Fall 2022

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Partners in Medicine

GABI PORTER

A Revolution in Research
Weill Cornell Medicine Advances Scientific Discovery

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A Revolution in Research
Weill Cornell Medicine Advances Scientific Discovery

ROGER TULLY

Many extraordinary medical achievements of the past decade have changed countless lives. Perhaps you know a friend who has received immunotherapy for a specific cancer previously deemed untreatable, or you have a family member who has received life-changing robotic surgery and is left without even a noticeable scar. Each of us knows someone who has benefited from groundbreaking scientific discoveries. At Weill Cornell Medicine, we are here to empower your care with the latest advances in scientific research and are committed to enhancing our research program to ensure the best possible treatments for our patients.

We are on the precipice of a vital transformation in biomedical research. Incredible innovations in genomics, precision medicine and computational biology promise unheard of potential to diagnose, treat and perhaps even prevent certain cancers, metabolic disorders, pediatric illnesses and a host of other formidable diseases.

Our world-class physicians and scientists recognize that the moment to expand our research enterprise and revolutionize the medical landscape is now – and we have a robust vision that is embodied in the *We're Changing Medicine* campaign. Research has long been a cornerstone of our success as one of the nation's leading academic medical centers. Throughout Weill Cornell Medicine's history, our researchers have made groundbreaking medical and research advances from the Pap test for cervical cancer in the 1940s, to the first "double-blind" controlled experiment to test the efficacy of drugs, and the synthesis of penicillin and of the hormone oxytocin that is crucial to childbirth. These discoveries have had a monumental impact on patients around the world. And we have not slowed down.

> We incorporate the latest genomic technologies and computational methods and use state-of-the-art tools to **solve some of the biggest scientific questions of our time.**

Today, our multidisciplinary team of researchers continues to work tirelessly to push the boundaries of scientific discovery and translate laboratory discoveries into innovative treatments and therapies for patients. We incorporate the latest genomic technologies and computational methods and use state-of-the-art tools to solve some of the biggest scientific questions of our time. Recent research areas at Weill Cornell Medicine include patient-centered studies such as: cardiovascular health and atrial fibrillation, cancer development and immunotherapy, the important role of gut bacteria in the body, identifying new treatment targets for

Alzheimer's disease and other forms of dementia and, most recently, the long and short-term implications of COVID-19. We currently have more than 524 clinical trials, 87 biobanks and registries, and 1,066 ongoing research studies.

A Foundation of Excellence in Research and Clinical Care

Over the past 25 years, the researchers at Weill Cornell Medicine have laid a foundation for future exponential growth of our institution and positioned us as a visionary leader in medicine. During this time, many new centers and institutes have been formed (see sidebar), and we now have more than 40 organizational entities engaged in research aimed to create lasting change in scientific discovery and patient care. In just the last five years alone, our institution has witnessed explosive growth of its scientific expertise, with 450 principal investigators at the institution, including 279 supported with National Institutes of Health (NIH) funding.

Weill Cornell Medicine now has an ambitious plan to change medicine, built on decades of success. "We will make **significant investments to recruit and retain leading investigators from around the world, develop advanced technology for precision health and expand state-of-the-art laboratory spaces across disease areas,"** says Dr. Hugh Hemmings, senior associate dean for research. "In addition, we will continue to **expand our clinical research programs**, a critical tool in bringing more treatments to our patients as quickly as possible."

Investments in our research enterprise will also help drive new and more effective ways to prevent and treat disease, address disparities in the communities we serve, enable patient access to cutting-edge research, and support our education mission for current and future clinical researchers.

Clinical Research Expansion and Precision Health

Our team of clinical researchers at the Englander Institute for Precision Medicine, and throughout our institution, are working to seamlessly bring together diverse streams of a patient's vital information history, spanning genomics, social determinants of health, environmental exposures, electronic health records and wearable device data. Our goal within the next decade is to make these strategies a routine part of health care – furthering our quest to dramatically improve the wellbeing of patients around the world.

ROGER TULLY

Key research institutes and centers established during the past 25 years:

- **Ansary Stem Cell Institute**
- **Helen and Robert Appel Alzheimer's Disease Research Institute**
- **Cardiovascular Research Institute**
- **Gale and Ira Drukier Institute for Children's Health**
- **Englander Institute for Precision Medicine**
- **Feil Family Brain and Mind Research Institute**
- **Friedman Center for Nutrition and Inflammation**
- **Hartman Institute for Therapeutic Organ Regeneration**
- **Sandra and Edward Meyer Cancer Center**
- **Jill Roberts Institute for Research in Inflammatory Bowel Disease**
- **Joan and Sanford I. Weill Center for Metabolic Health**

Over the last 20 years, our physician-scientists have made many important breakthroughs in the development – and use – of technology. Expanded technology gives us the ability to use our patients' unique genes, social environments and lifestyle choices to formulate better prevention and treatment strategies. Our diverse patient base enables us to do what few other institutions can: create individual treatment strategies that are more effective and curative.

"By investing in cutting-edge technology and new biomedical approaches – from genomics and data science to artificial intelligence and machine learning – we can illuminate the precise origins of disease and the most

(continued on page 4)

optimal ways to personalize treatments," says Dr. Augustine M.K. Choi, the Stephen and Suzanne Weiss Dean of Weill Cornell Medicine. "Our scientists harness advanced research techniques that explore the human genome, and include observations about how demographics, social influences and lifestyle choices influence well-being. With this work, we can create a robust precision health enterprise that will holistically evaluate the individual factors that underlie disease development."

