

NCI Cancer Moonshot

Christine Siemon

National Cancer Institute, NIH

Overall Goals of the Cancer Moonshot

Presidential Memo 2016

- ***Accelerate progress in cancer, including prevention & screening***
From cutting edge research to wider uptake of standard of care
- ***Encourage greater cooperation and collaboration***
Break down silos within and between academia, government, and private sector
- ***Enhance data sharing***
NCI Cancer Research Data Commons
Annotated patient-level clinical data and 'omics

The Process (2016)



Vice President's
Office



Cancer Moonshot
Federal Task Force



NCI/NIH



NCAB



Blue Ribbon Panel



Working Groups



Blue Ribbon Panel Goals

- Identify major scientific opportunities that are poised to be accelerated by additional emphasis and funding
- Identify major scientific and regulatory hurdles that can be overcome with additional emphasis and funding
- Develop recommendations of opportunities that would be pursued through the Cancer Moonshot
- Final recommendations at www.cancer.gov/brp



Blue Ribbon Panel Recommendations

- A.** Network for direct patient engagement
- B.** Cancer immunotherapy translational science network
- C.** Therapeutic target identification to overcome drug resistance
- D.** Creation of a national cancer data ecosystem
- E.** Fusion oncoproteins in pediatric cancer
- F.** Symptom management research
- G.** Precision prevention and early detection
- H.** Retrospective analysis of biospecimens from patients treated with standard of care
- I.** Creation of human tumor atlas
- J.** Development of new enabling technologies

Summary of the BRP Recommendations

A. Network for direct patient engagement

- Enlist patients in federated network that includes patient tumor profiling data and “pre-registers” patients for clinical trials.

B. Cancer immunotherapy translational science network

- Organize networks to discover and evaluate novel immune-based approaches for pediatric and adult cancers, and eventually develop vaccines.

C. Therapeutic target identification to overcome drug resistance

- Launch interdisciplinary studies to delineate mechanisms that lead cancer cells to become resistant to previously effective treatments.

D. Creation of a national cancer data ecosystem

- Create an ecosystem to collect, share, and interconnect datasets.

Summary of the BRP Recommendations

E. Fusion oncoproteins in pediatric cancer

- Improve understanding of the abnormal fusion proteins that result from chromosomal translocations and drive many pediatric cancers

F. Symptom management research

- Support research to accelerate development of guidelines for management of patient-reported symptoms to improve quality of life and adherence to treatment regimens

G. Precision prevention and early detection

- Implementation of evidence-based approaches. Conduct implementation science research to encourage broader adoption of HPV vaccination, colorectal cancer screening, and tobacco cessation

Summary of the BRP Recommendations

H. Retrospective analysis of biospecimens from patients treated with standard of care

- Analyze biopsies to learn which features predict outcome to better plan treatment for future patients

I. Creation of human tumor atlas

- Catalog the evolution of genetic lesions and cellular interactions in tumor/immune/other cells in tumor microenvironment from the earliest detected lesions to metastasis

J. Development of new enabling technologies

- Support development of technologies to accelerate testing of therapies and tumor characterization

Cancer Funding in 21st Century Cures Act

- **Signed into law in December 2016**
 - Authorized funds for FY 2017
 - Funds need to be appropriated each Fiscal Year
- **Allows for funding of the BRP Recommendations**
 - The cancer research portion is named the Beau Biden Cancer Moonshot Initiative
- **Specifies requirements for:**
 - Data Sharing (Cancer Moonshot Public Access and Data Sharing Policy)
 - Advancing health disparities research

CANCER MOONSHOT

IMPLEMENTATION

Cancer Moonshot Implementation

- **NCI established implementation teams aligned with the BRP recommendations**
- **The implementation teams include NCI extramural program staff, NCI intramural staff, and staff from other NIH institutes and centers that may have areas of common interest or collaboration**
- **The teams have considered multiple ways to fund Cancer Moonshot-related research, including grants, supplements, and other mechanisms, and, where appropriate, to form partnerships with foundations, academia, and the private sector**

Cancer Moonshot Implementation Teams

- A. Network for Direct Patient Engagement
- B. Cancer Immunotherapy Translational Science Network
 - Bi. Pediatric Implementation Team
 - Bii. Adult Implementation Team
- C. Therapeutic Target Identification to Overcome Drug Resistance
- D. A National Cancer Data Ecosystem for Sharing and Analysis
- E. Fusion Oncoproteins in Childhood Cancers
- F. Symptom Management Research
- G. Prevention and Early Detection: Implementation and Evidenced-Based Approaches
 - Gi. High Risk Cancers Implementation Team
 - Gii. Cancer Prevention and Screening Implementation Team
- H. Development of New Enabling Cancer Technologies
- I. Retrospective Analysis of Biospecimens from Patients Treated with Standard of Care
- J. Generation of Human Tumor Atlases

