

Friday 1<sup>st</sup> July Session 10: 16:40

**Novel species of the genus *Agromyces* and their role in caves and catacombs**

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Only a minor fraction of the microorganisms are known and can be cultivated. Accessing this important natural resource is a prerequisite for studying the microbial diversity and exploitation of the enormous wealth of chemical compounds produced by microorganisms. The chance of detecting rare and novel taxa of microorganisms increases by investigating unusual or poorly studied biotypes like subterranean environments, such as caves and catacombs, which in most cases are characterized by important paintings decorating walls and ceilings.

The biodeteriorative role of microbial communities colonizing hypogean environments, particularly the role of Actinobacteria, has been frequently emphasized. The appearance of whitish powdery patinas, scattered colored spots, production of unstable layers, and scaling disfigures the paintings and represents a threat for the conservation of these cultural properties.

The aim of our study was to isolate and identify novel Actinobacteria of the genus *Agromyces* to understand the role of this genus in hypogean environments. In fact, *Agromyces* spp. have been found to constitute an important part of hypogean microbial communities. A polyphasic taxonomic approach allowed the characterization of five novel species. *Agromyces salentinus* and *Agromyces neolithicus*, were isolated from an Italian cave, Grotta dei Cervi, and *Agromyces italicus*, *Agromyces humatus*, and *Agromyces lapidis*, originated from Domitilla Roman Catacombs.

The description of new species of Actinobacteria, allows a better understanding of the distribution, population dynamics, biochemistry, diversity and genetics of microorganisms thriving in hypogean environments. This knowledge is capital for the conservation of the valuable paintings and other art works present in caves and catacombs.

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