transforming CANCER CARE

Yale Cancer Center
“At its heart, cancer is a disease affecting families—families that support patients, in the hospital and at home.”

Thomas J. Lynch, Jr. ’82, ’86 M.D.
Director, Yale Cancer Center
Physician-in-Chief, Smilow Cancer Hospital
A Clear Path forward

A MESSAGE FROM THE DIRECTOR

This year more than a million Americans will be told they have cancer. The impact of that diagnosis is overwhelming to patients and their loved ones, and with good reason; despite seventy years of chemotherapy and billions of dollars invested in research nationwide, the prognosis for many patients is still poor. Yet we are doing better than ever in treating cancer. Advances in molecular biology and genetics allow a more precise understanding of why cancer happens. Novel therapies based on molecular profiling offer the hope of better outcomes—and in some cases have led to cures for cancers that no one thought possible just a decade ago.

But at its heart cancer is a disease that affects families, families that support patients, in the hospital and at home. Today, Yale Cancer Center is uniquely poised to make a significant impact on the nation’s battle with cancer—and on the families struggling to come to terms with a cancer diagnosis—with innovations in biology, in therapies, and in comprehensive, compassionate care.

the mission is survival

All of our investments and efforts are motivated by one thing—returning cancer patients to good health. Despite enormous national efforts, this goal has remained elusive. While we have seen some dramatic improvements in cancer cure rates, many therapeutic advances have simply added a few months to patients’ lives. As important as they are, such incremental advances are not good enough. Here at Yale, we will use the unique opportunity offered by our scientific and clinical growth to fundamentally change the way we think about cancer. We are not just expanding—we are creating new scientific and clinical synergies designed to move the cancer research paradigm beyond incremental advances to the pursuit and discovery of new therapies that substantially prolong life and, in some cases, may even cure.

Yale stands on firm footing in undertaking this bold mission. In recognition of the breadth and depth of its combination of scientific and clinical expertise, in 1974 Yale Cancer Center was among the very first institutions in the country to be designated a Comprehensive Cancer Center by the National Cancer Institute. Membership in Yale Cancer Center now stands at more than 250 physicians and scientists and growing. Yale researchers have pioneered numerous breakthroughs in cancer treatment—from the first use of chemotherapy to today’s advances in molecular profiling. We are committed to earning recognition as one of the world’s top centers for cancer research and patient care.
As evidence of that commitment, in October 2009 we opened the state-of-the-art Smilow Cancer Hospital at Yale-New Haven, giving us for the first time a unified facility for the care of cancer patients and their families. We are establishing a world-class research center for cancer biologists at Yale’s 136-acre West Campus. We are recruiting innovative scientific leaders and young talent who will work across the entire spectrum of Yale faculty and research facilities to advance knowledge of cancer’s underlying causes and mechanisms and translate those discoveries into improved patient care. And finally, Yale has made a historic commitment to this unprecedented expansion in both personnel and facilities while sustaining the University’s special interdisciplinary culture of scientific discovery.

*a personalized medicine revolution*

To achieve our goals, Yale will take a leadership role in the ongoing revolution in personalized medicine. We have established a facility to analyze each patient’s cancer at the molecular level, giving us molecular data our oncologists can use to pursue the most promising treatments for our patients as early as possible in the course of their disease. And, the knowledge gained from treating patients will provide laboratory scientists in our new Institute for Cancer Biology with data they can apply to their research. Their discoveries will in turn be brought back to the clinic to develop real curative advances. With that end in mind, we are also substantially increasing our support for research and recruitment of faculty specifically focused on translational research—basic science with the express goal of finding a cure for cancer.

Yale University and Yale-New Haven Hospital have demonstrated their tremendous commitment to Yale Cancer Center through their support—together with some extraordinarily generous donors—of the construction of Smilow Cancer Hospital. Its opening and Yale’s 2007 acquisition of the West Campus have given us an unprecedented opportunity to leap ahead to new treatments for our patients.

There are many ways in which you can join in this historic endeavor. I invite you to look more deeply at how we plan to reach our goal of returning every patient to good health. We are all in this effort together. That’s a promise I make to every person I treat.

Thomas J. Lynch, Jr. ’82, ’86 M.D.
A **bold** New Cancer Paradigm

The right medicine for the right person at the right time – personalized medicine holds extraordinary promise for the treatment of cancer. Success depends on integrating cancer care and laboratory science in a powerful, synergistic way. It begins with the molecular profiling of tumor cells from every patient at Smilow Cancer Hospital, where clinical scientists will study genetic abnormalities revealed in each tumor to help guide them to the most effective therapies available.

