



Annual Plan & Budget Proposal for Fiscal Year 2022

At a Glance

DIRECTOR'S MESSAGE: MAINTAINING OUR FOCUS ON THE FUTURE

Decades of sustained investment in biomedical research have led to tremendous progress against cancer. This long-term commitment has driven our understanding of the biology of cancer and uncovered new approaches to prevention, screening, diagnosis, and treatment of cancer. Many of these discoveries have directly benefited biomedical fields well beyond cancer.

These strides were made possible by continued support from Congress, the dedication of scientists, the commitment of the cancer research advocacy community, and—most importantly—the involvement of patients, survivors, and their loved ones.

We now know that cancer is not one, but thousands of different diseases. And yet, as much as we have learned, important gaps remain in our understanding of cancer.

I have personally witnessed the physical, emotional, and financial toll exacted by cancer. That toll has been compounded by the COVID-19 pandemic, in part because people with cancer may be at increased risk for complications from COVID-19. In addition, interruptions in health care services and concerns about exposure to the virus have led to delayed cancer screenings, diagnoses, and treatment. Early analyses



Norman E. Sharpless, M.D., NCI Director

suggest that these factors could result in thousands of additional cancer deaths in the years ahead.

NCI's long history and expertise in navigating uncertainty and tackling the seemingly insurmountable leave us well positioned to confront today's—and tomorrow's—challenges. While

contributing our scientific expertise to the current public health crisis, we remain focused on our top priority: cancer research. We have taken steps to ensure that the cancer research engine continues operating—not simply to maintain the status quo, but to accelerate progress for the future.

Recent events have focused the world's eyes on the continuing racial injustice in America. Inequity persists in cancer as well, as certain groups still face an increased risk of developing or dying from particular cancers. NCI has a long record of supporting research to better understand and overcome these cancer health disparities, and we are committed to continuing this crucial work.

We also must do more to increase diversity in the cancer research workforce to ensure that it reflects the diverse communities we serve. The perspectives and talents of populations underrepresented in the sciences are vitally important to the future growth of all areas of cancer research and care.

In recent years, NCI has seen a dramatic increase in new investigators entering the cancer field, as evidenced by a nearly 50% increase in grant applications submitted to NCI. Sustained budget increases across the cancer research continuum are critical to continue fueling excitement in the field and funding highly meritorious research proposals. It is NCI-funded investigator-initiated basic research that has served as the source of the most innovative and transformative work in cancer research, including work that has culminated in several Nobel Prizes in the last two decades.

As we approach the 50-year anniversary of the signing of the National Cancer Act of 1971, I'm reminded that the improvements we've seen in cancer care have been thanks to investments in basic science. Progress has been fueled by patients who have pushed for cures and scientists who have refused to give up. We cannot afford to turn away from promising research opportunities today, such as those laid out in this *Annual Plan & Budget Proposal*. With the nation's support, nothing will stop us from advancing our understanding of cancer and reducing its burden—not just for some, but for all people.

Norman E. Sharpless, M.D.

Director

National Cancer Institute

KEY MESSAGES

- To pursue the immense opportunities across the cancer research continuum, investments are needed across a multitude of funding mechanisms. Capitalizing on these future opportunities will lessen the adverse effects of the COVID-19 pandemic on patients diagnosed with cancer.
- Strong congressional support led to a nearly 20% increase in NCI's budget from fiscal year (FY) 2013 to FY 2019. During this time, a dramatic increase in new investigators entered the cancer field resulting in a 50% increase in R01 grant applications submitted to NCI. Continued infusion of funding into research project grants is necessary to capitalize on today's scientific opportunities.
- The FY 2022 budget proposal will give NCI the ability to support grant commitments and further improve the payline for R01 grants from the 10th to the 12th percentile. Doing so would allow NCI to fund a greater number of meritorious applications and make progress toward achieving the 15th percentile R01 payline by FY 2025.
- With steady and sustained budget increases supporting a cadre of talented researchers, NCI will be able to support promising research opportunities that improve our understanding of cancer and reduce the burden of the disease.

SCIENTIFIC PRIORITIES

NCI drives advances in cancer by investing in a broad portfolio of research, from basic science to survivorship. In addition to investments in long-established areas of research, NCI pursues new and emerging scientific opportunities. The following areas represent just a few of the many areas that, with further investment, will catalyze progress in cancer research.



CANCER DRUG RESISTANCE

Drug resistance remains one of the biggest challenges in cancer therapy. Cancers often have multiple mechanisms for surviving and growing, which may differ from patient to patient, and even from tumor to tumor. Catalyzing research aimed at solving the puzzle of why cancers become resistant to treatment will enable development of new strategies to overcome or prevent drug resistance in patients.



