

Non-Protein Amino Acids in Carbon-Rich Hayabusa Grains



Hayabusa and Itokawa
(Image Credit: JAXA)

Amino acids are the building-block of proteins and may have been originally brought to Earth by asteroids and meteorites. Scientists searched for, and found, multiple amino acids in the material returned by the JAXA's Hayabusa mission, which visited asteroid Itokawa.

- The identified amino acids in this study are *not* used in protein synthesis and are rare in biology, so it's highly unlikely that they are the result of terrestrial contamination.
- Furthermore, the identified amino acids were found in carbon-rich Hayabusa particles at abundances significantly greater than background levels.

- These results are the first evidence of plausibly extraterrestrial amino acids in asteroid material from a sample-return mission and demonstrate the capabilities of the analytical protocols used to study asteroid Ryugu and Bennu samples returned by the JAXA Hayabusa2 and NASA OSIRIS-REx missions, respectively.
- The presence of these amino acids in the returned samples may indicate that asteroids could have delivered molecules necessary for life to the primordial Earth and elsewhere in the solar system.

