

1. Experiment Title

Studies on microbiota on board international space station and their relationship to health problem

2. Principal Investigator

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3. Outline of Experiment

To survey the microbiota on board a Japanese International Space Station (ISS) module “KIBO” from “brand-new” to “well-used” condition, we need to prepare the analyzing system for microbiota on board ISS and astronauts. We recognize the microbiological problems on ISS as followings:

- 1) The environment on board a space-station is controlled to be comfortable for astronauts and also for saprophytic microorganism. Therefore, it is possible that the crews and equipments exposed to a high concentration of microbes especially fungal spores in the closed system. This makes it essential to investigate the microbiota present in spacecraft and space stations in order to be able to control microbial infection, allergy and disaster. The isolates will be potential pathogenic and they may cause different or atypical clinical features in the environment of space station.
- 2) It is well known that the incidence and changing of normal biota represent the host-immunology and host-parasite relationship. Especially in-flight, we need to intensively investigate not only the environmental microbiota but also the “normal biota” in flight Crew members.

In this research, we will analyze and access the microbiota by the methods and procedures for monitoring of environmental (surface and air) microorganisms using conventional and culture-independent analysis. The information will provide a platform for research and manage microorganisms in long-term manned space missions.

4. Experiment Facility

The Minus Eightys Degree Celsius Laboratory Freezer for the International Space Station(MELFI)

Sampling Kits