



## **The Sandra and Edward Meyer Cancer Center at Weill Cornell Medicine**

### **2016 Annual Report**

**Lewis C. Cantley, Ph.D.**  
**Meyer Director**

Translating basic science discoveries into clinical applications for cancer patients is the central mission of the Sandra and Edward Meyer Cancer Center.

In the past year, we have focused on strengthening the support we provide to our researchers and clinicians so that we can make even greater strides in science and patient care. We have invested in infrastructure improvements, developed several new cores, launched a new pilot grant program, expanded our community outreach efforts, and enhanced our collaborative relationships both at home and abroad.

## Leadership

Leadership is a critical component of an effective organization, and the Meyer Cancer Center senior leadership team provides strategic direction and oversight in the areas of basic science, clinical research, clinical care and administration.

- **Julie L. Boyer, Ph.D.**, Associate Director of Administration, supports all aspects of cancer center strategic development and provides oversight for cancer center resources.
- **Andrew Dannenberg, M.D.**, Associate Director of Cancer Prevention, provides recommendations on program development in population sciences outreach activities.
- **Howard A. Fine, M.D.**, Associate Director of Translational Research, has responsibility for facilitating collaborations between basic scientists and clinical researchers.
- **Silvia Formenti, M.D.**, Associate Director of Radiation Oncology, integrates the efforts of our growing immunotherapy program.
- **John P. Leonard, M.D.**, Associate Director of Clinical Research, facilitates a robust clinical trials operation.
- **David M. Nanus, M.D.**, Associate Director of Clinical Services, has responsibility for establishing a unified clinical practice that will provide the highest quality multidisciplinary care across divisions and departments.
- **Mark Rubin, M.D.**, Associate Director of Precision Medicine and Director of the Englander Institute for Precision Medicine, has implemented technologies to detect molecular alterations in tumor specimens as well as the associated analyses required to guide patient treatment.

In the past year, there have been two additions to the MCC senior leadership team:

- **John Blenis, Ph.D.**, Associate Director of Basic Science, will oversee the direction of basic science research programs, and provide critical guidance on faculty recruitment that complements existing research strengths and aligns with the cancer center's mission, which holds strength in basic science as fundamental to an innovative cancer research enterprise. As chair of the Meyer Cancer Center Scientific Review Committee, he will also oversee an annual pilot grant program for MCC members that will provide seed funding for innovative, hypothesis-driven research, positioning the projects to be competitive for external funding.
- **Barry Sleckman, M.D., Ph.D.**, Associate Director of Shared Resources, oversees resource operations that support basic, translational and clinical research. He will help develop a strategic plan for MCC shared resources that will serve the cancer research mission and be sensitive to broader institutional needs, as well as metrics and processes to evaluate and select shared resources to include as part of an NCI P30 grant application. A member of the advisory committee for the WCM Core Laboratories Center and the faculty advisory committee for each of the MCC shared resources, Dr. Sleckman will provide scientific and administrative guidance to ensure operational efficiency and cost effectiveness.

## Administration

A team of dedicated professionals implements the vision of the Director, Lewis Cantley, Ph.D., and supports the efforts of all Meyer Cancer Center members. These individuals work collaboratively with Julie Boyer, Ph.D., Associate Director of Administration, to develop strategic plans, guide research programs, promote shared research resources, coordinate seminars, evaluate membership, facilitate recruitment, distribute pilot grant funding, disseminate information, enhance cancer clinical trial portfolios and support clinical initiatives:

- **Erick Herrscher**, Assistant Director, Administration – Mr. Herrscher is the key administrator providing strategic oversight for development, submission, management and maintenance of a National Cancer Institute P30 Cancer Center Support Grant. He is also leading the implementation of informatics systems to collect relevant cancer center data and interfaces with the Joint Clinical Trials Office to align our cancer clinical trial portfolios with NCI requirements.
- **Katelyn Carbonell**, Research Program Manager – Ms. Carbonell provides oversight for the ongoing development of MCC Research Programs according to NCI guidelines. She is responsible for data acquisition and preparation in support of the P30, and manages all MCC research-related initiatives.
- **Stacey Shackford**, Communications Manager – Ms. Shackford is responsible for development of the MCC communication strategy that integrates critical MCC-related entities, including NewYork-Presbyterian Hospital, the Office of External Affairs, the Division of Hematology and Medical Oncology and the Englander Institute for Precision Medicine, as well as external affiliates.
- **Thomas Smith**, Administrative Specialist – Mr. Smith provides programmatic and administrative support for the Meyer Cancer Center's scientific, academic and administrative initiatives.
- **Bo Wang**, Finance Administrator – Mr. Wang is responsible for the direct administration of Meyer Cancer Center financial activities and the Director's grant portfolio.

## Faculty

### **Meyer Cancer Center Membership**

From the inception of the Meyer Cancer Center, membership has been inclusive; any health professionals and/or laboratory, clinical, or population research scientists holding a full-time faculty appointment at Weill Cornell Medicine or Cornell Ithaca who demonstrate involvement in cancer research and/or patient care and are interested in fulfilling the mission of the cancer center have been considered members. In 2016, the Meyer Cancer Center membership totaled **279 full-time faculty members**.

