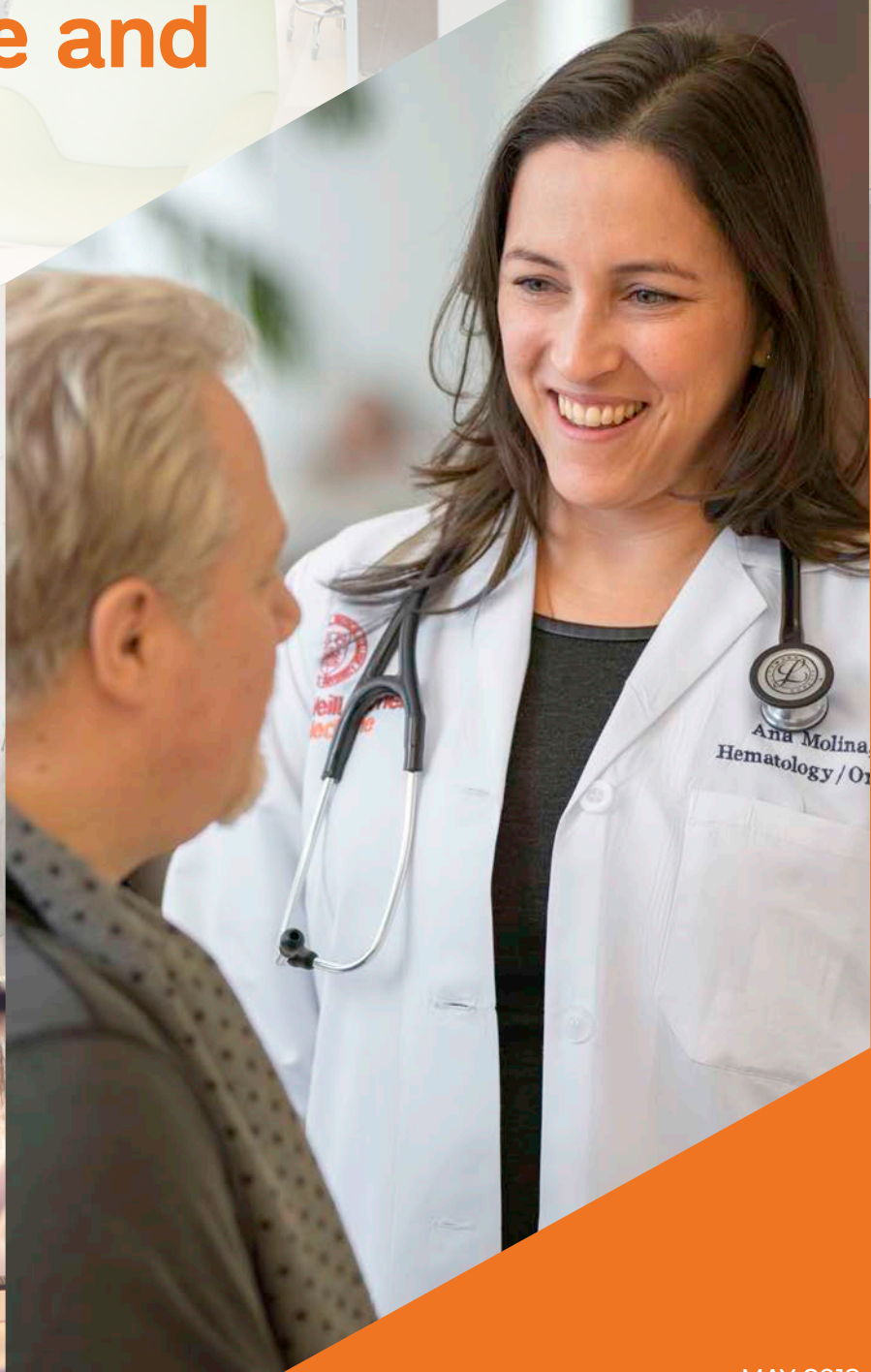




**Weill Cornell  
Medicine**

# Making an Impact: Cancer Care and Research

Annual  
Progress  
Report



MAY 2018





**Thank you** for joining Weill Cornell Medicine in our effort to save lives from cancer.

Within the pages of this publication, we aim to highlight the extraordinary impact of your gift to support cancer research and treatment. Your philanthropy is critical to drive the kind of exploratory science needed to steer cancer patients toward healing, and to attract the brightest minds in cancer research and clinical care to our institution.

