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Coordination rather than fragmentation: Curating the microbial diversity

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| Plenary lecture |

**Session selection**:

Estimates on the number of prokaryotic **cells** on the planet Earth is somewhere around 5 x 1030. Of these, more than about 85% are assumed to thrive in aquatic and terrestrial subsurface regions. Estimates on the number of **species** are naturally much lower, ranging between 6 x 105 and 107 for fungi and between 106 and 109 for prokaryotes. In contrast, the number of **named species is low**, around 10.000 for prokaryotes and they range between 45.000-300.000 for fungi. Improved isolation strategies will be applied to isolate a much higher fraction of these resources than seen up to date.

At present, the number of strains deposited in the 49 public collections (BRCs, CCs) registered in the Global Catalogue of Microorganisms with the WFCC/WDCM is about 255.000. In comparison to the numbers indicated above these depositions are minute but impressive, considering the effort that is involved in the high quality deposition and maintenance of microbial resources; the number is even higher if those of other WDCM registered and non-registered collections are counted.

Nevertheless, the number of resources isolated word-wide in the frame of research projects, deposited in laboratory collections of unknown quantity and quality, most probably outnumber that available in culture collections to an unexplored extent. A minute fraction of resources will be described as new species and will be available from public collections. Another portion will be included in scientific papers and should in theory at least be available to peers upon request if the recommendation for sharing resources is followed (the practice, however, indicates, that it is not followed). This leaves a vast number of strains in research collections which are probably worth maintaining as they represent unique specimens of scientific and technological value, fulfilling the requirements for deposition if scientifically sufficiently explored. These requirements will be introduced in the lecture.

There is naturally a second side of the coin: As even many of the larger collections already struggle today to keep pace with the mandatory deposition of the increasing number of prokaryotic type strains, they are not prepared (e.g. infrastructure, personnel, mandate) to accept a higher workload accompanying the increase of non-type strain holdings. In times of declining financial resources and the recognition of international, even intercontinental construction of infrastructures, public collections should take the opportunity to establish a new organizational structure to meet the challenges of the microbiological revolution. Rather than accessioning resources in a sheltered national environment collections should develop strategies for harmonized international networking, for improved collection-provider and collection-user dialogs, to build upon individual collection strength.

The strategy of a vision of a coherent international infrastructure will be outlined, using recent European initiatives, such as EMbaRC, and MIRRI, as well as international initiatives such as GBRCN and other regional networks as examples.