

Annual Plan & Professional Judgment Budget Proposal for Fiscal Year 2026

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DIRECTOR'S MESSAGE

When I began as a kidney cancer–focused oncologist a couple of decades ago, cancer science had not progressed enough to give almost any of my patients the one thing they all wanted—more time with their loved ones. Too often, even the best available advances only gave them a few additional months.

Today, kidney cancer has a very different outlook. Thanks to biological and clinical research led by NCI-supported scientists—and the unrelenting dedication of doctors, advocates, patients, and families—we can tell a new story. We have effective treatments for several types of kidney cancer, including a drug for people with a hereditary form of kidney cancer that controls their tumors with minimal side effects. Outcomes are improving for people with early-stage disease, and many with metastatic kidney cancer are being cured or living years with their cancer instead of months. The horizon holds promise to treat more kidney cancers and provide new approaches for prevention and early detection.

We can tell the same stories for many cancers because of robust NCI investment in cancer science that has delivered enormous returns for the American people and the world. NCI-led research has paved the way for breakthroughs in prevention, screening, and treatment that have driven down cancer mortality rates over the past three decades. Many cancers once considered a death sentence now have dramatically better outlooks, such as advanced lung cancer and metastatic melanoma. We've seen similar progress with prostate cancer, breast cancer, and many others.

Unfortunately, research has not yet made enough progress for the more than 600,000 people expected to die from cancer in the United States in 2024. There is still much more to do for the more than 18 million people alive in our country today who have heard those frightening words, “You have cancer.”

We are so close to transforming cancer from something people fear to a condition that we manage, prevent, or cure. For instance, this year, we achieved [the first cellular therapy approved for a solid tumor](#), melanoma. This treatment, pioneered by NCI funding, has also shown promise against advanced colorectal cancer, advanced breast cancer, and even glioblastoma.

NCI research is also illuminating artificial intelligence's (AI) potential to tell us which treatments are most likely to work, enhance screening for precancers before they progress to cancer, and help find some of the hardest cancers to detect early. Approaches like these could greatly improve outcomes.

We are on the doorstep of much more progress. The rapid pace of cancer research discovery and innovation, the availability of powerful technology and infrastructure, and a cadre of talented people provide us with extraordinary opportunities for more lifesaving advances.

To achieve its full potential, the cancer research enterprise, known collectively as the [National Cancer Program](#), must be mobilized to work at full strength—together. That starts with an innovative workforce empowered to produce the discoveries of tomorrow and reach people affected disproportionately by cancer by addressing access to research and barriers to care.

It is critical that scientists have access to accurate data, representative of all patient populations, to engineer new machine learning and AI algorithms that predict the best interventions. We must revolutionize clinical research so that promising approaches and discoveries are tested in clinical studies that are accessible, inclusive, nimble, and able to rapidly answer the most pressing questions for all populations.

Finally, we must continue to generate the foundational scientific evidence necessary to strengthen cancer prevention, enhance screening, and deliver optimal care to everyone confronted by cancer.

With strategic increased investments through NCI, the cancer research enterprise could be fully powered to achieve the scientific breakthroughs required to reach the [Cancer MoonshotSM](#) goal to reduce the cancer death rate by 50% by 2047 and improve the experience of patients and families facing a cancer diagnosis.

As the largest funder and a key catalyst for [all aspects of cancer science](#), NCI is the linchpin that unites cancer research through the National Cancer Program. We are dedicated to bringing all stakeholders together to achieve the mission to *advance scientific knowledge and help all people live longer, healthier lives*.

NCI investments in training, data, science, and infrastructure sustain cancer research performed at cancer centers, hospitals, community clinics, and universities across the United States—assembling major networks that empower the advances needed in our current era. These activities, in turn, advance not only science, but the economic health of communities by creating jobs and [fueling local entrepreneurship](#). NCI's nationwide research networks make it possible for people in all 50 states to participate in research. In this role, NCI has a unique ability to reach deep into communities to understand people's specific challenges, while also shaping our national efforts to take advantage of transformative opportunities.

This proposal highlights [four immediate scientific opportunities](#) to move the needle against cancer even further. They include reversing the alarming rise of cancer among young adults, understanding how cancer in one organ site affects the entire body, identifying ways to overcome the financial hardships that contribute to worse outcomes for many people, and developing vaccines to train the body's immune system to prevent or treat cancers. Of course, these four areas offer only a snapshot of the extraordinary opportunities and pressing challenges we must embrace with urgency.

When I think of how far cancer science has come, and the exciting ideas and promising interventions within reach, I am simply in awe. Together, we can radically change the experience of cancer and improve cancer outcomes to give more Americans more time to create lasting memories with their loved ones.



**W. Kimryn Rathmell,
M.D., Ph.D., M.M.H.C.**

Director
National Cancer Institute

NCI FISCAL YEAR 2026 PROFESSIONAL JUDGMENT BUDGET PROPOSAL

This Fiscal Year 2026 (FY26) Professional Judgment Budget Proposal presents NCI's assessment of the optimal funding needed to support the National Cancer Program and ultimately help all people live longer, healthier lives. While FY24 and FY25 were subject to statutory budget caps, FY26 presents an opportunity for Congress to fully fund cancer research. This includes new funding to increase investments in research grants, train the next-generation cancer workforce, modernize and expand clinical studies infrastructure, and develop new ways to prevent or intercept cancer.

NCI FISCAL YEAR 2026 (FY26) PROFESSIONAL JUDGMENT BUDGET PROPOSAL (DOLLARS IN MILLIONS)

FY24 NCI Appropriation	\$7,224	
FY25 President's Budget Proposal*	\$9,287	
Proposed Increase over FY25 President's Budget Proposal (Allocation by category)	\$2,179	\$479 Cancer Biology Research \$338 Cancer Prevention Research \$457 Cancer Detection & Diagnosis Research \$534 Cancer Treatment Research \$175 Public Health & Cancer Control Research \$196 Training & Infrastructure
FY26 TOTAL	\$11,466**	

*Each year the President submits a comprehensive budget request to Congress which outlines the administration's policy, economic outlook, and funding priorities for the coming fiscal year.

