Overview of Kibo experiment candidates for around 2012

1. Experiment Title

Study of the effects of space flight on the aging of *C. elegans*

2. Principal Investigator

Yoko Honda
Genomics for Longevity and Health
Tokyo Metropolitan Institute of Gerontology

3. Outline of Experiment

To clarify the effects of the space environment on the aging rate of organisms, we proposed to study the aging of the nematode *Caenorhabditis elegans* in space as a model. We examined the effects of a 10-day space flight on an aging marker in the course of the International *C. elegans* Experiment (ICE)-First, 2004. We suggested that the aging rate in space-flown animals was slower than that in the ground control animals. To evaluate this suggestion, we did manipulations of some genes whose expression were changed in space, and found some genes that are related to *C. elegans* aging.

In this study, we propose to construct a simple system to measure their survival rate in space. The synchronized culture of worms in *C. elegans* maintenance medium (CeMM) will be sent into space. The rate of the waving movement can be monitored by CCD camera at 10-day-intervals until the worms stop movement. At the late stage of the worms' lifespan, the ratio of moving worms under microgravity in space is compared with that under 1G in space or on the ground. The worms that do not move are considered to be not alive. We also study some aging markers at several intervals for the experiment in space. The rate of waving movement per 1 min and the pharyngeal pumping rhythm will be measured as the aging markers. This study will observe the complete lifespan in space to provide information about aging in space of animals.