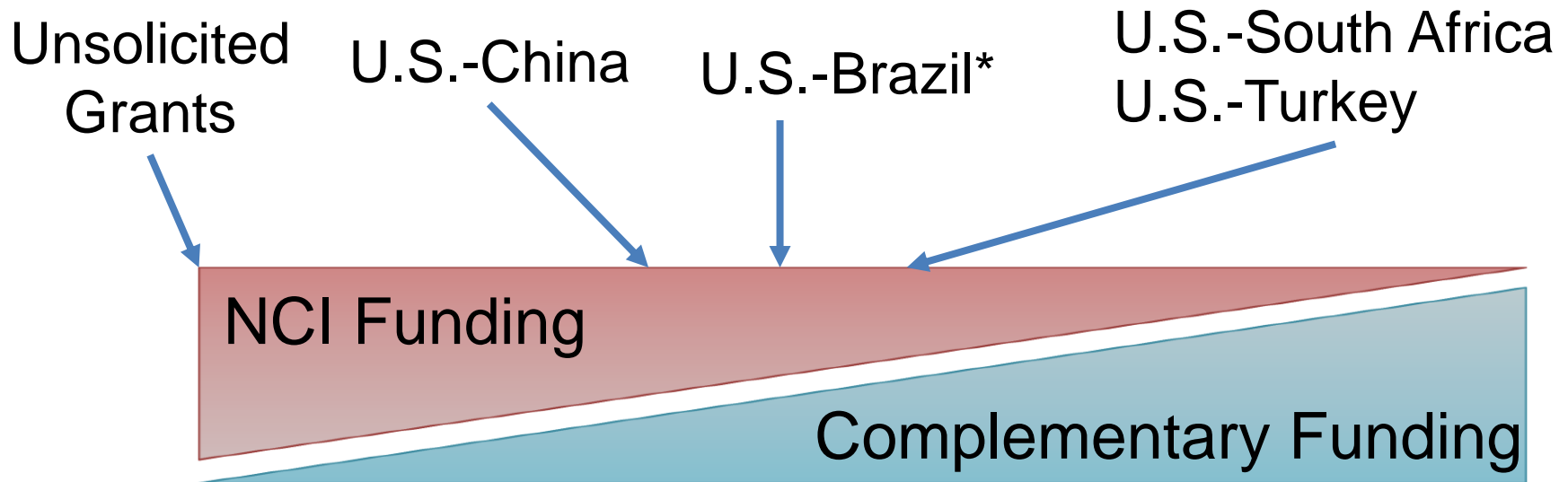


Bilateral Co-funding Programs:  
**U.S.-Russia Bilateral  
Collaborative Research  
Partnerships on Cancer**

NCI Board of Scientific Advisors  
3/28/2016



# Recent Jointly Funded Programs



## Participating ICs:

NIAID	OAR
NIMH	FIC
NICHD	NIBIB

# U.S.-Russia Bilateral Collaborative Research Partnerships on Cancer

## US Department of State Support for Collaborative Work with Russia

- There is enthusiastic support from the Russia Desk at the State Department for NCI pursuing scientific research collaborations in Russia.
- Moreover, this initiative is strongly supported by Ambassador Tefft.



John F. Tefft,  
US Ambassador to Russia

# U.S.-Russia Bilateral Collaborative Research Partnerships on Cancer

## Status of Partnership with Russian Basic Research Foundation (RFBR)

- Previous collaboration and FOAs led by OAR (OAR plans to revisit).
- MOU recently signed by Dr. Lowy outlining a collaboration on cancer research.
- NCI Delegation visited RFBR in October, 2015 and negotiated initial list of collaboration topics to operationalize MOU.



## U.S.-Russia Bilateral Research Program

### Next Three Years (2017-2020):

- **10 awards (R21)** at a maximum of **\$100,000 direct cost per year/per award for 3 years**
- Budget (in total costs) of **\$1.85 million/year** for three years.
- As was the case in previous bilateral funding opportunities, **10% of funds will be set aside to support intramural research collaborations.**
- Funded awards determined after **simultaneous NCI and RFBR review.**
  - NCI and RFBR must reach **consensus** to fund.
  - Only applications with **high scores from both agencies** will be funded.

# U.S.-Russia Bilateral Research Program

## Next Three Years (2017-2020): The Team

Proposed topics were fleshed out by DOC staff who will provide continuing input throughout negotiations with RFBR and drafting of an FOA.

DOC	PD
CGH	Paul Pearlman
OHAM	Kishor Bhatia
DCP	Sharmistha Ghosh-Janjigian
DCTD	Igor Kuzmin
DCB	Betsy Read-Connole
CSSI	Natalie Abrams
DCEG	Marianne Henderson



# U.S.-Russia Bilateral Research Program

## Next Three Years (2017-2020): Topics

1. Immunotherapy and tumor microenvironment
2. Targeted delivery of anticancer drugs
3. Precision medicine for cancer
4. Bio-imaging of cancer
5. Biomedical applications of nanoparticles
6. Brain tumor biology
7. Epigenetics, proteomics and metabolomics
8. Effect of Cancer Therapy on Brain Tumors
9. Tumor angiogenesis including fundamental and clinical aspects
10. Biomarkers
11. Physical sciences and engineering in cancer biology
12. Radiation epidemiology





# Immunotherapy and the Tumor Microenvironment

*Examples topics include, but are not limited to, the following:*

- Implication of differences in tumor microenvironment in infection associated and non-infection associated cancers.
- Prophylactic vaccines for cancer prevention
- Immunoprevention
  - Immunotherapy of premalignant lesions
  - Tumor microenvironment during carcinogenesis