**This proposal includes \$50 million for the 7th year of the Childhood Cancer Data Initiative.

NCI is the largest funder of cancer research in the world, providing foundational support that fuels novel discovery, technical innovation, economic growth, and hope. NCI funding is distributed across the United States in both academic and community settings. Meaningful progress against cancer requires sustained funding increases to act upon existing and emerging opportunities and to build on discoveries made from previous investments, including those made through the 21st Century Cures Act funding for the Cancer MoonshotSM. Support for these opportunities will increase our understanding of cancer biology and spark the discovery of better ways to prevent, detect, diagnose, and treat cancer.

Strengthening the future cancer workforce

NCI is committed to fostering a highly skilled research workforce that catalyzes future progress against cancer. Strong support for training of the future workforce will ensure that progress against cancer continues and thrives by constantly infusing cancer research with innovative ideas to prevent more cancers, further reduce mortality, and improve outcomes for all.

Even with a constrained budget, NCI is prioritizing support for early-stage investigators (ESIs) by funding a higher percentile of peer-reviewed R01 applications from ESIs than established investigators. In FY24, the ESI payline—the percentile cutoff point that NCI intends to fund in a given fiscal year—was maintained at the 17th percentile. However, the payline for established investigators fell to the 10th percentile, and decisions were made to reduce the budgets for existing grants and other programs.

This proposed budget for FY26 would allow NCI to grow its training portfolio beginning with the highly competitive [K99/R00 Pathway to Independence Award](#). The program has succeeded in transitioning early-career mentored scientists to independent researchers. More funding would allow NCI to grow the program beyond the current capacity of about 40 awards per year. Additionally, NCI could increase support for programs for trainees at all career stages, including for students as young as middle school through NCI's Youth Enjoy Sciences program.

As NCI seeks to attract talented individuals with a variety of opinions and interests to the cancer workforce, we also need to expand our training portfolio. This requires steadfast support for career development and training programs that cultivate a sustainable pathway toward independence. NCI also needs new programs to prepare a workforce skilled in data science, public health, and other fields that support cancer research to sustain progress against cancer.

Modernizing cancer clinical studies to deliver breakthroughs

The pace of discovery is faster than ever before, aided by the return on decades of investment in basic research and technology development that are yielding advances for people with cancer and those at risk for the disease. Clinical research must keep pace with the speed of discovery to bring benefits to all people.

Clinical studies are a key step on the path to making progress against cancer. However, they can take years to design, launch, and complete. This proposed budget would enable NCI to further modernize clinical studies and expand clinical research networks and associated infrastructure into community oncology practices, where most people receive their cancer care.

In 2024, NCI launched a pilot [Virtual Clinical Trials Office](#) providing remote staff to help sites with patient screening, enrollment, and data collection. Innovative approaches like this can increase efficiency and make trials accessible to more people by enabling institutions with fewer resources to participate in more studies. NCI is also convening experts in community engagement and related fields to develop a plan to increase capacity to conduct cancer research in all communities, including rural areas and other underserved populations.

Sustained funding increases will allow NCI to transform the way we approach clinical studies, making them more accessible and nimble. This transformation will ensure improved access to clinical studies designed to rapidly answer the most pressing questions and help deliver high-quality cancer care for all people.

Preventing and intercepting cancer

Effective cancer prevention and control with proven, cost-effective strategies will have a powerful effect on the goal of cutting cancer death rates in half by 2047. To develop better preventive measures and screening methods, we must increase our knowledge about the causes and trajectories of many cancers. This requires investing resources in foundational research and promising new drugs, vaccines, and other interventions to reduce the risks of cancer and to intercept cancer at the earliest possible stages.

Research has shown that multi-cancer detection tests can find precancer or cancer before it is symptomatic. These tests could change how we screen for cancer and potentially improve outcomes by detecting cancer at its earliest stages. Using a single blood draw, these tests may be able to detect the

presence of multiple cancer types—including ones without established screening methods. However, it is not known whether multi-cancer detection tests will save lives or cause substantial harms by overdiagnosing conditions that do not require invasive diagnostic measures or even treatment.

To answer these and other questions, [NCI launched the Cancer Screening Research Network](#). This network will conduct large, rigorous studies on multi-cancer detection tests in asymptomatic people. Initial funding provides resources for seven sites; additional funding is needed to expand the network and support the goal of enrolling over 200,000 people from various populations into randomized controlled trials that evaluate these tests.

This budget request will enable NCI to fully leverage the scientific opportunities before us to prevent, detect, and treat cancer, while growing the cancer research workforce. The return on this investment will be a stronger cancer research enterprise that maximizes research advances to empower progress against cancer for all people.

NCI RESEARCH PORTFOLIO: DRIVING DISCOVERY TO END CANCER AS WE KNOW IT

NCI enables advances against cancer by investing in a [broad portfolio of research](#), supporting the [cancer research workforce](#), and sustaining the [infrastructure that enables cutting-edge research to succeed](#). All these components are essential to lead progress against cancer and accomplish the goals of the [National Cancer Plan](#).

NCI's support of basic, translational, and clinical research is helping to reduce the burden of cancer by driving discovery to improve cancer risk assessment, prevention, detection, diagnosis, treatment, and survivorship. Sustained and robust support for NCI's work is needed to realize the long-term vision of ending cancer as we know it for all populations.

