Center/NewYork-Presbyterian and associate professor of pathology & cell biology at Columbia University Vagelos College of Physicians and Surgeons, to learn how the tests can help reduce the spread of COVID.

Is a rapid antigen at-home COVID test a good option if I think I have COVID?
Most at-home tests are antigen-based tests, which are less sensitive than laboratory-based testing. You can use these tests if you suspect you have COVID or may have been exposed to a person with COVID. If you test positive, call your health care provider immediately to discuss the next steps. It's likely you'll be told to take a more sensitive laboratory-based test, such as a PCR test, to confirm the first result. You should also socially distance so you don't expose anyone else.

Rapid antigen at-home tests are a good option because you get the results much quicker, in 15 minutes, versus one to two days for nucleic acid amplification tests like PCR, which must be processed in a laboratory.

However, home tests are less sensitive than PCR tests, which means they have a greater chance of missing an infection and giving you a false-negative result. That being said, the accuracy of some rapid antigen home tests can be slightly improved by serially performing two tests over a 24-to-36-hour period, which is how some of these antigen tests are being packaged and sold.

Also keep in mind that the home tests may not detect an individual who has been recently infected but has yet to build up enough virus to trigger a positive test. This process could take several days.

Can I use the tests to determine if I'm safe to visit family or friends?
The idea behind these tests is that they offer a quick way to verify whether or not you are infected and could potentially spread the virus to others. Even if you are fully vaccinated and have no symptoms, you can still be infected and could potentially pass the virus to others.

These tests also may be useful if you're scheduled to go into the hospital for tests or elective surgery, plan to travel, attend an event, or go to work or school.

If you get a negative result with an at-home test, it's typically thought that your probability of spreading the virus is low—for that day. But it doesn't necessarily mean you're not infected. Again, it can sometimes take several days for an infection to become detectable.

With the holidays coming up, should you get tested before visiting family?
First, we need to talk about whether it's a good idea to get together in large groups outside your regular social circle. With less-than-ideal vaccination rates and the highly infectious Delta variant, we're not out of the woods yet. It's a heck of a lot of safer than last year, before the vaccines, but the pandemic isn't over. That's not the answer people want to hear, of course.

Testing lowers the risk that you might be infected and pass the virus to others, but it doesn't eliminate that risk. I would argue that if anyone in the group is not vaccinated, that's a red flag that you shouldn't get together. Another consideration is that older or immunocompromised individuals, as well as those with chronic illnesses, are vulnerable to infection even if they are fully vaccinated. It's hard to give you more definitive answers; the science is nuanced.

But many people are going to get together for the holidays…
In which case they should get tested just before—the same day if possible—and after. Ideally, they should also wear masks and practice social distancing. I realize that's not very practical. But at least make sure the house is well-ventilated, and if the weather is good, dine outside.

Unless you've had no potential exposures to the virus in the previous 7 to 10 days, a rapid test only tells you that you're probably not infectious for that day. You may have an infection that won't be detectable until the next day or two, so you need to consider that when visiting others for multiple days.

Testing afterward will let you know if you became positive in the time period since your last test, so you would know if you posed an exposure risk to the other individuals at your gathering. If you are negative both before and after, chances are quite low that you could have personally exposed anyone.

Very importantly, a positive test after your gathering will NOT tell you whether you were exposed at the event. If you were just infected by someone at the gathering, you would not yet have enough virus to make the test positive. CDC recommendations currently state that vaccinated people should get tested 5 to 7 days after last exposure.

Is regular self-testing a substitute for not getting vaccinated?
No, it is absolutely not a substitute. Vaccination gives you an immune response to the virus, making an infection very unlikely. In the event you do get a so-called breakthrough infection, vaccination dramatically reduces the impact of the infection, making it much less likely that you'll become severely sick or infect someone else.

Testing provides no such protection. It's just going to tell you whether you've gotten infected.

Is testing necessary if you're generally healthy and fully vaccinated?
Yes. You can still get infected. If you do, you'll probably be asymptomatic or have mild symptoms, but it is still possible to pass the virus to others.

