

Brain Research through Advancing Innovative Neurotechnologies (BRAIN) Working Group

BACKGROUND

The human brain gives rise to a stunningly diverse range of perceptions, thoughts, and actions. These mental states and processes arise from dynamic and integrated patterns of brain activity which emerge from complex interactions between individual neurons and entire circuits. By exploring these patterns of activity, both spatially and temporally, and utilizing simpler systems to learn how circuits function, we can generate a more comprehensive understanding of how the brain produces complex thoughts and behaviors. This knowledge will be an essential guide to progress in diagnosing, treating, and potentially curing the neurological diseases and disorders that devastate so many lives.

Together with private foundations, industry, and other government agencies, NIH proposes the NIH BRAIN (Brain Research through Advancing Innovative Neurotechnologies) Initiative to accelerate the development and application of innovative new technologies to construct a dynamic picture of brain function that integrates neuronal and circuit activity over time and space. The goal is to build on the growing scientific foundation of neuroscience, genetics, physics, engineering, informatics, nanoscience, chemistry, mathematics and other advances of the past few decades, to catalyze an interdisciplinary effort of unprecedented scope. In order to achieve these aims, the NIH Director is requesting the assistance of the Advisory Committee to the NIH Director (ACD). Specifically, he is asking that the ACD convene a high level working group to develop a rigorous plan for achieving this scientific vision.

CHARGE

The BRAIN Working Group of the ACD is charged with the following:

- Review recent advances in neuroscience;
- Articulate the short-, mid-, and long-term scientific goals for achieving the vision of the NIH BRAIN Initiative; and
- Develop a scientific plan for achieving these goals. This plan should include:
 - Areas of research that should be considered “high priority”. Recommendations should include, but are not limited to: research that is currently supported but warrants additional focus; development of new technologies; research on a range of model systems, from simple to complex, with an appropriate balance; and/or entirely new directions for research that will be necessary to achieve these ambitious goals;

- Principles for achieving the scientific goals, and structures appropriate for them, including the balance of individual groups and larger consortia, the relative roles of technology development and problem-driven experiments, and the relationship with other areas of neuroscience;
- Areas in which collaboration with others (i.e., foundations, industry, other agencies) would result in either complementary activities or the leveraging of efforts; and
- Specific recommendations for timelines, milestones, and cost estimates for short-, mid-, and long-term objectives, in order to provide explicit opportunities for evaluating success or failure going forward.

PROCESS, DELIVERABLES, and TIMEFRAME

The BRAIN Working Group of the ACD will:

- Seek input broadly from the scientific community, patient advocates, and the general public;
- Hold open meetings and workshops on specific topics as needed;
- Deliver an interim report with an initial list of high-priority areas for FY14 funding in summer, 2013; and
- Present its final report to the full ACD at its June, 2014 meeting.