



Trans-NCI Cancer and Aging Coordinating Committee Executive Summary 2019–2021

There is a bidirectional relationship between cancer and aging.

Aging is a risk factor for adult cancers, and emerging evidence suggests that cancers and some cancer treatments might accelerate aging. However, the mechanisms by which aging-associated processes contribute to cancer and treatment efficacy are largely unknown.

The National Cancer Institute (NCI) seeks to develop new ways to prevent, detect, diagnose, and treat cancer by understanding aging. NCI's investments in cancer and aging research foster discoveries and collaborations to accelerate the development of targeted prevention, control, and treatment approaches to ensure all patients, regardless of age, have equitable access to—and benefit from—safe and effective treatments and other cancer research advances.

The **Trans-NCI Cancer and Aging Coordinating Committee (CACC)** integrates and coordinates cancer and aging research activities by enhancing collaboration among extramural staff at NCI and the National Institute on Aging (NIA).

CACC welcomes input and collaboration across all National Institutes of Health (NIH) institutes, centers, and offices.

CACC **coordinates analysis and review** of the NCI-funded research portfolio related to cancer and aging, **identifies gaps** and opportunities to address those gaps through extramural activities, and **develops communication initiatives** and **hosts events** to inform the research community of relevant priorities and resources.

“ It's clear that the challenges in understanding the relationship between aging and cancer are daunting. But significant progress has been and continues to be made.

NCI Director Dr. Norman E. Sharpless, [Cancer Currents Blog](#),
January 24, 2018

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**Trans-NCI Cancer
and Aging Coordinating
Committee Mission:**

Foster communication among
NCI and NIA program staff with an
interest in—and stewardship of—
cancer and aging research.



Advancing the Cancer and Aging Research Agenda

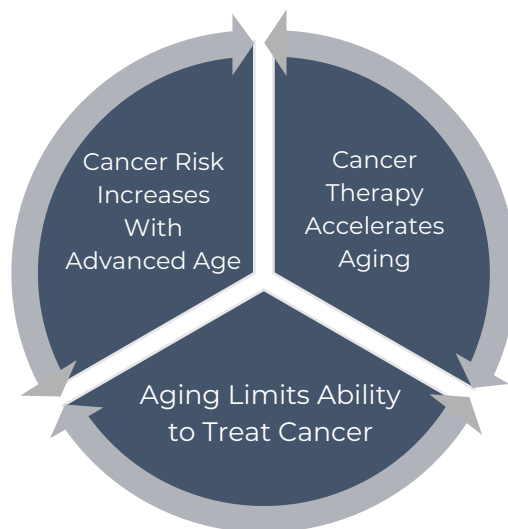
CACC provided input on new funding concepts, workshops, presentations, and extramural resources, including the following:

- Samuel Waxman Partnership for Aging and Cancer Research Program
- Aging Mouse Models Network
- Cancer MoonshotSM workshop on engaging older adults in NCI clinical trials
- Cancer and Aging Interest Group Age-Dependent Changes in Cancer Biology meeting
- NIA workshop on senescence in brain aging
- Cancer, Aging, and COVID-19 think tank, including extramural perspectives and presentations from Drs. Norman Sharpless (NCI), Dinah Singer (NCI), Richard Hodes (NIA), and Luigi Ferrucci (NIA)
- Supplemental funding to NCI-Designated Cancer Centers for new interdisciplinary research on cancer and aging ([see background and funding abstracts online](#))
 - ***Eight NCI-Designated Cancer Centers were awarded administrative supplements in September 2020, for a total investment of \$1,198,299***
- Notice of Special Interest: Administrative Supplements for Understanding Aging Trajectories Among Cancer Survivors ([see notice online: NOT-CA-20-037](#))
 - ***Posted in March 2020, NOT-CA-20-037 issued five awards, for a total investment of \$754,335***
- Notice of Special Interest: Understanding the Effects of Cancer and Cancer Treatment on Aging Trajectories and Aging Outcomes ([see notice online: NOT-CA-21-031](#))
 - ***Posted in January 2021, NOT-CA-21-031 invites investigator-initiated applications that aim to better understand the effects of a cancer diagnosis and subsequent treatment on aging trajectories and outcomes, through January 8, 2024.***

Perspectives on Cancer and Aging: The Arti Hurria Memorial Webinar Series was established in 2019 to honor the legacy of the late Dr. Arti Hurria, a clinical science pioneer in geriatrics and oncology. NCI and NIA supported Dr. Hurria's research programs, and she was the founding scientific chair of NCI's think tanks *Cancer and Accelerated Aging: Advancing Research for Healthier Survivors*. The quarterly webinar serves as a platform to engage and build a community of researchers dedicated to cancer and aging research, and it has attracted more than 1,600 participants over the eight webinars presented to date.