Do rapid at-home COVID tests detect the Delta variant?
Like PCR tests, rapid at-home tests also appear to detect all variants of SARS-CoV-2, including the Delta variant.

Any advice about how to take the home tests?
Each test is a bit different. It's important to read the instructions beforehand and follow them exactly, including how to swab your nostrils and the timing of each step.

But don't worry about those "brain-tickler" swabs that go deep into your nasal passages like many tests administered by health care workers. The at-home tests use nasal swabs, so you only need to insert the swab about an inch or so into your nostrils.

Where can you get rapid at-home tests, and how much do they cost?
They are available in many pharmacies and online, although there are shortages in many parts of the country. That should change in the next month or so with the Biden administration's effort to ramp up the availability of home tests. At present, they cost about $7 to $12 each. However, the price is likely to come down, making regular testing more affordable. ◆

GRANTS AWARDED (SINCE JUNE 2021)

Compiled by Renee Peele, Senior Grants Manager

PI	Sponsor	Title
Edmund Au, PhD	National Institute of Neurological Disorders and Stroke	Studying the Molecular Regulation of MGE Projection Neuron Identity by St18
Francesca Bartolini, PhD	National Institute on Aging (Renewal)	Pathogenic roles for microtubule stabilization pathways in Alzheimer's disease
Francesca Bartolini, PhD	TIGER – Taub Institute Grants for Emerging Research (Internal)	Exploring the Impact of Tubulin Hyperacetylation on Mitochondria Dynamics and Presynaptic Function in Parkinson's Disease
Ibrahim Batal, MD	Nelson Family Transplant Development Award (internal through Department of Surgery)	Genomic and immune predictors of recurrent immune-mediated glomerulopathy of the kidney allograft
Alex Chavez, MD, PhD	National Human Genome Research Institute	Protein tagging at scale to enable functional genomic studies
Eunhee Choi, PhD	National Institute of General Medical Sciences	Investigation of the role of insulin receptor in chromosome stability
Catherine Clelland, PhD	National Institute on Aging	Tetrahydrobiopterin Effects on Cognitive Function in Alzheimer's Disease: Biochemical, Molecular and Cognitive Analysis
Crystal Colon Ortiz (Carol Troy's Lab)	National Institute of Neurological Disorders and Stroke	Vascular-Glial Signaling in Neurovascular Injury
Wei Gu, PhD	National Cancer Institute	p53 acetylation in ferroptosis and tumor suppression
Wei Gu, PhD	National Cancer Institute	Novel small molecule USP7 Inhibitors for p53 activation and cancer therapy
Gunnar Hargus, MD, PhD	TIGER – Taub Institute Grants for Emerging Research (Internal)	Ferroptosis in tauopathies – a study on cell autonomy using patient-derived stem cells and postmortem brain tissue for single cell analysis
Minah Kim, PhD	Neuroendocrine Tumor Research Foundation	Targeting angiopoietin-2 to improve ICI therapy efficacy in pNET metastasis

GRANTS AWARDED (SINCE JUNE 2021)

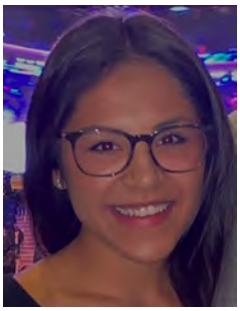
Compiled by Renee Peele, Senior Grants Manager