CANCER RESEARCH CONTINUUM



Providing hope: The power of cancer biology research

Virtually every new cancer diagnostic, therapeutic, or preventive measure begins with addressing a basic science research question. Through decades of carefully planned experiments in laboratories across the country, researchers generate fundamental knowledge that often cuts across multiple types of cancer. It's these investments in cancer biology research that support the groundwork needed to discover and advance lifesaving cancer interventions. Continued support is then required to build on these findings.

NCI is the largest funder of the basic research that is critical for making sustained progress against cancer. Cancer survivors and those at risk of developing the disease rely on the innovative approaches that cancer biology research delivers.

For example, through cancer biology research, NCI-supported researchers have:

- pinpointed a specific type of [bacteria linked with colorectal cancer](#), which could inform new strategies for cancer screening and treatment

- mapped [interactions between tumor cells and their environment](#) in stomach cancer to improve our understanding of how the disease advances
- updated long-held beliefs about cell division that could [change the way we treat some fast-growing tumors](#)
- identified an unexpected way tumor cells hide from the immune system, revealing a new target to help expose the cancer to immune cells

Discoveries like these, and many others, open the door to new cancer prevention, interception, and treatment options where few or none currently exist and provide hope that one day all cancers will be treatable.

Read more about NCI's related research areas, including [cancer biology research](#), [cancer genomics research](#), and [research on causes of cancer](#).

Reducing the burden: The potential of cancer prevention

While overall cancer mortality continues to decrease, researchers estimate that more than half of cancer deaths are preventable. More research investments are needed to learn how to implement, improve, and build on current prevention strategies and intercept cancer more effectively by improving treatment of precancerous lesions.

Researchers have identified several preventable factors in cancer development, such as health behaviors, exposure to cancer-causing agents, and social determinants of health. However, there is still much more to learn about how changes in these risk factors influence cancer risk. The knowledge gained from cancer prevention research can be used to refine guidelines and implement targeted measures to reduce the incidence of cancer.

For example, NCI-funded researchers are investigating new ways to prevent precancerous conditions from progressing to cancer and new ways to improve cancer screening in underserved areas. This research has enabled progress in several areas. NCI-supported groups have:

- shown that treating a precancerous anal condition in people with HIV [reduces their risk of anal cancer](#) by more than half
- launched the [SHIP Trial Network](#) to evaluate a self-collection method for human papillomavirus (HPV) testing as a way to screen for cervical cancer, especially among underserved and under-screened people
- found that [simple reminders can increase the number of patients who complete follow-up testing](#) after an abnormal cancer screening result, which aids in cancer prevention and early intervention
- [improved breast cancer risk prediction tools for Black women](#), who have a 40% higher rate of breast cancer death than White women, by adding genetic information to the traditional questionnaire-based factors that can inform screening decisions

Through rigorous scientific studies, researchers can assess the impact of cancer prevention strategies, identify areas for improvement, and develop more efficient and accessible intervention approaches to reduce the burden of cancer.

Read more about NCI's related research areas, including [cancer prevention research](#).

Intervening early: The urgency of cancer detection and diagnosis research

Imagine if fewer people suffered and died from cancer because we detected and diagnosed the disease or its precursors at the earliest possible stage.

Accurately identifying cancer—and precancerous lesions—and assessing its severity is the primary goal of cancer detection and diagnosis research. Early detection can save lives. An imprecise approach, however, can lead to overdiagnosis, overtreatment, and unnecessary physical, psychological, and financial harm.

Investing in cancer detection and diagnosis research can help develop more sensitive, accurate, and cost-effective methods that provide information about not only the cancer type but also detailed genetic information to support targeted cancer therapies and precision medicine. This research can also establish the impact that screening could have on survival rates for selected cancer types. With the rise of multi-cancer detection tests, [NCI launched the Cancer Screening Research Network](#) to evaluate potential survival benefits, or other outcomes, from this new type of tool.

With recent advances in NCI-funded detection and diagnosis technology, scientists have capitalized on novel opportunities. For example, NCI-supported researchers have:

- developed a [noninvasive method of detecting colorectal cancer](#) using engineered bacteria that can sense DNA shed by tumors into the gut
- identified [four key warning signs](#) that could help health providers find colorectal cancer at an earlier and more treatable stage in younger adults, a population that has experienced rising rates of colorectal cancer over the last few decades
- overcome the challenge of assembling a large and diverse data set for a rare brain cancer called glioblastoma, enabling the creation of an [AI model that can more accurately detect tumor boundaries](#) prior to surgery
- developed a urine-based test that can [distinguish between slow-growing prostate cancers that pose little risk and more aggressive cancers](#) that need treatment, potentially helping some people avoid unnecessary procedures

Cancer detection and diagnosis research is primed with these emerging technologies. Carefully assessing their impact on cancer outcomes will limit risk and ensure benefit from these new screening and detection methods.

Read more about NCI's related research areas, including [cancer screening and early detection research](#) and [cancer diagnosis research](#).

Innovating treatment: The need for more effective and less toxic cancer therapies

For more than 50 years, NCI has played a vital role in the development of more effective and less toxic therapeutic options for patients with cancer. Despite the steady progress in improving treatments, some forms of cancer still lack effective therapies, many cancers eventually develop resistance to treatment, and not all people have equal access to cutting-edge treatments. Adding to the challenge, patients with cancer often experience severe side effects from the disease and its treatment, which for childhood cancer survivors can impact their quality of life for decades.

