



Understanding the Brain: NSF Activities

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SBE Advisory Committee
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**Social,
Behavioral
and
Economic
Sciences**

**Biological
Sciences**

**Computer
and
Information
Science and
Engineering**

**Mathematics
and Physical
Sciences**



**Education
and Human
Resources**

Geosciences

**International
and
Integrative
Activities**

Engineering



Investments in Cognitive Science and Neuroscience at NSF

Focused Programs

- Neural Systems and Behavioral Systems Clusters (BIO)
- Cognitive Neuroscience and Perception, Action and Cognition Programs (SBE)
- Robust Intelligence Program (CISE)

Interdisciplinary Programs

- Science of Learning Centers (NSF)
- Science and Technology Center for Brains, Minds and Machines
- Collaborative Research in Computational Neuroscience involving NSF, NIH, Germany, France, Israel

Other Significant Investments

- Research at the Interface of Biological, Mathematical and Physical Sciences, and Engineering



Understanding the Brain

NSF's goal is to **enable scientific understanding of the full complexity of the brain, in action and in context**, through targeted, cross-disciplinary investments in research, technology, and workforce development.

Understanding the Brain comprises two NSF-wide activities:

- ❖ *Cognitive Science and Neuroscience*, initiated in FY 2012
- ❖ *BRAIN Initiative*, initiated in FY 2013



NSF Strategies



- Fostering integrative research that crosses scale, levels of analysis, and disciplines
- Expanding investments in innovative technologies, experimental and analytical methods, and data and cyber-infrastructure that will enable integrative research.
- Supporting growth of a globally competitive scientific workforce

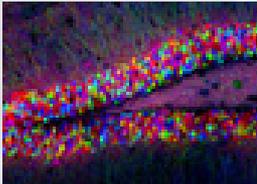


NSF BRAIN Initiative - Thematic Areas

Goal: **Generate an array of physical and conceptual tools** to determine how healthy brains of humans and other organisms function over the lifespan.



Multi-scale Integration of Brain Dynamic Activity and Structure



Neurotechnology and Research Infrastructure



Quantitative Theory and Modeling of Brain Function



Brain-Inspired Concepts and Designs

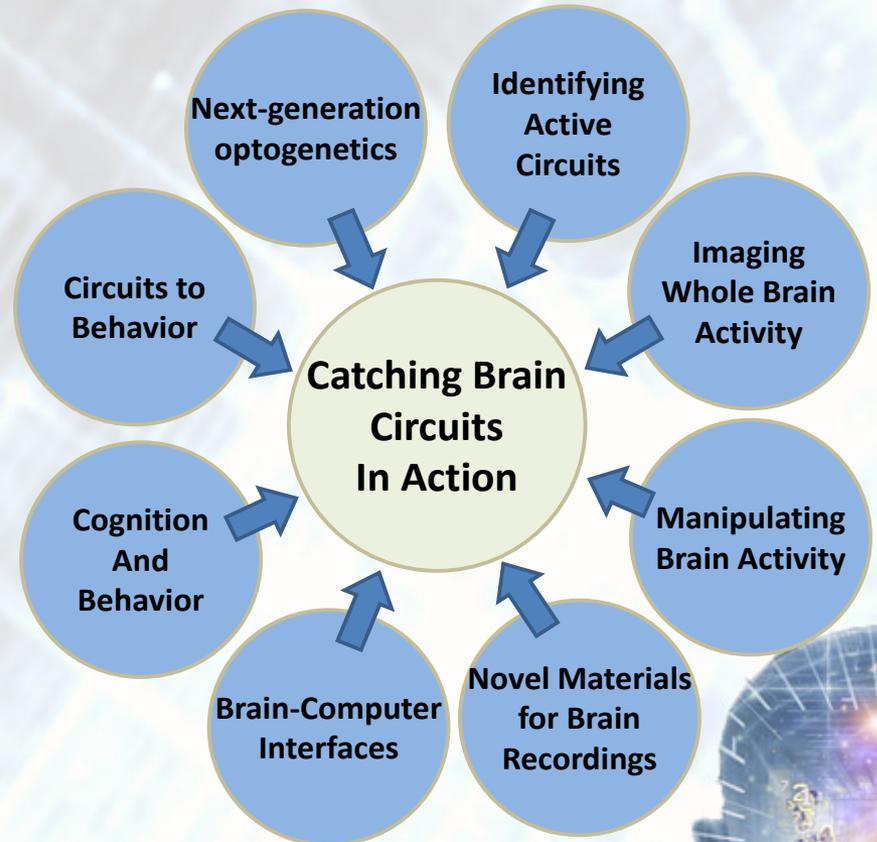


BRAIN Workforce Development

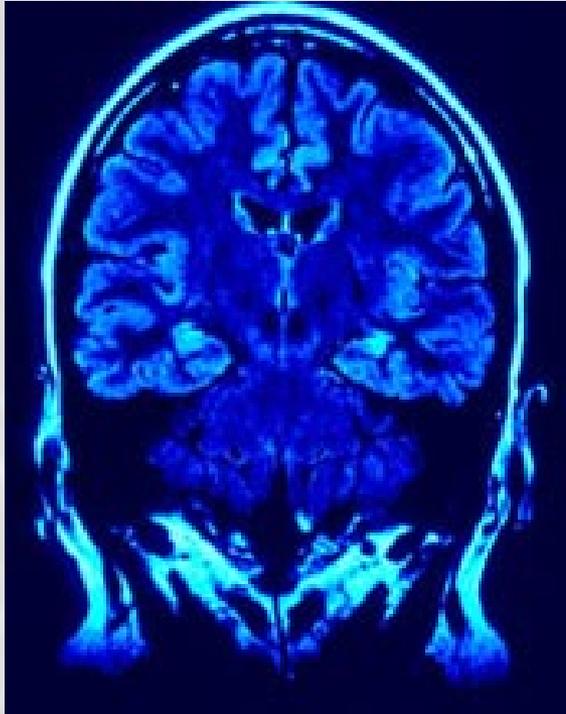


FY14 NSF BRAIN Activities

- Ongoing core investments augmented by new funding for Understanding the Brain
- Funded 36 EAGER awards responding to call for “Catching Circuits in Action”
- Dear Colleague Letter to encourage international collaboration and exchange in neuroscience
- Launched nsf.gov/brain



Future Plans and Opportunities



- Integrative Strategies for Understanding Neural and Cognitive Systems Solicitation
- Industry/University Cooperative Research Centers Dear Colleague Letter
- Ideas Lab Dear Colleague Letter
- International and interagency opportunities





Committee on Science

Interagency Working Group in Neuroscience Report (released 02/2014)

- Understanding and Treating Brain Diseases, Disorders and Trauma
- Understanding and Optimizing Interactions between the Environment and the Brain across the Lifespan
- Understanding and Applying the Brain's Information Processing Capabilities
- Enhancing Communication Across Federal Agencies and with the Public





Committee on Science

Interagency Working Group in Neuroscience – Current Activities

- Continue as forum for exchange of information, including updates on the BRAIN initiative
- Organizing around next concrete steps
 - Enhancing communication
 - Biomarkers and emerging technology
 - Neuroscience and education
 - Issues in neuroscience data





National Science Foundation
WHERE DISCOVERIES BEGIN