WINTER/SPRING 2023

# EINSTEIN

THE MAGAZINE FOR ALUMNI AND FRIENDS OF ALBERT EINSTEIN COLLEGE OF MEDICINE

# HEALING CHILD & TEEN MENTAL HEALTH

# A Message From the Dean

s we approach the College of Medicine's 65th commencement, I am reminded of my own graduation from Einstein more than 40 years ago, which launched my career in academic medicine and is the reason for any successes that I have enjoyed.

Since my return to Einstein, we've faced enormous challenges, mostly due to the COVID-19 pandemic. But we have also experienced tremendous successhitting record numbers in National Institutes of Health funding, hiring more than 40 faculty members to staff the Montefiore Einstein Cancer Center, and, just this year, receiving the second-largest gift in the College of Medicine's long and distinguished history. Additionally, Einstein became a fully accredited and independent degree-granting medical school, revamped the medical school curriculum, recruited outstanding people to key leadership positions, and reorganized its basic science departments (page 2).

In yet another success story, this issue's cover article, "Healing Child and Teen Mental Health," describes the many research and community programs that Einstein and Montefiore have launched to address mental-health challenges in the Bronx (page 28).

Drug development is another area where we're making important advances. Four Einstein scientists, working in tandem with our office of biotechnology and business development, have developed treatments for conditions including Ebola, osteoarthritis, and cancer that are now in clinical trials (page 44).

For me, the successful end of this academic year is bittersweet because



it will be my last as Einstein's dean. I am extremely proud of the College of Medicine's accomplishments during the past five years, due to the efforts of our outstanding faculty, students, and staff, as well as our excellent Board of Trustees.

The essence of Einstein and its people hasn't changed since my time here as a student. I remain strongly committed to the College of Medicine and will continue to support Einstein as I enter the next phase of my career. It has been the honor of a lifetime to serve as your dean, and I thank you all for this amazing privilege.

GORDON F. TOMASELLI, M.D. The Marilyn and Stanley M. Katz Dean Albert Einstein College of Medicine Executive Vice President, Chief Academic Officer Montefiore Medicine

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Winter/Spring 2023

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# IN THIS ISSUE

## COVER STORY

#### 28 HEALING CHILD AND TEEN MENTAL HEALTH

Health professionals are making progress against the growing problem of child and adolescent mental illness, thanks to innovative programs at Einstein and Montefiore

## FEATURES

#### 20 MENTORSHIP MATTERS

Five groups of Einstein scientists and their trainees talk about why their collaborations are essential for developing the next generation of scientific researchers

#### 4I LAUNCHING MEDICINE'S NEXT INNOVATORS

In the Einstein/Montefiore Innovation Biodesign Training Program, physicians and students meld technology and science to improve patient health

#### 44 TRANSLATING DISCOVERIES INTO THERAPIES

Drugs to treat Ebola, osteoarthritis, and cancer are now in clinical trials thanks to research led by four Einstein scientists

#### 60 A JUMP START ON THE ROAD TO BIOTECH SUCCESS

In the race to bring promising scientific ideas to market, Ph.D. programs like Einstein's may be the ultimate asset

## DEPARTMENTS

- 5 Campus News
- I2 Research Notes
- 14 Lab Chat: Lindsay M. LaFave, Ph.D.
- **I8** Mavens of Medicine: Melissa Wasserstein, M.D.
- 54 Crossword: Albert's Puzzler
- 55 Motivations: The Front Line of Philanthropy
- 64 Class Notes
- 69 A Look Back









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**ON THE COVER:** Photo by Jörg Meyer of Pluto Castillo, a teen ambassador for Montefiore Einstein's Arts and Integrative Medicine program.

# Highlights of the Dean's Tenure

he five-year term (2018 to 2023) of **Gordon Tomaselli, M.D.**, Einstein's Marilyn and Stanley M. Katz Dean, was dominated by a global pandemic as well as unprecedented financial stresses on the College of Medicine that required enormous adaptation. Despite those considerable challenges, Einstein and Montefiore not only endured but also moved forward with a number of remarkable and, in some cases, transformative accomplishments in research, education, organizational structure, and operations. Some of those are listed here.

## **RESEARCH ENTERPRISES**

- Recruited Edward Chu, M.D., as the new director of the renamed Montefiore Einstein Cancer Center (MECC), whose mission is to better integrate cancer science and discovery at the College of Medicine into Montefiore Health System. MECC had a successful National Cancer Institute site visit in January, with positive results expected in May.
- Launched a program of collaborating laboratories designed to help manage and ultimately eliminate the COVID-19 virus as a threat to public health.
- Worked on developing new diagnostic approaches to disease through the office of biotechnology and business development.
- Collaborated with the New York City Economic Development Corporation to provide funding to Einstein with the goal of becoming a leading life sciences hub for research and innovation in the tristate area.
- Attained record levels of National Institutes of Health funding, which totaled more than \$200 million for the first time in 2020 and again in 2022.

## **ACADEMIC INITIATIVES**

- Became a fully independent degree-granting medical school, completing its transition from Yeshiva University into Montefiore Medicine Academic Health.
- Created a new, innovative medical school curriculum, a process that was accelerated by the COVID-19 pandemic.
- Consolidated Einstein's academic departments with the goal of further advancing science and collaboration while improving thematic clustering of prioritized research.
- Began intense preparation for Einstein's reaccreditation by the Liaison Committee for Medical Education (LCME), a process that takes place every eight years. The successful LCME site visit took place in January, with positive results expected this spring.
- Solidified the leadership and institutional importance of the Belfer Institute for Advanced Biomedical Studies.



## FULLY INDEPENDENT DEGREE-GRANTING MEDICAL SCHOOL

\$200M+ IN NIH FUNDING IN 2020 AND 2022



FACULTY RECRUITED FOR CANCER CENTER

# ALOCK RESEARCHAVILION

## ADDITIONAL ACHIEVEMENTS

- Received a \$100M gift from an anonymous donor to support Einstein's research and education programs.
- Strengthened our diversity and inclusion programs and initiatives.
- Reevaluated and reorganized our development programs, with the goal of increasing private philanthropy at Einstein.
- Made major changes to Einstein's Board of Trustees, including the addition of 12 new Board members.
- Upgraded Einstein's infrastructure, with an emphasis on improving information technology operations.

These and other efforts contributed to Einstein being recognized in 2022 as one of the 500 best midsize employers in the U.S. among educational institutions, according to *Forbes*. Einstein ranked no. 1 in New York City, no. 2 in New York State, and no. 35 nationally.

# IMPROVED FACILITIES

LABS, HOUSING, INFORMATION TECHNOLOGY, AND MORE

# **\$100M DONATION** ONE OF EINSTEIN'S LARGEST GIFTS EVER

# **FORBES BEST**

MID-SIZED EMPLOYERS #1 IN NEW YORK CITY #2 IN NEW YORK STATE

# A Message From the Board Chair



"This funding will help investigators translate their laboratory findings into clinical tools for diagnosing and treating life-threatening cancers."

- RUTH GOTTESMAN, ED.D.

he year has been off to a wonderful start at the College of Medicine. In January we learned of a major new gift from **Evelyn Gruss Lipper, M.D.** '71, to create Einstein's Integrated Imaging Program for Cancer Research. This funding will help investigators translate their laboratory findings into clinical tools for diagnosing and treating life-threatening metastatic cancers.

Over the past two decades, Dr. Lipper's gifts have helped make Einstein a leader in using advanced imaging to study how complex diseases begin and progress in the human body. You can read more about the valuable work she supports beginning on page 10.

Another important aspect of scientific investigation is highlighted in our article about mentorship, which is essential for developing the next generation of researchers. It describes the collaborations among five groups of mentors and mentees across the educational spectrum at Einstein, and how their work is benefiting both the scientists and their trainees (page 20).

In this issue of *Einstein* magazine, you'll also learn about the recent work of our Board of Trustees, including: • The addition of **Trustee Raja Flores**, **M.D. '92** (page 9), who has established an endowed need-based scholarship for medical students, in part because he was inspired by a matching-grant program (page 56).

• The launching of a recognition society to honor any donors who have included the College of Medicine in their estate plans. The Albert Einstein Legacy Society (page 59) will be an important cultivation and engagement vehicle for alumni, parents, friends, and trustees, and I hope you will join me in becoming a member in the coming months.

On a sadder note, the magazine pays tribute to my dear longtime friend and fellow Einstein Trustee Emily Fisher Landau, whom we lost at the end of March. She funded the establishment of the Fisher Landau Center for the Treatment of Learning Disabilities at Einstein in 1997, and I was proud to become its founding director. She and I developed a lasting friendship over the years, in part because of our shared passion for helping people with learning difficulties. She was one of the most extraordinary individuals I've ever met. You can learn more about her remarkable life on page 68.

Finally, I'd like to recognize **Dean Gordon Tomaselli, M.D. '82**, who has served the College of Medicine with many transformative accomplishments over these past five years. Some of the highlights of the dean's tenure can be found on pages 2 and 3. As he enters the next phase of his career, I know he will remain committed to Einstein, and I thank him for the exemplary job he has done at the College of Medicine.

Rith L Jo Heman

RUTH L. GOTTESMAN, ED.D. Chair, Albert Einstein College of Medicine Board of Trustees Einstein Professor Emerita of Pediatrics

# CAMPUS NEWS

# Einstein Appoints Named Chairs

Julio Aguirre-Ghiso, Ph.D., is the Rose C. Falkenstein Chair in Cancer Research. An international leader in cancer cell dormancy and metastasis, he helped guide a major shift in the cancer biology field by investigating how cancer cells hibernate. Dr. Aguirre-Ghiso is the co-leader of the Tumor Microenvironment and Metastasis Program and founding director of the Cancer Dormancy and Tumor Microenvironment Institute at Montefiore Einstein Cancer Center (MECC), as well as a professor of cell biology, of oncology, and of medicine.

Jacqueline Bello, M.D., is the Zimmer-Hardy Chair of Neuroradiology. Dr. Bello is a professor of radiology and in the Leo M. Davidoff Department of Neurological Surgery at Einstein and director of neuroradiology at Montefiore. She has been elected to Einstein's Davidoff Society for teaching excellence and is a past president of the



From left: Julio Aguirre-Ghiso, Ph.D.; Jacqueline Bello, M.D.; Kartik Chandran, Ph.D.; H. Dean Hosgood, Ph.D., M.P.H.; and Jonathan Lai, Ph.D.

New York Roentgen Society, the New York State Radiological Society, and the American Society of Neuroradiology.

Kartik Chandran, Ph.D., is the Gertrude and David Feinson Chair in Medicine. He is a professor of microbiology & immunology and the Harold and Muriel Block Faculty Scholar in Virology at Einstein. Dr. Chandran studies how viruses infect cells, and he has led efforts to identify and develop antiviral treatments for such diseases as COVID-19, Ebola, and hantavirus syndromes (see page 45). He also leads Prometheus, an international consortium established to develop antibody-based therapies for emerging viruses.

**H. Dean Hosgood, Ph.D., M.P.H.**, is the Atran Foundation Chair in Epidemiology & Population Health.

Dr. Hosgood, whose research primarily focuses on cancer and environmental exposures, is an associate professor of epidemiology & population health at Einstein, co-leader of the Cancer Epidemiology Prevention & Control Program of MECC, co-director of the Ph.D. in Clinical Investigation, and director of global environmental health for the Global Health Center.

Jonathan Lai, Ph.D., is the Dan Danciger Professor of Biochemistry. Dr. Lai is a professor of biochemistry whose research involves the application of peptide, protein, and antibody engineering methods for the development of novel immunotherapies and vaccines. An expert in engineering antibodies, he has worked to develop antibody treatments against viruses responsible for such diseases as Ebola, COVID-19, and Chikungunya.

## **Tenure for 7 Einstein Professors**

Earle C. Chambers, Ph.D., M.P.H.

Professor of Family and Social Medicine, of Psychiatry and Behavioral Sciences, and of Epidemiology & Population Health

#### Carol A. Derby, Ph.D.

Professor in the Saul R. Korey Department of Neurology and of Epidemiology & Population Health

#### Carmen R. Isasi, M.D., Ph.D.

Professor of Epidemiology & Population Health and of Pediatrics

Marina Konopleva, M.D., Ph.D. Professor of Oncology and of Molecular Pharmacology

Shadi Nahvi, M.D., M.S. Professor of Medicine and of Psychiatry and Behavioral Sciences

Yunlei Yang, M.D., Ph.D. Professor of Medicine and in the Dominick P. Purpura Department of Neuroscience

Marcel Yotebieng, M.D., Ph.D., M.P.H. Professor of Medicine

## CAMPUS NEWS

# New Diversity and Inclusion Appointments

## Dr. Holden Named Senior Associate Dean



National diversity innovator **Lynne M. Holden, M.D.**, a member of Einstein's faculty since 1996, has been named senior associate dean

for diversity and inclusion. Dr. Holden assumed her new post in October 2022.

A professor of emergency medicine (EM) at Einstein and an attending physician at Montefiore, Dr. Holden has worked extensively with medical students, residents, and faculty. In recognition of her teaching excellence, she was elected to the Leo M. Davidoff Society, which honors those who have made significant contributions to the education of Einstein medical students. She has served as a co-chair of the admissions committee, taught in the Introduction to Clinical Medicine course, and held the position of associate residency director/site director at Montefiore. She continues to serve on the EM residency admissions committee.

As vice chair for diversity, equity, and inclusion for the department of emergency medicine, Dr. Holden spearheaded the development of the Social EM Program, which fosters activities that expose residents to the social determinants of health in the Bronx and empowers them to create empathetic solutions through research and community service. Since 2006, she has directed the Emergency Department Clinical Exposure and Mentoring Program, which has provided educational and experiential learning through volunteering and shadowing for 1,800 New York City undergraduate and postbaccalaureate students.

Dr. Holden is co-founder and president of Mentoring in Medicine, Inc., a national nonprofit organization dedicated to inspiring and preparing students to become healthcare and science professionals. She is on the board of directors of the American Board of Emergency Medicine and serves on several national committees that address workforce diversity in medicine, including the Association of American Medical Colleges' Action Collaborative for Black Men in Medicine and its Pathways Program advisory group.

## New Assistant Dean for Diversity Enhancement



Reginald Leon Hayes, M.Div., has been named Einstein's new assistant dean for diversity enhancement. In this role,

Mr. Hayes will

focus on promoting diversity, equity, and engagement for current and prospective medical students and those in Einstein's pathway programs. Mr. Hayes began his new role in late January.

Mr. Hayes' responsibilities will include bolstering Einstein's pathway program consortium, recruiting diverse medical students, and creating an inclusive environment at Einstein. "It is an honor both to be back in the Bronx and to join the Einstein community," said Mr. Hayes, who previously lived and served in a church in the Bronx and participated in a community outreach program in the borough.

Mr. Hayes worked most recently at the National Academies of Sciences, Engineering, and Medicine (NASEM), in Washington, D.C., as an associate program officer for the Roundtable on Black Men and Black Women in Science, Engineering, and Medicine.

Before joining the roundtable, he worked as an implementation partner for the United States Agency for International Development's Partnerships for Enhanced Engagement in Research program, focusing on cervical cancer and mortality rates for women.

Mr. Hayes also served as a research analyst for diversity in clinical trials at the National Cancer Institute, where he studied methods to combat medical and science mistrust among historically disadvantaged populations and increase diversity in clinical trials.

A native of Washington, D.C., Mr. Hayes has also worked as a biology and environmental science teacher. A classically trained tenor, Mr. Hayes has performed in many operatic roles.

He earned his bachelor's degrees from Shaw University and Nyack College, and a master's in divinity from the Alliance Theological Seminary. In May, he will receive a master's in business administration from Western Governors University.

# Scientific Leader Named Chair of Cell Biology



Irich Steidl, M.D., Ph.D., an internationally recognized leader in cancer and stem cell biology, has been named the chair of the department of cell biology at Einstein. Dr. Steidl assumed his new position in November 2022 when Arthur Skoultchi, Ph.D., who had led the department with distinction for 24 years, stepped down from departmental leadership.

Dr. Steidl is a professor of cell biology, of oncology, and of medicine; interim director of the Ruth L. and David S. Gottesman Institute for Stem Cell Biology and Regenerative Medicine; and the Edward P. Evans Endowed Professor for Myelodysplastic Syndromes at Einstein. He is also the deputy director of Montefiore Einstein Cancer Center (MECC) and co-director of MECC's Blood Cancer Institute.

Investigations led by Dr. Steidl have made key contributions to the understanding of myelodysplastic syndromes and acute myeloid leukemia, two related blood diseases that he helped characterize as being driven by diverse pools of precancer and cancer stem cells. This work has led to the discovery, study, and therapeutic targeting of such diseasedriving stem cells in blood cancers, resulting in pioneering scientific progress as well as innovative clinical trials. His contributions to the field were recognized by the National Cancer Institute when he received its Outstanding Investigator Award in 2021.

Since joining Einstein's faculty in 2008, Dr. Steidl has received numerous awards. His translational research accomplishments were recognized at Einstein's commencement ceremony in 2020, when he received the Saul R. Korey Award in Translational Science and Medicine. On multiple occasions in 2013, 2017, 2019, and 2020—he received Einstein's Julius Marmur Award for Outstanding Mentoring in Graduate Research.

Dr. Steidl has previously received the Scholar Achievement Award from the Leukemia & Lymphoma Society and the National Institute of Health's Howard Temin Award, and he is currently the president of the International Society for Experimental Hematology.

Before joining Einstein as an assistant professor in 2008, Dr. Steidl received his M.D./Ph.D. degree from the Heidelberg University School of Medicine and the German Cancer Research Center, both in Heidelberg, Germany, and trained at the Heinrich Heine University Medical Center in Dusseldorf, Germany, as well as at the Harvard Stem Cell Institute and Beth Israel Deaconess Medical Center in Boston.

# Allen Institute Names Next Generation Leader



Heather Snell, Ph.D., an associate in the Dominick P. Purpura Department of Neuroscience at Einstein, in December was

named one of six Next Generation Leaders (NGLs) by the Allen Institute, a nonprofit research organization based in Seattle. NGLs are members of a neuroscience advisory panel made up of early-career researchers who will help advise investigations at the Allen Institute for Brain Science, the MindScope Program, and the Allen Institute for Neural Dynamics.

Dr. Snell, who is in the lab of Kamran Khodakhah, Ph.D., studies Purkinje cells—specialized neurons, unique to the brain's cerebellum, that enable normal cerebellum functioning by releasing the neurotransmitter GABA. In mouse model studies, Dr. Snell uses molecular biology, optogenetics, and other techniques to understand the receptors and channels that govern Purkinje-cell activity, and how dysfunctions of Purkinje cells, and of the cerebral circuitry generally, contribute to motor and cognitive disorders.

NGLs are selected through a competitive process that includes applications from around the world. Each leader has a three-year term on the 18-member advisory council, made up of postdoctoral fellows and newly appointed faculty members. The program provides professional development for members to serve as scientific advisers to other groups.

## CAMPUS NEWS

# Senior Associate Dean Elected to NBME Post

Joshua D. Nosanchuk, M.D., senior associate dean for medical education at Einstein, was elected in January to a leadership post at the National Board of Medical Examiners, the country's primary medical assessment nonprofit organization.

Dr. Nosanchuk is one of seven at-large members of the NBME. He also serves as a professor of microbiology & immunology and of medicine and an infectiousdisease specialist at Montefiore. The NBME also named Reena Karani, M.D. '97, as its first woman of color to serve as chair in the organization's 108-year history (see page 67).

