

## **Astrobiology News October 2023: Cosmic Bringers of Life and Death**

Asteroids are of great scientific interest, in part because of their potential threat to life on Earth through catastrophic impacts, but also for their possible life-giving qualities. Last month, NASA's OSIRIS-REx (Origins, Spectral Interpretation, Resource Identification and Security – Regolith Explorer) mission returned a half-pound sample of material from Bennu, an asteroid named in 2013 by a nine-year-old boy for an ancient Egyptian deity associated with the Sun, creation, and rebirth.<sup>1</sup> Bennu is truly ancient – essentially undisturbed since the formation of the Solar System over 4.5 billion years ago – and its composition may hold clues to the origin of life on Earth.

The study of the sample of asteroid Bennu that was returned by OSIRIS-REx is in its infancy; however, on October 11 the science team reported a high concentration of carbon and water.<sup>2</sup> Carbon is present in both organic and mineral form, while water is locked inside clay minerals. Since water-carrying asteroids are thought to have helped create Earth's oceans, lakes, and rivers, thus making Earth a habitable planet 4 – 4.5 billion years ago, further analysis is expected to yield important insights into Earth's past. A better understanding of Bennu's composition may also prove useful if humanity ever needs to steer it away. Although there is no risk of Bennu hitting the Earth through the mid-2100s, the chances rise to around 1 in 1,750 between then and 2300.<sup>3</sup>

While the science team will continue its analysis for the next two years, NASA will preserve at least 70% of the sample at the Johnson Space Center in Houston for further research by scientists and future scientists worldwide. NASA will also loan samples to the Smithsonian Institution, Space Center Houston, and the University of Arizona for public display later this fall. Meanwhile, if you'd like to help search for new asteroids, check out *The Daily Minor Planet* on Zooniverse!<sup>4</sup>

Until next month,

Grace

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<sup>1</sup> <https://www.nasa.gov/solar-system/ten-things-to-know-about-bennu/>

<sup>2</sup> <https://www.nasa.gov/news-release/nasas-bennu-asteroid-sample-contains-carbon-water/>

<sup>3</sup> <https://phys.org/news/2023-10-nasa-asteroid-sample-life-critical-carbon.html>

<sup>4</sup> <https://www.zooniverse.org/projects/fulsdavid/the-daily-minor-planet>