Within the past year, specific criteria for membership in the Meyer Cancer Center have been defined to align with the National Cancer Institute's expectation of cancer centers. Eligible members for the Cancer Center Support Grant include any full-time faculty member of Weill Cornell Medicine who:

1. has cancer-relevant peer-reviewed non-training funding from the NIH/NCI or from an NCI-recognized organization; or
2. is a clinical science leader as evidenced by leadership of therapeutic investigator initiated institutional trials (in-house, internally reviewed trials, including those collaborative studies conducted with industry sponsorship in which the center is a primary contributor to the design, implementation, and monitoring of the trial, or participation in a multi-site trial initiated by an investigator at another center); or
3. is newly recruited in collaboration with the Meyer Cancer Center and is still within their start-up phase; or
4. holds a Meyer Cancer Center leadership position.

Membership is reviewed annually by Research Program Leaders to insure relevance of the member's professional activities to the Meyer Cancer Center's mission. Continued membership is contingent upon maintenance of the specified criteria.

### **Recruitment**

Strategic recruitment of faculty members to expand or enhance existing research programs or capabilities has been a continued MCC focus. New faculty members in 2016 include:

- **Kristy A. Brown, Ph.D.**, an international expert in cancer and obesity, formerly from the Centre for Cancer Research at the Hudson Institute of Medical Research in Australia;
- **Elena Piskounova, Ph.D.**, recently completed a postdoctoral fellowship at the University of Texas, Southwestern, and will lead a research program on melanoma metastasis.

To continue expanding the breadth of our clinical care and basic research programs, there are active searches for faculty members with expertise in the areas of thoracic oncology, breast oncology and tumor immunology. With the transition of David M. Nanus, M.D., from the position of Chief, Division of Hematology and Medical Oncology, to Director, NYPH-WCM Healthcare Systems Cancer Program, a search for a new division chief has also been initiated. In his new role, Dr. Nanus will be vital in helping integrate cancer care and clinical research across NYP-Lower Manhattan, NYP-Queens, and NYP-Methodist. This expansion and integration provides MCC with the opportunity to define a more unique catchment area with the associated demographics in comparison to other NCI-designated cancer centers in New York City.

## Research Programs

As we continue to pursue NCI Cancer Center designation via the NCI P30 Cancer Center Support Grant, we regularly re-evaluate the structure of our research programs. Last year, we realigned and consolidated our research programs—from 10 programs into four—to reflect our strongest basic, translational and clinical research while capturing our maximum extramural funding base.

The following table summarizes the new structure:

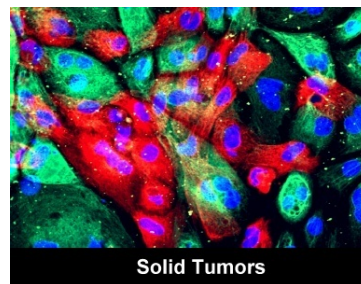
Research Program	Leadership	Working Groups
SOLID TUMORS	Lewis Cantley, Ph.D. <i>Interim</i>	Brain
		Breast
		Lung
		Gastrointestinal
		Prostate
HEMATOLOGIC MALIGNANCIES	Ari Melnick, M.D. Barry Sleckman, M.D., Ph.D.	Bone Marrow Transplant
		Lymphoid
		Myeloid
		Myeloma
		Myeloproliferative Neoplasms
CANCER BIOLOGY	John Blenis, Ph.D.	
CANCER GENETICS, EPIGENETICS & SYSTEMS BIOLOGY	Olivier Elemento, Ph.D. Steve Lipkin, M.D., Ph.D.	

Regular research program meetings provide a forum to discuss the strategic research focus for each program and to facilitate the goals of both the working groups and the programs. Each program has been encouraged to identify opportunities for collaborative grants (P01, SPORE, etc.) that will enhance multidisciplinary research efforts and elevate the national profile of the Meyer Cancer Center.

## **Solid Tumors Research Program**

Program Leader: Lewis Cantley, Ph.D. (*interim*)

The Solid Tumors Research Program, led by Lewis Cantley, Ph.D., is composed of disease-specific working groups, each with designated leaders. In 2016, under the leadership of Manish Shah, M.D., a Gastrointestinal Cancer Working Group was formed, for a total of five working groups:



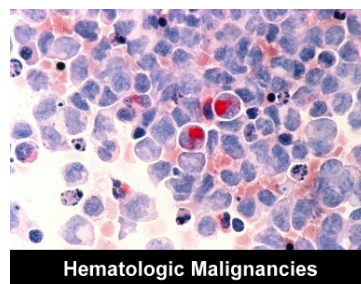
- Breast Cancer Working Group – Linda Vahdat, M.D., and Anthony Brown, Ph.D.
- Brain Cancer Working Group – Howard A. Fine, M.D.
- Gastrointestinal Cancer Working Group – Manish Shah, M.D.
- Lung Cancer Working Group – Nasser Altorki, M.D.
- Prostate Cancer Working Group – Mark A. Rubin, M.D., and David Nanus, M.D.

Each month, these working groups meet to discuss research in progress and disease-specific issues and then convene as one large group to discuss issues of general relevance.

## **Hematologic Malignancies Research Program**

Program Co-Leaders: Ari Melnick, M.D., and Barry Sleckman, M.D., Ph.D.

The Hematologic Malignancies Research Program welcomed Dr. Sleckman as a co-leader in 2016. To reflect the diversity of the hematologic malignancies, five disease-specific working groups were instituted to better serve the needs of researchers and clinicians aligned with specific disease areas:



- Lymphoid Malignancies Working Group – Peter Martin, M.D., and Kristy Richards, M.D., Ph.D.
- Myeloid Malignancies Working Group – Gail Roboz, M.D.
- Myeloma Working Group – Ruben Niesvizky, M.D.
- Myeloproliferative Neoplasms Working Group – Andrew Schafer, M.D.
- Bone Marrow Transplant Working Group – Koen van Besien, M.D.

