



Book of Abstracts

XIIth SCAR Biology Symposium

Leuven, Belgium, 10-14 July 2017

**BOOK OF ABSTRACTS
XIIITH SCAR BIOLOGY
SYMPOSIUM**

**LEUVEN, BELGIUM
10-14 JULY 2017**

This publication should be quoted as follows:

Anton Van de Putte (Ed.). 2017. Book of abstracts: XIIth SCAR Biology Symposium. Leuven, Belgium, 10-14 July 2017. Scientific Committee on Antarctic Research (SCAR), Cambridge, United Kingdom. 512 pp.

Scientific Committee on Antarctic Research
Polar Research Institute
Lensfield Road
UK - CB2 1ER Cambridge
T: +44 (0)1223 336 550
E: info@scar.org
www.scar.org

The abstracts in this book are published on the basis of the information submitted by the respective authors. The publisher and editors cannot be held responsible for errors or any consequences arising from the use of information contained in this book of abstracts. Reproduction is authorized, provided that appropriate mention is made of the source.

This book has been finalized on 30 June 2017. Any changes after this date have not been adapted.

Environment dependent distribution of glacier and subglacial microbial communities from King George Island (NW Antarctica)

Corina Itcus¹, Soon Gyu Hong², Constantin Marin³, Cristian Coman⁴, Iris Tusa¹, Manuela E. Sidoroff¹ and Cristina Purcarea^{1,5}

¹ National Institute Research and Development for Biological Sciences, Bucharest, Romania
E-mail: cristina.purcarea@ibiol.ro

² Division of Life Sciences, Korean Polar Research Institute, Incheon 21990, Republic of Korea

³ Emil Racovita Institute of Speleology, Bucharest 050711, Romania

⁴ Algology and Microbial Metagenomics Laboratory, Institute of Biological Research, Cluj-Napoca 400015, Romania

⁵ Institute of Biology Bucharest of the Romanian Academy, Bucharest 060031, Romania

The impact of environmental geochemistry on the bacterial and fungal communities from glacier ice and subglacial streams was investigated on various locations of King George Island, NW Antarctica. Subglacial stream samples (42) and ice samples (63) from glacier transects of Barton Peninsula, Weaver Peninsula and Potter Cove areas were collected during ROICE field trips (February 2015 and February 2016) at King Sejong Station KOPRI (South Korea). Cultured microbiota was obtained by cultivation on 1 x R2B and 1:50 diluted media at 4°C and 15°C, leading to isolation of 102 bacterial colonies from glacier ice and 88 colonies from subglacial streams. Scanning Electron Microscopy analysis of both microbial communities and isolated colonies revealed the presence of cocci, bacilli and filamentous microorganisms, the dominant morphotype varying with the sample location. The identified bacterial strains based on 16S rRNA gene sequence belonged to Proteobacteria, Firmicutes, Bacteroidetes and Actinobacteria phyla, with a high representation of Gammaproteobacteria, the majority being homologous to cold environments bacteria.

Physicochemical and geochemical parameters of melted ice samples showed significantly lower pH, TDS and TOC values of glacier ice relative to those of the subglacier water, suggesting the enrichment of the latter one with geochemical compounds at the interface glacier/forefield with expected impact on its microcosm. All glacier ice samples were rather homogenous, belonging to Na-HCO₃ type, with a higher Ca content in the vicinity of subglacier streams, while the stream water was more heterogenous, corresponding to Na-Ca-HCO₃ and Na-Cl types. Trace elements analysis revealed the presence of high concentrations of Al, Fe and Sr, in particular in the subglacial stream water.

Genomic DNA was isolated in triplicate from all ice and stream samples, and the bacterial and fungal diversity determined by 16S rRNA and ITS2 partial gene sequencing, respectively, is currently under way using a MiSeq Illumina platform, to unravel the microbial community structure and correlation with the geochemistry of the glacier ice transects and subglacial streams from Kings George Island area, Maritime Antarctica.

Acknowledgments: This study was financially supported by INCDSB Core Project PN 0936108, ANCS-UEFISCDI PN-II-ID-PCE-2011-3-0742 and H2020 EraNet-LAC ELAC2014/DCC0178 Joint Program. We thank the King Sejong Station team (KOPRI, Republic of Korea) for logistic support.