# Targeted Delivery of Anticancer Drugs & Precision Medicine for Cancer

*Examples topics include, but are not limited to, the following:*

- Genomics of premalignant lesions
- Biomarkers for risk assessment, detection, diagnosis and prognosis of early cancer
- Precision screening of cancer
- Identification of high-risk cohorts
- Characterization of response to mechanism-directed interventions
- Precision medicine for small cell lung cancer



## Bio-Imaging of Cancer

*Examples topics include, but are not limited to, the following:*

- Identification of high-risk cohorts
- Characterization of response to mechanism-directed interventions



# Biomedical Applications of Nanoparticles

*Examples topics include, but are not limited to, the following:*

- Next generation therapeutic or theranostic nanoparticles
- Tools and devices aimed at monitoring the tumor microenvironment
- Tools and devices capable of penetrating cellular or physiological barriers
- Understanding nanoparticle delivery mechanisms
- Development of nanotechnologies for biomarker discovery or validation
- Tools and devices for molecular *in vitro* screening of at-risk populations
- Tools and devices for early cancer detection, treatment or monitoring using *in vivo* imaging techniques
- Cancer prevention and control using chemopreventive nutraceuticals
- Integration of modeling and simulation approaches to guide rational nanomaterials design

# Epigenetics, Proteomics and Metabolomics

*Examples topics include, but are not limited to, the following:*

- Identification of high-risk cohorts
- Characterization of response to mechanism-directed interventions
- Systematic and comprehensive investigation of key areas of kinome biology using proteogenomic approaches
- Development and application of targeted proteomic assays for kinases that function in specific signaling networks



A monument to lab rats used for DNA Research. Novosibirsk, Russia.



# Biomarkers

*Examples topics include, but are not limited to, the following:*

- Predictive factors after regrowth of tumors (for brain cancers).
- Effective biomarkers derived from infection related oncogenes (viruses and other infectious agents) - for use in screening and monitoring
- Identification and assessment of biomarkers (genetic, molecular, cellular, tissues) that can be utilized in risk assessment, detection, diagnosis and prognosis of early cancer
- Characterization of progressor vs. non-progressor lesions
- Characterization of interval cancers
- Contributions of genetic factors and environment in Russia vs. US
- Biomarker assay development
- Predictive biomarkers for targeted therapy in small cell lung cancer



## Physical Sciences and Engineering in Cancer Biology

*Examples topics include, but are not limited to, the following:*

- Mechanobiology across molecular, cellular, and tissue levels in basic cancer biology and clinical pathophysiology;
- Probes and new imaging techniques to measure mechanical forces and characterize changes in physical properties of cancer;
- Novel methods for spatio-temporal analysis of cancer genome organization, molecular and cellular crowding, phenotypic variation, and cell population diversity;
- Micro-fluidic devices and novel materials and matrices to model the 3D tumor microenvironment;
- Formulation of predictive, multiscale mathematical models of cancer progression.

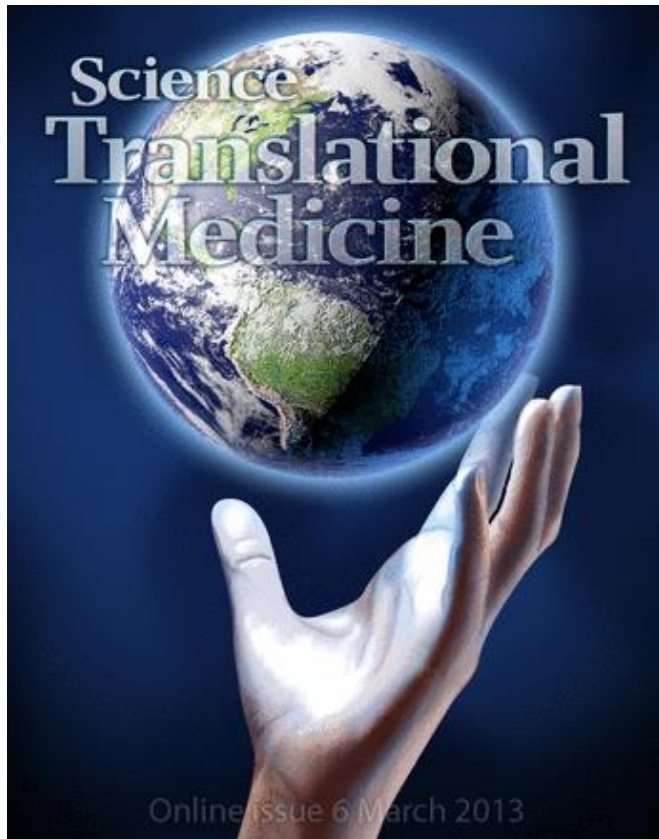


## Radiation Epidemiology

*Examples topics include, but are not limited to, the following:*

- Occupational and Environmental radiation dose reconstruction and assessment
  - Exposure assessment measurements
  - Radiation dose model construction and assessment
  - Radiation dose modeling software development
  - Uncertainty assessment
  - Physical radiation dose measurement
- Health outcome infrastructure development for radiation-related disease
  - Health outcome database development
  - Developing cohort tracing procedures for epidemiology studies
  - Cancer registry development
  - Biological sample archiving, management and storage
- New opportunities for population-based radiation effects studies
  - Identifying new radiation-exposed populations





Science Translational Medicine, 6 March 2013

“Successful campaigns to control cancers with existing methods and to improve current strategies through research will increasingly depend on a multinational consensus and collaborative work. In that spirit, we intend to take the lead in areas that are within our remits.”

~ Harold Varmus and Harpal S. Kumar

