Vision for primate neuroimaging to accelerate scientific and medical breakthroughs

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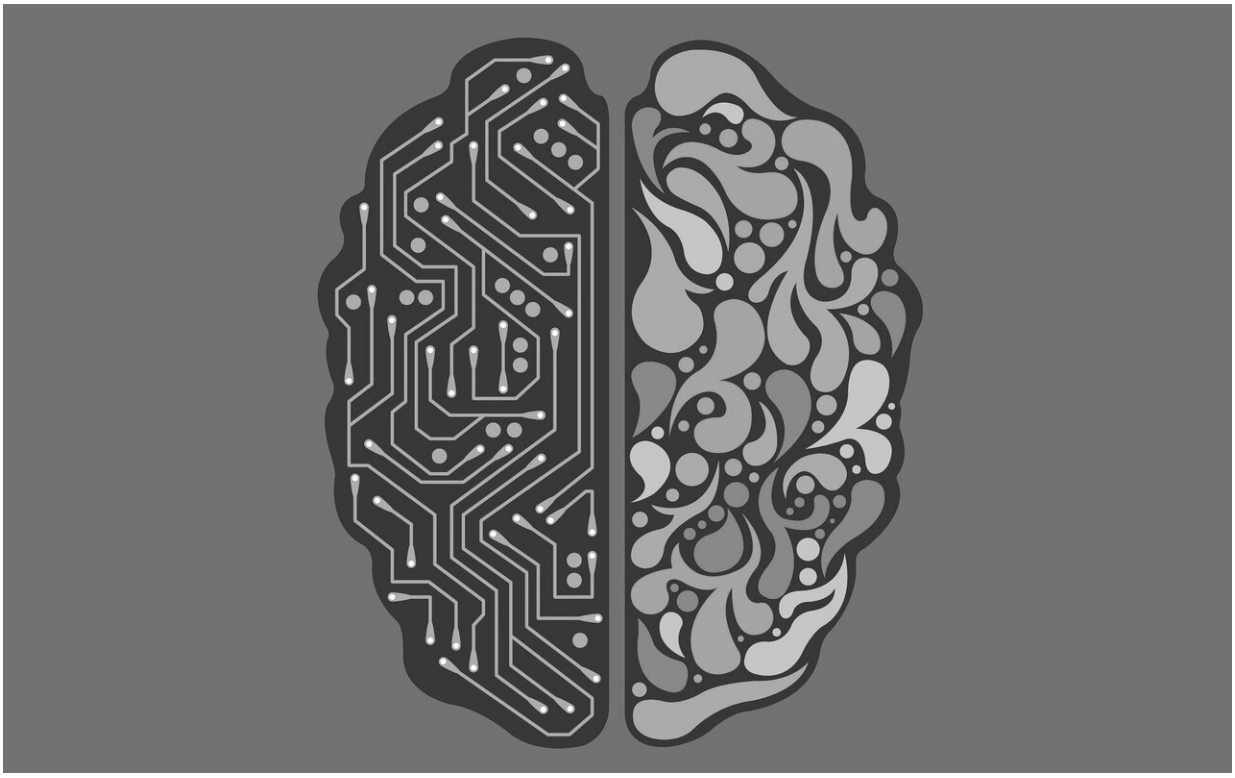

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A global community of over 150 scientists studying the primate brain has released a blueprint for developing more complete "wiring diagrams" of how the brain works that may ultimately improve understanding of

many brain disorders.

In a new paper published in the journal *Neuron*, participants in a Global Collaboration (entitled the PRIMatE Data Exchange: PRIME-DE) reveal an exciting vision for how primate brain imaging can help to accelerate landmark discoveries in neuroscience and medical breakthrough of direct relevance to humans. PRIME-DE is an open science program of the International Neuroimaging Data-sharing Initiative of the Child Mind Institute.

Through highly collaborative global efforts such as the Human Connectome Project, the human neuroimaging community has matured. However, important information about how the brain works often cannot be obtained in humans.

Until recently, there has been little global collaboration focused on nonhuman primate brain imaging. If this can be achieved, it will allow better direct translation of information from animal research to humans and accelerate breakthroughs in biomedicine. In sum, everyone benefits when the global community shares for greater openness and puts forward a vision to stimulate scientific discovery around the world.

To accelerate the pace of progress, the PRIME-DE initiative recently established a repository of openly shared data and assembled a vibrant international community of scientists for a Global Collaboration workshop hosted by the Wellcome Trust in London last September 2019. Additional funding support for early career investigators was provided by the BRAIN Initiative, Kavli Foundation, and National Institute of Mental Health. The resulting paper, "Accelerating the Evolution of Nonhuman Primate Neuroimaging," summarizes the vision and goals of the global community.

The authors write that the community can dramatically accelerate the

pace of progress if these commitments are made across the globe:

- Increasing the Quality of Brain Imaging. The community can establish data quality and minimal specifications for brain imaging acquisition to increase shared data value across the world.
- International Regulations and Public Engagement. International institutions and regulators can work together to support global collaboration, openly communicate the importance of the work with animals and the high levels of care of research with both human and nonhuman animals.
- Harnessing the Latest Technology. Adopting the latest technology is required for generating important insights from these large amounts of data, maximizing benefits for science and medicine.

The paper also outlines the community ambitions to openly share thousands of datasets and the development of a large-scale, multimodal resource to directly complement the Human Connectome Project and to bridge to information that cannot be obtained in humans.

"Primate neuroimaging has remained largely piecemeal and single-lab driven, causing most scientists to struggle to amass datasets consisting of even 10 to 20 individuals, whereas the human-imaging community now aim for thousands," write co-authors Michael Milham, MD, Ph.D., vice president of research at the Child Mind Institute and director of the Center for Biomedical Imaging and Neuromodulation at the Nathan S. Kline Institute for Psychiatric Research; and Christopher I. Petkov, Ph.D., professor of comparative neuropsychology at Newcastle University Medical School. "If this global collaboration blueprint serves as a litmus test of what the future will bring, exciting advances and discoveries not possible to achieve in a single laboratory or country will soon become evident by global collaboration."

Provided by The Child Mind Institute