PI	Sponsor	Title
Minah Kim, PhD	TIGER – Taub Institute Grants for Emerging Research (Internal)	The title for the TIGER award is "Angiopoietin-2 regulation of compromised BBB integrity in Alzheimer's disease
Laura Beth McIntire, PhD	National Institute on Aging	Acyl chain remodeling and regional lipid dysregulation in Alzheimer's disease
Natura Myeku, PhD	National Institute on Aging	The Role of Immunoproteasome Function in Alzheimer's Disease and Aging
Tal Nuriel, PhD	National Institute on Aging	Elucidating the Temporal, Spatial and Cellular Effects of Differential APOE Isoform Expression
Teresa Palomero, PhD	National Cancer Institute	Role and Mechanisms of VAV1 alterations in Peripheral T-cell Lymphomas
Tulsi Patel (Dr. Wichterle's Lab)	National Institute of Neurological Disorders and Stroke	Defining motor neuron diversity from embryo to adulthood and generating tools for in vivo and in vitro access
Markus Siegelin, MD	National Institute of Neurological Disorders and Stroke	HDAC inhibitors reverse the Warburg Effect and Elicit Metabolic Vulnerabilities in Model Systems of Glioblastoma
Andrew Teich, MD	National Institute on Aging	Molecular Scavenger Engineering to Treat Visceral Obesity
Andrew Teich, MD	National Institute on Aging (Administrative Supplement to existing R01 grant)	A Translational Bioinformatics Approach to Rescuing Synaptic and Neurophysiologic Dysfunction in Alzheimer's Disease
Clarissa Waites, PhD	TIGER – Taub Institute Grants for Emerging Research (Internal)	Molecular and Functional Characterization of Exosomes Derived from the nSMase/Ceramide Synthesis Pathway
Hee Won Yang, PhD	Velocity Fellows Award - Internal grant through HICC	Deciphering mechanisms of CDK4/6-inhibitor resistance to determine new breast cancer therapeutic opportunities

Pathology-in-Picture

The Eldad Hod lab had a pumpkin carving contest for Halloween for the scariest pumpkin (scary to all scientists at least). P=0.051, this won't make sense to non-scientists, but all scientists will understand why this is the scariest pumpkin.

New Staff Promotions



Andrea Alvarez
Gross Room Manager, Anatomic Pathology

Congratulations to **Andrea Alvarez** on her new role as our first Gross Room Manager. In this role, she will be responsible for providing administrative leadership, technical oversight, and employee development of the Gross Room staff, which includes nine Pathology Assistants (PA's) and one technical support staff member.

In addition to mentoring the new PA's, Andrea will also have a large role in the training of new residents. Andrea joined our team in the fall of 2019, after graduating from Loma Linda University's Pathologists' Assistant program. Over the past two years, Andrea has assisted senior management with an assortment of managerial tasks. Most recently, when the department purchased a new Kubtec specimen imaging system for the Gross Room, Andrea coordinated the deliver, setup, validation, and training of staff. She drafted several pertinent standard operating procedures for safe utilization, proper shutdown and recalibration, and maintenance procedures.

Andrea can be reached via e-mail at aa4566@cumc.columbia.edu.

Leniza Munoz
Regulatory Compliance Coordinator, Anatomic Pathology

Congratulation to **Leniza Munoz** on her new role as the Regulatory Compliance Coordinator for Anatomic Pathology. In this role, Leniza will be responsible for the management of the Quality Management System ensuring compliance with numerous regulatory agencies, as standards change and evolve. She will provide direction in the development and implementation of new workflows, policies and procedures, working with the managers to ensure regulatory requirements are met.

Leniza joined our department in the spring of 2004 as an autopsy technician. Over the past 17 years, Leniza has learned on the job to gross specimens, more recently qualifying for a New York State Department of Education Pathologist's Assistant license. In the past four years, Leniza has played a critical role on our Anatomic Pathology compliance team, helping to lead us through two successful New York State and CAP inspection cycles. She will now coordinate the team.

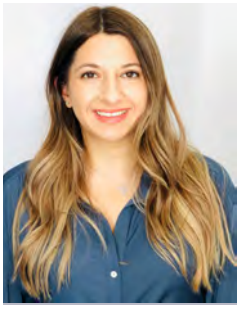
Lenia can be reached via email at lam2125@cumc.columbia.edu or via phone at (212) 305-6239.

