

Name of research institute or organization:

**Institut für Veterinär Bakteriologie, Universität Bern
Freie Universität Berlin**

Title of project:

Transport and survival of desert soil- and rock surface inhabiting micro-organisms in atmospheric mineral dust

Project leader and team:

Prof. Joachim Frey, Institut of Veterinary Bacteriology, University of Bern
Prof. Dr. Anna Gorbushina, Freie Universität Berlin

Project description:

The part of the project at Jungfrauoch includes samplings of dust from the air after Sahara storm. For this purpose, 2 different sampling systems are prepared to be mounted at Jungfrauoch, i) a filter sampler that collects air on sterilized filters and ii) a Coriolis sample taking liquid samples of sand storm thus having the advantage of including also electrically charged particles that might be lost by the filter sampler.

Current activities were one visit of Joachim Frey accompanied by Prof. Erwin Flückiger. At this visit it was noticed that the Coriolis air-sampler was out of function and that the current placement outside is inadequate for this instrument. The sampler was repaired and a device that would enable to mount the Coriolis and the filter sampler on one of the windows was constructed. Since no storms were announced, no samples could be taken and no further visits could be made.

The laboratory in Berlin (William Broughton, Anna Gorbushina) concentrated on improving methodology in molecular biological as well as geochemical and microbiological analysis of arid sand samples. A representative sand samples collected in the desert of the Republic of Chad were used to evaluate current methods new ones in an attempt to catalogue all microbes present in small dust or sand samples. The methods used (and developed) included classical microbiological approaches in which sand extracts were plated-out on a variety of different media, polymerase chain-reaction (PCR) based amplification of 16S/18S rRNA sequences followed by construction of clone libraries, PCR amplification of 16S/18S rRNA sequences followed by high-throughput sequencing (HtS) of the products and direct high throughput sequencing of DNA extracted from the sand.

Key words:

desert sand, aeromicrobiology, pathogens, African (Sahara, Chad) dust

Collaborating partners/networks:

Prof. William Broughton (Microbiology, BAM; Berlin)
Prof. Eric Triplett (Microbiology, University of Gainesville, Florida)
Prof. Hans-Jürgen Brumsack (Geochemistry, ICBM, University of Oldenburg)

Scientific publications and public outreach 2011:

Refereed journal articles and their internet access

Töpfer, I., Favet, J., Schulte, A., Schmölling, M., Butte, W., Triplett, E.W., Broughton, W., Gorbushina, A.A. Pathogens as potential hitchhikers on

intercontinental dust *Aerobiologia* DOI 10.1007/s10453-011-9230-2 xxxx, 2011,
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Address:

Institute of Veterinary Bacteriology
Universität Bern
Laenggass-Str. 122, CH-3001 Bern

Contacts:

Joachim Frey, PhD
Institute of Veterinary Bacteriology
Universität Bern
Laenggass-Str. 122
CH-3001 Bern, Switzerland
Tel. +41 31 631 2414 (2430)
Fax +41 31 631 2634
joachim.frey@vetsuisse.unibe.ch
www.vetmed.unibe.ch/vbi

Anna Gorbushina
Faculty of Geosciences
Free University of Berlin
Malteserstrasse 74–100
12249 Berlin, Germany
Tel. +49 30 8104 1400 (1409)
Fax +49 30 8104 1407
Department 4 - Materials and Environment
BAM (Federal Institute for Material Research & Testing)
Unter den Eichen 87
12205 Berlin, Germany