Among the NBME's most important functions is creating assessments and learning tools for health professionals, including the lengthy comprehensive exams known as Steps 1, 2, and 3. These assessments, formally called the United States Medical Licensing Examination



program (USMLE), are required to obtain a license to practice medicine. Medical faculty from across the country write the test questions, which are reviewed by members of the NBME board and its numerous committees.

Dr. Nosanchuk has held a range of positions at NBME, including chair

of the test development committee for microbiology and immunology, member of NBME's management and interdisciplinary review committees, a reviewer of its comprehensive basic science exam, and a panelist who set standards for the Step 1 exam. He currently serves on a committee that develops test materials on pharmaceutical advertisements and drug warnings.

"I have learned so much from all of the individuals on my committees and panels," he said. "Working in these groups helps me bring best practices for medical educational teaching and assessments back to Einstein."

He received a bachelor's degree in history and an M.D. degree from Cornell University. He completed his residency at New York Hospital–Cornell and Memorial Sloan Kettering Cancer Center, followed by a fellowship at Einstein.

# Liver Disease Researcher Named Keystone Fellow



Esperanza Arias-Perez, Pharm.D., Ph.D., assistant professor of medicine and of pathology at Einstein, has

been named a 2023 Keystone Symposia Fellow. She is one of only 10 investigators nationwide selected for the honor, which recognizes rising talent in biological and biomedical research.

The competitive one-year program is

designed to provide early-career researchers from underrepresented and other disadvantaged backgrounds with the skills they need to successfully pursue leadership and decision-making roles in academic, industry, and government research sectors.

Dr. Arias-Perez, who is a member of the Marion Bessin Liver Research Center at Einstein, Einstein's Institute for Aging Research, and Montefiore Einstein Cancer Center, focuses on liver-related disease, ranging from nonalcoholic steatohepatitis to liver cancer, with a special interest in the molecular basis underlying clinical disparities.

Dr. Arias-Perez received her Ph.D. from the School of Medicine at the Autonomous University of Madrid (Spain) and has worked in clinical research at Ferring Pharmaceuticals and at Pfizer. As a Fulbright postdoctoral fellow in the lab of Ana Maria Cuervo, M.D., Ph.D., professor of developmental and molecular biology and of medicine at Einstein, Dr. Arias-Perez studied mammalian autophagy in the context of aging and age-related diseases.

# Einstein Receives 'Transformational' \$100M Gift

ontefiore Einstein announced in March that an anonymous donor is making a \$100 million contribution to the College of Medicine. This gift, one of the largest in Einstein's history, will support biomedical investigations that include basic, clinical, and translational research programs serving our nation and the world.

It will also provide direct financial support to students, ensuring greater access to the vibrant and innovative learning environment that Einstein provides.

"This is a historic and transformational gift that will enable us to expand our research capabilities in unprecedented ways. It will provide an opportunity for our students and faculty to excel in the pursuit of innovation while continuing to deliver on our commitment to health equity," says **Philip Ozuah, M.D., Ph.D.**, president and chief executive officer of Montefiore Medicine, the umbrella organization over Einstein and Montefiore.



"This gift will enable us to expand our research capabilities in unprecedented ways."

— PHILIP OZUAH, M.D., PH.D.

"We are extremely proud to receive this support, as it comes from someone whose life has been dedicated to transforming the lives of others. I am humbled by the donor's friendship and extraordinary degree of trust and confidence in us," Dr. Ozuah says.

# Einstein Board Welcomes New Trustee



Raja Flores, M.D. '92, is a worldrenowned thoracic surgeon recognized for his technical

skill and lifelong work on lung and esophageal cancer, mesothelioma, and asbestos-related diseases.

His research has produced more than 300 publications, and he has presented nearly 300 lectures worldwide. Dr. Flores is the principal investigator of a \$4.8 million grant from the Agency for Toxic Substances and Disease Registry, part of the U.S. Department of Health and Human Services, to study the effect of asbestos contamination in the town of Libby, Montana.

He is currently investigating the health effects of mold exposure on New York City Housing Authority tenants. Dr. Flores is an active member of the Manhattan Community Board 11 in East Harlem, New York.

He was educated at New York University, Einstein, Columbia University, and Harvard University. Dr. Flores currently serves as the Steven and Ann Ames Professor of Cardiothoracic Surgery and is the system chair in the department of thoracic surgery at Mount Sinai Health System.

Learn more on page 58 about the endowed scholarship he has established at Einstein.



Montefiore Einstein Cancer Center physicians and scientists, from left: Brandon Stiles, M.D., John McAuliffe, M.D., Ph.D., and Maja Oktay, M.D., Ph.D., with Evelyn Gruss Lipper, M.D. '71, and John Condeelis, Ph.D., director of Einstein's Integrated Imaging Program for Cancer Research.

# From Physician to Philanthropist

Einstein alumna Evelyn Gruss Lipper, M.D., is helping launch a program that translates cancer research into tools to treat life-threatening diseases

ver the last two decades, gifts from Evelyn Gruss Lipper, M.D. '71, have helped make the College of Medicine a leader in using advanced imaging to study how complex diseases get started and progress in the human body.

Now Dr. Lipper's family philanthropy, the EGL Charitable Foundation, has made a major new gift to create Einstein's Integrated Imaging Program for Cancer Research (IIPCR). The gift will help investigators at Einstein and Montefiore Einstein Cancer Center translate their laboratory research findings into clinical tools for diagnosing and treating metastatic cancers (in which tumor cells have spread beyond the primary tumor). "Dr. Lipper's visionary generosity provides a path for bringing basic-science advances to bear on intractable disease," says Gordon F. Tomaselli, M.D., the Marilyn and Stanley M. Katz Dean at Einstein and executive vice president and chief academic officer at Montefiore. "With her support, promising Einstein discoveries will be transformed into effective treatments, with the goal of improving cancer care."

#### THE ROLE OF OBSERVATION

When Dr. Lipper decided to support research at her alma mater, she focused on imaging—a decision influenced by her own professional experience as well as by her interest in the use of new technology to improve health outcomes. "In science, observation is critical to understanding," she says. "I took up that theme and went with it."

Dr. Lipper's initial gift to Einstein, in 2000, was instrumental in establishing the Gruss Magnetic Resonance Research Center (MRRC). Einstein scientists could now use magnetic resonance imaging (MRI)—a noninvasive imaging tool involving powerful magnets and radio waves—to open a window onto metabolism, structure, and function.

It soon became clear that recent advances in the field of biophotonics could complement and expand upon MRI findings by attaining much higher resolution than was possible with MRI alone. Biophotonics uses photons (light particles) to examine and manipulate living systems, allowing insights at the molecular level into cell function in health and disease. The potential of biophotonics as an imaging tool inspired Dr. Lipper to make a second major gift to Einstein, establishing the Gruss Lipper Biophotonics Center (GLBC) in 2006.

#### CATALYZING COLLABORATIONS

"To take this work to the next level, we really needed to combine MRI with multiphoton optical imaging—which would require a substantial investment in equipment and personnel," says John Condeelis, Ph.D., the Judith and Burton P. Resnick Chair in Translational Research, professor of cell biology and of surgery, scientific director of the Analytical Imaging Facility, and chair emeritus of anatomy and structural biology at Einstein.

In 2012, responding to the need, the EGL Charitable Foundation provided funds to establish Einstein's Integrated Imaging Program (IIP), co-directed by Dr. Condeelis, Robert Singer, Ph.D., and Craig Branch, Ph.D.

Over the years, the IIP spurred numerous advances, particularly in understanding how breast cancer cells spread to distant organs, and it achieved its aim of encouraging research collaborations between the MRRC and the GLBC. By the end of 2021, it became clear that something else was needed: a way to move basic-science discoveries into the clinic.

#### **IMPROVING PATIENT CARE**

The EGL Charitable Foundation stepped in once again, providing funds to create Einstein's IIPCR, which will open later this year under the direction of Dr. Condeelis. This latest gift will expand the imaging team's research portfolio to include lung and pancreatic cancers and involve investigators from fields including radiology, oncology, surgery, pathology, veterinary medicine, and epidemiology.

"Dr. Lipper's extraordinary vision, persistence, and generosity are an inspiration to all of us in the translational research community," says Dr. Condeelis. "She's a shining example of how the combined efforts of our research and philanthropic communities can address major healthcare challenges and ultimately improve the health of our community."

Adds Dr. Lipper, "Perhaps the most important lesson I've learned as a philanthropist is that it's not simply a matter of giving money away. You want to give it effectively and make an impact. What could be better than advancing medical technologies that improve people's health?" "[Dr. Lipper] is a shining example of how the combined efforts of our research and philanthropic communities can address major healthcare challenges and ultimately improve the health of our community."

- DR. JOHN CONDEELIS



# TO DONATE

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➢ development@einsteinmed.edu
√ 718.430.2411



Cancer clinician-researchers, from left: Drs. Maja Oktay, Brendon Stiles, and John McAuliffe.

# RESEARCH NOTES

# A Promising Immunotherapy Finding

mmune-checkpoint inhibitors, such as the name-brand drugs Keytruda and Opdivo, unleash the immune system's T cells to attack tumor cells. Their introduction a decade ago marked a major advance in cancer therapy, but only 10% to 30% of treated patients experience long-term improvement.

In a paper published in November 2022 in the *Journal of Clinical Investigation*, Xingxing Zang, M.Med., Ph.D., and colleagues presented findings that could bolster the effectiveness of immune-checkpoint therapy. Dr. Zang is the Louis Goldstein Swan Chair in Women's Cancer Research and a professor of microbiology & immunology, of oncology, of medicine, and of urology at Einstein and a member of the Cancer Therapeutics Program at Montefiore Einstein Cancer Center.

## **TELLING FRIEND FROM FOE**

The surfaces of immune cells are studded with receptors called "checkpoint" proteins. By recognizing the body's "self" proteins, checkpoint receptors prevent T cells from attacking the body's normal cells. Most types of cancer cells cunningly express "self-like" proteins that can bind with checkpoint proteins, tricking immune cells into standing down and not attacking tumors.

Current checkpoint inhibitors are monoclonal antibodies designed to short-circuit immune-cell/cancer-cell interactions by blocking either the tumor proteins or the T-cell receptors that bind with tumor proteins. Their limited effectiveness prompted Dr. Zang and other **Freeing up immune cells to attack tumors:** ① The tumor protein PVR (orange arrow) has "turned off" a natural killer (NK) cell by binding with its checkpoint receptor protein KIR2DL5 (green). ② The new checkpoint inhibitor (red triangle) has blocked the NK cell's KIR2DL5 protein, preventing PVR from inactivating the NK cell. ③ With the checkpoint inhibitor protecting the NK cell from PVR, the NK cell can now attack the tumor cell.

scientists to look at checkpoint pathways involving natural killer (NK) cells, which—like T cells—play major roles in eliminating unwanted cells. A cancer-cell protein called PVR soon captured their attention.

PVR protein is usually absent from or very scarce in normal tissues, but is found in abundance on many types of tumors. Moreover, PVRs appeared to inhibit T-cell and NK-cell activity by binding to a checkpoint protein called TIGIT—prompting efforts to interrupt the TIGIT/PVR pathway by using monoclonal antibodies made against TIGIT. However, several clinical studies, including two large phase 3 clinical trials, have recently failed to improve cancer outcomes.

## THE ROLE OF A NEW RECEPTOR

Meanwhile, the cancer-cell protein PVR was found to have another "binding partner" on NK cells: the receptor protein KIR2DL5. "We hypothesized that PVR suppresses NK-cell activity not by binding with TIGIT but by binding with the recently recognized KIR2DL5," says Dr. Zang. To find out, he and his colleagues synthesized a monoclonal antibody targeting KIR2DL5.

In studies involving humanized animal models of several types of human cancers, the researchers showed that their monoclonal antibody against KIR2DL5—by blocking the KIR2DL5/ PVR pathway—allowed NK cells to vigorously attack and shrink human tumors and prolong animal survival.



# Too Much 'Good' Cholesterol Can Be Bad for Certain Patients

DL cholesterol (HDL-C) has for decades been considered "good" cholesterol, conferring beneficial effects by removing other forms of cholesterol from the bloodstream.

In the October 2022 issue of *Hypertension*, Gaetano Santulli, M.D., Ph.D., and colleagues published the first study examining the relationship between HDL-C and cardiovascular events in patients with hypertension. They found that high circulating levels of HDL cholesterol significantly increased the risk of cardiovascular events in hypertensive patients.

The study involved more than 11,000 people with hypertension who were followed for more than 25,000 person-years. Participants were divided into three groups: low HDL (HDL less than 40 mg/dL), medium HDL (HDL between 40 and 80 mg/ dL), and high HDL (HDL greater than 80 mg/dL).

Compared with the medium-HDL group, the low-HDL group as expected—was at greater risk for cardiovascular events, but, remarkably, the high-HDL group also faced a significantly increased risk.

The results suggest that algorithms now used to calculate cardiovascular risk should be revised to take high-HDL cholesterol levels into consideration. Dr. Santulli is an associate professor of medicine and of molecular pharmacology at Einstein.





# Two Diabetes Drugs Outperform Others

n a large clinical trial comparing four drugs commonly used to treat type 2 diabetes (T2D), researchers from around the country, including at Einstein and Montefiore, found that insulin glargine U-100 and liraglutide performed the best of four drugs approved by the U.S. Food and Drug Administration to maintain blood glucose levels in the recommended range.

Blood glucose management is crucial for keeping people with T2D healthy. All four evaluated drugs were added to treatment with metformin, the first-line drug for treating T2D. Their findings were published online on Sept. 21, 2022, in a pair of papers in the *New England Journal of Medicine (NEJM*).

Jill Crandall, M.D., professor of medicine and the Jacob A. and Jeanne E. Barkey Chair in Medicine at Einstein, and chief of endocrinology at Einstein and Montefiore, was a coauthor on one of the *NEJM* papers.

# **RESEARCH NOTES**

# Lab Chat

indsay M. LaFave, Ph.D., studies lung adenocarcinoma, the most common type of lung cancer. After earning her doctorate in cancer biology at the Gerstner Sloan Kettering Graduate School of Biomedical Sciences in Manhattan, Dr. LaFave completed a postdoctoral fellowship at the Massachusetts Institute of Technology and Harvard University. In 2021, she joined the Einstein faculty, where she is an assistant professor of cell biology and a member of the Stem Cell & Cancer Biology Program at Montefiore Einstein Cancer Center.

Starting a lab is hard under normal circumstances. What was it like during the pandemic? The pandemic certainly magnified the challenges of getting equipment and hiring staff, especially having to do so many of those things over Zoom. But over time, I found a core group of colleagues, and we supported each other through it all.

Why did you come to Einstein? A key reason was the breadth of the science. I was excited to work with researchers in stem-cell biology, cancer dormancy, and chromatin biology, and with clinicians in lung cancer. I knew they would improve my science and help take it in new directions.

# What is the focus of your

National Cancer Institute grant? In previous studies, I discovered that some late-stage lung cancer cells have excess levels of the transcription factor RUNX2. Transcription factors are proteins that turn specific genes on or off. Now we're investigating how RUNX2 activation affects disease progression. I hope this work will reveal new drug targets for slowing the development and spread of the disease.

Cancer research generates vast quantities of data that must involve computational biology to be comprehensible. Is research becoming too far removed from hands-on experience? My lab uses single-cell sequencing, which produces large amounts of data about the epigenomic factors that drive lung cancer. Bioinformatics help us analyze those data and generate hypotheses. We also use mouse models, lung organoids, and cells and tissues from patients to validate those bioinformatics findings and refine our hypotheses. So it's a fruitful back-and-forth.

#### What are organoids?

They're tiny three-dimensional tissue cultures derived from mouse or human stem cells that mimic many of the properties of an organ. There's a limit to what aspects of human biology we can replicate in a petri dish, but as organoid models become more complex, we'll increasingly use them in place of mouse models.



You're in the Leading Edge Symposium. What is that about? It's a cross-institutional effort to support women and nonbinary postdocs, with the goal of improving gender equity in the life sciences.

What are the biggest barriers to gender equity in academia? Some barriers disproportionately affect women, such as inadequate access to childcare. Women are also underrepresented in faculty positions, so it can be hard to find them as mentors and to feel a sense of belonging. These are just a few of the aspects of the institutional culture of academia that require change.

## What do you do for fun?

My husband and I like to travel, go hiking, and explore new restaurants. Some days I just like to hang out at home with my husband and my cat and watch movies or read.

# MAJOR NIH AWARDS

Einstein and Montefiore investigators received more than \$200 million in research funding from the National Institutes of Health during federal fiscal year 2022.

# Evaluating an Alzheimer's Screening Tool

Investigators at Einstein, Montefiore, the Regenstrief Institute, and the Indiana University School of Medicine have received an \$11 million grant from the National Institutes of Health (NIH) to evaluate an Einstein-developed test for assessing cognitive impairment and dementia. The five-minute screening tool was designed for people from a range of racial and ethnic backgrounds, education levels, and socioeconomic circumstances, with the goals of reducing disparities in predementia and dementia diagnosis and treatment and of improving dementia care overall. The study will enroll 6,600 participants presenting with cognitive concerns in 22 primary-care clinics in the Bronx and Indiana. Joe Verghese, M.B.B.S., M.S., is the principal investigator on the grant, chief of the unified divisions of geriatrics in the department of medicine and of cognitive & motor aging in the Saul R. Korey Department of Neurology at Einstein and Montefiore, and director of the Montefiore Einstein Center for the Aging Brain.

## Leading a New York Research and Training Consortium

The NIH has awarded Einstein a fiveyear, \$6.6 million grant to lead a New York-based consortium of medical schools to train up to 10 young scientists annually in kidney, urology, and hematology research. The grant establishes the New York Consortium for Interdisciplinary Training in Kidney, Urological, and Hematological Research, bringing together more than 100 research and education experts from Einstein, Columbia University Irving Medical Center, the Icahn School of Medicine at Mount Sinai, and the Renaissance School of Medicine at Stony Brook University. The consortium will recruit up to 10 trainees each year, who will focus on diseases such as sickle-cell and kidney disease that disproportionately affect Black and Hispanic people and other marginalized groups. The grant's principal investigator is Michal Melamed, M.D., M.S., professor of medicine, of pediatrics, and of epidemiology & population health at Einstein and a nephrologist at Montefiore.

## Studying Heart Failure in Hispanics

Researchers at Einstein and Montefiore have received a five-year, \$5.2 million NIH grant to explore the underlying causes of heart failure among Hispanics/ Latinos, who are at heightened risk for heart disease. Investigators will simultaneously evaluate heart function and the relationship between the heart and the aorta, the artery conveying oxygen-rich blood from the heart's left ventricle to the rest of the body. Researchers will recruit 1,600 Hispanic/Latino men and women over age 45 for the study. Participants will receive echocardiograms and other tests to determine the stiffness and functioning of the aorta, possible aorta-left ventricle coupling abnormalities, and the possible presence of heart failure and pre–heart failure. Carlos J. Rodriguez, M.D., M.P.H., the principal investigator on the grant, is a professor of medicine and of epidemiology & population heath at Einstein and the director of clinical cardiology research and of cardiovascular epidemiology at Einstein and Montefiore.

## **RESEARCH NOTES: MAJOR NIH AWARDS**



# The Link Between HIV Infection and Depression

Depression is the most common neuropsychiatric illness among people living with HIV (PLWH). Three Einstein researchers have received a five-year, \$3.85 million NIH grant to investigate the neurobiological mechanisms that may connect the two comorbidities. The researchers will test their hypothesis that systemic inflammation disrupts the blood-brain barrier (BBB) and allows peripheral blood mononuclear cells to cross the BBB, altering the brain's reward circuity and contributing to depression in PLWH. The project may lead to strategies for improving both mental health and overall health in PLWH. Project leader Vilma Gabbay, M.D., is the director of the Psychiatry Research Institute at Montefiore Einstein for Biomarkers and Dimensional Psychiatry. Anjali Sharma, M.D., M.S., is a professor of medicine at Einstein and an internist at Montefiore. Joan W. Berman, Ph.D., is a professor of pathology and of microbiology & immunology and the Irving D. Karpas Chair in Medicine at Einstein.

