



Our Place in the Universe

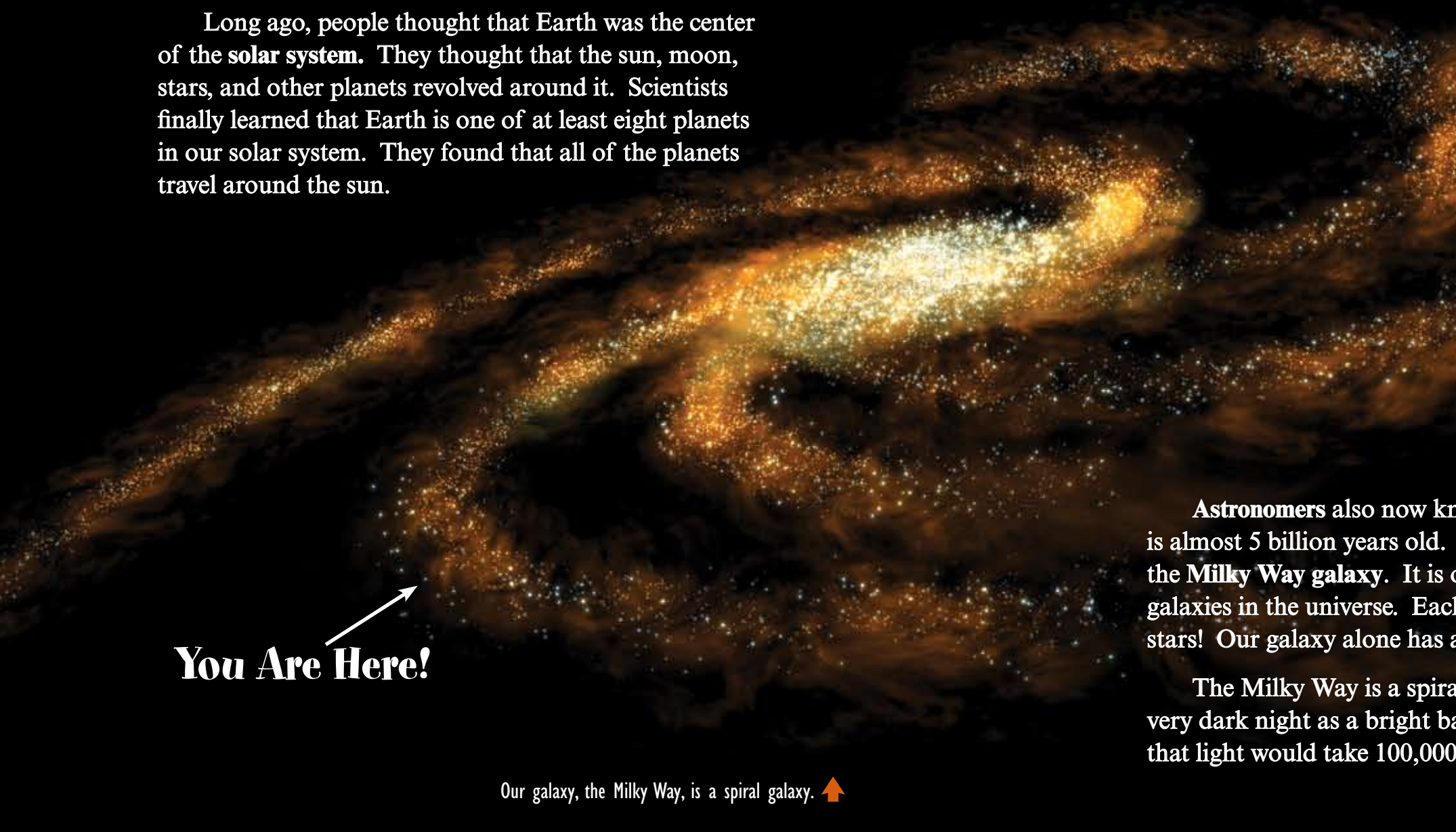
Have you ever looked into the night sky and wondered what was out there? Throughout time, people have gazed to the heavens. They are hoping to find clues about our place in the universe.

Long ago, people thought that Earth was the center of the **solar system**. They thought that the sun, moon, stars, and other planets revolved around it. Scientists finally learned that Earth is one of at least eight planets in our solar system. They found that all of the planets travel around the sun.



Space Wanderers

The word planet comes from the Greek word for wanderer. Ancient Greeks noticed that some of the lights in the night sky seemed to wander. Now we know that planets move in an invisible path around the sun. That path is called an orbit.



You Are Here!

Astronomers also now know that our solar system is almost 5 billion years old. It is located at the edge of the **Milky Way galaxy**. It is one of at least 100 billion galaxies in the universe. Each one of them has billions of stars! Our galaxy alone has about 200 billion stars.

The Milky Way is a spiral galaxy. It can be seen on a very dark night as a bright band in the sky. It is so wide that light would take 100,000 years to travel across it.

Our galaxy, the Milky Way, is a spiral galaxy.



The Sun

The sun is a **star** at the center of the solar system. It isn't the biggest or brightest star in our galaxy, but it is the star closest to Earth. It is the largest body in our solar system. In fact, it contains 99.8 percent of all of the mass in our solar system.

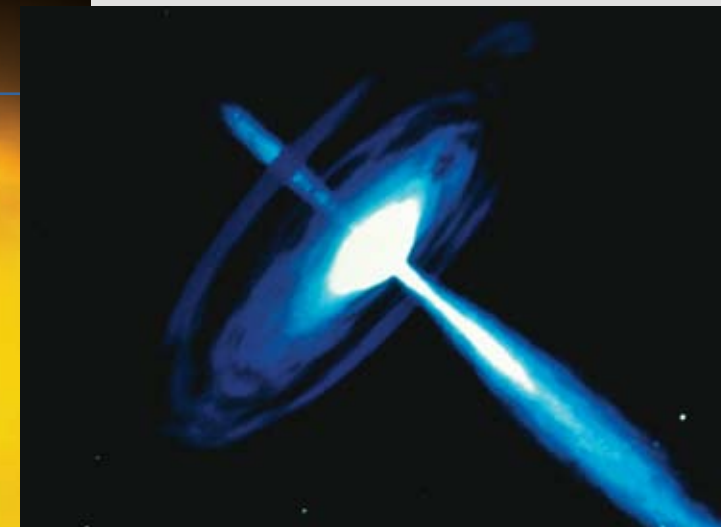
The sun is the major source of energy on Earth. It gives us light and heat. It's responsible for the growth of plants, winds, ocean currents, and the water cycle. Without the sun, Earth would be very cold. It would be so cold that no living thing could survive.

Like other stars, the sun is made up of hot hydrogen and helium gases. The temperature in its center is about 15 million degrees Celsius (27 million degrees Fahrenheit).

The sun also creates **gravity**. The force of gravity between the sun and planets keeps Earth and other planets of the solar system in place and orbiting around the sun.

Now, That's Big!

The sun is a medium-sized star known as a yellow dwarf. It is not a large star, but 1.3 million Earths could fit inside of it!



What Is a Black Hole?

Huge stars that use up all their energy form black holes. As the stars die, their gravity causes them to collapse. Their gravity is so great that not even light can escape. Any object that is pulled into a black hole becomes invisible. A black hole is not *really* a hole. It is an area very crowded with **matter**. We only know a black hole is there because of the way an object that gets near one is pulled toward it. One black hole that scientists found is only a few kilometers wide. But it weighs as much as three billion suns!