These challenges can be overcome. Investments in treatment research today will inspire and sustain the safe and effective cures of tomorrow. For example, NCI-supported researchers have:

- pioneered groundbreaking research using lymphocytes (a type of immune cell) from a person's own tumor to treat their advanced melanoma, [garnering FDA approval of a first-of-its-kind personalized treatment](#)
- completed a clinical trial that led to the [first FDA approval of an immunotherapy for advanced alveolar soft part sarcoma](#), a rare soft tissue cancer that requires frequent surgeries and affects mostly adolescents and young adults
- developed a [targeted drug combination to treat patients with a rare type of brain tumor](#) called a papillary craniopharyngioma, potentially eliminating the need for surgery or radiotherapy

- conducted the MIRASOL trial, which led to FDA approval of a novel therapy to [improve overall survival in people with advanced ovarian cancer](#) that had stopped responding to standard chemotherapy

More research is needed to ensure that all patients with cancer have safe and effective therapies and the highest possible quality of life.

Read more about NCI's related research areas, including [cancer treatment research](#) and [research on childhood cancers](#).

Improving public health: The role of cancer control and health care delivery research

Each year, cancer has a significant impact on public health, affecting the nation's economy and the quality of life for millions of people in the United States. NCI invests in studies to identify population-wide trends in cancer and to improve the delivery of cancer interventions. NCI also supports research that enables people to live a healthy life after cancer.

More research is needed to design interventions that improve cancer prevention, screening, treatment, and survivorship outcomes and to address why certain racial, ethnic, and rural populations suffer disproportionately from some cancers. This research can inform policies that reduce cancer-causing exposures, ensure greater compliance with health recommendations, minimize misinformation, and address gaps in the health care system when cancer survivors transition from oncology care to primary care.

Additional investments in cancer control and implementation research will improve the lives of cancer survivors and the general population, while ensuring that all population groups benefit from advances in cancer research. For example, NCI-supported groups have:

- estimated that [more than 15,000 deaths could be prevented](#) if 10% more of the eligible U.S. population used lung, colorectal, breast, and cervical cancer screening tests
- revealed gaps in public awareness that drinking alcohol of any type raises the risk of cancer, a finding that can support [efforts to reduce the health impact of alcohol](#)
- launched the Persistent Poverty Initiative to help [alleviate the cumulative effects of persistent poverty on cancer outcomes](#) by building research capacity, fostering cancer prevention research, and promoting the implementation of community-based programs
- discovered that [the right side of the colon ages significantly faster](#) than the left side in African Americans, possibly explaining why these individuals are more likely to suffer from right-sided colon cancer, which doesn't respond as well to conventional chemotherapies

Researchers are working hard to understand population-level impacts on cancer control and to design and test interventions along the cancer continuum that can address disparities and ensure good health for all people.

Read more about NCI's related research areas, including [public health research and cancer](#) and [cancer health disparities research](#).

Strengthening the research enterprise: The need for a robust cancer research workforce and infrastructure

An extensive research infrastructure and a stable workforce comprise the backbone of the entire cancer research enterprise, and NCI provides a level and scope of infrastructure and training that cannot be matched by other organizations. Investing in these critical needs is of the greatest importance in leading progress against cancer.

All cancer research requires a robust workforce and infrastructure. This includes [cancer centers](#) where [clinical trials can test new approaches](#) to prevent and treat cancer, [facilities](#) that develop and manufacture novel technologies and medicines, [electronic databases](#) to support large amounts of biomedical data, and programs and initiatives to train a workforce that drives cancer research forward.

These elements need continued investments to remain strong and capitalize on new opportunities. With continued investments, NCI has:

- launched the new [Virtual Clinical Trials Office](#), an effort to accelerate nationwide participation in cancer clinical trials with remote clinical research support staff who assist teams in community-based and remote settings
- supported the next generation of cancer researchers through the [K99/ROO Pathway to Independence Program](#), which helped 95% of surveyed award recipients transition from postdoctoral research to research independence
- engaged more than 500 middle-school, high-school, and undergraduate students and their teachers through a Youth Enjoy Science (YES) Research Education Program at the University of Nebraska Medical Center, [increasing representation of Native Americans in pursuit of cancer careers](#)
- released a [comprehensive data set that combines molecular and clinical data](#) from individual studies of more than 1,000 tumors across 10 cancer types, which is publicly available through NCI's cloud-based Cancer Research Data Commons

Investing in the NCI-supported cancer research workforce and infrastructure ensures that all research areas supported by the NCI budget produce the highest quality research in the most effective way possible.

Read more about NCI's [cancer research infrastructure](#) and the [Center for Cancer Training](#).

HIGHLIGHTED SCIENTIFIC OPPORTUNITIES IN CANCER RESEARCH

NCI continually pursues new and emerging scientific opportunities that, with further investment, would catalyze progress in cancer research.

For example, harnessing the power of cancer data is allowing researchers to probe unexplored features of cancer biology and tackle novel treatment approaches. Unraveling the complexity of cancer metastasis is revealing surprising ways that cancer spreads to other parts of the body. And revolutionizing clinical trials is making the work of testing new cancer prevention, detection, and treatment methods faster and more inclusive.

Building upon previous advances, researchers have more avenues to make progress against cancer than ever before. Read about four important areas of opportunity for fiscal year 2026 and how sustained investments in each area would support the goals and strategies of the [National Cancer Plan](#).

Tackling the Emergence of Early-Onset Cancers in Young Adults

More young adults are developing cancer than ever before. Worldwide, the rate of cancer among people between the ages of 18 and 49, known as early-onset cancer, has climbed by almost 80% since the 1990s.

The roots of this change are poorly understood. While the trend is most notable in gastrointestinal, breast, and uterine cancers, the increase in diagnosis at younger ages has not been seen across all cancer types. The increase also varies significantly across different population groups, as well as by geographic location. We must identify the factors underlying the dramatic increase in early-onset cases to develop effective [prevention strategies](#), optimize screening guidelines for [early cancer detection](#), and [eliminate disparities](#) with shifting cancer demographics.