## Risk-Benefit Analysis of Playing Soccer

More than 25 million Americans play soccer, which is the world's most popular sport. Soccer benefits brain health by boosting blood flow to that organ, but recent studies show that highly repetitive heading of the ball is associated with structural brain changes and worse cognitive performance, similar to changes caused by concussion. The NIH has awarded Einstein researchers a five-year, \$3.4 million grant to assess the trade-offs between soccer's aerobic brain benefits and the adverse effects from heading. The study will involve neuroimaging, exercise testing, and cognitive testing of 280 young men and women, half of them soccer players. The principal investigator is Michael Lipton, M.D., Ph.D., professor of radiology and of psychiatry and behavioral sciences, associate professor in the Dominick P. Purpura Department of Neuroscience, and associate director of the Gruss Magnetic Resonance Research Center at Einstein and director of MRI services at Montefiore.

## Targeting Huntington's Disease Mechanisms Early

Deficits in cortical interneurons (which transfer signals between sensory and motor neurons) have been detected in people with Huntington's disease (HD), but their role in HD development has not been investigated. Mark F. Mehler, M.D., has received a five-year, \$3.4 million NIH grant to test whether preventing interneuron deficits from causing adverse effects can prevent HD or ameliorate its severity. Studying a mouse model of HD, Dr. Mehler and colleagues will use cell-transplantation techniques to investigate whether it's possible to restore impaired brain function during early stages of the disease. Dr. Mehler is a professor in and the chair of the Saul R. Korey Department of Neurology at Einstein and Montefiore, and a professor in the Dominick P. Purpura Department of Neuroscience and of psychiatry and behavioral sciences, the director of the Institute for Brain Disorders and Neural Regeneration, and the Alpern Family Foundation Chair in Cerebral Palsy Research at Einstein.



# Getting to the Heart of 22q11.2 Deletion Syndrome

One in 4,000 live births is affected by 22q11.2 deletion syndrome. Approximately 60% of patients with the syndrome have congenital heart disease, most commonly cardiac outflow tract (OFT) defects, varying in severity from mild to severe. Approximately half of infants born with OFT defects require surgery to survive. Bernice Morrow, Ph.D., has received a four-year, \$3.1 million grant from the NIH to better understand the developmental and genetic explanations for the wide variability in OFT defect severity. She and colleagues will analyze whole-genome sequences from people with 22q11.2 deletion syndrome, some with OFT defects and others without them. DNA variants identified in this way will then be validated in zebrafish using gene editing. Dr. Morrow is a professor of genetics, of obstetrics & gynecology and women's health, and of pediatrics, the Sidney L. and Miriam K. Olson Chair in Cardiology, and the director of translational genetics at Einstein.

## Developing New Drug Targets for HIV

To improve treatment for HIV, there is a need for longer-acting antiretroviral drugs to which HIV will not become resistant. One approach is to target host-virus interactions. Ganjam V. Kalpana, Ph.D., has received a five-year, \$3.1 million NIH grant to develop drugs that disrupt the interface between an HIV-1 enzyme and a host-cell protein. That host-cell protein mimics a segment of HIV-1 RNA that also interacts with the same HIV-1 enzyme to enable viral replication, so drugs that disrupt HIV-1 enzyme/host-cell protein interactions are also likely to inhibit viral replication. Dr. Kalpana and colleagues plan to develop dual-acting drugs that interfere with both virus/host-cell protein interactions and viral protein/viral RNA interactions. Ideally, such drugs would inhibit HIV-1 replication without inducing drug resistance. Dr. Kalpana is a professor of genetics and of microbiology & immunology and is the Mark Trauner Faculty Scholar in Neuro-oncology at Einstein.

# Unraveling the Role of a Mitochondrial Protein

ATP molecules provide the energy required for most cellular processes. Almost all ATP is synthesized in mitochondria by a protein complex known as the mitochondrial ATP synthase. This protein complex has also been thought to function in a different form as the mitochondrial permeability transition pore, which is involved in necrotic cell death. Richard Kitsis, M.D., has received a four-year, \$2.8 million NIH grant to conduct studies to better understand the functions of the mitochondrial ATP synthase. Using mouse models with cardiomyocytes deficient in this protein complex, Dr. Kitsis' lab will study the complex's role in cellular energetics and test whether it also functions as the mitochondrial permeability transition pore. Dr. Kitsis is a professor of medicine and of cell biology, the Dr. Gerald and Myra Dorros Chair in Cardiovascular Disease, and the director of the Wilf Family Cardiovascular Research Institute at Einstein, and a cardiologist at Montefiore.

# MONTEFIORE AND EINSTEIN MAVENS OF MEDICINE

# The Magic of Pediatric Genetic

Q&A With Dr. Melissa Wasserstein

elissa Wasserstein, M.D., is a professor of pediatrics and of genetics and the associate director of the Rose F. Kennedy Intellectual and Developmental Disabilities Center at Einstein, and the chief of the division of pediatric genetic medicine at the Children's Hospital at Montefiore. A native of Long Island, Dr. Wasserstein earned a medical degree at the New York University School of Medicine, and then completed a residency in pediatrics and a fellowship in medical genetics at the Icahn School of Medicine at Mount Sinai. She came to Einstein in 2016.

## Was there an "aha!" moment during your training that influenced your career path?

During my residency, on my first night covering the pediatric intensive care unit, one of my patients was a comatose baby. The metabolic genetics team determined that she had a rare inborn error of metabolism called "maple syrup urine disease," a potentially deadly condition. They did some magic with IV fluids and medications, and the next day she was sitting up in bed playing. I knew then and there that I would specialize in pediatric genetics. Today, that baby is an amazing young woman in her 20s, and she's still my patient.

#### Did you have any mentors?

Two pediatricians at Mount Sinai. One was Selma Snyderman [1916-2012], one of only two women in her medical school class at the University of Pennsylvania. But rather than being intimidated, she was absolutely fearless and went on to develop lifesaving treatments for children with inborn errors of metabolism. It was a very different time for women to be practicing medicine; when she had children, she was given just two weeks off for each pregnancy. Nonetheless, she and others showed a generation of women that they could be great physicians and have phenomenal family lives. The other mentor was Kurt Hirschhorn [1926-2022], a brilliant scientist, clinician, and role model. He was a pioneer in the field of cytogenetics and identified the genetic defect underlying Wolf-Hirschhorn syndrome. He loved the field of genetics as much as he loved learning and teaching, and this combination was incredibly motivating.

# What was the focus of your early research?

As an attending physician, I started working with patients who had Niemann-Pick disease, a rare genetic lipid-storage disorder that can cause a range of serious, progressive health problems. More than 25 years ago, I became involved in clinical studies to characterize the disease and, ultimately, in clinical trials of a novel enzyme replacement therapy. The therapy, Xenpozyme, was approved by the Food and Drug Administration in August 2022. It was a long, long journey but well worth the effort. We finally have a treatment. I'm excited to see what the next 20 years will bring as we move from enzyme replacement therapy to, perhaps, curative gene therapies. It's such a fascinating field. You have to keep learning because things change by the minute.

## Now that there's a treatment, will Niemann-Pick be added to routine newborn screening?

Possibly. I'm leading a study called ScreenPlus, funded by the National Institutes of Health [NIH], in which we're studying how well newborn screening works for 14 rare genetic disorders, including Niemann-Pick. For treatable rare genetic disorders, it's important to know as early as possible. Fortunately, new screening technologies have greatly expanded the number and types of disorders that we can detect in babies. But before we screen for these disorders, it's important to determine the accuracy of the tests and see how early detection affects the outcomes of infants who have the disorders. Another ScreenPlus focus is studying the ethical and social implications of screening tests.

## Can you provide some examples of the ethical and social implications of newborn screening?

There are a lot, especially now that we can screen babies for more and more conditions. For example, should we screen newborns for conditions that might not appear until later in lifeeven adulthood? Should we screen a newborn for untreatable diseases when knowing about them might allow parents to plan for the child's future and to make their own reproductive choices? As we move toward sequencing a baby's entire genome at birth—which is a distinct possibility—the practical and ethical implications of screening will become infinitely more complicated. We need to address these sorts of questions as early as we can.

## Your other NIH grant addresses inequities in genomic medicine. What is the aim of this study?

The idea behind NYCKidSeq—a joint effort of Montefiore-Einstein, the Icahn School of Medicine at Mount Sinai, and the New York Genome Center—is to increase access to genomic medicine among children from racial and ethnic minority groups in New York City. These kids bear a disproportionate burden of illness but lag in benefiting from advances in research and technology. We performed diagnostic wholegenome sequencing on 1,200 children from diverse backgrounds, with a focus on kids with unexplained seizures, developmental delays, heart disease, or immune abnormalities. We also tested new technologies to enhance educa"I'm excited to see what the next 20 years will bring as we move from enzyme replacement therapy to, perhaps, curative gene therapies."

#### - DR. MELISSA WASSERSTEIN

tion and counseling for families about genomic medicine.

## You were featured in a documentary with New York Giants running back Saquon Barkley. What was the documentary about?

The National Football League (NFL) was profiling Mr. Barkley's efforts to raise awareness about children with 22q11.2 deletion syndrome, which affects his young niece. This syndrome causes intellectual disability, congenital heart disease, and other issues. My involvement came about through the work of Bernice Morrow [Ph.D.], an Einstein professor who studies the genetics of the syndrome and was a driving force behind the creation of the Montefiore-Einstein Regional Center for 22q11.2 Deletion Syndrome, where I'm part of the treatment team.

#### What do you do for fun?

I am an avid New York Times crossword puzzler and a lifelong runner.







# MENTORSHIP Matters

Einstein scientists and their trainees find that collaboration benefits both sides of the equation

BY TERESA CARR



aria Alejandra Feliz Norberto is a big believer in mentors. In fact, the third-year Einstein graduate student has two of them. Moreover, she herself has become a mentor, working with four high school students and with two students from her alma mater, Lehman College.

"Being a mentor is all about opening doors for students—giving your mentees a glimpse of what's possible," Ms. Feliz Norberto says. "It also means providing support, so the mentee knows that someone is in their corner to help. That's crucial."

Mentorship is essential for developing the next generation of scientific researchers. Mentees learn professionalism, get hands-on training, are exposed to different specialties, and become more effective in the research arena. The relationship benefits the mentors too: Studies show that mentors experience increased scientific productivity and enjoy more career success than scientists who don't mentor.

Here, we highlight five groups of Einstein mentors and their mentees and explain how the relationships have improved their scientific investigations.

#### PH.D. PARTNERSHIP:

## TERESA BOWMAN, SOFIA DE OLIVEIRA, AND MARIA ALEJANDRA FELIZ NORBERTO

When it came time to choose a mentor for her graduate research, Ms. Feliz Norberto (pictured across at top left) couldn't decide. After arriving at Einstein, she had enjoyed her postbaccalaureate research experience in the lab of Teresa Bowman, Ph.D., associate professor of developmental and molecular biology, of oncology, and of medicine at Einstein and a member of the Ruth L. and David S. Gottesman Institute for Stem Cell Biology and Regenerative Medicine and Montefiore Einstein Cancer Center.

And during her rotation period while she was in the first year of grad school, she'd had a great research experience in the lab of Sofia de Oliveira, Ph.D., assistant professor of developmental and molecular biology and of medicine at Einstein and chair of the Montefiore Einstein Cancer Center women's initiative network. "I wanted both on my team," she says.

She ended up asking if she could have each of them as mentors, and the two scientists agreed. "We wanted to work with her," says Dr. Bowman. "So we created a research project for Maria Alejandra that would capture both of our areas of interest."

It helped that both mentors use zebrafish as model organisms to study blood cells. Dr. de Oliveira studies neutrophils, the white blood cells that fight infections, heal injuries, and combat cancer by infiltrating the tumor microenvironment. And Dr. Bowman focuses on mutations in hematopoietic (blood-forming) stem cells (HSCs) that lead to myelodysplastic syndromes (MDS), the blood disorders in which bone marrow produces defective blood cells that crowd out normal adult blood cells. About one-third of MDS cases



Ph.D. student Maria Alejandra Feliz Norberto, right, discusses zebrafish with mentors Sofia de Oliveira, Ph.D., left, and Teresa Bowman, Ph.D.

"Having two mentors who are successful female scientists tells me that I can help other students see themselves in this position one day."

- PH.D. STUDENT MARIA ALEJANDRA FELIZ NORBERTO



evolve into acute myeloid leukemia, an often-deadly blood cancer.

It turns out that some MDS patients also have too few neutrophils, leaving them susceptible to infection. "That allowed for a good collaboration involving both mentors," says Ms. Feliz Norberto. For her project, the three of them decided, Ms. Feliz Norberto would investigate interactions between HSCs and neutrophils that eventually lead to MDS.

The arrangement has benefited Ms. Feliz Norberto as well as her mentors. "I am learning a lot about neutrophils and thinking about the feedback they provide to the blood system and how that feedback winds up regulating HSCs," Dr. Bowman reports. Dr. de Oliveira says she is "learning how HSCs—the progenitors of the blood system—affect what we see later in neutrophils."

Ms. Feliz Norberto dreams of having her own lab someday. "As a member of an underrepresented minority, I sometimes have trouble seeing myself in these big positions," she says. "But having two mentors who are successful female scientists tells me that I can make this happen and that I can help other students see themselves in this position one day."

## POSTDOC COLLABORATION: NICHOLAS SIBINGA AND GUSTAVO OLIVEIRA DE PAULA

n 2018, Gustavo Oliveira de Paula, Ph.D., traveled from his native Brazil to accept a postdoctoral position in the lab of Nicholas Sibinga, M.D., professor of medicine and of developmental and molecular biology at Einstein. The two agreed to give the arrangement a year. Now, nearly five years later, Dr. Oliveira de Paula is still here.

The good fit was not immediately apparent. Dr. Sibinga studies the biological mechanisms of cardiovascular disease. For his Ph.D. research, Dr. Oliveira de Paula had focused on pharmacology. But to develop effective drugs, he realized, he could benefit from a mentor with expertise regarding the biological processes that lead to disease.

Dr. Sibinga viewed the relationship as a win-win. "Gustavo could learn some new science," he realized, "and the lab would benefit from his pharmacology expertise. People typically think that the flow of information goes from senior to junior colleagues, but it often goes the other way around."

Indeed, the two are combining their knowledge domains to reach the same goal. "We're dedicated to understanding the cellular processes in heart disease better, with an eye to identifying molecules to target with drug therapies," says Dr. Sibinga, who is also a cardiologist at Montefiore.

Dr. Oliveira de Paula uses mouse models to study the cellular changes affecting blood vessels as they become clogged with plaque. He's also exploring how angioplasty and stenting—cardiac procedures for opening blocked arteries—affect cellular processes. For example, he notes that one-fourth of patients who undergo

Nicholas Sibinga, M.D., left, and Gustavo Oliveira de Paula, Ph.D., review the cellular changes in heart disease. angioplasty plus stenting end up with scar tissue around the stent, which narrows the artery again. "Ultimately, we'd like to find new ways to treat vascular obstruction, possibly without invasive procedures," he says.

Good mentor-mentee relationships can last a lifetime. Dr. Oliveira de Paula intends to apply for grants in both the United States and Brazil to fund his own independent research. "But I feel like wherever I go," he says, "I'm going to maintain this collaboration with Nick." "People think that the flow of information goes from senior to junior colleagues, but it often goes the other way around."

- DR. NICHOLAS SIBINGA





M.D./Ph.D. student Hayden Hatch examines a vial containing fruit flies in the lab of Julie Secombe, Ph.D.

#### M.D./PH.D. MENTORSHIP: JULIE SECOMBE AND HAYDEN HATCH

arly in his M.D./Ph.D. training, eighth-year Einstein student Hayden Hatch realized he wanted to work in the lab of Julie Secombe, Ph.D. She was studying KDM5 proteins that regulate the expression of genes involved in intellectual disability and certain cancers. The hitch was that Mr. Hatch, a neuroscience student, needed a neuroscience faculty member as a mentor—but Dr. Secombe was at the time an associate professor of genetics.

"I was over the moon at the prospect of having someone with a neuroscience background come to my lab," Dr. Secombe says. "So I decided to apply to join the neuroscience department, even though I had to meet with every single tenured faculty member over there," she says with a laugh. The secondary appointment in neuroscience, she says, "turned out to be a great thing for me personally." She is now a professor of genetics and in the Dominick P. Purpura Department of Neuroscience.

Mr. Hatch had never taken a genetics class but had spent two years as a research technician at New York University Medical Center, studying the fruit-fly brain to better understand the neuronal mechanisms underlying complex behaviors. And Dr. Secombe, who also worked with fruit flies, needed someone to investigate how KDM5 proteins regulate neurodevelopment "Julie encourages me to put myself out there. The recognition is all due to her encouragement and belief in my potential."

— M.D./PH.D. STUDENT HAYDEN HATCH



within the fruit-fly brain. "That would help us better understand how mutations in these genes contribute to human disease," she says.

The two clicked right from the start. "Did we talk about cats at our first meeting?" asks Dr. Secombe. "Probably," answers Mr. Hatch. "We bonded over our love of cats."

For his thesis research, Mr. Hatch conducted experiments that showed that KDM5 proteins help regulate the development and function of neurons. "We saw similar behavioral deficits, such as impairments in learning and memory, in fruit flies that had the same genetic variants as those that cause intellectual disability in humans," he notes.

His research led to multiple publications and has garnered numerous accolades, including Einstein's Julius Marmur Award, Einstein's Junior Investigator Neuroscience Research Award, and the Genetics Society of America's DeLill Nasser Award for Professional Development in Genetics. "Julie encourages me to put myself out there," says Mr. Hatch. "The recognition is all due to her encouragement and belief in my potential."

Both say that a meaningful aspect of their collaboration was connecting with families of people with intellectual disabilities linked to mutations in KDM5 genes. Eleven of these families traveled from around the world to attend Einstein's Rare Disease Day in 2020, which focused on KDM5. In 2021, in the *American Journal of Medical Genetics*, the two researchers published results of a survey of caregivers of 37 children with the rare disorder—the largest study group reported to date.

Because of his interest in intellectual disability, autism, and other neurodevelopmental disorders, Mr. Hatch plans to apply for a residency in pediatric neurology this year. He would like to treat patients and to become a principal investigator in his own lab, where he can also mentor students.

"Mentoring gives you an amazing opportunity to instill a great scientific mindset in the next generation," Dr. Secombe says. "You get to see students go out in the world and succeed, knowing you've helped them develop what they take with them."

## MEDICAL STUDENT GUIDANCE: ROY CHUCK AND JESSINTA OSENI

t's the nature of science that "many great ideas either totally bomb or at least don't turn out as expected," says Roy Chuck, M.D., Ph.D. He was lamenting that, all too often, medical students who add a full year of research to their training have little to show for their efforts—which could have been the case for one of his mentees, fourth-year student Jessinta Oseni.

But after several of her initial research projects with Dr. Chuck were delayed or failed to work out, the pair decided to address an important clinical question: Can corneas from young donors who've died from head trauma be safely donated for transplant?

Working with Saving Sight, one of the nation's largest eye banks, Ms. Oseni examined 287 corneas that had been removed from people younger than 50 who had died from head injuries. Studying data on and images of those corneas, she focused on the endothelial layer—the cell layer that lines the bottom of the cornea and that's responsible for keeping the cornea "I learned that it's important to know when to ask for assistance and that it takes a team to successfully complete a project."

