

The World Federation of Culture Collections (WFCC) and the need for a sustained future of the Australian Collection of Microorganisms (ACM)

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At the first International Congress of Microbiology in Paris (1930) the Commission of Nomenclature and Taxonomy emphasised the significance of culture collections by stating ‘among the most important agencies working towards satisfactory nomenclature and classification of bacteria are the several type collections. These constitute invaluable depositories and much of the future development will depend upon their adequate growth, support and utilisation; in some cases, at least they should develop to research institutes of high grade. It is further urged that all bacteriologists publishing descriptions of new species or important strains of bacteria deposit pure cultures of such with a culture collection that may be made available to others interested’¹. In 1947, during the 4th International Congress of Microbiology the International Federation of Culture Collections (IFCC) was set up and its head office was located at the Centre de Collections de Types Microbiens at Lausanne in Switzerland. In 1962, the formation of the section on culture collections (SCC) was approved by the International Association of Microbiological Societies (IAMS), which later was constituted as the World Federation of Culture Collections at the 10th International Congress of Microbiology in Mexico City in 1970^{1–3}. WFCC was admitted as an Interdisciplinary Commission of the International Union of Biological Sciences (IUBS)¹.

Concurrently, Professor BVD Skerman (Department of Microbiology, University of Queensland) became the first director of World Data Centre for Microorganisms (WDCM) (1972) sponsored by UNESCO, the World Health Organization (WHO) the Commonwealth Scientific and Industrial Research Organisation (CSIRO) and the University. The first edition of the World Directory was published by John Wiley and Sons, Inc. New York. Prof. Skerman was the catalyst and a driving force for a series of reforms that led to the clarification of bacterial nomenclature. He reorganised the International Committee on Systematic Bacteriology and the Judicial Commission by persuading the members to accept and develop the statutes that govern their operations and persuaded them to adopt a new starting date for bacterial nomenclature. The resulting revision of the International Code of Nomenclature of Bacteria

and the publication of the Approved Lists of Bacterial Names under his direction leave a legacy of procedures for the orderly progress of bacterial taxonomy and nomenclature⁴. In 1978, International Cell Research Organization recommended the publication of a revised edition of the World Directory. The revision was again financed from UNESCO, UNEP and the University of Queensland. The 2nd edition of the World Directory was published. In 1984, the WDCM became affiliated with WFCC in 1984 at the 5th International Conference on Culture Collections (ICCC-5) in Bangkok, Thailand.

The WFCC relocated the data centre to the Institute of Physical and Chemical Research (RIKEN) Japan after an open competition to host the data centre in 1986, when Prof. Skerman retired. The WDCM in RIKEN was initially headed by Prof. Kazuo Komagata and later (in 1987) by Prof. Hideaki Sugawara. The WDCM was later transferred to the Institute of Microbiology, Chinese Academy of Sciences (IMCAS) in 2010 and it networks the 726 microbial resource centres of diverse types of microorganisms in over 75 countries in the Culture Collections Information Worldwide database (CCINFO). It also serves as an information resource for the customers of the microbial resource centres (<http://www.wdcm.org/>). From 2012 onwards WDCM started the initiative to construct an effective information environment called the Global Catalogue of Microorganisms (GCM), which provided database management system to culture collections and collected strain catalogue information to form an integrated database. Currently, GCM contains information on 48 335 bacterial, fungal and archaea species from 112 collections in 43 countries and regions.

Today the World Federation of Culture Collections is a Multidisciplinary Commission of the International Union of Biological Sciences (IUBS) and a Federation within the International Union of Microbiological Societies (IUMS). The WFCC is concerned with the collection, authentication, maintenance and distribution of cultures of microorganisms and cultured cells. Its aim is to promote and support the establishment of culture collections and related services, to provide liaison and set up an information network

between the collections and their users, to organise workshops and conferences, publications and newsletters and work to ensure the long-term perpetuation of important collections. The Federation has an Executive Board and works through a series of committees and has statutes and by-laws (<http://www.wfcc.info/>).

Since 1968 the Federation was holding international conferences and the last one took place in Singapore in July 2017. The next conference will take place in Chile in 2020 where the Federation will celebrate its formal establishment 50 years ago.

Biological resource centres and the Nagoya Protocol

In the rapidly changing world culture collections have key roles to play and they are now more than repositories. The growing number of countries have now taken the initiative to establish infrastructures for microbial resources and microbial informatics and the concept of national biological resource centre has been increasingly realised in different parts of the world (<http://www.oecd.org/sti/biotech/oecdbestpracticeguidelinesforbiologicalresourcecentres.htm>). The biological resource centres must meet the high standards of quality and expertise to serve the global scientific community for delivery of biological information and related materials. In addition, the Nagoya Protocol (<https://www.cbd.int/abs/about/>) provides a transparent legal framework for the effective implementation of one of the three objectives of the Convention on Biological Diversity that is the fair and equitable sharing of benefits arising out of the utilisation of genetic resources including microbially-derived ones.

Australian collection of microorganisms

In 2000, the ICC-9 took place in Brisbane under the leadership of then President Prof. Lindsay Sly. Prof. Sly was the Director and the Curator of the Australian Collection of Microorganisms (ACM). Unfortunately, the ACM ceased operations in 2009, after serving the Australian scientific community for 39 years. Prof. Sly also led the establishment of the Australian Microbial Resources

Information Network⁵, which later became linked to the Atlas of Living Australia (<https://www.ala.org.au/>). It is thus imperative that the ACM is revitalised to serve the needs of Australian Microbiologists. With the publication of this article, I would like to invite the Australian Microbiology community for their support towards establishment of a Trust Fund named after Prof. Skerman to ensure long term survival of the ACM and provide a platform for the future establishment of an Australian Biological Resources Centre and full documentation of the unique Australian Microbial Diversity.

I would like to conclude with Prof. Sly's words and emphasise again the significance of the 'recognition of the importance of microorganisms as a source of new frontier opportunities for bioindustries in Australia and the need to strengthen and support culture collections of microorganisms to provide necessary resources to underpin the life sciences and the development of strong and competitive biotechnology'^{5,6}. A special issue dedicated to the 'Culture Collections' will be published in the near future by *Microbiology Australia* to support Australia's resumption of its role at the national and international level and we look forward to working closely with our members who are associated with culture collections in Australia.

References

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