HBP
The Human Brain Project

PRESS RELEASE

The European Commission has officially announced the selection of the Human Brain Project (HBP) as one of its two FET Flagship projects. The new project will federate European efforts to address one of the greatest challenges of modern science: understanding the human brain.

The goal of the Human Brain Project is to pull together all our existing knowledge about the human brain and to reconstruct the brain, piece by piece, in supercomputer-based models and simulations. The models offer the prospect of a new understanding of the human brain and its diseases and of completely new computing and robotic technologies. On January 28, the European Commission supported this vision, announcing that it has selected the HBP as one of two projects to be funded through the new FET Flagship Program.

Federating more than 80 European and international research institutions, the Human Brain Project is planned to last ten years (2013-2023). The cost is estimated at 1.19 billion euros. The project will also associate some important North American and Japanese partners. It will be coordinated at the Ecole Polytechnique Fédérale de Lausanne (EPFL) in Switzerland, by neuroscientist Henry Markram with co-directors Karlheinz Meier of Heidelberg University, Germany, and Richard Frackowiak of Centre Hospitalier Universitaire Vaudois (CHUV) and the University of Lausanne (UNIL).

– Norway holds a strong position within neuroscience, an area with an enormous potential to increase quality of human life and reduce medical expenses. We are happy to hear that the European Commission has given FET-status to a project with contributions from two Norwegian groups, one of which linked to the CMBN-Centre of Excellence, says Anders Hanneborg, Executive Director for Division of Science, The Research Council of Norway.

The research group led by Professor Jan G. Bjaalie at the Institute of Basic Medical Sciences, University of Oslo, is contributing to the neuroinformatics part of the HBP. The group is also affiliated with Centre for molecular biology and neuroscience, a former Norwegian Centre of Excellence.

– Integrating our data and knowledge about the brain is an important strategy for meeting the challenges of an aging population and the subsequent steady increase in diseases affecting the brain, says Bjaalie. – In a far-reaching perspective, the possible future consequences of HBP brain mapping will be an opportunity to find new treatments for diseases such as Alzheimer's and Parkinson's.

The researchers in Oslo are particularly involved in the development of digital brain atlases, building on the same principles as Google Maps or Google Earth, but developed to handle considerably more complex information. Digital brain atlases will serve as frameworks to tie together many modalities of brain data and related information and will become important for studying normal and abnormal brain structure and function.

The computational neuroscience research group at the Norwegian University of Life Sciences, led by Professor Gaute T. Einevoll, is contributing to the theory part of the HBP.

– The novel brain simulator to be built in HBP will link the activity in cortical neuronal networks to EEG, MEG, and other measurements of human brain activity. We will use our knowledge in physics and computer science to model this link, explains Einevoll.

The selection of the Human Brain Project as a FET Flagship is the result of more than three years of preparation and a rigorous and severe evaluation by a large panel of independent, high profile scientists, chosen by the European Commission. In the coming months, the partners will negotiate a detailed agreement with the Community for the initial first two and a half year ramp-up phase (2013-mid 2016). The project will begin work in the closing months of 2013.

A scientific portrait of the Human Brain Project

The Human Brain Project will provide new tools to help understand the brain and its fundamental mechanisms and to apply this knowledge in future medicine and computing.

Central to the Human Brain Project is Information and Computing Technology (ICT). The project will develop ICT platforms for neuroinformatics, brain simulation and supercomputing that will make it possible to federate neuroscience data from all over the world, to integrate the data in unifying models and simulations of the brain, to check the models against data from biology and to make them available to the world scientific community. The ultimate goal is to allow neuroscientists to connect the dots leading from genes, molecules and cells to human cognition and behavior.

A novel medical informatics platform will federate clinical data from around the world, allowing medical researchers to unlock the clinically valuable information they contain and to incorporate it in computer models of disease. The goal is to develop techniques for the objective diagnosis of the brain's diseases, to understand their underlying mechanisms and to speed up the search for new treatments.

Finally, the HBP will build new platforms for "neuromorphic computing" and "neurorobotics", allowing researchers to develop new computing systems and robots based on the architecture and circuitry of the brain. The new systems will use detailed knowledge of the brain to address critical problems facing future computing technology: energy efficiency, reliability, the huge difficulties involved in programming very complex computing systems.

The HBP will fund independent scientists to use the new platforms for their own research, reserving a substantial part of its budget for this purpose. In brief, the HBP will create a CERN for the brain.

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