

Space rock yields answers about origins of life on Earth

3 June 2009, By Wanda Vivequin



Chris Herd

(PhysOrg.com) -- Formic acid, a compound implicated in the origins of life, has been found at record levels on a meteorite that fell onto a frozen Canadian lake in 2000.

Chris Herd, a professor in the University of Alberta's Department of Earth and Atmospheric Sciences and curator of the university's meteorite collection, presented his research findings at the 2009 American Geophysical Union joint assembly in Toronto at the end of May.

Herd conducted his analysis on the Tagish Lake Meteorite, which he has described as being possibly the "most important rock that's ever been found anywhere on the Earth."

The U of A scientist found levels of formic acid that were four times higher than had previously been recorded on a meteorite. Formic acid is one of a group of compounds dubbed "organics" because they are rich in carbon. This compound is also commonly associated with ants and bees because of its presence in their venom.

Herd said the delivery of formic acid and other

carboxylic acids to the early Earth by meteorites like the one that fell on Tagish Lake in northern British Columbia would have provided the components needed for life, especially the fatty acids that are an important part of cell walls.

He said the ultimate source of formic acid may be interstellar space as this and related compounds have been observed astronomically in cold, molecular clouds as well as in comets.

The Tagish Lake meteorite fell on the frozen surface of a northern B.C. lake in the middle of January and was collected without being touched by human hands. It represents the most pristine sample of minerals from outer space. Samples of the meteorite, totalling 850 grams, were collected from Tagish [Lake](#) and purchased in 2006 by a research consortium that included the University of Alberta.

"We are lucky that the meteorite was untouched by humans hands, avoiding contamination by [organic compounds](#) that we have on our fingers," said Herd. "This meteorite can tell us new information about the birth and evolution of our solar system, and the very fact that it's been kept frozen, essentially pristine, uncontaminated by human hands, gives us an unprecedented opportunity to explore new scientific avenues that were heretofore impossible.

"We can do things with this [meteorite](#) that nobody's ever done before."

Provided by University of Alberta ([news](#) : [web](#))

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