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PROGRESS UPDATE

The Pan-Mass Challenge

Fall 2018



Dana-Farber Cancer Institute has been the top ranked cancer hospital in New England by U.S. News and World Report for 18 consecutive years, and is the only cancer center in the country ranked in the top 4 for both adult and pediatric cancer programs.



PAN-MASS CHALLENGE: IMPACT THAT GROWS WITH EVERY RIDE

It takes a strong partnership to fight cancer, and there is none quite like the Pan-Mass Challenge (PMC) and Dana-Farber Cancer Institute. Founded by Executive Director Billy Starr in 1980, the PMC has grown into Dana-Farber's largest single contributor and the most successful athletic fundraising event in the country. Since the first ride in 1980, the PMC has generated more than \$654 million for cancer research and care at Dana-Farber, including a record \$56 million raised in 2018. A model of fundraising efficiency, the PMC passes 100 percent of every rider-raised dollar directly to Dana-Farber, ensuring maximal impact on the Institute's mission and progress for patients.



The PMC is a committed community unlike any other, driven by a dedicated team of cyclists, volunteers, staff, corporate sponsors, and individual donors—all united by their focus on bringing an end to cancer closer with every dollar raised and mile pedaled. This formidable community shifted into an even higher gear in 2018, breaking records for number of registered riders (6,341), states represented (43), and funds raised. A record 901 PMC Living Proof® riders and volunteers participated in the event, which included 12 routes ranging from 1 to 2 days and 25 to 192 miles. Riders hailed from 10 countries and biked more than one million miles in total, while more than 4,000 volunteers kept the ride running smoothly.

Fueled by this strong team effort, the 39th PMC provided bedrock funding for a broad spectrum of cancer research and care programs at Dana-Farber, with a far-reaching global impact. The Institute deeply appreciates this incredible support and the PMC's loyal partnership.



PMC COMMITMENT: KEEPING DANA-FARBER AHEAD OF THE CURVE

The PMC brings a world without cancer closer by the mile through the fundraising support it provides for Dana-Farber. As Dana-Farber navigates a changing healthcare landscape, advances an ambitious and robust research agenda, and accommodates growing patient volume, the importance of the PMC's partnership cannot be overemphasized.

A founding member of the Dana-Farber/Harvard Cancer Center—designated by the National Cancer Institute as one of 49 comprehensive cancer centers nationwide—Dana-Farber has long been at the forefront of cancer medicine. The Institute's leading efforts not only benefit patients that come to Dana-Farber, but also reverberate far beyond Boston to help patients everywhere.

By providing large-scale funding the Institute can count on, the PMC is making a truly extraordinary impact. The following pages provide an overview of the meaningful progress propelled by the PMC.

Dana-Farber Cancer Institute By the Numbers

***As of 12/31/2017



494,383

Infusion treatments and outpatient visits
3% increase from previous year

830

Active clinical trials



652

Fellows training in Dana-Farber labs and clinics



517

Members of faculty (MDs and PhDs)

350

Principal investigators
46% increase from previous year



101

DFCI physicians listed on *Boston Magazine's* "Top Doctors" list
50% increase from the previous year.



96.3%

Patients expressed satisfaction with their care at DFCI



"I know I echo the profound gratitude of everyone at Dana-Farber when I say that it is an honor to work alongside a team as passionate as the PMC. We have made many exciting advances in the past year as a result of your generosity. On behalf of the entire Institute community, thank you so much for your tremendous support."

Laurie H. Glimcher, MD
President and CEO, Dana-Farber Cancer Institute

PMC COMMITMENT: PUSHING DANA-FARBER TOWARD ITS AMBITIOUS GOALS

The PMC plays a role in everything Dana-Farber does to fight cancer, providing funds that support Dana-Farber's mission, empowering groundbreaking work across our laboratories and clinics. These critical resources enable Dana-Farber to invest in bold discovery science, better cancer treatments, rapid drug development, brightest faculty optimal facilities, and the best patient care.

Here is an overview of how PMC support strengthens Dana-Farber and advances its lifesaving work.



