

## Prevent. Cure. Innovate.

### Dartmouth's Norris Cotton Cancer Center

**Cancer touches us all.** Half of us will be diagnosed with cancer during our lifetime, and one in four of us will die from the disease. While some cancers have seen dramatic improvements in survival and even cures, the majority of cancers have proven to be highly complex and difficult to treat. In the face of these challenges, our best hope for overcoming cancer depends on bringing together the insights of all disciplines. This is where Dartmouth's Norris Cotton Cancer Center stands apart.

**Dartmouth's Cancer Center is one of a kind—the only cancer center to be fully integrated with a world-class liberal arts college, medical school, engineering school, business school, and academic health system.** This unique interconnectivity coupled with Dartmouth's intimate scale and collaborative culture has sparked groundbreaking research, innovations, and landmark entrepreneurship in areas such as immunotherapy, precision medicine, cancer prevention, diagnosis, and surgery. With faculty from 21 departments across Dartmouth, the Cancer Center also enriches the education of hundreds of undergraduate and graduate students every year, providing them with mentored research experiences.

**Drawing on its greatest strengths—and with transformative philanthropic investments—Dartmouth's Cancer Center will lead in three areas:**

**Preventing Cancer in Current and Future Generations.** We will stop cancer before it starts by developing the tools needed to map any individual's lifetime genetic, behavioral, and environmental risk factors for cancer, including in utero exposures, and create bold new strategies to mitigate those risks.

**Creating Cancer Cures.** We will engineer new, more effective, and less toxic cancer therapies and technologies. These include affordable, universal CAR T-cells and novel immunotherapies; new devices and imaging to improve cancer surgery; more precise and less-invasive screening and diagnostic tests; new molecular therapies; and nanoparticle monitoring of drug delivery.

**Educating Innovators.** We will train the next generation of physicians, scientists, and healthcare leaders to tackle one of the world's biggest problems using non-siloed approaches.

Philanthropic investments in these areas and in innovation and entrepreneurship will propel Dartmouth's Cancer Center to the forefront of comprehensive cancer centers worldwide.

**The outlook for cancer prevention and treatment is both more hopeful and more challenging than ever before.** Real progress will require creative, ambitious teams of scholars, clinicians, and innovators, working together with patients, in an environment where collaboration is easy and patients' needs and values always come first. That place is Dartmouth.

**Please join us.** Together, we will transform cancer prevention and treatment.

## Gift Opportunities

### Preventing Cancer in Current and Future Generations

#### **Professorship in Cancer Prevention: \$4M**

To advance the Cancer Center's revolutionary vision for cancer prevention, we must be able to recruit and retain top talent in critical areas of expertise. The most urgent areas of need are computational, molecular, and environmental epidemiology because of the increasingly pivotal role that these disciplines play in cancer prevention. An endowed professorship will provide a critical assist in recruitment efforts and enduring support for a top scientist or physician-scientist in cancer prevention.

#### **Faculty Fellowships in Cancer Prevention (2): \$2M each**

Even outstanding senior faculty spend much of their time applying for grants to sustain their labs, and practicing physicians struggle to carve out time for research. These endowed faculty fellowships would provide two-to-three years of protected time and funding for faculty to pursue new ideas for cancer prevention, to build momentum in a particular line of research, and to collaborate with scientists from diverse disciplines.

#### **Cancer Prevention Research Fund: \$2M**

Current-use gifts totaling \$2 million will provide both essential seed funding and scale-up support for a variety of cancer prevention research projects and collaborations. Examples could include building web-based platforms to streamline bioinformatics research; analysis and manipulation of the gut microbiome to enhance individuals' immune systems; maintaining regional registries to inform research and patient care; and funding data collection tools, such as bracelets that record the chemical exposures of pregnant women.

