

TIME FOR KIDS

Another Earth?

Scientists at NASA have discovered Earth's bigger, older cousin

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"Kepler basically stared at one part of the sky for four years and waited to see if the brightness of stars periodically dipped," said Coughlin. "What we can tell from this dimming is that there is a planet circling that star. Every time it makes an orbit around the star it passes in front of the star and we see it from Earth."

It is this relationship between planet and parent star that makes Kepler-452b so remarkable. "The new discovery, Kepler-452b, fires the planet hunter's imagination because it is the most similar to the Earth-sun system found yet: a planet at the right temperature within a habitable zone, and only about one and a half times the diameter of Earth, circling a star very much like our own sun," said NASA in a press release.

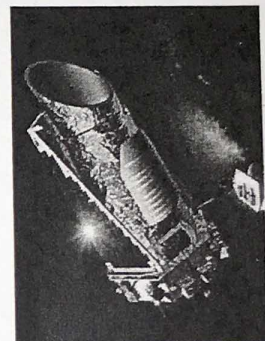
NASA researchers and engineers have identified a planet 1,400 light year away that closely resembles Earth. The planet, named Kepler-452b after the Kepler telescope that detected it, is about 60% larger in diameter than Earth and is located in the constellation Cygnus.

Kepler-452b rotates in a 385-day orbit around a parent star, Kepler-452, that's 6 billions years old, 1.5 billion years older than our sun. Kepler-452 is the same temperature as our sun, but is 20 % brighter and 10% larger.

"The planet seems similar to earth in a lot of respects," Jeff Coughlin told TFK. Coughlin is a Kepler research scientist at the SETI Institute in Mountain View, California. "[It's] the most similar that we have found so far."

The Transit Method

NASA launched Kepler in 2009. Since then, the telescope has identified more than 1,000 planets outside of our solar system. It uses what is called "the transit method" to gather data on planets and stars far off in other galaxies. It focuses on certain stars in the universe and watches for moments when the stars dim.



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NASA launched the Kepler telescope, named after astronomer Johannes Kepler, in 2009.

Goldilocks Zones

A delicate balance allows Earth to support life. As we orbit the huge star we call the sun, the earth rotates at a distance just close enough to maintain liquid water and comfortable temperatures. Such a sweet spot in a solar system, called a "habitable zone," or "goldilocks zone," is the most likely place to find life beyond our planet.

Until yesterday, at least a dozen planets had been located in habitable zones throughout the universe. But none had the winning combination of features that makes Kepler-452b so similar to Earth. "The ones we found before were around cooler, smaller stars called M stars," said Coughlin. "New candidates, like Kepler-452b, are around G-stars, more sun-like stars, that are hot and yellow."

It's these favorable characteristics that would make life on Kepler-452b possible. However, if there were life on Kepler-452b, it would be quite different from life on Earth. "Because it is thicker than Earth, everything would weigh much more there," said Coughlin. "There are a lot of unknowns about how life would evolve on another planet. But the same physics that work on Earth would work elsewhere, so it's possible that life would follow a similar development. Nature can find common solutions to common problems."

Next Steps

Kepler-452b is too far away for humans to visit. But the discovery of this new Earth-like planet can tell us a lot about what's possible for the future of space travel. "The next step in the process is to do follow up missions to find planets similar to Kepler-452b, but much closer to Earth," said Coughlin. "We could do a lot more follow up with those planets, and even start to think about visiting one day."

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