

Mars Science Teams Investigate Ancient Life in Australia

[bright music]

[Ken Williford] This, in a sense, is kind of a Holy Grail for us.

[Mitch Shulte] We're in the outback of Australia because this is some of the oldest convincing evidence for life on Earth, and the Mars 2020 mission and the ExoMars mission are going to be looking for signs of life in the ancient past on Mars. And it was a great opportunity to bring the mission teams here to really see for themselves what we're talking about when we're talking about ancient biosignatures.

[Williford] This part of Western Australia called the Pilbara specifically, it's really absolutely a Mecca for understanding the record of life on Earth. This is one of the most important places on the planet, geologically speaking.

[Ken Farley] Members of the science team came out here to look at some of the oldest rocks that are on Earth. These rocks are anywhere from 2½ to 3½ billion years old. About the same age as the rocks we're gonna find on Mars. And what's very special about them is they have evidence of the earliest life on Earth.

[Williford] The rocks you see right in front of me here, these wrinkly layered structures that we call stromatolites, structures like this actually represent fossilized microbial mats.

[Martin Van Kranendonk] A microbial mat is actually a structure preserved in the rock made by communities of millions and millions of microorganisms.

[Williford] Basically fossilized pond scum, in a sense. Microbacteria living in a shallow water environment, and we believe that if life ever existed on Mars, it would've been purely microbial.

[Van Kranendonk] And those are left behind in the record, that are very distinct, and so we've been showing the NASA and European Space Agency scientists the details of what those textures look like.

[Williford] When we say with Mars 2020 we're seeking the signs of ancient life on Mars, this is precisely the kinds of signs of life that we'll be seeking.

[Teresa Fornaro] I learned to be a kind of a Martian, to be in a harsh environment. My comfort zone is the laboratory, but here I can say that this is the real stuff. It's not just simulating stuff in a laboratory. This is a real good training for us.

[Farley] It was really important to get the science team out here, and speaking for myself, I'd seen pictures of rocks like this. And they didn't really convince me that they were the product of life. And when you see them up close and personal, it really tells a story, that this was once life.

And that's something you just can't get if you don't go out and look at rocks like this.

[Jim Watzin] You can study it, you can read about it, but there's nothing like the practical experience of trekking around in the desert and really trying to think about, as we land our Mars rovers there, and we look at the images provided by our sensors, how do we interpret that and follow the clues to try to find the kinda evidence that has been unearthed here in Australia.

[Williford] Could Mars ever have supported life? And then to take the next step, did Mars ever host life?

[Watzin] We're just smart enough now about Mars to ask the really hard questions.

[light music]