Microbiological Common Language (MCL): a standard for electronic information exchange in the Microbial Commons

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Abstract:

Although Biological Resource Centers (BRCs) traditionally have open catalogs of their holdings, it is quite cumbersome to access meta-information about microorganisms electronically due to the variety of access methods used by those catalogs. Therefore, we propose Microbiological Common Language (MCL), aimed at standardizing the electronic exchange of meta-information about microorganisms. The standard is viewed as a framework for the rich description of microbial material ranging from information on the sampling and isolation process and availability in BRCs to the biochemical properties of the microbial material being described. Its application ranges from representing the online catalog of a single collection to accessing the results of StrainInfo (http://www.straininfo.net) integration and ad hoc use in other contexts. MCL is intended to be broadly applicable in situations where microbial material is referenced or used and therefore has been designed to be interoperable with existing and future standards. The standard has been heavily influenced by the Microbial Information Network in Europe (MINE) vocabulary and implements the recommendations put forward by the Organisation for Economic Co-operation and Development (OECD). The abstract model of the standard precisely defines the elements of the standard and is based on the natural workflow from sampling and isolation to a description of the original isolate and subsequent deposits in BRCs. The model can be implemented using a variety of representation technologies, of which currently XML and RDF/XML implementations are readily available. MCL is envisioned as an open, fundamental infrastructure for the future, and therefore greatly encourages input from the microbiological community. The community is encouraged to adopt the standard by creating and consuming data in this format and to provide feedback on the language structure, on existing or missing terms or on governance issues. Only via wide participation by the community will MCL be able to grow beyond its initial practical scope and form the basis of a new era in microbiology where new insights might be gained from the vast amount of scientific knowledge readily available.

Key words: Electronic information exchange, Microbial Common Language (MCL), StrainInfo