

# Secrets of the deep may hold key to life on other planets

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Extraordinary creatures who inhabit extreme underwater conditions are being investigated by University scientists in a three-year project. These deep-sea communities could reveal an evolutionary history different to anything else on earth and even give us clues to how life could exist on other planets.

The creatures live around hydrothermal vents - incredibly hot environments in the deep sea - and are unique because they depend on bacteria living inside them for their own survival. These bacteria take their energy from hydrogen sulphide in the vent fluid.

“They’re among the fastest growing animals on the planet – a full community can grow in just three years,” said earth and environment lecturer Dr Crispin Little.

“Vent communities are dependent on geochemical rather than solar energy sources and this buffers them from almost all major events, such as mass extinctions or climate change.

“Their evolutionary history is likely to be radically different to other, photosynthesis-based communities – they may even mirror life forms on other planets.”

Very little is known about the geological history of these animals, discovered only 20 years ago, in particular how they become fossilised. Dr Little and geochemistry colleagues have been awarded a natural

environment research council grant to design and build seafloor fossilisation experiments to investigate this fundamental process. “We’ve already found a number of fossils, but don’t know how they came to be there,” said Dr Little. “Until we know more it’s very difficult to interpret the fossil record we already have.”

Pieces of hydrothermal animals have already been placed in titanium mesh cages at hydrothermal vent sites 3.5km down in the ocean. Dr Little will return to these sites in the East Pacific Rise off the coast of South America over the next three years to examine the fossilisation process.

See [earth.leeds.ac.uk/people/little/](http://earth.leeds.ac.uk/people/little/) for further information

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