THE CANCER INSTITUTES AT NORTHWESTERN MEDICINE

EARLY CANCER DETECTION TECHNOLOGIES INSTITUTE
Most cancers are curable if detected early. In fact, early detection is the only option currently to reduce deaths from cancer substantially. Cervical cancer is a striking example of how population screening (the Pap smear test in this case) was able to quickly reduce deaths from this disease by 90 percent. This screening has relegated cervical cancer from the most prevalent cancer in women to #13. These success stories are still rare, unfortunately. For many types of cancer—including lung cancer, pancreatic cancer, and ovarian cancer—there is simply no screening option available, which translates into extremely high mortality rates. For others, available diagnostic tests cannot be applied for the screening of the entire eligible population due to the low diagnostic accuracy of tests, the high cost, invasiveness, or associated health risks. This leads to only a small portion of our population being screened. Colon cancer detection via colonoscopy, prostate cancer screening using the PSA test, and mammography screening to detect breast cancer, as examples, reach only a minority of at-risk patients.

Every year, more than 570,000 Americans die of cancer. Screening has the potential to reduce this number by as much as 90 percent. The two most prevalent malignancies, lung and colon cancers, are responsible for more than 40 percent of those deaths. If accurate early detection technologies are implemented for just these two cancers alone, the lives of as many as 190,000 people could potentially be saved in our nation. Emerging advanced technologies currently being developed at the Robert H. Lurie Comprehensive Cancer Center of Northwestern University may make this a reality.

A Uniquely Northwestern Approach

At Northwestern, we are uniquely equipped for innovation in cancer detection technology. The Early Cancer Detection Technologies Institute at the Lurie Cancer Center will create new research collaborations across Northwestern University. The combination of the world-class Feinberg School of Medicine and McCormick School of Engineering, together with the Lurie Cancer Center’s comprehensive designation by the National Cancer Institute (NCI), gives us breadth and depth in research and the ability to test in pre-clinical and clinical settings. We have the opportunity to bring together engineers (biomedical and electrical), clinicians (gastroenterologists, pathologists, radiologists, and epidemiologists), chemists, and cancer biologists while leveraging Northwestern’s unique strengths in engineering and nanotechnology.

“Early cancer screening is currently the only and the most effective way to dramatically reduce cancer mortality. The cutting-edge technologies that are being developed at the institute will make the screening of the entire population possible. By bridging revolutionary advances in nanotechnology, imaging, and bioengineering developed at Northwestern together with cancer biology and clinical medicine, the institute is poised to make cancer a disease of the 20th century.”

Vadim Backman, PhD, Walter Dill Scott Professor, Department of Biomedical Engineering, McCormick School of Engineering and Applied Sciences, and Program Leader for Cancer and Physical Sciences, Lurie Cancer Center
The mission of the proposed Early Cancer Detection Technologies Institute is to:

- Develop better and novel screening techniques that will significantly expand early treatment options for patients and improve the mortality rates for the most deadly cancers.
- Focus on the development of technologies to detect cancers with no viable screening options, such as pancreatic, ovarian, and lung cancer.
- Improve existing screening techniques, such as those for colon cancer, with the goal of enabling screening of the entire at-risk population.

Specifically, the institute will develop new early detection technologies that are:

- Highly accurate
- Minimally invasive or noninvasive
- Easy to implement
- Cost effective
- Patient-friendly

An important aspect of the institute will be its ability to connect basic science research, translational research, and commercialization activities. This comprehensive approach, working with existing Northwestern resources such as the Innovation and New Ventures Office (INVO), will ensure that discoveries in the laboratory are shepherded through the regulatory process and are viable in the clinical setting, ensuring maximum impact.

Northwestern Medicine

Northwestern Memorial Hospital and Northwestern University Feinberg School of Medicine are seeking to impact the health of humankind through Northwestern Medicine. We aspire to be the destinations of choice for people seeking quality healthcare; for those who provide, support, and advance that care through leading-edge treatments and breakthrough discoveries; and for people who share our passion for educating future physicians and scientists. Our commitment to transform healthcare and to be among the nation’s top academic medical centers will be accomplished through innovation and excellence.

The Cancer Institutes within our world-class Robert H. Lurie Comprehensive Cancer Center of Northwestern University are providing exciting opportunities to bring our best people, programs, and resources together to plan, coordinate, and implement patient care, research, education, community service, and advocacy across the realm of cancer. In addition to creating a breakthrough Department of Cancer Biology, we will establish several new institutes and centers within the next few years to facilitate the work of our cancer physicians and scientists. These robust interfaces and collaborations will undoubtedly lead to clinical advances that benefit patients and their families locally, nationally, and across the globe.

Cancer Institutes within the Lurie Cancer Center

- Cancer Survivorship Institute
- Cellular Immunotherapy Institute
- Developmental Therapeutics Institute
- Early Cancer Detection Technologies Institute
- Gastrointestinal Oncology Institute
- Hematologic Malignancies Institute
- Northwestern Brain Tumor Institute
- Oncology Nursing Institute
- Prostate and Genitourinary Malignancies Institute
- Sarcoma Institute
- Skin Cancer Institute
- Thoracic Oncology Institute
- Women’s Cancers Institute
The Lurie Cancer Center—of Northwestern University—one of only two National Cancer Institute-designated Comprehensive Cancer Centers in Illinois and one of 41 in the nation—is committed to being a national leader in the battle to overcome cancer.

Recognized as a national leader in cancer treatment, the Lurie Cancer Center supports care for a broad scope of cancers through comprehensive research; distinguished and dedicated faculty and staff; a world-class teaching program; and ongoing advances in medical, surgical, radiation, and interventional oncology.

We are a founding member of the National Comprehensive Cancer Network (NCCN): an alliance of 23 of the nation’s leading cancer centers dedicated to improving the quality and effectiveness of cancer care through development of clinical treatment guidelines and longitudinal outcomes research.

The Lurie Cancer Center has established major research strengths in breast, genitourinary, gastrointestinal, aero-digestive, neurologic, and gynecologic cancers; hematologic malignancies, sarcoma, melanoma, and pediatric oncology.

Our basic and translational research programs in hormone action/signal transduction, angiogenesis, gene regulation, biologic therapies, oncologic mathematical modeling, and nanotechnology are nationally and internationally recognized.

Our outstanding basic, translational, and clinical research complements a full range of prevention, early detection, treatment, rehabilitation, and palliative care programs for all types of cancer.

Our nationally recognized supportive oncology care and survivorship programs include a Division of Fertility Preservation for young cancer survivors.

Learn more about the Lurie Cancer Center’s patient care, services and programs, research and education, clinical trials, and faculty at cancer.northwestern.edu.