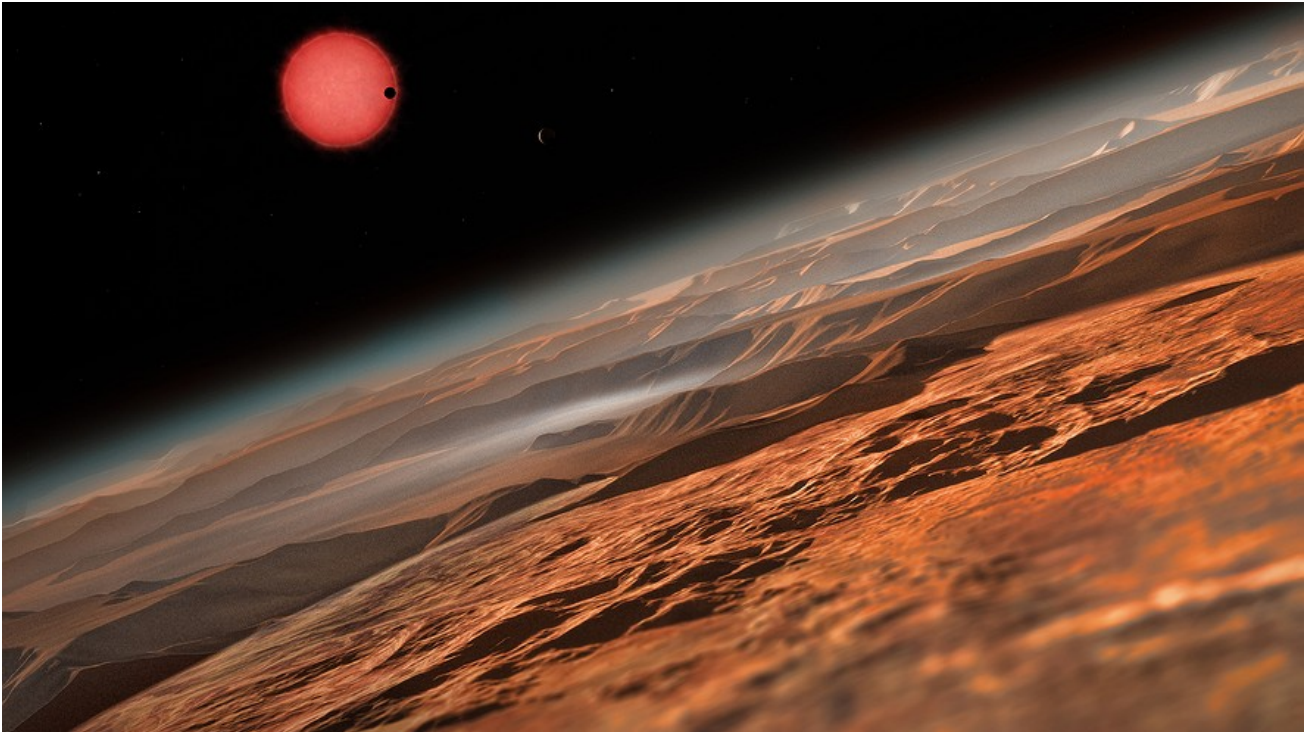


# Astronomers discover planets that could support human life

By Los Angeles Times, adapted by Newsela staff on 05.10.16

Word Count **592**



An artist's impression of the ultracool dwarf star TRAPPIST-1 as seen just above the surface of one of its three known planets. M. Kornmesser/European Southern Observatory

Just 40 light-years away, three newly discovered Earth-sized planets orbit a small red sun.

Astronomers who discovered the planets say all three are potentially suitable for life, perhaps even for humans. They could represent the best targets yet in the search for life beyond the solar system.

The planets are not huge, hot, super alien worlds, says Julien de Wit. He is a scientist who worked on the study.

The system's host star, called TRAPPIST-1, is what is known as an ultracool dwarf. It is about one-tenth the size of our sun and just a bit bigger than Jupiter.

## Human Life Possible

Its two innermost planets orbit extremely close to the star. They take just 1.5 and 2.4 Earth days, respectively, to complete a turn around the ultracool dwarf. The third planet's orbital period is less certain. Current observations suggest its orbital period could range anywhere from four to 73 days.