Mabel Rosario
Application Support Manager, Anatomic Pathology

We are pleased to announce **Mabel Rosario's** new role as Application Support Manager. In this role, Mabel will be responsible for the management of CoPath at three campuses: Columbia University Irving Medical Center, NYP-Lawrence Hospital, and NYP-Hudson Valley Hospital. Mabel will oversee the development, validation, and implementation of new systems and technology, and will supervise two Laboratory Information System (LIS) application support staff. In addition to managing the LIS team, Mabel will be involved in management level discussions regarding Anatomic Pathology's future goals, productivity, and day-to-day management. Mabel joined our team in 2008 as an Administrative Clerk accessioning gynecologic surgical specimens. In 2012, she was promoted to the role of Application Support Specialist. Over the past 13 years, Mabel has demonstrated a remarkable ability to master our CoPath LIS system and to integrate CoPath with Epic at multiple NYP sites, as well as the individual EMR's of our outreach clients. She has been instrumental in the testing and validation of Epic. This promotion is a recognition of her longstanding and significant contributions.

Mabel can be reached via email at mmr2172@cumc.columbia.edu or via phone at (212) 305-1425.

New Staff Promotions



Maria Kouimanis
Finance Manager, Pathology Finance

Please join us in congratulating Maria Kouimanis on her new position as Finance Manager. Maria is a professional with a master's degree in Non-Profit Management from Columbia University and many years of experience in healthcare Budget & Finance. In this role, Maria will be responsible for providing comprehensive financial management and accounting for the Department of Pathology and Cell Biology, will have a close working relationship with the Research, Procurement and Revenue Cycle Managers, as well as department leadership. Maria joined our team in the fall of 2017 as a Financial Analyst, and was most recently promoted to the role of Senior Financial Analyst.

Over the past 4 years, Maria has excelled in financial duties such as creating P&L statements for all labs; cash/EPIC reconciliation; service invoicing; FFS accruals and monthly, quarterly and year end close. We wish Maria all the best as she takes on this new role.

Maria can be reached via e-mail at mk3255@cumc.columbia.edu or via phone at (212) 342-2202.

Human Resources

Department to Launch Pathology and Cell Biology Employee Referral Bonus Pilot Program

The department will soon be launching the Pathology and Cell Biology Employee Referral Bonus Pilot Program. The objective of the program is to widen our applicant pool for hard-to-fill positions and reward employees who support our department's recruitment initiatives. Hard-to-fill positions were determined by the following metrics:

- time-to-fill
- time from posting to time finalist's application was submitted
- Number of open vacancies

For our launch, we are piloting with one role, the lab technologist (T8) positions in our AP lab. All staff within Pathology and Cell Biology may participate except for:

- Any employees involved in the decision to hire and/or employees who will manage or supervise the referral;
- Human Resources personnel; temporary staff; faculty;
- Former employees.

Employees who refer candidates who convert to employees will be eligible to receive two $500 payments.

Please see the following flyers for more details:

COLUMBIA

Pathology & Cell Biology
Employee Referral Bonus Pilot Program

1 **Know a qualified candidate for a Laboratory Technologist (Anatomic Pathology) open role:**

Are you?
- An active, regular employee at Pathology & Cell Biology
  ***Exceptions apply

Is the referred applicant?
- Not affiliated with CU
- Meets the essential qualifications for the role
- A person with high integrity, effective communication, and a drive to provide quality service.

2 **Ask qualified candidates to apply via the Careers at Columbia website: https://careers.columbia.edu/. Don't forget to give them the TalentLink posting requisition number for the role.**

3 **Complete an employee referral form.**

4 **Become eligible for monetary bonuses totaling up to $1,000.**

For more information on program details including the full list of eligibility requirements and exceptions, contact Pathology & Cell Biology Human Resources at path_hr@cumc.columbia.edu.

COLUMBIA

Pathology & Cell Biology

Open Positions Announcement

TO APPLY: You must visit Careers at Columbia website online: opportunities.columbia.edu and search open positions using the search bar "Search for Jobs" located at the right hand side of the page. You will need to create your Master Application in order to apply to these positions.

