

# International Collaboration in Computational Neuroscience: NSF's Experience

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Program Director

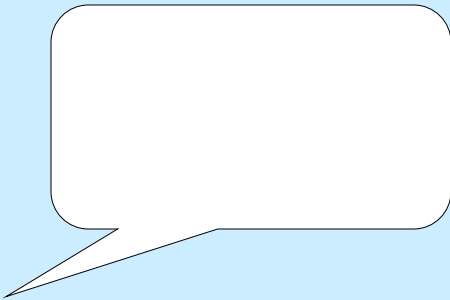
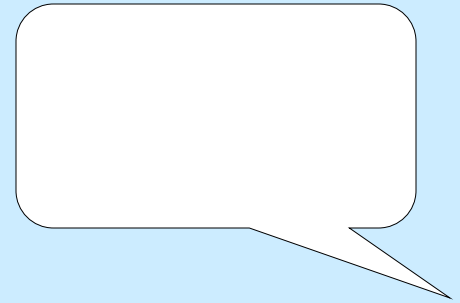
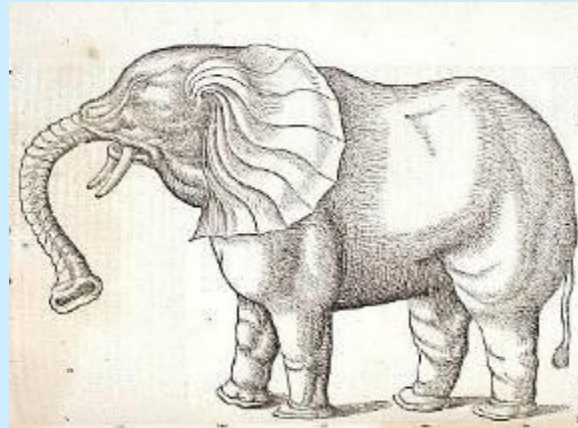
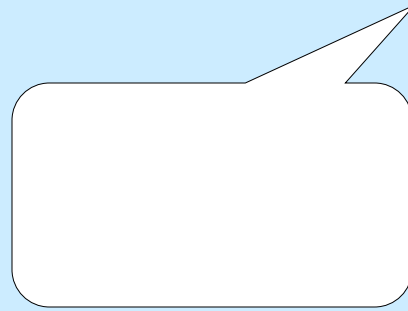
Division of Information and Intelligent Systems

Directorate for Computer and Information Science and Engineering

National Science Foundation

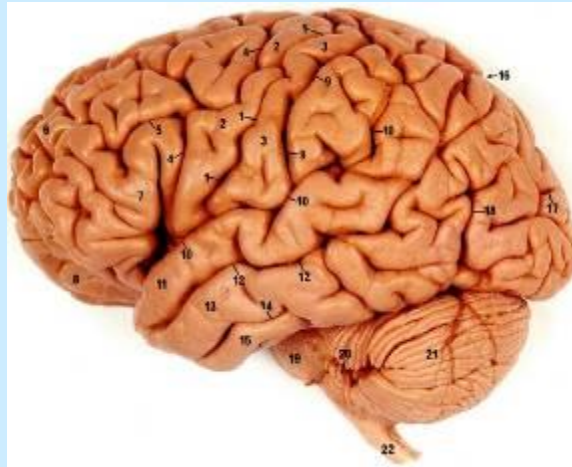
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*Homeostatic,  
self-organizing  
system*

*Statistical learning  
machine*



*Decision-  
maker*

*Massively parallel  
network*

*Ultra-low-power  
device*

# Computational understanding of the brain =

- ◆ interdisciplinary grand challenge for contemporary science and engineering
- ◆ computational methods/models, theoretical understanding, data challenge/opportunity
- ◆ encompasses many approaches and goals, disease and normal function
- ◆ levels of analysis, abstraction, scale



# Collaboration plays a pivotal role

- ◆ integration of deep expertise across multiple disciplines
- ◆ interplay between theory/modeling/analysis and experiment
- ◆ international perspectives and partnerships
- ◆ sharing of data and software for larger-scale collaboration and discovery
- ◆ in the U.S. context, coordination among funders



# Program strategy over time

## ***Collaborative research program (2002–)***

Inclusive scope, emphasis on collaboration and innovation. 235 projects (>\$200M), multiple funders. Coordination/development of related programs.

