

Brain Research Through Advancing Innovative Neurotechnologies® (BRAIN)
Multi-Council Working Group (MCWG) Meeting
May 20th, 2021

On May 20, 2021, the National Institutes of Health (NIH) *Brain Research Through Advancing Innovative Neurotechnologies®* (BRAIN) Initiative [Multi-Council Working Group \(MCWG\)](#) and [Neuroethics Working Group \(NEWG\)](#) met virtually to discuss efforts to promote scientific excellence through enhancing diversity, equity, and inclusion in neuroscience, and how basic research can inform human therapeutics.

[In opening remarks](#), John Ngai, PhD, Director of the NIH BRAIN Initiative and chair of the MCWG, welcomed a new working group member, Mala Murthy, PhD, (Princeton University). Dr. Ngai also introduced Andrea Beckel-Mitchener, PhD, as the Deputy Director of the NIH BRAIN Initiative. Next, he noted the new [BRAIN Director's Corner](#) webpage as a way to offer his distinct vision of the Initiative by directly communicating with the community. He also described the increase in Congressionally appropriated funds for fiscal year 2021, which helped launch the [BRAIN 2.0](#) transformative projects: 1) Organizing Resources for Brain Cell Type Access and Manipulation Across Species (cell type-specific armamentarium); 2) Phase III Brain Cell Census (parts list); and 3) Next-Generation Technologies for Brain Microconnectivity Analysis (wiring diagrams). Specifically, he mentioned two new funding opportunities for the first project ([RFA-MH-20-556](#) and [RFA-MH-21-180](#)) and the recent [BRAIN Connectivity Workshop Series](#). Next, he reminded the group of the Concept to Clinic: Commercializing Innovation ([C3i](#)) Program and upcoming events, including the 7th Annual [BRAIN Initiative Investigators Meeting](#), which will happen virtually from June 15-17, 2021. Dr. Ngai highlighted recent BRAIN-funded scientific advancements, including a detailed map of basal ganglia circuitry and a transcriptomic taxonomy of over 350 cell types in the mouse isocortex and hippocampus. He also spotlighted technological breakthroughs in brain-computer interface and adaptive deep brain stimulation devices for humans with paralysis or Parkinson's disease, respectively. Lastly, he noted current COVID-19 NIH research efforts, such as the NIH Post-Acute Sequelae of SARS-CoV-2 Infection (PASC) Initiative, which is aimed to better understand and treat the widespread and lasting symptoms experienced by patients previously infected with SARS-CoV-2, commonly referred to as "Long COVID".

The meeting continued with a presentation on activities to promote scientific excellence in BRAIN through enhancing diversity, equity, and inclusion:

BRAIN Initiative Investigator Demographics for Fiscal Years 2014-2020

Devon Crawford, PhD, Scientific Program Manager in the Office of Research Quality at National Institute of Neurological Disorders and Stroke (NINDS), overviewed findings from a [portfolio analysis of BRAIN Initiative investigator demographics between fiscal years 2014-2020](#). Dr. Crawford and her team assessed the distribution of BRAIN grant applicants and funded investigators across several facets of diversity, including scientific discipline, career stage, gender, race/ethnicity, institution type, and geographic location. Overall, BRAIN has funded scientists across scientific disciplines, gender, and race/ethnicity, but certain areas of diversity could be enhanced. For example, there were low numbers of BRAIN grant applications from underrepresented groups and women relative to the NIH as a whole. Further, most applicants were from coastal states and funding rates were higher for research intensive, well-resourced institutions compared to under-resourced and minority-serving institutions.

Promoting Scientific Excellence by Enhancing Diversity, Equity, and Inclusion

Dr. Beckel-Mitchener highlighted current BRAIN diversity, equity, and inclusion efforts, such as funding mechanisms to enhance workforce development, a capacity building and reagent dissemination RFA

open to minority-serving institutions and institutions in [IDeA-eligible](#) states ([RFA-MH-180](#)), and a new BRAIN grant application requirement aimed to foster diversity and inclusivity in neuroscience research by requiring investigators to incorporate diverse perspectives into their projects, thereby changing the culture of science (see below).

BRAIN Plan for Enhancing Diverse Perspectives (PEDP)

Ryan Richardson, PhD, American Association for the Advancement of Science (AAAS) Fellow in the Office of the NIH BRAIN Director at NINDS, introduced the [Plan for Enhancing Diverse Perspectives \(PEDP\)](#), a new component of most BRAIN funding opportunities published in April 2021 and beyond which requires applicants to submit a plan to enhance inclusivity in a way that aligns with their research strategy and/or project goals. PEDP considerations will be included as scored criteria during grant review. Dr. Richardson noted the key plan elements, such as a timeline and milestones, and the anticipated review process. MCWG members discussed setting target goals, measuring outcomes, sharing lessons learned, and ensuring diverse reviewer demographics as such BRAIN diversity efforts evolve. They also suggested outreach focused on current and future activities to university department chairs to drive meaningful culture change.

Next, Kafui Dzirasa, MD, PhD, Associate Professor at Duke University, presented an overview of his research on elucidating the neurobiological basis of behaviors and cognitive processes implicated in mental illness, as well as the translational potential of findings from preclinical rodent studies. In addition to Dr. Dzirasa's [tool development work](#), he discussed a [BRAIN-funded project](#) aimed to uncover how neural activity in multiple brain regions relates to whole-brain networks and behavior. Researchers are monitoring neural activity in behaving mice via electrode arrays and developing computational methods to link these data *a priori* to brain-wide network activity (known as “electrical functional connectomes” or electromes) and behavior. He explained how this novel approach, combined with powerful tools and theories drawn from a range of disciplines, will allow scientists to examine emotional states across species. This framework may inform therapies for psychiatric conditions in humans. Lastly, he emphasized the importance of generalizability of tools across sex and genomic architectures or ancestries, particularly in the context of creating a [human brain cell type atlas](#). The MCWG discussed exploring epigenetics across the lifespan and ancestries, and considered the value of ensuring diverse research participant recruitment, brain tissue donation, and sample collection in BRAIN-funded projects.

Finally, Henry (Hank) T. Greely, JD, Director of Law and Biosciences at Stanford University and NEWG co-chair, provided a NEWG update. Dr. Greely mentioned the NEWG's interest in addressing data sharing and privacy, as well as barriers to diverse human sample collection. He also recapped the National Academies of Sciences, Engineering, and Medicine report on the [Ethical, Legal, and Regulatory Issues Associated with Neural Chimeras and Organoids](#). The group noted a potential emerging need to define and study the neural basis of consciousness and pain perception. Lastly, Winston Chiong, Associate Professor at UCSF, summarized a recent workshop on post-trial obligations. This workshop, organized by the University of Washington and supported by a BRAIN neuroethics administrative supplement, convened investigators and NIH staff to discuss the ethics of and justifications for post-trial obligations, as well as how obligations for neural devices might differ from those of pharmacological interventions.

The meeting proceeded with a closed session of the MCWG members and federal staff to discuss funding plans for several fiscal year 2021 awards. The next NEWG and MCWG meetings will be held on August 19 and 20, 2021, respectively, and [videocast](#) will be available for live viewing and archived.