Please keep in mind:
1.It is your responsibility to ensure that your application is updated and states that you are an internal candidate. Failure to update your application may result in your application not being considered.
2.Make sure you apply for the position(s) you want to be considered. Please make a note of the requisition number and schedule from the posting so that you apply for the correct position.

Position Title	Requisition #	Date Posted	Unit	Eligible for Employee Referral Bonus Pilot Program?

Know a qualified candidate? Submit an employee referral form.

New Graduate Students

Albert Hung

Albert Hung graduated from UC Berkeley, this past May with a major in Molecular and Cell Biology. Albert has worked in a number of laboratories at UC Berkeley and UCSF, as well as at Merck. Most of his experience is in diabetes research. From March 2020 until he came back to the US to start graduate school, he worked at Academia Sinica in Taipei, where he stayed throughout the Covid-19 pandemic, while finishing his last semester at UC Berkeley by taking his classes remotely. Albert plays the cello. He is interested in disease related research and is doing his first rotation with Dr. Eunhee Choi.

Joanna Kopko

Joanna Kopko graduated from Stevens Institute of Technology in June 2021 with a BS in Chemical Biology. Joanna began her research career in a biochemistry/biophysics laboratory at Stevens studying cell proliferation. She had planned to do a research internship at the University of Illinois designing new antibiotics, but the internship was cancelled due to Covid-19 restrictions. Instead, she was able to get a virtual internship in the School of Pharmacy at Rutgers. Joanna is broadly interested in translational research and is also doing her first rotation with Dr. Eunhee Choi.

Kathryn Lee

Kathryn Lee (Kat) graduated from Georgetown University in 2019 with a BS in Biology. Kat had a variety of research experiences as an undergraduate, but due to her interest in cancer biology applied to an NCI post-baccalaureate program. At the NCI, she investigated the mechanisms that regulate the stages of carcinogenesis that lead to malignant lesions in oral cancer. Kat is broadly interested in translational research with an emphasis on neural tumors. She is doing her first rotation in Dr. Peter Canoll's laboratory.

New Graduate Students

Sam Levy

Sam Levy graduated from Seattle University College of Science and Engineering with a BS in Cell and Molecular Biology. He did research with an ecologist as an undergraduate, and after graduation, he spent three years in the Department of Neurological Surgery at the University of Washington, where he rapidly rose from Research Analyst to Research Scientist 2, focusing on molecular biology, genetics, clinical research and bioinformatics. Sam is doing his first rotation with Dr. Harris Wang.

Tain Luquez

Tain Luquez graduated from the Pontifical Xavierian University in Bogotá, Colombia with a BS in Biology. Following graduation, Tain worked as a research assistant in a Computational and Structural Biochemistry laboratory at the Pontifical Xavierian University, where he designed and coordinated a project to explore the transcriptomic response of astrocytes to palmitic acid, the most abundant saturated fatty acid in humans. Subsequently, he worked in the laboratory of Dr. Leroy Hood and Dr. Nathan Price at the Institute for Systems Biology in Seattle, where he studied lipid metabolism and immune function in Alzheimer's Disease. Tain is continuing his interested in this area and is doing a rotation with Dr. Vilas Menon.

Filko Prugo

Filko Prugo came to be a graduate student in our program through a rather circuitous route. After graduating with a BS in Chemistry from York University, he obtained a JD, also from York University. He has worked as an attorney for a few years in Canada and subsequently in the United States, where he became one of the country's leading biopharmaceutical patent litigators. He was the chair of the Life Science Intellectual Property Ligation group at Ropes & Gray. He obtained a MSc in Biotechnology from Johns Hopkins University and decided to pursue a PhD studying cancer biology. He is doing his first rotation in the laboratory of Dr. Ken Olive.