In January 2014, Weill Cornell Medicine named the Sandra and Edward Meyer Cancer Center through a \$75 million transformational gift from the Meyer family. Since then, the Meyer Cancer Center has helped deliver personalized cancer treatment while designing and implementing investigator-initiated clinical trials that allow patients to immediately benefit from the latest discoveries.

Thanks to your generosity, our physician-investigators and research scientists are working across all areas of our mission to transform the future of science-led, patient-centered cancer therapy. This report showcases some of that inspiring work, and provides opportunities for those interested in further engagement with our institution.

On behalf of Weill Cornell Medicine, our faculty, and the patients whose lives you have touched, we thank you for your continued and impactful support.

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

Your philanthropy is critical to drive the kind of exploratory science needed to steer cancer patients toward healing.

**We are proud** to bring scientific discoveries directly to cancer patients at the Sandra and Edward Meyer Cancer Center. Translating these basic science discoveries into clinical applications is at the core of our mission.

The Meyer Cancer Center is a collaborative, multidisciplinary research enterprise that engages more than 250 scientists, surgeons, oncologists, radiologists, pathologists, bioinformaticians and other clinicians, who collaborate daily to ensure that patients have access to emerging new therapies in a supportive and caring environment. Interactions with patients inform their research and drive further clinical innovation. Faculty also focus on training future researchers and recruiting leaders in cancer research and clinical care. This interdisciplinary model is the future of biomedicine, and will transform the way medical research is conducted.

As a donor who supports cancer initiatives at Weill Cornell Medicine, you have helped to make the accomplishments demonstrated here possible. You are an integral part of our mission, and we thank you for your dedication and generosity.

**Lewis C. Cantley, PhD**  
Meyer Director, Sandra and Edward Meyer Cancer Center  
Professor of Cancer Biology in Medicine  
Weill Cornell Medicine



