THE SIDNEY KIMMEL COMPREHENSIVE CANCER CENTER AT JOHNS HOPKINS

Ushering in a new era of cancer medicine
The Johns Hopkins Kimmel Cancer Center is ushering in a new era of cancer medicine. Progress that could not even be imagined a decade ago is now being realized in our laboratories and our clinics. We are transforming cancer medicine away from a model in which we see patients for the first time when they begin experiencing symptoms to one that detects, manages, and many times eradicates cancers before patients even know they have them. This work is being driven by our pioneering discoveries in cancer genetics and epigenetics.
**RISING TO THE CHALLENGE**

**A CALL TO ACTION**

Rising to the Challenge: The Campaign for Johns Hopkins will raise unprecedented levels of support to attract, sustain, and further empower the people of Johns Hopkins—our students, faculty, and researchers—who through their work improve the lives of millions around the world. Together with our philanthropic partners we will:

**ADVANCE DISCOVERY AND CREATIVITY**

through support of our exceptional faculty and researchers. Their innovative work drives the development of new knowledge, new forms of expression, and new ways to save lives and improve health, and furthers progress across our core disciplines in science and technology, the humanities and arts, and public health and medicine.

**ENRICH THE STUDENT EXPERIENCE**

by investing in scholarships and fellowships, inspirational spaces for collaborative learning and social opportunities, and new programs that will enhance student-faculty interactions, ensure diversity on campus, link learning in the classroom to life after graduation, and strengthen connections between our students and our surrounding communities.

**SOLVE GLOBAL PROBLEMS AS ONE UNIVERSITY**

by creating new cross-disciplinary solutions in crucial areas such as sustaining global water resources, revitalizing America’s cities, advancing individualized health, understanding how we learn and teach, and attacking the root causes of global health problems.

The Sidney Kimmel Comprehensive Cancer Center at Johns Hopkins is committed to playing a key role in the success of the campaign. Please join with us in this important mission.

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**THE SIDNEY KIMMEL COMPREHENSIVE CANCER CENTER AT JOHNS HOPKINS**

The Kimmel Cancer Center is leading the way in developing tests that detect cellular alterations that identify cancers, predict which therapies a cancer will respond to, and monitor cancers for recurrence. Our scientists have led the world in deciphering the genetic and epigenetic cause of cancer, and now they are developing the technologies that will allow these discoveries to be routinely used to make clinical decisions about how best to treat cancers, not just at Johns Hopkins, but also at cancer centers around the country and around the world.

**Getting the right treatments to the right patients at the right time**

**PERSONALIZED CANCER MEDICINE**

Within the next few years, all cancer patients at the Kimmel Cancer Center will have their tumors analyzed to reveal the unique combination of molecular and cellular alterations driving their cancers. Targeting these alterations will improve treatment outcomes, thwart cancers before they develop, and slash the cost of drug discovery.

**Finding broken genes**

The understanding that cancer is a genetic disease caused by a series of alterations to DNA is considered one of the most significant advances in cancer research, and it was revealed, in large part, by pioneering discoveries at the Johns Hopkins Kimmel Cancer Center. Next generation sequencing is the technology that allows researchers to see inside the cancer cell in a way that was never before possible and identify these alterations. The powerful technology has the ability to rapidly and simultaneously sequence millions to billions of DNA molecules. It has become an essential research tool and simultaneously, making sense of the data.

**Making sense of the data**

Research is driven by data. Personalized cancer medicine is only possible if clinicians can rapidly access and interpret the data collected on the cellular characteristics of each patient’s cancer. While other research institutions have been stymied by the immense amount of data that modern sequencing technology generates, Kimmel Cancer Center researchers are collaborating with Johns Hopkins experts in engineering, physics and computer science. These collaborations have resulted in algorithms and databases that can pour through huge amounts of information on cancer DNA and draw clinically relevant conclusions. This work is providing solutions and new technology to get the right treatments to the right patients at the right time.

