



In search of extraterrestrial life

Dr. Boris Schmidtgall

People have always wondered whether there are other intelligent beings “out there”. For several decades now, the search for extraterrestrial intelligence has been established as a research discipline: astrobiology. However, astrobiology began with speculation and conjecture sparked by Louis Pasteur’s famous experiments.

Sensationalism and fascination for aliens

People have always been fascinated by the vastness of the starry sky. The Bible mentions several times that believers worshipped God after gazing at the heavens. Whether Abraham, Job, David or other prophets – when they looked at the starry sky, it was clear to them that it was the work of a wise Creator. But even

for those who deny the existence of God, looking to the skies has often caused them to wonder whether we are alone in the vastness of space or whether there are other beings “out there”.

Especially in recent years, mass media has used people’s longing for an answer to this question to generate headlines.

In some cases, it is obvious that these are merely sensationalist reports. For example, on May 19, 2021, the Berliner Zeitung newspaper ran the headline: “Former US President Obama confirms UFO sightings by the US military.” The article in question states, among other things, that Obama joked on a talk show with a mischievous grin: “When it comes to aliens, there are some things I can’t say here on TV. Maybe they found us before we could find them...”

This report was taken so seriously that the Deutschlandfunk radio station felt it necessary to give the all-clear in Germany a little later. They reported: “Investigations have so far always shown that the UFOs are entirely of terrestrial origin. E.T., Marvin the Martian, ALF or whatever the aliens are called, have apparently not yet considered it necessary to visit our beautiful blue planet.” Not so long ago, the German TV channel Pro7 reported that, according to high-ranking Pentagon employees, a total of 800 UFOs had been sighted by May 2023. However, such reports are by no means limited to the German or US media. The Russian website ria.ru also reported that a “very bright spherical object” had been sighted at the Chinese border. Local residents reportedly managed to photograph the object, which was flying silently at a great height. However, when asked, the local authorities replied that no precise information was available.

Scientific evidence of extraterrestrial life found?

However, there are reports that claim to be scientific and state that it is almost certain that extraterrestrial life exists. A few years ago, for example, speculation about the existence of life on our neighboring planet Venus caused a prolonged media frenzy. On September 14, 2020, the Süddeutsche Zeitung newspaper ran the headline: “Mysterious gas: life on Venus possible.” The news spread like wildfire. The article stated that phosphine gas had been detected



in the atmosphere of Venus, which can only be produced biologically and is therefore a possible indication of life. However, the scientists mentioned in the article have so far failed to provide clear evidence that they were actually able to detect phosphine. Furthermore, it seems completely absurd that any form of life could survive under the conditions on Venus – the clouds consist of around 90 percent highly corrosive sulfuric acid and temperatures can reach up to 400°C

There are also reports of alleged traces of extraterrestrial life on Earth. In recent years, there have been discussions about alleged proteins that were found in the Acfer 086 meteorite. The author of a specialist article, Julie McGeoch, told Deutschlandfunk radio: “Theoretical calculations show that it is indeed possible for free-flying amino acids to combine in space. After all, they have had billions of years to do so.” However, biochemists who took a closer look at the structures of the allegedly detected “proteins” quickly realized that these molecules were not proteins and that they do not occur in organisms.

Early speculation about the origin of life

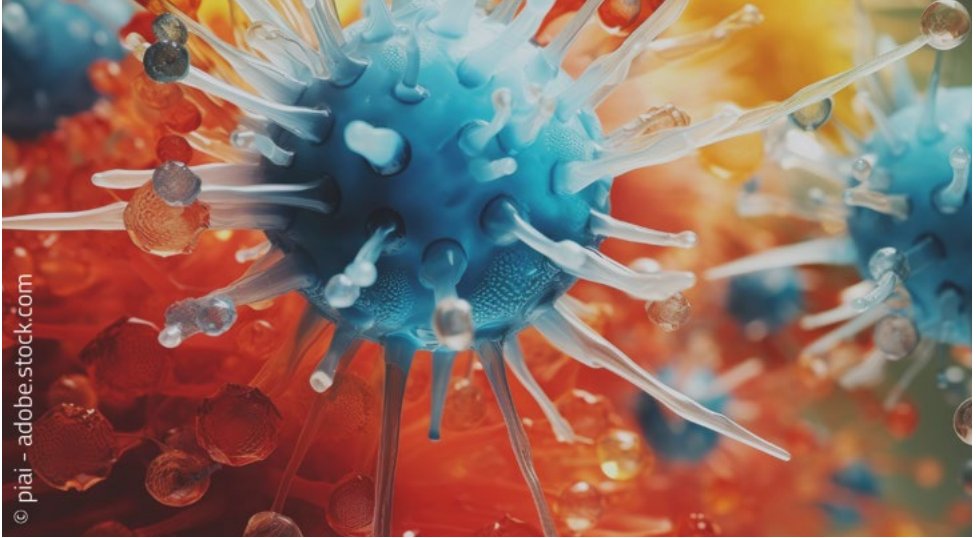
However, such reports appearing in mass media is not a new phenomenon. As early as the 19th century, some scientists assumed that extraterrestrial life must exist. This speculation was mainly the result of the work of Louis Pasteur.