ROGER TULLY

By understanding the drivers of disease, Weill Cornell Medicine physicians and scientists, including those based in the Meyer Cancer Center and the Englander Institute for Precision Medicine, will be able to discern each person's individual health risk, create personalized prevention strategies and help avert the occurrence of severe disease. Further investments in regenerative medicine and cellular therapeutics will rapidly accelerate the discovery of new treatments and therapies, enabling patients to benefit from the latest medicines should they need intervention. Data generated from precision health approaches will enable investigators to spot patterns and trends – and potentially uncover the answers to the most vexing health care questions.

Building the Future of Medicine

"A critical part of our commitment to building our research is a robust infrastructure that enables game-changing breakthroughs that impact the lives of the people and communities we serve," says Dean Choi.

Over the past two decades, we have greatly expanded our laboratory space and enhanced our technology to meet the changing needs of medicine and health care. In that time, we erected the award-winning 330,000 square foot Weill Greenberg Center to meet our ever-growing clinical needs and established the state-of-the-art Belfer Research Building, with 13 floors of laboratories and collaborative research hubs to help speed newly discovered therapies to patients.

In the next decade, we plan to build critical, new, cutting-edge research space as well as expand on existing lab spaces at both the Belfer Research Building and 1300 York Avenue.

Our entire spectrum of foundational, translational and clinical research at Weill Cornell Medicine will be supported through these renovations of existing lab spaces and the creation of new labs that span disease areas and support research in many of our departments, divisions, institutes and centers. Providing the latest, most advanced research and care means having the facilities and spaces to match.

Behind every life-saving treatment is a robust continuum of research rooted in the foundational sciences, expanded in translational research and rigorously tested through clinical research and clinical trials.

- **Foundational research** helps scientists understand living systems and life processes, which leads to better ways to predict, prevent, diagnose and treat disease.
- **Translational research** takes discoveries made in the laboratory, in the clinic or out in the field and transforms them into new treatments and approaches to medical care.
- **Clinical research** looks at better ways to prevent disorders by studying the impact of medicines, vitamins, vaccines and lifestyle changes – both on individual patients and within larger populations.

The *We're Changing Medicine* Campaign

When we launched our *We're Changing Medicine* campaign in 2021, we did so with a powerful goal – to transform the medical landscape globally. The $1.5 billion fundraising campaign – the largest and most ambitious in Weill Cornell Medicine's long and accomplished history – has created a specific blueprint to fuel remarkable advances across our mission, providing unparalleled clinical care, superb medical education and, especially, research advances that will re-imagine medicine going forward. Our vision requires a significant expansion of research in cancer, brain health, cardiometabolic research, children's health, lifespan, and women's health – and we are well on our way.

Dean's **Corner**

A Message from Dean Augustine M.K. Choi

"Through your partnership, **we have already made great strides in each of our priority areas**, and we will continue to provide and expand our institution's innovative and comprehensive care," says Dean Choi.

As dean of Weill Cornell Medicine, I have been fortunate to meet with many of our donors to learn what inspires their incredible philanthropy. Many are moved to give because they are grateful for the care they have received from their remarkable Weill Cornell Medicine physicians; they've learned about a research program that is pioneering in an emerging field; or they feel passionate about supporting a specific student scholarship program. Whatever their inspiration, all of our donors come to us with a fervent commitment to our institution and simply want to help us meet some of our greatest needs. There are so many different and important reasons to give. In every instance, with every vital gift, we are incredibly grateful for this generosity.

Weill Cornell Medicine is recognized as a formidable powerhouse in academic medicine because of the ongoing support of our friends and donors. Our *Partners in Medicine* are helping shape future health-care leaders, drive groundbreaking science and research, and provide world-class care to our patients. Through your partnership, we have already made great strides in each of our priority areas, and we will continue to provide and expand our institution's innovative and comprehensive care.

The *We're Changing Medicine* campaign is more than just a critical philanthropic effort for our institution: It is an *essential* evolution, designed to meet the needs of our ever-changing health-care system with forward-thinking determination. Thank you for joining us in this visionary movement.

With gratitude,

Augustine M.K. Choi, M.D.
Stephen and Suzanne Weiss Dean, Weill Cornell Medicine
Provost for Medical Affairs, Cornell University

Dr. Rahul Sharma, chairman of the Department of Emergency Medicine, speaks at a *Partners in Medicine* event.

STUDIO BROOKE

Leading the Conversation on Healthcare

While the health-care landscape continues to change and evolve, one thing remains constant: At Weill Cornell Medicine, we are here for you and your family. We are committed to providing you with world-class care and connecting you with virtual educational opportunities, featuring the most up-to-date medical science advances. As our *Partners in Medicine*, we want you to be the first to hear about these groundbreaking advances in health care, and learn how we're changing medicine every day.

From informational webinars, to podcasts and interactive online panels with leading scientific experts, you have a variety of ways to keep abreast of current academic medicine and to stay connected with Weill Cornell Medicine. Below is a snapshot of some of our recent and upcoming educational opportunities.

Plan Well, Live Well Webinars

This series of educational webinars offers valuable perspectives from personal, financial and estate planning experts and members of the Weill Cornell Medicine Professional Advisory Council. You will hear how to build a more stable financial future, supplement retirement income, provide more for heirs and enhance the impact of your giving. The webinars, which include live Q&A sessions with the presenters, are sponsored by the Lewis Atterbury Stimson Society. The Stimson Society is Weill Cornell Medicine's planned giving recognition society designed to honor the distinguished community of alumni, faculty, friends, patients and staff who have included Weill Cornell Medicine as a beneficiary in their financial or estate plans.

Please save the date for the upcoming webinar:
November 15th
Essential Estate Planning Strategies: What You Need to Know
Additional webinars will take place in February, April and June 2023.