For personalized medicine to work on a large scale and across an ever-widening spectrum of cancers, investigators at Yale are gearing up to map the specific genetic features found in more and more tumor types and to analyze their findings using massive computational databases. With this information available, a growing cadre of Yale cancer biologists, recruited for their expertise and commitment to finding cures for the disease, will have the raw knowledge to construct more predictive models and unlock the remaining secrets of cancer cell development, proliferation, and treatment resistance. Yale chemists and pharmacologists as well as scientists in private industry can draw on these findings to design and test new and more effective therapeutic agents.

Through its extraordinary new investments in basic cancer science, clinical research, and the translational studies bringing the two together, Yale will link cancer treatment for patients with highly predictive prognostic testing. These tools will identify the optimal course of therapy to give the best chance to cure disease and prevent its recurrence.
Dr. Stuart Seropian checks in with a patient
Yale Cancer Center Director Thomas J. Lynch has helped show that certain lung cancer patients harbor a mutation in the EGFR-TK (epidermal growth factor receptor tyrosine kinase) gene, which explains why certain new drugs are highly effective in controlling their lung cancer. Based on the presence or absence of the EGFR-TK gene mutation, patients can now be given the drug or placed immediately into other treatments. Other pharmaceutical agents have proven active for cancer patients with specific signature genetic abnormalities, among them certain leukemias, rare abdominal cancers, and a type of breast cancer. While the power of these drugs to cure or control certain advanced cancers remains the exception, they provide a curative model that can now be applied to other forms of cancer. Yale’s goal is to achieve such paradigm-changing treatment advances for all cancers.
Yale has built an exceptionally productive culture of discovery. The University prides itself on remaining intimate enough to promote campus-wide dialogue and large enough to offer the state-of-the-art facilities and core technologies needed for groundbreaking research. As Yale faculty reach out to colleagues in departments and laboratories covering the entire scientific spectrum, their collaborations open doors to innovation, imaginative thinking, and the initiation of bold, interdisciplinary science.

One measure of this culture of discovery is that Yale consistently ranks among the nation’s top ten research universities in total National Institutes of Health (NIH) research grant dollars awarded. Yale leads all medical schools in per faculty NIH funding and is the only leading medical school to have shown consistent annual increases in NIH funding.

**the institute for cancer biology**

In 2007, Yale’s science initiatives made a major leap forward with the acquisition of West Campus, a 136-acre research complex once housing Bayer HealthCare. Located in West Haven, just seven miles from Yale’s main campus, this ready-made science facility includes twenty buildings, about 1.6 million square feet in total, more than a quarter of which is configured and equipped for state-of-the-art research in chemistry and biology. Already, Yale has launched three “core” facilities on West Campus to support biomedical research, including high-throughput screening centers for small molecules and siRNAs and a next-generation DNA sequencing center.

An integrated cluster of research institutes will soon round out this multidisciplinary research campus, with teams dedicated to cutting-edge discovery in the areas of microbial diversity, chemical biology, biodesign, and systems biology.

In this extraordinary setting, a new Institute for Cancer Biology will contribute dramatically to the Cancer Center’s mission. Assembling a team of twelve faculty members and 120 post-doctoral fellows, graduate students, and staff, the Institute will bridge existing basic research programs on campus and integrate them into clinical studies at Smilow Cancer Hospital.

The Institute’s laboratories will work at the frontiers of oncology to improve our understanding of cancer biology. Some of the biologists will also be active Cancer Center physicians, giving them exceptional insight into the translation of basic science into patient care and, in turn, bringing knowledge gained in the clinic to the laboratory. They, like every Cancer Center scientist, will share in Yale’s singular mission of discovering curative therapies.
Researchers in the Small Molecule Discovery Center on Yale’s West Campus
Studies already under way at Yale’s West Campus include interdisciplinary investigations into the infectious pathways used by viruses that cause human cancer, like human papillomavirus, or HPV. A vaccine for HPV was recently approved to prevent cervical cancer, and researchers now hope that similar vaccines can be used to prevent and even treat virally induced tumors including head and neck cancers also caused by HPV and liver cancer caused by hepatitis C virus. This work is supported by the high-throughput core facilities on West Campus, and as molecular anti-viral targets are identified, drugs that attack these targets may eventually undergo clinical testing at the new Smilow Cancer Hospital.
Discoveries being made at Yale Cancer Center, the West Campus, and elsewhere at Yale will not only lead to better treatment for existing patients, they will help prevent the development of cancer. Yale scientists seek to identify the causes of human cancers through compilation and evaluation of public health and individual patient data. They also map the prevalence and spread of cancer-causing gene mutations in the population.