**PERSONALIZED CELL THERAPY**

Johns Hopkins Kimmel Cancer Center immunology, bone marrow transplant and blood and bone marrow cancer experts have developed a novel personalized cancer treatment approach called adoptive T-cell therapy. This treatment uses patients’ own immune cells to fight their cancer. The Kimmel Cancer Center is among five cancer centers in the U.S. performing the therapy and the only one that uses marrow infiltrating lymphocytes or MILs. A dedicated Cell Therapy Center at Johns Hopkins
would facilitate growing and managing these cells for a large number of patients and potentially improve the treatment of cancer and other life-threatening diseases. The ability to progress personalized cell therapy and make it available to more patients is limited by staff, equipment and facilities to grow the personalized cells. Currently the Kimmel Cancer Center team has the resources to treat just one patient per week.

MAKING BONE MARROW TRANSPLANT SAFE AND AVAILABLE TO ALL

The Johns Hopkins Kimmel Cancer Center has a rich history in developing and improving bone marrow transplant. Our team of experts helped pioneer bone marrow transplantation and continued to make refinements so that what was formerly one of the most toxic and intensive forms of cancer therapy is now delivered on a largely outpatient basis. Advances made at the Kimmel Cancer Center have made bone marrow transplant so safe, that it is now used to treat and cure a variety of non-cancer blood-forming and immune diseases. A new type of bone marrow transplant, known as haplo-identical or half-identical, was pioneered by Kimmel Cancer Center investigators and is considered one of the greatest advances in the field, making it possible for almost every patient who needs a bone marrow transplant to have a matching donor. Now, a revolutionary study uses half-matched transplants to improve the effectiveness and safety of solid organ transplants with living donors. It could essentially eliminate organ rejection and a lifetime of antirejection drugs. This important work could conquer the transplantation barrier—rejection—and what they learn could be applied to all solid organ transplants and facilitate the research being done in regenerative medicine.

A TEAM APPROACH

The Johns Hopkins Kimmel Cancer Center is a world leader, if not the world leader, in translational medicine—the ability to quickly integrate laboratory discoveries at the bedside to improve the lives of cancer patients. The Kimmel Cancer Center currently has multidisciplinary clinics in prostate cancer, pancreas cancer, colon cancer, liver cancer, breast, head and neck cancer, and melanoma; with clinics planned for kidney and bladder cancers. Our multidisciplinary clinics represent translational medicine in practice. Patients with a new diagnosis of cancer are able to come to our clinics and have multiple specialists review their pathology and other tests, and in a single day have a treatment recommendation and plan. Such coordination of innovative cancer care and cancer research is what sets the Kimmel Cancer Center apart as a leader in cancer research and medicine. The multidisciplinary clinics have been so successful that there is no longer adequate space to accommodate patient volume. A Diagnostics and Treatment Planning Center is being planned to make the entry into the Johns Hopkins Kimmel Cancer Center, and its system of diagnosing and treatment planning as simple, rapid, and patient and family-friendly as possible.

THE D.C. CAMPUS OF THE JOHNS HOPKINS KIMMEL CANCER CENTER

Working together in collaboration, the Kimmel Cancer Center, the National Cancer Institute, Johns Hopkins Suburban and Sibley Hospitals, we plan to create an elite cancer program in the Washington, D.C., metropolitan area that delivers state-of-the-art or better cancer care, innovates in the development of new cancer treatments, and trains future leaders in cancer medicine.

TARGETED RADIATION THERAPY

Proton therapy is targeted radiation therapy. It very precisely zeroes in on tumors, increasing the damage to cancer cells, while minimizing radiation exposure to healthy tissue and organs. It is the state-of-the-art in radiation treatment for several types of cancer, and Johns Hopkins does not currently have this technology. With its precision and safety, it has become the standard of care for pediatric tumors, tumors of the brain, spine and eye, lung, head and neck, and bone (sarcoma) cancers. Of the top-ranked cancers centers nationally, Johns Hopkins is the only one that does not currently treat patients with proton therapy. Many experts question whether our institution can remain a leader in cancer medicine without acquiring proton beam therapy.

