

The Global Microbial Big Data Cooperation

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Microbial resources are one of the most important natural resources in the world; the scientific basis to support the development of biotechnology and life sciences. Culture collections, as the libraries of these living microbial materials, are urgently required to be combined by a worldwide alliance. The World Federation for Culture Collection (WFCC) is one such community with long-term conservation and research facilities. The WFCC-MIRCEN World Data Centre of Microorganisms (WDCM), which was once hosted in Australia and Japan, is the heart of WFCC and plays a crucial role in providing a database of microorganisms, analyzing of their function, and establishing a platform of international communication. To date, 708 international culture collections from 72 countries have been registered to WDCM.

WDCM has generated an online reference strain catalogue that helps users find local sources of reference strains by citing from all collections to supply contact information, as well as the unique reference of the most appropriate one or more collections. Furthermore, WDCM is developing the Analyzer of Bio-Resources (ABC) as one of the most effective software provided to WFCC members, and which offers searching and statistical tools for culture collections or strains.

The increasing demand for authenticated, reliable biological material and associated information from culture collections has grown in parallel with that of biotechnology. However, only around one-sixth of collections registered in WDCM have an online catalogue, which greatly hinders the visibility—and hence the accessibility—of strains. Thus, WDCM has launched an international project called the 'Global Catalogue of Microorganisms' (GCM) to construct a data management system and global catalogue to help organize, expose, and explore the data resources of its member collections. GCM is expected to be a robust, reliable, and user-friendly system that will help culture collections to manage, disseminate, and share information related to their holdings. It also provides a uniform interface for scientific and industrial communities to access the comprehensive microbial resource information. Up to now, 103 international culture collections from 43 countries have joined GCM, and around 368,000 microbial strains have been included within it.