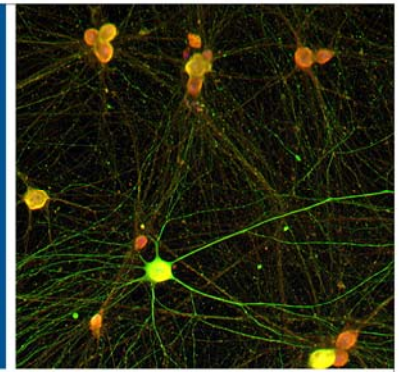


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# The BRAIN Initiative and Neuroscience Investments



## BRAIN Initiative

Brain Research through Advancing Innovative Neurotechnologies (BRAIN) Initiative

- A **multidisciplinary collaboration** involving public and private partners to develop technologies and revolutionize our understanding of the human brain.
- With funding from the BRAIN Initiative, researchers are developing the tools and knowledge needed for **lifesaving breakthroughs**.
- New resources will enable the broader field to **progress faster** in understanding the most complex biological structure in the universe.
- The BRAIN Initiative requires sustained, robust funding to make **vital discoveries** possible.
- As of FY 2020, NIH has contributed about **\$2 billion** to the BRAIN Initiative<sup>1</sup>; SfN recommends at least **\$560 million** in funding per year for the second phase of the program.
- In FY 2020, **183 grants** were funded by the BRAIN Initiative.<sup>8</sup>

## Catalyzing the Overall Neuroscience Investment

NIH: Collaboration among 15 NIH Institutes & Centers supporting neuroscience

- BRAIN is a small, yet important part of NIH funding, accounting for around 1% of the total neuroscience research budget.
- **Pooled resources** connect NIH institutes and centers to **confront research challenges** too complex to be handled by a single institute.

National Science Foundation (NSF) Led Project

- NSF's Understanding the Brain (UtB) project aims to enable scientific understanding of the interaction between the brain, behavior, and environment through targeted **cross-disciplinary investments**.
- In FY 2019, **\$122 million**<sup>2</sup> in funding was dedicated to cognitive and neuroscience research done through this project, which includes funding for the **BRAIN Initiative**.
- These investments are resulting in **tool and technology** creation.

Partnerships

- **Additional federal departments and agencies participate** in the BRAIN Initiative, including the Department of Defense, the Department of Energy, Food and Drug Administration, and more.
- The BRAIN Initiative leverages **foundations** like the Kavli Foundation, the Simons Foundation, the Allen Institute for Brain Science, the Pediatric Brain Foundation, and the Howard Hughes Medical Institute.
- Includes **industry partners** like Google, GE, Inscopix, Medtronic, GlaxoSmithKline, and others.

## Recent Advancements

### The Allen Institute for Brain Science Developed the Most Detailed Brain Map to Date

In 2019, the Allen Institute for Brain Science unveiled the most detailed 'parts list' of the human brain to date. The project (which spanned five years funded by the BRAIN Initiative) involved combining high-resolution neuroimaging with genetic-based cellular-level mapping to create a complete digital brain atlas. The atlas was made available online to scientists and the public through [brain-map.org](http://brain-map.org). This will help future brain studies to more accurately plan research.<sup>5</sup>

### University of California, San Francisco Created Speech From Brainwaves

BRAIN Initiative Scientists at the University of California, San Francisco used brain signals recorded from epileptic patients to program a computer to mimic natural speech. Paralysis caused by stroke or other neurological conditions can rob a person's ability to speak. This new approach could one day help paralyzed patients communicate.<sup>6</sup>

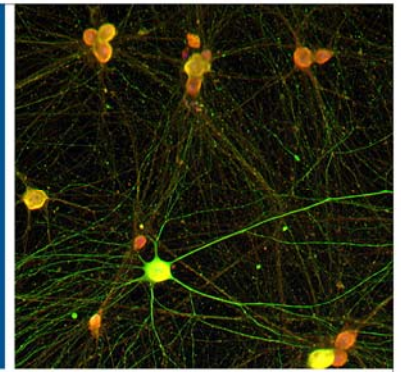
### Simons Collaboration for the Global Brain Supported a Study to Understand Communication Disorders

In a study supported by the Simons Collaboration for the Global Brain, a BRAIN Initiative scientist at the New York University School of Medicine measured brain activity from musical mice while they sang duets, and discovered a brain region critical for the split-second timing of songs. This fascinating may lead to therapies for communication disorders, such as autism.<sup>7</sup>

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## Sources

- <sup>1</sup> <https://brainblog.nih.gov/brain-blog/congress-passes-budget-bill-nih-brain-initiative-receives-60m-additional-funds-fiscal>
- <sup>2</sup> *FY 2021 Budget Request to Congress*. National Science Foundation. February 2020.
- <sup>3</sup> Dubinsk, L. (2017, Jan 5). Cleveland clinic performs nation's first deep brain stimulation surgery on stroke patient. *Dotmed.com*.
- <sup>4</sup> NIH. (2015, Dec 30). New NIH-funded memory drug moves into phase 1 clinical study. *National Institutes of Health*.
- <sup>5</sup> Lein, E. (2019, Aug. 21). Conserved Cell Types With Divergent Features in Human Versus Mouse Cortex. *Nature.com*
- <sup>6</sup> Chang, E. (2019, April 24). Speech Synthesis From Neural Decoding for Spoken Sentences. *Nature.com*
- <sup>7</sup> Global Brain (2020, Feb. 25) Studying Human Speech With Animals That Can't Talk. *Simons Foundation*
- <sup>8</sup> The BRAIN Initiative Funded Awards. [Braininitiative.nih.gov](http://Braininitiative.nih.gov)

*The Society for Neuroscience (SfN) is a nonprofit membership organization of around 30,000 scientists and physicians who study the brain and nervous system. Visit [Sfn.org](http://Sfn.org) or email [advocacy@sfn.org](mailto:advocacy@sfn.org) to learn more.*