### Creating Cancer Cures

#### **Professorships in Cancer Discovery (2): \$4M each**

Some of the greatest areas of research strength and innovation for the Cancer Center are also some of the most competitive in terms of attracting and retaining top scientists and physician-scientists. Professorships in two high priority areas—such as immuno-oncology and precision oncology—would help ensure that the Cancer Center has the talent and expertise needed to stay on the leading edge of discovery and innovation in new cancer treatments.

#### **Faculty Fellowships in Cancer Discovery (2): \$2M each**

Time is a critical resource for both research faculty and practicing physicians. These endowed faculty fellowships address that need by providing two-to-three years of protected time and funding for faculty to pursue new ideas for treating and curing cancer. Such support will aid in the retention of our most innovative scientists and physician-scientists—and fuel more rapid-cycle innovation and discovery.

#### **Junior Faculty Recruitment Fund (3): \$1M each**

Three \$1 million current-use gifts will provide start-up funding for three promising young scientists to begin their careers at Dartmouth. Institutions must be able to provide competitive and generous support to new faculty who are just launching their careers as independent researchers. That initial support yields returns in three-to-five years when the researcher attracts large external grant funding.

#### **Creating Cancer Cures Research Endowment: \$5M (endowed gifts of ≥ \$500,000)**

This endowed research fund will provide the support needed, year after year, to explore bold new research ideas and to ensure that Cancer Center scientists have access to the best equipment and technology—all in support of creating cancer cures.



## Accelerating Innovation and Entrepreneurship

### **Director's Innovation Fund: \$10M Goal (current-use gifts of ≥ \$10,000)**

This current-use fund will enable the director of the Cancer Center to respond quickly to promising new research ideas, to seize emerging opportunities to advance cancer prevention and treatment, and to rapidly scale-up programs that have the greatest potential for success.

### **Faculty Entrepreneurial Fellowships (2): \$2M each**

Moving a discovery from the lab to the marketplace takes dedicated time, resources, and often a lot of learning on the part of the scientist- or physician-entrepreneur. These endowed fellowships provide essential salary support and protected time for faculty to further develop a therapy, device, or other innovation, moving it closer to the marketplace—and closer to benefiting patients.

### **Entrepreneurial Initiatives Fund: \$1M**

A combination of endowed and current-use gifts will catalyze the translation of scientific discoveries into therapies, devices, and other innovations that can be licensed and tested in clinical trials—and will ultimately benefit patients. Gifts to this fund will build on the Cancer Center's track record of entrepreneurial successes and its deep integration across Dartmouth's professional and graduate schools—drawing on existing collaborations between faculty from the Geisel School of Medicine, Thayer School of Engineering, Tuck School of Business, and the Guarini School of Graduate and Advanced Studies.

## Educating Innovators

### **Undergraduate Education**

- **Cancer Scholars Programs: \$1M (Gift agreement pending.)**  
Endowing the Cancer Scholars Program will strengthen its offerings to include individualized mentored research experiences, clinical shadowing, participation in global oncology projects in low-income countries, and mentored writing for publication.
- **Director of Cancer Education: \$1M**  
This endowed fund will provide salary support for a master's-level educational director, who coordinates and upholds the excellence of research and educational opportunities for Dartmouth students. This individual will be the main point of contact for undergraduates who wish to explore career paths in cancer and enrichment opportunities within the Cancer Center—as well as graduate students from non-biomedical disciplines.

### **Cancer Research Graduate Student Fellowships (2): \$500,000 each**

These endowed fellowships will provide critical funding for exceptional graduate students, especially international students who don't have access to federal student funding. These fellows will receive world class training and mentorship in disciplines such as bioinformatics, molecular epidemiology, immunoncology, and precision oncology.

### **Post-Doctoral Fellowships (2): \$1M each**

These endowed fellowships will attract and support outstanding post-doctoral fellows with expertise in key areas of cancer research, while at the same time providing a critical assist for promising young scientists who will discover the treatments and cures of the future.

## An Incubator for Innovation: The Impact of Dartmouth's Cancer Center

Many of the discoveries that are now revolutionizing cancer prevention, treatment, and survivorship can be traced back to Dartmouth and its Cancer Center.