Spine Time Webinars

Spine Time Webinars are a series of online seminars designed to help patients and their doctors better understand what causes back and neck pain, which conditions can develop over time, and treatment options that may be available. During each session, one of the Weill Cornell Medicine Center for Comprehensive Spine Care co-directors hosts a lively and thoughtful discussion with spine specialists from different disciplines. The doctors discuss back and neck conditions from the perspectives of pain management, neurology, rehabilitation medicine and neurosurgery. The sessions are conducted every other Wednesday at 5:00 PM, and conducted on Zoom.

Upcoming sessions will include topics such as:

- Medication for back pain
- Fractures
- Demystifying physical therapy – what's the best modality for you?
- Spine Bake-Off - cooking for your spine health
- Aging Well
- Integrative Health – such as mindfulness and yoga for better spine health
- Music for spine health
- Basics in diagnosing and treating back pain
- After Your Surgery: Post-operative spine care (wound care, healing)

WEILL CORNELL MEDICINE ARCHIVE

The 2023 Heberden Society Lecture Series

Supported by the Office of the Dean, this free lecture series covers a broad range of topics and promotes interest in the history of medicine.

Wangui Muigai, Ph.D.
Assistant Professor, African and African American Studies and History, Brandeis University
Infant Mortality, Race, and the American Roots of a Health Inequality
January 18th, 5:00 PM

Naomi Rogers, Ph.D.
Professor of the History of Medicine and of History, Yale University
Health Activism and Community Control: American Medicine in the 1960s and 1970s
March 2nd, 5:00 PM

Jaipreet Virdi, Ph.D.
Associate Professor, Department of History, University of Delaware
Hearing Happiness: Deafness Cures in History
April 26th, 5:00 PM

Children's Health Discovery Panel

Body Positivity: Nutrition, Wellness and Sleep
Panelists: Dr. Jane Chang, Dr. Corinne Catarozoli and Dr. Steven Rosenblatt
Moderator: Dr. Susan B. Bostwick
November 17, 2022, 10:00-11:00 PM
In person at the Belfer Research Building, 2nd floor, with the option to stream online.

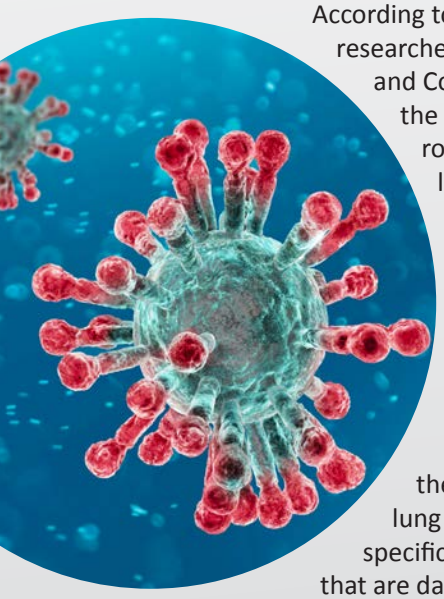
For more information about any of these topics, or to receive details on how to see recordings of past events, please contact Lorelei Schroeter at las2026@med.cornell.edu

COVID-19 and Emerging Health Issues

Weill Cornell Medicine has been on the vanguard of cutting-edge research and world-class patient care for those with COVID-19 since the beginning of the pandemic. Our extensive experience with COVID-19 has only further enhanced our understanding of this illness and its impact on individuals and families across the globe. In addition, this experience has strengthened our ability to tackle any emerging health issues that we will face in the future. Our research on COVID-19 is broad-based and includes work in disease prevention and vaccine development; predicting outbreaks before they occur; developing new ways to test for infection; creating and using new models to study disease and develop treatments; and anticipating and establishing changes in clinical care. See a few recent examples of this critical work below.

Old Drug May Have New Trick: Protecting Against Lung Injury

An FDA-approved drug that has been in clinical use for more than 70 years may protect against lung injury and the risk of blood clots in severe COVID-19 and other disorders that cause immune-mediated damage to the lungs.



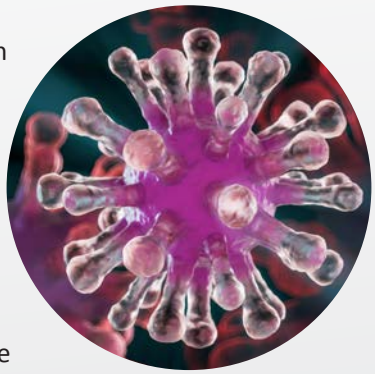
According to a preclinical study from researchers at Weill Cornell Medicine and Cold Spring Harbor Laboratory, the drug disulfiram protected rodents from immune-mediated lung injury in two separate models of this type of injury: infection with the SARS-CoV-2 coronavirus that causes COVID-19, and a lung failure syndrome called TRALI that in rare cases occurs after blood transfusion.

"As we learn more about the underlying biology of these lung injuries, we may be able to specifically target the processes that are damaging the lung tissue," says senior co-author Dr. Robert Schwartz, an associate professor of medicine in the Division of Gastroenterology and Hepatology at Weill Cornell Medicine.

Both types of lung injury are now known to be driven in part by immune cells' formation of web-like structures called neutrophil extracellular traps, or NETs. These can trap and kill infectious organisms, but can also be harmful to lung tissue and blood vessels, causing the accumulation of fluid in the lungs (edema) and promoting the development of blood clots. Disulfiram blocks one of the steps in NETs formation.

"Currently there aren't any good treatment options for COVID-related lung injury, so disulfiram appears to be worth investigating further in this regard, particularly in severe COVID-19 patients," Dr. Schwartz says.