The increase in early-onset cancer is not explained by elevated screening rates and is unlikely to have a simple explanation. For example, researchers have linked certain genetic conditions, dietary habits, and obesity to colorectal cancer, but these risk factors do not fully explain the sharp rise in this cancer among young adults. To learn more about risk factors in this age group, researchers are also investigating the role of accelerated aging processes, pollution, and even microbes that live in the gut. Other studies seek to understand inequities in early-onset cancer, such as the [higher rates of death from early-onset colorectal cancer](#) seen among men who live in parts of the U.S. South.

Addressing this problem will require the full spectrum of the NCI-supported cancer research enterprise, from NCI's [Surveillance, Epidemiology, and End Results Program](#)—which has been instrumental in tracking this emerging trend—to basic science studies on the biological effects of environmental exposures. With decades of sustained data collection and technology advances, researchers have more tools than ever before to study early-onset cancer. However, more research is needed to fully leverage these resources.

Data from large and diverse groups of people are essential, including information about lifetime environmental exposures and health history paired with preserved biological samples. Additionally, we need to create advanced computational programs capable of processing and analyzing the extensive and intricate data gathered from these studies.

NCI has already made great strides against cancer. With sustained funding, NCI is primed to develop interventions specific to early-onset cancers and the unique needs of this patient population. We must tackle early-onset cancers to better protect young people today and future generations from cancer at any age.

Sustained investments in symptom science research and innovative long-term care of cancer survivors will enhance treatment delivery, limit long-term side effects, and have a positive impact on millions living with cancer now and in the future.



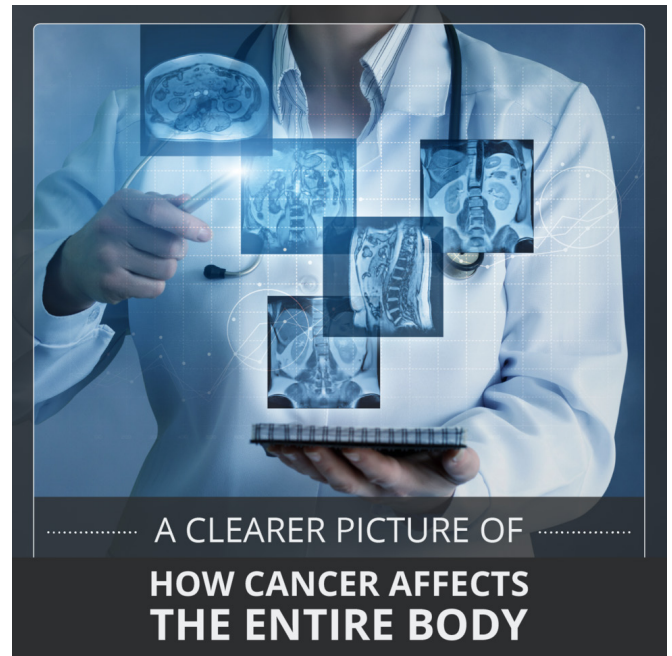
Approaching Cancer as a Disease That Affects the Entire Body

Cancer is a whole-body problem. We know that some of cancer's most devastating effects are extreme weight loss, debilitating fatigue, pain, and accelerated aging, which is particularly concerning for childhood cancer survivors. Cancer can also affect healthy tissues and organs, allowing tumors to spread to other parts of the body. These whole-body effects of cancer can decrease quality of life, hinder a person from receiving effective treatments, and worsen outcomes for those living with the disease. If we hope to meet the National Cancer Plan goals to [develop effective treatments](#) and [deliver optimal care](#), we must identify, understand, and overcome the systemic effects of cancer.

After [decades of promoting collaborations and supporting progress in cancer biology research](#), NCI is poised to unite discrete research areas that contribute to our understanding of the effects of cancer on the entire body. We will continue to build on NCI-led basic science research by supporting teams that look at the systemic effects of cancer from multiple angles. For example, a deeper understanding of how healthy organs in the body interact and how those interactions differ in people with cancer is crucial. This will require the collection, integration, and advanced computational analysis of diverse types of data from specialized fields, as well as animal and engineered-tissue models that better reflect system-wide processes in the human body.

Not everyone who develops cancer will have the same set of symptoms and treatment responses, even those with the same type of cancer and those receiving the same treatments. Understanding these differences will require large studies with various groups of people and more advanced technologies that can probe for and detect cancer-related signals throughout the body.

The return on investment in this area of research is a clearer picture of how cancer communicates with and affects the entire body. This knowledge is critical to inform proactive, personalized treatment plans that address cancer and cancer-related symptoms and halt the spread of disease to other parts of the body—improving outcomes for all.



Alleviating Financial Toxicity for Cancer Survivors and Caregivers

Financial toxicity—the problems patients and their families experience because of medical expenses—can be a catastrophic effect of cancer for many people. About half of those diagnosed with cancer experience financial hardship, and some even skip their recommended treatments because of high costs. Yet, many questions remain about how to address this problem in a way that meets the unique needs of all people. Finding answers will require sustained support for NCI’s vast research networks combined with community involvement to **engage every person**.

NCI has been instrumental in revealing and understanding the effects of financial hardship on cancer survivors and their families. For example, NCI-supported research found that nearly **75% of people with advanced colorectal cancer face financial problems**, even if they have health insurance. Another NCI-funded study found that some people with breast cancer are **more likely to make surgical decisions based on cost** than the physical effects of their treatment options.

NCI is committed to testing and implementing novel approaches to assess the impacts of public policies on financial hardship and to reduce the risks of financial toxicity. A recent NCI-supported study showed that people undergoing treatment for cancer and their caregivers who participated in a financial navigation program **saved thousands of dollars**, easing some of the financial burden. More research and engagement efforts are needed, however, to learn from our communities, especially the growing population of young cancer survivors who are at risk of employment disruption and who are more likely to be underinsured.