Graduate Program

Recent Theses Defended

Adrienne Cohen, David Owens lab, October 26
"Carabin is a negative regulator of CD8 T-cellmediated anti-tumor immunity"

Aleksandar Obradovic, Andrea Califano lab, October 26
"*Discovering Master Regulators of Single-Cell Transcriptional States in the Tumor Immune Microenvironment to Reveal Immuno-Therapeutic Targets and Synergistic Treatments*"

Nicholas Giangreco, Nicholas Tatonetti lab, October 26
"Mind the developmental gap: Identifying adverse drug effects across childhood to evaluate biological mechanisms from growth and development"

Manny Tamargo, Vunjak-Novakovic lab, October 21
"Matured engineered human cardiac tissues to study autoimmune myocarditis"

Benjamin Hobson, Sims and Sulzer labs, September 22
"Subcellular Molecular Profiling of Midbrain Dopamine Neurons"

Andrew Ressler, Goldstein & Boland labs, September 8
"CDX2 as a predictive biomarker of drug response in colon cancer"

Elise Flynn, Lappalainen lab, September 3
"Epitranscriptomic Alterations in Alzheimer's Disease: The Role of MicroRNA Methylation in the Regulation of Tau Proteostasis"

Timothy Zhong, Acharyya lab, August 17
"Systemic regulation of cancer metastasis"

Upcoming Thesis Defenses

Felix Wu, Dalerba Lab, Molly Przeworski Lab,
December 2, 1:00 PM, Fairchild Building, Morningside Campus, Rooms 602-606
"Scouring genomes and evolutionary trees for the origins of sex-biased germline mutation"

Sanjid Shahriar, Agalliu and Menon Labs,
December 6, 1:00 PM, Neurological Institute Alumni Auditorium
"Identifying the origin and mechanisms of pathological angiogenesis in neuroinflammatory diseases"

Maya Poon, Donna Farber Lab,
December 8, 10:00 AM, VP&S Building Amphitheater 7
"Tissue-wide Dynamics of Human Anti-viral Immunity"

Samuel Resnick, Alejandro Chavez Lab,
December 15, 2021, 2:00 PM via Zoom - https://tinyurl.com/y5x34srn
Passcode: 089699
"Multiplexed high throughput screening identifies broadly active rescuers of proteotoxicity"

Paul Dellorusso, Emmanuelle Passegue Lab,
December 17, 2021, 2:00 PM, Vagelos Education Center, Room 4-401
"Autophagy and Hematopoietic Stem Cell Potential During Aging"

Jordan Metz, Peter Sims Lab,
December 2, 1:00 PM, Fairchild Building, Morningside Campus, Rooms 602-606
"Systems-Level Approaches to Understanding Protein Synthesis"

Alan Chramiec, G. Vunjak-Novakovic Lab,
December 7, 4:00 PM, Hammer Health Science Building, LL204
"Inter-Organ: A Novel Multi-Tissue System for Preclinical Drug Evaluation and Recapitulation of Metastasis"

Julie Yi, Richard Vallee Lab,
December 14, 2021, 12:30 PM, ICRC Building, 8-816
"Characterization of pathogenic BicD2 mutations in vitro and in vivo"

Nikolai Von Krusenstiern, Brent Stockwell Lab,
December 16, 2021, 1:15 PM, Havemeyer Building – Morningside, Room 209
"Lipids on fire: Identifying and targeting subcellular membranes that drive ferroptosis"

Yoo Jin (Eunice) Lee, Angela Christiano Lab,
December 21, 2021, 10:00 AM via Zoom - https://tinyurl.com/y3vwxtwr
Passcode: 027840
"Characterization of pathogenic BicD2 mutations in vitro and in vivo"

Campus News

Program Between Columbia and United Negro College Fund Links HBCUs and CUIMC

Source: CUIMC Newsroom

Columbia University Irving Medical Center's Herbert Irving Comprehensive Cancer Center (HICCC) and the United Negro College Fund (UNCF) have created the Ernest E. Just Biomedical Research Scholars @ Columbia, a groundbreaking program that will provide college and graduate students at historically Black colleges, universities, and medical schools (HBCUs) with research opportunities and access to mentors at Columbia University Irving Medical Center (CUIMC) and the HICCC. In turn, faculty at CUIMC will have access to a diverse and talented cohort of students to mentor, and faculty will collaborate on research projects ranging from epidemiological studies to new ideas for cancer therapy.