"It is becoming increasingly clear that time itself is a potent mutagen."
Dr. Sharpless,
2020 CAIG
virtual conference



"Many cancer drugs contribute to aging directly."
Dr. Sharpless,
2020 CAIG
virtual conference

"Therapies that are beneficial in young adults can be difficult to use in older adults because of the age-associated reduced resilience of the host."
Dr. Sharpless, 2020 CAIG virtual conference

Quotes and figure (adapted) from National Institute of Environmental Health Sciences (NIEHS) coverage of the October 2020 Cancer and Aging Interest Group (CAIG) virtual conference, Age-Dependent Changes in Cancer Biology, jointly organized by NIEHS, NCI, and NIA, with opening and keynote presentations from NCI Director Dr. Sharpless, NIA Director Dr. Hodes, and NIA Scientific Director Dr. Ferrucci. Shown for relevance to CACC mission; not commissioned by CACC (credit: Dr. Arif Rahman).

Cancer and Aging Research Priorities Across NCI

NCI supports a range of research, from understanding aging biology as a driver of cancer biology to eliminating population-level cancer disparities due to chronological, functional, or biological age.

The ***NCI Annual Plan & Budget Proposal for Fiscal Year 2020*** states that the "greatest risk factor for cancer is advancing age."

It calls for "support for research on the basic mechanisms of aging and cancer [to] enhance our understanding of both subjects and enable the development of new strategies for cancer prevention and treatment, as well as the optimal delivery of cancer interventions based on a person's age."



Division of Cancer Biology (DCB)

DCB is particularly interested in aging-associated molecular transformations of stem cells and changes in metabolism as contributors of cancer susceptibility, progression, and metastasis.

Priorities include:

- Molecular mechanisms of aging-associated transformations of stem cells
- Aging-associated changes in metabolism and contributions to cancer susceptibility, progression, and metastasis
- Development and use of aging-relevant model systems to understand basic mechanisms of cancer biology and mechanisms by which cellular senescence contributes to cancer biology
- Sex differences and the role of gender in cancer and aging
- Mechanisms of oxidative stress in cancer and aging
- Human tumor evolution and therapy resistance as part of the Human Tumor Atlas Network
- How the nervous system contributes to increased cancer incidence with aging by which anti-tumor immunity diminishes with age

Division of Cancer Control and Population Sciences (DCCPS)

DCCPS is committed to advancing research on aging as a dynamic interplay of biological, physiological, environmental, psychological, behavioral, and social processes to inform efforts in cancer prevention and control.

Priorities include:

- Methodology and measurement of aging trajectories in survivorship and surveillance of biological, behavioral, and psychosocial risk factors for multimorbidity
- Interventions to prevent, lessen, or rehabilitate aging-related consequences of cancer treatment
- Population-based data and existing resources to address survivorship and aging hypotheses
- Patient-reported outcomes to stratify risk, support decision-making, and optimize cancer and aging outcomes in survivors

DCCPS led the inaugural trans-NIH think tanks in 2018 and 2019, *Cancer and Accelerated Aging: Advancing Research for Healthier Survivors*. That content largely delineated the division's state of knowledge in cancer- and treatment-associated aging and in measurement of aging phenotypes in survivors ([see more background online about pre-CACC efforts on cancer and aging at DCCPS](#)).



- Inclusion of older adults in interventional and observational studies of survivorship
- Age-related changes in body composition, energy balance, and health behaviors on cancer risk and outcomes

Division of Cancer Prevention (DCP)

DCP leads, supports, and promotes rigorous, innovative research and training to prevent cancer and its consequences to improve the health of the aging population.

Priorities include:

- Intervention studies, such as chemoprevention, vaccines, and surgery and behavior modifications, that include the aged population
- Development of biomarkers for early detection and new screening technologies that include the aged population
- Development of immune-based approaches for the prevention of cancer that are suitable for the aged population
- Development of the Precancer Atlas portion of the Human Tumor Atlases that includes samples for the aged population
- Clinical trials conducted in the NCI Community Oncology Research Program (NCORP) focused on treatment tolerability and toxicities in older adults, and enrollment of older adults to NCORP-sponsored clinical trials
- Implementation of the geriatric assessment and other determinants of fitness to improve clinical trial enrollment of older adult populations

Division of Cancer Treatment and Diagnosis (DCTD)

DCTD supports a portfolio of research that focuses on drug discovery, safety, and efficacy to improve survival and healthspan for cancer patients.