Yale Cancer Center’s Cancer Prevention and Control Research Program leads the way in this effort by conducting multidisciplinary research to prevent cancer and detect it in its earliest stages. Led by researchers based at the Yale School of Public Health, these studies have shown ways to improve outcomes and reduce the risk of cancer. The research is largely population-based, with the densely populated Connecticut region serving as a laboratory for studies.

tracking causes and outcomes

Public health studies depend on data painstakingly gathered and analyzed over many years. Yale is home to several unique and widely-utilized databases. These include the Connecticut Tumor Registry, since 1935 the nation’s oldest population-based tumor registry, and Yale’s National Cancer Institute-funded Surveillance, Epidemiology, and End Results Program, which compiles regional cancer-related statistics.

A recently established alliance with University College London will give Yale Cancer Center unprecedented access to one of the most expansive databases of clinical data available. Because of the UK’s government-run national healthcare program, the databases are much more comprehensive than what can be collected via the U.S. healthcare system, with its more limited access to patient data.

Yale scientists can also draw on the Cancer Center’s Rapid Case Ascertainment Shared Resource, which identifies patients with newly diagnosed cancers throughout Connecticut. This resource facilitates collection of patient data to advance research needs including clinical trials and helps in the swift identification of changes in public health. Yale also possesses one of the largest and most comprehensive annotated tumor specimen collections in the country. Pathologists and other scientists draw upon this irreplaceable resource for studying cancer development and testing treatments in human cells.
Researcher Melinda Irwin studies the effects of exercise on cancer prevention.
Yale is one of only four recipients nationwide of the National Cancer Institute (NCI) Specialized Programs of Research Excellence (SPORE) awards focused on melanoma and basal cell carcinoma. The Yale SPORE in Skin Cancer draws on the University’s combined strength in dermatology and oncology to advance research and clinical care in three areas: identifying environmental and genetic factors in skin cancer and developing national guidelines for preventive intervention; discovering new tumor markers and targets for skin cancer therapy; and developing novel immunological therapies. The NCI provides generous funding to the SPORE for basic laboratory and translational research, as well as limited funding for human studies. The next step—and the essential phase in the process to discover new treatments—is the development of more investigator-initiated clinical trials.

The Yale Center for Clinical Investigation (YCCI) was one of the first recipients of a National Institutes of Health Clinical & Translational Science Award designed to speed the translation of research into clinical trials and to bring patients the latest treatment options. The shared resources of the Cancer Center and YCCI provide Yale physician-scientists with support for developing the needed infrastructure to streamline the initiation of new cancer clinical trials, generate electronic medical records and data capture systems, and recruit the biostatistical expertise needed to assess results. Together with YCCI, Yale Cancer Center is developing a multi-institution, statewide cancer clinical trials network.
A cancer diagnosis can be deeply isolating, and the clinical environment can be a frightening and alien place. Caregivers at Yale work to make the hospital feel as welcoming as possible and to help each patient understand that he or she is not alone. Individualized, disease-focused oncology teams assemble around every patient early in the course of diagnosis and treatment. Together they develop a coordinated treatment plan created specifically for each patient. Physicians and nurses keep patients and their families informed about treatment options and invite them to participate in decisions at every step along the way. And that team is committed to helping the patient for life—from fighting the disease to survivorship to prevention of recurrence.

Smilow Cancer Hospital greatly enhances patient care by giving Yale’s doctors and nurses, social workers and psychologists, chaplains and therapists a facility designed specifically for this purpose. Smilow Cancer Hospital provides comprehensive assistance in diverse areas—from personal and financial needs to the complex medical, emotional, spiritual, and social issues the patient may confront. Today’s most advanced cancer treatment facility also ensures that residents never need to leave the region to receive the finest cancer care in the world. Yale caregivers take justifiable pride that they have done everything they possibly can to make each patient’s life better.
Social worker Bonnie Indeck, left, discusses programs with a patient in the healing garden at Smilow Cancer Hospital.
Smilow Cancer Hospital at Yale-New Haven provides Yale with a comprehensive and unified clinical setting. The fourteen-story, nearly 500,000-square-foot facility includes 112 inpatient beds, outpatient treatment rooms, expanded operating rooms, infusion suites, diagnostic imaging services, therapeutic radiology, and a specialized Women’s Cancer Center. Patients benefit from the new molecular profiling facility, which enables optimal treatment based on an individual tumor’s genetic signature.

