

Mysterious signal hints at nearby alien life

Would aliens look like us?
As scientists pick up a mysterious radio signal from the Earth's closest star, some think we could be on the brink of our first ever alien encounter.



Familiar faces: aliens might have evolved in a very different environment from our own.

In April 2020, astronomers at the Parkes telescope in Australia picked up an unusual radio signal. It was coming from the direction

of Proxima Centauri, the closest star to our own solar system. It was definitely artificial, not natural. And tiny shifts in frequency suggested that it might be coming from another planet.

For nearly a year they kept it secret. After all, unexplained radio signals usually turn out to be man-made. But now they have gone public.

Why? Because, after months of failing to find any human source for the signal, they believe this could be the most promising breakthrough in the search for aliens since the **Wow! signal of 1977**. They have named it Breakthrough Listen Candidate 1 (BLC-1).

Next to Proxima Centauri is an **exoplanet** slightly larger than Earth. Named Proxima b, the planet is thought to orbit within the **habitable zone**, meaning that it has the right atmospheric conditions to host liquid water. This would allow life to develop on its surface.

If there are aliens on Proxima b, we have a real chance of meeting them. Travelling at 20% of the speed of light, a spacecraft could travel from one system to the other in a few decades.

In fact, researchers are already working on a tiny, laser-powered probe that would be able to make the trip. And while humans are still a long way from the technology needed to transport people out of our solar system, a

more advanced alien civilisation might already have this capacity.

So, if a spaceship from Proxima b does end up setting down on Earth, what will our visitors look like?

For well over a century, humans have speculated about the appearance of aliens. Some have imagined them as humanoid, like Superman or The Doctor. But others have suggested aliens would look completely different from us. **John Wyndham**'s book *The Kraken Wakes* is about a jellyfish-like species that can only live in ocean trenches.

Proxima b is a very different place from Earth. Its year lasts just 11 days. It orbits a **red dwarf** star that releases fierce radiation. And it is probably **tidally locked** with its sun: half of it in constant day, and the other half in constant night.

That would mean its only habitable space would be a thin band between these two zones, trapped in eternal twilight. It is difficult to see how any species evolving in these conditions could look like us.

They would likely have huge eyes to cope with the dimmer light on their home planet. They might also have less tolerance for large temperature changes.

They would have evolved in a lower **atmospheric pressure**, meaning that the pressure on Earth could crush their bodies. On the other hand, thanks to the more

powerful gravitational field on Proxima b, they would probably be physically stronger than human beings.

But there might also be similarities between us. In order to use tools, they would have to have at least two limbs – one to hold a tool and one to hold an object – and digits capable of gripping things. And if aliens are behind BLC-1, they must have similar technology.

Would aliens look like us?

Peas in a pod

Yes, say some. To develop advanced technology, the aliens would have to have sophisticated problem-solving capacity and at least two **dextrous** limbs. That alone would make them very similar to human beings. They must have complex language, like we do. Most importantly, if they are broadcasting their location to the universe, they probably share that most fundamental human trait: curiosity.

Not at all, say others. Alien life would have evolved in very different conditions from ours. Their civilisations might have developed very differently, and they might have faced entirely different moral and social questions. Their way of thinking could be completely incomprehensible to us. They might not even be able to survive in the conditions of Earth.

YOU DECIDE

1. If you were in charge of showing an alien tourist around Earth, what would you take them to see?
2. How do you think human societies would be affected by an alien encounter? How might it change the way we behave towards each other?

ACTIVITIES

1. What would an alien visiting Earth from Proxima b for the first time think of our home? Write a diary entry from its perspective.
2. An alien species has sent a message asking to know more about our planet. Using a smartphone or camera, take a series of five photos that summarise life on Earth. Write a short description of each, explaining how it would help an alien understand humans.

SOME PEOPLE SAY...

“We only have to look at ourselves to see how intelligent life might develop into something we wouldn’t want to meet.”

Stephen Hawking (1942 - 2018), British physicist

What do you think?

Q & A

Q: What do we know?

A: Most people agree that it was vanishingly unlikely that an extremely intelligent species like humanity would evolve at all. In 3.5 billion years of evolution on Earth, no other species has developed that is capable of such advanced problem-solving, and of shaping its environment to suit its needs. Indeed, it is only in the last 10,000 years that humanity has really explored the potential of its intelligence. If we go extinct, it is unlikely that anything like us will ever appear on Earth again.

Q: What do we not know?

A: There is some debate over what the effect of disease would be on alien visitors. For millennia, humanity was separated into two halves: one in Eurasia, one in the Americas. When they met each other again in 1492,

WORD WATCH

Radio signal – Stars and many other astronomical objects emit radio signals, meaning that studying radio waves is a good way of investigating the cosmos. Because they travel well in space, it is possible that aliens might communicate with us using targeted radio signals.

Wow! signal of 1977 – In 1977, the Big Ear radio telescope in Ohio picked up a strong radio signal, lasting 72 seconds, which bore all the hallmarks of extraterrestrial origin. When it was spotted by astronomer Jerry R Ehman, he simply wrote “Wow!” next to it, inspiring its name. It has never been detected since.

Exoplanet – Any planet outside the solar system. So far we have confirmed the existence of 4,395 exoplanets, but there are likely to be at least 100 billion in the Milky

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Eurasian pathogens decimated the population of the Americas. If human pathogens were able to infect aliens, or vice versa, the same could happen. In HG Wells's book *The War of the Worlds*, invaders from Mars are defeated not by human weapons, but by disease.

Way alone.

Habitable zone – The area around a star that is neither too warm nor too cold for liquid water, believed to be essential for complex life to exist. As many as 40 billion might exist in the Milky Way.

John Wyndham – A 20th-Century British science fiction author, famous for his novels on the themes of alien invasion and the end of the world.

Red dwarf – A relatively small, cool star. They are the most common and longest-lived stars: they can theoretically burn for trillions of years, although since the universe is less than 14 billion years old, we have never observed one in the late stages of its life.

Tidally locked – When the same face of a celestial body is always turned towards the object it orbits. The moon is tidally locked with the Earth. On a planet, it means that one side is always extremely hot and the other extremely cold.

Atmospheric pressure – The internal pressure of a human body is the same as the pressure of the air on the surface of the Earth. At the much higher pressures in the depths of the ocean, our bodies would simply collapse. Similarly, an alien whose internal pressure was much higher or lower than Earth's air pressure would struggle to adapt.

Dextrous – Dexterity means having fine motor skill, the ability to carry out intricate tasks. It comes from the Latin “dexter”, meaning “right”, since in most (but not all)

human beings the right hand is more
dextrous than the left.