

Education :

Are we alone in the Universe? Is there life beyond Earth? How can we search for evidence of the life in our Solar System and beyond? These questions motivate people to learn about our natural world, and are at the core of our Center for Education. The Center promotes STEM Education through funded programs aimed at teaching and inspiring children, young adults and educators with emphasis on space sciences and astrobiology

Summer Research Internship Program:

Life in the Universe – Astronomy and Planetary Science at the SETI Institute

Students work with scientists at the SETI Institute and at the nearby NASA Ames on projects spanning the field of astrobiology from microbiology to planetary geology to observational astronomy.

Airborne Astronomy Ambassadors (AAA):

A program designed to measurably enhance student STEM achievement and engagement in selected school districts via professional development for middle school, high school, and community college science teachers.

Voyages Through Time Curriculum:

A standards-based curriculum materials for a one-year high school integrated science course centered on the unifying theme of evolution

Reaching for the Stars: NASA Science for Girl Scouts:

“Reaching for the Stars: NASA Science for Girl Scouts” is a 5-year space science education program bringing Girl Scouts together with scientists, engineers, and educators at NASA and beyond.

RESEARCH :

From Big Bang to Formation of Stars :

For life to exist, the first requirement is a universe with suitable molecular building blocks. Except for hydrogen, the elements that make up organic molecules are all produced in the cores of stars. The material of planets and other small bodies is also dependent on stellar nuclear reactions. As Carl Sagan famously said, “we are made of star stuff.”

Our scientists investigate the mechanisms that lead to star and planet formation, and how these affect the extent of habitable real estate in our galaxy.

From Planets to Habitability :

One of the greatest recent astronomical discoveries is that planets are extremely plentiful. The majority of stars are accompanied by planets.

Similarly to the planets in our solar system, exoplanets have a diversity of conditions and environments. These offer clues to the location and prevalence of life. Our scientists ask how we can use what we've learned about the Earth and its extreme environments, as well as the conditions on other solar system worlds, to understand the connection between the environments of other planets and moons, and their potential life forms.

From Life to Complexity :

We have one example of life in the universe, here on Earth. Its resilience has allowed it to spread to nearly every environment on the surface of our planet.

What can Earth teach us about the conditions that allow life to emerge and thrive? What are the signatures of life that will help us find it on other worlds? And how can the communication methods of other terrestrial species help us to recognize intelligence that might exist elsewhere in the cosmos?

Extraterrestrial Intelligence ;

SETI is a generic acronym that stands for the Search for Extraterrestrial Intelligence. Scientists doing SETI experiments are looking for proof – not merely of life elsewhere – but of intelligent beings in other star systems.

How is it done?

Scientists long ago realized that we can't find aliens by climbing into rockets and zipping off to other planetary systems. Such galactic gallivanting is standard fare in movies and on television, a circumstance that has convinced many people that it's something humans will be doing real soon now. But the enormous distances to the stars (even the nearest is 7,000 times farther than Pluto) means that we simply aren't about to visit the aliens. Warp drive is a lovely idea, but no more than that.

And while some people think that the extraterrestrials, with their advanced technology, may be able to come here, this is not a popular idea among most scientists.

Consequently, most SETI these days eschews rockets, and relies on radio telescopes – massive antennas outfitted with highly sensitive and specialized receivers. The idea is simple: Forget the rockets and bring on the photons. Let signals beamed via radio (or light) do the traveling.

Radio is a great way to send information over the incredible distances between the stars; it easily passes through the dust and gas that suffuse space, and it does so at the speed of light (about 20,000 times faster than our best rockets.)

So, most SETI of the past 60 years has involved using large antennas to try and eavesdrop on any radio signals aliens might be transmitting.

There are also SETI experiments done with specially designed optical systems that search for flashing laser light beamed into space by other societies to convey information, to propel their rockets, or to just ping other star systems to see if anyone is home.

Note that SETI experiments do not broadcast. They just try to pick up signals that might already be threading the galaxy.

Life in the Universe Curriculum:

A unique set of resources for elementary and middle school teachers, designed to bring the excitement of searching for life beyond Earth into the classroom.

Our Place in the Solar System: Sun, Earth, Moon and Eclipse Activity Guide:

This guide supports activities for learning about the sun, light, our solar system and eclipses.

Uni stellar Education:

Some space research centers and Uni stellar have placed smart digital telescopes (eVscopes) into the hands of teachers and students to help improve science education and increase student interest in science and astronomy.