PMC is Propelling Progress in these areas

Bold Science

innovative and ambitious discovery science which, while often ineligible for grant funding, is absolutely essential in laying the groundwork for medical breakthroughs

Optimal Facilities

expansion and customization of state-of-the art laboratory and clinical space, keeping Dana-Farber at the forefront of cancer medicine

Better Treatments

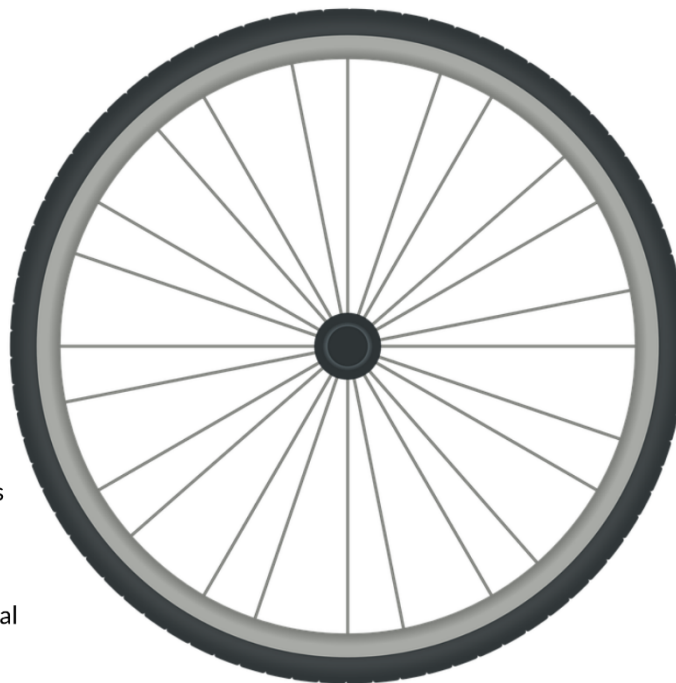
advances in cancer genomics, precision medicine, immunotherapy, and other leading-edge areas that revolutionize the way we treat cancer

Best Care

strengthen disease centers across Dana-Farber and sustain patient-centered programs, enabling comprehensive care personalized to the individual needs of every patient

Rapid Drug Development


discovery and delivery of novel therapies, from synthesizing chemical prototypes in our labs to testing them in new clinical trials




PROGRESS PROPELLED: LEADERSHIP IN PRECISION MEDICINE


Over the past decade, increasingly sophisticated genomic technologies have provided investigators with a comprehensive and detailed understanding of the genetic alterations driving cancer. These advances have accelerated the rise of precision medicine, a highly individualized medical strategy that tailors treatment to the molecular profile of a patient's tumor.

With the help of the PMC, Dana-Farber is a leader in precision cancer medicine. Among the initiatives propelled by PMC support are:

 **Profile**, launched in 2011 as one of the nation's most comprehensive precision cancer medicine initiatives, aims to detect genetic alterations and identify targeted cancer therapies that are most likely to be effective in individual patients.

- More than 50,000 patients have consented to participate in *Profile*, and more than 22,000 tumor samples have been analyzed.
- With *Profile*'s latest technology platform, OncoPanel, 60 percent of patients have had actionable data that help physicians select the most effective anti-cancer treatments.

 **iCat2**, a national clinical trial that uses personalized genetic information to guide treatment strategies for pediatric patients with solid tumors.

 **Pediatric Leukemia Project (LEAP)**, a landmark initiative which has had a direct impact in the clinic, shaping diagnoses and treatment strategies and differentiating among the many subtypes of leukemia to allow for more personalized treatments for patients.