Imagine having the ability to incorporate effective screening for financial hardship into patient care and connecting cancer survivors and their families to financial resources that have been proven to help based on results from large studies. No family should have to forgo lifesaving interventions or make suboptimal treatment decisions to avoid financial ruin. **Delivering optimal care** includes preventing and treating cancer in a way that is sustainable for all people, without the burden of financial toxicity.



Expanding the Utility of Cancer-Targeting Vaccines

Millions of people receive a cancer diagnosis each year, and millions more live with inherited conditions that put them at high risk of developing the disease. Interventions that can enhance a person's immune response against cancer and decrease the burden of potentially life-altering surgeries or time-consuming, invasive surveillance are crucial. These are the goals of preventive and therapeutic cancer vaccines.

Cancer vaccines rely on a simple idea: By exposing the immune system to molecules found on the surface of cancer cells, the immune system is primed to identify and eliminate cancer.

We have seen that vaccines against cancer-causing viruses like HPV have been successful at preventing some cancers, and now vaccines against cancer itself have shown promise for those with genetic conditions that increase their risk of the disease. Preventive cancer vaccines are already being tested in first-of-their-kind [clinical trials for people with an inherited condition called Lynch syndrome](#), which dramatically increases a person's risk of developing colorectal and other cancers.

NCI-supported researchers are also designing cutting-edge therapeutic vaccines for those who already have cancer, including mRNA vaccines tailored to target a person's cancer cells. In early clinical trials, researchers have shown that personalized vaccines—specifically for [pancreatic cancer](#) and [melanoma](#)—can effectively train the immune system to recognize tumor cells, reducing the risk that the cancer will return after surgery to remove it.

These advances lay the groundwork for additional progress, but more research is needed. For example, identifying molecules unique to cancer cells is critical to ensure that vaccines target cancer cells only. Finding ways to keep a cancer visible to and remembered by the immune system after vaccination is also a high priority for researchers. While mRNA vaccines have changed the speed and personalization of vaccine development, continuing to refine this technology for distribution in under-resourced communities and build upon other vaccination methods remains important.

Reaching these goals will require sustained investments. Researchers need models that accurately reflect the interactions between cancer and immune cells as well as its surrounding tissues; databases that catalog precancer and cancer cell characteristics; and support for multidisciplinary collaborations between experts in cancer biology and immune system function. But most importantly, investments to [engage every community](#) in this research are critical. Enrolling robust numbers of diverse participants in clinical trials will ensure that all people benefit from cancer vaccines.

Cancer vaccine research has shown potential for great progress in [preventing cancer](#) and [developing effective treatments](#). Cancer vaccines may allow people at high risk of cancer to have a higher quality of life and live cancer free with fewer interventions, and those living with cancer may be able to better use the cancer-fighting power of their own immune systems to help eliminate the disease.



STORIES OF CANCER RESEARCH

NCI supports cancer research to advance scientific knowledge to better understand, prevent, detect, diagnose, and treat cancer and to help cancer survivors live longer, healthier lives. The Fiscal Year 2026 Annual Plan and Professional Judgment Budget Proposal shares the stories of Justin, who participated in an NCI clinical trial after his non-Hodgkin lymphoma persisted despite four different treatments; Leeya, an early-stage investigator who received a grant through NCI's Cancer Moonshot Scholars program to study cervical cancer prevention in low-resource settings; and CYTALUX, a molecule that makes tumors glow in the operating room.

Opting for a Novel Combination Treatment for Resistant Aggressive B-Cell Lymphoma

Justin, who lives in western Pennsylvania, is passionate about the outdoors. He works for the U.S. National Park Service, maintaining hiking and biking trails around the country, including in California's Shasta-Trinity National Forest and Yosemite National Park, Colorado's Rocky Mountain National Park, and parks in northern Minnesota. He also teaches chain saw classes for the National Park Service and loves to fish and hunt in his free time.

He was working on a stone wall in the New River Gorge National Park and Preserve in West Virginia when he suddenly felt pain in his groin. Thinking he had a hernia, Justin went to his primary care doctor and had imaging followed by a biopsy. The biopsy revealed that Justin had stage 4 follicular [non-Hodgkin lymphoma \(NHL\)](#). He underwent a standard 6-month chemotherapy regimen and had no evidence of disease at the end of the treatment.

A month later, however, doctors found a 13-cm growth at the base of his spine. The operation to remove the growth was complicated, and Justin became septic and almost died. Once he recovered, he had two more chemotherapy regimens. Each seemed promising for a short while, but then the cancer returned.

He then underwent [CAR T-cell therapy](#) at his doctor's suggestion. However, a month after that treatment ended, scans showed that Justin's follicular lymphoma had transformed into an aggressive diffuse large B-cell lymphoma (DLBCL)—a change that happens in a small percentage of people living with follicular lymphoma.

Faced with the disappointment that yet another treatment had not eliminated his cancer, Justin next considered a bone marrow transplant, which came with significant risks. His local oncologist instead recommended that he enter a new clinical trial at the National Institutes of Health (NIH). "I had some hesitation because of my experience with the earlier treatments," he recalled. "But if the bone marrow transplant failed, then I might have been too sick to enroll in the trial. I was out of options."

Benefiting from the innovative ViPOR treatment

Justin chose to enroll in the [NCI clinical trial testing a treatment called ViPOR](#) at the NIH Clinical Center in Bethesda, MD, in December 2020. ViPOR is a five-drug combination targeted therapy designed to interrupt multiple pathways that DLBCL cells use to survive, such as B-cell receptor signaling. And the new treatment does this without chemotherapy.

Dr. Christopher Melani, co-investigator and Justin's trial doctor, explained that previous laboratory studies conducted by intramural researchers at NCI revealed the potential of this combination of drugs—which includes venetoclax, ibrutinib, prednisone, obinutuzumab, and lenalidomide (Revlimid)—against NHL, including DLBCL.