Charge to Cancer Moonshot Implementation Teams

- Discuss approaches and develop initiatives for *FY18* and *FY19* that will achieve the goals of the Recommendation
 - Identify opportunities in current landscape of existing initiatives that can be leveraged
 - Seek input from others, including the cancer research community, advocates, and associations
 - Work with the Partnership Committee to consider creating and/or leveraging partnerships (academia, industry, pharma, ...)
- Provide oversight and coordination of the Team's funded initiatives (e.g. managing awards, organizing meetings, providing supplements)

FUNDING OPPORTUNITIES

BLUE RIBBON PANEL RECOMMENDATIONS

CANCER MOONSHOT

cancer.gov/brp

Cancer Moonshot Funding Opportunities

Pediatric Immunotherapy Discovery and Development Network (PI-DDN) 2 RFAs

- **Establish a network of collaborating investigators to identify and advance research opportunities for translating immunotherapy concepts for children and adolescents with cancer**
 - Discovery and characterization of pediatric cancer immunotherapeutic targets
 - Development of new immunotherapy treatment approaches
 - Improved understanding of the immunosuppressive tumor microenvironment
 - To advance new, more effective immune-based therapeutic regimens for patients with high-risk pediatric cancers.

Cancer Moonshot Funding Opportunities

Immuno-Oncology Translation Network (IOTN) 4 RFAs

- **Establish a Network for accelerating research advances through collaborative team science approaches to improve immunotherapy outcomes for diverse cancers that are either resistant or develop resistance to immunotherapies**
 - This strategy is expected to discover new immune targets and evaluate novel immune-based therapies and combination approaches that eliminate established cancers in adults or to prevent cancers before they occur

Cancer Moonshot Funding Opportunities

Fusion Oncoproteins in Childhood Cancers (FusOnC2) Consortium

- **Establish a consortium of collaborating research teams to advance our understanding of the biology and mechanisms of action of fusion oncoproteins in pediatric cancers**
 - Help overcome existing barriers to progress and pave the way to novel therapeutic approaches with increased efficacy and fewer side effects than current options
 - The (FusOnC2) Consortium will take a comprehensive approach to understanding the biology of fusion oncoproteins in childhood cancers and will use this information to inform strategies for therapeutic targeting

Cancer Moonshot Funding Opportunities

Analyzing and Interpreting Clinician and Patient Adverse Event Data to Better Understand Tolerability

- **Stimulate the development of methods for better understanding tolerability by analyzing the clinical trials adverse event data through the use of the Common Terminology Criteria for Adverse Events (CTCAE) and the Patient-Reported Outcomes version of the CTCAE (PRO-CTCAE™), as well as other clinically relevant data**
 - Create a consortium of the funded research teams comprised of principal investigators, biostatisticians, data scientists, investigators with patient-reported outcome (PRO) measurement expertise, and cancer clinical trialists to share analytic approaches to determine tolerability and develop a menu of methods for public use

Cancer Moonshot Funding Opportunities

Improving Management of Symptoms During and Following Cancer Treatment 2 RFAs

- Promote research on the implementation and evaluation of integrated symptom monitoring and management systems for use in cancer care delivery through a Research Consortium
- Provide new insights and valuable evidence that can be used to guide efforts on a nation-wide basis to improve symptom control for cancer patients during treatment and survivorship

Cancer Moonshot Funding Opportunities

Approaches to Identify and Care for Individuals with Inherited Cancer Syndromes

- Identify best practices to improve case ascertainment of hereditary cancers, with the goal of improving prevention and detection

Cancer Moonshot Funding Opportunities

Accelerating Colorectal Cancer Screening and follow-up through Implementation Science (ACCSIS) 2 RFAs

- Provide an evidence base for multilevel interventions that increase rates of CRC screening, follow-up, and referral-to-care, and best practices for how multilevel interventions can be scaled-up to reduce the burden of colorectal cancer on the United States (U.S.) population

Cancer Moonshot Funding Opportunities

Mechanisms of Cancer Drug Resistance and Sensitivity: Coordinating Center

- Create a Coordinating Center that will integrate and facilitate trans-disciplinary research across the Drug Resistance and Sensitivity Centers (DRSCs) established under [RFA-CA-17-009](#)
 - Provide a platform that enhances collaboration along the basic-preclinical-clinical spectrum of the network and facilitates sharing of unique resources/tools, and outreach to NCI programs and extramural research communities