PROGRESS PROPELLED: NEXT-GENERATION CANCER THERAPIES

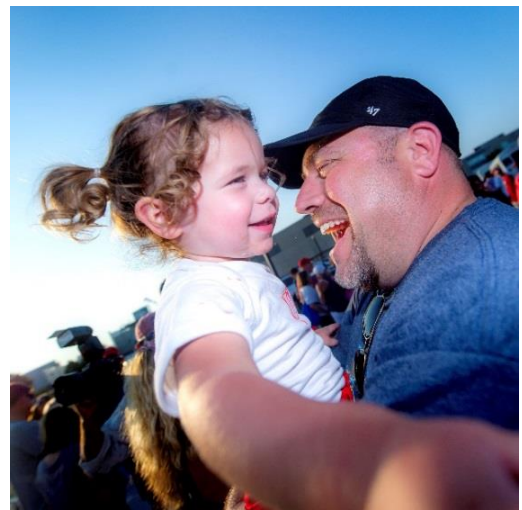
Through strategic investments research enabled by the PMC, Dana-Farber supports scientific leaders and young investigators, acquires cutting-edge technology to aid in the pursuit of advances in cancer science, and ensures a spirit of collaboration and innovation. The following examples illustrate how PMC funding helps to advance the Institute's clinical and laboratory research efforts:



NeoVax, a vaccine developed by **Catherine Wu, MD**, and **Patrick Ott, MD, PhD**, connects personalized medicine with immunotherapy by using the genetic sequence of a patient's tumor to identify alterations that create neoantigens—proteins that signal to the immune system that a cell is abnormal and should be destroyed. Dr. Ott led the international clinical study of NeoVax in melanoma, the results of which were published in the July 2017 *Nature*, detailing the first-in-human use of the vaccine. Drs. Wu and Ott conducted a comprehensive analysis to characterize how the immune system interacts with cancer cells after being exposed to NeoVax. **Their findings showed that NeoVax induces and strengthens the immune response against melanoma.**









In April 2017, the FDA approved a targeted drug called **midostaurin**, the clinical testing of which was led by **Richard Stone, MD**, as a combination treatment with chemotherapy for patients with newly diagnosed acute myeloid leukemia (AML) that carries a mutation in the FLT3 gene. It was **the first new treatment for AML in 25 years**. Nearly 30 percent of patients with AML have a FLT3 mutation, which drives malignant growth of the disease. In the international, phase III RATIFY trial, which was published in the August 2017 *New England Journal of Medicine*, Dr. Stone and his colleagues reported that the addition of midostaurin to standard chemotherapy **significantly prolonged overall survival for AML patients with FLT3 mutations**, giving these patients an additional treatment option.



PROGRESS PROPELLED: COMPREHENSIVE AND PERSONALIZED PATIENT CARE

Bolstered by PMC investment, Dana-Farber’s hallmark “total patient care” is reflected in the comprehensive resources it devotes to addressing the psychosocial, emotional, and spiritual needs of patients and families at the Institute and in the broader community. Funding from the PMC allows the Institute to provide increased access to health information, support groups, neighborhood-based programs, and other patient-centered offerings, such as the following:

-  **Leonard P. Zakim Center for Integrative Therapies and Healthy Living**, which enhances the lives of patients and families by incorporating complementary therapies into traditional cancer care.
-  **Sibling Program**, which offers personalized, comprehensive psychosocial support to school-age and teenage siblings of pediatric cancer patients.
-  **The Mammography Van**, the only mobile digital mammography program in Massachusetts, offering screening mammograms and breast health education to women over 40 years of age.
-  **Sun Safety Program**, which brings Dana-Farber’s Blum Family Resource Center Van to beaches, health fairs, and community events to teach the public about skin cancer prevention and sun-safe practices.
-  **Family Connections**, which offers guidance, information, and resources to those who are dealing with cancer in their family.
-  **Cancer Care Equity Program**, which helps to reduce disparities in cancer care in the community by increasing access to cancer screening, detection, and treatment.



PROGRESS PROPELLED: LOCAL, NATIONAL, AND GLOBAL IMPACT

Propelled by its longstanding partnership with the PMC, the Institute is a world leader in cancer medicine, driving scientific and clinical breakthroughs that have an impact on patients locally, nationally, and globally. PMC funding has enabled pivotal advances across Dana-Farber's disease centers and laboratories.