— MEDICAL STUDENT JESSINTA OSENI



## MENTORS AND MENTEES

compact and clear, allowing for sharp vision in organ recipients.

The transplant community had long assumed that head trauma—from a gunshot wound or car accident, for example—would so significantly damage the corneal endothelium that those corneas would be unusable for transplant surgery. However, Ms. Oseni's careful study found that corneas from head-trauma victims were not significantly different from corneas removed from other people. She presented the results of her study at two major conferences, and they were published in the journal Cornea in November 2022.

Dr. Chuck, who is a professor of ophthalmology and visual sciences, the Paul Henkind Chair in Ophthalmology, and a professor of genetics at Einstein and the chair of ophthalmology at Montefiore, hails the importance of Ms. Oseni's findings. "If we can continue to figure out which factors make a cornea transplantable or not transplantable using evidence-based methods, we're going to affect the world as we expand our scarce donor-organ pools," he says.

Ms. Oseni says she is grateful that Dr. Chuck gave her the freedom to run her study but was always there for guidance. "As a student researcher, you want to figure everything out yourself," Ms. Oseni says. "I learned that it's important to know when to ask for assistance and that it takes a team to successfully complete a project."

Dr. Chuck notes that becoming a good mentor can take time. "There are some faculty members who are naturals as mentors, and for others there's a learning curve," he says. "I don't know that I was great at mentoring when I first began taking on students 25 years ago, but I think I'm getting better at it."



Fourth-year medical student Jessinta Oseni goes over her corneal-donor research project with her mentor, Roy Chuck, M.D., Ph.D.

# Alumni Connection Hasan Bazari and Melissa lammatteo

ast summer, Melissa lammatteo, M.D. '12, FAAAAI, faced a dilemma: Should she stay in academic medicine or accept a job offer from a pharmaceutical company to oversee the first-in-humans trial of a vaccine for peanut allergies? Taking the job would cut her off from what she loved about medicine—the personal interactions with patients. But she was excited by the possibility of affecting people's lives on a global scale.

To help her decide, she called on the wisdom of one of her mentors, Hasan Bazari, M.D. '83, at Massachusetts General Hospital (MGH) in Boston. The two Einstein alumni had first met during Dr. lammatteo's residency at Harvard Medical School and MGH. She'd been considering a switch from emergency medicine to internal medicine and was nervous about meeting Dr. Bazari, who was the director of MGH's internal medicine program at that time.

"But he was so warm and welcoming," she says, "and we had an instant connection through Einstein." Dr. Bazari became her rock—easing her transition to internal medicine, connecting her with other mentors when she went on to specialize in allergy and immunology, and even helping her husband, a lawyer, find a job in Boston.



Hasan Bazari, M.D. '83, and his mentee, Melissa lammatteo, M.D. '12.

Dr. Bazari says that more than 1,000 trainees passed through the MGH internal medicine program while he was in charge. But Dr. lammatteo stood out, he says: "You didn't have to tell her what to do—just ask the right questions."

When it came to discussing her job dilemma, Dr. lammatteo appreciated how Dr. Bazari helped guide her to the decision she realized was in her heart all along. "He's like [the *Star Wars* character] Yoda," she says. "He's so brilliant and yet so humble."

With his support, she says, she felt confident about taking her career in a new direction and accepted the position as a clinical

# "The process of helping young people see the world is a privilege."

- DR. HASAN BAZARI

development physician at Allergy Therapeutics.

Today, Dr. Bazari teaches, volunteers for the Einstein Alumni Association's board of governors, and maintains relationships with scores of mentees. "The process of helping young people see the world is a privilege," he says. "You get to watch someone's true purpose unfold before your eyes. It's magical." **E** 

# HEALING CHILD & TEEN NIENTAL HEALTH



# The kids are not all right ... but they're getting better, thanks to innovative clinical and research programs at Montefiore and Einstein

## **BY GARY GOLDENBERG**

n February 2021, at the height of the COVID-19 pandemic, the Citizens' Committee for Children of New York launched a survey of more than 1,300 young people ages 14 to 24 from across the city.

Two of the most-striking findings: 35% of youths surveyed citywide—and half of those in the Bronx—said they wanted or needed mental health services from a professional, yet only 42% of those desiring mental health services reported receiving them.

All too many children and adolescents are plagued by depression, suicidal thoughts, anxiety, loneliness, isolation, sadness, or hopelessness—just a partial list of their mental health woes (see page 39). Such problems are especially common in low-income areas, immigrant households, and minority communities—in other words, in places such as the Bronx. And everything related to mental health everywhere has been made worse by the lingering pandemic.

Ambassadors for the Arts and Integrative Medicine program at Montefiore Einstein, Ciro Joel Trinidad and Pluto Castillo.

# HEALING CHILD & TEEN MENTAL HEALTH

"Mental health challenges in children, adolescents, and young adults are real, and they are widespread," writes U.S. Surgeon General Vivek Murthy, M.D., in a 2021 report, *Protecting Youth Mental Health*. "But most importantly, they are treatable, and often preventable."

Dr. Murthy's perspective may seem overly optimistic, but health professionals around the county are making real progress against the growing problem of child and adolescent mental illness—as shown by the work of dozens of Montefiore and Einstein psychologists and psychiatrists. Some of these efforts are described in the following pages.

# **JUST SAY YES**

Montefiore's child psychologists have developed a variety of arts and activity programs to help local children and teens cope with mental health issues

Why you have to be like this? You was really nice at first But now you are really messed up to me. Why you have to be like that?

his lyric was written not by a seasoned songwriter but by a 9-year-old Bronx boy. Carlos (not his real name) experienced abuse as a young child and was bullied later in school—traumas that have deeply affected him. He was at Montefiore's Moses Child Outpatient Psychiatry Division (COPD) for counseling when his therapist, Jenny Seham, Ph.D., introduced him to Hear Your Song, a nonprofit organization that empowers children through songwriting.



"When there's a block in therapy, the arts can often provide a way through. It's an expansion of the ways we can reach our patients, in addition to traditional means." — DR. JENNY SEHAM

"I said to Carlos, 'My friends are musicians. Would you like to write a song with them?' And just like that, he started singing," says Dr. Seham. Carlos later returned to the COPD to join the songwriting program.

It's one of the COPD's more than half dozen Youth Empowerment Series (YES) programs aimed at helping children and adolescents come to terms with mental health issues, from post-traumatic stress disorder to depression to anxiety.

"The idea is to create a safe, therapeutic environment where kids, working individually and in groups, can actively explore whatever is troubling them, under the guidance of mental health professionals and local experts in the arts and other fields," says Dr. Seham, founder and director of Montefiore Einstein's Arts and Integrative Medicine (AIM) program, which oversees YES.

Launched in 2018, AIM offers 12- to 15-week sessions in songwriting, dance, yoga, photography, painting, poetry, and gardening, which are open to children ages 5 to 21 who are already receiving therapy at Montefiore. Each program culminates with a public exhibit or performance featuring the participants' creations. Most prominent is the YES Art Gallery, a rotating art exhibition just off the main lobby of Montefiore Medical Center on 210th Street, curated and directed in collaboration with Fine Art at Montefiore Einstein.

The goal is to bring joy, inspire creativity, and provide health benefits. "Our programming is founded on evidence-based practices that have been shown to affect both mental and physical health," says Dr. Seham. She was referring to a 2019 World Health Organization report, *What Is the Evidence* 

Clockwise from top left: A young woman focuses on her painting at Montefiore Einstein's Arts and Integrative Medicine program; Pluto Castillo strums a ukulele in the Community Garden; a keyboard songwriting session gets underway; and a roomful of young artists get creative with their brushes and bottles of paint.









# HEALING CHILD & TEEN MENTAL HEALTH

*on the Role of the Arts in Improving Health and Well-Being?*, which reviewed findings from more than 900 relevant publications from around the globe.

"When there's a block in therapy, the arts can often provide a way through," adds Dr. Seham, an artist, choreographer, dancer, and actor as well as a psychologist and an assistant professor of psychiatry and behavioral sciences at Einstein. "It's an expansion of the ways we can reach our patients, in addition to traditional means."

Through her own studies, Dr. Seham is adding to the evidence in support of arts programming for youth with mental health issues. She also examines the impact of programs on the broader community, in and out of the hospital. In two recent studies, she found that the YES Gallery and the YES Community Garden positively influenced the mood of Montefiore employees (no small benefit for workers in such a high-stress environment) and could help reduce the stigma associated with mental illness.

As for Carlos, the YES songwriting program certainly appears to be working. "He ended up writing a whole song about 'going through the dark and coming into the light," says Dr. Seham. "He tells me he sings it all the time at home."

"Our programming is founded on evidence-based practices that have been shown to affect both mental and physical health." — DR. JENNY SEHAM



Teens gather with guitars and a laptop computer for a songwriting session at Montefiore Einstein's Arts and Integrative Medicine program.

# Portrait of a Young Artist

iro Joel Trinidad of the Bronx wants to shine a light on the impact of art on mental health. His father passed away when Ciro was 11, sending him into a deep depression. A month later, he was diagnosed with acute lymphocytic leukemia, an aggressive type of blood cancer. The next three years were one long blur-an endless stretch of hospitalizations at the Children's Hospital at Montefiore (CHAM) and elsewhere, with treatments that caused bouts of confusion, epileptic seizures, and crippling muscle weakness. Bedbound for months on end, he grew increasingly anxious and fearful about socializing.

Five years into his ordeal, Ciro's psychotherapist, Jenny Seham, Ph.D., recommended group therapy programs at Montefiore's Moses Child Outpatient Psychiatry Division, where he could mingle with other kids with the same concerns. Trembling with anxiety, he attended a few sessions, dropped out for a while, and eventually returned. "What calmed me down was finding other teenagers with the same interests in music, video games, and anime," he says. Still, depression and anxiety would get the best of him.

When she learned that Ciro was interested in drawing, Dr. Seham urged him to join the Youth





Three of artist Ciro Joel Trinidad's drawings were on display earlier this year in the Youth Empowerment Series Art Gallery at Montefiore.



Empowerment Series (YES) Arts Group, a component of Montefiore Einstein's Arts and Integrative Medicine, or AIM, program. There, psychotherapists and professional artists use the arts to create a healing environment for children and adolescents with mental health issues. Ciro started drawing again and impressed everyone with his talent.

His social skills flourished along with his artistic skill. "It distracted my mind from all my other problems and gave me practice socializing and communicating," he says.

In 2022, Dr. Seham invited Ciro to exhibit his works in the YES



Montefiore honored Ciro Joel Trinidad with its annual Arts and Integrative Medicine Ambassador Award in recognition of his artistry, advocacy, and service.

Art Gallery at Montefiore, but the invitation awakened painful childhood memories: classmates had ridiculed his artwork back in elementary school. "I would hide my drawings from my teachers, from other students," he recalls. But with his newfound confidence, Ciro agreed to exhibit his work.

"I'm still working on my issues," admits Ciro, now 21. "I can't say I'm happy or sad, more like in between, neither in the light nor in the dark."

But there's a much brighter side to his remarkable story. Today, he's cancer free and attending the Borough of Manhattan Community College, majoring in animation and motion graphics. He has since graduated from the YES program but remains active as an AIM ambassador, mentoring children in the Arts Group. "I want to help others who are dealing with mental health issues understand that they can actually enjoy life," says Ciro.

Last year, Montefiore honored him with its annual AIM Ambassador Award in recognition of his artistry, mental health advocacy, and service to the community.

"This program should be expanded to other hospitals," says the young artist. "It has so much potential." The same could be said about Ciro.

"I want to help others who are dealing with mental health issues understand that they can actually enjoy life." — ARTIST CIRO JOEL TRINIDAD



# HEALING CHILD & TEEN MENTAL HEALTH

# GETTING TO THE SOURCE OF ADOLESCENT DEPRESSION

Irregularities in the brain's reward circuit may play a key role

hat old medical-school joke— "Half of everything we teach you is wrong, but we don't know which half"—has the ring of truth when it comes to teens stricken by major depressive episodes: doctors know that half of them will fully recover, while the other half will develop severe depression or a chronic mood disorder—but doctors can't predict who will recover and who won't.

"In psychiatry, we diagnose depression from symptoms, but that can be subjective, and it doesn't give us much insight into a patient's prognosis," says Vilma Gabbay, M.D., professor of psychiatry and behavioral sciences and in the Dominick P. Purpura Department of Neuroscience at Einstein. "I would argue that this is particularly important

# Neurocircuitry in Adolescent Depression



Regions of the reward-attainment network in adolescents where brain connectivity patterns were associated with the severity of anhedonia (the inability to experience pleasure), a core depression symptom.

for depression, since it's associated with suicide, the second-leading cause of death in adolescents and young adults."

Depression is characterized by persistent feelings of sadness or irritability and decreased ability to experience pleasure (anhedonia). The condition is poorly understood biologically and has a range of possible causes, including genetics, stressful life events, and medical conditions.

"My lab is focused on identifying the neurobiological mechanisms that

"We hope our study will identify objective diagnostic criteria for adolescent depression and will lead to targeted therapies that address the underlying causes of the condition and not just the symptoms."



underlie adolescent depression and that may predict outcomes," says Dr. Gabbay, who is also the director of the Psychiatry Research Institute at Montefiore Einstein (PRIME) Center for Biomarkers and Dimensional Psychiatry.

She has a good idea where to start looking. In previous research, Dr. Gabbay found that, of all the core symptoms of adolescent depression, only anhedonia the inability to feel pleasure—was associated with worse outcomes, including an increased risk of suicide. The discovery suggests that impaired brain-reward circuitry—which controls the ability to feel pleasure—might cause severe cases of teen depression to continue.

Using brain imaging to look deeper, Dr. Gabbay found that depressed adolescents have abnormally low levels of GABA (the brain's major inhibitory neurotransmitter), plus abnormal activation patterns in brain regions related to anticipating and attaining reward (the "planning" and "receiving" components of reward processing). Dr. Gabbay also found that immune system irregularities, including elevated levels of interferon
# Support for Pandemic-Affected Parents and Kids

t was obvious from the start of the pandemic: although children were largely resistant to the disease, they were all too susceptible to the anguish it caused—fear of or grief about losing a parent; social isolation; the difficulties of remote learning.

Clinicians were in uncharted territory, uncertain how best to respond to this novel threat to pediatric mental health. "But we knew from decades of research that child resilience is tied to caregiver resilience," says Sandra Pimentel, Ph.D., chief of child and adolescent psychology at Montefiore and Einstein and an associate professor of psychiatry and behavioral sciences at Einstein. So Montefiore's experts in psychiatry and behavioral sciences and in pediatrics began extending lifelines to parents, both on the staff and in the community.

Through a community speakers bureau she created, Dr. Pimentel and colleagues gave dozens of talks in neighborhoods throughout the Bronx and met with organizations such as parent-teacher and faith-based groups. They developed parent support groups, created a confidential emotional support line for caregivers, produced tip sheets on such topics as "Helping Kids Cope with Grief and Loss," and led grand rounds such as "Supporting Family and Child Emotional Health During COVID-19."

Help was also offered to teens and young adults directly affected by the pandemic. Dr. Pimentel and her colleagues in the Becoming an Emerging Adult at Montefiore (BEAM) program collaborated with local Bronx youth to conduct virtual town halls discussing loneliness and isolation.

Meanwhile, Vilma Gabbay, M.D. (see opposite page), was awarded a \$4.1 million National Institutes of Health grant to study interventions to reduce pandemic-related symptoms of depression and anxiety among Bronx caregivers. The randomized trial will evaluate three approaches. One-third of the 360 participants will receive 12 weeks of group telehealth therapy, expanding on the work of Connecting and Reflecting Experience (CARE), a groupbased program at Montefiore and Einstein developed by Amanda Zayde, Psy.D., assistant professor of psychiatry and behavioral sciences at Einstein and psychologist at Montefiore. Another third of the participants will receive

#### PARENTS TIP SHEET Coping Skills to Teach Your Child

#### Deep Breathing

Drawing in air by expanding the belly can help your child relax and reduce heart rate, blood pressure, and stress hormones.

#### Mindfulness

Helping your child focus on what's around them, what they see and hear, can help pull your child away from the anxiety and ground them in the present moment. Doing activities together (playing a game) that can bring their attention into the present moment is another way to practice.

#### Coping Statements

Teach your child to talk back to their worries-"Even though I'm scared, I can handle it." "I'm stronger than my worries."

#### Coping Ahead

Teach your child that when you have to do something that makes you nervous, it helps to plan in advance how to help yourself in the moment. If you can push through it, it will get easier!

#### • Acceptance

Help your child acknowledge discomfort without fighting it. Ignoring, judging, or avoiding the anxiety will likely make it grow bigger and more powerful. Teach them that everyone feels anxious at times, and that it is OK to feel anxious. You can feel anxious and do things that are important to you anyway.

Source: Psychiatry and Behavioral Sciences, Montefiore Medical Center

12 weeks of parenting education supported by the Valera Health smartphone app, with a focus on teaching caregivers problem-solving, communication, and coping skills. The final third will receive both interventions.

"As a psychiatrist and a mom, I want caregivers in the Bronx to have the tools to be confident in tough parenting situations and tackle stress and uncertainty in a healthy way," says Dr. Gabbay.

#### HEALING CHILD & TEEN MENTAL HEALTH

and other inflammatory proteins, were associated with anhedonia severity and abnormal reward circuitry in adolescents.

Now, in a new study supported by a grant from the National Institute of Mental Health, Dr. Gabbay is taking a more comprehensive look at how reward dysfunction and immunological abnormalities might contribute to adolescent depression. She plans to enroll a diverse group of 120 adolescents with depressive symptoms and follow them over two years.

The teens will receive comprehensive clinical evaluations, and those diagnosed with clinical depression will take computerized tests designed to engage and measure their reward circuitry. The researchers will look for known biomarkers of inflammation and measure participants' GABA levels. In addition, the teens will undergo functional magnetic resonance imaging during the reward testing to evaluate their ability to feel pleasure, depression severity, functioning, anxiety, and risk of suicide.

"We hope our study will identify objective diagnostic criteria for adolescent depression and will lead to targeted therapies that address the underlying causes of the condition and not just the symptoms," says Dr. Gabbay.

#### RX: READ TWO STORIES AND CALL ME IN THE MORNING

"Come, and take choice of all my library, and so beguile thy sorrow." — William Shakespeare, Titus Andronicus

eading, as Shakespeare realized, has the power to soothe troubled souls. Four centuries later, the bard's insight has been formalized into "bibliotherapy," a type of psychotherapy in which people read carefully selected



"If you ask patients in your office if they're thinking about hurting themselves, they may say 'No'—but that could change five minutes after they walk out the door."

- DR. PETER FRANZ

materials that help them cope with mental health issues. Bibliotherapy has now entered the digital realm and found its way into social media platforms designed to support people at risk for suicide and other personal crises.

One proponent of digital bibliotherapy is Peter Franz, Ph.D., a postdoctoral research fellow at PRIME, who studies ways to prevent self-injurious thoughts and behaviors. "Loneliness is a major risk factor for suicide," says Dr. Franz. "The question is, how can we create connections between people that are reparative and therapeutic?"

The standard approaches to suicide prevention—traditional psychotherapy and medical treatment—could certainly be improved upon. According to the Centers for Disease Control and Prevention, suicide rates have barely budged over the last century, and suicide now ranks as the second-leading cause of death among individuals ages 15 to 44.

"There's a great need for new approaches, particularly ones that are low cost, engaging, accessible, and scalable," says Dr. Franz. Digital bibliotherapy appears to fit the bill.

