

From Earth to Mars, towards understanding better the red planet habitability

Assessing the habitability of Mars and detecting life, if it was ever there, depends on knowledge of whether the combined environmental stresses experienced on Mars are compatible with life and whether a record of that life could ever be detected. However, our current ability to make these assessments is hampered by a lack of knowledge of how the combined effect of different environmental stresses influence the survival and growth of organisms. In particular, many combinations of stress, such as high radiation conditions combined with high salt and low temperature, relevant for early Mars, have not been investigated.



> Editorial: kicking-off the last year of MASE



2017 will be an exciting time for MASE since the project is reaching its end. The consortium is now focused on producing scientific publications and attending a variety of scientific conferences for dissemination.

Recently, the exobiology team at the "Centre de Biophysique Moléculaire" lead by Dr. Frances Westall hosted the third and last press conference of the MASE project. In parallel, the MASE consortium held a scientific meeting to discuss project's progress, new scientific collaborations and upcoming publications. This month, several members of MASE will fly to Arizona to present results in the Astrobiology Science Conference 2017 that will put emphasis in the topic of life detection in exoplanets. Furthermore, we will host a session focused in anaerobic extremophiles and its use in analog studies in the next European Astrobiology Network Association conference. We actively seek to expand collaborations and create synergies with other analogue research teams so do not hesitate to approach us towards building complementary activities.

MASE results will provide better understanding of the nature of potential Martian biosignatures and the techniques that will be necessary to investigate them. We hope to implement a step change in our understanding of Martian habitability and our ability to detect traces of life.

Prof. Charles Cockell
MASE Coordinator

> MASE attending AbSciCon 2017



The Astrobiology Science Conference 2017 (AbSciCon 2017) will be held April 24-28 2017 in Mesa, Arizona. The theme for this year is "Diverse Life and its Detection on Different Worlds." Mars and icy worlds in our solar system are increasingly recognized as habitable, even as increasing numbers of exoplanets in their stars' habitable zones have been discovered. The focus is shifting from identification of habitable worlds, to detection of life on them. Other topics that will be covered include geochemistry, biochemistry, biomarkers in anaerobic ecosystems, biogeochemical cycles on water worlds, biosignatures on exoplanets and astrobiology outreach.

The MASE team will be attending the conference and presenting 6 communications.

AbSciCon 2017 will provide a forum for reporting on new discoveries, sharing data and insights, advancing collaborative efforts and initiating new ones, planning new projects, and educating the next generation of astrobiologists. The conference will feature plenary sessions on current and thought-provoking topics, topical sessions, evening programs, and public and educational events.

To browse the conference program click [here](#).

> MASE attending EANA 2017



The next European Astrobiology Network Association meeting will take place 14-17 August 2017 in Aarhus, Denmark. A variety of topics will be covered during the conference, but EANA17 will put emphasis on the new and exciting field of "Exoplanets".

The MASE team will organize a specific session focused on analogue research with anaerobic microbes where we will summarize the major findings of the MASE project and discuss on potential programmatic ways that will continue beyond the project's lifetime.

The abstract deadline for posters, contributed talks and registration close on 1st June 2017. Do not miss opportunity to join this inspiring conference and learn more about our research!

To browse the conference program click [here](#).

> Connect with the MASE project

Website

www.mase.esf.org

MASE website is meant at providing information and updates on the project and its progress. This platform also intends to provide news and information on relevant scientific events.

Social media platforms

Research Gate

MASE project is featured on Research Gate, the social networking site for scientists and researchers that allow to share publications and find potential collaborators.



Facebook MASE @MarsAnalogues

MASE project can be followed on the Facebook platform, where project progress is reported along with relevant information to research on life in extreme environments, scientific events and funding opportunities.



Twitter @MarsAnalogues

MASE related events can be followed in Twitter in real time.

> Blog post at ESF website

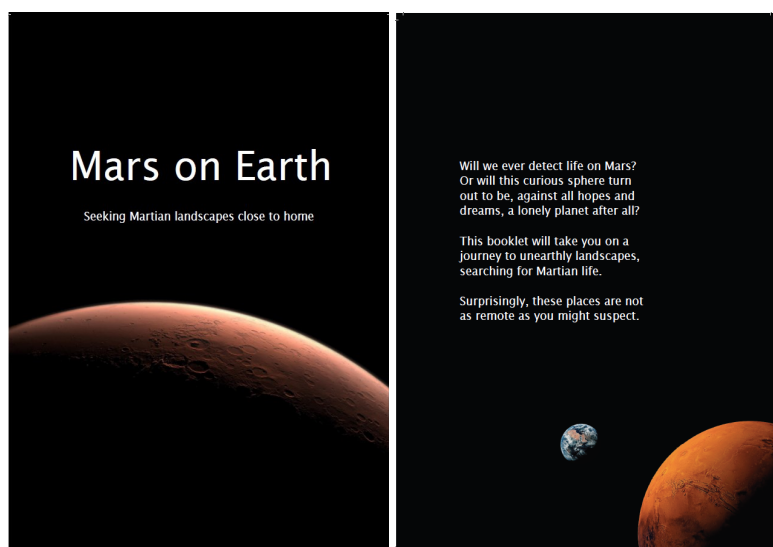
Last March, the MASE project was featured in the ESF-Science Connect blog. One of our project coordinator, Patricia Cabezas, explained how MASE is helping the scientific community to look for answers about life on other planets. Read the full article [here](#).

