

Discovered organic molecules that can make life in the center of the Milky Way

What are the secrets that we still don't know?

Near the center of the Milky Way, in a huge cloud of interstellar dust, astronomers discovered an organic molecule that had never appeared in outer space. Named propargylamine, it could be a key ingredient in the formation of amino acids, one of the most important things in the history of life.

' *The strangeness of this chemical lies in their carbon-nitro double bonds, making them highly reactive* ,' said Luca Bizzocchi, an astrophysicist at the Max Planck Institute for Alien Physics, for good.

' *With this double bond, it becomes an important element in the chemical chain that leads to the formation of the simplest, most abundant molecules of the universe containing carbon and nitro - such as formaldehyde (H₂CO) or ammonia (NH₃) - up to complex things like amino acids, the building blocks of ground biology* '.

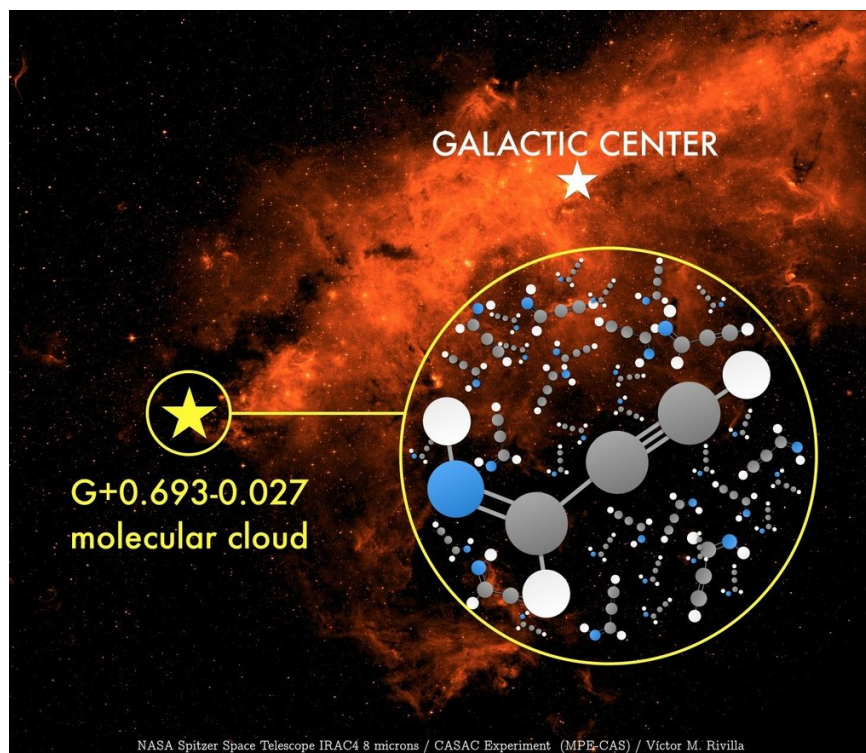


Illustration of the Milky Way.

The scientists found this organic molecule in a system of molecular gas clouds, called the Central Molecular Zone (G + 0.693-0.027), a space that is inherently still catch the eye of industry experts. It contains many complex organic molecules in the Universe such as ethyl formate, iso-propyl cyanide and propylene oxide.

The above substances are prebiotics, which play an important role in creating 'building blocks of life' such as amino acids, RNA and DNA. As Bizzocchi said, propargylamines may play an important role in shaping the aforementioned elements of life; Specifically, the carbon-nitro double bonds play a large role in a chemical reaction called Strecker synthesis - the method of creating amino acids in the laboratory environment.

In addition, propargylamine also has a structure similar to some organic molecules that have been confirmed to exist in extraterrestrial space. So Bizzocchi and his team decided to find it. First, they need to understand propargylamine in the lab environment first.



Propargylamine in cluster G + 0.693-0.027.

When light penetrates a cloud of molecules, the molecules in it absorb and redistribute electronic radiation at a certain wavelength, each producing different wavelengths. We can think of this as the 'fingerprints' of organic molecules, and in order to 'solve the case', scientists have to know what the fingerprints look like.

' *When molecules rotate in space, they emit light photons at specific frequencies. By combining this information with data from radio telescopes, we know if the molecule exists in the dust cloud* , " explained the researcher Bizzocchi.

Obtaining a fingerprint from the lab, and then comparing it to the observed telescope results, they made an interesting discovery in the Central Molecular Area.

' *[Organic molecules] are among the G + 0.693-0.027 data, only we cannot identify them when the spectrum is unknown - the signaling framework - emanating from them. As soon as we got the missing information, it was because of the lab measurements that we immediately realized propargylamine was waiting for someone to discover it,* " said researcher Víctor M. Rivilla from the Institute of Physics. Italian National Astronomy said.

Who knows in the vast universe out there, what else doesn't have a 'fingerprint' waiting for humans to discover?

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