"We all know that people can engage in potentially harmful communication online," Dr. Franz acknowledges. "But there are also places online that offer a supportive environment where people are comfortable being themselves and where there's less stigma associated with talking about mental health concerns such as suicide. We know that young people at risk for suicide are engaging in online discussions at a higher rate than their agematched peers, and linking them up with a supportive online community might be incredibly helpful."

Could such an online resource work as intended? To find out, Dr. Franz tested the impact of digital bibliotherapy on 528 adults—each with a history of suicidal thoughts—who were randomly divided into two groups. One group read short stories on a social media platform that describe firsthand experiences with suicidal thoughts and recovery from having those thoughts. People in the second group were placed on a waiting list for the platform. After two weeks, participants who read the stories reported significantly less intense suicidal thoughts compared with people on the waiting list, according to Dr. Franz's paper, which was published in August 2022 in the *Journal of Consulting and Clinical Psychology.* 

"The effects were relatively modest," Dr. Franz says. "But the big upside is that this intervention can be given to anyone, anywhere, and at very low cost. And it can be given anytime, with no waiting to talk to a therapist or get a prescription." He is now planning to test the digital bibliotherapy intervention on adolescents.

Dr. Franz has done research with TeenHelp.com and TheMighty.com websites that provide online support for people experiencing mental health challenges—and is also exploring other ways to use digital technology to support young people at risk.

"Suicidal thoughts tend to ebb and flow quite a bit, even during the course of a single day," he explains. "If you ask patients in your office if they're thinking about hurting themselves, they may say 'No'—but that could change five minutes after they walk out the door. We need a way to assess suicidal thoughts and engage with people more regularly."

One solution, Dr. Franz believes, is to use a smartphone app to check in on people several times a day. "In theory, we could more accurately assess their suicide risk and provide interventions in a timelier manner," he says. "We could also use the app to better understand what life events tend to trigger suicidal thoughts and behaviors. Then we could intervene before those thoughts and behaviors ever materialize. I'd say that a very large proportion of individuals who are thinking about suicide are not receiving treatment," continues Dr. Franz. "That's a challenge we need to overcome."



"We know that young people at risk for suicide are engaging in online discussions at a higher rate than their age-matched peers, and linking them up with a supportive online community might be incredibly helpful." — DR. PETER FRANZ

#### HEALING CHILD & TEEN MENTAL HEALTH

#### ADOLESCENCE AND RACISM—AN INSIDIOUS MIX

New guidelines for helping youth who experience racism-related stress

avigating adolescence is tough—and often much tougher for teens who regularly encounter racism. Some are naturally resilient and able to weather those stresses, but others suffer significant psychological harm, especially those already coping with mental health issues.

"Racism has been around forever. Over the past few decades researchers have amassed enough evidence to unequivocally show that it can be harmful, emotionally and physiologically—exacerbating everything from anxiety to depression to suicidal ideation," says Ryan DeLapp, Ph.D., who was until recently an assistant professor of psychiatry and behavioral sciences at Einstein.

The problem now has its own name: racism-related stress (RRS), defined as psychological distress stemming from direct or indirect experiences of racism, ranging from racial microaggressions (subtle, intentional, or unintentional degradations and exclusions that may be imperceptible to others) to overt acts of discrimination in everyday life (e.g., in school, at work, in social situations).

A recent twist to RRS is the nearconstant depiction of racism in the broader culture, such as cable news and social media after events such as the murder of George Floyd.

"The natural reaction is to want to learn more, to make sense of it all," says Dr. DeLapp. "More information is better, right? But it can set off endless 'doomscrolling,' where information overwhelms your ability to absorb it."



The endless replays of acts of violence against people of color—a staple of cable news coverage—can also be traumatizing, experts say. And making matters worse, few mental health professionals are prepared to help young people who experience RRS.

While he was a full-time faculty member at Einstein, Dr. DeLapp and his colleague Laurie Gallo, Ph.D., assistant professor of psychiatry and behavioral sciences at Einstein and a psychologist at Montefiore, worked to fill this underappreciated gap in clinical care. Together they developed REACH UP (Racial, Ethnic, and Cultural Healing Unifying Principles), a therapeutic framework designed to help clinicians identify and treat adolescents and young adults affected by RRS.

REACH UP aims to empower patients by identifying challenges that hinder the ability to embrace their racial/ethnic identity, and developing both acute and long-term mechanisms for coping with the intense emotional discomfort associated with racism. The intervention unfolds over six to eight therapy sessions.

"Racism has been around forever. Over the past few decades researchers have amassed enough evidence to unequivocally show that it can be harmful, emotionally and physiologically."

— DR. RYAN DELAPP

Drs. DeLapp and Gallo aren't the first to prescribe remedies for RRS. However, their approach is the first to target clinicians of varying training levels, cultural backgrounds, and theoretical orientations. REACH UP is not a standalone therapy; it was devised to supplement other psychotherapeutic approaches.

"In most clinical settings, particularly hospital-based outpatient psychiatric clinics, patients present with other mental health issues. RRS is rarely, if ever, a primary reason why they are seeking help. Our approach was therefore crafted to be flexible enough to work within a patient's overall treatment plan," says Dr. DeLapp, whose treatment guide was published in November 2022 in the *Journal of Health Service Psychology*.

In March 2023, Dr. DeLapp took on a new position: launching the REACH UP program at a group practice serving youths and young adults across several states. He continues working as a part-time clinician at Einstein and Montefiore, focused on helping young people cope with stress related to racism.

# CHILD AND YOUTH MENTAL HEALTH: BY THE NUMBERS



ONE IN SIX U.S. youth ages 6 to 17 experiences a mental health disorder each year

#### MORE THAN ONE IN

THREE high school students continually felt unhappy or hopeless in 2019, A 40% INCREASE SINCE 2009

50% of all lifetime mental illness begins by age 14 and 75% begins by age 24

#### **ONE IN FIVE**

young people reports that the pandemic had a significant negative impact on their mental health



Socioeconomically disadvantaged children and adolescents are **TWO TO THREE TIMES MORE LIKELY** to develop mental health conditions than peers with higher socioeconomic status

**70**<sup>%</sup>

of youth in the juvenile justice system have diagnosable mental health conditions

SUICIDE IS SECOND TO ACCIDENTS as the leading cause of death among people ages 10 to 14 in the United States

YOUNG BLACK ADOLESCENTS are twice as likely to die by suicide than their white peers

LESBIAN, GAY, AND BISEXUAL YOUTH are nearly four times more likely to attempt suicide than straight youth

The percentage of high-school girls reporting "persistent feelings of sadness or hopelessness" rose from 36% to 57% from 2011 to 2021, with the sharpest increase occurring during the COVID-19 pandemic. Nearly 1 in 3 seriously considered suicide in 2021—up from 1 in 5 in 2011.

Sources: American Academy of Child & Adolescent Psychiatry; Centers for Disease Control and Prevention; National Alliance on Mental Illness.

#### HEALING CHILD & TEEN MENTAL HEALTH

# WHAT IS YOUR SUPERPOWER?

Hospitalized kids cast themselves as heroes in a therapeutic comic book

f the many projects she has helped lead, Sandra Pimentel, Ph.D., may be most proud of *Superkids: Change the World*, an interactive comic book that helps hospitalized children—particularly those spending long stretches away from school, friends, and family—cope with the adversities of illness.

The idea for *Superkids* came from Chase Masterson, an actor who founded the Pop Culture Hero Coalition, which uses superhero comic book imagery and narratives to help children develop social and emotional skills. She wanted to honor Bronx comic book writer Len Wein, who'd been hospitalized as a kid—and whose lifelong love of comics was sparked by the comic books his father brought to keep him occupied. A comic book supporting other children in that predicament seemed like the perfect tribute.

For help in realizing this idea, Ms. Masterson turned to Dr.



Pimentel, chief of child and adolescent psychology at Montefiore and Einstein and associate professor of psychiatry and behavioral sciences at Einstein, and Janina Scarlet, Ph.D., psychologist and author of the book *Superhero Therapy*. Dr. Pimentel worked with colleagues in pediatrics to identify the greatest psychological challenges that hospitalized kids face (fear, pain, loneliness, and depression) and strategies for coping with those "monsters" in the superhero lexicon.

"Superheroes are born of adversity," says Dr. Pimentel. "That's their origin story. But what makes them heroic is their resilience and their ability to overcome their personal monsters. In *Superkids*,



"Superheroes are born of adversity. What makes them heroic is their ability to overcome their personal monsters."

- DR. SANDRA PIMENTEL

we ask kids to identify their monsters and we introduce them to the special evidence-based skills, or 'power-ups,' that they can wield to defeat the monsters."

Young readers of *Superkids* are introduced to mindful breathing and other power-ups, asked to identify their own heroes, encouraged to build their social support teams with sidekicks such as pets and friends, and, ideally, become inspired to help other kids in need. (Bronx readers may notice that the comic's cover shows the Superkids bursting from the entrance of CHAM on Bainbridge Avenue.)

Judging from a small initial pilot study, *Superkids* is an easy-to-read, accessible format for teaching evidence-based skills for coping with pain and adversity. "It was really helpful, and I felt more positive after reading the comic book," one young reader commented.

The team is now conducting a randomized clinical trial testing how best to deliver *Superkids* in the hospital setting. It is also modifying *Superkids* to address the interests and needs of older kids.

"In *Superkids*—and for that matter in all of our work—we're trying to be creative in how we deliver care," says Dr. Pimentel. "It doesn't have to be sitting a patient in a chair and saying, 'Let's do therapy."" **E** 

# LAUNCHING MEDICINE'S Next innovators

Physicians and students are melding technology and science to improve patient health

**BY SUE BYRNE** 

edical student Soaptarshi Paul says he "couldn't be happier" about getting the opportunity to put his computer-science background to use at Einstein. This past fall he and several of his classmates were able to pursue innovation biodesign training in an elective offered to fourth-year students that aims to encourage the development of technologies such as mobile health apps. Mr. Paul and his peers, who were born in the mid to late 1990s, are members of the first generation of "digital natives." The internet, mobile phones, and social media have been a part of their experience

#### NEXT INNOVATORS



"We want to be able to think about new ways to make the healthcare system more efficient and improve patient outcomes. In the biodesign space you break out of the box and think more creatively."

— MEDICAL STUDENT SOAPTARSHI PAUL from their youngest years, shaping their interactions with the world and inspiring an intuitive understanding of the opportunities digital applications can play in healthcare.

"Today's medical students have access to technology that wasn't available even 10 years ago," Mr. Paul says. "We want to be able to think about new ways to make the healthcare system more efficient and improve patient outcomes. In the biodesign space you break out of the box and think more creatively."

#### THERE'S AN APP FOR THAT

Einstein's biodesign effort is led by Sunit Jariwala, M.D., professor of medicine and director of clinical and research innovation at Einstein, medical director of digital transformation at Montefiore, and codirector of the Montefiore Asthma Center.

As an allergist and immunologist, Dr. Jariwala knew that people in the Bronx suffer from one of the country's highest rates of asthma. He also knew that fully half of all asthma patients don't follow their doctors' advice, putting themselves at risk for serious complications. So he and his team came up with a technological fix to help patients breathe easier: an interactive and personalized app that patients can use to access asthma education and medication reminders just by reaching for their mobile phones.

Called ASTHMAXcel, the app was modeled on a health educator-delivered training for patients at the Montefiore Asthma Center. "We needed to empower our patients when it came to their health," he explains. "So we based the app on educational videos describing how to use asthma medications, how to recognize the warning signs of an asthma attack, and how to track symptoms. We also included push notifications to remind patients to take their medication."

Following several years of testing, ASTHMAXcel was introduced in 2017 as Einstein and Montefiore's first homegrown mobile app. After using the app for two months, patients reported better control over their asthma attacks, used steroids less often, and had fewer emergency department visits and hospitalizations. The results were published in November 2020 in the *Annals of Allergy, Asthma & Immunology.* 

The success of the two asthma mobile platforms spurred Dr. Jariwala to create the Einstein/Montefiore Innovation Biodesign Training Program in 2020, one of only six such programs in the country and the first to focus on chronic conditions and health disparities. Since its inception, the one-year experience has trained 18 residents, fellows, and attendings working in a variety of areas, from neurosurgery and diabetes care to cardiology and anesthesiology. The program includes coursework, a clinical immersion experience, a scholarly project, and mentoring from Einstein and Montefiore faculty and external experts.

#### MOBILE HEALTH TOOLS

The training has led to the creation of mobile health tools for pediatric asthma patients as well as for other conditions, including COVID-19, type 2 diabetes, and chronic obstructive pulmonary disease. "We wanted to take these technologies on a larger scale across departments and across chronic conditions, and teach faculty, residents, fellows, and medical students how to identify and address pain points. Then we could build the prototypes, help validate them, and scale them up to get them in the hands of patients," Dr. Jariwala says.

Supported by more than \$2 million in



Sunit Jariwala, M.D., Einstein professor of medicine, works with medical students Moshe Beiser, left, and Jasper Sim on digital health technologies.

grant funding from foundations, industry, and the federal Agency for Healthcare Research and Quality (part of the U.S. Department of Health and Human Services), the Einstein/Montefiore Innovation Biodesign Training Program has led to the creation of 12 apps as well as 10 peer-reviewed published manuscripts, 25 seminars, and nearly a dozen health-technology podcasts.

#### **OPPORTUNITIES FOR STUDENTS**

In 2020 Einstein medical students were surveyed about their interest in coursework on health innovation. Based on the enthusiastic response, the Health Technology/Innovation elective was opened to fourth-years in the fall of 2021. The coursework not only covers medical devices and digital health technologies but also includes a market assessment to find out if there's a real need for a particular healthcare device in the first place.

"For example, if you want to find a way to develop a better diabetes medication-compliance tool, you want first to learn about competitors already in the market and how you could be different and provide value," Mr. Paul says. "If your device is a Bluetooth sensor that connects to a glucose monitor, you'd want to see all the other Bluetooth sensors out there and determine how they work, how much they cost, and the types of people being targeted. You may find there is not an opportunity there, or you may uncover something you've never seen before."

Besides building digital tools, healthcare innovation also involves the examination of large amounts of data to identify patterns and make predictions. Mr. Paul and his classmate Moshe Beiser have been doing just that. As part of a summer project for Dr. Jariwala, they sought to better understand the physician experience with telemedicine during the pandemic. Their research was published in August 2021 in *Telemedicine and e-Health*.

"Biotech innovation will change the way I practice medicine," Mr. Beiser says. "It is a way we can help a broader swath of patients than just the ones we work with face-to-face. The way Dr. Jariwala approaches data will absolutely inform how I see clinical questions as they arise and how I think about the solutions."

#### **EXPLORING CAREER PATHS**

Starting with the Class of 2026, biodesign training at Einstein won't be limited to

a fourth-year elective: During their first 18 months at Einstein, students can take biodesign and entrepreneurship classes within the new four-year Impact course, which will also expose them to basicscience research, community engagement, and global health.

"We wanted to build in these opportunities early on," says Jessica Rieder, M.D., M.S., inaugural director of the new Impact course, associate professor of pediatrics at Einstein, and a pediatrician at the Children's Hospital at Montefiore. "We want to allow students to explore the different career paths available to them, open their horizons, develop their professional identity, and help them realize that they can be leaders in these areas."

During the summer after their first year, students can participate in the Einstein-CUNY Design Challenge to work with a team of Einstein and CUNY students and a faculty mentor or a team of professionals to develop a project that might lead to the creation of their own healthcare apps. "A lot of students already have been involved in these activities on their own time," Dr. Rieder says. "The Impact course is designed to give them curricular time to develop a meaningful project based on their interests while improving health in the Bronx."

Second-year med student Jasper Sim is already working on a health-innovation project, analyzing data to improve health systems. "Dr. Jariwala has been a great mentor, allowing me the independence to work on this project on my own—from refining my questions to analyzing the results, all the way to submitting the research for publication," he says. "I've had some computer-programming experience, but I had never applied it to clinical research. This has been a great opportunity to learn a new skill."

# TRANSLATING DISCOVERIES INTO THERAPIES

Drugs to treat Ebola, osteoarthritis, and cancer are now in clinical trials thanks to research led by four Einstein scientists

**BY TERESA CARR** 

ILLUSTRATIONS BY TATYANA STARIKOVA HARRIS oving basic-science discoveries out of the lab and into clinical trials isn't easy. Just ask Steven Almo, Ph.D., professor and chair of biochemistry at Einstein. In 2011, he came up with an idea for a new form of immunotherapy, known as Immuno-STAT<sup>™</sup>, that didn't enter clinical trials until 2019.

Thanks to grant support from the National Institutes of Health, he and his Einstein colleagues were able to develop Immuno-STAT into a potential therapy against cancer as well as autoimmune diseases. But then came a major hurdle. "We were confronting the 'Valley of Death,'" says Dr. Almo—the term describing the gap between invention and commercial application, where lack of funding dooms many advances.

"There's no shortage of scientists with good ideas for new drug technologies," continues Dr. Almo, who is also a professor of physiology and biophysics, a co-leader of the Cancer Therapeutics Program at Montefiore Einstein Cancer Center, the Wollowick Family Foundation Chair in Multiple Sclerosis and Immunology, and the director of the Einstein Macromolecular Therapeutics Developmental Facility.

"In our case, we were fortunate that Einstein's office of biotechnology and business development understood what our innovative science could mean to patients," Dr. Almo says. "It relentlessly pursued finding a licensing partner that could raise the funding needed to further develop our technology and bring it to clinical trials."

Janis Paradiso, M.B.A., directs Einstein's office of biotechnology and business development. "Our challenge in advancing a drug discovery is finding a champion—typically a biotechnology company, a life-sciences entrepreneur, or a venture capital firm—that believes in it and has the resources to develop it," she says.

"That partner then licenses our IP [intellectual property], hoping its investment will culminate in a drug approved by the U.S. Food and Drug Administration [FDA]," she adds. "The licensing agreement allows us to hold the licensing partner's feet to the fire to ensure that the drug's development is being advanced in a diligent manner."

Over the past year, Ms. Paradiso says, Einstein has gone from having two IP assets in clinical trials to four—with more in the works. "It's an exciting time," she says.

On the following pages, we interview the four Einstein researchers whose discoveries are currently in clinical trials, and we look into what their approval could mean for patients.



## KARTIK CHANDRAN: Developing a Broad-Spectrum Ebola Treatment

S ince 1976, some two dozen ebolavirus disease outbreaks, involving several different ebolavirus strains, are known to have occurred in Africa. The largest outbreak in recorded history—the 2013–16 Western African epidemic—killed more than 11,000 people and was caused by the Zaire strain.

The good news is that monoclonal antibodies, which bind to and neutralize specific pathogens, have emerged as successful treatments for Ebola patients. The FDA approved two monoclonal-antibody therapies in late 2020. However, they're effective against only the Zaire strain and not the other two ebolavirus strains, Sudan virus and Bundibugyo virus, which have also caused major outbreaks. One of those strains—Sudan virus was responsible for the recent ebolavirus outbreak in Uganda that killed 55 people.

"The sub-Saharan region of Africa is a hot spot for these viruses," says Kartik Chandran, Ph.D., professor of microbiology & immunology, the Gertrude and David Feinson Chair in Medicine, and the Harold and Muriel Block Faculty Scholar in Virology at Einstein. He lists other strains that have appeared in the area, in addition to the three major disease-causing ebolaviruses: the Taï Forest ebolavirus is known to

The Ebola therapy developed by Kartik Chandran, Ph.D., and colleagues contains two antibodies (blue and purple, at left) that bind to different regions of the virus's spike protein.

#### TRANSLATING DISCOVERIES

have infected one person, the Reston strain infects nonhuman primates, and the Bombali ebolavirus has been isolated from bats.