Justin stayed at the NIH Clinical Center for an initial 2 weeks of treatment, then returned home for a



Justin benefited from a novel 5-drug treatment called ViPOR for non-Hodgkin lymphoma.

Credit: Sage Storm

week without treatment. He repeated 2 weeks of treatment followed by 1 week off for another five cycles, finishing in April 2021.

Like many of the patients in the trial, Justin had fewer side effects on this protocol than his prior therapies—some fatigue and cramping due to low potassium levels. By the end of his first cycle of ViPOR, his tumors had shrunk by more than 90%. “The treatment was like a pain reliever,” Justin said.

One year after completing ViPOR treatment, Justin returned to his job at the National Park Service full time, and 3 years later his cancer has not returned. Dr. Melani describes him as likely cancer free. “Many of these patients whose cancers stopped responding to standard treatments would have otherwise died within a year, and now we have a good proportion who are still alive 2 years later, and some now 5 years later,” said Dr. Melani. “It’s gratifying to see these long-term remissions and potential cures in patients.”

Appreciating life without cancer

Justin has been cautious about celebrating too quickly. He waited until this past spring to have his infusion port removed. “The entire ordeal of having cancer, getting four separate treatments, and having my cancer return shortly after each treatment ended, has been stressful,” he shared. “I still get anxiety when I feel pain in my body.” He gets annual surveillance and is grateful that the screenings continue to show no cancer.

On social media, he participates in several cancer groups and encourages others with DLBCL to consider participating in the ViPOR trial. “I wouldn’t be here without NCI,” Justin effused. “The NIH Clinical Center is one of the country’s best kept secrets.”

Justin looks forward to attending his elder son’s high school graduation next year and spending more time with his younger son. He completed a bucket list item soon after he concluded the ViPOR protocol—visiting all 48 contiguous states, and he is planning additional trips. He and his wife want to travel with their sons and show them the coral reefs, as well as the redwood trees on the West Coast. Wherever Justin travels, you can bet he’ll be enjoying the outdoors.

Treating Precancer in Low-Resource Settings to Prevent Cervical Cancer

Leeya Pinder, M.D., M.P.H., of the University of Cincinnati, knows how to bridge divergent cultures—geographical, social, and professional—and thrive in them. She grew up in Queens, New York, for the first half of her childhood and then adapted to being a teenager in Charleston, South Carolina. At age 7, Leeya decided to become a doctor and let nothing stand in her way.

Encouraged by various teachers who made learning science fun, she majored in chemistry and pursued medicine at the Medical University of South Carolina. After working for 5 years as a gynecologist in a private practice, Leeya realized that she wanted to practice medicine differently, and she pivoted to global health and gynecologic oncology.

This decision led her to Kenya, where she witnessed the daily struggles of living in a place without access to adequate health care. She developed programs that integrated cervical cancer screening into HIV clinics. Reflecting on the gynecological services she provided, Leeya mused, “Being in Kenya was my first understanding of: ‘Live in the place in which you work, if you really want to affect change.’” Her time there motivated her to make a difference in medically underserved communities and solidified her focus on cervical cancer research. She saw the need for more effective, less invasive, and scalable interventions for cancer prevention and treatment in low-resource settings.

Leeya excelled in global health work and gained further insights from mentors and through several fellowships, conducting research in the United States and Zambia.

In 2023, she joined the University of Cincinnati as associate professor and director of the Center for Global Cancer Control, where she focuses on increasing cervical cancer prevention in Cincinnati and across sub-Saharan Africa. She also advocates for HPV self-testing in appropriate settings, both in the United States and abroad, and her work in Zambia informs her research in Cincinnati.

Cancer Moonshot Scholar R37 award

Bolstered by her work in Kenya and Zambia, Leeya submitted her first [R01 grant](#) application to NCI’s Cancer Moonshot Scholars program. The program is designed to diversify the cancer research workforce while advancing science. Applicants must be supported by their institution. She was thrilled to be selected for the inaugural Cancer Moonshot Scholars cohort and awarded the R01 grant in 2023. She was further elated that it was converted to an [R37 MERIT Award](#), which brings with it the possibility of an additional 2 years of funding. “This grant has changed a lot for me,” Leeya remarked. “It’s given me the freedom to be a scientist primarily, as well as the confidence that what I do actually matters.”

Reflecting on NCI’s support of early-stage investigators, particularly groups underrepresented in biomedical research, Leeya said: “This support gives us the opportunity to step into a space where we can actually make a difference and leverage our ideas. And to be in one of the first cohorts of this program—it’s an incredible opportunity.”

A recent White House Cancer Moonshot Scholars event provided such an opportunity, where people from different research disciplines met to discuss potential collaborations that could move science forward in



Leeya Pinder, M.D., M.P.H., is studying ways to prevent cervical cancer in low-resource areas.

Credit: Leeya Pinder

meaningful ways. At the event, Leeya connected with an engineer from MIT, and they discussed Leeya's work with cervical precancer and the vaginal microbiome.

"She is a device person, and I'm a science person," Leeya stated. "We're now partnering to make a difference in women's health. I think this kind of collaboration is what will be transformational in the future."

The POLESA trial

Leeya's R37 research on "Repurposed Antiretroviral Therapies to Eliminate Cervical Cancer" addresses a challenge of treating cervical precancer, particularly in low-resource settings. Her earlier work in Zambia showed that women living with HIV do not respond as well as women who do not have HIV to the three standard methods for treating cervical precancer: freezing, heating, or removing. However, in previously published research, she discovered that an older antiretroviral medicine may help.