## ***Data sharing (2007–)***

Exploratory workshops and pilot funding. Emphasis on high-quality data. Data-sharing infrastructure, proposals for data- and resource-sharing.

## ***International projects (2010–)***

Beyond pre-existing mechanisms. Visits, workshops lead to partnerships with Germany, France, and Israel. 47% of proposals as of 2015.



NSF-NIH-ANR-BMBF-BSF Joint Program

# Collaborative Research in Computational Neuroscience

<http://www.nsf.gov/crcns>

- ◆ Computational neuroscience, inclusively defined encompassing many approaches and goals; related to biological processes; disease and normal function; theory, modeling, and analysis; implications for biological and engineered systems
- ◆ ***Innovative, collaborative, and interdisciplinary*** to make significant advances on important hard problems, and to develop new research capabilities

The program considers **Research Proposals** describing collaborative projects that bring together complementary expertise on interdisciplinary challenges; and **Data Sharing Proposals** to support preparation and deployment of data and other resources, in a manner that responds to the needs of a broad community.

Opportunities for ***parallel international funding*** (Germany, France, Israel).

**Next deadline: October 29, 2015**



# Different details, common interests



biology

computing

psychology

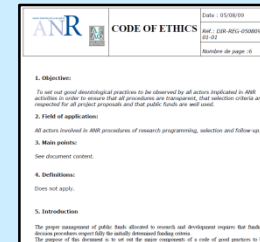
engineering

stroke

hearing

vision

addiction



funding silos

conflicts/  
confidentiality

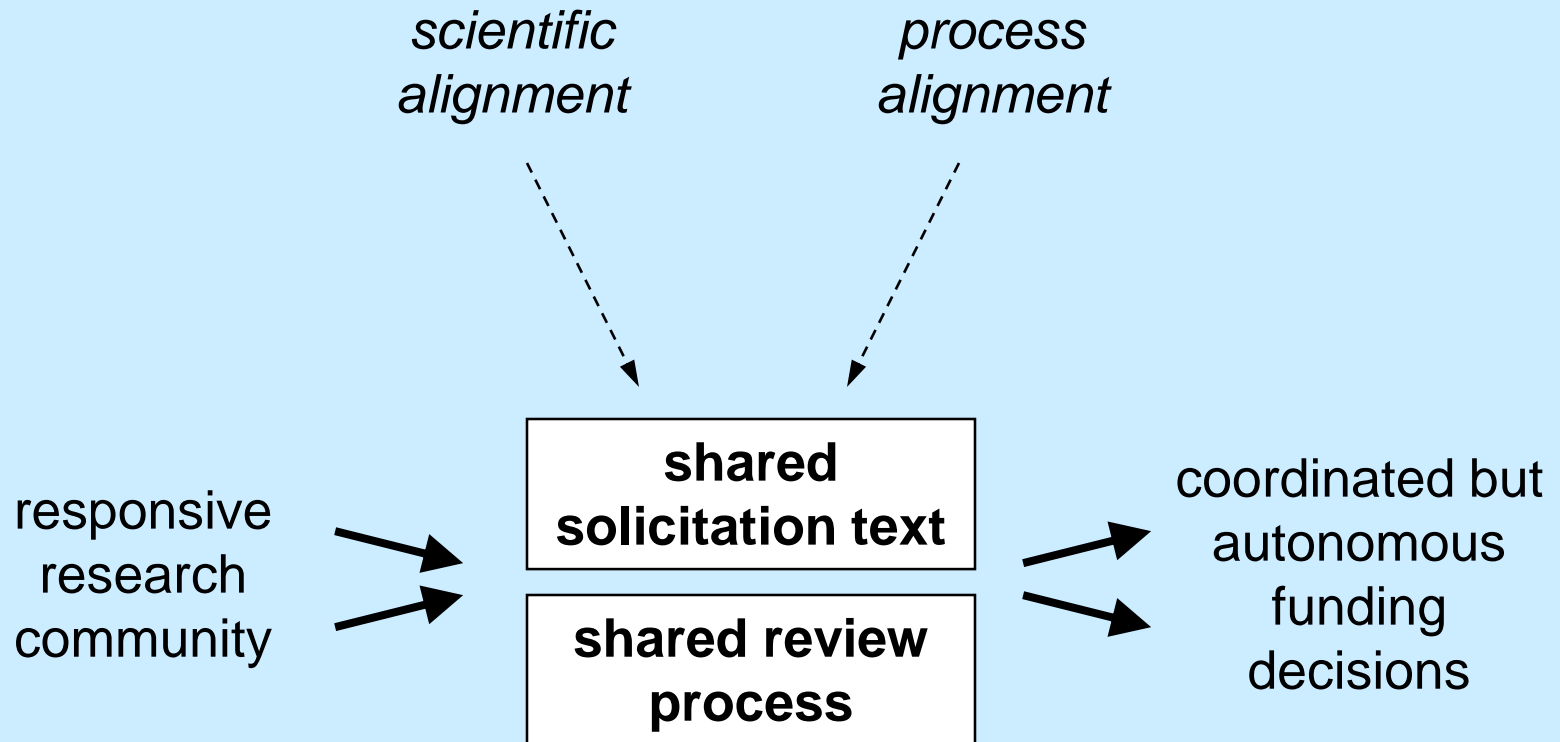
scoring

ranking

application  
requirements



# Our current model



# Collaborative Research in Computational Neuroscience (CRCNS)

Notice Number: NOT-NS-08-008

## Collaborative Research in Computational Neuroscience (CRCNS)

Innovative Approaches to Science and Engineering Research on Brain Function

