

SMALL BUSINESS INNOVATION RESEARCH

Proposed FY2020 Contract Topics

NCI Board of Scientific Advisors Meeting

March 25, 2019

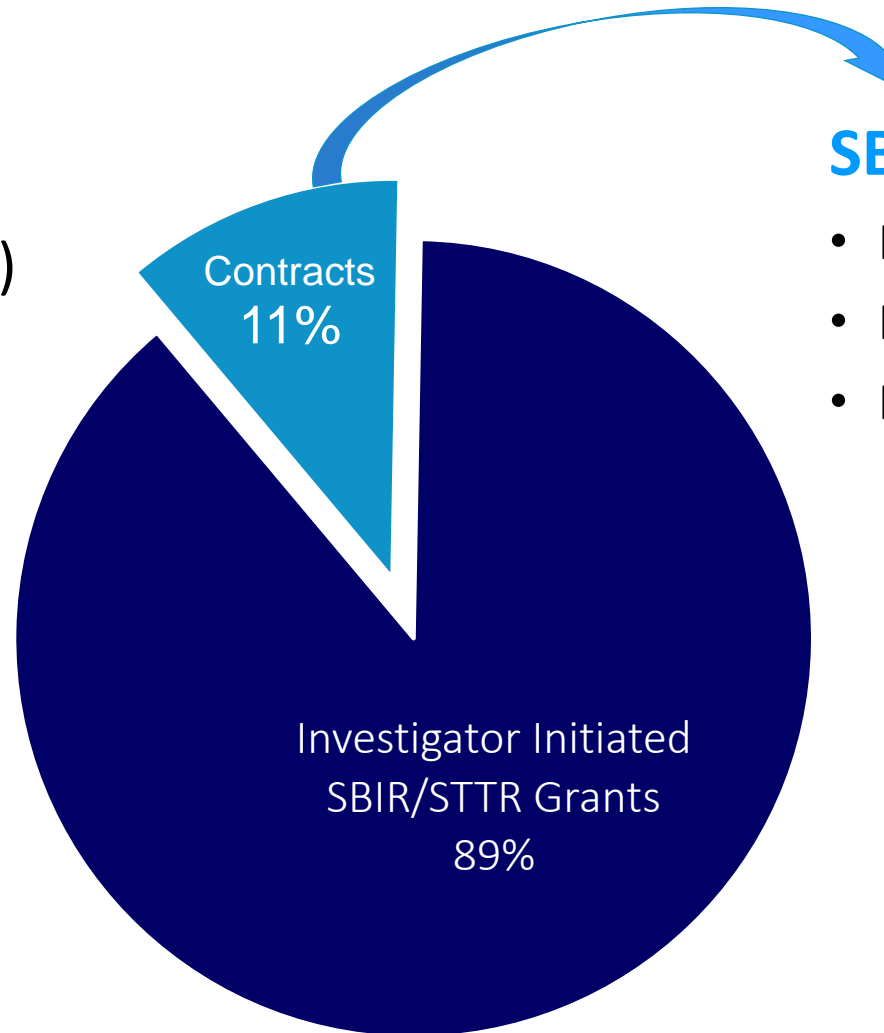
Andrew J. Kurtz, PhD

SBIR & STTR: Congressional Set-Asides

SBIR: Small Business
Innovation Research (3.2%)

STTR: Small Business
Technology Transfer (0.45%)

\$167M
(FY2018)

