Interview with BRAIN Project Pioneer: Miyoung Chun

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Brain [1] Research through Advancing Innovative Neurotechnologies (BRAIN) project, which President Obama announced [2] in his State of the Union [3] address in February, will be a decade-long effort to understand the nature of thought (See "Why Obama's Brain-Mapping Project Matters [4].") The project, which inevitably evokes the Human Genome Project [5], will demand billions in research funding and require the coöperation of many government agencies, universities, and foundations. Miyoung Chun [6], a molecular geneticist and vice president for science programs at the Kavli Foundation [7], has been coördinating communication among those involved since planning [8] began 18 months ago.

What do you hope to map, exactly?

We've made great strides since neurons were recognized [by Santiago Ramón y Cajal [9] more than 100 years ago] as the basic functional unit of the nervous system. We know how to measure the activity of small numbers of neurons—up to a few hundred. Using functional MRI [magnetic resonance imaging [10]], we also know how to measure the activities of patches of large numbers of neurons—from 30,000 to one million. But many critical brain functions involve anywhere from a few thousand to many millions of neurons.

BRAIN will generate revolutionary new tools to measure the brain activities in thousands to millions of neurons in order to produce a general theory of the brain.

Why do it?

We want to understand how we reason, how we memorize, how we learn, how we move, how our emotions work. These abilities define us. And yet we hardly understand any of it.

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