

What is life's future on Earth and beyond?

Antarctic ice field

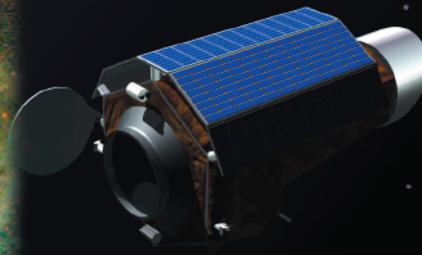
Cyanobacteria in acid river



Rio Tinto, Spain

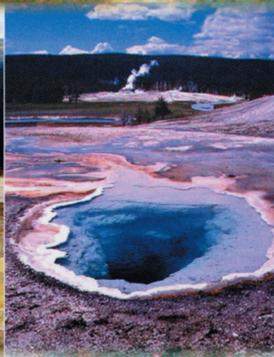
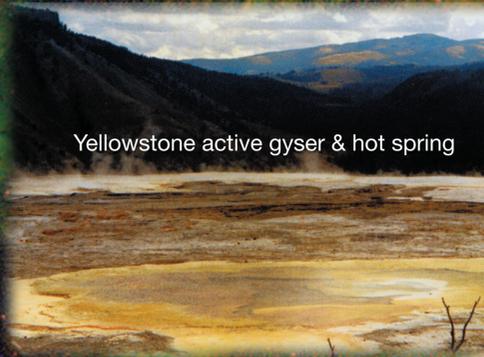


Artist rendition of an extrasolar planet



Kepler Mission

Yellowstone active geyser & hot spring



Lake Vostok



Mars rover

LIFE ON EARTH

HOW IS THE STUDY OF LIFE ON EARTH RELATED TO THE SEARCH FOR LIFE ELSEWHERE?

Studying the diversity of life on Earth today has revealed that most of it is single-celled, microscopic, and underground. Fascinating microbes thrive in the most *extreme environments* – from lakes below Antarctic ice, and the hottest, driest deserts, to acid rivers, and boiling hot springs. These environments and the life that live in them help astrobiologists theorize not only about what early Earth might have been like, but also what types of environments might exist on other planets that could potentially support life.

LIFE ON OTHER PLANETS

WHERE AND HOW ARE ASTROBIOLOGISTS LOOKING FOR LIFE?

The search for life in the Universe begins right here at home - by studying life on Earth - and in our own backyard – the Solar System – where we have only scratched the surface. Mars, Europa (a moon of Jupiter), and Titan (a moon of Saturn) are currently the most exciting objects of investigation. The potential for liquid water on these three bodies, either now or in the past, intrigues astrobiologists.

Further from home, finding a living, breathing alien is not what astrobiologists expect to find, rather the search is for an *indication* that life is present – for a *biosignature*. How can we tell if a planet, either in our Solar System or beyond it, harbors life? With the current technology, we are only able to *remotely sense* things like a planet's atmosphere or surface features. In the future, astrobiology looks forward to space craft that can bring rock, soil, or even gas samples back to Earth. Even more exciting is the potential for exploration by humans – perhaps even you!

Find out more... <http://nai.arc.nasa.gov>