"The development of ebolavirus therapies has proceeded slowly, in fits and starts, with most research sponsored by the U.S. Department of Health and Human Services and the Department of Defense," Dr. Chandran says. "Without the funding and the time to develop separate drugs for each strain of ebolavirus, we and others realized we needed a pan-ebolavirus drug that could treat or prevent infection caused by any of them."

#### A 'RAINBOW UNICORN'

The search for such a drug began in 2016. Dr. Chandran—along with

colleagues from the U.S. Army Medical Research Institute of Infectious Diseases and the biotech companies Adimab and Mapp Biopharmaceutical—sifted through the antibodies from a survivor of the 2013–16 Zaire ebolavirus epidemic, looking for antibodies that recognized other ebolaviruses too.

Out of 349 different antibodies tested, the researchers identified one that could neutralize the three major Ebola strains that infect humans. "We call it the 'rainbow unicorn' antibody," Dr. Chandran says. A second antibody from the same ebolavirus survivor showed promise, but it required some fine-tuning in the lab.

"Antibodies that work against ebolavirus do so by attaching to spike proteins on the viral surface that the



Kartik Chandran, Ph.D., examines a molecular model of the Ebola spike protein.

microbe needs to penetrate and infect cells," Dr. Chandran explains. "Thanks to our consortium's molecular engineering skills, we were able to modify the second antibody's structure into a sort of skeleton key that fits onto and blocks multiple spikes."

Lab tests showed that the two monoclonal antibodies combined were able to neutralize all known ebolavirus strains by successfully attaching to their spike proteins. Then, in proof-of-concept animal studies, the two-antibody combination, dubbed MBP134, was administered to macaque monkeys that had been infected with normally fatal doses of ebolavirus. "The antibody combination proved to be almost completely protective for the virus-infected monkeys," Dr. Chandran said.

MBP134 is being evaluated in a phase 1 clinical trial, and preliminary results indicate that the therapy is safe for humans. However, since Ebola outbreaks are relatively rare and unpredictable, a conventional phase 2/3 trial to evaluate the drug cocktail's effectiveness in patients isn't possible. Nevertheless, says Dr. Chandran, physicians in Uganda are giving the drug to a handful of patients infected in the ongoing Ebola outbreak in Sudan, under the FDA's compassionate-use protocol allowing unapproved drugs when no other treatments are available.

Mapp Biopharmaceutical and the federal government's Biomedical Advanced Research and Development Authority recently announced a contract to further develop MBP134 into an FDA-approved drug. Dr. Chandran hopes that thousands of doses of MBP134 will be stockpiled before the next outbreak. "Lives depend on our being able to deploy it quickly," he says.

![](_page_48_Picture_0.jpeg)

## **JOEL FRIEDMAN:** Harnessing an Ancient Remedy

f you had wandered into Einstein's Falk Center seven years ago, you might have overhead Joel Friedman, M.D., Ph.D.—a regular in the gym's noontime pickup basketball games—extolling the virtues of curcumin, a derivative of the gold-colored herb turmeric.

"I hadn't been able to play basketball for several months because my knees hurt so much from osteoarthritis," recalls Dr. Friedman, professor of microbiology & immunology and of medicine at Einstein. "My orthopedist had nothing to offer except suggesting I take up shuffleboard instead." But then a postdoctoral student in Dr. Friedman's lab told him that his grandfather, a healer in India, applied a mixture of curcumin and coconut oil to aching joints. The remedy seemed to make sense: Dr. Friedman found hundreds of papers published on the health benefits of curcumin, most notably its antiinflammatory quality.

"After I started applying curcumin plus coconut oil to my knees—voilà!—I was able to play basketball again and resume doing Chinese martial arts," he recalls. "It made me think that curcumin might have real potential as an osteoarthritis drug. But as I read the studies exploring curcumin as a therapy, I realized that they'd all hit the same wall: No matter how much curcumin

An artist's illustration of how curcumin, when applied as an ointment to the knee, penetrates the skin to deliver relief for arthritis pain.

# FROM BENCH TO BEDSIDE

A promising new therapy's journey from the lab to the clinic is long, expensive, and often doomed to failure. It generally takes 10 to 15 years and can cost as much as \$2.6 billion. Only about one in eight drugs evaluated in human trials ultimately gains marketing approval from the U.S. Food and Drug Administration (FDA).

**DISCOVERY:** The early stages of a drug's development typically take the most time and effort. Researchers often must screen thousands of compounds before discovering one with potential. At that point, the compound moves on to preclinical studies to see if it appears safe and effective when used in animal models of human diseases.

The discovery and preclinical phases are usually supported by grants from the National Institutes of Health or by philanthropy. But for compounds to progress further, institutions such as Einstein must usually license them to biotechnology companies or other investors who are able to pay for the further development, including clinical trials needed for FDA approval.

![](_page_49_Picture_4.jpeg)

**LICENSING AGREEMENTS:** Licensing such compounds benefits the researchers who discovered them and their institutions, says Janis Paradiso, M.B.A., director of Einstein's office of biotechnology and business development. At Einstein, she explains, one-third of the distributable net revenue from licensing agreements typically goes to the inventors personally, one-third to their labs, and one-third to the College of Medicine. "It's a virtuous cycle," she says. "Einstein reinvests its proceeds into research and science, propelling the development of future treatments."

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**PHASE 1:** The earliest clinical studies are phase 1 trials, which typically involve 20 to 100 healthy volunteers or people with the disease or condition. They focus on evaluating a drug for safety, including determining a safe dosage range. If phase 1 studies, which generally take several months, go well, it's on to phase 2. About 70% of drugs in phase 1 trials move to the next phase, according to the FDA.

**PHASE 2:** Phase 2 trials may involve multiple medical centers that enroll hundreds of patients affected by the condition the drug is intended to treat. Those studies further assess safety but focus mainly on effectiveness. These trials take several months to two years to complete.

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**PHASE 3:** If the first two phases suggest that a drug is both safe and effective, phase 3 clinical trials—usually multicenter trials involving thousands of patients—can start. In addition to monitoring for safety and effectiveness, phase 3 trials may also compare the drug with an already-approved drug for treating the same condition. Such trials require one to four years to complete.

When a new medication finally makes it to the finish line of FDA approval, the biggest winners, of course, are the patients who can benefit from it.

you ingest with pills, or how much you rub on your skin, the body doesn't absorb it too well."

# FINDING THE THIRD

Studying the yellow curcumin concoction in his lab, Dr. Friedman discovered that fatty acids in coconut oil transported only small amounts of curcumin through the skin and into the joint. What was needed, he realized, was a third ingredient: a solvent capable of dissolving high concentrations of curcumin and its fatty-acid carrier. Finding one proved quite a challenge, since nearly all good solvents for curcumin aren't safe to use. Finally-after a period of testing and aided by his previous research on nanoparticles-he arrived at a formula for safely delivering an effective dose of curcumin through the skin.

Dr. Friedman connected with entrepreneurs, who formed Vascarta, a company that licensed the technology from Einstein with the goal of developing it into a drug. A safe and effective topical drug for joint pain could be a boon for the 31 million Americans who suffer from osteoarthritis, the most common disability among adults. Many of them rely on oral nonsteroidal anti-inflammatory drugs (NSAIDs), which can cause serious side effects. Diclofenac, the only topical FDA-approved drug for arthritis pain, is also an NSAID; for safety reasons, the name-brand drug Voltaren and other topical diclofenac products should not be applied for more than 21 days.

So far, Dr. Friedman's curcumin compound has been patented and has progressed through animal studies and a phase 1 trial in India to assess safety. A phase 2 trial involving osteoarthritis patients is being planned. Although reduced joint pain would be the trial's primary outcome, Dr. Friedman believes his compound's benefits may extend beyond the joints: The preclinical studies, he says, detected curcumin in the bloodstream after the product was topically applied.

"Curcumin triggers tissues to produce the signaling molecule nitric oxide, which may be a magic bullet for a number of conditions," says Dr. Friedman. "One of nitric oxide's best-known effects is vasodilation, which suggests that boosting nitric oxide levels via curcumin could potentially lower blood pressure and treat systemic problems caused by sickle-cell disease." He also points to studies suggesting that nitric oxide may reduce systemic inflammation, a contributor to heart disease, cancer, and diabetes as well as arthritis.

"I have no doubt that prescription drugs based on curcumin will one day make it to the market," Dr. Friedman says. "We hope to get our product there first." "Curcumin triggers tissues to produce the signaling molecule nitric oxide, which may be a magic bullet for a number of conditions."

- DR. JOEL FRIEDMAN

![](_page_50_Picture_10.jpeg)

Joel Friedman, M.D., Ph.D., has developed a topical arthritis drug.

![](_page_51_Picture_0.jpeg)

### XINGXING ZANG: Unleashing Immune Cells to Fight Cancer

ingxing Zang, M.Med., Ph.D., develops immune-checkpoint inhibitors (ICIs)—monoclonal antibodies that unleash the full power of the immune system to attack a wide range of human cancers. "Unlike surgery, radiation, and chemotherapy, ICIs are immunotherapies, meaning they enlist the body's own immune system to attack tumors," says Dr. Zang. "It is the future—a completely different approach to cancer treatment."

Dr. Zang has already patented more than 10 ICIs, most of which have been licensed by biotechnology companies for further development. One of his ICIs is now being evaluated in clinical trials in China. Dr. Zang has also launched three start-up companies in the United States and Israel to develop early drug prototypes. "He keeps our office busy," Ms. Paradiso says.

Dr. Zang is a professor in the departments of microbiology & immunology, oncology, medicine, and urology and the Louis Goldstein Swan Chair in Women's Cancer Research at Einstein, and a member of the National Cancer Institute–designated Montefiore Einstein Cancer Center. His postdoctoral mentor, James P. Allison, Ph.D., shared the 2018 Nobel Prize in Physiology or Medicine for coming up with the idea for ICIs and developed Yervoy, the first of nine ICIs now on the market.

Today's ICIs have succeeded against cancers that once were intractable. Previously, for example, patients with metastatic melanoma lived an average of only seven months following diagnosis; now, some melanoma patients treated with ICIs have survived for more than a decade. "But the problem," explains Dr. Zang, "is that whether we are talking about melanoma or other cancers for which ICIs are prescribed, the majority of patients don't respond to these drugs."

#### CANCER-FIGHTING MONOCLONAL ANTIBODIES

Dr. Zang excels at discovering checkpoints that the current ICIs don't target—discoveries that have led to new ICIs that may work where others have failed. "I want to do as much as I can to bring novel and better drugs to patients," he says.

The first of Dr. Zang's cancerfighting ICIs to make it to clinical trials is a monoclonal antibody called TQB2618, which binds to the T-cell checkpoint receptor known as Tim-3. By binding to the Tim-3 receptor, the antibody "locks out" three different molecules that tumor cells deploy to bind to Tim-3 and put the

#### HOW TO TURN T CELLS LOOSE

Sprouting from T cells and other immune cells are proteins called "checkpoint" receptors. When they make contact with proteins in the body's own cells, the interaction prevents a possible autoimmune reaction. Diabolically, most types of cancer cells express proteins and other molecules aimed at inactivating T cells by binding to their checkpoint receptors.

In the illustration on the facing page, a tumor cell (at left) has deployed three different molecules to inactivate a T cell (at right) by stimulating its Tim-3 checkpoint receptors (purple). Two of the tumor molecules are the secreted proteins galectin-9 and HMGB-1 (blue and yellow); the third is phosphotidylserine (green), a cell-surface phospholipid.

The immune-checkpoint inhibitor TQB2618, now in clinical trials against several types of cancer, stops tumor molecules from shutting down T cells. The illustration shows that TQB2618 molecules (pink) have bound to the T cell's purple Tim-3 receptors, thereby preventing any of the tumor molecules from doing so. Protected from inactivation, the T cell can now attack cancers.

![](_page_52_Picture_4.jpeg)

Xingxing Zang, M.Med., Ph.D., works with postdoctoral fellow Anne Madsen, Ph.D.

brakes on T-cell activity. (See illustration on opposite page.) A leading Chinese drug company, the Chia Tai Tianqing Pharmaceutical Group, is sponsoring several trials of TQB2618 in China.

A phase 1 trial of TQB2618 demonstrated its safety in advanced cancer patients in 2021. Now seven new clinical trials are studying the drug in various types of cancer, including both solid cancers and blood cancers:

• A phase 2 trial in patients with cancer of the nasopharynx (the area behind the nose and above the throat) who haven't responded to standard treatment;

• Four phase 1/2 trials—hybrid trials that are designed to look at safety, efficacy, and dosage—in patients with recurrent/ metastatic non-small-cell lung cancer, small-cell lung cancer, head and neck cancer, or lymphoma (a cancer of the lymphatic system); and

• **Two phase 1 clinical trials**, one involving late-stage melanoma patients, the other in patients with recurrent/refractory acute myeloid leukemia or myelodysplastic syndromes (cancers of the blood and bone marrow).

Early in 2023, another of Dr. Zang's ICIs, the first of its kind, will begin a phase 1 trial in the United States for the treatment of several types of solid tumors. The trial is sponsored by NextPoint Therapeutics in Cambridge, Mass., of which Dr. Zang is the scientific co-founder.

"I'm hopeful that in a decade, checkpoint inhibitors will have become a standard treatment for many forms of cancer," Dr. Zang says.

![](_page_53_Picture_0.jpeg)

## **STEVEN ALMO:** Confronting Diseases by Tweaking T Cells

By training, Einstein professor Steven Almo, Ph.D., is a structural biologist who uses X-ray crystallography to study the structure and function of molecules. His expertise has led to collaborations with researchers modifying proteins to create new therapies and with other researchers studying molecules that control the immune system. One day in 2010, those collaborations inspired what he calls "a crazy idea" for an experiment. "That will never work," he recalls a colleague telling him. "You're right," agreed Dr. Almo. "But let's try it anyway."

The crazy idea was to mimic what the immune system does naturally when confronted with a potential danger such as a cancer cell: activate a select group of T cells to go on the attack.

Today's immunotherapies—checkpoint-inhibitor drugs such as Keytruda and Opdivo—can cause serious side effects because they activate all the

#### TRAINING T CELLS TO TARGET AND TERMINATE TUMORS

Anticancer Immuno-STAT proteins are designed to selectively activate "disease-relevant" T cells, avoiding the generalized, life-threatening T-cell reactions that other drugs can trigger. Immuno-STAT CUE-101, pictured here, rallies T cells to attack recurrent metastatic head and neck cancers caused by human papilloma virus (HPV) 16. Such a tumor (bottom of illustration) displays antigenic fragments of HPV 16's E7 protein (red) and can be recognized by T cells possessing receptors for the E7 protein (green). To find those specific T cells, CUE-101 molecules have two "targeting arms" (blue); each arm is equipped with E7 protein fragments (red) that enable CUE-101 to preferentially bind T cells (see large cell at center) that have E7-specific receptors. Then CUE-101's "activating arms" each with two copies of IL-2 (turquoise), a potent cytokinesignaling protein—swing into action. Just as occurs during natural immune responses, IL-2 activates the T cells by binding to their IL-2 receptors (purple), causing the targeted T cells to proliferate and boosting their aggressiveness as they home in on and kill head-and-neck cancer cells. body's T cells, triggering an overzealous immune response that extends to healthy organs and tissues. A targeted T-cell response would ideally kill cancer cells without endangering the patient. But creating a molecule to switch on specific T cells is complicated, says Dr. Almo. "I suspect that others had the same idea but talked themselves out of it, assuming it would be too challenging to make such a molecule."

#### TARGETING T CELLS TO TREAT DISEASES

Dr. Almo's idea was to synthesize fusion proteins equipped with two pairs of arms; one pair would bind only to those T cells pertinent to a patient's disease, while the other would tell the disease-related T cells what to do. (See illustration on opposite page.)

That strategy could potentially treat many diseases in which T cells play a role. For treating prostate cancer, for example, the fusion protein would be tailored to seek out prostate-cancerrelevant T cells and then, with its second pair of arms, stimulate those T cells to replicate and infiltrate the tumor; for an autoimmune disease such as lupus, the fusion protein's second pair of arms would be programmed to suppress, rather than stimulate, T-cell activity that would injure the body.

"To our surprise and delight we were able to make these fusion proteins and demonstrate in a test tube that they could kill specific T cells or make other T cells proliferate," says Dr. Almo. "Those were the basic studies that led to the founding of the biopharmaceutical company Cue Biopharma and its licensing of our discovery from Einstein, which eventually led to clinical trials."

Cue Biopharma, Inc., has advanced

![](_page_54_Picture_6.jpeg)

Steven Almo, Ph.D., develops drugs to selectively turn T cells on.

Dr. Almo's technology, known as Immuno-STAT, through animal studies to clinical trials. In a two-arm, phase 1 multicenter trial that began in 2019, Cue Biopharma is evaluating an Immuno-STAT drug product named CUE-101 in patients with recurrent, metastatic head and neck squamous-cell carcinoma caused by human papilloma virus (HPV) 16. In the first part of the study, patients are treated with CUE-101 alone; in the second arm, patients receive CUE-101 together with the checkpoint inhibitor Keytruda.

A phase 2 study of CUE-101, underway at the Washington University School of Medicine, involves patients with newly diagnosed, locally advanced oropharyngeal squamous-cell carcinoma caused by HPV 16. Patients are receiving CUE-101 as neoadjuvant therapy (treatment intended to shrink tumors) one month before undergoing surgery for tumor removal.

"This study is especially important,"

says Dr. Almo, "because examining the excised tumors allows you to actually see how CUE-101 has affected them."

A tweak to CUE-101 has created a second Immuno-STAT drug, CUE-102. It's designed to treat cancers in which the protein Wilms' tumor 1 is overexpressed—a common occurrence in solid tumors such as breast, lung, colorectal, and pancreatic cancer and in blood cancers such as acute myeloid leukemia.

Since the FDA found that CUE-101 has a "favorable tolerability profile," the agency has allowed a phase 1 trial of CUE-102 to begin at a much higher initial dose. "This significantly speeds up clinical development," says Dr. Almo, saving nearly a year on studies that would otherwise be needed to find the highest safe dose.

"What's most exciting to me," he adds, "is that Montefiore Einstein is one of the sites where the CUE-102 clinical trial will be conducted."

