



## > Scientific Programme

### PROGRAMME

All abstracts not listed as talks are posters.

POSTERS: Posters boards are A0 in size (landscape) or 1189 by 841 mm.

#### 14<sup>th</sup> European Workshop on Astrobiology

Edinburgh, UK

October 13-16, 2014

<b>Monday October 13</b>	
8:30-9:30	<b>Registration</b>
<b>Welcome</b>	
9:30-9:50	Welcome by the Principal of the University of Edinburgh
9:50-10:00	President of EANA: Frances Westall
10:00-10:10	Chair of Organising Committee: Charles Cockell
10:10-10:30	The Sounds of Scottish Astrobiology
<b>10:30-11:00</b>	<b>COFFEE BREAK</b>
<b>Signatures of Life in Earth's Extremes</b>	
11:00-11:20	Barbara Cavalazzi Extreme among extremes: Salt and sulphur springs of the Dallol (Danakil depression, Ethiopia) and their astrobiological role
11:20-11:40	Ana Miller Biosignatures valuable for astrobiology: the case of reticulated filaments
11:40-12:00	Sam Payler Biogeochemical Cycling and Biogeography in Deep Subsurface Evaporite Deposit Brines
12:00-12:20	Sam Kouvanos Unambiguous Detection of Microbial Growth with Minimal Assumptions
12:20-12:40	Kai Finster Microbial production of ice crystals in clouds as a novel biosignature
<b>12:40-14:00</b>	<b>LUNCH</b>
14:00-14:20	Jesse Harrison Iron starvation under microaerobic conditions suppresses the sensitivity of Halomonas hydrothermalis to sub- and supra-optimal temperatures
14:20-14:40	Corinne Panitz Different stress responses of Deinococcus geothermalis exposed as biofilms or planktonic cells
<b>Minerals and Signatures of Life</b>	
14:40-15:10	Dirk Schultze-Makuch Microhabitats for microbial life in a liquid natural asphalt lake and their relevance as an astrobiological analog to Titan
15:10-15:30	Anja Bauermeister Electric Cable Bacteria and Mineralogical Signatures of Life
15:30-16:00	<b>COFFEE BREAK</b>
16:00-16:20	Joachim Meessen UVC-induced photodamage and its attenuation by co-occurring stressors in the photobionts of the astrobiologically relevant lichens Buellia frigida and Circinaria gyrosa
16:20-16:40	Petra Schwendner Investigating the physiology of anaerobic microorganisms in analog environments: MASE
16:40-17:00	John Brucato Infrared spectral investigations of UV irradiated nucleobases adsorbed on mineral surfaces
17:00-17:20	Marie Bassez Ferromagnesian rocks in association with carbonates as a signature of life
17:20-17:40	Andreas Elsaesser Recovery of Amino Acids from Mineral Surfaces – Implications for Life Detection Strategies

17:40-20:00 **Poster Session and whisky/Scottish gin tasting**

**Tuesday October 14**

**Minerals and Signatures of Life**

9:00-9:30 John Parnell Demonstrating deep biosphere activity in the geological record of lake sediments

**Plasma and Radiation Hazards to Life**

9:30-10:00 Ralf Moeller "The devil is in the detail" – understanding bacterial spore resistance towards plasma sterilization

10:00-10:30 Lewis Dartnell Life on Venus: radiation hazards to an aerial biosphere

**COFFEE BREAK**

11:00-11:20 Joop Houtkooper Expected Biosignatures from Increases in Entropy and Disequilibrium

**Students' contest "space factor"**

11:20-11:25 Ralf Moeller Introduction

11:25-11:40 Michaela Musilovalsolation of radiation resistant bacteria from the Antarctic dry valleys by pre-selection and the correlation between radiation and desiccation resistance

11:40-11:55 Tareq L Omairi Studies on astrobiology with particular reference to cometary panspermia

11:55-12:10 Dagmar Koschnitzkilgnicoccus hospitalis shows high radiation tolerance although never exposed to it in its natural habitat

12:10-12:25 Bo Byloos Potential of Cupriavidus metallidurans CH34 for biomining from lunar-like basalt by determining the molecular mechanisms behind microbe-mineral interactions

**LUNCH**

**Students' contest "space factor" continued**

14:00-14:15 Ralf Moeller Introduction

14:15-14:30 Katja Nagler Analysis of Bacillus subtilis spore germination in high-salinity environments

14:30-14:45 Claudia Pacelli BIOMEX (Biology and Mars Experiment): Preliminary results on Antarctic black cryptoendolithic fungi in ground based experiments

14:45-15:00 Alexandra Perras Grappling hooks: The life style and ultrastructure of the SM1 Euryarchaeon which thrives in a Mars analogue site

