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Searching for weird life on Earth

A GROWING band of scientists is exploring the mysteries of life on Earth, gathering evidence to suggest that life as we know it may not be as it seems.

Australian National University astrobiologist Charles Lineweaver said humans knew so little about life on Earth, it was possible there were "essentially aliens living among us".

"Not aliens from another planet, but life forms which may have a very different, or completely different, origin than the life that we're familiar with," he said.

Dr Lineweaver and his colleague, Professor Paul Davies, of Arizona State University in the United States, began writing in detail about this "weird life" in 2005.

Since this time, the field has expanded as scientists probe the origin of life – how life on Earth began some 4 billion years ago.

Now Dr Lineweaver and his colleagues will present more details on their theory in a paper to be published in the journal, *Astrobiology*.

"Imagine the surface of the Earth, and imagine if you had only explored 1 per cent of it," Dr Lineweaver said.

"But that 1 per cent was spread out all over. So you can imagine if you've only explored 1 per cent of the ocean, you might not have seen Australia or New Zealand.

"There might be big continents, very important continents, that had not yet been discovered.

"That seems to be the situation we're in with microbial life."

Dr Lineweaver said less than 1 per cent of all microbial life –



Charles Lineweaver at Mount Stromlo where he looks for signs of microbial life.

extremely tiny life forms such as bacteria – had been properly examined.

Viruses were worse. They outnumbered bacteria by up to 100 times.

"They're much smaller, therefore much harder to look at and much harder to find," he said.

"So I think the viral world is an even more unexplained world."

The paper, *Signatures of a Shadow Biosphere*, will be published as the world celebrates this week Charles Darwin's birth 200 years ago. It is also 150 years since he published *On the Origin of Species by Means of Natural Selection*.

Darwin's theory describes how life on Earth has a common origin and how, from this origin, all different types of life emerged.

But, Dr Lineweaver said, Darwin was not able to show how

life got started on Earth. "Darwin pointed at it, it was very important to him, but on the other hand it was in the too-hard basket 150 years ago. It's not in the too-hard basket any more," he said.

Advances in microscope technology and understanding of genomes have opened the doors to greater understanding of life that exists on Earth and therefore how it may have started.

Dr Lineweaver said they wanted microbiologists to take seriously the idea there could be other forms of "weird life" on Earth that had not yet been discovered.

"If they find a type of life that is very, very different from the types of life forms we know about, then we will be able to talk more about life elsewhere in the universe," he said.