

Elif Koeksoy

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ACADEMIC EDUCATION

Ph.D. in Geoscience, U. of Tuebingen, Germany

Expected 04/2018

Thesis title: Biogeochemical Fe-S-cycling in a Proterozoic Ocean Model Habitat – the high alpine Arvadi Spring.

Geomicrobiology Dep., Center for Applied Geoscience, U. of Tuebingen

Supervisors: Prof. Andreas Kappler & Dr. Itay Halevy

M.Sc. Microbiology, U. of Tuebingen, Germany

2012 – 2014

Thesis title: Arvadi Spring – a Modern Analogue for the Redox Transition from Ferruginous to Euxinic to Oxic Conditions in Proterozoic Oceans.

Geomicrobiology Dep., Center for Applied Geoscience, U. of Tuebingen

Supervisors: Prof. Andreas Kappler & Dr. Katja Laufer

B.Sc. Biology, U. of Tuebingen, Germany

2009 – 2012

Thesis title: Analyses of protein-protein-interactions involved in the bacterial peptidoglycan synthesis of *Staphylococcus carnosus* TM300.

Dep. of Microbial Genetics, Interfaculty Inst. for Microbiology and Infectious Diseases, U. of Tuebingen

Supervisors: Dr. Ute Bertsche & Dr. Julia Deibert

PUBLICATION RECORD

Koeksoy E., Halama M., Konhauser K. O., Kappler A. (2016) Using modern ferruginous habitats to interpret Precambrian banded iron formation deposition. *International Journal of Astrobiology*, **15**, 205-2017.

Deibert J., Kuehner D., Stahl M., **Koeksoy E.**, Bertsche U. (2016) The Peptidoglycan Pattern of *Staphylococcus Carnosus* TM300—Detailed Analysis and Variations Due to Genetic and Metabolic Influences, *Antibiotics*, **5**, 33.

Koeksoy E., Halama M., Hagemann N., Laufer K., Kleindienst S., Byrne J. M., Sundman A., Hanselmann K., Halevy I., Schoenberg R., Konhauser K. O., Kappler A. (accepted with minor reviews) Biogeochemical Iron- and Sulphur-Cycling in the Arvadi Spring – a Paleoproterozoic Ocean Analogue. Submitted to *Geobiology*.

Koeksoy E., Sundman A., Byrne J. M., Hagemann N., Lohmayer R., Planer-Friedrich B., Halevy I., Konhauser K. O., Kappler A. (in prep.) Green Rust Formation in a Paleoproterozoic Ocean Analogue. Target Journal: *Geology*. Anticipated submission February 2018.

CONFERENCE & WORKSHOP CONTRIBUTIONS

Goldschmidt Conference, Paris, France

(08/2017)

Session convener: New insights into the evolution of Archean-Paleoproterozoic environments and the biosphere

Oral presentation: Identity and Abundance of Iron- and Sulfur-Metabolizers in a Paleoproterozoic Ocean Analogue

Scottish Planetary Science Research Network Meeting, Edinburgh, UK

(02/2017)

Poster presentation: Biogeochemical Fe-S-cycling in a Paleoproterozoic ocean model habitat - the Arvadi Spring

Workshop: 'Building Habitable Worlds', Edinburgh, UK

(02/2017)

Geobiology Gordon Research Conference, Galveston, USA

(02/2016)

Poster presentation: Reconstructing Proterozoic ocean Fe-S biogeochemistry using the Arvadi spring (Switzerland) as a modern model analogue

American Chemical Society Conference, Denver, USA

(03/2015)

Oral presentation: Iron mineral formation in an iron- and sulfide-rich early ocean model habitat

- Biomineralization Short Course, CNRS, Paris, France** (12/2014)
Poster presentation: Iron mineral formation in an iron- and sulfide-rich early ocean model habitat
- 'The role of Earth Sciences in the Origin of Life Problem' microsposium, Goettingen, Germany** (05/2014)
Oral presentation: Evaluation of the Arvadi Spring as a modern model for Paleoproterozoic oceans