15:00-15:15 Giuseppe Gallo The relevance of biosignatures in siderite-nodules: an example from quaternary continental deposits (Tiberino Basin, Italy)

15:15-15:30 Claudia Hahn Introducing the potential of antimicrobial materials for human spaceflight activities

15:30-15:40 Ralf Moeller Summary and closing remarks

**COFFEE BREAK**

**Mars and biosignatures**

16:10-16:30 Martin Lee Evidence for silica springs at the surface of Mars from the Nakhla meteorite

16:30-16:50 Christian Schroder Possible association of ferrous phosphates and ferric sulfates in hydrothermal deposits in Gusev Crater, Mars

16:50-17:10 Adrienne Macartney ALH84001 carbonates formed by low temperature replacement of plagioclase glass

17:10-17:30 Dominic Papineau Organic matter in martian meteorites: ingredients for life or contamination?

**General talk**

17:30-18:00 Euan Clarkson, University of Edinburgh On the geology of Edinburgh and its surroundings: death of an ocean, volcanoes, trilobite eyes and the optics of Descartes and Huygens...and more

**CONFERENCE DINNER**

**Wednesday October 15**

**Instrumentation and searching for biosignatures**

9:00-9:30	Bettina Haezeleer Raman Measurements Under Simulated Martian Conditions
9:30-9:50	Cedric Malherbe Preparations for the use of Raman spectrometers on Mars
9:50-10:10	James Lewis Sulfate minerals: A problem for the detection of organic compounds on Mars?
10:10-10:30	Paloma Serrano Biosignatures of methanogenic archaea by Confocal Raman Microspectroscopy (CRM)
10:30-11:00	<b>COFFEE BREAK</b>
11:00-11:20	Manish Patel Searching for signs of life with the NOMAD spectrometer suite on the ExoMars Trace Gas Orbiter.
11:20-11:40	Adam Stevens Spatial heterogeneity of biomarkers in analogue environments
11:40-12:00	Matt Gunn A hyperspectral Imager for Astrobiology

**Searching for biosignatures using space platforms**

12:00-12:30	Petra Rettberg Biofilms in space – the experiment BOSS on the EXPOSE R-2 mission
12:30-14:00	<b>LUNCH</b>

14:00-14:30	Jean-Pierre de Vera BIOMEX: Three different steps to approach a systematic determination of habitats and stable biosignatures in space- and Mars-like environments
14:30-14:50	Rosa de La Torre Lichens survived ground simulation tests before integration on board of the EXPOSE R2 mission
14:50-15:10	Casey Brycel Impact shocked rocks as protective habitats on an anoxic early Earth
15:10-15:30	Yuko Kawaguchi Tanpopo: Astrobiological exposure and capture experiments of microbes and micrometeorite
15:30-16:00	<b>COFFEE BREAK</b>

**Exoplanets and biosignatures**

16:00-16:30	Lena Noack Interior structure and possible habitability of ocean worlds
16:30-16:50	Eric Lopez Overestimating Eta-Earth: The Importance of Photo-Evaporation
16:50-17:10	Duncan Forgan Surface Flux Patterns on Planets in Circumbinary Systems, and Potential for Photosynthesis
17:10-17:30	William Martin Spectropolarimetry, Biosignatures, and the Search for Homochirality

**Poster session?**

**END OF DAY**

**Thursday October 16**

**Signatures of the prebiotic world**

9:00-9:30	Zita Martins Shock-synthesis of amino acids via the impact of comets
9:30-9:50	Kensei Kobayashi Formation of Amino Acid Precursors and Nucleic Acid Bases from Simulated Interstellar Media and Their Robustness
9:50-10:10	Hajime Mita Exposure and Capturer of Amino Acids and their Precursors on the Japanese Experiment Module of the International Space Station
10:10-10:30	Rowena Ball Hydrogen peroxide as driving agent for replication and evolution in the RNA World
10:30-11:00	<b>COFFEE BREAK</b>

**Cyanobacteria, Mars and their signatures**

11:00-11:20	Kirsi Lehto Pressurized Martian-like pure CO <sub>2</sub> atmosphere is highly usable for the culturing of cyanobacteria
11:20-11:40	Mickael Baque Preservation of cyanobacterial biomarkers after Martian ground-based simulation exposure

**An overall philosophical perspective on the conference**

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11:40-12:10	David DunerThe History and Philosophy of Biosignatures
12:10-12:30	Claudio MacconeEvolution and SETI (Evo-SETI) as Lognormal Stochastic Processes
12:30-13:30	LUNCH AND END OF CONFERENCE

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