![](_page_55_Picture_0.jpeg)

# Mind Game

![](_page_55_Figure_2.jpeg)

#### Across

- 1 Sound of relaxation (3)
- 4 The group of mental disorders that includes depression (4)
- 7 Stress can cause one to clench this (3)
- 8 Latin for marketplace, or a common phobia (5)
- 10 Say this to draw boundaries (2)
- 11 A feeling of worry or nervousness (7)
- 13 Depression associated with winter, for short (3)
- 15 Common ending for a compound (3)

- 16 Peaceful and calm (3)
- 17 Con's opposite (3)
- 19 Its five stages start with denial and end with acceptance (5)
- 22 The long projection of a neuron (4)
- 23 Exercising helps keep you mentally and physically (3)
- 24 Form of depression some women experience after birth: post\_\_\_\_ (6)
- 26 Feeling of unhappiness from isolation (10)

![](_page_55_Picture_19.jpeg)

28 A structured, goal-oriented talk therapy, in brief (3)

- 30 Some people do this for comfort (3)
- 33 The most common mental disorder in the world (10)
- 34 A type of antidepressant medication, for short (4)
- 35 A graduate degree (3)

#### Down

- 2 STAT (4)
- 3 Genetic carrier (3)
- 4 Purpose (7)
- 5 A transcendent state (3)
- 6 A system of physical and breathing techniques used to promote well-being (4)
- 7 A feeling of great pleasure and happiness (3)
- 9 A treatment for 18 Down, and the third element on the periodic table (7)
- 10 A degree in math (3)
- 12 The state of being aware of the present moment (11)
- 13 A neurotransmitter that acts as a hormone (9)
- 14 Social relationship formed between people (10)
- 18 The mental disorder marked by alternating periods of elation and depression (7)
- 20 Just (4)
- 21 Argon, on the periodic table (2)
- 25 The treatment of mental conditions by verbal communication: talk \_\_\_\_ (7)
- 27 Nighttime resting state that influences mental and physical health (5)
- 29 An anxiety disorder that develops in reaction to a physical injury or mental or emotional distress, for short (4)
- 31 Aftermath of a fire (3)
- 32 3.14 (2)

# MOTIVATIONS The Front Line of Philanthropy at Einstein and Montefiore

#### IN THIS ISSUE

- **56** A \$15M Gift for Student Scholarships (pictured)
- 60 A Jump Start on the Road to Biotech Success
- 64 Class Notes
- 68 In Memoriam

To learn more, please visit: montefiore.org/ giving and einsteinmed.edu/giving

For web-exclusive content, visit: magazine.einsteinmed.edu/motivations23

#### MOTIVATIONS | PHILANTHROPY

# **\$15M GIFT** FOR NEED-BASED SCHOLARSHIPS

An anonymous donor's generosity will help Einstein attract and retain tomorrow's leadersand has already inspired others to give

**BY TERESA CARR** 

lifelong dream of becoming a doctor brought Sean Sukal, M.D., Ph.D. '02, from his native Trinidad to the United States at the age of 17. After graduating from the City University of New York's Hunter College, where he met his wife, Mintra Sukal, M.D. '00, he was elated to be accepted to Einstein.

But as an international student, he wasn't eligible for government loans like the ones that financed his wife's education. Without the scholarship he received from Einstein, says Dr. Sean Sukal, his family could not have afforded medical school.

"My dad would have had to sell our family's land in Trinidad," he says. "Thank God he didn't have to."

Now, to help other aspiring physicians realize their dreams, the couple has established the Sukal Family Endowed Scholarship Fund, which will help defray tuition costs for medical students with financial need.

Sitting side by side in their living room in Boca Raton, Fla., the Sukals, pictured on the facing page, above right, explain how they were inspired by a new \$15 million scholarship gift to Einstein. That donation, from an anonymous benefactor, consists of two parts: a \$10 million outright gift for student support, plus another \$5 million endowment that will match other donations ranging from \$50,000 to \$250,000.

The one-to-one match is "amazing," says Dr. Mintra Sukal as her husband nods enthusiastically. "Supporting scholarships is something that we've always thought of doing," he adds. "The opportunity to double our contribution convinced us to make it happen."

Einstein sorely needs scholarship funds to compete with other medical schools in recruiting talented students, especially those from groups historically underrepresented in medicine, says Joshua Nosanchuk, M.D., senior associate dean for medical education at Einstein. "Promising students may choose to go elsewhere—or not go to medical school at all—for financial reasons."

The Sukals credit their success to the support they received from Einstein and now want to extend a hand to others. "The idea that it takes a village to raise our young doesn't end with elementary school," says Dr. Sean Sukal. "It's true of medical school, too."

#### MULTIPLYING THE GOOD

The anonymous donor is strengthening the Einstein community of donors by inspiring others to establish endowed scholarships in their own names. The philosophy behind the match is that it will create a perpetual loop of generosity, inspiring alumni to support incoming Einstein medical students for generations to come.

Like the Sukals, many other

Einstein alumni seem to have been waiting for the right opportunity to donate. In a 2022 feasibility study of nearly 100 alumni, 84% reported that student support through scholarships is their top priority for philanthropic giving. And 42 Einstein alumni, including 10 of the 40 members of the alumni board of directors, have already taken advantage of the new \$5 million endowment to create their own named scholarships.

Donors to date include Sten Vermund, M.D. '77, Ph.D., a pediatrician and infectious-disease epidemiologist who recently stepped down as dean of the Yale School of Public Health to return to teaching and research, and his wife, Pilar Vargas, M.D. '77, Ph.D., a retired child psychiatrist. "It's human nature to want to multiply a good," says Dr. Vermund, co-chair of the alumni board's development subcommittee and member of the Einstein Alumni Association's board of governors. "The generous gift of matching funds helps us do that in a substantial way."

Drs. Vermund and Vargas chose to double their impact with an endowed scholarship in honor of Einstein's Marilyn and Stanley M. Katz Dean, Gordon Tomaselli, M.D. '82. The fund remains open to new donations.

Einstein has some catching up to do when it comes to fundraising for student support, says Dr. Vermund. In comparison, he points to the NYU Grossman School of Medicine, where tuition is free, and to other peer institutions that keep student debt more manageable. Einstein's current leadership has done a great job of turning the ship around, says Dr. Vermund. "Now I hope that we can

![](_page_58_Picture_11.jpeg)

"The idea that it takes a village to raise our young doesn't end with elementary school. It's true of medical school, too."

- DR. SEAN SUKAL

![](_page_58_Picture_14.jpeg)

Pilar Vargas, M.D. '77, Ph.D., and Sten Vermund, M.D. '77, Ph.D., have created an endowed scholarship.

#### MOTIVATIONS | PHILANTHROPY

sail out under full steam, bringing the alumni and friends of the institution along to support the Einstein educational mission."

#### LIGHTENING THE LOAD OF STUDENT DEBT

Raja Flores, M.D. '92, was excited to join other alumni when he established the Raja Flores, M.D., Endowed Scholarship. As chair of thoracic surgery at Mount Sinai Medical Center in New York City, Dr. Flores treats everyone from the wealthiest patients to those experiencing homelessness. He credits Einstein with instilling the ethos that patients from all walks of life deserve the same compassion, dignity, and respect.

Dr. Flores himself almost chose a more affordable medical school. But then he read an inscription on the wall of Einstein's Belfer Building: *There is no greater privilege than to be entrusted with another person's mind, body, and spirit.* "I fell in love with the place," he says. "I decided to take out loans and whatever else it took to go here."

Today, many Einstein students take on significant debt to follow their hearts. As of 2020 nearly half of Einstein students graduated with \$200,000 or more of debt, compared to an average of only 17% of students at other local medical schools.

Beginning their careers with so much debt takes a toll on new physicians—as well as on the field of medicine itself. A 2019 review of 52 studies published in the *British Medical Journal* found that high medical debt negatively affects students' mental health and lowers academic performance.

Typically, residents and interns make very little money, says Dr. Nosanchuk. "Having that large debt looming over them when they're working really hard and trying to make ends meet is disheartening," he says. "Graduating with low or no debt increases people's wellness not just while they're students, but also throughout their residencies and training."

The *British Medical Journal* analysis found that the fear of burdensome debt discourages students from pursuing lower-paying specialties such as infectious disease. Last year only 56% of training programs for infectious-disease physicians in the United States filled their trainee slots, compared with 90% of most other specialties. The chief barrier: high prior debt combined with low compensation, according to the Infectious Diseases Society of America.

#### SUPPORTING GENERATIONS OF STUDENTS

Coming from a low-income family shouldn't dictate a student's choice of a medical school or specialty, says the anonymous benefactor. That's why the focus of the donation is on students with financial need, with an emphasis on supporting those students who are least able to afford tuition at Einstein.

That's what motivates Dr. Flores, too. "I see others like me out there," he says, "and I want to help them realize their dreams."

The Sukals' story is a testament to the tremendous dividends that an investment in an Einstein education can yield. Dr. Sean Sukal blazed a trail for physicians of color in dermatology, a field in which only about 7% of U.S. practitioners are Black or Hispanic.

"We are so grateful for the education, training, and life experience we received at Einstein," says Dr. Mintra Sukal, a radiologist. "We're just so happy to be able to give back."

![](_page_59_Picture_15.jpeg)

"I see others like me out there, and I want to help them realize their dreams."

- DR. RAJA FLORES

![](_page_59_Picture_18.jpeg)

#### TO DONATE

To contribute to the Dean Tomaselli Scholarship—or create your own contact Min Um-Mandhyan, senior director of alumni relations and development, at: min.um-mandhyan@einsteinmed.edu.

# STANDING UP

## Suzanne (Sue) Fried, M.D. '64

Dr. Fried is an inaugural member of the Albert Einstein Legacy Society, which recognizes individuals—alumni, faculty, staff, and friends—who wish to advance Einstein's mission through a legacy gift in their estate plans, which help ensure the College of Medicine's future prosperity. If you would like to speak to someone about creating a plan that best serves your philanthropic goals, contact Michael Divers at 718.430.2685 or Einstein-MDivers@einsteinmed.edu.

#### Specialty: Psychiatry

Why medicine? "My father became a doctor after immigrating from Ukraine. He believed in helping the underdog. He died when I was 12, and I wanted to carry on his work."

What I love about Einstein: The sense of community. "I'm not surprised it has become such a socially conscious institution."

**Biggest Einstein influence:** Joe Hirsh, the first assistant dean for student affairs. "He encouraged me to join a public health program in El Salvador and Guatemala, where I worked with severely malnourished children. I loved it."

**Proudest accomplishment:** "Thought disorder is fascinating to me, particularly the inability to articulate thoughts logically. My life's work has been about understanding mentally ill patients and helping them to understand themselves."

Why I established the Suzanne R. Fried, M.D., Fund: "People were good to me, and I benefited from a scholarship myself. Without it, I would have had a hard time paying tuition. I feel obligated to give back as much as I can."

Honor the past and support our future by joining the Albert Einstein Legacy Society einsteinmed.edu/giving/legacysociety

![](_page_60_Picture_10.jpeg)

![](_page_60_Picture_11.jpeg)

Photo by Jason Torres

MOTIVATIONS | CAREERS IN BASIC SCIENCE

# A JUMP START ON THE ROAD TO BIOTECH SUCCESS

In the race to bring promising scientific ideas to market, Ph.D. programs like Einstein's may be the ultimate asset

**BY JOE LEVINE** 

s a doctoral student at Einstein, Sabriya Stukes, Ph.D. '14, worked in the lab of Arturo Casadevall, M.D., Ph.D., then chair of the department of microbiology & immunology. Dr. Casadevall, now at Johns Hopkins, was doing basic research on a fungal pathogen called Cryptococcus neoformans, and "he really stressed the importance of creating a diverse laboratory environment and sharing your scientific work with as many people as possible," Dr. Stukes recalls. "And that was true of Einstein generally. Going to grad school in the Bronx gave me a unique perspective on scientific collaborations and how science coming out of an academic institution could affect people's lives."

Dr. Stukes did not become a basicscience researcher. After Einstein she held a series of different jobs, including helping build a national platform to accelerate scientific collaborations, designing a new master's degree program in translational medicine for the City College of New York, and directing operations for a small biotech company. Today she serves as chief scientific officer for IndieBio NY, a start-up development program that supports early-stage founders who want to turn their scientific ideas into successful biotech companies.

Still, the outlook that Dr. Casadevall and Einstein imparted remains central to her work.

"People bringing new scientific ideas to market tend not to realize that interesting laboratory data don't always translate into a sustainable business idea," she says. "So it's really important that scientists and engineers ask the right questions when thinking about bringing their technologies to market. Are they truly meeting an unmet need? Can they make a compelling case for funding?"

#### AN IDEAL TRAINING GROUND

Amid a global pandemic, climate change, and other challenges to human and planetary health, the skills required to bring new solutions to market have never been more important. But the United States, while remaining the world leader in basic research, is slipping when it comes to application.

Currently 90% of biotech start-ups fail, and an even higher percentage of new medicines in development never make it to market, with many falling victim to the "Valley of Death"—the developmental phase between lab work and clinical trials, where funding is scarce.

Dr. Stukes believes that the key to improving that track record is recruiting and developing the right people, and that Ph.D. programs like Einstein's can be ideal training grounds.

"There's a stereotype that people with Ph.D.s don't make good entrepreneurs because we don't know how to pivot and adjust in the real world," she says. "I think the opposite is true. We're trained to solve problems, create original bodies of work, and become experts in our disciplines, and we often lead our own research efforts. Plus, we know more about failure than most people because most of our experiments don't work, or they give us unexpected results. It's what we do with those results that makes all the difference."

The latter attribute is key. Successful start-ups are often those that modify their original concepts in response to the feedback that Ph.D. programs with savvy tech-transfer offices can provide. And although most scientific experiments may fail, Einstein has developed a nationally "We're trained to solve problems, create original bodies of work, and become experts in our disciplines."

- DR. SABRIYA STUKES

#### MOTIVATIONS | CAREERS IN BASIC SCIENCE

recognized career and professional development program to help its graduates bring those experiments that *are* successful to fruition.

#### EXPANDING CAREER POSSIBILITIES

The office of biotechnology and business development, led by Janis Paradiso, M.B.A., and the career and professional development for graduate students and postdocs program, directed by Diane Safer, Ph.D., offer practical learning opportunities.

"Not only have things changed at Einstein; they've also changed in the biomedical workforce environment," notes Victoria Freedman, Ph.D., associate dean for graduate programs in biomedical sciences. "The expectation now—and this is coming from the National Institutes of Health [NIH] and the National Science Foundation—is that Ph.D. programs will also be opportunities for career exploration and advancement.

"We encourage our Ph.Ds. to learn about the wide range of careers available to them and to take advantage of all the opportunities out there," Dr. Freedman continues. "We bring a lot of people in to discuss all aspects of business development, intellectual property, and even venture capital. We also have a business and technology internship to give students experience in the business transfer process."

That's the role that Einstein has played for Adam Kramer, Ph.D. '19, a senior scientist at MicroCures, a New York City biotech firm that is developing a new therapy that can recruit cells to damaged tissue in order to accelerate healing—or, conversely, help prevent cancer by stopping cell migration.

Dr. Kramer came to Einstein knowing that he wanted to work in biotech. His father ran Africa's largest science museum, and his family had a history of cancer. Here on a Fulbright scholarship, he chose Einstein because several of its labs were doing work with an applied focus. Through the Biotechnology Club at the College of Medicine, he attended a talk by David Sharp, Ph.D., professor of molecular pharmacology, of ophthalmology & visual sciences, and in the Dominick P. Purpura Department of Neuroscience, who was then in the process of founding MicroCures. Soon afterward he joined Dr. Sharp's lab, where students were studying different applications for Dr. Sharp's work, ranging from treatments for skin wounds to cancer and erectile dysfunction.

"The only people in the world who understand the biology we're working on and have the skills to translate it come from Dave's academic lab—so his lab is effectively the training station for the company," Dr. Kramer says. "Einstein also has given us lab and office space on campus, as it has for several other companies, and I still work with Dave's students. From my perspective, Einstein has a great culture in biotech."

Although MicroCures does not yet have a marketed product, it seems clear that Dr. Sharp and his team are making the right moves. The new therapy has worked in animal models, and the company is now raising funds for its first human trials. "Dave understands that scientists are very good at the research in their fields, but he also knows that business acumen is just as important," says Dr. Kramer, whose job focuses on obtaining small-business innovation grants "The only people in the world who understand the biology we're working on and have the skills to translate it come from Dave's academic lab."

- DR. ADAM KRAMER

![](_page_63_Picture_12.jpeg)

from the NIH. "Collaboration has been huge for us."

Chair and chief executive officer of MicroCures is Derek Proudian, a Silicon Valley investor. Dr. Sharp has brought in Einstein specialists for each of the indications the company is pursuing-Kelvin Davies, Ph.D., Einstein professor of urology and of molecular pharmacology, for erectile dysfunction; Joshua Nosanchuk, M.D., professor of medicine and of microbiology & immunology and the senior associate dean for medical education at Einstein, and an infectious-disease clinician at Montefiore, for wound healing; and Roy Chuck, M.D., Ph.D., professor of ophthalmology and visual sciences and of genetics and the Paul Henkind Chair in Ophthalmology at Einstein, and the chair of ophthalmology and visual sciences at Montefiore, for ophthalmology-as well as business-development people and an intellectual-property team. "Often, the founders try to do everything themselves," Dr. Kramer notes, "and that's one reason so many fail."

Like most scientists, he would like to see increased funding for basic research, more public/private partnerships (particularly between pharmaceutical companies and academic labs), and a streamlining of regulatory hurdles, "not making them less stringent," he says, "but perhaps taking a page from COVID-19 vaccine development, where everyone was able to move very quickly."

#### A CATALYTIC ROLE FOR PHILANTHROPY

Outside funding for research-intensive centers such as Einstein can make a big difference.

"If you have a new idea or something that's unproven or very innovative, you won't be able to get funding from established agencies," notes Dr. Freedman. "And I think that's where philanthropy could have a tremendous, catalytic role. Donors can step in and provide the funds to try these exciting ideas, which often lead to more grants or even new businesses."

For Einstein graduate Dr. Stukes, again, it all comes back to investing in people.

"Medical and research institutions need to understand that just because you're getting a Ph.D., it doesn't necessarily mean you want to start your own lab," Dr. Stukes says. "People get Ph.D.s for a variety of reasons and want different careers, and it's important for institutions to support those careers, whether through the career-development office or through student-association offices. It can't just be on the students to form specialized clubs and cobble the information together for themselves."

Perhaps most of all, programs need to recognize that entrepreneurs like Dr. Stukes herself may wander a bit before they understand where they're headed—and that their openness is part of what makes them good experimenters and pivoters.

"All of life is an experiment and, in a sense, there are no failures," she says. "You always get data that are useful in making your next move, and ultimately it's the sum of all of your experiences that helps you in whatever role you're in." **E** 

![](_page_64_Picture_11.jpeg)

"Donors can step in and provide the funds to try these exciting ideas, which often lead to more grants or even new businesses."

- DR. VICTORIA FREEDMAN

![](_page_64_Picture_14.jpeg)

![](_page_64_Picture_15.jpeg)

#### MOTIVATIONS

# CLASS NOTES

![](_page_65_Picture_2.jpeg)

## 1960s

**Evelyn Wolf Rokito, M.D. '61**, is emeritus at Nassau County Medical Center but is still working part time doing disability physical examinations for Nassau County and New York State employees. Both of her sons are orthopedic surgeons (chief of shoulder surgery at NYU Langone Health and chief of sports medicine at Long Island Jewish Medical Center/Northwell Health); her daughter is an attorney in Chicago. Dr. Rokito reports that she has seven beautiful grandchildren and is still living a fulfilling life.

Joseph Bloom, M.D. '62, reports that he has no promotions, no appointments, no career changes, no moves, no births, no marriages, and no interesting stories to share with alumni. But he is still writing about state mental hospitals and watching the cacti grow.

**Paul Rochmis, M.D. '64**, and his wife, Ann, are approaching their 58th year of marriage. They are both retired, she from psychiatry, he from rheumatology. They enjoy gardening, reading, and working out. The two hold videoconferences weekly with their four kids and some of their seven grandchildren. Dr. Rochmis sends out a monthly email newsletter to patients, and he lectures on gout. He stays in touch with Artie Goldstein, M.D. '64, his longtime Princeton University and Einstein classmate. Dr. Rochmis and his wife report that they will be happy to wine and dine any former classmates who may be passing through their lovely area of Virginia.

Leslie Wolfson, M.D. '66, says that after a career in neurology that included an Einstein residency, two years in the air force, 18 years at Einstein, and 31 years at the University of Connecticut, he has morphed into an emeritus professor. His wife, Linda, who had been a counselor at Housatonic Community College, has also retired, leaving them free to enjoy their three children and nine grandchildren. They are excited about following the career of their oldest granddaughter, Emery, who is a first-year student at Einstein.