TRAINING EXPERIENCE

Visiting scientist experience

- Weizmann Inst. of Science, Dep. Of Earth and Planetary Science, Rehovot, Israel** (12/2017)
 Data integration and mineral sample discussion in collaboration with Dr. Itay Halevy
- Center for Geomicrobiology, Aarhus U., Denmark** (01/2015 & 06/2015)
 Training in voltammetric analysis of geochemical gradients in marine sediment cores during assistance in two sampling campaigns in collaboration with Prof. Bo Barker Jorgensen and Dr. Hans Roy
- ANKA Synchrotron Facility, KIT, Germany** (05/2015)
 Training in synchrotron-spectroscopic analyses of Fe- and S-rich mineral precipitates on the Fe- and K-edge by the SUL-X line comprising XAS and EXAFS
- Novartis AG, Basel, Switzerland** (10/2012)
 Meeting with research staff for the isolation of novel antibiotics from soil microbial communities, Dep. of Microbiology & Biotechnology, Interfaculty Inst. for Microbiology and Infectious Diseases, U. of Tuebingen

Participation in field excursions and lab courses

- Field excursion 'Geomicrobiology and Biogeochemistry of High Alpine Fe-rich Cold-Water Springs'** (09/2013)
 Geomicrobiology Dep., U. of Tuebingen
- Lab course 'Geomicrobiology and Environmental Microbiology'**, (10/2013)
 Geomicrobiology Dep., U. of Tuebingen
- Electron microscopy short course** (03/2014)
 Geomicrobiology Dep., U. of Tuebingen
 Training in preparation and analyses of environmental biofilm samples with CLSM, SEM, CLSM of FISH samples and image processing with ImageJ
- Electron microscopy short course** (02/2012)
 Cent. for Molecular Biology of Plants, U. of Tuebingen
 Preparation of thin sections of rock samples, staining and microscopic analyses of human tissue, blood and microbial culture samples

SUPERVISING ACTIVITY

- Student supervision and co-organization of field excursion 'Geomicrobiology & Biogeochemistry of High Alpine Fe-rich Cold-Water Springs'** (09/2015 – 09/2017)
 Geomicrobiology Dep., U. of Tuebingen
- Assistance in lab course 'Geomicrobiology and Environmental Microbiology'** (10/2014 – 10/2016)
 Geomicrobiology Dep., U. of Tuebingen
- Training of students and interns in basic skills of anoxic work** (10/2014 – 02/2015)
 Geomicrobiology Dep., U. of Tuebingen (10/2014 – 12/2014)
 (09/2014 – 11/2014)
- Teaching assistance in lecture 'structure and function of plants'** (11/2011 – 12/2011)
 Cent. for Molecular Biology of Plants, U. of Tuebingen

RESEARCH SKILLS & EXPERTISE

- Sampling experience in marine and freshwater habitats, high alpine cold water springs, glacier melt lakes and mine systems
- (Anoxic) sampling of environmental soil, biofilm and mineral samples and their specific treatment for subsequent mineralogical, morphological and microbiological analyses
- Wet-chemical, colorimetric and spectrophotometric analytics including IC, FIA, HPLC, ferrozine and methylene blue assays
- Sample preparation with Critical Point Drying, HMDS and staining with Dead-Live and DAPI for fluorescence microscopy, SEM, SEM-EDX and CLSM
- Expertise in mineral synthesis (ferrihydrite, FeS), mineral extraction from environmental soil and mineral identification by XRD, Moessbauer spectroscopy, XAS and EXAFS
- Microbial community analyses of environmental samples and enrichment cultures using DGGE, 16S rRNA gene sequencing (454) and Most Probable Number counts
- Cultivation and isolation of anaerobic and microaerophilic marine and freshwater cultures (strains *Rhodobacter ferrooxidans* SW2, *Rhodopseudomonas palustris* TIE1, *Clorobium luteolum* S2, *Acidovorax* sp. BoFeN1); expertise in cultivation of hyperthermophilic and barophilic cultures (*Ferroglobus placidus*)
- Rate quantification of Fe-turnover with environmental sedimentary and liquid microcosm experiments under controlled conditions
- Expertise in data processing tools BLAST, Mothur, KEGG, Klee, ImageJ; geochemical modeling experience with MineQL