You are an **integral part of our mission.**

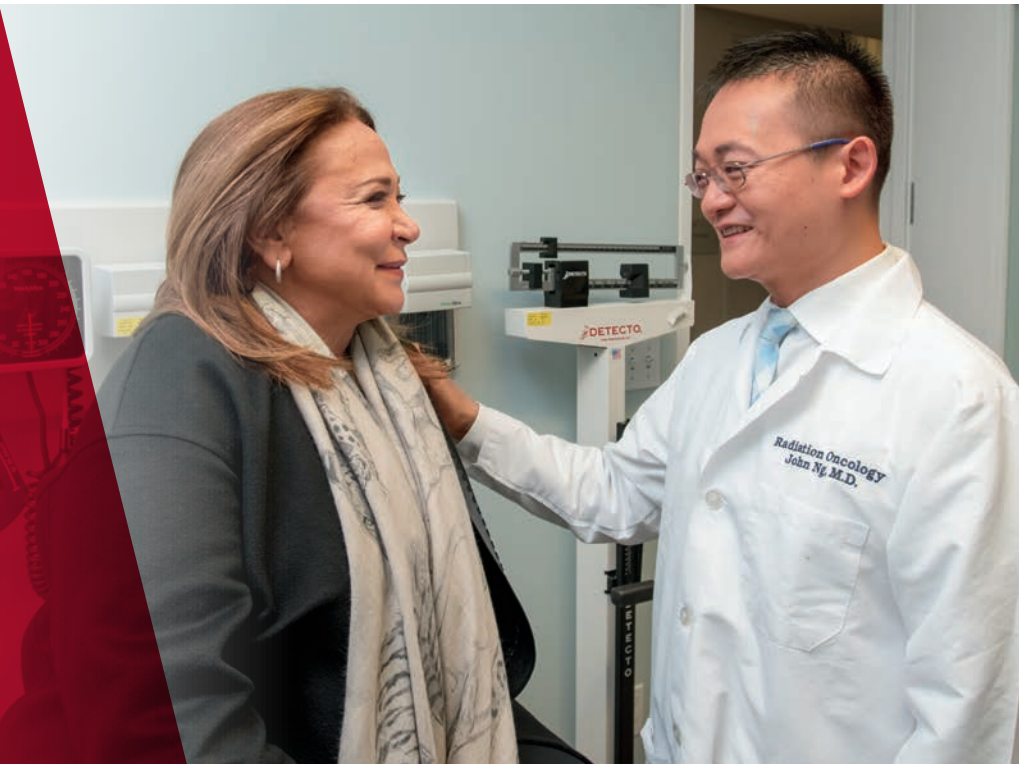
# Care

Outstanding patient care drives the three pillars of Weill Cornell Medicine's mission: **Care. Discover. Teach.** And while medicine is constantly improving and changing, Weill Cornell Medicine's compassionate, superior patient care remains exemplary.

Weill Cornell Medicine physicians take the time to get to know cancer patients and provide them with the best available care options. Patients have access to personalized evaluation and treatment programs, participation in innovative clinical trials, and a full array of resources needed for comprehensive cancer care. These resources include nutrition education, psychosocial support, complementary medicine, rehabilitation therapies, pain management, cardiac and pulmonary care, and access to specialists across a wide range of medical fields.

## Breast Cancer Survivorship

Thanks to medical advances over the last 20 years, women diagnosed with breast cancer have an excellent chance of living a normal lifespan. However, after these patients have completed active treatment, many still struggle with physical and psychological issues that impact their quality of life. In order to address these important challenges, the Weill Cornell Medicine Breast Center recently began a breast cancer "survivorship" program. This initiative studies and supports patients throughout their lifetime after a breast cancer diagnosis.



In 2017...

↑ 25%

Nationally registered clinical trials available to patients at the Meyer Cancer Center increased by 25 percent.

The majority of these trials test treatments in cancer of the...



**Breast**



**Blood**



**Gastrointestinal System**





# Discover

Weill Cornell Medicine has a strong tradition of research excellence rooted in the collaborative, groundbreaking and patient-centered work of our faculty.

Basic, translational and clinical researchers collaborate across our oncology efforts to convert conceptual breakthroughs into novel therapies that benefit our patients. The four research programs that make up the Meyer Cancer Center – Cancer Biology; Cancer Genetics, Epigenetics and Systems Biology; Hematologic Malignancies; and Solid Tumors – focus on interdisciplinary research across the cancer continuum.

**Our dedicated researchers have been recognized as outstanding in their fields and have attracted significant grant support. Some recent highlights since 2016 include:**

- Dr. Lewis Cantley received the **NCI Outstanding Investigator Award**, which supports cancer research leaders with up to \$600,000 in research funding per year for seven years. The award allows Dr. Cantley to investigate specific biochemical mechanisms controlling cellular metabolism to uncover new targets for pharmaceutical intervention, and new biomarkers for predicting patients who are likely to respond.
- Dr. Christopher Barbieri and Dr. Heather Yeo were among two of seven investigators nationwide to be awarded prestigious **Damon Runyon Cancer Research Foundation Awards**. Dr. Barbieri was recognized for a project focusing

on the treatment methods of patients with prostate cancer, and Dr. Yeo received the award for her work to improve perioperative surgical outcomes in patients with gastrointestinal cancer.

- Weill Cornell Medicine and NewYork-Presbyterian have been named to the nonprofit **Stand Up 2 Cancer's Colorectal Dream Team**, an interdisciplinary team co-led by Dr. Cantley and funded by a grant worth up to \$12 million, which brings together researchers from six institutions who focus on research that has the potential to affect all stages of colorectal cancer.
- Weill Cornell Medicine has been awarded a five-year, \$11.3 million, **Specialized Programs of Research Excellence (SPORE)** grant from the National Cancer Institute (NCI), part of the National Institutes of Health (NIH), to improve the detection, diagnosis and treatment of prostate cancer.
- Weill Cornell Medicine was awarded a \$5 million **Specialized Center of Research (SCOR)** grant from the **Leukemia and Lymphoma Society (LLS)** to support their Progressive Assessment of Therapeutics program, composed of a world-renowned team of lymphoma researchers harnessing their expertise in different aspects of lymphoma therapeutics.

- **The Leukemia and Lymphoma Society Mantle Cell Lymphoma Research Initiative** awarded Weill Cornell Medicine with a \$5 million challenge grant, funded over a five-year period, to support research efforts toward curing mantle cell lymphoma.