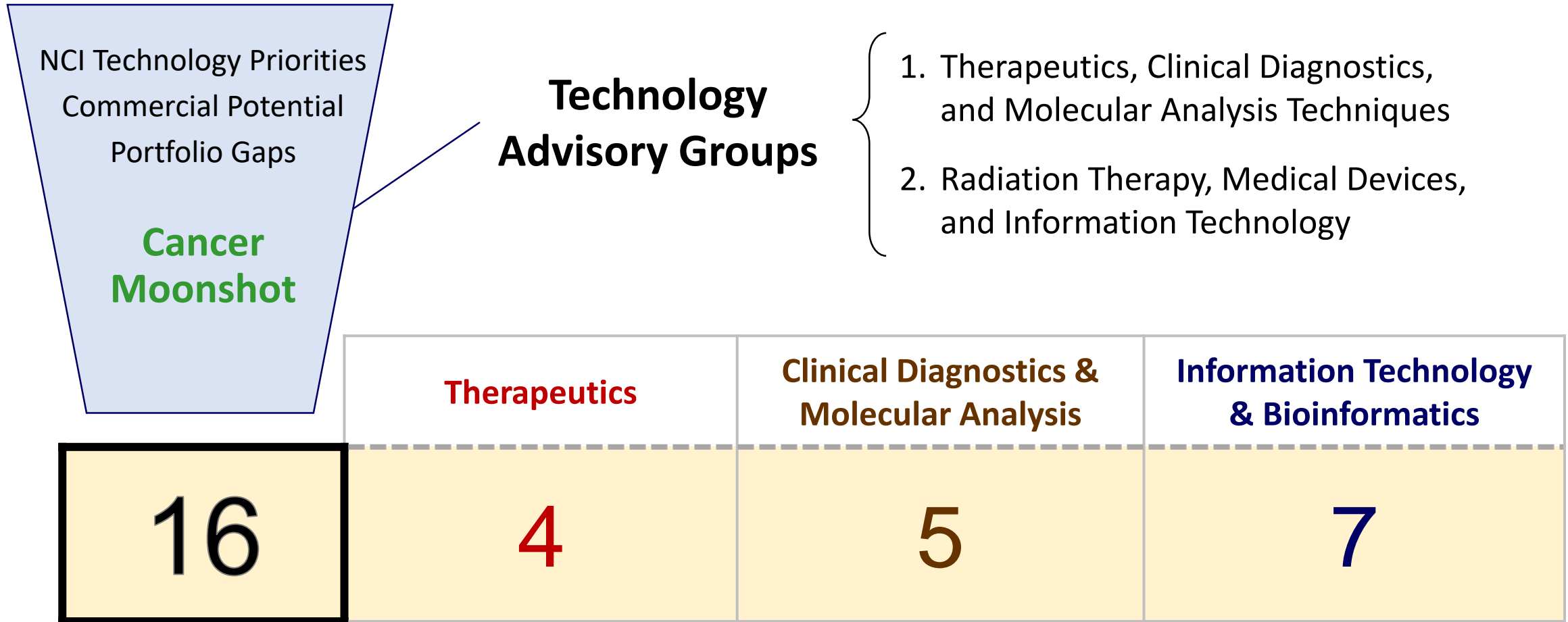


SBIR Contract Topics

- R&D scope defined by the NCI
- New topics once per year
- NIH-wide RFP

Contract Topic Selection Process

21 Concept Ideas



Therapeutics

Page Topic Title ▪ <i>NCI Division(s)</i>	Overall Goal <i>*Alignment with <u>Cancer Moonshot</u> recommendation(s)</i>
6 Manufacturing Innovation for the Production of Cell-Based Cancer Immunotherapies ▪ <i>Div. Cancer Treatment and Diagnosis</i> ▪ <i>SBIR Development Center</i>	Goal: Technologies that improve, modernize, and accelerate commercial-scale manufacturing for cell-based immunotherapy products
7 Development of Senolytic Agents for Cancer Treatment ▪ <i>Div. Cancer Treatment and Diagnosis</i> ▪ <i>SBIR Development Center</i>	Goal: Preclinical development of novel anti-cancer agents that selectively target senescent cells

8 Combinatory Treatment Modalities Utilizing Radiation to Locally Activate or Release Systemically Delivered Therapeutics

- *Div. Cancer Treatment and Diagnosis*
- *SBIR Development Center*

Goal: Preclinical development of novel agents that can be activated upon treatment with ionizing radiation

9 Sensing Tools to Measure Biological Response to Radiotherapy

- *Div. Cancer Treatment and Diagnosis*

Goal: *In vitro* or *in vivo* sensors that provide biological response information (complementary to physical radiation dose)

Clinical Diagnostics & Molecular Analysis

10 Quantitative Biomimetic Phantoms for Cancer Imaging

- *Div. Cancer Biology*
- *SBIR Development Center*

Goal: Imaging phantoms made from materials that better represent the unique characteristics of organs commonly afflicted with cancers

11 Artificial Intelligence-Aided Imaging for Cancer Prevention, Diagnosis, and Monitoring

- *SBIR Development Center*

Goal: Image analysis software aided by artificial intelligence to assist physicians with clinical decision making

Clinical Diagnostics & Molecular Analysis

12 Spatial Sequencing Technologies with Single Cell Resolution for Cancer Research and Precision Medicine

- *Div. Cancer Treatment and Diagnosis*
- *SBIR Development Center*

Goal: Technologies that generate sequence information from tissue slides without losing the histological context of the gene targets

