PROGRAM

Sunday October 21
Registration  18:00-

Public lecture: First and Second Origin of Life  19:00 -
André Brack (Orleans, France),
Tetsuya Yomo (Osaka, Japan)

Monday October 22
Registration
08:00-
Welcome
9.00-9.20

Session  Chair: Harry Lehto
9.20-10.20

1. Astrobiology, Life and Habitable zones

1.1 Updating the Astrobiology Roadmap  12
    Carl Pilcher

1.2 Life, the Universe and Habitable Zones  13
    Rami Rekola

1.3 The quest for terrestrial planets  14
    Ewa Szuszkiewicz

Coffee
10.20-10.50

Session  Chair: Werner von Bloh
10.50-12.10

2. Life, climate and the atmospheres

2.1. Biological feedbacks as cause and demise of Neoproterozoic icehouse:
implications for multicellular evolution  15
    *P. Janhunen, H. Kaartokallio, I. Oksanen, K. Lehto, H. Lehto

2.2 Life and Climate: Is there a link?  16
    Peter Ditlevsen

2.3 The importance of high CO₂ amounts in young terrestrial planetary
atmospheres  17
    *H. Lammer, M.L. Khodachenko, M. Panchenko, N. Terada, Yu.N.Kulikov

2.4 The life span of a photosynthetic-active biosphere on super-Earth planets  18
    *C. Bounama, W. von Bloh, S. Franck
Lunch and EANA executive council meeting
12.10-14.00

Session  Chair: Maria Webb
14.00-15.20

3. Mars research

3.1 Detection of anticipated life on Mars by Phoenix
  *Joop M. Houtkooper, Dirk Schulze-Makuch  

3.2 Methane and formaldehyde: their abundance and sources on the Earth and Mars
  *C. Muller and D. Moreau

3.3 Geological and Paleo-Climatic Constraints for the Search of Life on Mars
  *V.-P. Kostama, M. Aittola, J. Korteniemi, H. Lahtela, T. Törmänen, T. Öhman
  and J. Raitala

3.4 Modelling the surface and subsurface Martian radiation environment:
Implications for Astrobiology

Coffee
15.20-15.50

Session  Chair: Frances Westall
15.50-17.10

4. Early life

4.1 The origin and evolution of viruses
  D. Bamford

4.2 Horizontal gene transfer: evolution by default or product of natural selection?
  Anthony Poole

4.3 Membranes and the Origin of Cellular life
  *Tiina Laiterä and Kirsi Lehto

4.4 Elaborate morphologies in probable microfossils from Archaean chert, Pilbara Craton,
Western Australia: indicators of complex cell behaviour?

18.30-21.00 Poster session and refreshments

Tuesday October 23

Session  Chair: Axel Brandenburg
9.00-10.20
5. Prebiotic chemistry

5.1 Conformation-dependent racemization of aspartyl residues in model peptides
   *A. Brack, K. Kuge, N. Fujii 27

5.2 Driving chirality
   H. Lehto 28

5.3 Emergence of chirality and molecular evolution
   *Raphaël Plasson, Hugues Bersini, Axel Brandenburg 29

5.4 A Terrestrial Prebiotic Route to Pyrroles and Higher Aromatics
   *H. Strasdeit, S. Fox, D. Denysenko 30

Coffee
10.20-10.50

Session Chair: Jean-Francois Lambert
10.50-12.10

5.5 Oxidative Pathways of Reduced Phosphorus Compounds:
   A Primary Source of Condensed Phosphates on the Early Earth
   *M. A. Pasek, T. P. Kee, J. I. Lunine 31

5.6 Phosphorus Redox Chemistry in Planetary Environments:
   Implications for the Origins of Life
   D. E. Bryant, I. B. Gorrell, D. Greenfield, S. M. Evans, L. Wang, D. E. Heard,
   M. A. Blitz, A. Goddard, C. Smith, M. A. Pasek, *T. P. Kee 32

5.7 Abiotic organic synthesis underneath the ocean floor
   Nils G. Holm 33

6. Small bodies in the solar system: Comets, Meteorites, Moons

6.1 Unbiased meteorite statistics: an impossible task? The Oman experience
   *Beda A. Hofmann, Edwin Gnos, Manuel Eggimann, Ali Al-Kathiri 34

Lunch and EANA executive council meeting
12.10-14.00

Session Chair: Yves Ellinger
14.00-15.20

6.2 Organics on Wild 2 Comet: Laboratory results of stardust samples
   *J.R. Brucato and the Stardust Team 35

6.3 Composition of Saturnian E-ring Particles. Probing subsurface Oceans of Enceladus?

6.4 Interplay of Novel Organic and Inorganic Chemistry on Titan
   Sam Abbas 37
6.5 Photochemistry of organic molecules related to Mars, Titan, Meteorites and Comets: Experiments in Terrestrial orbit and laboratory simulations

Coffee
15.20-15.40

EANA General assembly
15.40-16.20

Workshop Dinner and Sauna 16.30/18.45 - 23.00
For participants for the sauna, the departure will be approx at 16.30 directly from Educarium
The dinner only people will join the group later. The bus leaves at 18.45 sharp at the Orthodox Church by
the Market place and at 19.00 at Caribia hotel.
Return is scheduled for 23.00. Further details will be given at the meeting.