Priorities include:

- Effective and safe anti-cancer targets and drugs/drug combinations specific for older adults
- Discovery and development of novel drugs or drug combinations that have reduced treatment-related aging to help improve long-term pediatric cancer survivorship
- Prediction of treatment toxicity and consideration of patient heterogeneity for treatment optimization for older adults, particularly those with comorbidities
- Immunotherapy-based combinations for younger and older cancer patients



Office of Cancer Clinical and Proteomics Research (OCCPR)

OCCPR strives to improve prevention, early detection, diagnosis, and treatment of cancer by enhancing the understanding of the molecular mechanisms of cancer, advance proteome and proteogenome science and technology development through community resources, and accelerate the translation of molecular findings into the clinic.

Priorities include the following:

- Related to aging across the lifespan, the office supports developing a deeper understanding of the functional biology of pediatric brain tumors through large-scale multi-omic characterizations

Center to Reduce Cancer Health Disparities (CRCHD)

CRCHD leads the NCI efforts to help reduce the unequal burden of cancer in our society. Cancer disparities by race/ethnicity also affect other population groups, including those defined by age, disability, sexual gender minority, geographic location, income, and education. CRCHD is committed to advanced understanding of the multifactorial causes of cancer disparities, including biological and non-biological bases of cancer incidence and progression in aging, and by facilitating new and ongoing linkages between research, training, and outreach in cancer and aging.

Priorities include:

- Strengthening NCI's cancer research portfolio in basic, clinical, translational, and population-based research to address cancer health disparities and aging through collaborations with NCI divisions, offices, and centers
- Emphasizing aging-related research projects on cancer disparities in existing funding mechanisms (e.g., U54 Comprehensive Partnerships to Advance Cancer Health Equity)
- Providing technical expertise, information, and advice on strategic priorities, program direction, and scientific policy to strengthen diversity training and cancer disparities in aging research
- Leading NCI's efforts in workforce diversity by training students and investigators from diverse backgrounds to address cancer and aging-related research
- Building regional networks to foster collaboration, enhance disparities research, and disseminate culturally appropriate, evidence-based information to underserved communities about cancer and aging



Future Directions

To advance the committee's mission, CACC members commit to:

- 1. Optimizing function** by broadening facilitation among members to increase the number and diversity of representatives with rotating leadership responsibilities. One option under consideration is a model with two co-chairs, a core planning group, and subcommittees to develop specific extramural activities.
- 2. Expanding NCI's visibility** by creating and nurturing productive partnerships within and across NCI, NIA, and other NIH institutes, centers, and offices.
- 3. Advancing programmatic and extramural capacity-building** by inviting NIH colleagues to present relevant portfolios, funding opportunities, published research, and providing extramural grantsmanship resources (see sidebar and box below).

TRANS-NCI EXTRAMURAL AWARENESS GROUP FORUM

CACC will host two upcoming Trans-NCI Extramural Awareness Group (TEAG) forums. Part 1 will provide an overview of CACC and joint NCI/NIA efforts to support research at the intersection of aging biology and cancer biology, with the second forum focusing on clinical translation and population-based science to address cancer diagnosis, treatment, and survivorship in the context of aging.

PART 1: Coordination of Cancer and Aging Research Support Across NCI (CACC), September 20, 2021

PART 2: Clinical Science on Cancer and Aging, October 12, 2021

EXTRAMURAL CAPACITY BUILDING FOR CANCER AND AGING RESEARCH

CACC provides resources in, and stewardship of, cancer and aging research to inspire and educate potential grantees, including the dissemination of [cancer and aging sample grants](#) and hosting invited experts Supriya Mohile, Michael Irwin, and Kerri Winters-Stone as part of the seminar *[Hindsight Is 2020: Lessons Learned From Cancer and Aging Researchers on Submitting a NIH Grant](#)*.