COVID-19 Virus Can Cause Inflammation in Infected Placentas



SARS-CoV-2 infections of women in late pregnancy frequently spread to their placentas and led to inflammation, according to a study from investigators at Weill Cornell Medicine. The findings suggest that further research is needed on the virus's effects in pregnancy and underscore the current recommendation by the U.S. Centers for Disease Control and Prevention that pregnant women continue to take precautions, such as masking and vaccination, to reduce their risk of SARS-CoV-2 infection.

In the study, the researchers found signs of SARS-Cov-2 infection, inflammation and tissue damage in 22 of the placentas from 52 mothers who tested positive for the virus at the time of delivery at NewYork-Presbyterian/Weill Cornell Medical Center. The researchers also determined in laboratory studies that more recent SARS-CoV-2 variants were more likely to infect placental tissue than the original strain.

"The main message from these findings is that placental infection can happen with SARS-CoV-2 and can lead to severe inflammatory responses in the placenta – and that raises questions about the short- and long-term effects on newborns," says co-senior author Dr. Heidi Stuhlmann, professor and acting chair of cell and developmental biology and of biochemistry and the Harvey Klein Professor of Biomedical Sciences at Weill Cornell Medicine.

Recent large studies indicate that SARS-CoV-2 infected mothers with moderate or severe symptoms are more likely to experience adverse events during pregnancy and after birth, for example, preterm births, postpartum hemorrhage and an increased risk of stillbirth or early neonatal death. However, transmission of the virus from infected mothers to their newborns appears to be extremely rare.

The team hopes to conduct longer-term studies of health outcomes among children born to SARS-CoV-2 infected mothers.

Members of the Class of 2026 at the White Coat Ceremony.

The First Stethoscope

STUDIO BROOKE

Each August, just over 100 new medical students gather on the campus of Weill Cornell Medicine to mark the beginning of their careers at the annual White Coat Ceremony. The event, where new students receive their first white coats and stethoscopes, is as much a rite of passage for aspiring physicians as it is a time for them to reflect on the responsibilities they will take on as doctors.

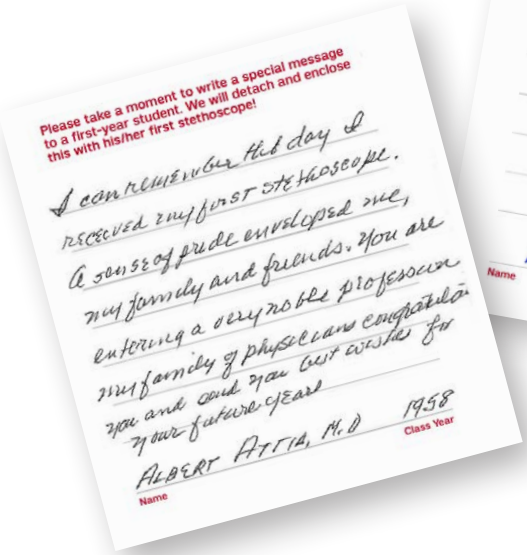
Receiving their first stethoscope and white coat is a pivotal moment in the life of every aspiring physician and medical researcher. These are symbols of the commitment they are making, and the mission they have accepted. It is a moment that they will cherish forever.

Weill Cornell Medicine's alumni feel a close connection to the students who come after them and carry a deep pride in their alma mater. And so, the Weill Cornell Medical College Alumni Association, with the generous help of the Moss Family Foundation, created the Stethoscope Fund to support our students.

Through supporting this fund, our alumni community plays a vital role in equipping each new generation of physicians with one of the most enduring and visible symbols of the medical profession: a stethoscope. Our alumni also provide encouragement and support – a few moving notes are included below – with their stethoscopes. For years, students have remarked that receiving these notes and making these connections were among the most meaningful experiences they've had during medical school.

As we look toward a brighter, post-pandemic future, we continue to be reminded of the vital role that physicians play in relieving suffering around the world. Supporting new generations of health-care leaders who will dedicate themselves to a lifetime of service in medicine is now more critical than ever. Weill Cornell Medicine's students and alumni are leading the way.

STUDIO BROOKE

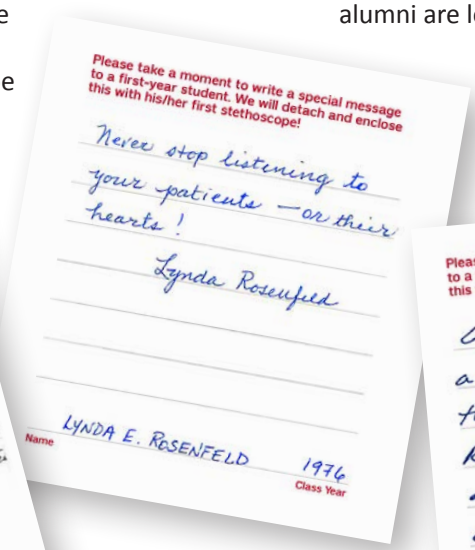


Please take a moment to write a special message to a first-year student. We will detach and enclose this with his/her first stethoscope!

I can remember the day I received my first stethoscope. A sense of pride enveloped me, my family and friends. You are entering a very noble profession my family of physicians congratulate you and send you our wishes for your future years

Name: ALBERT ATTIA, M.D

Class Year: 1958



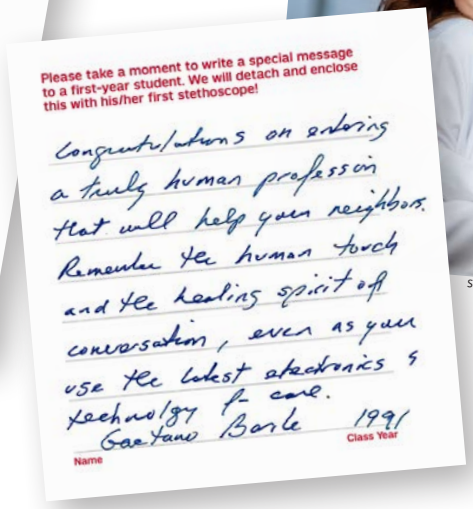
Please take a moment to write a special message to a first-year student. We will detach and enclose this with his/her first stethoscope!