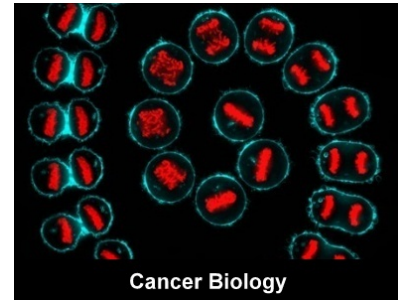
In addition to regular monthly meetings of each working group, these investigators are planning a retreat for September 2017 that will feature lectures on integrating translational and clinical research as well as a working session to foster internal interactions among the working groups.



### **Cancer Biology Research Program**

Program Co-leaders: John Blenis, Ph.D., Timothy Hla, Ph.D.

The Cancer Biology Program investigates the complexities of aberrant cancer cell signaling by studying the transcription factors, cellular signaling events and cellular architecture that impact malignant transformation, as well as the interaction of tumor cells with their normal counterparts and surrounding microenvironment.

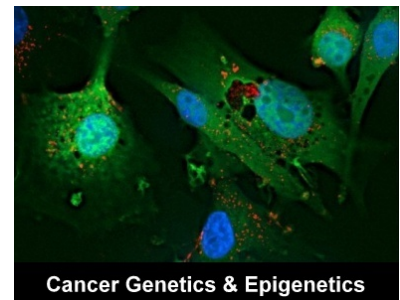


In 2016, Timothy Hla, Ph.D., was recruited to Harvard; the MCC leadership is evaluating candidates to co-lead this program with Dr. Blenis.

### **Cancer Genetics, Epigenetics and Systems Biology Research Program**

Program Co-leaders: Olivier Elemento, Ph.D., Steven Lipkin, M.D., Ph.D.

Investigators in the Cancer Genetics, Epigenetics and Systems Biology Program use next-generation sequencing, advanced computing and experimentation to identify and understand the function of genetic and epigenetic alterations in tumors. These can be translated into clinical tools, such as biomarkers for therapy selection and early cancer detection as well as targets for novel cancer therapies.



The Cancer Genetics, Epigenetics and Systems Biology Research program collaborated with the Weill Cornell Medicine Genomics/Epigenomics Core Facilities to bring novel genomics technologies into the core to serve the needs of program members and the larger WCM community. This includes a 10X Genomics GemCode Platform, a state-of-the-art technology for sequencing long DNA fragments, and Drop-seq, a high-throughput technique to profile transcriptomes of tens of thousands of single mammalian cells.



## Shared Research Resources

With oversight from Barry Sleckman, M.D., Ph.D., Associate Director for Shared Resources, several new shared research resources, or “cores,” have been introduced to serve the needs of MCC members.

### **Institutional Biobank**

In partnership with the medical college, the MCC has supported the establishment of an Institutional Biobank as a resource for clinical and translational research requiring biospecimens from normal and disease states. The biobank will facilitate coordinated tissue procurement, processing, and storage in a CAP/CLIA-accredited environment. The consolidation of WCM biobanking efforts under this shared resource ensures procurement of high quality biospecimens, compliance with regulatory guidelines, maximization of biospecimen utility, and global and equitable access to biospecimens for investigators.

### **Oncology Preclinical Pharmacy**

A Preclinical Pharmacy maintains large quantities of commercial and experimental compounds for research purposes. Under the direction of Leandro Cerchietti, M.D., the pharmacy coordinates the chemical synthesis of compounds that are identical to experimental drugs in cancer clinical trials, as well as to approved oncology drugs. This unique resource facilitates drug testing in pre-clinical animal models at reasonable cost, as well as evaluating combination therapies without the typical restrictions on research involving drug combinations.

### **PDX Program**

The Patient-Derived Xenograft Program and tumor repository allows for the development of models that more closely resemble human cancers than tumors established from cell lines or murine xenografts, by transplanting fresh human tumor specimens from cancer patients directly into mice. Giorgio Inghirami, M.D., has led the development of several PDX tumor models in multiple cancer types, such as lymphoma, lung cancer, breast cancer and colon cancer. Each model and corresponding molecular data has been banked into a repository for access by the MCC research community.

### **Mass Spectrometry, Proteomics and Metabolomics Core**

The Mass Spectrometry, Proteomics and Metabolomics Core facilitates the characterization and quantification of proteins and metabolites to assess the dynamic behavior of cancer cells. Guoan Zhang, Ph.D., director of the core facility, provides strategic consulting in proteomics and small molecule analysis. The core offers services in protein identification, protein quantification, post-translational modification analysis, MS data analysis and metabolite quantification.



## Internal Grants

In order to further support innovative, collaborative research among its members, the Meyer Cancer Center launched a pilot grant program. The inaugural program solicited requests for collaborative one- to two-year projects for non-invasive cancer detection methods. The goal was to stimulate innovations in circulating tumor DNA analysis. Three competitive applications were received, and following a standard peer-review process, one \$200,000 award was made to a team led by Dan Avi Landau, M.D., Ph.D., to assess the viability of a new non-invasive blood test using circulating tumor DNA for detection and monitoring of non-small cell lung cancer.

The MCC will initiate a broader pilot grant program in 2017, to stimulate promising new cancer research (basic, translational, clinical or population science) across all cancer types and facilitate the collection of preliminary data that will result in larger national research grants. The effort will be supported in part by a new Cancer Research Innovation Fund launched by the Office of Development, which will allow pooled philanthropy to support the most innovative ideas in basic cancer research.