> Upcoming astrobiology events

- **A CONCERT short course entitled: CELOD Cellular effects of ionizing radiation—introduction to radiation biology.** 24 April—5 May 2017 at Stockholm University, Sweden. [Further information](#).
- **2017 International Summer School in Astrobiology.** 25-30 June 2017 at Santander, Spain. Registration Application deadline: 14 April. [Further information](#).
- **The International Symposium on Education in Astronomy and Astrobiology.** 3-7 July 2017 at Utrecht, the Netherlands. Early registration deadline: 1 May 2017. [Further information](#).
- **The 68th International Astronautical Congress.** 25-29 September 2017 at Adelaide, Australia. [Further information](#).

> MASE outreach

Mars on Earth: Seeking Martian landscapes close to home



The [Science Communication and Society MSc Programme](#) at Leiden University in collaboration with the MASE consortium have elaborated an educational booklet about how astrobiology research on Earth can help us to search for Martian life.

MASE postdoctoral researcher Euan Monaghan and Assistant Professor in Astronomy & Society at the Leiden Observatory Pedro Russo, supervised the work of Liza van Kapel, Lotte Scholten and Eva Smidt. Thanks to all the team for doing a great job!

Download the booklet [here](#).

> Third MASE press conference in Orléans

The third and last MASE Press Conference was held in conjunction with the Centre de Biophysique Moléculaire (CBM, CNRS) in Orléans, France. A total of 10 journalists were gathered to learn more about the MASE project and the research carried out by the Exobiology team lead by Dr. Frances Westall. Le Figaro and La Recherche, among others, attended this event which it was also broadcasted on television and radio platforms.

The Press Conference took place on Wednesday March the 29th April and was broadcasted in the local TV channel of Orléans in the evening and on the MASE Twitter account in real time. Journalists who attended the event had the opportunity to interview MASE scientists Dr. Frances Westall and Dr. Frederic Gaboyer and visit the "lithotheque- rock collection", the International Space Analogue Rockstore (ISAR) and the analytical platform of Raman spectroscopy and Atomic Force Microscopy.

This press conference provided the opportunity for a briefing on:

- Current progress assessing the habitability of Mars and detecting life.
- Identifying the landing site for the Exomars Mission launching in July 2020.
- Using microfossil analysis to detect past signatures for Martian life.



> The MASE growing medium – Why Astrobiology?



Dr. Kristina Beblo-Vranesevic - German Aerospace Center

What is it your university background?

I studied biology at the University of Regensburg, Germany and microbiology as major subject.

Why did you decide to get a PhD degree?

I liked to work in the lab, and additionally, I got the opportunity to work further on the topic of my diploma thesis at German Aerospace Center (DLR) and at this time I was already fascinated by the huge field of astrobiology.

How did you get into astrobiology – what attracted you to it?

During my diploma thesis I had the “first contact” to astrobiology. I worked on the topic if heat loving microorganisms are able to survive simulated space conditions. The idea was if these organisms growing at most hostile conditions on Earth are maybe even more resistant or tolerant to space conditions as “normal” microorganisms. This topic did not let me go back and I still work on these questions. In addition, the question arose whether life existed or even existed in Mars.

What does it excite you the most about your research?

To get everyday a tiny step closer to the answer of the overall big questions: “Are we alone?” or “Where is and was life possible in our universe?”

What advice would you give someone in high school or university, who is considering a career in the astrobiology field?

Go for it. Try to get an internship or something comparable at an institute related to astrobiology sciences, get the first contacts and then mostly the way of becoming an astrobiologist is already defined. Additionally, be patient because sometimes exactly this way is not obvious.

Dr. Petra Schwendner - University of Edinburgh

What is it your university background?

I studied Biology at the University of Regensburg, Germany. Once I attended the first microbiology lecture I was fascinated and keen on learning more. So my decision on which subject to study as main course was immediately made. After university I went to do my PhD in Dr. Rettberg's group at the German Aerospace Center in Cologne in collaboration with the University of Regensburg.

Why did you decide to get a PhD degree?

I really enjoy working in the field of Astrobiology and within a university environment so that I knew I wanted to deepen my knowledge in “Astromicrobiology” (that's how I like to call what I am doing). Besides doing my own research, I was also enthusiastic about teaching students and raise their interest in this field. Pursuing a PhD will allow you to do all of this.

How did you get into astrobiology – what attracted you to it?

Talking to Prof. Christine Moissl-Eichinger who I met during my studies attracted me towards Astrobiology. At that time she was working for ESA and was supervising the topic Planetary Protection and experiments at the anaerobic chamber. From the very first moment, I was fascinated from the technique on how to grow microorganisms without oxygen and how you can use them for planetary protection considerations. Talking to her about her research and her time at NASA started me dreaming about working in the field of Astrobiology.

What does it excite you the most about your research?

Being in the lab and getting exciting results at the end of an experiment which are contributing to our understanding of the microbial diversity in extreme environments. To examine what we can learn from these habitats concerning the habitability of other planets. This also means you get to visit a lot of exciting, extreme places on Earth which spices up lab and desk-top work.

What advice would you give someone in high school or university, who is considering a career in the astrobiology field?

Go for it if this is what really fascinates you. It doesn't matter in which STEM field you are most interested – from astronomy, biology, engineering, geology, to physics – Astrobiology is a multidisciplinary research field with widespread applications. There is a topic for everyone who is keen on working on it. It is never too late to get your first step into Astrobiology.



> The MASE natural fossilisation process



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