

# Is there really any life 'out there'?

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Mankind should not assume that it will definitely find life on alien planets according to a hypothesis being presented at the Royal Society, the UK's national academy of science, this week. Professor Charles Cockell, Director of the UK Centre for Astrobiology at the University of Edinburgh, will raise the possibility that there is no life 'out there' at a discussion meeting entitled Characterising exoplanets: detection, formation, interiors, atmospheres and habitability.

As scientists add to the growing list of planets in the universe which are classed as habitable, Professor Cockell poses an important question – Does life always arise whenever a planet's conditions deem it possible?

On Earth, vacant habitats are rare; most environments that are able to support life do. Professor Cockell argues that this knowledge could be giving us a biased approach to the search for [life on other planets](#).

"The pervasive nature of life on Earth is leading us to make this assumption," said Professor Cockell. "On our planet, carbon leaches into most habitat space and provides energy for microorganisms to live – there are only a few vacant habitats that may persist for any length of time on Earth, but we cannot assume that this is the case on other planets"

[Habitable planets](#) may turn out to be abundant in the universe; however the search for life on them may yield many negative results.

"It is dangerous to assume life is common across the universe – it

encourages people to think that not finding [signs of life](#) is a "failure" when in fact it would tell us a lot about the [origins of life](#)," added Professor Cockell.

In his talk, Professor Cockell suggests that scientists should use his hypothesis to avoid the assumption that habitable conditions are likely to contain life, and as a result, approach the question in a more scientifically robust and experimentally testable way.

He also highlights another common assumption that we make when considering [extraterrestrial life](#). That is that life will always result in a signature that we will be able to recognise and detect.

Professor Cockell explains that in coming decades, increasingly powerful telescopes and developments in spectroscopy may allow us to look for the signals of life on planets beyond our solar system. However, regardless of this, our view is still going to be heavily influenced by our knowledge of [life on Earth](#).

In order to detect life on another planet we would need to assume that:

- Once life originates it will usually evolve metabolisms that produce signature gases that we associated with known life.
- Once these metabolisms evolve, the organisms that contain them will usually colonise a planet in high numbers.
- Once the organisms colonise the planet they will usually produce enough gas or surface biosignatures to accumulate at concentrations detectable by us.

Therefore we need to accept the possibility that life could exist on a habitable planet without presenting any signatures that we would

recognise as life or be able to detect from Earth.

Researchers attending the Royal Society meeting aim to set the agenda for the next decade in this rapidly expanding field of extra-solar planet science. Some 800 planets orbiting stars outside of our solar system have now been detected, with varying masses and orbital parameters. The challenge now is to move from detection to understanding these planets as bodies in their own right.

**More information:** The full discussion meeting programme can be downloaded here: [royalsociety.org/events/2013/exoplanets/](https://royalsociety.org/events/2013/exoplanets/)

Provided by The Royal Society

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