## External Grants

In 2016, seven cancer center members were awarded **eight** new grants from the National Cancer Institute, totaling over **\$1.6 million**. The cancer center's total research grant portfolio contained more than **85** cancer-focused research grants, of which **38** were awarded from the National Cancer Institute. The direct costs of the portfolio amounted to more than **\$25 million**, for basic, translational, and clinical research.

Among them was a prestigious NCI Outstanding Investigator Award for Meyer Director Lewis Cantley, Ph.D. The award supports accomplished leaders in cancer research who are providing significant contributions toward understanding cancer and developing applications that may lead to breakthroughs. It provides \$600,000 for seven years, allowing substantial time for awardees to take greater research risks. Dr. Cantley will 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.

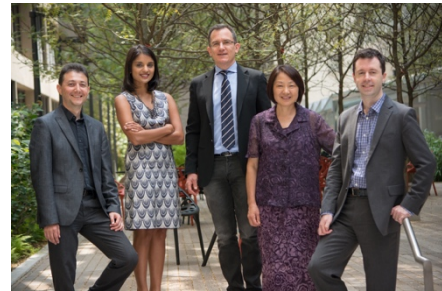
MCC members also submitted some notable, multi-investigator grant applications in 2016:

- Mark Rubin, M.D., resubmitted an application for an NCI Prostate Cancer SPORE (Specialized Program of Research Excellence) focused on genomics, in collaboration with Himisha Beltran, M.D., Olivier Elemento, Ph.D., & Chris Barbieri, M.D., Ph.D.
- Selina Chen-Kiang, Ph.D., led the resubmission of an NCI Program Project application on mantle cell lymphoma that featured collaborations with Dr. Cantley, Dr. Elemento, John Leonard, M.D., Peter Martin, M.D., and Jihye Paik, Ph.D., as well as investigators at Ohio State University's Cancer Center. While this submission was not funded, positive feedback from reviewers encouraged a revised resubmission.
- Paraskevi Giannakakou, Ph.D., submitted a T32 training grant to support postdoctoral scholars in translational oncology research by providing additional mentoring opportunities and fostering collaborations with MCC's accomplished clinical faculty.

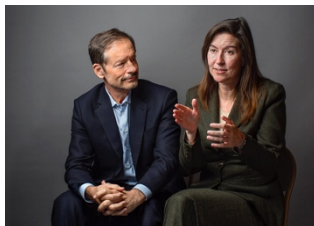
## Prominent partnerships

The Meyer Cancer Center and its affiliated Englander Institute for Precision Medicine expanded its international reach by partnering with the International Cancer Genome Consortium and Australia's Garvan Institute.

Under the leadership of MCC Associate Director of Precision Medicine, Mark Rubin, M.D., Weill Cornell Medicine was one of the institutions to be selected to be part of President Barack Obama's Precision Medicine Initiative's *All of Us* Program, which aims to engage a million US volunteers in a significant health research effort. WCM -- partnering with Columbia University Medical Center, NYP and Harlem Hospital -- will enroll thousands of participants from NYC's demographically diverse population.



In partnership with the New York Genome Center, MCC and the Englander Institute have created a specialized genomic data center, one of 11 chosen by the National Cancer Institute to lead the next phase of the ambitious Cancer Genome Atlas project. With funding of approximately \$480K, this Center for Functional and Clinical Interpretation of Tumor Profiles is led by Mark Rubin, M.D., and Olivier Elemento, Ph.D., co-leader of MCC's Cancer Genetics, Epigenetics, and Systems Biology Program. The center will perform integrative analyses to detect and unravel genomic mutations and assess their clinical potential.



Closer to home, collaborations with Cornell University in Ithaca became tighter, with the roll-out of the P.A.Th. (Progressive Assessment of Therapeutics) program, supported in part by a \$5 million SCOR grant from the Leukemia & Lymphoma Society, and the establishment of a new Center on the Physics of Cancer Metabolism, funded through a \$9.3 million grant from the National Cancer Institute.

Led by Claudia Fischbach-Teschl, Ph.D., an associate professor of biomedical engineering at Cornell University, and Meyer Director Lewis Cantley, Ph.D., the goal of the center is to combine the strengths of different interdisciplinary research groups to gain unprecedented understanding of the biological and physical mechanisms regulating how tumors function and metastasize, or spread, in the human body's microenvironment.

## Research excellence

MCC had a strong presence at national and international meetings and conferences, such as the American Association for Cancer Research (AACR), the American Society of Clinical Oncology (ASCO) and the American Society for Hematology (ASH).

The research efforts of our faculty were published in several high impact journals:

- Monica Guzman, Ph.D., shared her discovery of ‘epichaperome’ protein networks and their potential as future therapeutic targets in *Nature*.
- Holly Prigerson, Ph.D., published several studies exploring cancer care at the end of life.
- A study by Bishoy Faltas, M.D., published in *Nature Genetics*, explored how chemotherapy can drive treatment resistance in bladder cancer.
- Prostate cancer biology was elucidated with several papers from MCC members, including a *New England Journal of Medicine* study into DNA-repair gene mutations as an indicator of cancer progression, by Mark Rubin, M.D.; a *Nature Medicine* study led by Himisha Beltran, M.D., which showed that a subset of treatment-resistant prostate cancer pathologically resembles small cell lung cancer; a *Cancer Cell* report about the role of N-Myc in regulating the change from prostate adenocarcinoma to neuroendocrine prostate cancer, by David Rickman, Ph.D.; and a report by surgeon Thomas Fahey III, M.D., in the *Journal of Clinical Endocrinology and Metabolism*, that identified a link between prostate protein PSMA and adrenal tumors.
- Another study in *Cancer Cell* by Ari Melnick, M.D., 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.
- Dan Landau, M.D., Ph.D., 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.
- Ithaca member Tudorita Tumber, Ph.D., challenged a long-standing model regarding epidermal stem cells and their role in skin repair, in a *Nature Cell Biology* paper.
- The Cantley lab found that a metabolic protein linked to cancer may also influence autoimmunity, as reported in *PNAS*, as well as a previously unidentified link between cancer metabolism and cellular architecture, as reported in *Cell*.



