

Science ON by UAc: Luso-American Webinars

# The quest for extraterrestrial life: why does it matter?

## Invited speakers:



**Wolf Geppert**  
European Astrobiology  
Institute



**Frédéric Foucher**  
CNRS, France



**Diana Northup**  
University of  
New Mexico,  
USA



**Erik Persson**  
Lund University,  
Sweden

## Host speakers:



**João Madruga**  
IITAA – UAc  
Portugal  
Director



**Joana Ramos**  
IITAA – UAc  
Portugal  
Vice-Director



**Lurdes Dapkevicius**  
IITAA – UAc  
Portugal  
Research staff

**Registration:** e-mail to [didia.as.jesus@uac.pt](mailto:didia.as.jesus@uac.pt)  
Until October 14th, 2021, 12:00 (AZOST)

**Online Event**  
18/10/2021 – 9:00 to 18:00



**AMERICAN CORNERS**  
PORTUGAL ★★★★★

10<sup>th</sup> ANNIVERSARY OF THE NETWORK



Wolf Geppert

My own interests focus on the following questions: To which extent can biomolecules and their precursors be formed already in space and from which stage of the biochemical evolution planetary conditions are necessary? Furthermore: Is there a possibility to synthesise the basic building stones of life already under very extreme conditions?

Since 1999 I am active as a researcher in astrochemistry, molecular astrophysics and astrobiology I have performed research using a multitude of different methods, including storage rings, ion traps, guided ion beam machines, free electron lasers and synchrotrons. Furthermore, I have used the results of these experimental investigations in model calculation of dark clouds and circumstellar envelopes. I have also performed astronomical observations using radiotelescopes (Onsala Space Observatory, Kitt Peak Observatory, Effelsberg Observatory).

In addition, I have occupied leading positions in European and Nordic Research Networks. I have been the coordinator of the Nordic Network of Astrobiology since 2007 and have organised many meetings and summer schools for this entity.

Since May 2019 I am also Chair of the newly-founded European Astrobiology Institute, in which 6 leading European research organisations and around 20 universities participate.

# About the speakers



Frédéric Foucher

Dr. Frédéric Foucher is research engineer at the Centre National de la Recherche Scientifique (CNRS), in the exobiology team of the Centre de Biophysique Moléculaire (CBM), in Orléans, France.

He obtained his Ph.D. in physics and material sciences at the University of Poitiers, France, in 2007. He then joined the exobiology group of the CBM as a specialist of Atomic Force Microscopy and Raman spectroscopy. In January 2017, he obtained his habilitation (HDR) in physics at the University of Orléans, France, for a HDR thesis entitled “Methodology for the search for life on Mars”.

Dr. Frédéric Foucher is now working in various fields of astrobiology. In particular, he is known for his work on the detection of biosignatures in ancient terrestrial rocks and putatively in Martian rocks. He is involved in the preparation of the future ExoMars 2022 ESA/Roscosmos mission to Mars.



Diana Northup

Diana Northup and her lab group investigate bat microbiomes and geomicrobiological interactions and microbial diversity in carbonate and lava caves in the Azores, Iceland, Mexico, and Hawai'i, New Mexico, and California (USA). Across these study environments, she also investigates the microbial diversity of a variety of secondary mineral formations (e.g. coralloids and crusts) and microbial mats to help better detect life on extraterrestrial bodies. We use diverse cultivation techniques, next generation sequencing and genomics, and scanning electron microscopy to learn more about the roles that novel, as well as known organisms play in these aphotic ecosystems.



Erik Persson

Erik Persson is a Reader in Practical Philosophy at Lund University. His specialty is applied ethics. One of his primary research interests is the philosophy of astrobiology, where he has published several articles and book chapters. During the academic year 2016-17 he worked for a NASA funded project at the Center of Theological Inquiry in Princeton dealing with societal issues in astrobiology. He has also worked with two research projects dealing with philosophical issues in relation to astrobiology at the Pufendorf Institute of Advanced Studies in Lund.



João Madruga

João da Silva Madruga studied Engenharia Agrícola at the University of Trás-os-Montes e Alto Douro (UTAD) and did his PhD at the University of the Azores (1996) under the theme “Genesis of Placic Horizon in Azorean Andosols”.

He has been undertaking investigation on the classification and cartography of volcanic soils, having a critical role on the promotion of rational fertilization and monitoring of hydrographic basins.

He is a staff member of the University of the Azores, where he is responsible for the Department of Agricultural Sciences (Faculty of Agricultural and Environmental Sciences) and the Director of IITAA.



Joana Ramos

Joana Barcelos e Ramos did a Marine Biology degree at the University of the Azores and PhD at the Christian-Albrechts University of Kiel and IFM-GEOMAR (Kiel, Germany) in 2009, focused on the effects of selected species of marine phytoplankton to rising carbon dioxide and light. After that (2010-until present), has been at the University of the Azores studying the effects of global change on marine planktonic microorganisms.

Her research focuses on the effects of global change, namely increasing carbon dioxide, on phytoplankton, their role in biogeochemical elemental cycling and potential feedbacks to climate. She is also interested in phytoplankton physiology, life cycles and mortality. She is IITAA's Vice-President.



Lurdes Dapkevicius

Maria de Lurdes Enes Dapkevicius is a member of IITAA's research staff and an assistant professor at the Faculty of Agricultural and Environmental Sciences of the University of the Azores in the area of Microbiology. Her research focuses on bacteria, their resistance to stressful environments, and their impact on the environment, animal, and human health.

Astrobiology emerged as a research interest in her career in the early 2000's, in cooperation with Professor Northup's group and, later on, with Professor Geppert's. In the mid-2000's, she led a 4-year research project aimed at studying the Azorean lava caves as surrogate environments for Astrobiology studies and co-organized the 2016 Astrobiology Summer School of the European Astrobiology Campus on “Volcanism, plate tectonics, hydrothermal vents and life”.



# Schedule

## A.M.

- **9:00** – Access to the conference link
- **9:15** – Welcome note
- **9:30** - *Pathways to biomolecule precursors: Ionic processes leading to complex molecules in space and planetary atmospheres* – Wolf Geppert (EAI; Stockholm University, Sweden)
- **10:30** – Break
- **10:45** – *On the challenge of detecting extraterrestrial life* – Frédéric Foucher (CNRS, France)
- **11:45** - *Life in the dark: what microbial diversity in lava caves can tell us about finding life on extraterrestrial bodies* – Diana Northup (University of New Mexico, USA)
- **12:45** – Lunch break

## P.M.

- **14:00** - *Microbes and inhospitable environments: clues from bacterial life inside Azorean lava tubes* – Lurdes Dapkevicius (IITAA – UAc, Portugal)
- **15:00** – *Azores as a research site for Astrobiology* – João Madruga & Joana Ramos (IITAA – UAc, Portugal)
- **15:30** – Break
- **15:45** - *A philosophical perspective on astrobiology* – Erik Persson (Lund University, Sweden)
- **16:45** – Round table/discussion
- **17:45** – Closing of the event

# Organization

- Lurdes Dapkevicius
- Dídia Jesus (secretary)



Sponsored by

**AMERICAN CORNERS**  
PORTUGAL ★★☆☆★

10<sup>TH</sup> ANNIVERSARY OF THE NETWORK