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BOOK OF ABSTRACTS



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### P-108 - EVALUATION OF DIFFERENT SAMPLING METHODS IN COMBINATION WITH RNA-FISH FOR DETECTING BIODETERIOGENIC MICROORGANISMS IN WOOD ARTWORKS

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#### Background

Artworks are inhabited by microorganisms that can cause biodeterioration. For developing proper safeguard strategies, it is fundamental to identify the microbial communities that are metabolically-active [1]. Depending on the materials used in the creation of artworks the various types of microorganisms adhere differently due to their different characteristics and to their state of conservation [2]. Thus, the selection of a proper sampling method as well as of an effective detection/identification technique, that allow reliable detection and identification of metabolically active microorganisms, is extremely important. RNA-FISH is one of the promising techniques that has been previously applied with this end [3]. Therefore, the aim of this work was to determine the effectiveness of various sampling methods for their combination with RNA-FISH to detect microbial cells involved in artworks biodeterioration. Our attention was specifically focused on wood artworks.

#### Method

Wood slabs were artificially inoculated with bacteria, yeasts and filamentous fungi usually found in artworks (*Bacillus* sp., *Rhodotorula* sp. and *Penicillium* sp. respectively). They were incubated for two weeks and then, various sampling methods were applied for collecting the cells: (i) a swabbing method (with cotton swab); (ii) three impression methods (with filter paper, nitrocellulose and nylon membranes); and (iii) a destructive method. The collected cells were fixed, recovered in suspension and counted. Four different RNA-FISH assays were performed with each sample following the protocol previously described by us [3]: a blank and three assays with addition of probes (of an equimolar mixture of EUB338-Cy3 and EUK516-6-FAM and of the individual probes separately). The analysis were carried out by epifluorescence microscopy.

#### Results & Conclusions

The results showed that independently of the sampling method applied it was possible to: i) recover the three types of microorganisms present in the samples, even though the majority of the cells recovered were filamentous fungi cells; and ii) observe fluorescent signals that allowed to identify each one after the application of the RNA-FISH technique. Among the sampling methods tested, the impression method with nylon membrane was the best in terms of number of cells recovered.

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#### References & Acknowledgments

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