## Awards

Meyer Cancer Center junior faculty members received numerous accolades this year:

- In addition to the 2016 Sidney Kimmel Foundation Scholar Award, Dan Landau, M.D., Ph.D., received an American Society for Clinical Investigation Council Young Physician-Scientist Award and a Stand Up To Cancer (SU2C) Innovative Research Grant;
- Computational biologist Marcin Imielinski, M.D., Ph.D., also received an American Society for Clinical Investigation Council Young Physician-Scientist Award;
- Ovarian cancer researcher Juan Cubillos-Ruiz, Ph.D., received a SU2C Award, a Department of Defense Early Career Investigator Award, and a Daedalus Fund for Innovation Award; Christopher Barbieri, M.D., Ph.D., and Heather Yeo, M.D., were among two of seven investigators nationwide to be awarded prestigious Damon Runyon Cancer Research Foundation awards;
- Eftychia Apostolou, Ph.D., was granted a \$1.5 million NIH New Innovator Award;
- Pathologist Nancy Du, Ph.D., received a \$1 million Department of Defense Breakthrough Award, and radiation oncology postdoc Erik Wennerberg, Ph.D., received a Breakthrough Fellowship;
- Christopher Mason, Ph.D., received a Pershing Square Sohn Cancer Research Prize;
- Two students from the lab of Olivier Elemento, Ph.D. – Katie Gayvert and Neel Madhukar – were named to the “30 under 30” in healthcare list by Forbes.

Meyer Director Lewis Cantley, Ph.D., was also honored in Israel with the nation’s highly prestigious international award, the Wolf Prize.

## Coordinated care


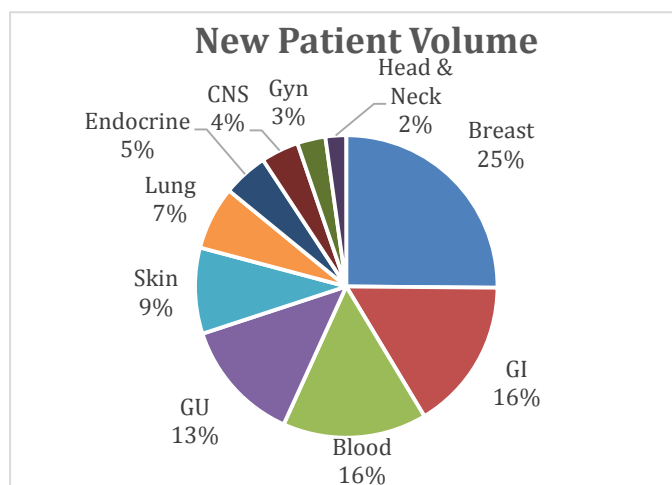
Over the past year, **29,836** patients with cancer diagnoses were seen at NewYork-Presbyterian/Weill Cornell, and **8,551** of those were new patients.

Patients treated at NewYork-Presbyterian/Weill Cornell have access to a host of medical services that enhance and complement their cancer care. That care will be more coordinated, as part of a new delivery model.

We were selected by the Centers for Medicare & Medicaid Services (CMS) to participate in a national Oncology Care Model project, which encourages practices to improve care and lower costs through episode- and performance-based payments.

In 2016, an additional **17** cancer clinical trials were opened for enrollment at MCC, bringing the total number of recruiting, nationally registered clinical studies to **139**.

Most of these newly opened trials are in breast, blood, and genitourinary (GU) cancers, providing our largest patient populations with potential treatment options.



**ARE HAPPENING HERE**  
for Kids

**AMAZING IS HAVING SEVEN LIVES BEFORE YOUR FIRST BIRTHDAY.**

When Leni was just three months old, she became seriously ill. Her pediatrician didn't know why—but she knew who would. The pediatric specialists at NewYork-Presbyterian diagnosed Leni with a rare form of leukemia—but that was just the beginning. Before Leni was discharged, she'd undergone seven life-saving procedures, including chemotherapy, a liver transplant, and gall bladder surgery. In all, it took 10 doctors, 20 nurses, and two NewYork-Presbyterian

This year also brought many other noteworthy clinical advances:

