

**ACCESS AND BENEFIT SHARING, A MAIN PREOCCUPATION
OF THE WORLD FEDERATION FOR CULTURE COLLECTIONS (WFCC)**

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Most culture collections were started by scientific institutions or individual scientists, some of them more than 100 years ago, when stable long-term *ex situ* conservation of microbes was almost fiction. Today 525 culture collections in 67 countries are registered with the World Federation for Culture Collections (WFCC¹), World Data Centre for Micro-organisms (WDCM¹). One of the aims of the WDCM is optimal transparent dissemination of information. WFCC members contribute daily to the study, exploration and *ex situ* conservation of microbiological resources vital for humankind. WFCC is organized in a cooperative spirit, best illustrated by its program of “endangered collections” that tries to secure stock of microbial specimens doomed to be lost by lack of funding.

Two years before the Bonn guidelines were drafted, the WFCC became a partner in a European funded project that conceived and developed the MOSAICC² code of conduct for micro-organisms sustainable use and access management. The purpose of this work was to secure transparent access to microbiological diversity for *bona fide* and sustainable use by either public or private entrepreneurs in a fair win-win scheme.

For sustainable balanced socio-economic use of biodiversity, including scientific research, it is necessary to secure sound and easy access to biological material and related information. To achieve a balanced implementation of the Access and Benefit Sharing concept, from a practical perspective, taking into consideration the technical developments, **the World Federation for Culture Collections seeks to develop a simple, cost effective and efficient multi-purpose conveyance system that integrates tracking biological material as well as collecting, managing, and exploiting related information.**

The WFCC works towards the development of a balanced system through the following elements:

Standard microbiological resources transfer and use framework

Material Transfer Agreements (MTA) already exist and have been used for more than a decade but the issue is to get more uniformity in the general conditions of transfer, to ease the distribution of biological material in a coherent contractual framework. Uniformity should be sought preferably at the level of model provisions forming a tailored MTA. WFCC supports the initiative of the European Culture Collections Organisation (ECCO) that is working on a standard MTA for all its members.

Beside facilitating access to microbiological resources through uniform access and distribution rules, it is also necessary to ease their sound exploitation. Well defined property rights play a key role in enhancing economic innovation and the provision of services of general interest. Their most important

^{1/} See www.wfcc.info
^{2/} See www.belspo.be/bccm/mosaicc

contribution is to stimulate long term investment by adjusting the institutional rules to new technologies and evolving societal expectations.

The mere static concept of ownership must be adapted to the requirements of the newly emerging, moving knowledge based bio-economy.

Full private ownership implies exclusive property and the right to sell or lease this exclusive property and all the other rights. However, this concept applies poorly to biological resources when the same material is ‘owned’ by different stakeholders (collectors, isolators, institutes, research groups, etc). In general, innovation in life sciences is characterized by a diffuse process of “exploration” of microbiological resources. Forms of non exclusive property, such as the sharing of resources among public and private research institutions or collaborative databases are thus common in the intermediary stages of the innovation process.

There is thus a need for flexible property rights management tools. Instead of having just the two options of full or no ownership, ownership can constitute a “bundle” of use and decision rights that are attributed to a number of stakeholders / economic agents. It is a scheme allowing multi-ownership of gradual level of use and decision rights. Several rights-owners determine use and access to resources. These rights range from basic access rights to alienation rights.

The concept of “**bundle of rights**” is rooted in intellectual property rights but scales the implementation of IPR according to the stakeholders’ socio-economic needs and goals. It could also take into consideration the role of traditional knowledge.

Practical integrated conveyance system: the use of Globally Unique Identifiers (GUIDs)

By registering its members through a unique acronym and numerical identifier in its official list and urging them to catalogue their microbiological resources, WFCC has developed a pioneering database system in the World Data Centre for Micro-organisms. This feature was originally developed to manage and secure the *ex situ* conservation of microbiological resources. This system allows the tracking of microbiological items. But it also allows the implementation of the CBD “Access and Benefit Sharing” principle since it can potentially retrieve all kinds of information about microbiological resources, including information related to the location and movements of the resource.

Although the labeling within the culture collections world is fairly efficient for its initial purpose, there is a need for complementary ways to detect multiple digital resources: for example, a way to know whether others than the WDCM have data on the same biological source. An initiative in this context, Straininfo.net³ operates through an Integrated Strain Database, which is a central repository that provides a complete and correct view on the synonymous labels assigned to biological specimens during their lifetime. The Straininfo.net portal adds to the commonly used strain numbers a more persistent identifier, a larger identifier that provides extended uniqueness.

Taking advantage of the Straininfo.net project, a model was built for assigning Globally Unique Identifiers (GUIDs) to biological resources. WFCC proposes the development of persistent unique identifiers for global use, combining both the strain label and a persistent location where to retrieve information on microbiological resources. Such GUIDs would be assigned to (micro)biological resources and stored in integrated strain databases. For microbiological resources, an integrated database could be located at the World Data Centre for Micro-organisms (WDCM), which already retains an ID system for WFCC registered culture collections and institutions. Unique identifiers do not intend to replace traditional labeling of strains, genes or other data elements, but allow incorporating them in a larger namespace that provides an extended uniqueness and interoperability. This is a multi-purpose system that can retrieve all kind of data: scientific, technical, administrative, etc., for any kind of use: research, conveyance, resources conservation, etc.

Valuation of microbiological resources

Having organized the legal framework and the technical issues paves the way to benefit sharing but ultimately, to reach a fair deal requires reliable figures. One cannot reach a quantitative deal without having a good estimation of the socio-economic, ecological and scientific value of the microbiological resource that is “traded”. The WFCC has participated in the MOSAICS project which advises further work on appropriate methods to appraise the multiple values of microbiological resources, in such a way that these can be translated in economic terms.

Methods to value ecological items such as ecosystems exist but at present there is no reliable way to value biological items as such. In the case of micro-organisms, the inherent value is not easily defined. In many cases, there is no identifiable inherent value in the microbe until a lot of scientific work has been done to investigate the metabolic pathways of the organism and determine if it has any unique feature.

More specific economic studies on test cases are necessary to adapt existing methods or develop new ones to appraise the value of microbiological items and express it in monetary terms. Such studies could conciliate the economic and the ecological aspects.

Conclusion

The implementation of the concept of “bundle of rights” to allot the right and duties to entitled stakeholders, the use of Global Unique Identifiers to convey transfers of microbiological items combined with an appropriate valuation of the microbiological items make it possible for fair and equitable transaction between provider and users of microbiological items. Building on decades of WFCC efforts in cooperative networking and pioneer work in IT, these new tools are the latest contribution of the culture collections to facilitate access to genetic resources.

However, it remains the responsibility of all stakeholders, including lawmakers, to make the system work and secure access to genetic resources enabling fair benefit-sharing whilst facilitating the objectives of the CBD.