Everyone entering the hospital building passes through a warmly welcoming two-story glass lobby with a terrazzo floor, a granite waterwall, terracotta walls, and maple woodwork. Natural light suffuses every patient and public room. Patients and family can retreat to an outdoor healing garden, with plantings, a small stream, and soothing views. A special boutique helps patients to look and feel better, despite their illness. Smilow Cancer Hospital is the spearhead of Yale’s drive for recognition as one of the world’s leading cancer centers and for its mission of discovering cures for cancer.
Above all, Yale aims to give every patient the very best chance to cure his or her cancer. Cancer is increasingly common and remains one of the leading causes of death despite the enormous investments made in battling the disease over the past forty years.

Yale has made unprecedented commitments in expanding its facilities, recruiting new scientific and clinical leadership, and providing them with every resource they need to succeed. Together this investment and talent create a unique opportunity to revolutionize the entire cancer field, through a dedicated mission of discovering and delivering curative therapies.

A plan is in place that has transformed how people are cared for at Yale and will help lead to the discovery of effective new treatments and preventive strategies for many cancers. Together, Yale and you will help to give every person afflicted with cancer a chance for a healthy, normal life.
Pathology Professor David Rimm's lab uses microarray technology to diagnose cancer.
At Yale Cancer Center and Smilow Cancer Hospital at Yale-New Haven we strive to improve lives by conducting groundbreaking research, providing cancer prevention and wellness education, and delivering compassionate care for patients and their families. The generous support of donors accelerates ongoing work and helps to launch important new research projects and programs.

**MOMENTUM FUND**  
Any amount

Yale Cancer Center and Smilow Cancer Hospital have joined forces to create the Momentum Fund to provide essential funding for breakthrough cancer research and compassionate patient care by combining the gifts of many donors. Momentum Fund donors help to turn bold, innovative ideas into powerful tools to detect, prevent, and more successfully treat cancer.

**SUPPORT FOR SCIENTIFIC AND CLINICAL RESEARCH**

Donors who wish to support Yale Cancer Center research can choose to establish or add to an endowed or current use fund. Endowed funds are invested by Yale University and the annual income is used to support research and programs at Yale Cancer Center. Current use funds can be used immediately to enhance research and programs.

**Current Use Research Fund**  
$10,000 or more

Scientific research, by its very nature, is constantly changing in response to new discoveries and new technological advances. Each new investigation, new investigator, and set of circumstances brings a unique set of needs for the completion of the project. Current use research funds permit Yale Cancer Center to respond to these special needs as they occur—for example, providing funds for training, new equipment, tissue analysis, or the creation of a new laboratory.

**Clinical Trials Fund**  
$50,000 or more

Clinical trials are research studies that test how well new medical approaches will work in the patient population. Each trial answers scientific questions and seeks to find better ways to prevent, screen for, diagnose, or treat a disease. With philanthropic support, Yale Cancer Center aims to open more clinical trials, increase the number of patients who choose to participate, and successfully test the value of new treatments so that they can ultimately benefit more people.
Endowed Research Fund  $100,000 or more
Yale Cancer Center has been a leader in understanding the fundamental mechanisms of cancer biology and developing effective therapies for treatment. Discoveries in the laboratory are the seeds of scientific progress and medical breakthroughs, but such ideas require validation before major funding becomes available. An endowed research fund provides a steady source of “venture funding” so that promising ideas can be pursued to the point of validation, thus making them more eligible for grant funding from federal and foundation sources. An Endowed Research Fund may be designated toward a specific cancer (i.e. breast, prostate) or a particular program (i.e. radiation therapy, survivorship).

RECRUITING EXCELLENCE
All gifts designated for recruiting scientists and clinicians to Yale Cancer Center enhance its ability to attract the most talented individuals. These funds support the start-up and equipment costs that new faculty incur during their first three years at Yale and seed pilot research projects that then compete for external federal and private grants. Yale Cancer Center is committed to strengthening its research and clinical enterprise by recruiting and supporting extraordinary leaders in every cancer disease area.

Fellowships  $100,000 or more
The beginning of a distinguished medical career involves training and specialized research beyond the doctorate and at the cutting edge of learning. Yale Cancer Center’s post-doctoral fellows, chosen from among the best-qualified new Ph.D. graduates in the world, are indispensable research partners for Yale’s senior investigators, and firmly on the path to becoming leading scientists themselves.

Professorships  $3,000,000
An endowed professorship is the highest honor the Yale School of Medicine can bestow upon distinguished faculty members, and the availability of such recognition is often essential to recruit exceptional faculty to Yale Cancer Center. Endowed professorships provide secure and flexible support for a faculty member’s innovative research and/or clinical activities, giving them the academic and scientific freedom to pursue ideas that can move science forward and lead to novel therapies that save lives.
To get involved

To learn more about supporting the work of Yale Cancer Center, please contact:

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