【Biological Sciences（Agricultural sciences）】

Finding of Regulatory Proteins of Microtubule Polymerization and Discovery of Natural Compounds against Dementia

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【Outline of survey】

Japan is the world's top country for longevity, and the number of patients of dementia as Alzheimer's disease is increasing. But we have no effective drug for the disease. We created *prolyl isomerase Pin1*-knockout mice and have found that Pin1 protects against Alzheimer's disease. We think that appropriate regulation of microtubule polymerization should decrease the risk of dementia. We would like to find the proteins that regulate microtubule polymerization and elucidate their functions. The goal of this project is to discover natural compounds against dementia.

【Expected results】

We will find regulatory proteins of microtubule polymerization and elucidate the functions of them completely. In order to investigate the biological functions of them, we have been creating the knockout- and the transgenic- mice. We will use these mice to study the pathogenic mechanism of dementia. If the natural compounds that control the regulatory proteins are discovered, they will be the innovative drugs against dementia.

【References by the principal investigator】

・Takahashi K, Uchida C, Shin RW, Shimazaki,K and Uchida T.* (2008) Prolyl isomerasePin1: New findings on post-translational modifications and physiological substrates in cancer, Alzheimer's disease and asthma, ***Cell and Mol Life Sci***. 65, 359-375.

・Uchida T.*, Fanghaenel F, Uchida C, Ostroff L (2005) Prolyl isomerase Pin1 protects against age-related diseases, ***PNE***. 150 (11), 1413-1419. (Japanese)

【Term of project】 FY2008− 2012	【Budget allocation】 80,800,000 yen (direct cost)

【Homepage address】 http://www.agri.tohoku.ac.jp/enzyme/index-j.html/