Joint NIH-NSF Initiative - Collaborative Research in

### Program Solicitation

NSF 08-514

Replaces Document  
NSF 04-514

Richtlinien zur Förderinitiative Deutschland - USA Zusammenarbeit in  
Computational Neuroscience

NSF 09-60

## German-USA Collaboration in Computational Neuroscience

Over the last decade, both Germany and the United States have been increasing their investment in and funding research and education in computational areas of science, engineering, and mathematics. This document builds on collaborations between researchers from the United States and in Germany, to create funding opportunities that will grow.

Both countries now play leading roles in this effort. From both countries have been established on a "Computational Neuroscience" in June 2008 in Munich. This international collaborative research, in order to support the goals of this Dear Colleague Letter, both countries will continue to support research in computational neuroscience. A parallel *Richtlinie* is being issued.

NSF and BMBF will accept proposals for US-German collaborations starting in 2009. Collaborating investigators at German and U.S. institutions should describe research objectives and plans, and specify how computational neuroscience is inclusively defined. Collaborations are expected to leverage the strengths of both countries to pursue innovative research approaches and maximize the impact of the funding. Proposals will be evaluated according to their intellectual merit and potential for collaboration. NSF and BMBF will implement a joint funding program.

Proposal budgets should include travel funds for U.S. investigators to visit Germany, to exchange views about the ongoing research and to facilitate intensive communication between research groups.



