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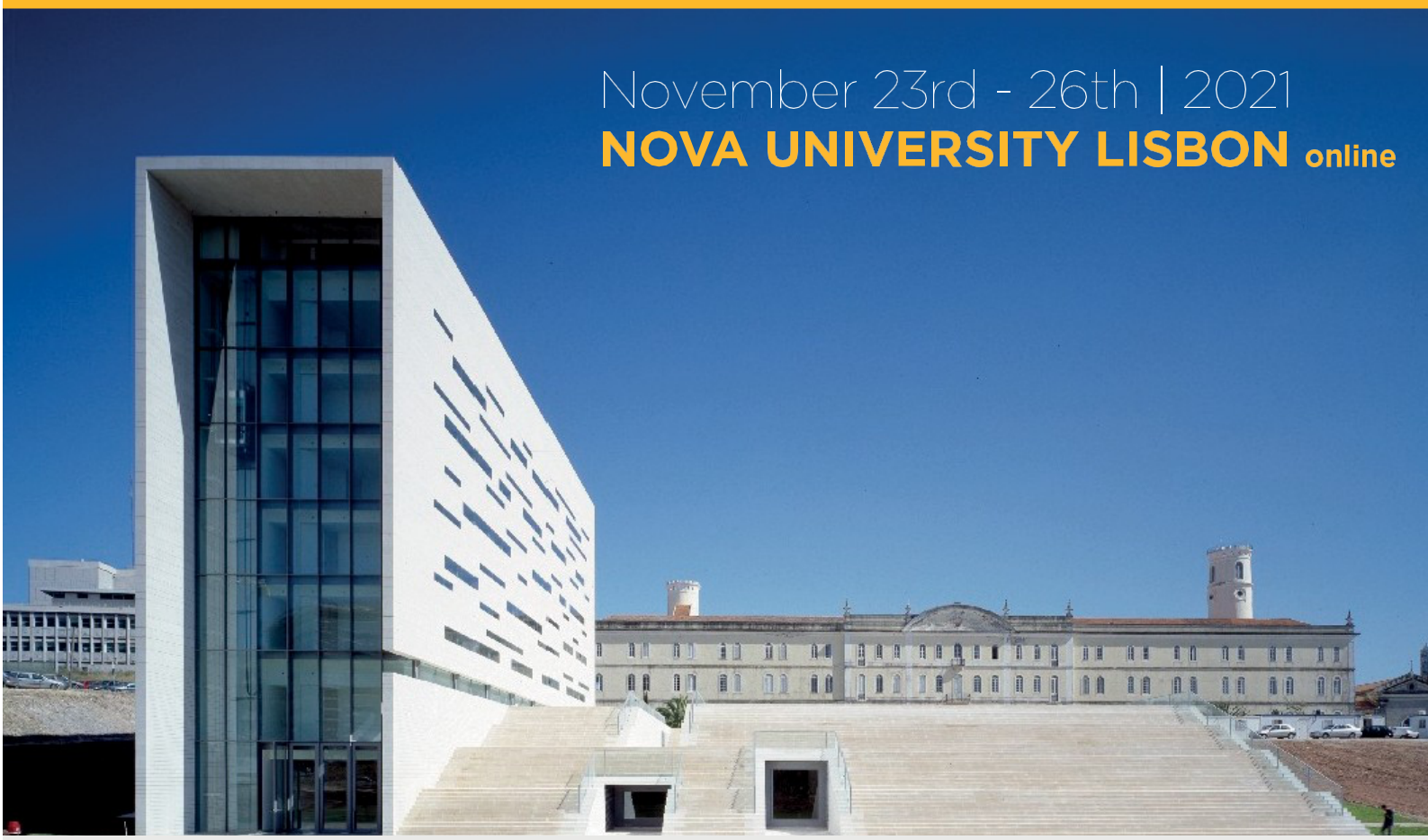

Abstracts Book

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SPM Sociedade Portuguesa de Microbiologia

spbt sociedade portuguesa de biotecnologia

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348. Diversity of metallophytes and metal(loid)-tolerant bacterial strains in a portuguese mine for phytotechnologies purposes

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Soil contamination with metal(loid)s due to anthropogenic activities, such as mining, is a worldwide issue that affects ecosystem functioning and human health. Efforts are currently made to restore these soils through sustainable and economically strategies. Phytotechnologies stand out as reliable and ecologically sound options, focusing on the use of plants and their associated microorganisms to reclaim contaminated lands and decrease pollutant linkages. These options can also provide economic revenues, integrating soil restoration into the circular economy concept. Mining areas host metallophytes, either excluders or (hyper)accumulators, and plant growth-promoting bacteria (PGPB), adapted to high concentrations of metal(loid)s, that can be used in phytoremediation strategies.

The Borralha mine is a deactivated tungsten producer located in the northern Portugal, in which the ending of mineral extraction left several open-air tailings highly contaminated with metal(loid)s, such as Cu, Zn, Cd, As and Pb.

This study aimed to assess the most abundant metallophytes and characterize the culturable bacterial community present in Borralha mine tailings for biotechnological purposes. Plant biodiversity was assessed over 1 year period, covering the different seasons. Based on plant taxonomy, a total of 14 plant species were identified, with some species (e.g., *Agrostis capillaris, Cytisus striatus*, *Erica arborea, Pinus pinaster, Rubus ulmifolius*, *Salix caprea* and *Sedum arenarium)* showing potential to be used in remediation strategies. For soil bacteria characterization, a composite soil sample was collected from vegetated and non-vegetated areas in the tailing zone. A total of 65 bacterial isolates were isolated and characterized genotypically and phenotypically (e.g. metal tolerance and plant growth promoting traits). Several bacterial strains showed potential to be used as bioinoculants in assisted-phytoremediation approaches.

Acknowledgments

This work was supported by Phy2Sudoe - Advancing in the application of innovative phytomanagement strategies in contaminated areas of the SUDOE space (SOE4/P5/E1021) project, funded by FEDER- Fundo Europeu de Desenvolvimento Regional under Programa INTERREG. The authors would like to thank the scientific collaboration under the FCT project UIDB/50016/2020.

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