**[Rec J] Development of new enabling cancer technologies; characterization of DNA and RNA from individual cells*

13 Subcellular Microscopy and 'Omics in Cancer Cell Biology

- *Div. Cancer Biology*
- *SBIR Development Center*

Goal: Technologies that provide spatially-resolved, molecular phenotypic information

**[Rec J] Development of new enabling cancer technologies; multidimensional single-cell imaging*

14 Intra-Tumor Sensing Technologies for Tumor Pharmacotyping

- *Center for Strategic Scientific Initiatives*
- *Div. Cancer Treatment and Diagnosis*
- *SBIR Development Center*

Goal: Sensing approaches that provide *in vivo* readouts on the efficacy of candidate therapeutic agents

**[Rec J] Development of new enabling cancer technologies; emergent technologies for tumor pharmacotyping*

15 IT Tools to Improve Patient Navigation Through the Cancer Care Continuum

- *Div. Cancer Control and Population Sciences*

Goal: Tools that assist decision-making and reduce the burden of tasks completed by patients and patient navigators

**[Rec F] Symptom management research*

**[Rec G] Prevention and early detection*

**Cross-cutting theme to address health disparities*

16 Cloud-Based IT Tools for Big Data Analysis in the Cancer Research Data Commons

- *Center for Biomedical Informatics and Information Technology*

Goal: New or existing analytic tools that provide secure access to the various big data types within the Data Commons

**[Rec D] Developing a national cancer data ecosystem*

17 Tools and Technologies for Visualizing Multi-Scale Data

- *Center for Strategic Scientific Initiatives*
- *Div. Cancer Biology*
- *SBIR Development Center*

Goal: Tools that enable integration, visualization, and analysis of data generated using different analytical approaches

**[Rec I] Generation of human tumor atlases*

18 IT Tools for Automated Analysis of Physical Activity, Performance, and Behavior from Images for Improved Cancer Health

- *Div. Cancer Control and Population Sciences*

Goal: Software that can automatically extract physical activity data from patient images for clinical and home monitoring

19 Cancer Clinical Trials Recruitment and Retention Tools for Participant Engagement

- *Div. Cancer Prevention*
- *SBIR Development Center*

Goal: Tools for clinicians and participants that address barriers to participation, simplify recruitment, and increase retention

**[Rec A] Establishing a network for direct patient engagement*

20 De-Identification Software Tools for Cancer Imaging Research

- *Center for Biomedical Informatics and Information Technology*

Goal: Tools that automate the removal of Protected Health Information (PHI) from image data files to facilitate data sharing

21 Software Enabling Data Integration from Wearable Sensors to Generate Novel Analytics for Cancer Patients

- *Div. Cancer Treatment and Diagnosis*
- *Div. Cancer Control and Population Sciences*

Goal: Software that can integrate objective data from wearable sensors to support clinical cancer research

**[Rec F] Symptom management research*

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Case: MagArray, Inc.

Early Diagnostics Using Nanotechnology-Based Imaging and Sensing (2007)

Goal

- To develop sensors with improved sensitivity and specificity of genomic and proteomic signatures for early detection and post-treatment monitoring

MagArray

- Phase I contract (2007-2008)
- Phase II contract (2009-2011)
- Phase IIB Bridge grant (2013-2017)

- *Stanford spin-out*
- *Ultrasensitive multiplex immunoassay systems*
- *REVEAL Blood Test for Lung Nodule Characterization (2018)*

Economic Impact – Study Goals

1. Quantify the contribution of the NCI SBIR/STTR program to the U.S. economy
2. Determine key patient and societal impacts resulting from technologies funded by the NCI SBIR/STTR program

Test Cohort

- 690 Phase II SBIR/STTR grant awards
- Awards made between 1998 – 2010
- 444 Companies
- \$787 Million

Study timeline: September 2017 – September 2018

Economic Impact




\$9.1 BILLION
in total sales to date of products and services resulting from the NCI SBIR/STTR Phase II grants


\$26.1 BILLION
in total economic output nationwide


368
awards with sales, royalties, and follow-on R&D funding


\$2.9 BILLION
in new tax revenues (federal, state, and local)


\$8.1 BILLION
in labor income


107,918
estimated new jobs in the U.S.

sbir.cancer.gov/impact

Small Business/Academic Collaborations

FY2017 NCI SBIR/STTR