Never stop listening to your patients — or their hearts!

Lynda Rosenfeld

Name: LYNDA E. ROSENFELD

Class Year: 1976



Please take a moment to write a special message to a first-year student. We will detach and enclose this with his/her first stethoscope!

Congratulations on entering a truly human profession that will help your neighbors. Remember the human touch and the healing spirit of conversation, even as you use the latest electronics & technology for care.

Gaetano Barile

Name

Class Year: 1991

Bench to Bedside: **Research Advances at Weill Cornell Medicine**

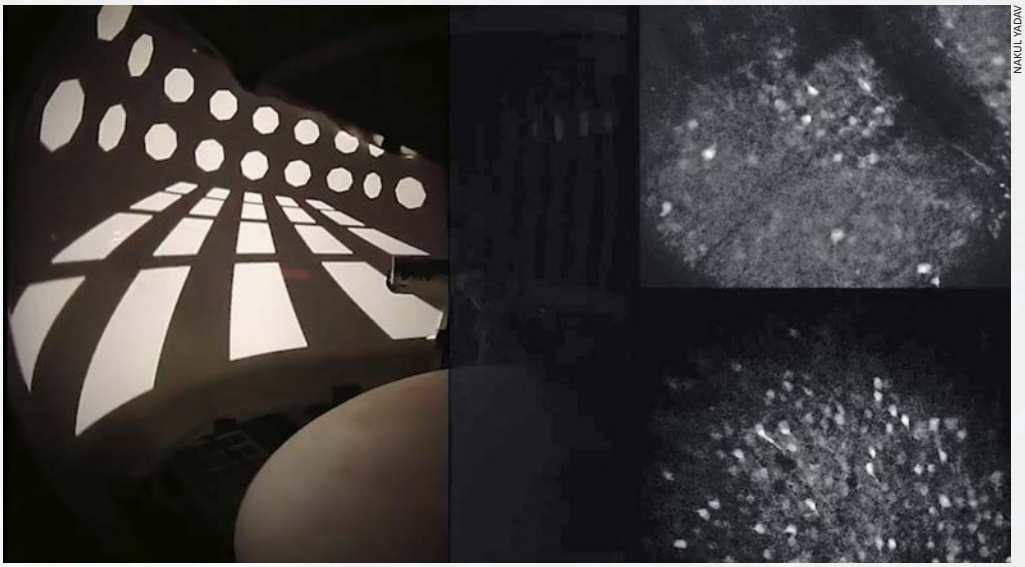
Weill Cornell Medicine scientists and researchers are responsible for groundbreaking advancements in areas across the scientific spectrum. They work to move the "eureka moments" of basic research into practical treatments to help patients.

Our goal is to accelerate new preventive interventions and treatments – to bring our findings from the scientist's laboratory bench to the patient's bedside as quickly as possible. Here are some of our most recent exciting and innovative research initiatives:

New Study Reveals **Where Memory Fragments are Stored**

An unforgettable time at a restaurant is not just about the food. The odors, the decor, the sound of music playing, the conversations, and many other features may combine to form a distinctive memory of the night. Later, reviving any one of these impressions alone may be sufficient to bring back the entire experience.

A new study now reveals that in the brain, a complex memory similarly consists of a whole and its parts. The researchers found that while the overall experience is stored in the hippocampus, the brain structure long considered the seat of memory, the individual details are parsed and stored in the prefrontal cortex. This separation ensures that, in the future, exposure to any individual cue is sufficient to activate the prefrontal cortex, which then accesses the hippocampus for recall of the whole memory.



NAKUL YADAV

As mice navigate different rooms in virtual reality, the prefrontal neurons communicate with those in the hippocampus to conjure associated memories.

A research team at Weill Cornell Medicine and The Rockefeller University developed novel techniques to simultaneously record and manipulate neural activity from multiple brain areas as mice navigated multisensory experiences, encountering various sights, sounds and smells while in an endless corridor in virtual reality. The researchers trained the mice to associate different rooms, which were composed of different combinations of the sensory cues, as rewarding or aversive experiences. Later, nudged by a specific scent or sound, the mice were able to recall the broader experience, and knew whether to happily expect sugar water or look out for an annoying puff of air.

The experiments demonstrated that while the entorhinal-hippocampal pathway, a well-studied circuit involving the hippocampus and its surrounding region, was essential for forming and storing the experiences, the individual sensory features were being shipped off to prefrontal neurons. Later, when mice encountered sensory features, a different circuit was engaged. This time, the prefrontal neurons communicated with the hippocampus to conjure the relevant global memory. This suggests that there's a dedicated pathway for memory recall, separate from memory formation.

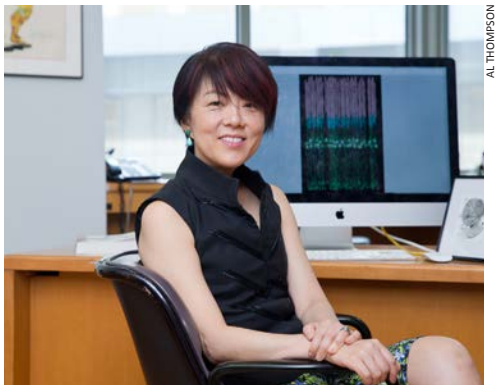
These findings have implications for treatment of conditions such as Alzheimer's disease, where the deficits are thought to be more related to memory recall than storage. The existence of separate storage and retrieval pathways in the brain suggests that targeting of prefrontal recall pathways may be more therapeutically promising.

