

Report of Commission F-3

### **Astrobiology Meeting sponsored by Commission F-3**

Before the advent of COVID, we had planned to hold an Astrobiology Meeting in South Africa in November 2020. Needless to say, this meeting never occurred. It was postponed several times before being cancelled by the local organizing committee. The F-3 Organizing Committee now intends to co-sponsor a meeting in 2023 in Quito, Ecuador in collaboration with the International Society for the Study of the Origin of Life (ISSOL). The planning is being led by Dr. Herve Cottin, the Vice President of Commission F-3 in collaboration with Dr. H. J. Cleaves, President of ISSOL. We will send more information to commission members as details become available.

### **Standards of Evidence for Life Detection.**

Over the last few years there has been quite a bit of debate on what standards should be applied to claims for the detection of life, either by in-situ probes such as those currently operating on the surface of Mars or via remote observations such as those used to study extra solar planetary systems. In response to the interest in this topic a community workshop was convened, Co-Chaired by Dr. Victoria Meadows (University of Washington) and Dr. Heather Graham (Catholic University of America/NASA-GSFC). This workshop produced a Draft Report “Community Report From the Biosignatures Standards of Evidence Workshop” that is available for review at the following website:

[https://www.nfold.org/\\_files/ugd/c2389f\\_d081d7f5fcfc455cbe0bb560a900ecb6.pdf](https://www.nfold.org/_files/ugd/c2389f_d081d7f5fcfc455cbe0bb560a900ecb6.pdf)

This is an extensive and comprehensive attempt to recommend standards for the Astrobiology Community as we seek evidence for the existence of Life beyond the Earth. While the official comment period on the report has ended, I expect that the debate concerning the suggested standards will continue into the indefinite future and that members of Commission F-3 should become familiar with the arguments and concepts presented in this report.

### **The European Astrobiology Network Association**

The European Astrobiology Network Association (EANA) presented the following awards:

#### ***2021 Space Factor Students Contest***

1st prize, Sebastian Victor Gfellner et al., Introducing the FORaminifera Rocket EXperiment (FORAREX)

2nd prize, Bárbara Soares et al., Composition of terrestrial planets orbiting M dwarfs

3rd prize, Marina Fernandez et al., Interstellar phosphorus chemistry as a complex system: a theoretical approach to the formation of the simplest building blocks of life

4th prize, Hector Palomeque et al., *Ignicoccus hospitalis* – understanding its extraordinary radiation tolerance and an unsolved archaeal repair system

#### ***2021 Poster Awards***

Ophelia Gunn and Charles Cockell, Could Fluid Inclusions in Polar Ice Provide a Sanctuary for Martian Microorganisms?

Eduardo J. Cueto Diaz et al., CO<sub>2</sub> adsorption capacities in amine-functionalized microporous silica nanoparticles

Víctor M. Rivilla et al., Discovery in space of ethanolamine, the simplest phospholipid head group

Vera Palma et al., Assessment of lipid biomarkers from Mars analogue subsurface environments

Caroline Brachmann et al., Modelling the composition of volcanic gases on young terrestrial planets in the C-H-O-N-S system

Bernardo Barosa et al., At the dawn of metabolism- How Aquificae can shed light into the evolution of carbon fixation and hydrogen oxidation

***EANA 20th Anniversary Presentation Award***

Annemiek C. Waajen et al., How the presence of meteorites could have shaped microbial communities on early Earth

Kristina Beblo-Vranesevic et al., From Mars analogue environments to space: ground data evaluation of the survivability of *Buttiauxella* sp. MASE-IM-9 and *Salinisphaera shabanensis*

Lena Noack and Caroline Brachmann, Can plate tectonics lead to observational traces in (exo-) planetary atmospheres?

***EANA 20th Anniversary Outstanding Paper Award***

Alberto G. Fairén, Javier Gómez-Elvira, Carlos Briones, Olga Prieto-Ballesteros, José Antonio Rodríguez-Manfredi, Raquel López Heredero, Tomás Belenguer, Andoni G. Moral, Mercedes Moreno-Paz, and Víctor Parro, The Complex Molecules Detector (CMOLD): A Fluidic-Based Instrument Suite to Search for (Bio)chemical Complexity on Mars and Icy Moons