**Barbara Barlow, M.D. '67**, is the founder and executive director of the Injury Free Coalition for Kids, one of the country's most effective injury-prevention programs. It was started while Dr. Barlow was the chief of pediatric surgery at Harlem Hospital. The coalition helped reduce major injury to Harlem children and received a \$15 million grant so that the program could be replicated across the United States. It is now in 44 trauma centers nationwide. On Nov. 18, 2022, the coalition started National Injury Prevention Day, which promotes community injury-prevention activities. Learn more at Injuryfree.org.

David Abramson, M.D. '69, reports that his paper "Molecular Changes in Retinoblastoma Beyond RB1: Findings from Next-Generation Sequencing" was the seventh-most cited in the journal *Cancer* in 2021. He continues to run the ophthalmic oncology service at Memorial Sloan Kettering Cancer Center; it is now the largest such service in a U.S. cancer hospital.

Lawrence Marton, M.D. '69, serves as a consultant to industry and to nonprofit, government, and academic institutions. Dr. Marton is an emeritus member of the board of trustees of the American Association for Cancer Research Foundation and is on the board of directors of Cancer Commons. In the for-profit sector, he serves on the boards of Cellsonics, Matternet, Microsonic Systems, NaNotics, Omniox (also serving as executive chair), RenovoRx, and xCures. Previously, Dr. Marton was the dean of the University of Wisconsin Medical School and chaired the department of laboratory medicine at the University of California, San Francisco, where he was a professor of laboratory medicine and of neurological surgery.

![](_page_66_Picture_0.jpeg)

# 1970s

Jerry Appel, M.D. '72, is still working full time as a professor of medicine in nephrology at Columbia University Medical Center. He sees patients daily, does clinical research, and teaches. He is married to Alice Appel, Ph.D. '75; their son Jacob is an associate professor of psychiatry at Mount Sinai, and their son Seth practices intellectual property law in Chicago. Their grandkids are starting to look at colleges.

Andrew Levitas, M.D. '72, retired in 2017 as a professor of psychiatry and the medical director of the Center for Excellence for the Mental Health Treatment of Persons with Intellectual Disabilities and Autism Spectrum Disorders at the Rowan University School of Medicine. He continues to stay active as part of the volunteer faculty. Dr. Levitas is a member emeritus of the scientific and clinical advisory committee of the National Fragile X Foundation. He and Phyllis, his wife of 53 years, who worked in the field of cognitive rehabilitation, have two grown sons and recently welcomed a granddaughter. He has published his second novel, The Third Book of Samuel. His first novel, Alumni Notes (2011), was set at Einstein in 1973 (as are parts of The Third Book of Samuel).

Fifty years ago, the members of Einstein's Class of 1973 assembled on campus for this graduation photo.

#### Dan Mayer, M.D. '73,

reports that he is happily retired from clinical practice and works at home as a caretaker for his wife. He is also a decision editor for the *Western Journal of Emergency Medicine* and *JACEP Open*, teaches evidence-based medicine to

dental residents, tutors his grandchildren, and is learning to play classical guitar.

**Stanley Harris, M.D. '74**, reports that a podcast about his book *The People Value Proposition, See One, Do One, Teach One ... LEAD* was conducted by the American Association for Physician Leadership. To listen, go to Soundpracticepodcast.com and type "Stanley Harris" in the search box.

Mitchell Geffner, M.D. '75, received the 2022 International Outstanding Clinician Award from the European Society for Paediatric Endocrinology. He is the first U.S. physician to receive the honor, which was presented in September 2022 in Rome. Dr. Geffner is a pediatric endocrinologist at Children's Hospital Los Angeles and the Ron Burkle Chair in the Center for Endocrinology, Diabetes, and Metabolism. He also serves as the co-director of the Congenital Adrenal Hyperplasia Clinic at the hospital.

Sidney Goldfarb, M.D. '75, has been married for 50 years to a New York Medical College grad, also Class of 1975. Both retired one year ago, he from urology and she from psychiatry. Dr. Goldfarb practiced in Princeton, N.J., a former home of Albert Einstein. He reports that he patented a drug, but it never made it into production. He and his wife now live in Newtown, Penn. **Robert Katz, M.D. '75**, retired from the practice of pathology, but then served as the president of the Board of Health of Morris Township, N.J., through the pandemic.

Harold Pincus, M.D. '75, reports that the John A. Hartford Foundation's board of trustees recently approved more than \$17 million in funding for seven programs, including a Health and Aging Policy Fellowship, which provides professionals in health and aging with a year of financial support, policy placements, career opportunities, and expanded networks to directly experience the policy-making process and become effective advocates for older adults. The fellowship program (health andagingpolicy.org) is directed by Dr. Pincus, professor and vice chair of psychiatry at Columbia University and co-director of Columbia's Irving Institute for Clinical and Translational Research.

Sam Moskowitz, M.D. '76, is working as a gastroenterologist partner in the multispecialty Brooklyn Surgery Center, rated by *Newsweek* in 2022 as number one in Brooklyn and in the top five in New York State. He has also achieved three fellowship titles: FACP, FACG, and AGAF.

#### Kenneth J. Pellegrino, M.D. '78,

retired in March 2020 after working for nearly four decades at the practice he started in 1981, Brookfield Family Medicine, which became Western Connecticut Health Network and is now Nuvance Health. For one year, he also helped his town vaccinate more than 10,000 residents against the COVID-19 virus. Dr. Pellegrino and his wife are now undertaking the bittersweet task of downsizing from their Connecticut home of 20 years and transitioning to a new lifestyle in San Luis Obispo, Calif., where their three married children and numerous grandchildren live.

#### MOTIVATIONS | CLASS NOTES

## 1980s

Miriam Greenberg, Ph.D. '80, has been named a fellow of the American Association for the Advancement of Science (AAAS) for her contributions to the field of lipid function. AAAS is the world's largest general scientific society and the publisher of the *Science* family of journals. Dr. Greenberg, professor of biological sciences at Wayne State University in Detroit, is an expert on Barth syndrome, a rare and life-threatening X-linked genetic disorder that primarily affects males. Her research aims to determine the efficacy of potent new compounds, which may offer potential treatments for the disease.

**Steven Merahn, M.D. '82**, is back in the Bronx as the medical director for Partnership Solutions, Inc., which manages two New York State–based nonprofit organizations dedicated to supporting individuals with intellectual and developmental disabilities. They are Care Design NY and Partners Health Plan.

Brian Delaney, M.D. '83, has transitioned to part-time clinical work but has been doing more teaching at Einstein as an assistant professor of family and social medicine. He reports that being around wonderful colleagues and students is exciting and keeps him motivated. He continues to be a regular "gym/pool rat" at Einstein's Falk Center. He and his wife, Muriel, welcomed their fourth grandchild, Seth Delaney Whelden, in September 2022. Seth was born to Dr. Delaney's son-in-law Caleb Whelden and daughter **Charlotte Delaney**, M.D. '16, who practices at Main Street Pediatrics

in Hopkinton, Mass. Seth joins his older brother, Oliver, at home. Dr. Delaney's older daughter, Kelly, son-in-law Mark, and grandkids Naomi and Jason continue to live and work in the Washington, D.C., area.

#### Jeremy Nadelmann, M.D. '85, is

happy to report that his youngest daughter, Julia, matriculated at Einstein as a member of the Class of 2026. His oldest daughter, **Jennifer Nadelmann, M.D. '18**, is a surgical retinal fellow at Weill Cornell Medicine. His middle daughter, **Emily Nadelmann, M.D. '21**, is a dermatology resident at Montefiore. Dr. Nadelmann is in his 32nd year of clinical practice as a noninvasive cardiologist in New Haven, Conn. He is an assistant clinical professor at the Yale School of Medicine, and for the past five years he has been working at the Yale New Haven Hospital Heart and Vascular Center.

Etta Eskridge, Ph.D. '86, M.D. '95, has been working as a specialist in palliative medicine at the Rochester Regional Health system since 2013. She has served as a board member for the Global AIDS Interfaith Alliance and has spent time volunteering in Malawi, Africa, where the alliance has rural clinics and trains nurses to support the fragile health infrastructure there. Her son Alex is finishing his first semester at New England Law in Boston. She sends greetings to all.

Judy Yee, M.D. '87, was awarded the 2023 Society of Abdominal Radiology Gold Medal, the highest recognition given by the society. Dr. Yee was commended for her mentorship, clinical acumen, substantial scientific contributions, and leadership.

#### Hiroshi Mashimo, M.D., Ph.D. '88,

established and continues to serve as the director of the Swallowing and Motility Disorder Center at VA Boston Healthcare. His translational research involves novel endoscopic imaging and therapeutics. As part of the VA Innovators Network, Dr. Mashimo is involved with wearables and nonendoscopic capsule imaging modalities for medical diagnostics. He serves as president of the world organization for specialized studies on disease of the esophagus, OESO.org. He reports that he has three wonderful children who have grown up and left the nest but share many of his interests, including martial arts, photography, cooking, and outdoor sports.

**Evan Goldstein, M.D. '89**, became the president and chief of the medical staff at Boca Raton Regional Hospital in Florida, a 380-bed academic teaching hospital, on Jan. 1, 2023.

# 1990s

**Giselle Corbie, M.D.** '91, has been named the vice provost for faculty affairs at the University of North Carolina at Chapel Hill. Dr. Corbie is the Kenan Distinguished Professor of Medicine, the director of the Center for Health Equity Research, and the associate provost for rural initiatives. For more than 25 years she has developed a successful, continuously funded independent research portfolio that has garnered awards from the National Institutes of Health. She recently served as the president of the Society of General Internal Medicine and in 2018 was elected to the National Academy of Medicine.

#### Imran Khan, Ph.D. '93, M.B.A.,

announces the publication of his first novel, a geopolitical thriller, *Gambit on the Devil's Chessboard* (available on Amazon and at Barnes and Noble). Dr. Khan says Einstein is referenced in the novel. He is a professor of pathology and laboratory medicine at the University of California, Davis, Health System. Researching tuberculosis has taken him worldwide, leading to trials of novel TB diagnostics in countries such as India, where it is endemic, and revealing the threat poverty poses to the planet.

Michal A. Elovitz, M.D. '94, has been named the dean for women's health research and the director of the Center for the Advancement of Female Biology at the Icahn

# **Stay In Touch**

Keep your classmates up to date by submitting your news to *Einstein* magazine. We look forward to including you.

- 😑 einsteinalumni@einsteinmed.edu
- Albert Einstein College of Medicine Alumni Association
- **O** EinsteinAlumni

School of Medicine at Mount Sinai. A leader in maternal-fetal medicine and an expert in preterm birth, Dr. Elovitz joined Mount Sinai from the Perelman School of Medicine at the University of Pennsylvania, where she was the Hilarie L. Morgan and Mitchell L. Morgan President's Distinguished Professor in Women's Health and a professor of microbiology, as well as the founder and director of the Maternal and Child Health Research Center, vice chair for translational research, founder and director of the Prematurity Prevention Program, director of the Maternal-Fetal Medicine Fellowship, and creator and lead mentor of the Women for Women's Health Mentoring Group.

#### Reena Karani, M.D. '97, M.H.P.E.,

has been elected chair of the National Board of Medical Examiners (NBME), the first woman of color to serve as chair in the organization's 108-year history. She previously served as treasurer of the NBME. Dr. Karani is director of the Institute for Medical Education and a professor of medicine, medical education, and geriatrics and palliative medicine at the Icahn School of Medicine at Mount Sinai in New York City. Dr. Karani is a founding co-director of the Harvard Macy Program for Postgraduate Trainees. She served as a member of the council and chair of the Education Committee for the Society of General Internal Medicine, and she is on the board of directors of the American Geriatrics Society.

# 2000s

# **Roger Greenberg, M.D., Ph.D. '00**, is the J. Samuel Staub, M.D., Professor

is the J. Samuel Staub, M.D., Professor of Cancer Biology at the University of Pennsylvania's Perelman School of Medicine. In addition to running his own research group, he is the director of the Penn Center for Genome Integrity and the scientific director of the Basser Center for BRCA. This year he received the William L. Gerald Award from Memorial Sloan Kettering for research that has provided novel insights into cancer biology.

**Lisa Senzel, M.D., Ph.D. '01**, is a clinical pathologist at Stony Brook Medicine. She and her husband have three children.

**Neeral Shah, M.D. '01**, is an associate professor of gastroenterology and hepatology with tenure at the University of Virginia, where he is the GI fellowship program director and the director of the Academy for Excellence in Education at the school of medicine. He recently authored *The Infographic Guide to Medicine*, available in print or on the web (AccessMedicine. mhmedical.com and AccessMedicina.mh medical.com).

**Dan Cousin, M.D. '05,** co-founded Doctors for Providers (Doctors4Providers. com) to extend the reach of patient care through collaborative-medicine models, a new trend in healthcare. Einstein alumni interested in learning more are encouraged to go to the website. He also founded Medsurity Experts (MedsurityExperts.com) to combat problems that exist in the medicolegal field.

# 2010s

Akiva Dym, M.D. '17, has resettled in New Jersey with his wife, Stephanie, and three children. Dr. Dym is an assistant professor of emergency medicine at Rutgers New Jersey Medical School and does clinical work at University Hospital. He is also the assistant medical director for emergency department quality and observation services. Dr. Dym is completing his M.B.A. at Rutgers.

Elia Rackovsky, M.D. '18, and Naomi Schwartz, M.D. '19, were married on June 13, 2022. Dr. Rackovsky is completing his training as a fellow in pediatric critical care medicine at the Children's Hospital at Montefiore, and Dr. Schwartz works as a pediatrician with Optum in Mount Kisco, N.Y.

#### MOTIVATIONS | IN MEMORIAM

#### **Remembering Board Member Emily Fisher Landau**

**Emily Fisher Landau**, who served as an honorary member of Einstein's Board of Trustees and was a longtime friend and benefactor of the College of Medicine, died March 27, 2023, in Palm Beach, Fla., at age 102.

Her steadfast commitment to Einstein is reflected in her decade of service on the College of Medicine's Board of Overseers from 1999 to 2009. She was also a pioneering member of Einstein's National Women's Division, lending her time and talent as a member of its board and executive committee. In 2000, the division named her "Woman of the Millennium" for her devotion to Einstein's mission, her efforts on behalf of those in need, and her impact on cultural life.

Among her many contributions, Mrs.

Fisher Landau funded the establishment of the Fisher Landau Center for the Treatment of Learning Disabilities in 1997, with Ruth Gottesman, Ed.D., Einstein's current chair of the Board of Trustees, serving as its founding director. The center's mission is to ensure that those with learning difficulties receive support and adequate resources.

Today the center's important work continues as part of Montefiore Einstein's Children's Evaluation & Rehabilitation Center, offering educational, psychological, social, medical, and vocational assistance to those with learning disabilities of all ages, from preschool children to adults.

She is quoted as saying, "Never stop learning, never stop looking," and this is a testament to her extraordinary life. Her

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generosity is also reflected in her passion and support of the arts. This included donating several hundred works to the Whitney Museum of American Art, where she served as a trustee for decades

Mrs. Fisher Landau was the widow of Martin Fisher, a principal in the real estate firm Fisher Brothers, and of Sheldon Landau, a clothing manufacturer.

#### **IN MEMORIAM**

Morton Blum, M.D. '60, age 89, specialist in internal medicine and gastroenterology who had a private practice in Manhattan and was an attending physician at New York Hospital, Lenox Hill Hospital, and Gracie Square Hospital before retiring from medicine in 1986 and creating CBM Limited, a real estate and design investment firm, May 2, 2022, New York, N.Y.

Deryck Duncalf, M.B., Ch.B., age 96, professor emeritus of anesthesiology at Einstein and former chair of anesthesiology at Montefiore, he was instrumental in establishing the first pain treatment clinic, critical care services, and training programs at both institutions, Feb. 14, 2023, Stamford, Conn.

Shoshana Englard-Falconer, M.D. '78, retired ophthalmologist, May 20, 2022, St. Paul, Minn. Jack Goldman, M.D. '61, age 85, retired chairman of gastroenterology and medicine at St. Joseph's Hospital in Yonkers, N.Y., May 4, 2022, Westchester County, N.Y.

Huaxi Hu, Ph.D. '93, age 58, a leader in the field of Alzheimer's disease research, founder and co-editor in chief of the neuroscience journal *Molecular Neurodegeneration*, investigator at the Sanford Burnham Prebys Medical Discovery Institute (2003–20), professor at Xiamen University in China, and distinguished professor and director of the Institute for Brain Science and Disease at Chongqing Medical University in China, Oct. 14, 2022.

Philip F. Incao, M.D. '66, age 81, family physician, Feb. 28, 2022, Crestone, Colo.

Robert M. Lewis, M.D. '60, age 86, obstetrician and gynecologist who delivered more than 1,000 babies during his 36-year career, Dec. 7, 2022, New Rochelle, N.Y.

#### Veronica Jean Scott, M.D. '73,

age 76, former director of the Center on Aging at Meharry Medical Center, Nashville, Tenn., where she also served as director of geriatrics in the department of medicine, June 12, 2022, Nashville, Tenn.

Adrian Spitzer, M.D., age 94, professor emeritus of pediatrics at Einstein who joined the faculty in 1968 and was the director of the division of pediatric nephrology from 1973 until 1999, former president of the American Society of Pediatric Nephrology, and a recipient of its Founder's Award, Dec. 27, 2021.

David Q. H. Wang, M.D., Ph.D., age 60, professor of medicine and of genetics, director of the molecular biology and next generation technology core of the Marion Bessin Liver Research Center at Einstein, and an internationally renowned leader in the pathophysiology and genetics underlying gallstone disease, Feb. 19, 2023, White Plains, N.Y.

# A LOOK BACK

# 1963: Einstein Signs Agreement With Montefiore

he College of Medicine's affiliation with Montefiore Hospital Medicine began 60 years ago, on Sept. 25, 1963, when officials of the two institutions met to sign the formal agreement. Standing, from left: Marcus D. Kogel, M.D., dean of the College of Medicine, and Martin Cherkasky, M.D., director of Montefiore Hospital. Seated, from left: Jacob W. Schwab, president of Montefiore Hospital, and Samuel Belkin, Ph.D., president of Yeshiva University. In 1969, Montefiore took over the operation of Einstein's Jack D. Weiler Hospital, which today is part of Montefiore Health System's Einstein campus. Montefiore became Einstein's University Hospital and academic medical center in 2009, when the two institutions signed a new agreement reflecting their expanding partnership. Then, in 2015, a historic agreement was signed, which transferred financial and operational responsibility for the College of Medicine to Montefiore.

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Albert Einstein College of Medicine

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Science at the Heart of Medicine

Winter/Spring 2023

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## **EINSTEIN IMAGE**

Metastasis (the spread of cancer from a primary tumor to other parts of the body) causes 90% of cancer deaths. Wenjun Guo, Ph.D., and colleagues found that mutations in MLL3 (a gene frequently mutated or deleted in breast cancer and other human cancers) allow cancer cells to reversibly switch between epithelial and mesenchymal cell states-transitions crucial for enabling cancer cells to adapt to the changing microenvironments they confront on the way to forming metastases. In a key experiment, the researchers generated mouse mammary stem-cell organoids (clumps of mostly epithelial cells) in which MLL3 was deleted. As shown here, the MLL3 deletions caused many of the epithelial cells (green) to upregulate the mesenchymal marker vimentin (red), indicating the cells' partial transition to the mesenchymal state. When transitional cells were injected into the tail veins of mice, they readily seeded in the lungs and formed metastases. The researchers also found that BET (bromodomain and extraterminal) protein inhibitors target MLL3-mutant cells in various types of cancer. The findings were published in January 2023 in Nature Cell Biology. Dr. Guo is an associate professor of cell biology at Einstein.

Image courtesy of Piril Erler, Ph.D., a co-author of the *Nature Cell Biology* paper and a postdoctoral fellow in the lab of Wenjun Guo, Ph.D.

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