APPEL À PROJETS CRCNS  
EDITION 2015



MODALITÉS  
RECOMMANDATIONS  
PARTICIPATION



United States - Israel  
Binational Science Foundation

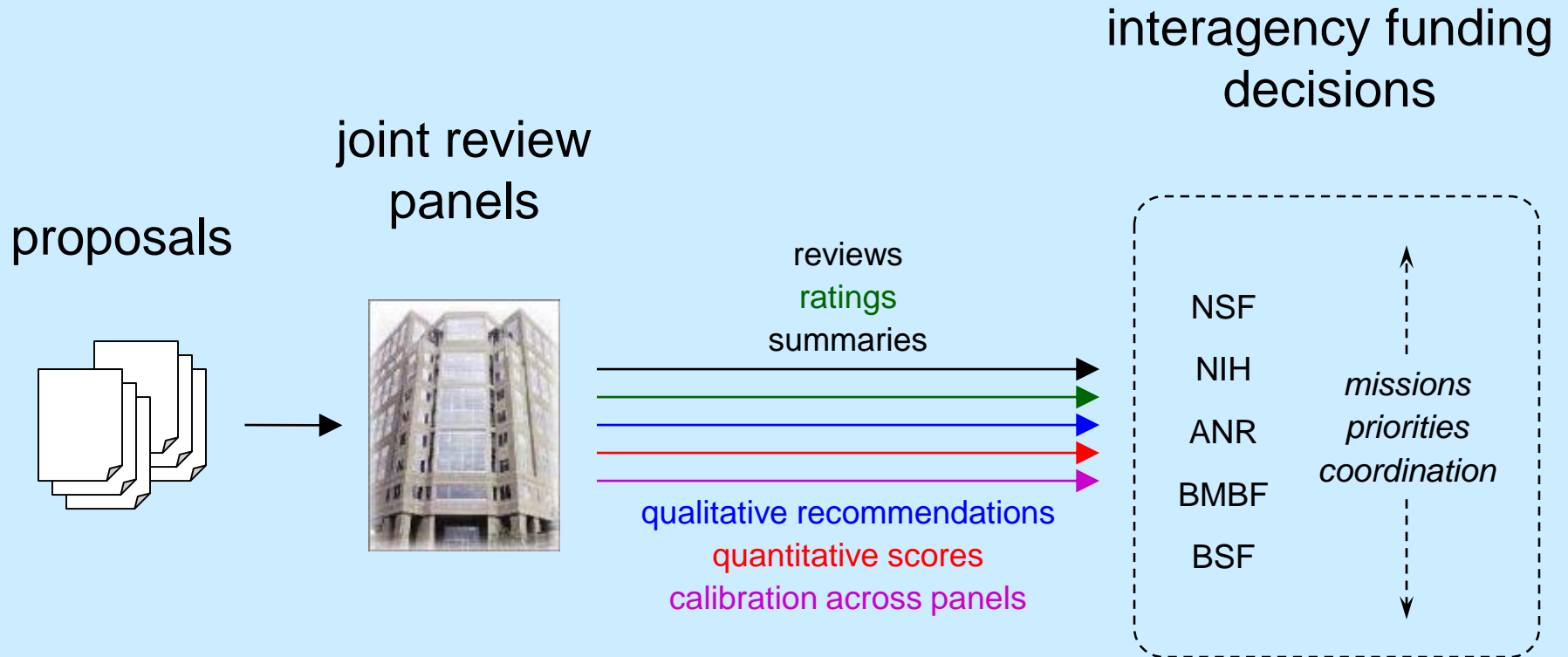
A SPECIAL BSF CALL FOR PROPOSALS IN A JOINT NSF-BSF  
PROGRAM IN COMPUTATIONAL NEUROSCIENCE

IMPORTANT :

1. Le présent document est le résultat de la réunion du 15 novembre 2015 du programme de

The U.S. - Israel Binational Science Foundation (BSF) is pleased to announce the opening of the second round of applications in a new joint funding program with the U.S. National Science Foundation (NSF):

# Shared review process





# Some benefits

- ◆ Freedom to collaborate
- ◆ Complementary approaches and scientific cultures
- ◆ Development of globally oriented scientists and engineers
- ◆ Sharing/alignment of infrastructure, resources
- ◆ One-stop shopping
- ◆ International competitive review