Wednesday October 24
Session Chair: Gerda Horneck
9.00-10.20

7. Life in extreme conditions

7.1 Microbial life in extreme subglacial Antarctic lake environments: Lake Vostok
*S. Bulat, I. Alekhina, V. Lipenkov, V. Lukin, D. Marie,
C. Lavire, P. Normand, J.R. Petit

7.2 The Enigma of the Nitrate Deposits in the Atacama Desert, Chile
*Rocco L. Mancinelli, Kimberley Warren-Rhodes, Amos Banin, Ragnhild Landheim

7.3 UV-induced DNA damage in Deinococcus radiodurans: Photoprocesses and gene expression

7.4 Growth of Microorganisms at Martian Subsurface Conditions: Laboratory Modeling
*A. K. Pavlov, V. N. Shelegedim, M. A. Vdovina, A. V. Tretyakov

Coffee
10.20-10.50

Session Chair: Kirsi Lehto
10.50-12.10

7.5 New insights into the microbial diversity in spacecraft assembly clean rooms and
the impact on planetary protection
*C. Moissl, Kasturi Venkateswaran, Gerhard Kminek

8. Lithopanspermia

8.1 Shock experiments in support of the Lithopanspermia theory: The influence of host rock
composition, temperature and shock pressure on the survival rate of endolithic
and epilithic microorganisms
9. Education and Public Outreach

9.1 The Science and Culture of Astrobiology in Education and Outreach
Mark Brake and Martin Griffiths 45

9.2 ABC-Net, a European Astrobiology Lecture Course Network
*Gerda Horneck and the ABC-Net Team 46

Formal Ending of the meeting

(Lunch)
12.10-13.35

Y Young astrobiologist sessions

Youth Session Chair: Liisa Gunnelius
13.35-15.05

Y.1 The origin of introns and mRNA
*Marc P. Hoeppner, Daniel C. Jeffares, Anthony M. Poole 47

Y.2 The importance of the Astrobiology for the young generations
José Ruiz de la Herrán 48

Y.3 Irradiation of a homogeneous mixture of ammonia and carbon dioxide (NH₃, CO₂) at low temperatures
*Sohan Jheeta, Anne LaFosse, Bhalamurugan Sivaraman, Slywia Ptasinska, Nigel Mason 49

Y.4 Dissociative recombination of nitrile ions - important processes in Titan's atmosphere
*Erik Vigren, Magdalena Kaminska, Vitali Zhaunerychuk, Mathias Hamberg, Mathias Danielsson, Richard D. Thomas, Jacek Semaniak, Patrik Andersson, Mats Larsson, Wolf D. Geppert 50

Coffee
15.05 - 15.30

Youth Session Chair: Marc Hoeppner
15.30 - 17.10

Y.5 Compound model to explain water origins for Earth-like planets
*Karla de Souza Torres, Othon Cabo Winter 51

Y.6 Structure and evolution of RNA polymerases
Liisa Gunnelius 52

Y.7 Analysis of the critical moments of the evolution of biosphere macroparameters for revealing catastrophes
*V.A.Ozheredov and N.G.Khorseva 53
Y.8 Searching for habitable-zone planets with SuperWASP
*D. R. Anderson and The SuperWASP Consortium

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Y.9 How to close the door leaving it open? – On the origin of membrane transport system
Katarzyna Adamala

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POSTERS

P1. Life

P1.1 What is life?
Anthony Mellersh and *Sohan Jheeta

P1.2 Computer simulated macroevolution: beyond Bak-Sneppen and
Generalized Lotka-Voltera models
Wojciech Borkowski

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P2. Life, climate and the atmospheres

P2.1 The habitability of super-Earths in Gliese 581
*W. von Bloh, C. Bounama, M. Cuntz, S. Franck

P2.2 Simulating Terrestrial Effects of a Nearby Supernova
*Dimitra Atri, Adrian L. Melott, Yurii Serozhkin,

P2.3 Conditions for lightning in gas-dusty atmosphere of water-containing bodies of Solar system
Yurii Serozhkin

P2.4 Evolution of Earth-size Planetary Atmospheres: From Planets to Exoplanets
*Kaijun Liu, Riku Järvinen, Ilkka Sillanpää, Walter Schmidt,
Esa Kallio, Pekka Janhunen

P2.5 Experimental simulation of volatile organic contributions to planetary
atmospheres and surfaces
*R. C. Wilson, V.K.Pearson, D.C. Turner, G.H. Morgan, I.A. Franchi,
I.P.Wright, I. Gilmour.

