Research Supervisor's Policy on Call for Application, Selection and Management of the Research Area (FY2011)

The brain is a complex biological control system with a multi-level hierarchy. Therefore, understanding brain functions requires an integrated approach based on research that encompasses multiple levels ranging from molecules to cells, to neural networks, and 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.

We started to receive the application of research proposals in FY2009. Nine proposals in FY2009 and six proposals in FY2010 were selected. The research topics that have been selected till date cover a wide range of basic/clinical neuroscience fields. One example is research that uses a drosophila model to analyze the brain information processing mechanism for integrating sensory information and associating it with behavioral control by inducing diverse patterns of gene expression in specific neurons. This research will elucidate the construction and operation principles of the brain through neuron-level analysis. Another example is research that reveals the molecular mechanisms for the formation of compensatory neural circuits following brain injuries in human subjects, monkeys or mice, and develops molecular targeted therapies that promote neural reorganization and functional recovery.

So far we have chosen the 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 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. In the case of research on functional molecules, those discovered uniquely by the applicant's group are 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 above mentioned basic policies remain the same for 2011 applications, we welcome proposals for research on new technologies to control the formation (including neogenesis and reorganization) and operation of neural circuits on the

basis of fundamental research findings pertaining to elucidation of the formation and functions of neural networks. Please state clearly a road map pursuing this field of applied research and development, and describe the specific actions and efforts you will undertake during the course of the research. 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.

In the administration of this research area, we aim to produce results that transcend individual researches. We conduct closed meetings where researchers in this area gather to let the team leaders present their achievements, and propagate discussions to strengthen the unity among research teams. We hope that collaborative works are initiated through this process.

Finally, this fiscal year will be the final year in which we will accept new proposals. Although the number of proposals to be accepted will be less than that of FY2010, we hope to receive many ambitious research proposals in line with the objectives of this research area.