**The research efforts of our faculty were published in several high-impact journals since 2016:**

- A study by **Dr. Bishoy Faltas** published in *Nature Genetics* explored how chemotherapy can drive treatment resistance in bladder cancer.
- **Dr. Holly Prigerson** published a study in the *Journal of Clinical Oncology* exploring cancer care at the end of life. The study compared patients' understanding of their illness before and after undergoing scans that staged their cancer, and before and after discussing results with their oncologist.
- Prostate cancer biology was elucidated with several papers from Meyer Cancer Center members, including a *New England Journal of Medicine* study into DNA-repair gene mutations as an indicator of cancer progression, by **Dr. Mark Rubin**; a *Nature Medicine* study led by **Dr. Himisha Beltran** which showed that a subset of treatment-resistant prostate cancer pathologically resembles small cell lung cancer; a *Cancer Cell* report about the role of a protein in

regulating the change from prostate adenocarcinoma to neuroendocrine prostate cancer, by **Dr. David Rickman**; and a report by surgeon **Dr. Thomas Fahey III** in the *Journal of Clinical Endocrinology and Metabolism*, that identified a link between prostate protein PSMA and adrenal tumors.

- Two studies by **Dr. Ari Melnick** were featured in publications this year: a study in *Cancer Cell* shed light into how a pair of proteins cooperate to transform blood cells and cause cancer, and a study in *Nature Medicine* examined how epigenome evolution plays a key role in cancer progression.
- **Dr. Dan Landau** showed how mathematical modeling could be used to track mutations and explain why patients with chronic lymphocytic leukemia develop treatment resistance, in a *Nature Communications* paper.
- **The Cantley Lab** found that a metabolic protein linked to cancer may also influence autoimmunity, as reported in *Proceedings in the National Academy of Sciences*, as well as a previously unidentified link between cancer metabolism and cellular architecture, as reported in *Cell*.

 **For more highlights, please visit** [meyercancer.weill.cornell.edu](http://meyercancer.weill.cornell.edu).



# Teach

Weill Cornell Medicine is among the top-ranked medical and graduate schools in the nation, with faculty dedicated to educating the healthcare leaders of tomorrow.

An array of opportunities for continued growth and learning within the cancer community allows faculty and students to educate and collaborate.

- The faculty of the Sandra and Edward Meyer Cancer Center have many opportunities to collaborate with both medical students and graduate students in the joint MD-PhD program with Sloan Kettering Institute and The Rockefeller University.
- Oncology-related clinical training programs, offered in conjunction with NewYork-Presbyterian, provide fellows with the chance to partner with internationally-recognized clinicians and researchers.
- Many oncologists and fellows from Weill Cornell Medicine are members of the American Society for Clinical Oncology (ASCO), the leading organization for professionals who care for people with cancer, and frequently present their research findings at ASCO meetings and symposia.
- Medical students interested in cancer research and patient care have the opportunity to gain in-depth knowledge in the field before graduation as part of the Areas of Concentration (AOC) Program, a six-month, dedicated

research block during the third year of medical school which allows students to complete original research in an area of their choice with the assistance of a one-on-one mentor.

- The Meyer Cancer Center monthly seminar series hosts prominent guests who present their ongoing work on a wide variety of clinical, basic and translational cancer research topics.
- The Meyer Cancer Center sponsors three endowed lectures annually to honor the leadership of outstanding physicians and faculty members. These lectures feature distinguished investigators who present research and clinical discoveries that represent seminal advances in cancer prevention or treatment:
  - Mark S. Brower, MD, Lecture in Hematology and Oncology
  - Daniel G. Miller, MD, Lecture in Cancer Prevention
  - Andrew I. Schafer, MD, Lecture in Hematologic Malignancies



# Highlight

# Faculty



## Howard Fine, MD

**Associate Director for Translational Research, Sandra and Edward Meyer Cancer Center  
Director, Weill Cornell Brain Tumor Center  
Louis and Gertrude Feil Professor of Medicine**

Dr. Howard Fine, founder and director of the Weill Cornell Brain Tumor Center, is the institution's first recipient of the prestigious National Institutes of Health's Director's Pioneer Award. Established in 2004, the NIH Director's Pioneer Awards, part of the NIH Common Fund, provides nearly \$1.2 million annually for five years to a single principal investigator who has demonstrated exceptional creativity and is pursuing a bold, new research strategy against a major biomedical challenge. The award will support Dr. Fine's innovative approach to modeling deadly brain cancers in the laboratory.

