

Strategy for producing a variety types of neurons by regulating spatial and temporal identities of neural stem cells

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【Outline of survey】

There are thousands types of neurons in the nervous system. It is known that the neuronal subtype is dependent on “when” and “where” the neuron is produced. This raises a hypothesis that a neural stem cell (neuroepithelial cell) has its own identity which is spatially and temporally regulated, leading to produce a specific type of neuron. In this project, I would like to prove this hypothesis in the cerebellar system. I will try to identify molecules that control spatial and/or temporal identities of cerebellar neuroepithelial cells which eventually contribute to neuronal subtype specification.

【Expected results】

Greeting an aging society, the problem of various nervous system diseases and dementia is getting larger, increasing an importance of researches which lead to regeneration and transplantation medical treatment. In this study, we are going to investigate the mechanisms to specify neuronal subtypes and eventually would like to induce a specific type of neurons from neural stem cells. Therefore, it is expected this study may contribute to future regeneration and transplantation medical treatment for neuronal disorders.

【References】

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2. Kawauchi T, Chihama K, Nabeshima Y, Hoshino M: Cdk5 phosphorylates and stabilizes p27^{kip1}, contributing to actin organization and cortical neuronal migration. **Nature Cell Biol.** 8, 17-26, 2006
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【Term of project】 FY2007 – 2011

【Budget allocation】 17,600,000 yen
(2007 direct cost)

【Homepage address】

http://www.ncnp.go.jp/nin/guide/r_diag/E-index.html