The White House Neuroscience Initiative

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The White House Neuroscience Initiative’s Goal

To develop a strategy towards significant, transformative discoveries in fundamental and translational neuroscience and cognitive science through coordinated Federal efforts and synergy with outside stakeholders.

OSTP’s role: To incorporate and heighten the President’s emphasis on neuroscience through Administration-wide initiatives and activities.
Economic & Human Costs and Challenges

- One in three people over the age of 65 will develop dementia. The number will double in 30 years.
- Delaying the onset of Alzheimer’s disease by five years could save $50 billion in annual U.S. health care costs.
- Nearly 800,000 Americans suffer a stroke each year, costing the United States an estimated $54 billion per year.
- Traumatic Brain Injury (TBI) impacts approximately 1.7 million Americans each year. Severe TBI can negatively affect cognitive and motor function, sensation, and emotions.
The White House Neuroscience Initiative

- National Plan to Address Alzheimer’s Disease
- Interagency Working Group on Neuroscience
- Executive Order on Improving Access to Mental Health Services for Veterans, Service Members, and Military Families
- BRAIN (Brain Research through Advancing Innovative Neurotechnologies) Initiative
- National Conversation on Mental Health
- Neuroethics: Presidential Commission for the Study of Bioethical Issues

Images from http://cbs.fas.harvard.edu/science/connectome-project/brainbow#
National Plan to address Alzheimer’s Disease

• Ordered under the 2011 National Alzheimer’s Project Act (NAPA)
• Developed by experts in aging and Alzheimer’s disease from federal, state, private and non-profit organizations

National Plan Includes:

• Finding ways to prevent and treat Alzheimer’s disease and related disorders by 2025
• Enhancing care for Alzheimer’s patients
• Expanding support for people with dementia and their families
• Improving public awareness
• Tracking data to support these efforts.
The Alzheimer’s Disease Research Summit 2012: Path to Treatment and Prevention, which developed important recommendations for HHS and NIH.

Multiple research projects funded by NIH, including two major new clinical trials, genetics sequencing, and the development of new cellular models.

Grants that helped provide training to more than 10,000 health care providers on topics from dementia diagnosis to effective behavior management.
## Congressional Support for Neuroscience

### The Congressional Neuroscience Caucus
- Co-chaired by Representative Cathy McMorris Rodgers (R-WA) and Representative Earl Blumenauer (D-OR)
- Promotes a better understanding of how the brain develops, functions, and ages
- Seeks to raise awareness about the millions of Americans afflicted with neurological disorders or mental illnesses

### The Fattah Neuroscience Initiative (FNI)
- Led by Representative Chaka Fattah (D-PA)
- Designed to make major progress in understanding the human brain by supporting federal research efforts across brain disease, disorder, injury, cognition and development.
- Intends to significantly increase federal investment in neuroscience research, including fully funding recommendations made by the NSTC Interagency Working Group on Neuroscience (IWGN)
NSTC Interagency Working Group on Neuroscience (IWGN)

IWGN Mission: Coordinate activities in neuroscience research across the Federal government with a focus on the fundamental understanding of learning, brain development, and plasticity, and applications to brain health and recovery.

Identify research areas where communication and/or coordination across Federal agencies can foster advances that address national needs and, where possible.

Define concrete actions the Federal government can take to enable acceleration of progress in neuroscience research and development.
IWGN Federal Representation

Department of Health and Human Services (co-chair)
National Science Foundation (co-chair)
Department of Agriculture

Department of Commerce, including NIST
Department of Defense, including DARPA

Department of Education, including Institute of Education Sciences
Department of Energy
Department of Homeland Security
Department of Justice

Department of Veterans Affairs
Central Intelligence Agency
Environmental Protection Agency
National Aeronautics and Space Administration
Office of the Director of National Intelligence

Executive Office of the President: OSTP, OMB, Office of National Drug Control Policy
## IWGN Progress to Date

1. Established a forum for information exchange across the Federal Government and is facilitating efforts across Federal agencies to improve coordination and collaboration of R&D agendas on neuroscience.

2. Provided an Interim Report to the NSTC Committee on Science to communicate research needs and priorities in neuroscience to the Administration and Federal agencies and identified broad areas of interest for further engagement:
   - Understanding and treating brain diseases, disorders, and traumas
   - Understanding and optimizing interactions between the environment and the brain across the lifespan
   - Understanding and applying the brain’s information processing capabilities
   - Enhancing communication among federal agencies and with the public
Next Steps

1. Finalize and release a public report on enhancing the coordination and cooperation of Federal R&D agenda on neuroscience.

2. Re-charter the IWGN: This charter shall terminate no later than December 31, 2014, unless renewed by the co-chairs of the SBE and Life Sciences Subcommittees of the NSTC Committee on Science.

3. Implement previous IWGN priorities.

4. Increase public-private partnerships.

5. Explore international collaborations.
Executive Order on Improving Access to Mental Health Services for Veterans, Service Members, and Military Families (Aug. 31, 2012)

- Strengthens suicide prevention efforts across the military and in the veteran community
- Enhances access to mental health care by building partnerships between the VA and community providers
- Increases the number of VA mental health providers serving our veterans
- Promotes mental health research and development of more effective treatment methodologies
-Launches a government-wide collaborative effort to address these issues through a Military and Veterans Mental Health Interagency Task Force that has developed a plan providing specific milestones for research into PTSD, TBI, suicidality, and addiction
On April 2, 2013, President Obama launched the multiagency BRAIN Initiative to “accelerate the development and application of new technologies that will enable researchers to produce dynamic pictures of the brain that show how individual brain cells and complex neural circuits interact at the speed of thought.”