Dr. Fine and his colleagues have been using advanced stem cell techniques to grow large clusters of functional and interconnected human brain cells, called cerebral organoids, in the laboratory. Dr. Fine's laboratory has developed technologies to use these organoids to examine how patients' tumors grow and respond to therapies within a realistic biological environment. This approach allows them to model brain cancers more accurately on the molecular level, which could be crucial for the development of effective therapies. The award complements an already highly productive brain cancer research program within Weill Cornell Medicine's Sandra and Edward Meyer Cancer Center.

An internationally renowned neuro-oncologist and associate director for translational research at the Meyer Cancer Center, Dr. Fine has built large multidisciplinary brain tumor programs at top academic institutions throughout the country. During his nearly 30 years of experience in both laboratory and clinical research, Dr. Fine has cared for more than 20,000 patients with brain and spinal cord tumors, conducted over 100 clinical trials, and has published more than 250 papers and book chapters on brain tumors. For more than 20 years, Dr. Fine has run a continuously operating translational genetic/molecular laboratory that is devoted to clarifying and developing better therapies to treat brain tumors.

Dr. Fine believes in an interdisciplinary approach that links the expertise of neurosurgeons, radiation oncologists, pathologists, medical oncologists, neurologists and nutritionists at Weill Cornell Medicine in order to develop a specific comprehensive treatment plan for each patient.



# Where We're Headed

We would not be where we are today in the journey to combat cancer without your dedicated support.

Thanks to your philanthropy, cancer initiatives at Weill Cornell Medicine are poised to maintain its impressive trajectory of progress in research and clinical care.

Your continued involvement is critical to our success as we move forward with our current priority initiatives:

## **Meyer Cancer Center Collaborative Research Initiative**

The Meyer Cancer Center has established the Meyer Cancer Center Collaborative Research Initiative (CRI), a seed funding program that promotes scientific excellence in research projects based on basic, translational, or clinical cancer research, or population science. The goal of the CRI is to facilitate and support high-quality collaborative research that will ultimately result in competitive extramural grant applications. CRI Investigator Awards provide researchers at Weill Cornell Medicine with funding to conduct preliminary studies and experiments needed to generate key data and evidence to establish proof of concept. This will enable scientists to successfully compete for grants to complete these important studies and translate findings to the care and treatment of cancer patients.

## **Shared Research Cores**

Shared research cores within the Meyer Cancer Center provide on-site basic, clinical and general services for cutting-edge research support. These research cores provide centralized support services, as well as broaden access to advanced technologies.

One of several critical research resources for cancer investigators is the **Proteomics and Metabolomics Core**, which facilitates the characterization and quantification of proteins and metabolites to assess the dynamic behavior of cancer cells. Established with philanthropic funds, ongoing research in the core led to the award of an NIH Shared Instrumentation Grant.

The **WorldQuant Initiative for Quantitative Prediction** creates and utilizes predictive tools and quantitative methods to deepen the understanding of genetic factors that drive disease. Using sophisticated, machine-learning algorithms that span both the biomedical and financial disciplines, the Initiative analyzes genomic and molecular data to identify patterns that can predict patients' future risk of developing disease, define specific health trajectories, and pioneer new methods in predictive genomics and medicine.

Another priority initiative is the **Institutional Biobank**, a resource for clinical and translational research requiring biospecimens from normal and disease states. Using the biobank, testing of novel drugs or drug combinations in experimental models can facilitate the design of innovative clinical trials.

The **Ellen and Gary Davis Immune Monitoring Core** provides a comprehensive analysis of samples from both tumors and the tumor microenvironment, which facilitates real-time development of next-generation immunotherapy trials and laboratory studies.

The **Patient-Derived Xenograft (PDX) Program** and tumor repository allows for the development of models that more closely resemble human cancers by transplanting fresh human tumor specimens from cancer patients directly into mice. Each model and corresponding molecular data has been banked into a repository for access by the Meyer Cancer Center research community. Weill Cornell Medicine has become the first academic center in the U.S. to be part of the EurOPDX consortium, which has a collection of more than 1,800 tumor lines representing 30 different solid tumor types.

