We Started the Revolution in Cancer Treatments. Now It's Time to Finish the Job.

Nearly 20 years ago most of the cancer research community doubted the possibility that targeting cancer cells without harming normal cells would work. But, Dr. Brian Druker at the Knight Cancer Institute believed that an understanding of what drove the growth of cancer would allow cancers to be specifically targeted. This belief led to his work on the life-saving drug, Gleevec®, that took a cancer with a life expectancy of less than five years and turned it into a manageable disease providing patients with a normal life span. *Time* magazine heralded this breakthrough drug with a cover story, and other national media recognized this great leap forward, forever establishing the Knight Cancer Institute as a leading innovator in targeted cancer therapy.

In the past decade, most other major cancer centers have joined us in the field we pioneered. Today there are more than 50 targeted therapy treatments and hundreds more in development because of Dr. Druker's groundbreaking work. But, we recognize that the next step into the future goes beyond cancer drugs alone.

The new knowledge that has revolutionized treatment, has done little to help catch cancer early and ideally, prevent it. Even as treatment options have dramatically improved, with once-a-day pills that target the specific biology of each patient's disease, early detection of cancer has been frozen in time. Today, we still use the same screening tools that we've deployed for decades. Mammograms and PSA tests for prostate cancer are the best we have today, but they're woefully inadequate. They miss some cancers while triggering many unnecessary biopsies and treatments.

We know cancer is an easier foe when caught early. It is cheaper to treat. And patients live longer and suffer less when it is detected early. Indeed, targeted therapy and early detection will prove to be inextricably linked. Early stage cancers are easier to treat because they harbor fewer mutations and molecular defects. Gleevec is most effective against the early stages of leukemia and so it will be in tackling other cancers. The full potential of targeted therapy to conquer cancer will only be realized when coupled with a sophisticated, modern early detection effort. We need to develop tests that distinguish slow and non-lethal cancers from more dangerous malignancies. We want to bring tomorrow's technologies forward today.

Phil and Penny Knight share our sense of urgency. They will donate $500 million if OHSU and the Knight Cancer Institute raise an additional $500 million in two years. The Knights pledged this gift because they believe in Dr. Druker's work and his vision for the future of cancer treatments.

With the world-class team we're building at the Knight Cancer Institute, we can map how cancers start and how they progress. We will build upon this research to develop next-generation early detection tools and technologies. For this project, we will recruit and focus the energies of 20 to 30 top scientists from multiple disciplines on early detection. We will liberate them from administrative work and create a unique place for them to collaborate with each other as well as with clinicians who will help translate their discoveries into tests and treatments.

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Providing a means for scientists to focus is crucial. Today many spend the majority of their time writing grants and reports and performing administrative tasks. We cannot afford to have our best and brightest minds wasting their time. Imagine what the world would have been if Einstein, daVinci, or Michelangelo spent most of their time applying for the resources to revolutionize physics, or paint the Mona Lisa and the Sistine Chapel, instead of doing it. Twenty scientists liberated from the "business of science" can produce like a team of 60.

To make real progress, we must understand the key molecular differences that distinguish an early benign growth from a lethal one. This is important because tumors are made up of cells that range from benign to lethal. By conducting detailed, comprehensive analyses, we will understand the key molecular features, or changes, that drive normal benign cells to become malignant.

Many of the technologies that can do this work exist today, but have not been refined and directed to the problem of early cancer detection. We know we'll also need a wide variety of tools to detect different cancers. These will include ultra-sensitive tests on blood, saliva or other body fluids to uncover mutations that we know are biological beacons for the disease and imaging technologies capable of seeing molecular abnormalities. These detection methods differ from screening used today because they will better equip us to differentiate potentially lethal cancers from abnormalities that do not require treatment.

In addition, new, high-end computing tools are needed to process the complex information that our analyses will generate. Sophisticated computing will enable us to translate millions of details about a person's cancer into a clear prevention or treatment plan.

As we learned with targeted therapies, there will not be a one-size-fits-all solution to early detection. Our action plan to make this vision reality is designed to deliver rapid results in the area of greatest unmet need in conquering cancer. But, this vision isn't about our institution. It's about every patient, every family and every organization with a stake in the cancer fight. No one can solve this problem alone.

We are all in this together, and we can change it together.