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P3. Mars

P3.1 Identification of β-carotene in a Martian-analog Evaporitic Matrix Using
Raman Spectroscopy - A Methodical Approach
*P. Vítek, K. Osterrothová, J. Jehlicka

P3.2 A low wax crude oil could explain possible liquid hydrocarbon seeps on Mars
*M. S. Direito and M. E. Webb

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P3.3 Raman LIBS Instrument for ExoMars 2013: calibration and data refining procedures
N. Tarcea, T. Dörfer, M. Schmitt, M. Hilchenbach, H. Thiele,
H. Henkel, I. Rauschenbach, E. K. Jessberger, F. Rull,
R. Hochleitner, F. Langenhorst, *J. Popp

P3.4 The effect of short wavelength UV radiation on uracil thin layer.
An application of the "Mars lamp"
* A. Bérces, G. Kovács, H. Lammer, Ch. Kolb, Gy. Rontó

P3.5 Studies of resistance to Mars UV conditions with extremely halophilic archaea
* Sergiu Fendrihan and Helga Stan-Lotter

P3.6 Survivability and performance of cyanobacteria under simulated Martian UV-radiation
*M. Tammi, F. O'Reilly, L. Mibelli, B. Osborne, J. Tammi

P3.7 NASA Phoenix Mars Lander – Uncovering the Mysteries of the Martian Arctic
NASA, *Line Drube, *Christina Østerkryger Von Holstein Rathlou

### P4. Early Life

P4.1 Informational polymers in the primitive Earth: nonlinear analysis of archaea genomes and eukaryotic exons compared to computer-generated random sequences
Giorgio Bianciardi

P4.2 Viruses in the origin, evolution and panspermia of life
*Matti Jalasvuori and Jaana K. H. Bamford

P4.3 Is the case against ribose proven?
*Anthony R. Mellersh and Nigel J. Mason

P4.4 Shallow-water biolaminated sediments in a 3.33 Ga-old chert from Barberton
*Frances Westall, Gisela Gerdes, and Axel Hofmann

### P5. Prebiotic chemistry

P5.1 The fate of amino acids adsorbed on mineral matter
*J-F. Lambert, L. Stievano, I. Lopes

P5.2 Chemical Evolution: Amino Acids at Hot Volcanic Coasts
*S. Fox and H. Strasdeit

P5.3 Protein Subunits and the Search of Protein Precursors
Franco Ferrari

P5.4 How long can left and right handed life forms coexist?
Axel Brandenburg

P5.5 Quantum origin of life
Y. Toyozawa, *J.E. Dmochowski, M. Plaza

P5.6 Biforked state of a prebiotic microsystem: the intermediate step to living unit
Vladimir N. Kompanichenko

P5.7 Absorption of compounds of biological importance in solid surfaces and their relevance in terrestrial and extraterrestrial conditions
   *López-Esquivel Kranksith Laura, Negrón-Mendoza Alicia, Ramos-Bernal Sergio 82

P5.8 Characteristics of fluctuating conditions in the hydrothermal medium suitable for the origin of life
   *Vladimir Kompanichenko, Polona Kralj, Boris Fishman, Konstantin Shlufman, Efim Frisman 83

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   *G. Briani, S. Aiello, A. Belleni, L. Graziani 84

P6.2 Dissociative recombination studies of CH2OH+ and CD2OD+

P6.3 Application of a minimum energy principle to the amino acids found in the carbonaceous chondrites
   *Y. Ellinger, M. Lattelais, F. Pauzat, B. Zanda 86

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   T. Tokano 87

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   Adam Culka 88

P6.6 Raman spectroscopic nondestructive detection of organic minerals for exobiological studies
   *J. Jehlicka, H.G.M. Edwards 89

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   Katarina Miljkovic 90

P6.8 Stardust and StardustNext missions
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   Michael B. Simakov 92

P7. Life in extreme conditions

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   *I. Alekhina, D. Marie, J-R. Petit, V. Lukin, V. Zubkov, S. Bulat 93

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   *D. Wolicka, A. Borkowski 94

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   B. Cavalazzi, *F. Westall, R. Barbieri

P7.4 Mycobacterium species in geothermal areas from Yellowstone National Park
   *Ricardo Santos, João Fernandes, Fernanda Oliveira and Manuela Cadete

P7.5 Life in the Mud Volcanoes
   *D Ali, S Haque, HJ Lehto, A Ramsubag, B Wilson

