

## 2024 Report from Commission F-3 (Astrobiology)

Hayabusa 2 returned samples from the carbonaceous asteroid Ryugu in December 2020. The samples were examined and opened for proposals for analysis from qualified experts early in the triennium and a treasure trove of data has been the result. Twenty different amino acids, uracil and even vitamin B3 have been detected in the returned samples, yet because these samples were collected directly from Ryugu, there is little concern that such biomolecules are due to terrestrial contamination. These analyses should shed light on the role primitive bodies may have played in the origin of life on Earth, throughout the solar system, and extrasolar environments. In September 2023, the OSIRIS-REx spacecraft successfully returned 122 grams of sample from the water- and carbon-rich asteroid Bennu. Preliminary analyses of these samples have just begun, and a catalog of samples should soon be available to the world-wide scientific community early in the triennium that can be requested by qualified investigators for detailed scientific analysis. Asteroid (and comet) sample return has been, and will continue to be, the only method that can provide contaminant free samples of organic processes that occurred prior to the origin of life on Earth, and this age of sample return is thus a watershed opportunity for Astrobiology. However, amidst these recent successes in the field of astrobiology, the highly anticipated Exomars mission, originally scheduled for launch in 2022, has unfortunately been postponed until 2028. While this delay presents challenges, the science community is still united for the success of this program.

The study of Astrobiology has become much more popular over the last several triennia thanks to regional and national Astrobiology Centers and Institutes. In particular, the European Astrobiology Institute under the leadership of Prof. Wolf Geppert ([wgeppert@fysik.su.se](mailto:wgeppert@fysik.su.se)) has established a series of well-attended seminars that are advertised and open to the worldwide scientific community and serve to promote interest in all aspects of Astrobiology from philosophical and ethical issues to intricate details of biochemistry and chemical evolution. These compliment other efforts to support the Astrobiology Community with seminars and discussion forums such as those of the Astrobiology Science Communication Guild (contact: [svetlana.shkolyar@nasa.gov](mailto:svetlana.shkolyar@nasa.gov)), or the series of education movies developed by the French Astrobiology Society (<https://astrobioeducation.org/fr/>). Finally, IAU Commission F-3 joined with the International Society for the Study of the Origin of Life (ISSOL) to hold a very successful meeting in Quito Ecuador in August 2023. The next joint IAU F-3/ISSOL meeting will occur in Paris, France in 2026.