As part of the work supported by her R37 grant, she is testing the antiretroviral medicine in combination with one of the three standard treatment options for cervical precancer in women living with or without HIV in Zambia. The clinical trial is called POLESA, which means "to heal" in the native Nyanja language.

"My goal is to try to heal the cervix so that this disease doesn't progress to cervical cancer," Leeya explained.

An important advantage of the medicine is that it is self-administered. "This is a treatment that women can do in the comfort of their own home without having an invasive procedure performed," she explained.

Enrollment in the trial was postponed by a delay in obtaining the study drug. Leeya was undeterred by the pause, and continued to study behavioral aspects, such as women's vaginal hygiene routines, which might affect the response to treatment. She uses surveys to gather behavioral information and devotes time to hear ideas and feedback from the community and local advisory boards: "Listening is essential for success in low-resource settings."

By gathering the behavioral surveys first, followed by examination of the vaginal microenvironment, Leeya is better able to tailor the treatment for each patient. And through this approach, she can learn what factors will affect the outcome in her effort to eliminate a patient's cervical precancer.

She looks forward to the day when multiple tools—such as artificial intelligence, immunotherapy, and vaccines—establish a universal, affordable solution to prevent and treat cancer. Until that happens, whether in Zambia, Cincinnati, or elsewhere, Leeya will continue to help address challenges in cervical cancer prevention in low-resource settings, one woman at a time.

Lighting the Way to Detect Tumors During Surgery

In 2010, a company called On Target Laboratories, based in West Lafayette, Indiana, was founded with the goal of helping doctors find cancers more easily during surgery. Their first product was CYTALUX (pafolacianine), a molecule that makes even the tiniest of tumors glow brightly in the operating room. Today, surgeons are finding tumors in lungs and ovaries more easily using this first-of-its kind tool. But the path to bring CYTALUX from the laboratory into the operating room took a lot of persistence from the small start-up company—a journey that was helped along with support from [NCI's Small Business Innovation Research \(SBIR\) program](#).

Seeing the need for innovation

Sumith Kularatne, Ph.D., vice president of research and development for On Target, was part of the original team that envisioned the potential of a tool like CYTALUX. Having lost his grandfather to cancer when he was a young boy in Sri Lanka, Sumith has spent much of his life blending his love of chemistry with a strong desire to help families affected by cancer. This led him to the United States, where he eventually began researching molecules that could help reveal cancer cells during surgery in real time.

“Surgeons are dealing with a challenging situation,” Sumith explained. Sometimes, a tumor is buried underneath the surface of an organ, rendering it invisible to the naked eye. At other times, a tumor may be too small or not solid enough for a surgeon to feel it with their fingers or surgical instruments. These pitfalls, he continued, inspired On Target to develop a technology that could enhance the surgeon’s sense of sight—like a pair of tumor-revealing glasses.

Advancing innovative research and technologies is the goal of NCI’s SBIR program, which funds researcher-initiated projects that align with NCI’s mission. Through the federal SBIR program, small businesses can receive funding, resources, and other support to help drive innovative technologies like CYTALUX into the marketplace to benefit patients.

Making tumors glow

CYTALUX is a modified version of folate, commonly known as vitamin B9, that is attached to a fluorescent dye. There are many more folate receptors on the surface of certain tumors than on surrounding cells in the body. This overabundance of folate receptors provides a target that researchers can use to shuttle cargo, such as the fluorescent dye in CYTALUX, to a tumor’s location.

Once CYTALUX binds to folate receptors and enters tumor cells, a special camera used during surgery causes the dye to emit a bright green signal. This approach, the team found, worked well in animal models of ovarian cancer, the cancer type with the largest concentration of folate receptors.

A logical next step was to test CYTALUX in lung cancer, which has a high proportion of folate receptors and causes more deaths in the United States than any other cancer. While surgery remains the gold standard for treating early-stage lung cancers, as many as a third to half of these cancers return, likely because some tumors or tumor cells remained behind after the initial surgery.



CYTALUX binds to a tumor in the lung and glows brightly.

Credit: On Target Laboratories

With limited funding options for the highly experimental work, the On Target team competed for and received a phase 1 SBIR grant to study CYTALUX for lung cancer in animal models. Two years later, with promising data in hand, the group received an additional phase 2 SBIR award to conduct more studies and scale up production of CYTALUX.

Others took notice of the company's success. On Target was selected to participate in [SBIR Investor Initiatives](#), an NCI-sponsored program that helps SBIR and Small Business Technology Transfer award recipients present their technology to investors and strategic partners.

Catalyzed by NCI's Investor Initiatives contacts, On Target received \$40 million in private financing. Those partnerships opened the door to more investors and eventually garnered the company enough support to launch clinical trials testing CYTALUX during surgeries to remove tumors in people with lung and ovarian cancers.

A shining return on investment

Surgeons were impressed. In those clinical trials, they saw the borders of tumors in real time, cutting out the cancer while preserving as much of the unaffected organ tissue as possible. They even removed cancers that they would have missed without CYTALUX because the tumors were not visible on scans.

In late 2021, the Food and Drug Administration (FDA) approved CYTALUX as an optical imaging agent for adults with ovarian cancer. Approval for adults with lung cancer followed a year later.

Almost 10 years after its first SBIR grant, On Target officially launched CYTALUX, making it commercially available in September 2023. It is now the first FDA-approved imaging agent to detect cancers in the lung and ovaries during surgery in real time.

"The [SBIR] grant helped us understand the full potential of what we have with CYTALUX," said Tim Biro, R.Ph., chief operating officer of On Target, who along with Sumith is one of the longest-serving members of the company. His gratitude for the chance to see the technology get developed and the company grow from three employees to more than 30 is evident. "SBIR support was really important to the company at that early stage."

If you ask Sumith about the importance of this work, he'd tell you that the return on investment is simple: "a better outcome for patients with cancer and their families."