

Deep life across time and space

Mini-symposium at Swedish Museum of Natural History
Organized by Stockholm University Astrobiology Centre
28th of November
Lilla hörsalen 09.30-17.00

Deep biosphere research is at the scientific frontier of bio- and geo-related sciences, yet it is largely underexplored. In terms of volume, deep subsurface settings represent some of the largest microbial habitats on the planet, and the combined biomass of the deep biosphere encompass the largest living reservoir of carbon, excluding land plants. However, before plants colonized land (~400 Ma), the deep biosphere outweighed the surface biosphere by about one order of magnitude, providing a new “deeper” perspective on the history of life on Earth. Paradoxically, the paleo-record of the deep biosphere is still largely uncharted and neglected. The aim of this meeting is to highlight current research of deep life through time and bring together researchers from various disciplines. The scope of the meeting will bridge paleobiology, geochemistry, geobiology, microbiology and astrobiology. Deciphering the fossil record of the deep biosphere is a challenging task, but when successful, will unlock doors to life’s cryptic past.

09.30 Introduction.

Magnus Ivarsson, Dept. of Palaeobiology, Swedish Museum of Natural History

09.40 Fossil life at “rock bottom”

Therese Sallstedt, Dept. of Palaeobiology, Swedish Museum of Natural History

10.05 The carbon isotope record of the deep biosphere

Patrick Meister, Dept. for Geodynamics and Sedimentology, University of Vienna

10.30 66 million year old impact spherules from the Chicxulub impact revealing traces from the asteroid

Vivi Vajda, Dept. of Palaeobiology, Swedish Museum of Natural History

10.55 Mycelial fossils in the Palaeoproterozoic deep biosphere

Stefan Bengtson, Dept. of Palaeobiology, Swedish Museum of Natural History

11.20 Unconventional biomarker of fungi in the subsurface

Christine Heim, Dept. of Geobiology, University of Göttingen

12.00 Lunch

13.00 Timing and origin of natural gas accumulation in the Siljan impact structure, Sweden

Henrik Drake, Department of Biology and Environmental Science, Linnæus University

13.25 In situ analyses of microbial Ni fractionation in fossilized microstromatolites

Anna Neubeck, Dept. of Earth Sciences, Uppsala University

13.50 Abiotic iron-mineral chemical gardens mimic putative fossils

Sean McMahon, School of Physics and Astronomy, University of Edinburgh

14.15 The survival primacy of methanogens

Anna Schnürer, Dept. of Molecular Sciences, SLU

14.40 Coffee break

15.15 Free-living, anaerobic chytrid-like fungi in the deep subsurface

Oona Snoeyenbos-West, Dept. of Palaeobiology, Swedish Museum of Natural History

15.45 Basalt dissolution experiments with Surtsey microbes

Andreas Türke, Dept of Earth Sciences, University of Bergen

16.10 Discussion and reflections

Magnus Ivarsson

17.00 End