

Overview

Procedures for storing biosamples and managing biosample information at ABCC/RERF have, until now, been largely dependent on individual research departments. To preserve these precious biosamples, which include human blood, urine, pathological specimens, and teeth, in good condition over the long term, and to promote further research utilizing such samples, it was crucial to centralize their management and create a database for sample information. In April 2013, the Biosample Center was established to undertake this work. With the goal of clarifying radiation effects on disease and on biological and molecular changes among A-bomb survivors and their children, the Center is centralizing sample management, arranging appropriate storage for quality control, and ensuring effective use of this invaluable material, donated by A-bomb survivors, their children, and spouses. To achieve these objectives, biosamples and sample data previously stored in various departments are being moved to the Center, and samples collected in the future will also be handled and stored there with newly standardized preparation methods. In addition, sample information will be stored in an RERF database for centralized management to take full advantage of these biosamples. This database is to link to clinical and epidemiologic databases.

The 58 deep freezers and 29 liquid nitrogen tanks used for storage of biosamples are currently installed in the Hiroshima Laboratory. Because they had been filled to capacity, securing space for the biosamples became a task of the highest priority. In October 2015, to solve the space issue, we introduced a robotic deep-freezer biorepository system in Hiroshima to accommodate and effectively manage future samples, in addition to the 850,000 existing samples. The robotic biorepository system became operational in March 2016. Introduction of a robotic biorepository at Nagasaki Laboratory is also planned in the future.

BIOSAMPLE CENTER

FY2016 Biosample Center Achievements

- Completed inventory of about 715,000 blood and urine samples among 803,000 samples stored in departmental deep freezers and handed over their control to the Biosample Center (Hiroshima).
- Completed inventory of about 150,000 blood and urine samples among 490,000 samples stored in -80°C freezers or in liquid nitrogen tanks (Nagasaki).
- In FY2016, about 81,900 blood samples (Hiroshima 52,200, Nagasaki 29,700) and about 17,000 urine samples (Hiroshima 10,900, Nagasaki 6,100) have been newly stored in the Biosample Center.
- Changed the approach to urine sample storage from storage of only supernatant sample to storage of both supernatant and primary urine.
- Started to prepare specific and detailed regulations on sample usage and a sample use request form.
- Initiated planning of quality control study to see the effects of long low temperature preservation on biosamples.
- Reported recent progress of the Biosample Center at Local Liaison Council meetings to obtain understanding and support from the local community.