P7.6 Fungi in astrobiology
   Tapani Yli-Mattila

P7.7 Growth and survival of coloured fungi in space
   *Gomoio Ioana, Piso Marius, Hasegan Dumitru, Evangelia Sarantopoulou

P7.8 Effects of the ISS low Earth orbit related environment on the transcriptome and proteome expression in the ESA Life Support System bacterium Rhodospirillum rubrum ATCC25903
   *F. Mastroelo, N. Leys, R. Benotmane, F. Vanhaverbe, A. Janssen,
   L. Hendrickx, M. Mergeay, R. Wattlez

P7.9 Astrobiological experiments on Foton-M3
   R. Demets

P7.10 HALOSPACE - Testing the survival of Halococcus dombrowskii in the ESA EXPOSE facility at the International Space Station
   *Tatjana K. Polacsek and Helga Stan-Lotter

P7.11 Habitats on the external parts of the International Space station?
   C. Muller

P7.12 Cleaning-resistant Cupriavidus and Ralstonia bacteria contaminating spacecrafts and the ultra clean rooms they are assembled in
   *Natalie Leys, Annik Dams, Albert Bossus, Ann Provoost,
   Kasthuri Venkateswaran and Max Mergeay

P7.13 An introduction to planetary protection
   Euan Monaghan

P7.14 Raman spectroscopy study of extremophile organisms and their relationship with minerals and rocks
   *Susana E. Jorge Villar, B Howell G.M. Edwards

P8. Lithopanspermia

P8.1 LITHOPANSPermIA: test of interplanetary transfer and re-entry process of epi- and endolithic microbial communities in the FOTON-M3 Mission
   *R. de la Torre, L. Gª Sancho, G. Horneck, Petra Rettberg, C. Ascaso,
   A. de los Rios, J. Wierzchos, M. Reina, J.P. de Vera, C. Cockell, R. Demets

P8.2 High Speed Impact Experiment for Studying of Survivability of Micro organisms under Low Temperature

P8.3 Estimation of possibilities of mass transfer from Mars to Earth
M. Gorski, *S. Janikowski, M. Kubiak, G. Wiktorowicz

P8.4 Realisation of Panspermia phase 2 inside the Mini External Exposure Facility on the International Space Station (ISS)
Cornelia Meyer, *Ulrike Pogoda de la Vega, Ralf Moeller, Jean-Pierre de Vera, Thomas Berger, Guenther Reitz, Petra Rettberg, Uwe Reimold, Rogier Schonenborg

P8.5 Formation of oligopeptides in frozen solution: possibility of delivering seeds of life by small solar system bodies
*N. Gontareva, E. Kuzicheva, A. Pavlov, M. Vdovina

P8.6 Plant seeds as biological instruments for dispersing life through the Universe in directed panspermia
*David Tepfer, Andreja Zalar, Sørren V. Hoffmann, Sydney Leach

P9. Public outreach and education

P9.1 SOWA - Polish National Astrobiology Student's Conference
K. Adamala, M. Gochna, *M. Gorski, I. Kowalska

P9.2 Teaching & the public outreach in the field of astrobiology: Finland as an example
Marianna Ridderstad

P9.3 Perspectives on Astrobiology projects in Brazil
*E. Janot-Pacheco, C. Lage, H. Boechat-Roberty, G. Porto-de-Mello, A. Wuensche, A. Friaça

P10. Beyond the solar system

P10.1 Laboratory set-up for studying ices at the 25-1000 microns region
*J. Canto, O. Gomis, R. Vilaplana, M. Domingo

P10.2 Molecular line carriers in the translucent clouds
*M. Kazmierczak, J. Krelowski, M. Schmidt

P10.3 New redox-catalysts found in interstellar dust by MS
Franz R. Krueger

P10.4 Investigations of Dusty Circumstellar Disks
*R. Nilsson, G. Olofsson

P10.5 Radiative Transfer in Protoplanetary Disk: effects on physical and chemical properties of gas and presolar dust
L. Graziani, *S. Aiello, A. Belleni, G. Briani, C. Cecchi-Pestellini

P10.6 Transiting Extra-solar Planets: the photometric information
Alvaro Gimenez

P10.7 Influence of stellar X-ray luminosity evolution on exoplanetary mass distributions
   *T. Penz, G. Micela, and H. Lammer

P10.8 Counter-rotating planetary systems
   *S. Kotiranta, H. Lehto, S. Mikkola

P10.9 The role of the inclination of terrestrial planets on the habitable zone's stability
   *B. Funk, R. Schwarz, E. Pilat-Lohinger, A. Süli, R. Dvorak

P10.10 Giant planets as a dynamical shield - numerical studies
   *T. Laakso, J. Rantala, M. Kaasalainen