The program aims to increase the number of Black researchers in tenure-track positions at Columbia and other top-tier biomedical research institutions in the country by providing a critical link between young scientists in the pipeline at HBCUs and established researchers at Columbia University.

"The Ernest E. Just Biomedical Research Scholars Program is an opportunity to build mutually beneficial relationships between researchers at Columbia and HBCUs," says Anil Rustgi, MD, interim executive vice president and dean of the Faculties of Health Sciences and Medicine at Columbia University Irving Medical Center and director of the HICCC. "The most innovative research comes when scientists from all backgrounds are represented and have a voice."

Today, Black Americans represent approximately 13% of the U.S. population but less than 2% of tenure-track faculty at top-tier research institutions and only 4% of doctorates in life sciences.

"We are excited about this first-of-its-kind initiative that establishes a link between HBCUs and majority research institutions and centers like Columbia University," says Chad Womack, PhD, senior director of STEM Initiatives and the founding director of the Ernest E. Just Life Science Initiative at UNCF. "This initiative leverages the phenomenal legacy of Dr. Ernest E. Just, a preeminent Black scientist who blazed a trail for other African Americans pursuing careers in the life sciences. The program with Columbia also represents an effort to address historical inequities and remove barriers that have kept many Black scientists from achieving their highest aspirations in life science research at top-tier research institutions."

UNCF is a national nonprofit educational organization that supports HBCUs and helps Black Americans enter and complete college.

"Being a successful scientist is not just about doing science. Having access to experienced scientists as mentors and being connected to a vibrant research network are key to successfully navigating the academic world, attaining a tenured position, and thriving professionally," Womack adds.

The Ernest E. Just Biomedical Research Scholars @ Columbia program developed from discussions about how students at HBCUs can connect with scientists at top-tier research institutions such as CUIMC. In addition to Womack and Rustgi, those discussions included Kevin Gardner, MD, PhD, senior vice chair of pathology & cell biology at Columbia University Vagelos College of Physicians and Surgeons, and Sandra Harris-Hooker, PhD, senior vice president for external affairs and innovation at Morehouse School of Medicine.

"We are very excited about this program, which will grow over time," Rustgi says. "I am grateful to Dr. Womack and UNCF, Dr. Gardner, Dr. Harris-Hooker, and our HICCC administration for collectively working with me."

"More than ever, we need diverse voices, life experiences, skills, and knowledge in life science research," says Harris-Hooker. "Developing and mentoring a pipeline of professionals through a program such as the Ernest E. Just Biomedical Research Scholars @ Columbia program has the potential to help solve some of our most daunting problems, such as health equity, and unlock new discoveries in life science research."

The program began this past summer with 12 students from Morehouse School of Medicine who were paired with a faculty researcher at Columbia University's Vagelos College of Physicians and Surgeons, Mailman School of Public Health, or School of Nursing depending on the student's research interests. Students were selected by UNCF and Morehouse School of Medicine and conducted their research with CUIMC faculty remotely in this initial cycle.

"When my medical school told me about the opportunity, I was rightfully excited as it means an opportunity to work with some of the world's leading experts," says John Degraft Hanson, an Ernest E. Just Scholar who is a second-year medical student at Morehouse School of Medicine.

Degraft Hanson is a graduate of the University of Florida and decided to pursue a career in medicine because of his concern for the health care inequity in American society that has left many people in want. He worked with Ana Emiliano, MD, assistant professor of medicine at Columbia University Vagelos College of Physicians and Surgeons, as his mentor, analyzing images to investigate how various bariatric surgeries affect the body.

Next year the program is anticipated to expand to students at other HBCU medical schools and undergraduate institutions. Students will work in New York City with their mentors. All students are provided a stipend as part of the program, which is funded jointly by the UNCF Ernest E. Just Life Science Initiative and the HICCC. ◆