Through experiments in 1862, Pasteur successfully demonstrated that life does not emerge spontaneously from inanimate matter. This proof shattered the belief held by many scholars until then that life could emerge spontaneously from dead matter – as Aristotle had already assumed over two thousand years ago. Pasteur’s simple and elegant experiment consisted of storing boiled culture media¹ in either sealed or open glass flasks over a long period of time. Since no development of bacteria or other microorganisms was observed in the sealed flasks, it was clear that organisms do not spontaneously emerge. Pasteur then coined the phrase “Life only comes from life”. Additionally, pasteurization – a process to increase the shelf life of dairy products – was named after him. His statement, which remains valid today, probably also prompted Charles Darwin to speculate about the origin of life in a “warm little pond”, a body of water that is said to have contained all the necessary chemical substances and an energy source required to produce the first living cell.

In 1862, Pasteur demonstrated that life does not emerge spontaneously from inanimate matter.

Other scientists, however, assumed that life must have been imported from outside our planet. The British physicist William Thomson – also known as “Lord Kelvin” – suggested that life came to Earth on meteorites. The Russian origin-

¹ Culture media are sterile substances used to cultivate microorganisms or cells



of-life researcher Alexander I. Oparin also supported this idea toward the end of his career (1957) – previously, in the 1920s, he had advocated a terrestrial origin of the first organisms in line with Darwinian thinking. Both Kelvin and Oparin used Pasteur’s experiments to justify their views. Oparin spoke of an external “infection” as the origin of

Pasteur coined the phrase “Life only comes from life”.

life on Earth. The term “panspermia hypothesis” was coined for these considerations.

The astrophysicist Thomas Gold posited an adventurous concept (1960): life on Earth originated from a pile of garbage that aliens had accidentally left behind. He actually published this idea in writing – it was later referred to as “accidental panspermia”.

Searching for traces in molecules of life

The explanations of the molecular biologist Francis Crick (1973) are also very interesting. Together with James Watson, he is regarded as having discovered the three-dimensional DNA structure. He was convinced that the most plausible explanation for the origin of life on Earth was a deliberate introduction from the universe by intelligent extraterrestrials. A central argument of Crick’s hypothesis was the role of certain metals in organisms. Molybdenum, which is relatively rare on Earth, is an important trace element in organisms, while relatively common metals such as chromium and nickel are of fairly marginal importance. If Darwin’s primordial soup hypothesis were to be believed, however, the composition of organisms would be expected to correlate with the abundance of elements on Earth.

A second important argument put forward by Crick related to the universality of genetic code: the characteristics and functioning of the genetic machinery are the same in almost all organisms. Crick drew the conclusion from this that life must have originated from a single extraterrestrial organism. Crick also warned against “infecting” other planets with life. Chemist Steven Benner from the University of Florida also made an important contribution to the debate (2002). He focused extensively on the key macromolecules of life: nucleic acids (genetic material molecules) and proteins (building blocks of the body and biocatalysts). His aim was to identify a universal molecular signature of life, which could then also be expected to be found in organisms on other planets. He was surprised to discover that nucleic acids and proteins have opposing and complementary properties.

As genetic molecules, nucleic acids must ensure the safe storage and transmission of genetic information. It is therefore necessary for them to be made up of the small number of four molecular building blocks. This minimizes the risk of errors (mutations) quickly creeping in when genetic information is copied to be passed on to subsequent generations. The probability of such errors increases with the number of building blocks in the molecular alphabet of the genetic text. Conversely, proteins require a higher number

of molecular building blocks, as many different functions require very different proteins. Benner saw the fact that life is dependent on at least two types of biological macromolecules from the very beginning as a paradox, as this contradicts the expectations of Darwin’s theory of evolution.