- The FDA granted an orphan drug designation to the STAT3-targeted agent napabucasin as a treatment for patients with gastric or gastroesophageal junction (GEJ) cancer, based on early-phase research by Manish Shah, M.D.
- Paraskevi Giannakakou, Ph.D. teamed up with physician-scientist Scott Tagawa, M.D., to use a simple blood test to develop an early-switch therapy, resulting in significantly higher response rates to taxane chemotherapy in prostate cancer patients.
- Neurosurgeons Rohan Ramakrishna, M.D., and Mark Souweidane, M.D., are transforming drug delivery and brain cancer treatment through several innovative techniques, such as convection-enhanced delivery (CED) and the BrainPath introducer, a surgical tool with a tip designed to nudge brain tissue aside rather than cut into it.
- Computational tools developed in the lab of Olivier Elemento, Ph.D., led to the identification of new drugs and new uses for existing drugs, such as the steroid dexamethasone to deter the growth of a hard-to-treat prostate cancer subset.
- Leandro Cerchietti, M.D., found that a novel drug being developed for blood cancers may also provide hope for lung cancer patients.
- The lab of Meyer Director Lewis Cantley, Ph.D., found a drug that could be used to treat types of breast cancer, lung cancer and melanoma by targeting the serine pathway.
- Lorraine Gudas, Ph.D., identified a gene that may provide a new, specific target for drugs that could stop kidney cancer progression in its tracks.
- John Babich, Ph.D., created new radiopharmaceuticals for medical diagnostics and treatment in prostate cancer and neuroendocrine tumors. He is also working with neuro-oncologist Howard Fine, M.D., to image the vascular beds of gliomas and trace tumor metabolism as part of a study into the effects of ketogenic diets on brain cancer.
- Ching-Hsuan Tung, Ph.D., developed a fluorescent “cancer spray” that can be applied to organs during surgery to create a luminous outline of cancerous cell clusters.
- The Lymphoma Clinical Research Group received an award for its study demonstrating the efficacy of an innovative combination therapy for treating mantle cell lymphoma.
- Ithaca and NYC researchers collaborated to develop an inhibitor of the SIRT2 enzyme for several types of cancer, including leukemia, breast and colorectal.
- Another Ithaca-NYC partnership resulted in the creation of a solar-powered system to allow medical technicians to obtain biopsy samples in the field and easily administer reliable tests for Kaposi’s sarcoma.
- Silvia C. Formenti, M.D., MCC’s Associate Director of Radiation Oncology, has partnered with Janssen Biotech to study the preclinical efficacy of combining external-beam radiotherapy with immuno-oncology drugs.
- Epidemiologist Janey Paterson and surgeons Brendon Stiles, M.D., and Heather Yeo, M.D., are creating mobile phone apps to enhance surgical outcomes for patients, and oncologist Allyson Ocean, M.D., partnered with patient Anne Glauber to launch an online social and information network for pancreatic cancer.



## Communications

The reputation of the cancer center was enhanced through concerted communications efforts, which promoted the accomplishments of our faculty members in academic publications and popular press, as well as new media. MCC members were featured in hundreds of news articles, and were invited to appear as experts in several prominent television reports.



### Web, Print, Social Media

The MCC website, launched in March 2015, received nearly 100,000 visits in its second year. Visitor numbers increased 123%. Search engines like Google drove 66% of the traffic (compared to 34% the year before) and visits to our news stories increased 250%. A special section on immunotherapy was one of the most popular pages on the site, and was a main attraction to our site via search engines. Our various social media channels also continued to grow in content and popularity, and subscriptions to the cancer center listserv surged by nearly 500%, as people signed up to receive our weekly events and funding round-ups, monthly media updates and quarterly newsletters. A new partnership with print and online giant OncLive will expand our reach even farther.

### National Meetings



The Meyer Cancer Center was promoted at national and international meetings and conferences, such as the American Association for Cancer Research (AACR) and the American Society for Clinical Oncology (ASCO), where oncologist Adrienne Phillips, M.D. made a splash with her findings into the use of immunotherapy as a treatment for a fatal form of a rare blood cancer, relapsed or refractory adult T-cell leukemia-lymphoma (ATLL). At the 58<sup>th</sup> Annual Meeting of the American Society of Hematology, John Leonard, M.D., was consulted as an expert to comment on many studies, while Peter Martin, M.D., Jia Ruan, M.D., Ph.D., Richard Furman, M.D., and several others presented the results of their own studies into new combination treatments for a variety of blood cancers.

### Outreach

The cancer center and its members have been increasingly active in community events and fundraisers. Weill Cornell Medicine/NewYork-Presbyterian were corporate sponsors of this year's Leukemia and Lymphoma Light the Night event in Manhattan, and MCC played a major role in organizing and fundraising. MCC was also a sponsor for the 2016 Strides for Life event in support of the Lung Cancer Research Foundation. And the cancer center participated in other community outreach events, such as the Third Avenue Street Fair and a 92Y seminar series.



## Seminar Series

The Meyer Cancer Center monthly seminar series hosted many prominent guests who presented their ongoing work on a wide variety of clinical, basic and translational cancer research topics. To incorporate topics of broad interest, suggestions for speakers are solicited from each research program.

### Meyer Cancer Center Director's Seminar Series

1-20-16	Kristy Brown, Ph.D. (Hudson Institute)	<i>Sex, Fat and Breast Cancer: The Link Between Inflammation, Dysregulated Metabolism and Estrogen Production</i>
2-17-16	Luis Parada, Ph.D. (MSKCC)	<i>The Role of Cell Origin and Cancer Stem Cells in GBM Phenotype</i>
3-16-16	Michael Pollak, M.D. (McGill University)	<i>Diabetes, Obesity and Cancer: Pharmacology and Physiology and the Interface</i>
5-18-16	Stephen Gruber, M.D., Ph.D., M.P.H. (University of Southern California)	<i>Cancer Genetics at the Interface of Immunology, Patient Care, and Population Science</i>
6-15-16	Melody Swartz, Ph.D. (University of Chicago)	<i>Multifaceted Roles of Lymphatic Vessels in Regulating Tumor Immunity</i>
9-21-16	Martin Eilers, Ph.D. (Biozentrum, University of Wurzburg)	<i>Protein Complexes of MYC and N-MYC Protein as Targets for Tumor Therapy</i>
11-16-16	Andrea Califano, Ph.D. (Columbia University)	<i>A 'Precise' Approach to Precision Cancer Medicine</i>
12-14-16	Alec Kimmelman, M.D., Ph.D. (New York University)	<i>Identifying Metabolic Dependencies in Pancreatic Cancer</i>

In addition to the monthly seminar series, the MCC is fortunate to sponsor three endowed lectures featuring distinguished investigators who present research and clinical discoveries that represent seminal advances in cancer prevention or treatment.

