

Molecular basis for emotion and its role in higher brain functions and psychiatric and neurological disorders

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【Outline of survey】

The emotion such as fear plays essential roles in the survival of animals in nature. Mammals memorize fearful events and places where they have experienced fears, and it ensures the safety of mammals to feel fear of the events and places. In modern society, there are also a variety of fears that are raised by humans, and the post-traumatic stress disorder (PTSD) is one of the most critical problems. Although this disorder has been treated in the fields of psychology and psychiatry, an essential cause of PTSD is still unknown. In this project, we will attempt to elucidate the following through various approaches such as functional analyses of gene-manipulated mice: the molecular and cellular mechanism for the expression of emotions, the mechanism for the memory of emotions, the molecular and cellular mechanism for the impairment of emotions, the relationship between psychiatric and neurological disorders and the molecular and cellular mechanism for the impairment of emotions, and the relationship between stress and the expression of impaired emotions.

【Expected results】

The results obtained in this project will be available to elucidate the molecular mechanism for psychiatric and neurological disorders in the study using the patients' postmortem brains. In addition, the results will also be able to provide scientific bases for the treatment of disorders of the emotion in children to the research in education and psychology. Furthermore, the tools that will be developed in this research will be able to be applied to the screening of drugs for treating psychiatric and neurological disorders accompanied by the impairment of emotions.

【References by the principal researcher】

- Nakazawa, T., et al. (2006). NR2B tyrosine phosphorylation modulates fear learning as well as amygdaloid synaptic plasticity (in press, *EMBO Journal*).

【Term of project】 FY2006 - 2010

【Budget allocation】 20,300,000 yen

【Homepage address】

http://www.ims.u-tokyo.ac.jp/NeuronalNetwork/Neuronal_Network/Index_english.htm