

Overview

Procedures for storing biosamples and managing biosample information at ABCC/RERF have, until recently, 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 manualized 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. This linked system will constitute the Research Resource Center.

The 60 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 August 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 780,000 existing samples. The robotic biorepository system became operational on a trial basis in January 2016. Introduction of a robotic biorepository at Nagasaki Laboratory is also planned in the future.

FY2015 Biosample Center Achievements

- Research Protocol for Collection and Transfer of Samples and Information by the Biosample Center at the Radiation Effects Research Foundation was approved.
- In addition to serum and lymphocytes, we have started to store duplicate plasma samples both in Hiroshima and Nagasaki.
- Transferred biosample storage operations from Department of Clinical Studies and Department of Molecular Biosciences to the Biosample Center as of July 21, 2015.
- With the help of the Information Technology Department, established an internal storage system tailored to storage tubes with two-dimensional barcodes designed for the robotic biorepository system.
- The robotic biorepository arrived at RERF in early June and was installed by the end of August. Following the final fine tuning, it became operational in January 2016.
- Conducted inventory check of biosamples stored in -80°C deep freezers.
- Conducted risk management such as a fall-prevention device for freezers and liquid nitrogen tanks, waterproofing work at doors, and extension of operating time of electric generators from 24h to 48h (Nagasaki).
- Reported recent progress of Biosample Center at Local Liaison Council Meeting to obtain understanding and support from local community.
- Held a workshop on “preservation and usage of biosamples” and exchanged information with experts.