*The Mark S. Brower, M.D., Lecture in Hematology and Oncology* was established to honor the memory of this beloved physician and faculty member. This annual lecture features internationally-recognized physicians, scientists or physician scientists that are advancing cancer care and research.

- 2016 – Siddhartha Mukherjee, M.D., Ph.D. (Columbia University) *'The Changing Landscape of Cancer: Past, Present & Future'*
- 2015 – Harold Varmus, M.D. (Weill Cornell Medicine) *'Confronting Cancer's Complexity'*
- 2014 – Lewis C. Cantley, Ph.D. (Weill Cornell Medicine) *'Advances in Cancer Research: On the Front Lines of the Revolution'*



*The Daniel G. Miller, M.D., Endowed Lecture in Cancer Prevention* honors the memory of this outstanding physician and distinguished pioneer in cancer prevention research.

- 2016 – Michael Pollak, M.D. (McGill University) *'Diabetes, Obesity, and Cancer: Pharmacology and Physiology at the Interface'*
- 2015 – Ernest Hawk, M.D., M.P.H. (The University of Texas M.D. Anderson Cancer Center) *'Advancing Cancer Prevention and Control as Plan A'*
- 2014 – Kenneth Kinzler, Ph.D. (Johns Hopkins University)

*The Andrew I. Schafer, M.D., Lectureship in Hematologic Malignancies* honors the leadership and mentorship of Andrew I. Schafer, M.D., a distinguished hematologist and leader in academic medicine.

- 2016 – Harinder Singh, Ph.D. (University of Cincinnati) *'Towards a Gene Regulatory Logic of Immune Cell Development and Function'*
- 2015 – Bertrand Nadel, Ph.D. (Centre d'Immunologie de Marseille-Luminy) *'Follicular Lymphoma: Immunogenetics Ahead of Disease'*
- 2014 – Gabriel Rabinovich, Ph.D. (University of Buenos Aires) *'Integrating Immune and Vascular Signaling Programs in Cancer through Lectin-Glycan Interactions'*



### Special Seminars

In an effort to expand our collaboration efforts and to further promote the numerous research interests and areas represented by our esteemed investigators throughout the institution, the Meyer Cancer Center is proud to have partnered with several departments in WCM/NYP to host special seminars throughout the year. The inclusion of special seminars as part of our sponsored events at the MCC encourages the participation, involvement, and representation of various disciplines across the institution. The considerable contributions made at the departmental level to stimulate scientific discussion and integration strengthens the WCM/NYP research community.

## Translational Research Workshop

As a companion to the monthly seminar series, the newly-established translational research workshops facilitate a productive exchange of cancer drug development ideas among cancer center investigators. This bi-annual forum, led by Selina Chen-Kiang, Ph.D., and Ruben Niesvizky, M.D., allows clinicians, basic scientists and representatives from the pharmaceutical industry to discuss clinically relevant therapeutic drug targets, the laboratory methods used to study the associated pathways, and clinical protocols to evaluate drug efficacy.

The first workshop, convened in June 2016, focused on immune checkpoint inhibitors in cancer. The program featured speakers from the Meyer Cancer Center as well as Memorial Sloan Kettering Cancer Center, and was followed by a panel discussion with all speakers.

### Targeting Immune Checkpoints in Cancer

Doug Fearon, M.D. (WCM)	<i>Uncovering the Efficacy of T cell Checkpoint Antagonist by Nullifying CXCL12</i>
Jedd Wolchok, M.D., Ph.D. (MSKCC)	<i>Immunologic Checkpoint Blockade: Exploring Combinations</i>
Maggie Callahan, M.D., Ph.D. (MSKCC)	<i>Checkpoint Blockade in Cancer Therapy– Biomarkers and Mechanisms</i>
Silvia Formenti, M.D. (WCM)	<i>Radiotherapy as an Adjuvant to Immunotherapy</i>

The fall workshop (October 2016) examined the potential for new drug development based on the cancer epigenome. In addition to presentations from Meyer Cancer Center investigators, this workshop featured a talk by Elizabeth Maher, M.D., from the University of Texas Southwestern Medical Center.

### Targeting the Cancer Epigenome

Ari Melnick, M.D. (WCM)	<i>Mechanism and Strategy for Targeting the Cancer Epigenome</i>
Elizabeth Maher, M.D. (UTSW)	<i>Imaging 2HG: A Window into the Biology of IDH-Mutated Gliomas</i>
Gail Roboz, M.D. (WCM)	<i>Therapeutic Targeting of the AML Epigenome</i>
Olivier Elemento, Ph.D. (WCM)	<i>Lessons Learned from Exploring the Cancer Epigenome</i>

## Philanthropy

Private capital is critical in driving the kind of exploratory science needed to take cancer patients into a new era of healing, and the Meyer Cancer Center continued to enjoy significant support from generous donors in 2016. Philanthropic commitments to support cancer totaled in excess of \$29 million; a subset of these gifts contribute to cancer center priorities. Our doctors are often our greatest ambassadors. Gifts secured with their help included two gifts of \$1 million to establish endowed Research Scholar Awards in lung cancer and pancreatic cancer.