This grand, integrative challenge is aimed at understanding the relationship between brain and behavior.
The BRAIN Initiative

Understanding the brain has been identified as one of five longstanding and fundamental questions, or “grand challenges” for future research.

What do we need to do this?

- **Continued cooperation** across different fields of research.
- **Integration of findings** across scales of space and time, from molecular, physical, physiological and genetic, to cognitive and behavioral.
- Discoveries born out of **curiosity-driven science**.
- Innovative **new tools, technologies, materials, and theories**.
- Improved **data management and storage and analytic techniques**.
- **Time**. This is a long-term investment.
Defense Advanced Research Projects Agency
DARPA’s Role in the Brain Initiative

DARPA’s new programs and extensions to existing activities:

• Developing the new tools to measure and analyze electrical signals and the biomolecular dynamics underpinning brain function.

• Exploring applications – such as a new generation of information processing systems and restoration mechanisms – that dramatically improve the way we diagnose and treat warfighters suffering from post-traumatic stress, brain injury, and memory loss.

• Engaging a broad range of experts to explore the ethical, legal, and societal issues raised by advances in neurotechnology.

• Programs include: Revolutionizing Prosthetics; Reorganization and Plasticity to Accelerate Injury Recovery; manufacture of sensing systems for neuroscience application; analysis of large data sets.
National Institutes of Health
NIH’s Role in the Brain Initiative

FY 2014 high-priority research areas, as identified by the Advisory Committee to the NIH Director (ACD):

- Generate a census of cell types and create structural brain maps.
- Develop a suite of tools for circuit manipulation.
- Develop new large-scale network recording capabilities.
- Link neuronal activity to behavior
- Integrate theory, modeling, statistics & computation with experimentation.
- Delineate mechanisms underlying human imaging technologies.
- Create mechanisms to enable collection of human data.
- Disseminate knowledge and training.

“The overarching vision is to combine these approaches into a single, integrated science of cells, circuits, brain and behavior.”
The NSF is uniquely positioned to foster our understanding of the brain by supporting fundamental research that brings together scientific and engineering disciplines to reveal the principles underlying memories, thoughts, and complex behaviors.

Key goals for the NSF include:

- Identification of neural signatures that can predict complex behavior.
- Development of models that define the computational aspects of functional neural networks.
- Establishment of a quantitative and predictive theory of brain function.
- Strategies for unprecedented levels of global data sharing for brain research and education.
THE ALLEN INSTITUTE FOR BRAIN SCIENCE
$60 million annually
To understand how brain activity leads to perception, decision making, and ultimately action

HOWARD HUGHES MEDICAL INSTITUTE
$30 million annually
To develop new imaging technologies and understand how information is stored and processed in neural networks

KAVLI FOUNDATION
$4 million annually for 10 years
To support provide the knowledge for addressing debilitating diseases and conditions

SALK INSTITUTE FOR BIOLOGICAL SCIENCES
$28 million
To produce a sophisticated understanding of the brain, from individual genes to neuronal circuits to behavior
Pioneering research and emerging technologies often have the potential to raise new ethical challenges.

This new effort will continue to adhere to our highest standards of research protections.

The Presidential Commission for the Study of Bioethical Issues (www.bioethics.gov) has been directed to explore the ethical, legal, and societal implications raised by this research initiative and other recent advances in neuroscience.
National Conversation on Mental Health

On June 3, 2013, President Obama and Vice President Biden hosted a National Conference on Mental Health at the White House as part of the Administration’s effort to launch a national conversation to increase understanding and awareness about mental health.

The conference brought together people from across the country, including mental health advocates, educators, health care providers, and individuals who have struggled with mental health problems, to discuss how we can work together to reduce stigma and help the millions of Americans struggling with mental health problems recognize the importance of reaching out for assistance.
National Conversation on Mental Health

Builds on a number of efforts for raising awareness and improving care for those experiencing mental health issues.

- **Expanding Mental Health Coverage**: The Affordable Care Act will expand mental health and substance use benefits and parity protection for 62 million people.
- **Supporting Young People**: The FY14 Budget includes a new $130 million initiative to help teachers and other adults recognize signs of mental illness in students.
- **Improving Access to Services for Veterans**: The VA is hiring 1,600 new mental health providers, over 300 peer-to-peer veteran specialists, and establishing 24 pilot projects in 9 states partnering with community mental health providers.
- **Supporting Research on Mental Health**: The FY14 Budget supports ~$2.3 billion in mental health research funded by several NIH Institutes and Centers.
The BRAIN Initiative builds on the President’s call for historic investments in research and development to fuel innovation, job creation, and economic growth. The initiative fosters cutting-edge, interdisciplinary research needed to understand how brain function is linked to behavior and learning, and the mechanisms of brain disease.

The goal of the White House Neuroscience Initiative is to coordinate Federal efforts, and build public-private partnerships, that accelerate our understanding of the human mind and have the potential to help uncover new ways to treat, prevent, and cure brain disorders like Alzheimer’s disease, schizophrenia, autism, epilepsy, and traumatic brain injury.