Cancer Moonshot Funding Opportunities

Human Tumor Atlas Network (HTAN) 3 RFAs

- **A multidimensional molecular, cellular, and morphological mapping of human cancers, complemented with critical spatial information (at the molecular, cellular, and/or tissue level) that facilitate visualization of the structure, composition, and multiscale interactions within the tumor ecosystem**
 - Pre-Cancer Atlas (PCA)—construct atlases describing how and when premalignant lesions progress to invasive cancer or regress or obtain a state of equilibrium
 - Human Tumor Atlas (HTA)—construct atlases describing the transition from locally invasive to metastatic cancer, dynamic response to therapy, and development of therapeutic resistance
 - HTAN Data Coordinating Center

Cancer Moonshot Funding Opportunities

Implementation Team	RFA Number	RFA Title	RFA Receipt Date
Pediatric Immunotherapy Network	RFA-CA-17-050	Pediatric Immunotherapy Discovery and Development Network (PI-DDN)(U54)	12/19/17
	RFA-CA-17-051	Pediatric Immunotherapy Discovery and Development Network (PI-DDN)(U01)	12/19/17
Adult Immunotherapy Network	RFA-CA-17-045	Immuno-Oncology Translation Network (IOTN): Cancer	1/16/18
	RFA-CA-17-046	Immuno-Oncology Translation Network (IOTN): Cancer Immunoprevention Research Projects (U01)	1/16/18
	RFA-CA-17-047	Immuno-Oncology Translation Network (IOTN): Data Management and Resource-Sharing Center (DMRC) (U24)	1/16/18
	RFA-CA-17-048	Immuno-Oncology Translation Network (IOTN): Cellular Immunotherapy Data Resource (CIDR) (U24)	1/16/18
Target ID to Overcome Drug Resistance	RFA-CA-17-044	Mechanisms of Cancer Drug Resistance and Sensitivity: Coordinating Center (U24)	1/5/18
Fusion Oncoproteins	RFA-CA-17-049	Fusion Oncoproteins in Childhood Cancers (FusOnC2) Consortium (U54)	11/15/17
Symptom Management	RFA-CA-17-052	Analyzing and Interpreting Clinician and Patient Adverse Event Data to Better Understand Tolerability (U01)	1/18/18
	RFA-CA-17-042	Research Centers for Improving Management of Symptoms During and Following Cancer Treatment (UM1)	1/17/18
	RFA-CA-17-043	Coordinating Center for Research Centers for Improving Management of Symptoms During and Following Cancer Treatment (U24)	1/17/18
High Risk Cancers	RFA-CA-17-041	Approaches to Identify and Care for Individuals with Inherited Cancer Syndromes (U01)	1/9/18
Prevention and Screening	RFA-CA-17-038	Accelerating Colorectal Cancer Screening and follow-up through Implementation Science (ACCSIS)(UG3/UH3)	1/18/18
	RFA-CA-17-039	Accelerating Colorectal Cancer Screening and follow-up through Implementation Science (ACCSIS): Coordinating Center (U24)	1/18/18
Retrospective Analysis of Biospecimens	RFA-CA-17-044	Mechanisms of Cancer Drug Resistance and Sensitivity: Coordinating Center (U24)	1/5/18
Generation of Human Tumor Atlases	RFA-CA-17-034	Human Tumor Atlas Research Centers (U2C)	1/18/18
	RFA-CA-17-035	Pre-Cancer Atlas (PCA) Research Centers (U2C)	1/18/18
	RFA-CA-17-036	Human Tumor Atlas Network: Data Coordinating Center (U24)	1/18/18

Partnership Opportunities

BLUE RIBBON PANEL RECOMMENDATIONS

CANCER MOONSHOT

cancer.gov/brp

Cancer Moonshot Partnership Committee

The Partnership Committee is responsible for identifying potential partners, contacting organizations (public, private, etc.) to gauge interest in partnering, establishing agreements, etc.

Types of Partnerships

MOU

CRADA

Intra-agency agreements

Inter-agency agreements

Potential Partners

Advocacy groups

Cancer research and other professional societies

Other HHS agencies

Other government agencies

Philanthropic organizations

Pharmaceutical and biotech industry

If you are interested in partnering with the
NCI, please email:

Partnerships_CancerMoonshot@nih.gov
and provide:

- Your name
- Your contact information
- Describe the project/initiative you are interested in partnering in

Questions?

For more information:

<https://www.cancer.gov/research/key-initiatives/moonshot-cancer-initiative>



**NATIONAL
CANCER
INSTITUTE**

www.cancer.gov

www.cancer.gov/espanol