The star is just 1/20th as bright as our sun. Scientists say, however, that it could still give off enough heat to warm all three planets so that liquid water could exist on their surfaces.

Humans can possibly live on a planet if it is neither too hot nor too cold to have liquid water on its surface.

Ultracool dwarfs make up about 3/20th of the astronomical objects in our immediate neighborhood in space. But until now, no one had ever discovered a planet orbiting one.

That is probably because no one was looking, de Wit says. Most searches, like those involving NASA's Kepler telescope, target hotter, bigger stars.

## **A Unique Opportunity**

Scientists had debated whether it was possible for planets to form around such tiny and dim stars.

"The team took a big risk even looking for planets around these stars," de Wit says. "But it has really paid off."

The research was led by Michael Gillon and Emmanuel Jehin of the University of Liege in Belgium.

The scientists say the discovery provides a one-of-a-kind opportunity to look for signs of life on the three Earth-sized planets. That would not be possible if the bodies were orbiting brighter stars.

"Systems around these tiny stars are the only places where we can detect life on an Earth-sized exoplanet with our current technology," Gillon says. "If we want to find life elsewhere in the Universe, this is where we should look."

To determine if a planet might harbor life, scientists usually study the makeup of its atmosphere. Biomarkers like methane, oxygen and water could indicate that life is present.

For Earth-sized planets orbiting larger, brighter stars, the small signs would be lost in the glare of the star's light. However, in the faint glow of the red ultracool dwarf stars, the signs of life might be evident.

The three planets were found with the TRAPPIST telescope. It is a 60-centimeter telescope located in the Chilean desert.

## **Research Will Continue**

The researchers could not see the planets directly. But they knew they were there because the starlight from the ultracool dwarf dimmed slightly at regular intervals. That indicates a planet was passing in front of it.

The initial observations were then followed up with larger telescopes that confirmed the findings.

The scientists now plan to use even more powerful telescopes to study the TRAPPIST-1 system. The Hubble Space Telescope will point its powerful lens toward the ultracool dwarf star.

The scientists will also look at similar stars to see whether they might have planetary systems as well.

“This is only the beginning,” de Wit said. “There is a big adventure ahead of us.”

**Quiz**

- 1 Which sentence from the article BEST explains why no one had previously discovered a planet orbiting an ultracool dwarf star?
- (A) It is about one-tenth the size of our sun and just a bit bigger than Jupiter.
  - (B) The star is just one-twentieth as bright as our sun.
  - (C) Ultracool dwarfs make up about three-twentieths of the astronomical objects in our immediate neighborhood in space.
  - (D) Most searches, like those involving NASA's Kepler telescope, target hotter, bigger stars.
- 2 Which sentence from the article BEST supports the idea that these three new planets are potentially suitable for life?
- (A) The planets are not huge, hot, super alien worlds, says Julien de Wit.
  - (B) Humans can possibly live on a planet if it is neither too hot nor too cold to have liquid water on its surface.
  - (C) To determine if a planet might harbor life, scientists usually study the makeup of its atmosphere.
  - (D) The scientists will also look at similar stars to see whether they might have planetary systems as well.
- 3 Which sentence BEST supports the MAIN idea of the section "A Unique Opportunity"?
- (A) "Systems around these tiny stars are the only places where we can detect life on an Earth-sized exoplanet with our current technology," Gillon says.
  - (B) To determine if a planet might harbor life, scientists usually study the makeup of its atmosphere.
  - (C) Biomarkers like methane, oxygen and water could indicate that life is present.
  - (D) The three planets were found with the TRAPPIST telescope.

- 4 Which sentence would be MOST important to include in a summary of the section "Research Will Continue"?
- (A) Scientists learned that planets may orbit ultracool dwarf stars and will use more powerful telescopes to find other stars that are similar to the TRAPPIST-1.
  - (B) Scientists were unable to see the planets directly, so they used larger telescopes to confirm the initial findings about the TRAPPIST-1 system.
  - (C) Scientists studied the regular dimming of starlight from the ultracool wharf to find and observe planets in the TRAPPIST-1 system.
  - (D) Scientists will use the powerful lens of the Hubble Space Telescope to study the TRAPPIST-1 system