

Performing an upgraded and interoperable data management system for ITEM Microbial Culture Collection

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ITEM is an internationally recognized and ISO 9001-certified culture collection, hosted at the CNR-Institute of Sciences of Food Production (ISPA) in Bari (Italy). ITEM holds more than 14.000 strains of agro-food interest including filamentous fungi, yeasts and bacteria. It is a partner of the Italian network of microbial resources collections “JRU MIRRI-IT” (mirri-it.it/) and has been involved in the MIRRI-ERIC Infrastructure constitution (mirri.org). In addition to the ITEM database, strains-related data are included in the i) World Data Centre for Microorganisms (wdcm.org), ii) MIRRI-ERIC Catalogue and iii) CNR Biomemory Project network (biomemory.cnr.it).

Thanks to the support of the ongoing project “SUS-MIRRI.IT”, ITEM is upgrading and improving both the collection database and infrastructure, to integrate all the information associated with the strains preserved, improve quality control management and setting up a disaster recovery plan by creating a physical backup at the CNR-ISPA institute in Foggia (Italy). Generally, collections databases should not be standalone systems, but they must interact with other bioinformatic systems to achieve a global view of data and passport information available on strains [1]. Accordingly, the ITEM upgraded database management relies on interconnections between the recent catalogue of MIRRI-IT and different platforms storing biological data and microbial culture data: BioMICS (BioAware) for on-line catalogue, base statistics and images DB (item.bio-aware.com); EasyTrack2D (Twin Helix) for internal physical storage reference; Bionumerics (Applied Maths) for DNA/RNA sequences and passport data. All information is locally managed by R scripts to conform different standards.

The final goal is to standardize all information under FAIR principles (go-fair.org), in a unique platform with API capabilities to intercommunicate with other external components.

References

1. De Vero L, Boniotti MB, Budroni M, Buzzini P, Cassanelli S, Comunian R, Gullo M, Logrieco AF, Mannazzu I, Musumeci R, Perugini I, Perrone G, Pulvirenti A, Romano P, Turchetti B, Varese GC. Preservation, Characterization and Exploitation of Microbial Biodiversity: The Perspective of the Italian Network of Culture Collections. *Microorganisms*. 2019 Dec 12;7(12):685. doi: 10.3390/microorganisms7120685. PMID: 31842279; PMCID: PMC6956255.

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