TIMELINE

2018



FEBRUARY

Funding Opportunity Published

Research Infrastructure Development for Interdisciplinary Aging Studies ([PAR-18-645](#))

Led by:

- [Dr. Winifred Rossi](#) (NIA)
- [Dr. Erica Breslau](#) (NCI)

MAY

Funding Opportunity Published

Partnership for Aging and Cancer Research ([PAR-18-552](#))

Led by:

- [Dr. Chamelli Jhappan](#) (NCI)
- [Dr. Felipe Sierra](#) (NIA)

OCTOBER

Publication

Galicchio L, Gadalla SM, Murphy JD, Simonds NI. [The effect of cancer treatments on telomere length: A systematic review of the literature.](#) *J Natl Cancer Inst.* 2018;110(10):1048–1058. doi:10.1093/jnci/djy189

APRIL

Notice of Special Interest Published

Alzheimer's Disease and Its Related Dementias (AD/ADR)- Focused Administrative Supplements for NIH Grants that Are Not Focused on Alzheimer's Disease ([NOT-AG-18-008](#))

Multiple reissuances:

- [November 2018](#)
- [December 2019](#)
- [June 2021](#)

Led by:

- [Dr. Paige Green](#) (NCI)

JULY

Think Tank

[Measuring Aging and Identifying Aging Phenotypes in Cancer Survivors](#)

Chaired by:

- The late [Dr. Arti Hurria](#), a leader in geriatric oncology

2019

OCTOBER

Webinar

[Building Infrastructure for Cancer and Aging Research](#)

Speakers:

- [Dr. William Dale](#) (City of Hope)
- [Dr. Supriya Mohile](#) (University of Rochester)

FEBRUARY

Think Tank

[Strategies to Prevent or Remediate Cancer- and Treatment-Associated Aging](#)

Chaired by:

- [Dr. Kirsten Ness](#) (St. Jude Children's Research Hospital)

DECEMBER

Publication

Guida J, Ahles TA, Belsky D, et al. [Measuring aging and identifying aging phenotypes in cancer survivors.](#) *J Natl Cancer Inst.* 2019;111(12):1245–1254.



JANUARY

Webinar

[Canaries in the Coal Mine: What We Can Learn about Aging from Survivors of Childhood Cancer](#)

Speakers:

- [Dr. Kirsten Ness](#) (St. Jude Children's Research Hospital)
- [Dr. Maria Monica Gramatges](#) (Baylor College of Medicine)

APRIL

Webinar

[Cancer and Aging: Biological and Phenotypic Measures of Aging](#)

Speakers:

- [Dr. Luigi Ferrucci](#) (NIA)
- [Dr. Morgan Levine](#) (Yale School of Medicine)

SEPTEMBER

Funding Opportunity Published

[Supplemental funding to NCI-designated Cancer Centers in new interdisciplinary research on cancer and aging](#)

Led by:

- [Dr. Paige Green](#) (NCI)
- [Dr. Jennifer Guida](#) (NCI)

Webinar

[Geriatric Assessment in Oncology: Yesterday, Today & Tomorrow](#)

Speakers:

- [Dr. Hyman Muss](#) (University of North Carolina)
- [Dr. Grant Williams](#) (University of Alabama at Birmingham)

Funding Opportunity Published

[Aging, Cancer-Initiating Cells, and Cancer Development \(U01 Clinical Trial Not Allowed\)](#)

Led by:

- [Dr. Margaret Klauzinska](#) (NCI)
- [Dr. Candace Kerr](#) (NIA)

MARCH

Notice of Special Interest Published

Administrative Supplements for Understanding Aging Trajectories among Cancer Survivors ([NOT-CA-20-037](#))

Led by:

- [Dr. Lisa Gallicchio](#) (NCI)
- [Dr. Paige Green](#) (NCI)

Publication

Guida JL, Green PA, Gallicchio L. [Envisioning Arti's 'Cadillac Study' to assess aging trajectories in cancer survivors](#). *J Geriatr Oncol*. 2020;11(2):175-178. Published online July 8, 2019. doi:10.1016/j.jgo.2019.06.009.

JULY

Think Tank

Cancer, Aging and COVID-19

Speakers:

- [Dr. Luigi Ferrucci](#) (NIA)
- [Dr. Richard Hodes](#) (NIA)
- [Dr. Norman Sharpless](#) (NCI)
- [Dr. Dinah Singer](#) (NCI)

OCTOBER

Conference

[Age-Dependent Changes in Cancer Biology](#)

Speakers:

- [Dr. Luigi Ferrucci](#) (NIA)
- [Dr. Richard Hodes](#) (NIA)
- [Dr. Norman Sharpless](#) (NCI)

Webinar

[Hindsight Is 2020: Lessons Learned from Cancer and Aging Researchers on Submitting an NIH Grant](#)

Speakers:

- [Dr. Michael Irwin](#) (UCLA Geffen School of Medicine)
- [Dr. Supriya Mohile](#) (University of Rochester)
- [Dr. Kerri Winters-Stone](#) (OHSU Knight Cancer Institute, School of Medicine)

