

Building block of life found on comet

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The amino acid glycine, a fundamental building block of proteins, has been found in a comet for the first time, bolstering the theory that raw ingredients of life arrived on Earth from outer space, scientists said on Monday.

Microscopic traces of glycine were discovered in a sample of particles retrieved from the tail of comet Wild 2 by the NASA spacecraft Stardust deep in the solar system some 242 million miles (390 million km) from Earth, in January 2004.

Samples of gas and dust collected on a small dish lined with a super-fluffy material called aerogel were returned to Earth two years later in a canister that detached from the spacecraft and landed by parachute in the Utah desert.

Comets like Wild 2, named for astronomer Paul Wild (pronounced Vild), are believed to contain well-preserved grains of material dating from the dawn of the solar system billions of years ago, and thus clues to the formation of the sun and planets.

The initial detection of glycine, the most common of 20 amino acids in proteins on Earth, was reported last year, but it took time for scientists to confirm that the compound in question was extraterrestrial in origin.

"We couldn't be sure it wasn't from the manufacturing or the handling of the spacecraft," said astrobiologist Jamie Elsila of NASA's Goddard Space Flight Centre in Greenbelt, Maryland, the principal author of the latest research.

She presented the findings, accepted for publication in the journal *Meteoritics and Planetary Science*, to a meeting of the American Chemical Society in Washington, D.C., this week.

"We've seen amino acids in meteorites before, but this is the first time it's been detected in a comet," she said.

Chains of amino acids are strung together to form protein molecules in everything from hair to the enzymes that regulate chemical reactions inside living organisms. But scientists have long puzzled over whether these complex organic compounds originated on Earth or in space.

The latest findings add credence to the notion that extraterrestrial objects such as meteorites and comets may have seeded ancient Earth, and other planets, with the raw materials of life that formed elsewhere in the cosmos.

"The discovery of glycine in a comet supports the idea that the fundamental building blocks of life are prevalent in space, and strengthens the argument that life in the universe may be common rather than rare," said Carl Pilcher, the director of the NASA Astrobiology Institute in California, which co-funded the research.

Glycine and other amino acids have been found in a number of meteorites before, most notably one that landed near the town of Murchison, Australia in 1969, Elsila said.