PMC IMPACT

Fueling Dana-Farber's global leadership in cancer medicine by enabling the following:

GROUNDBREAKING DISCOVERIES

- Dana-Farber researchers identified a new CDK inhibitor that knocked out Ewing sarcoma in the lab and may form the basis for new pediatric cancer treatments.
- Dana-Farber physician-scientists showed that a diet low in carbohydrates and other foods that raise insulin levels can sharply reduce risk of recurrence in patients treated for non-metastatic colon cancer.
- Dana-Farber researchers discovered a protein target in neuroblastoma that appears to be vulnerable to newly developed drugs, setting the stage for clinical trials.

CLINICAL ADVANCES

- Dana-Farber physician-scientists demonstrated that real-time DNA sequencing in advanced pancreatic cancer can guide precision medicine treatment and improve patient outcomes.
- Dana-Farber-led research resulted in FDA approval of a new first-line therapy for newly diagnosed, advanced kidney cancer.
- Dana-Farber investigators developed blood tests for early detection of ovarian cancer and lung cancer that hold promise for clinical application.
- Dana-Farber researchers identified biomarkers that could help predict response and tailor immunotherapy treatments in several cancers including melanoma, head and neck, and kidney cancer.

NATIONAL AND GLOBAL LEADERSHIP

- Dana-Farber was one of the first cancer centers in the country to offer the revolutionary new CAR T-cell therapy to adults and children with certain blood cancers.
- Scientific publications by Dana-Farber faculty were cited more than twice as often as any of 12 leading cancer centers in the U.S., according to *The Lancet Oncology* in November 2017.
- Dana-Farber opened a cancer clinic in Haiti through Dana-Farber's Center for Global Cancer Medicine in conjunction with Partners in Health.

PROGRESS PROPELLED: 39 YEARS OF MILESTONE ADVANCES



Billy Starr organizes his friends to bike and raise money to combat cancer, marking the beginning of the PMC.

1980



Institute President Baruj Benacerraf, MD, receives the Nobel Prize for work that unveiled the genetic underpinnings of the human immune system.

1984

The PMC becomes The Jimmy Fund's largest fundraising event.



1993

The PMC becomes the most successful cycling fundraiser in the world.

1990

1988

Dana-Farber introduces its Susan F. Smith Center for Women's Cancers program to reduce the incidence of cancers in women.

Two out of every three children who enter the Jimmy Fund Clinic are cured.

The bridge connecting the Richard A. and Susan F. Smith Research Laboratories to the Dana Building is dedicated as the Pan-Mass Challenge Bridge to Progress.

1997

1998



The national Lung Cancer Alliance presents Billy Starr with a lifetime achievement award.

2005

2006

Gleevec (imatinib) goes on the market. Many patients with chronic myelogenous leukemia experience success with this "smart" drug, which was pioneered at Dana-Farber.

The American Nurses Credentialing Center bestows Magnet designation on Dana-Farber, the highest honor in nursing care.

The 39th PMC ride raises a record \$56 million to fight cancer.

2018



PMC attains a milestone goal of raising \$500 million since 1980!

2015

Dana-Farber's new Yawkey Center for Cancer Care and the PMC Outdoor Pavilion are dedicated.

2011



The Longwood Center opens, expanding Dana-Farber's research footprint, and the FDA approves five new cancer drugs in Dana-Farber-led clinical trials.

Dana-Farber launches Profile, an ambitious research project screening cancer patients for mutations in known cancer genes, putting the Institute ahead of the national wave in precision medicine.

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PROGRESS PROPELLED: \$654 MILLION RAISED

For nearly four decades, the PMC has provided a driving force for Dana-Farber's lifesaving mission and served as an enduring source of inspiration for everyone at the Institute. The \$654 million raised by the PMC since 1980 has fueled progress against cancer on a scale and at a rate that would not otherwise have been possible. The record-breaking \$56 million generated by the 2018 ride equips Dana-Farber with vital resources at a crucial time, when our accomplished physician-scientists are learning more than ever about how to better detect, prevent, and treat cancer in its many forms. The PMC remains an integral catalyst for even greater strides in the years ahead, and Dana-Farber is truly grateful for this committed community's steadfast partnership.



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FOR MORE INFORMATION

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