We may all be Martians: New research supports theory that life started on Mars

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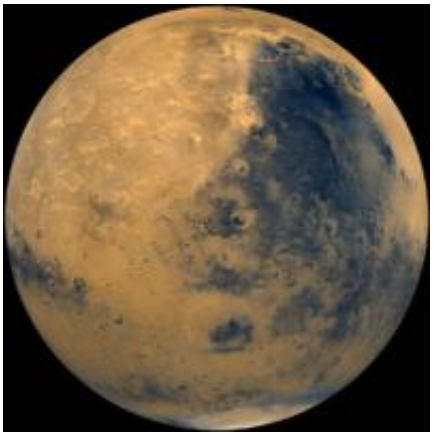

Mars. Image: NASA

New evidence has emerged which supports the long-debated theory that life on Earth may have started on Mars.

Professor Steven Benner will tell geochemists gathering today (Thursday 29 Aug) at the annual Goldschmidt conference that an oxidized mineral form of the element molybdenum, which may have been crucial to the origin of life, could only have been available on the surface of Mars and not on Earth. "In addition", said Professor Benner "recent studies show that these conditions, suitable for the origin of life, may still exist on Mars."

"It's only when molybdenum becomes highly oxidized that it is able to

influence how early life formed," explains Professor Benner, from The Westheimer Institute for Science and Technology in the USA. "This form of molybdenum couldn't have been available on Earth at the time life first began, because three billion years ago the surface of the Earth had very little oxygen, but Mars did. It's yet another piece of evidence which makes it more likely life came to Earth on a Martian meteorite, rather than starting on this planet."

The research Professor Benner will present at the Goldschmidt conference tackles two of the paradoxes which make it difficult for scientists to understand how life could have started on Earth.

The first is dubbed by Professor Benner as the 'tar paradox'. All living things are made of organic matter, but if you add energy such as heat or light to organic molecules and leave them to themselves, they don't create life. Instead, they turn into something more like tar, oil or asphalt.

"Certain elements seem able to control the propensity of organic materials to turn into tar, particularly boron and molybdenum, so we believe that minerals containing both were fundamental to life first starting," says Professor Benner. "Analysis of a Martian meteorite recently showed that there was boron on Mars; we now believe that the oxidized form of molybdenum was there too."

The second paradox is that life would have struggled to start on the early Earth because it was likely to have been totally covered by water. Not only would this have prevented sufficient concentrations of boron forming – it's currently only found in very dry places like Death Valley – but water is corrosive to RNA, which scientists believe was the first genetic molecule to appear. Although there was water on Mars, it covered much smaller areas than on early Earth.

"The evidence seems to be building that we are actually all Martians; that

life started on Mars and came to Earth on a rock," says Professor Benner. "It's lucky that we ended up here nevertheless, as certainly Earth has been the better of the two planets for sustaining life. If our hypothetical Martian ancestors had remained on Mars, there might not have been a story to tell."

More information: goldschmidt.info/2013/

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