MOLECULAR DIAGNOSTICS FOR CANCER TREATMENT

Precision medicine in cancer using genomic information about a patient's tumor has revolutionized cancer diagnosis and treatment. Progress will continue as genomic and proteomic information are integrated, as doing so will provide a clearer picture of a patient's cancer and help inform cancer treatment.



OBESITY & CANCER

Nearly 40% of adults and 20% of children are obese, and those percentages are growing. Not only is obesity associated with a higher risk of 13 types of cancer, it can also adversely affect cancer treatment and survival. Research to untangle the relationship between obesity and cancer will inform the development of effective strategies that prevent obesity and promote weight loss to reduce cancer risk and improve patient outcomes.



CANCER SURVIVORSHIP

The number of cancer survivors in the United States has grown dramatically over the past several decades, with more than 22.1 million estimated by 2030. More research is essential for developing effective interventions that mitigate the many short- and long-term adverse effects of cancer and its treatment. These interventions will improve the well-being and quality of life of cancer survivors.

NCI'S COVID-19 RESPONSE

CONTINUITY FOR PATIENTS AND RESEARCHERS

Although the COVID-19 pandemic has greatly disrupted daily life, NCI's top priority is, and always will be, to advance cancer research and reduce the burden of cancer. NCI is taking steps to meet the needs of people with cancer and to keep the nation's cancer research enterprise operating with as few disruptions as possible.

PRIORITIES FOR PEOPLE WITH CANCER

- Providing clear information about cancer and COVID-19
- Limiting disruptions to ongoing cancer clinical trials
- Providing care to trial participants while minimizing their risk of exposure

PRIORITIES FOR CANCER RESEARCHERS

- Supporting grantees whose work has been disrupted by the pandemic
- Extending funding application deadlines
- Quickly funding research on COVID-19 and cancer

CONTRIBUTIONS TO COVID-19 RESEARCH

NCI has unique resources and expertise to respond to the COVID-19 pandemic, including advanced technologies at the NCI-sponsored Frederick National Laboratory for Cancer Research and decades of support for research on the immune system and cancer and cancer-associated viruses. NCI has mobilized its nationwide research infrastructure to:

- Conduct studies of patients with cancer and COVID-19
- Develop and evaluate SARS-CoV-2 antibody tests and support research on serological sciences
- Search for and test compounds to treat patients with COVID-19

“NCI has tremendous expertise and unique research capabilities that make our participation in the response to this pandemic a moral obligation.”

—NCI Director Dr. Norman E. Sharpless

PROFESSIONAL JUDGMENT BUDGET PROPOSAL FOR FISCAL YEAR 2022

(dollars in millions)

FISCAL YEAR 2020 NCI BASE APPROPRIATION	\$6,245	
TOTAL BUDGET INCREASE Proposed Allocation	\$1,170*	\$310 Inflation Adjustment† \$147 Cancer Biology Research \$237 Cancer Prevention Research \$137 Cancer Detection & Diagnosis Research \$218 Cancer Treatment Research \$76 Public Health & Cancer Control Research \$45 Training & Infrastructure
FY 2022 BUDGET RECOMMENDATION	\$7,415	
FY 2022 CANCER MOONSHOTSM FUNDING	\$194	
FY 2022 TOTAL	\$7,609	

This budget proposal for fiscal year (FY) 2022 includes investments in critical research to advance progress in understanding and treating cancer as well as support for the infrastructure and training that enables cutting-edge research to succeed.

The budget proposal also includes \$50 million for the Childhood Cancer Data Initiative as well as Cancer MoonshotSM funding, which was authorized in the 21st Century Cures Act. Cancer Moonshot funding ends in FY 2023.

Investments in investigator-initiated research supported through research project grants (RPGs), including R01 grants, are the source of some of the most innovative ideas in cancer research.

The FY 2020 budget increase allowed NCI to further invest in RPGs by restoring noncompeting grants to 100% of their committed levels and increasing R01 paylines by 25% compared with the FY 2019 level. The FY 2022 budget proposal will allow NCI to sustain recent growth in RPGs and to further improve the payline for R01 grants from the 10th to the 12th percentile—and will get the institute closer to achieving the 15th percentile payline by FY 2025.

Additional key investments include training the next generation of cancer researchers and supporting the NCI-Designated Cancer Centers and practice-changing clinical trials programs, which enroll patients in clinical trials at more than 2,500 academic and community sites across the country.

* The increase of \$1,170 million includes an inflation adjustment and \$860 million for additional cancer research in six major focus areas.

† This adjustment includes inflation for the 2 years between FY 2020 and FY 2022.

NCI Research Project Grants (RPG) Funding and R01 Paylines



* RPG funding levels exclude small business grant set-asides.

† At the time of publication, FY 2021 appropriations had not been finalized.

‡ The left scale displaying RPG funding does not represent the actual future RPG funding needed to achieve the future payline percentiles on the right scale.