
Foreword

This special issue of *Functional Neurology* is devoted to the Human Brain Project (HBP). The HBP is one of the two FET (Future Emerging Technologies) Flagship projects approved this year by the European Commission and its main target is to reach an understanding of the mechanisms of brain functioning, an achievement destined to have major repercussions in the biomedical and technological fields.

The HBP focuses on an integrated interpretation of brain functioning, from molecular to cognitive level, and to this end it involves the development of new tools for large-scale mathematical modeling of the brain. This creates a bidirectional link between computational and robotic sciences on the one hand, and biomedical sciences on the other, both of which are essential not only to implement brain modeling but also to receive potent feedback from it. Given its architectural complexity, the project is structured in several platforms, comprising Brain Simulation, Neuroinformatics, Neurorobotics, Neuromorphic Computing, High-performance Computing, Cognitive Neuroscience, Theoretical Neuroscience, Molecular and Cellular Neuroscience, Medical Informatics, Ethics and Society, which will be developed by over 80 core laboratories over the next 10 years.

This special issue opens with an overview, by Henry Markram (coordinator of the HBP), of the major challenges facing the field of neuroscience today. It also contains contributions relating to the HBP platforms involving Italian groups, namely those of the University of Pavia (Egidio D'Angelo, Brain Simulation), the University of Florence (Francesco Pavone, Molecular and Cellular Neuroscience), the Politecnico di Torino (Enrico Macii, Neuromorphic Computing), and the IRCCS Fatebenefratelli Brescia (Giovanni Frisoni, Medical Informatics).

These papers will be presented in open talks during the kick-off meeting of the Italian HBP group, which will take place on October 17, 2013 in Pavia, just before the Ottorino Rossi Award conference (Pavia, October 18, 2013). The XXIV Ottorino Rossi Award is this year conferred on Prof. Henry Markram.

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