

## **Research Supervisor's Policy on Call for Application, Selection and Management of the Research Area (FY2010)**

Understanding brain functions requires an integrated approach based on research encompassing multiple levels from molecules to cells to neural networks to brain systems. This research area aims to elucidate the principle of formation and function of the brain neural network located at the pivotal point of these levels, and to develop new technologies for controlling the process of formation and activities of this network.

In the application of research proposals in the last fiscal year, we received numerous excellent proposals covering all fields of basic/clinical neurosciences ranging from elucidating the principle of formation and function of neural networks in *C. elegans*, *Drosophila*, zebrafish, or mouse by genetic engineering to unraveling of the neural base of higher order brain functions such as human cognition, motor control, and language using noninvasive brain function measurement methods. Of these, we chose nine proposals on the basis of the following three viewpoints:

(1) In addition to academic excellence, the research should also give prime importance to the elucidation of the molecular mechanism of the formation of the neural network or its functions.

(2) The research should be performed on the basis of original experimental methods/techniques. Research on functional molecules discovered uniquely by the applicant's group is considered important.

(3) The research should have the potential to develop into an innovative technology, which will constitute a breakthrough in neural network research and contribute to the development of applied research in the following three areas—the brain and society/education (social brain), brain and physical/mental health (healthy brain), and brain and information/industry (information brain).

Although the abovementioned basic policies remain the same this fiscal year, please also make a note of the following four points prior to application:

(1) In research that aims at elucidating the roles of specific genes and functional molecules as well as their clinical implications, the research program should include the descriptions about the target neural networks for analyses and methods adopted in the experiments.

(2) in research pertaining to the elucidation of functions of neural networks, in addition to bottom-up studies such as the electrical/optical measurements of neuron activities and plastic changes in synaptic connections, the research program should include a plan to reveal the purposes of information processing performed in the target neural network and the algorithm adopted to attain these purposes.

(3) in research pertaining to higher order brain functions of humans and other primates using mainly noninvasive measurement methods, the research program should include to the maximum possible extent a research proposal intended to reveal how neural information is processed in the neural network of the target brain region to realize its function.

(4) if the research involves human subjects, the research program must conform to the "Declaration of Helsinki" (ethical principles for research involving human experimentation) provided by the World Medical Association and other relevant laws, regulations, and guidelines, as well as adhere to internal regulations of the respective institutions.

Furthermore, we aim to produce results that transcend individual researches by conducting closed meetings where researchers in this research area gather to let the team leaders present their achievements, and by propagating discussions to strengthen the unity among research teams and establish collaborative research themes depending on the circumstances.