The original version of this story appears in The Rockefeller University newsroom.

Pre-Clinical Model May Enable Development of New Treatments for **Leading Cause of Age-Related Vision Loss**

Researchers at Weill Cornell Medicine have developed an important pre-clinical model of the leading cause of blindness in adults over the age of 65. The new model is being used to identify new treatments for dry age-related macular degeneration (dry AMD).

AMD affected an estimated 196 million people worldwide in 2020, with a projected total of 288 million cases by 2040. More than 80 percent of AMD cases are dry AMD, which involves lesions at the central part of the retina known as the macula and the formation of fatty deposits under the retina called drusen. Symptoms of the condition include blurry, distorted or loss of central vision which can make daily life activities extremely challenging.


AL THOMPSON

Dr. Ching-Hwa Sung

There are currently no treatments for dry AMD. Previously created mouse models have not sufficiently mimicked the characteristics of dry AMD in humans. By contrast, the new model demonstrates the accumulation of drusen under the retina.

"Creating a robust model of dry AMD has been a holy grail in the field," says senior author Dr. Ching-Hwa Sung, the Betty Neuwirth Lee and Chilly Professor in Stem Cell Research and a professor of cell biology in ophthalmology and of cell and developmental biology at Weill Cornell Medicine. "We anticipate our model will be a valuable tool for understanding the early development and progression of the disease and designing potential therapies."

Dr. Sung and colleagues at Weill Cornell Medicine's Margaret M. Dyson Vision Research Institute genetically engineered the mouse model by eliminating a gene called chloride intracellular channel 4 (CLIC4) from the retinal pigment endothelium (RPE) cells.

Using their model, the researchers discovered that the lipids forming drusen initially came from the retina-lining RPE cells, rather than from blood. The discovery, which represents a new treatment target for further development, may also explain why treating patients with statins that lower cholesterol levels has not been an effective approach for treating dry AMD.

"We hope our model accelerates research in the field," Dr. Sung says, "and that our validation of an exciting new platform for investigating AMD may lead to much-needed care options for patients."

Advance in Understanding Cell Division Could Lead to **New Cancer Treatments**

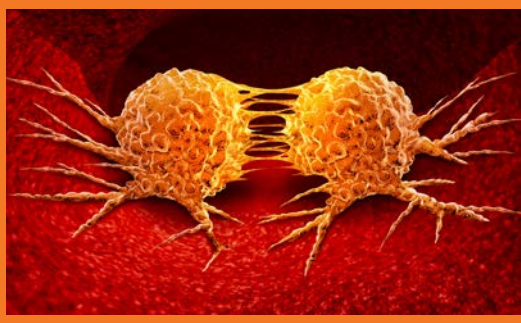
A protein called CDC7, long thought to play an essential role early in the cell division process, is in fact replaceable by another protein called CDK1, according to a study by investigators at Weill Cornell Medicine and the Dana-Farber Cancer Institute. The finding represents a fundamental advance in cell biology and may lead to new cancer therapies, since cancers frequently alter the molecular machinery of cell division to sustain their rapid growth.

The study determined the effects of removing CDC7 in a variety of mammalian cell types, a process that has been difficult to achieve. The results suggest that simultaneously targeting CDC7 and CDK1 could be an effective cancer treatment strategy.

"This study provides new insight into one of the most important steps in cell division and suggests a new set of targets for future cancer therapies," says Dr. Tobias Meyer, the Joseph Hinsey Professor in Cell and Developmental Biology and a member of the Sandra and Edward Meyer Cancer Center at Weill Cornell Medicine.

The process of cell division, also called the cell cycle, is of central importance in biology. As scientists have learned in recent decades, this process is initiated and controlled by a large set of molecules including the signaling proteins CDK1, CDK4, CDK6 and CDC7.

In the new study, the researchers used a variety of new and established protein-removal methods to make a surprising discovery: Selectively deleting the mouse version of CDC7 in different cell types may slow or stop cell division, but only for a day or two before cell division resumes. The researchers found that cells in mice, and presumably in all mammals, can compensate for the loss of CDC7 with increased activity from CDK1.

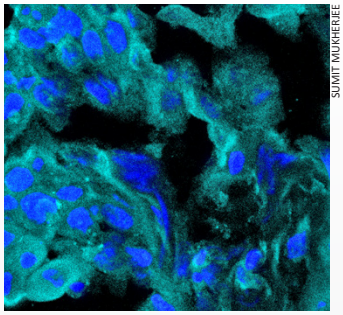


The findings illuminate the complex molecular orchestration of the cell cycle, and suggest that simultaneously blocking both CDC7 and CDK1 could be a powerful new strategy against cancer.

"This work highlights the surprising fact that cells can sometime achieve redundancy for a given function with two very different classes of protein – not just with two closely related proteins as we're used to seeing," Dr. Meyer says.