### Sharing discovery

The Meyer Cancer Center Subcommittee, a group of internal and external stakeholders, convened twice in 2016, featuring presentations from several of the cancer center's distinguished faculty. Silvia Formenti, M.D., the Sandra and Edward Meyer Professor of Cancer Research, Chairman of Radiation Oncology, and Meyer Cancer Center Associate Director of Radiation Oncology shared her groundbreaking work into immunotherapy at the May meeting during a joint presentation with Douglas Fearon, M.D., the Walter B. Wriston Professor of Pancreatic Cancer Research, titled *Immune Therapy: Converting an Art into Science*. Ari Melnick, M.D., Gebroe Family Professor of Hematology/Oncology and co-leader of the Hematologic Malignancies Program, teamed up with and Gail Roboz, M.D., Professor of Medicine and Director of the Clinical and Translational Leukemia Program, and one of her patients to deliver an inspiring talk titled *Reversing Course: Converting Cancer Cells into Normal Cells to Cure Leukemia*.

Donors and friends were also able to hear directly from investigators about exciting translational research projects happening within the Meyer Cancer Center at the spring New Weapons on the War on Cancer luncheon and in informal, small group settings, as part of a new Discovery Luncheons series. The inaugural Discovery Luncheon, held in September, featured Hematology and Medical Oncology Division Chief David Nanus, M.D., and Lorraine Gudas, Ph.D., Revlon Pharmaceutical Professor of Pharmacology and Toxicology, who discussed innovations in kidney cancer. The November luncheon was co-hosted by Joseph T. Ruggiero, M.D., Director of the Solid Tumor Oncology Practice, and Bartlett Family Associate Professor of Gastrointestinal Oncology Manish Shah, M.D., Director of the Gastrointestinal Oncology Program. Together, they shared advances in pancreatic, esophageal and colorectal cancer. Philanthropic commitments were received from participants following the luncheons to support these research initiatives. Four Discovery Luncheons are planned for 2017.

### The Leukemia & Lymphoma Society Challenge Grant

Targeting Unmet Clinical Needs for B-cell Lymphoma is an innovative research partnership between the Hematologic Malignancies Program at Weill Cornell Medicine and The Leukemia & Lymphoma Society (LLS), in collaboration with the Englander Institute for Precision Medicine, the Cornell University College of Veterinary Medicine and the Methodist Hospital of Houston. Its goal is to speed translational research and discoveries into new treatments for lymphoma patients. A consortium of donors contributed \$2 million to this effort. The rest of the \$5 million project was funded by a \$2 million pledge from LLS and a \$1 million contribution from the Meyer Cancer Center.

### Funding future innovations

Future fundraising efforts will include a focus on innovation. The new Innovation Fund initiative will serve as a reservoir to support the evolution of exploratory and developmental research projects at the Meyer Cancer Center. Gifts directed to the Innovation Fund will provide seed funding, essential to the germination of new ideas, nurturing them as they develop into promising new discoveries. This will enable researchers to conduct preliminary studies and experiments that generate data that can then be used when applying for competitive grants from the National Institutes of Health and other agencies. In this way, awards from the fund will be leveraged to attract the federal funding to Weill Cornell needed to complete these important studies and translate their findings to the care and treatment of cancer patients.

## Future direction

In summary, there have been significant advances in the organization and productivity of the Meyer Cancer Center that continue to fulfill the director's vision. By strengthening our infrastructure and means of support, we will maintain the impressive trajectory in cancer research and clinical care that has marked our cancer center in the three short years since its establishment.

In the coming year, the MCC will continue to focus on expanding expertise – basic research, clinical care and translational research – in thoracic oncology, breast oncology and tumor immunology. A new chief for the Division of Hematology and Medical Oncology will be an important partner in attracting thought leaders in each of these areas.

Strategic recruitment will enhance the development of MCC research programs. For both the Solid Tumors Research Program and the Cancer Biology Research Program, senior leadership needs to identify leaders/co-leaders who meet the NCI criteria for fully cancer-focused, peer-reviewed funded research projects.

Implementation of a strong internal pilot grant program will make innovative, as-of-yet unfunded ideas competitive for external funding, and expand the number of peer-reviewed research grants within each research program. The 2017 pilot grant program will focus not only on the strongest scientific proposals, but also on inter- and intra-programmatic collaborative efforts that will lead to multi-investigator grant applications. Increasing the number of clinical trials based on scientific hypotheses initiated by MCC investigators is another 2017 goal. To support this objective, the pilot grant program may also include specific awards to stimulate research that will lead to clinical evaluation.

Defining the MCC catchment area – the geographic area and population that the cancer center serves – has been an ongoing priority that will continue in 2017. NCI-designated cancer centers are charged with decreasing cancer incidence and mortality among populations within their catchment areas, including minority and underserved populations. To achieve this goal, the MCC will need to carefully define its catchment area, identify the cancer problems relevant to that area, and determine how it can best serve this area through its basic, translational, clinical and population research.

One of the key components in serving MCC's catchment area is providing access to and accruing patients of all demographics in clinical trials. With the expansion of WCM/NYP to Queens and Brooklyn, an integrated and robust clinical trials infrastructure is necessary to achieve this. Community education and outreach will also be necessary to fully serve the patients in our catchment area.

Finally, the growth and development of the MCC will depend upon the guidance of individuals with experience evaluating NCI designated cancer centers. In anticipation of assembling a formal External Scientific Advisory Board, the MCC leadership will invite a small group of faculty members and directors from peer cancer centers for an informal review of MCC. These individuals will provide advice on catchment area definition, research program structure, shared resource usage, clinical trial portfolio balance and educational/outreach programs.