

微生物保存機関巡り (24)

Bioresource Collection and Research Center (BCRC): An Industry-Oriented Service Platform for Biological Materials in Taiwan

Mission

The Food Industry Research and Development Institute (FIRDI) is a non-profit legal entity founded in 1965. The institute has successfully developed key technologies related to food and bio-related industries, and has become the most comprehensive food research institute in Taiwan. The Culture Collection and Research Center (CCRC) was established within FIRDI in 1982, and became a member of the World Federation for Culture Collection in 1984 (Fig. 1). After expanding the collection to human and animal cell resources in 1996 and to genetic resources in 2002, the Center was renamed as the Bioresource Collection and Research Center (BCRC) in 2002. BCRC's functions and mission include: (1) collection, preservation, and distribution of microbial, cell, and gene resources; (2) services for preservation, identification, patent and safe deposit, information, consultation, training, and contract tests; (3) research on biological material isolation, classification, identification, and improvement and development; (4) transfer technology resulting from research on improvement and development of biological materials; (5) provision of resources for public information and policy formulation.



Fig. 1 Bioresource Collection and Research Center (BCRC) based at the Food Industry Research and Development Institute (FIRDI) in Hsinchu, Taiwan.

Core facility

BCRC is a core facility for bio-related industries in Taiwan and has become a multi-function bio-resource center under the government's strategic plan for development of biotechnology industry with the support of the Ministry of Economic Affairs, Council of Agriculture, Ministry of Science and Technology, and National Health Research Institute. It has also been entrusted to operate the Agricultural Microorganism Bank since 1987, the depository of patent biological materials since 1994, the Cell Bank since 1996, the Taiwan Stem Cell Bank since 2008, the Taiwan Medical Cell and Microbial Resource since 2011, and the depository of microorganisms for bio-pesticides since 2014. It is the most important source of biological materials in Taiwan, with holdings of microorganisms of >27,400 strains, animal and human cells of >19,600 lines, and DNAs of >1,190,000 clones, which are distributed yearly in 5,000 batches. More than 50% of the holdings are isolates from Taiwan.

Quality

Being an industry-oriented service platform, BCRC provides a full spectrum of 160 bio-resources-related service items in 25 categories, including deposit and distribution of biological materials, identification and detection of biological materials, training, and collaborative and application research for bio-resources utilization. To improve the quality of bio-resources management and services, BCRC has been certified by the ISO 9001 management system since 2000 for the following practices: (1) depository of patent-related biological materials; (2) contract microbial identifications and tests; (3) cultivation and preservation of animal cell lines; (4) culture collection, preservation, and distribution; and (5) collection, preservation, and distribution of genomic and cDNA libraries. It was accredited in 2007 in respect of its laboratory according to the criteria of ISO/IEC 17025:2005 for industrial needs services, namely, antimicrobial tests, sterility tests, mycoplasma detection, etc. In 2012, it was further accredited in respect of Reference Material Producer according to the criteria of ISO Guide 34 for reference bacteria, fungi, and cell lines.

Service

BCRC endeavors to provide the state-of-the-art techniques and services to meet industry needs. In addition to the well-established microbial, cell, and

gene resources, the resources further include microbial resources for functional food, agricultural microbial resources, mushroom resources for food and medicinal use, stem cell resources, and recently developed reference bacterial and fungal and cell materials, etc. Thousands of identification and authentication services for microbial resources have been completed in recent years. For example, in 2012, within 353 strain identification services, 50% of them were contracted by industries, and 38.5%, 36.0%, and 25.5% services were authentication for fungi, bacteria, and human cells, respectively. The long-term preservation and storage management system established by BCRC provides the biotechnology and pharmaceutical industries with reliable off-site back-up for securing their valuable biological materials (Fig. 2). In response to the increase in natural disasters due to climate change, BCRC has constructed a remote site for maintaining the back-up collections in the south of Taiwan. Up to now, more than 207 cases with a total of more than 280,000 tubes for safe deposit services have been provided; 71% of them have been requested by biotechnology, pharmaceutical, food biotech, consumer goods and chemicals, etc., industries, with the majority of the preserved materials being cell lines. In 2014, the BCRC Partner program was launched to facilitate utilization of collected materials with a partnership among academic providers, BCRC, and industry recipients.

(Bioresource Collection and Research Center/
Food Industry Research & Development
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Fig. 2 Liquid nitrogen (LN₂) storage in BCRC/FIRDI. BCRC offers secure and reliable safe deposit for valuable microorganisms, cell lines and related materials. In response to the increase in natural disasters due to climate change, BCRC has constructed a remote site for maintaining the back-up collections.

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