A Potential New Target for

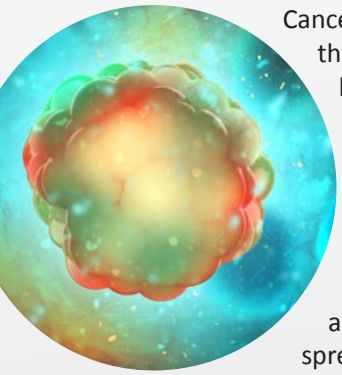
Cancer Immunotherapies


SUMIT MUKHERJEE

Tumors can use an enzyme called ART1 to thwart antitumor immune cells, making the enzyme a promising new target for immunity-boosting cancer treatments, according to a study from researchers at Weill Cornell Medicine and Albert Einstein College of Medicine. These findings should allow us to enhance the antitumor immune response to benefit cancer patients.

Tumors Change

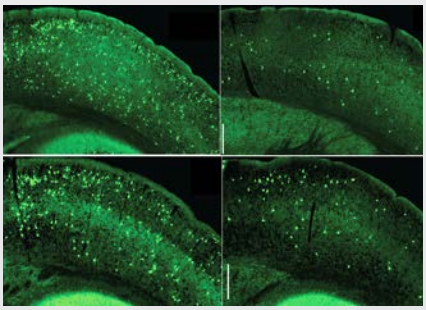
Their Metabolism to Spread More Effectively



Cancer cells can disrupt a metabolic pathway that breaks down fats and proteins to boost the levels of a byproduct called methylmalonic acid, thereby driving metastasis, according to research led by scientists at Weill Cornell Medicine. The findings open a new lead for understanding how tumors metastasize, or spread to other tissues, and hints at novel ways to block the spread of cancer by targeting the process.

Key Signaling Pathway in Immune Cells Could be

New Alzheimer's Target


DR. LIGAN

Inhibiting an important signaling pathway in brain-resident immune cells may calm brain inflammation and slow the disease process in Alzheimer's and some other neurodegenerative diseases, suggests a study by Weill Cornell Medicine investigators. The findings point to the possibility of new therapies for neurodegenerative diseases, which so far have no effective, disease-modifying treatments.

New Technology Helps Reveal Inner Workings of

Human Genome

The genome is the complete set of genetic instructions, DNA or RNA, enabling an organism to function. A research team including Weill Cornell Medicine scientists has developed a new method to assess the three-dimensional structure of the human genome, or how the genome folds. Using this method, the researchers demonstrated that cell function, including gene expression, may be affected by groups of simultaneously interacting elements in the genome. This may help shed light on the relationship between genome structure and how specific cell types – like a liver, lung or epithelial cell – are encoded.

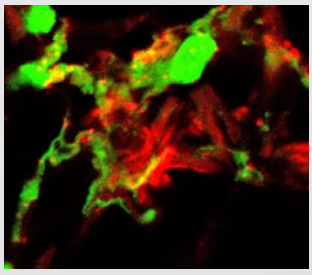
Post-Operative Atrial Fibrillation Associated with

Higher Risk for Heart Failure

Rapid or irregular heartbeat that develops after surgery, often within a few days, is associated with an increased risk for hospitalization for heart failure. According to a new study by Weill Cornell Medicine investigators the condition, called post-operative atrial fibrillation (POAF), may be a marker for early-stage heart failure and may potentially contribute to its development.

Study Reveals New Mode of Triggering

Immune Responses



The small proteins, called chemokines, that direct immune cells toward sites of infection can also form DNA-bound nanoparticles. These particles can induce chronic, dysfunctional immune responses, according to a new study by researchers at Weill Cornell Medicine and the Hospital for Special Surgery. The surprising discovery could shed light on some types of immune disorders such as scleroderma and lupus.

OPPORTUNITY

The *We're Changing Medicine* Legacy Match Challenge

Your Future Gift Can Generate a 10 Percent Match Today

For a limited time, your new or increased legacy gift to Weill Cornell Medicine will activate a special matching fund gift!

When you notify us in writing of your legacy gift intention, the *We're Changing Medicine* Legacy Match Challenge will generate an immediate cash matching gift equal to 10 percent of the face value of your future gift to support the new student residence.

How It Works

Simply let us know that you have included a future gift to Weill Cornell Medicine in your will or trust or as a beneficiary of your retirement plan, life insurance or bank account, and share a few details about your gift by sending in the enclosed confidential form.

Your future gift will then trigger an immediate cash gift *in your name* to support the new student residence currently under construction at York Avenue and 74th Street.

All Legacy Match Challenge donors will be honored on a plaque in the new student residence and will be recognized as members of the Stimson Society. Legacy intentions of $750,000 or more may also qualify for naming recognition for apartments or spaces in the student residence.

For example:

A bequest intention of		Generates a 10 percent match to the student residence
$100,000	>	$10,000
$500,000	>	$50,000
$2,000,000	>	$125,000

* Your legacy intention can be unrestricted or for a program area that is meaningful for you. The match funds are directed to the student residence.

Please join the Legacy Match Challenge and maximize your impact!

We are grateful to all donors who have already included Weill Cornell Medicine in their estate plans. If you have a legacy gift plan already documented with our planned-giving specialists, you can still be a part of the Legacy Match Challenge by increasing your existing gift plan.

If you have already included Weill Cornell Medicine in your plans but haven't yet informed us of your intent, please contact us so that your gift can qualify for this special match opportunity.

To qualify for the 10 percent Legacy Match Challenge funds, gifts must be new or increased legacy gifts of a minimum of $50,000 or more. Legacy gifts valued at $1.25 million or more will be matched at $125,000. The Challenge will run through June 30, 2023, or as long as matching funds are available.

We would be happy to provide more details or speak with you to ensure that your gift qualifies for the Legacy Challenge. Please contact Lisa Lager, director of Planned Giving, at 646-962-9567 or lil2033@med.cornell.edu.

Participation in the Legacy Match Challenge is easy – your future legacy gift will make an impact today and be remembered for generations to come.