A LUNG CANCER CENTER OF EXCELLENCE

The Kimmel Cancer Center is expanding its lung cancer program to include a Lung Cancer Center of Excellence located at the Bayview campus. A new clinic is planned that will include complete radiation and medical oncology services and a multidisciplinary clinic. One of the unique features of the clinical program is a cancer prevention center that will balance our mission to take care of patients with established cancers with an effort to identify people at risk for developing this deadly cancer and novel interventions to stave off disease. A tobacco cessation clinic and lung cancer screening and pulmonary nodule clinic are among the first prevention endeavors. This revolutionary program will take a population at risk for cancer, personalize cancer risk and lung cancer prevention, and also provide an opportunity to better study and understand tobacco exposure and lung cancer risk.

THE NEXT GENERATION OF KIMMEL CANCER CENTER CLINICIANS AND SCIENTISTS

The Kimmel Cancer Center’s training and education programs attract outstanding students and trainees at all levels of their education. Fellowships, some in partnership with the National Cancer Institute, include hematology/medical oncology, neuro-oncology, radiation oncology, pediatric oncology, and one focused on caring for the underserved. They are essential to improving research skills, creatively exploring scientific thought, and investigating innovative ways to improve health and lives.
PALLIATIVE CARE
AND SURVIVORSHIP
Research has unequivocally shown that palliative care results in better quality of care, better quality of life for patients and family, and reduced health care costs. Patients who receive palliative care from the onset, in addition to their regular therapy, live longer, often with less chemotherapy. The Johns Hopkins Kimmel Cancer Center has redoubled its efforts in palliative care and survivorship, bringing on board one of the country’s leading experts in the field to direct palliative care operations throughout the medical institution. By 2015, we expect to increase the number of doctors and advanced practice nurses, create an inpatient unit for palliative care, and begin a palliative care clinical and research fellowship. This work, as well as six research proposals in palliative care, set Johns Hopkins apart as an emerging national leader in the field.

There are 12 million cancer survivors in the U.S., and by 2020 that number is projected to nearly double to 22 million. Cancer is moving along the continuum from a disease that was considered almost universally fatal in the 1970s, to one in the 80s and 90s that was focused keenly on disease management, and as a result, greatly improved survival, to today where research discoveries and targeted therapies have resulted in dramatic increases in survival. Survivorship clinics are aimed at helping patients understand their treatment plan, understand and make sure that cancer therapy does not unnecessarily derail their life goals (i.e., protect fertility when possible), help patients re-engage in their lives following treatment in a healthy and normal way, and educate other care providers, employers, and insurance companies about this growing demographic that are cancer survivors.

CANCER HEALTH DISPARITIES
The problem of cancer health disparity is probably more solvable today than ever before. Priority Partners, a Johns Hopkins Medicaid managed health care plan has demonstrated that working to identify patients at risk of disease and intervening with individualized health care plans can drastically reduce disparities. The Kimmel Cancer Center, led by our Cancer Prevention and Control team, has adapted this model to cancer risk assessment and prevention using our pioneering discoveries in cancer genetics to improve the health of minorities and underserved populations through enhanced screening for colorectal and other cancers with disproportionate racial disparities.

Why Johns Hopkins? Why now?
For the first time in the history of medicine, scientists are discovering how mutations and other alterations in DNA cause cancer. With this new knowledge, we are developing molecularly targeted diagnostics, prevention strategies, and therapies that treat the cancer without harming the patient. There have never before been so many opportunities to use science to improve the clinical care of patients.

This is our decade. The convergence of brilliant scientific minds and dedicated donors has brought us to this point in time where we can begin to alter the course of cancer in ways we could only imagine just a few years ago. As we apply our discoveries and adapt technologies so that this new understanding about the cellular mechanisms that lead to cancer can be used routinely to make clinical decisions on how to best treat each patient, we will be improving the care of cancer patients everywhere. The benefits of decades of research have truly begun to payoff in the form of new ways to prevent, diagnose, and treat cancer.

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Rising to the Challenge:
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