The two Russian researchers Cherbak and Makukov (2013), who work at a university and research institute, respectively, in Almaty, Kazakhstan, pursued a similar approach. They found that a strikingly large number of arrangements of genetic codons (each of which has three genetic letters) in combination with amino acids result in arithmetic and ideographic (stylized pictograms) patterns. These patterns have no biological purpose and are demonstrably slowly destroyed by evolution. An appropriate comparison would be decorations on a house or the faces of four US presidents carved out of the rock. Cherbak and Makukov interpreted these patterns as a clear indication that life on Earth was planted on purpose.

Thomas Gold assumed that life on Earth originated from a pile of garbage that aliens had accidentally left behind.

The search for extraterrestrial intelligence as a research discipline

The search for extraterrestrial intelligence (SETI) has long been established as a scientific discipline in its own right. It is also referred to as astrobiology. There are



a number of journals that regularly report on research findings in this field. Stationary telescopes on Earth are used to scan signals from space for possible messages or traces of intelligent beings. And space telescopes are used to obtain images from space. Research is also being carried out into planets that may harbor life. This assumption is always made when a discovered planet is approximately the size of the Earth and lies in the “habitable” zone of a star, i.e. at a distance where liquid water could exist. Two Irish scientists claimed that there are over 40 billion such potentially habitable planets in the Milky Way alone (Sleator & Smith 2017).

Astrobiologists tend to be extremely generous in labeling planets as potentially “habitable” – evidence that liquid

water could exist there is usually sufficient. However, the habitability of Earth, which is the only real comparable example of a planet that supports life, is very sensitive to several parameters. The distance to the Sun and its radiation intensity, the mass of the Earth, the right ratio of land to water, the magnetic field that protects against solar winds and the composition of the Earth’s atmosphere, which so far remains unique in the universe, are indispensable boundary conditions for life on the blue planet (see Widemeyer 2021). And all these parameters must be within a reasonably suitable range. In addition, it would have to be shown that the evolutionary development of photosynthesis, a highly complex biochemical process that is fundamental to life, is possible on its own. So far, however, no other planet has

even come close.

Nevertheless, astrobiologists remain hopeful. One research group even went so far as to calculate the (evolutionary based and speculative) probability (P) of the existence of highly developed industries on other planets (Frank et al. 2018). They arrived at the negligible value of $P < 10^{-22}$. Nevertheless, it is believed that it is only a matter of time before other advanced civilizations are found somewhere in space. After all, there are many “habitable” planets where civilizations like ours must have emerged through evolution in the supposedly long time since space came into existence.

However, this hope has not yet been confirmed in any way by research.

Rather, it is said that SETI researchers are used to negative results, but are trying to change this situation (Clery 2020). So far, however, they have seen no successful whatsoever, despite copious funding from billionaires such as the Russian-Israeli entrepreneur Yuri Milner or Microsoft co-founder Paul Allen. Instead, it appears that life elsewhere also does not come into existence by itself and that the phenomenon of life only occurs on Earth. The Holy Scriptures also only speak of life on Earth, brought into being by the almighty Creator God.

Dr. Boris Schmidtgall, chemist, contributor to the scholarly community Wort und Wissen.



Sources

- BENNER SA (2002) Phosphates, DNA, and the search for nonterrestrial life: A second generation model for genetic molecules, *Bioorganic Chemistry* 30, 62–80.
- CLERY D (2020), Listen up, *Science*, <https://www.sciencemag.org/news/2020/09/how-big-money-powering-massive-hunt-alien-intelligence>, abgerufen am 16.09.23.
- CRICK FHC & ORGEL LE (1973) Directed panspermia, *Icarus* 19, 341–346.
- FRANK A et al. (2018) The Anthropocene generalized: evolution of exo-civilizations and their planetary feedback *Astrobiology* 18, 503–518.
- GOLD T (1960) „Cosmic Garbage“, *Air Force and Space Digest*, 65.
- OPARIN AI (1957) *The Origins of Life on earth*.
- shCHERBAK VI & Makukov MA (2013) The „Wow! signal“ of the terrestrial genetic code, *Icarus*, 224, 228–242.
- VAN DAM J (2015) Enthält der genetische Code Hinweise auf Design? *Studium Integrale Journal* 22. Jahrgang, Heft 2, 79–84.
- SLEATOR RD & Smith N (2017) Directed panspermia: a 21st century perspective, *Science Progress* 100, 187–193.
- WIDENMEYER W (Hrsg.) (2021) *Das geplante Universum*. 3. Aufl. SCM Hänssler.
- SCHMIDTGALL B (2020) Leben aus Nichtleben – was sagen die wissenschaftlichen Befunde? <https://www.wort-und-wissen.org/artikel/entstehung-des-lebens-wissenschaftliche-befunde/>
- BEHE MJ (2019) Darwin Devolves. *The New Science About DNA That Challenges Evolution*.