The People of Weill Cornell Medicine

Weill Cornell Medicine is an extraordinary place. Because our people are extraordinary.

At Weill Cornell Medicine, people are the heart and soul of everything we do. Every member of our team – physicians, nurses, scientists, administrators, and researchers – has dedicated their careers to improving health care and advancing science. Weill Cornell is filled with committed professionals – people who are passionate about caring for patients, training medical leaders, and achieving groundbreaking medical discoveries.

Sharing the stories of the talented people whose focused drive makes Weill Cornell a respected and world-renowned academic medical center connects us all. These individuals' stories capture their unique specialties, the personal experiences that drive them, and the teamwork that is focused on bettering patients' lives.

ROGER TULLY

Dr. Tamatha Fenster has always loved art and medicine, but never expected to excel in a career that seamlessly fuses her two passions.

While studying art in college, she worked as an EMT, a calling that took her, a New York City native, around the world as a volunteer.

"I never dreamed that I could be a surgeon one day," says Dr. Fenster, an assistant professor of clinical obstetrics and gynecology with a subspecialty in minimally invasive laparoscopic and robotic gynecologic surgery.

"What drove me to the field of women's health is that I loved the idea of a female patient being able to explain to a female surgeon the feeling they are having. And as the surgeon, being able to understand intuitively and having the tools and knowledge to help," she says.

PATRICIA KUHARIC

Dr. Fenster is also an entrepreneur, inventor and serves as the director of innovation and biotechnology of the Fibroid Center at Weill Cornell Medicine. Her inventions include: an improved gynecological speculum (Halo Speculum), and a novel 3D MRI imaging tool (smartHER), which she co-designed, that brings the pelvis to life. She also co-created a bedside communication tool for patients (VoiceLove), after witnessing the heart-wrenching isolation of patients during the COVID-19 pandemic. She is currently working on a patient education app that helps explain gynecological conditions to women.

She wants to empower women not to give up when they face significant challenges. A battle with dyslexia made her believe she could not become a physician.

"If you are passionate about making a difference and helping patients and that's a dream you have, pursue it, even if society is telling you that you cannot," she says. "Surround yourself with compassionate people who will support you and want to see you succeed and thrive."

"I never dreamed that I could be a surgeon one day."

Dr. Tamatha Fenster

PROVIDED

Dr. Juan Emilio Carrillo was just 11 years old when he boarded a plane from Cuba and set off alone to start a new life in the United States. It was difficult to leave his family, but he knew he had to keep looking ahead.

Living with relatives in Miami when he arrived, Dr. Carrillo learned English from watching television. His parents and sister joined him a year later and together they moved to New York. With a positive outlook, and a gifted academic and scientific mind, he rose to the top of his classes at Columbia University and Harvard Medical School.

"I was one of the few immigrant kids," says Dr. Carrillo. "My classmates were the sons and daughters of professors, deans and captains of industry, whose families were connected to medicine. I felt very alienated."

As a first-year medical student, he formed an organization with his fellow classmate Dr. Jaime Rivera to create a sense of belonging. What began as a small group for Latino medical students eventually grew into a national organization now known as the Latino Medical Student Association, with 150 chapters in five regions. The group is celebrating 50 years of chapters, advancing its mission to recruit people who otherwise may not consider medical school, retain Latino medical students and educate about health in Latino communities.

In 1995, he joined Weill Cornell Medicine, and developed a cross-cultural curriculum, among the first of its kind, to train medical students in treating and communicating with patients from diverse cultures. In addition, he has served in key roles implementing programs to address health disparities in immigrant communities.

ROBERT ESSEL

Dr. Victoria Eugenia Banuchi, assistant professor of otolaryngology, did not dream of being a doctor while growing up in Puerto Rico, even though her father, a family physician, carried his black medical bag everywhere.

She started training in classical ballet as a young child. And it was only when she left Puerto Rico for the United States and attended the University of Chicago, that a class in cancer biology inspired her to change her career path.

As an otolaryngologist at Weill Cornell Medicine, her specialty is managing benign and malignant head and neck tumors. She is a pioneer in the field of scarless endoscopic neck surgery. She has applied this technique for surgery of the thyroid, parathyroid, thyroglossal duct cyst and cosmetic surgery of the neck.

"You prepare for surgery like a performance," she says. "You think of what steps you're going to do and it's like choreography because other people are involved and have a common goal. In the end, you've accomplished something beautiful and rewarding."

Dr. Banuchi focused on head-and-neck surgery because it was a specialty within a specialty (otolaryngology) and that makes her the last stop for patients. She enjoys the hands-on nature of the work and the opportunity to engage in meaningful conversations with patients.

> **"You prepare for surgery** like a performance."
>
> **Dr. Victoria Eugenia Banuchi**

Equally important to her role as a surgeon is her role as a mom. She knows the balance it takes to prepare for surgery while balancing her dedication to her family. Dr. Banuchi talks about her family with her female residents and mentees to help them understand the work it takes to balance the demands of being a physician and being there for her family.

"We are writing that book as we go," she says. "We will find the answer in having more conversations and valuing the voice of women in the medical field, academics and surgical subspecialties."

Weill Cornell Medicine is among the top medical schools for research in the United States as ranked by U.S. News & World Report. Our doctors are also attending physicians at one of the top-ranked hospitals in New York – NewYork-Presbyterian/Weill Cornell Medical Center.

Make the Greatest Impact.

Achieve your personal and financial goals with an end-of-year gift to Weill Cornell Medicine's lifesaving programs.

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For more information on tax-wise gift planning strategies please contact Lisa Lager, Director of Planned Giving, at (646) 962-9567 or

plannedgiving@med.cornell.edu

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