Life Beyond Earth?

Is there intelligent life on other planets? For years, scientists said "no," or "we don't know." But today this is changing. Seth Shostak and Alexandra Barnett are astronomers. They believe intelligent life exists somewhere in the universe.[1] They also think we will soon **contact** these beings.[2]

Why do Shostak and Barnett think intelligent life exists on other planets? The first reason is time. Scientists believe the universe is about 12 billion years old. This is too long, say Shostak and Barnett, for only one planet in the **entire** universe to have intelligent life. The second reason is size—the universe is huge. **Tools** like the Hubble Telescope "have shown that there are at least 100 billion . . . galaxies," says Shostak. And our galaxy, the Milky Way, has at least 100 billion stars. Some planets **circling** these stars might be similar to Earth.

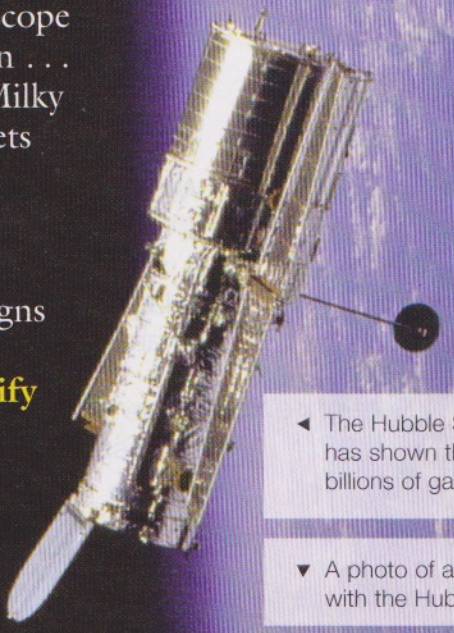
Looking for Intelligent Life

Until recently, it was difficult to **search** for signs of intelligent life in the universe. But now, **powerful** telescopes **allow** scientists to **identify** smaller planets—the size of Mars or Earth—in other solar systems. These planets might have intelligent life.

Making Contact

Have beings from space already visited Earth? Probably not, says Shostak. The **distance** between planets is too great. Despite this, intelligent beings might eventually contact us using other methods, such as radio signals.[3] In fact, they may be trying to communicate with us now, but we don't have the right tools to receive their **messages.** But this is changing, says Shostak. By 2025, we could make contact with other life forms in our universe.

Did You Know?
In 2007, scientists in Chile discovered the most Earth-like planet ever. Called Gliese 581c, it is about 20 light-years away from Earth.



◀ The Hubble Space Telescope has shown that there are billions of galaxies.

▼ A photo of a galaxy taken with the Hubble Telescope

[1] The **universe** is all of space—all stars, planets, and other objects.
[2] A person or other living creature (for example, an animal) is a **being**.
[3] A **radio signal** is a way of sending information using radio waves.

COLONIES IN SPACE

Stephen Hawking, one of the world's most important scientists, believes that to **survive,** humans must move into space: "Once we **spread out** into space and establish **independent** colonies, our future should be safe," he says.

Today, the United States, India, China, and Japan are all planning to send astronauts back to Earth's closest **neighbor**: the moon. Each country wants to create space stations there between 2020 and 2030. These stations will prepare humans to visit and later live on Mars or other Earth-like planets.

"Once we spread out into space and establish independent colonies, our future should be safe."

–Stephen Hawking

Robert Zubrin, a rocket scientist, thinks humans should colonize space. He wants to start with Mars. Why? There are several advantages: for one, sending people to the moon and Mars will allow us to learn a lot—for example, whether living on other planets is possible. Then, we can eventually create new human societies on other planets. In addition, the **advances** we make for space travel in the fields of science, technology, **medicine**, and health can also **benefit** us here on Earth.

But not everyone thinks sending humans into space is a smart idea. Many say it's too expensive to send people, even on a short **journey**. And most space trips are not short. A one-way trip to Mars, for example, would take about six months. People traveling this kind of distance face a number of health problems. Also, for many early space **settlers**, life would be extremely difficult. On the moon's **surface**, for example, the air and the sun's rays[1] are very dangerous. People would have to stay indoors most of the time.

Despite these concerns, sending people into space seems certain. In the future, we might see lunar[2] cities and maybe even new human cultures on other planets. First stop: the moon.

Did You Know?

The meals astronauts eat in space include food like pasta and chocolate cake or, for Japanese astronauts, ramen noodles.

[1] The **sun's rays** are narrow beams of light from the sun.
[2] **Lunar** means "related to the moon."