### Immunotherapy, Genomics, and Bioengineering

- Discovered new "**immune checkpoint**" **drugs** that are revolutionizing the treatment of solid tumors.
- Developed some of the first custom panels for "**next-generation**" **tumor genome sequencing**. The Cancer Center is one of only five gene-sequencing centers chosen for the National Cancer Institute's precision medicine cancer treatment trial—MATCH.
- Developed **advanced imaging technology** to improve accuracy of brain tumor surgery and radiation therapy.
- Invented new 3-D-printing strategy to dramatically improve **breast cancer surgery** and reduce costs.

### Prevention and Population Sciences

- Identified **cancer risk for current and future generations** from environmental toxins and behaviors.
- Revealed connection between genetic variations, brain responses, media exposures, and individual behaviors related to the **consumption of cancer-causing and obesogenic products**, especially among youth.
- Catalyzed recent FDA policy changes regarding **e-cigarettes** by demonstrating that youth who use e-cigarettes have a far greater risk for future cancer-causing tobacco use.

### Patient Values and Quality of Life

- Led first large-scale studies of **palliative care** delivered concurrently with cancer care.
- Pioneered **shared decision making** for cancer screening and treatment choices.
- Revealed the potential benefits and harms of some forms of cancer screening and the risk of **overdiagnosis**.

### Entrepreneurship

#### IMMUNOTHERAPY

- Medarex
- ImmuNext
- Celdara Medical

#### ADVANCED IMAGING

- DoseOptics
- CairnSurgical
- Clin-EPR

## Cancer Center Facts and Figures

Dartmouth's Cancer Center is one of only 49 National Cancer Institute-designated Comprehensive Cancer Centers in the nation—selected for excellence in clinical care, research, education, and community engagement—and the only one north of Boston and east of Buffalo.

### RESEARCH

- More than 120 senior scientific investigators from 21 departments within Geisel, Thayer, and Arts & Sciences attract \$50 million annually in grants and contracts.
- Cancer Center members account for more than 1/3 of all Dartmouth College research funding overall and more than 1/2 of all Dartmouth College research funding from the National Institutes of Health.
- More than 200 research projects within four programs: Cancer Biology and Therapeutics, Cancer Population Sciences, Translational Engineering in Cancer, Immunology and Cancer Immunotherapy.
- Entering its fifth decade of continuous funding from the National Cancer Institute.

### EDUCATION

- Largest single sponsor of undergraduate research opportunities across campus.
- More than 100 Dartmouth undergraduates every year enrich their learning through the Cancer Center—by contributing to research, shadowing physicians who treat patients with cancer, and attending lectures and dialogues that explore the many career paths connected to cancer.
- Cancer Center members are also intimately involved with teaching and mentoring of Geisel's MD and MD-PhD students, as well as graduate students from Geisel, Tuck, Thayer, and the Guarini School.
- 9 Hematology-Oncology MD fellows.

### CLINICAL CARE

- Consistently ranked among the very top nationally for patient satisfaction (#1 in 2017).
- More than 32,000 patients served annually from a five-state catchment area: NH, VT, ME, MA, NY.
- More than 200 cancer specialists in 17 interdisciplinary, patient-centered oncology programs.
- More than 160 open clinical trials; one of only 30 NCI National Clinical Trials Network Lead sites.
- Care is provided as close to home as possible through six regional centers and in partnership with nine community hospitals in New Hampshire and Vermont.
- Global oncology programs in Honduras and Rwanda.

### COMMUNITY ENGAGEMENT

- Cancer Center researchers partner closely with communities in NH and VT to improve cancer prevention, detection, treatment, and survivorship. Examples include facilitating HPV vaccination uptake in rural primary care practices, identifying household risk of cancer due to arsenic in well water, and working with immigrant communities to navigate cancer care.
- Expert consultations and continuing education for regional physicians and cancer care clinicians.