2020



NOVEMBER

Webinar

[mTOR Signaling Pathway, mTOR Inhibitors and Aging: Considerations for Clinical Trials](#)

Facilitator:

- [Dr. Irina Sazonova](#) (NIA)

Webinar

[Harnessing the Power of the WHI Life and Longevity after Cancer \(WHI-LILAC\) study to better understand cancer and aging](#)

Speakers:

- [Dr. Garnet Anderson](#) (Fred Hutchinson Cancer Research Center)
- [Dr. Elizabeth Cespedes Feliciano](#) (Kaiser Permanente Northern California)

Accelerated Aging Following Cancer Treatment

27th Annual Maryland State Council on Cancer Control Conference

Keynote:

- [Dr. Jennifer Guida](#) (NCI)

FEBRUARY

Publication

Guida JL, Agurs-Collins T, Ahles TA, et al. [Strategies to prevent or remediate cancer and treatment-related Aging](#). *J Natl Cancer Inst*. 2021;113(2):112-122. Published online April 29, 2020. doi:10.1093/jnci/djaa060

APRIL

Workshop

[Cancer MoonshotSM Workshop: Engaging Older Adults in the NCI Clinical Trials Network: Challenges and Opportunities](#)

Speaker:

- [Dr. Heidi Klepin](#) (Wake Forest School of Medicine)

2021

JANUARY

Notice of Special Interest Published

Understanding the Effects of Cancer and Cancer Treatment on Aging Trajectories and Aging Outcomes ([NOT-CA-21-031](#))

Led by:

- [Dr. Basil Eldadah](#) (NIA)
- [Dr. Lisa Gallicchio](#) (NCI)

Webinar

[Cancer and Aging: Microenvironmental Impact on Oncogenesis and Immunity](#)

Speakers:

- [Dr. James DeGregori](#) (University of Colorado)
- [Dr. Curtis Henry](#) (Emory University)

MARCH

Webinar

[Targeting Aging to Transform Human Health](#)

Speakers:

- [Dr. Nathan LeBrasseur](#) (Mayo Clinic)
- [Dr. Jessica Scott](#) (Memorial Sloan Kettering Cancer Center)

2021



MAY

Webinar

[Measuring Patients' Pace of Biological Aging Through Life-Course Research](#)

Speakers:

- [Dr. Daniel Belsky](#) (Columbia University)
- [Dr. Terrie Moffitt](#) (King's College London)

AUGUST

Publication

Siddique A, Simonsick E, Gallicchio L. [Functional decline among older cancer survivors in the Baltimore longitudinal study of aging](#). *J Am Geriatr Soc*. Published online August 3, 2021. doi:10.1111/jgs.17369

OCTOBER

Forum

Trans-NCI Extramural Awareness Group (TEAG) Forum (Part 2): Clinical Science on Cancer and Aging

Moderators:

- [Dr. Weiwei Chen](#) (NCI)
- Dr. Philipp Oberdoerffer (NCI)
- [Dr. Anil Wali](#) (NCI)

Grantee Meeting

NCI P30 Cancer Center Support Grants for new interdisciplinary research on cancer and aging

Moderators:

- [Dr. Lisa Gallicchio](#) (NCI)
- [Dr. Paige Green](#) (NCI)
- [Dr. Jennifer Guida](#) (NC)

JUNE

Grantee Meeting

NCI P30 Cancer Center Support Grants for new interdisciplinary research on cancer and aging

Moderators:

- [Dr. Lisa Gallicchio](#) (NCI)
- [Dr. Paige Green](#) (NCI)
- [Dr. Jennifer Guida](#) (NCI)

SEPTEMBER

Webinar

[Cellular Senescence and Cancer Therapy: Mechanisms and Strategies to Improve Health During Survivorship](#)

Speakers:

- [Dr. Marco Demaria](#) (University Medical Center Groningen)
- [Dr. Judith Campisi](#) (USC Leonard David School of Gerontology)

Forum

Trans-NCI Extramural Awareness Group (TEAG) Forum (Part 1): Coordination of Cancer and Aging Research Support Across NCI (CACC)

Moderators:

- [Dr. Weiwei Chen](#) (NCI)
- Dr. Philipp Oberdoerffer (NCI)
- [Dr. Anil Wali](#) (NCI)

DECEMBER

Webinar

[Perspectives on Cancer & Aging](#)

Speakers:

- [Dr. Martina Mancini](#) (Oregon Health & Science University)
- [Dr. Jeanine Genkinger](#) (Columbia University)