

\$350 million in new funding for brain research

President Barack Obama announced in April a \$100-million Brain Research through Advancing Innovative Technologies (BRAIN) Initiative for fiscal year (FY) 2014. This ambitious neuroscience research initiative to understand and map the brain is a bold move amid the general federal budget tightening affecting biomedical research (**Table 1**). It also complements ambitious programs elsewhere, including the European Human Brain Map (<http://www.humanbrainproject.eu/>) and a \$100-million brain research initiative in the Ontario Brain Institute of London, Ontario, recently announced by the provincial government there.

The US BRAIN Initiative includes funding from several federal agencies, notably the National Institutes of Health, National Science Foundation and Defense Advanced Research Projects Agency, as well as from several private-sector foundations, including the Allen Institute for Brain Science, the Howard Hughes Medical Institute, the Salk Institute and the Kavli Foundation. Their overall contribution will more than double the first round of federal funds, bringing the sum to \$232 million.

The principal goal of the BRAIN Initiative is to help researchers find new ways to treat, cure or prevent brain disorders, such as Alzheimer's disease, epilepsy and traumatic

brain injury, according to administration officials. In terms of technology development, a major aim is "to produce dynamic pictures of the brain that show how individual brain cells and complex neural circuits interact."

Leaders of the Society for Brain Mapping and Therapeutics and the Brain Mapping Foundation (BMF), who advised the White House on the BRAIN Initiative, praised the Obama Administration for moving forward with the initiative, planned for fiscal year (FY) 2014. They also announced plans in April to establish a NanoBioElectronic Consortium. It will focus on "integrating nanotechnology, stem cell, cellular and molecular biology, immunology, device and imaging," says Babak Kateb, president of BMF and director of the National Center for NanoBioElectronics in Moffet Field, California.

About a week earlier, the Ontario provincial government announced a five-year,

\$100-million commitment to the Ontario Brain Institute (OBI), a nonprofit group. It was established in 2010, in part, to "support the Ontario government's vision to accelerate commercialization and improve patient care through a strong research community," says OBI chair Joseph Rotman. More specifically, new funding from the provincial government will enable OBI to expand its research support into depression and neurodegenerative diseases, such as Alzheimer's, while continuing to support work in autism, cerebral palsy and epilepsy, he says.

This year, the European Commission (EC) also earmarked €150 (\$194.4) million in new funding for 20 international brain research projects, bringing the total EU investment in brain research since 2007 to >€1.9 (>\$2.5) billion. Several months earlier, the EC identified two research proposals that it will fund at €0.50 (\$0.65) billion each over the next decade, with matching funds bringing eventual outlays for each of those projects to €1 (\$1.3) billion.

"Brain research could help alleviate the suffering of millions of patients and those that care for them," says European Research, Innovation and Science Commissioner Maire Geoghegan-Quinn. "Treating those affected is already costing us €1.5 million every minute, and this burden on our healthcare systems is likely to rise as our population ages. Unlocking the secrets of how the brain works could also open up a whole new universe of services and products for our economies."

In April, GlaxoSmithKline (GSK) of London launched its own research program in this area, sponsoring a \$1-million prize for technology development and promising additional funds to support as many as 40 academic researchers in 20 laboratories. The central goal will be development of "electroceuticals" for treating disorders in the peripheral nervous system. Electroceuticals encompass bioelectronic medicines and microscale devices that can "manipulate nerve impulses to treat a range of diseases," GSK officials note.

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Simone Brandt/Alamy

Table 1 Biotech in Obama's 2014 budget. Highlights of the \$3.8-trillion budget proposals for FY 2014^a

Federal allocation (\$ millions)	Focus
142,800	Overall federal R&D spending \$69.6 billion for non-defense R&D, 1.3% year-on-year increase
31,000	National Institutes of Health budget to support biomedical research, 1.5% year-on-year increase
12,700	Overall US Department of Energy spending (for clean energy R&D and advanced manufacturing); 18% year-on-year increase
7,600	US National Science Foundation spending, 8.4% increase year-on-year
4,700	US Food and Drug Administration spending, of which \$2.6 billion comes from budget authority and the remainder from user fees (including \$10 million to improve the safety of food and medical product imports), 21% year-on-year increase
2,800	The Office of Energy Efficiency and Renewable Energy spending (an increase of almost 56% year-on-year), including an \$87-million increase in the Bioenergy Technologies (formerly Biomass and Biorefinery Systems R&D) program. Proposal to renew three Bioenergy Research Centers for basic and bioenergy technology R&D
415	Office of the Assistant Secretary for Preparedness and Response, development of next-generation medical counter-measures against chemical, biological, radiological and nuclear threats, 2% year-on-year decrease
16.6	Funds to encourage development of a "bio-economy"; innovative proposals at the interface of biology, mathematics, the physical sciences and engineering; biological portion, 116% year-on-year increase
26	US Department of Agriculture biomass R&D, a 35% year-on-year decrease
0	US Department of Agriculture Bioenergy for Advanced Biofuels, which was allocated \$65 million in 2013, 100% year-on-year decrease

^aAlso contains proposals to close donut hole (coverage gap between low and catastrophic threshold for prescription drugs).