## **Organoid Platforms**

Organoids are miniature three-dimensional cellular structures grown by culture in the lab, which can be developed to mimic patients' tumors. Using organoid platforms as models, physician-scientists at the Caryl and Israel Englander Institute for Precision Medicine have enabled discoveries of novel therapeutic approaches that can be assessed in clinical trials and provide personalized therapeutic options for patients for whom standard clinical options have been exhausted.

## **Recruitment**

Strategic recruitment will enhance the development of our cancer research programs. As the Meyer Cancer Center continues to focus on expanding its expertise to new areas, attracting the best and brightest leaders in their fields is critical. Priorities include recruitment of a leader in cancer immunotherapy, and experts in the fields of thoracic oncology, genitourinary cancers, gastrointestinal cancers and breast cancer.



# Transformational Partnerships



## Meyer Cancer Center

The Sandra and Edward Meyer Cancer Center was named in recognition of a \$75 million gift from the Meyer family in 2014. Sandra and Edward Meyer are members of the Weill Cornell Medicine Board of Overseers, and are among Weill Cornell Medicine's most generous benefactors, demonstrating their commitment to advancing cancer research and improving outcomes for cancer patients through the establishment of the Meyer Cancer Center, its directorship and a professorship in cancer research.

From left: Sandra Meyer, Edward Meyer, Dr. Lewis Cantley, Anthony Meyer



## Englander Institute for Precision Medicine

The Caryl and Israel Englander Institute for Precision Medicine (EIPM) at Weill Cornell Medicine is a translational research hub, which opened in 2013 and was named in honor of a generous commitment from Caryl and Overseer Israel Englander in 2015. Dr. Olivier Elemento is the director of the Englander Institute, as well as director of the Laboratory of Cancer Systems Biology and co-leader of the Cancer Genetics, Epigenetics and Systems Biology Program in the Meyer Cancer Center.

The Englander Institute's three main resources – next-generation genomics, biobanking and computational biology – are enabling the EIPM team to most efficiently match new, biologically-targeted therapies to the cancer patients who will benefit most. The Englander Institute works closely with the Meyer Cancer Center to ensure that cancer patients are benefitting from cutting-edge research.

## Belfer Research Building

The laboratory scientists in the Sandra and Edward Meyer Cancer Center are centered in Weill Cornell Medicine's state-of-the-art Belfer Research Building, located at York Avenue and 69<sup>th</sup> Street. The 480,000-square-foot building, which opened in 2014, was made possible through the generosity of numerous donors, including a transformational gift from Renée and Overseer Robert Belfer, for whom the building was named. The building now houses 70 laboratories, seven translational centers/institutes, and has enabled the recruitment of nearly 70 researchers who are developing new programs and engaging in interdisciplinary collaborations.

**The Belfer Research Building is a testament to the power of philanthropy, and the Weill Cornell Medicine community remains deeply grateful to the donors who helped initiate a new era at the institution with this transformative facility.**

# Opportunities for Engagement

## Meyer Cancer Center Subcommittee

The Meyer Cancer Center Subcommittee is a group of stakeholders interested in the full spectrum of cancer initiatives, with a goal to support the Meyer Cancer Center's objectives through financial resource development. Subcommittee meetings provide members and their guests with an opportunity to learn about the important programs within the Meyer Cancer Center, and members of the Subcommittee serve as ambassadors by sharing the accomplishments of the Center with external audiences.

## Discovery Luncheons

In the fall of 2016, Discovery Luncheons were launched, providing guests with opportunities to engage in discussion with clinicians and their research collaborators in informal, small-group settings. Presentations in this series have featured a range of prominent faculty. To date, more than \$1.5 million has been raised by engaged Discovery Luncheon participants to support the research initiatives discussed.







# Weill Cornell Medicine

If you are interested in becoming engaged with cancer initiatives at Weill Cornell Medicine, please contact:  
Jeanne Maxbauer,  
Director of Principal and Major Gifts,  
at 646-962-9520 or  
[jem2047@med.cornell.edu](mailto:jem2047@med.cornell.edu).



20<sup>th</sup>  
1998-2018  
ANNIVERSARY  
of the renaming of the medical college