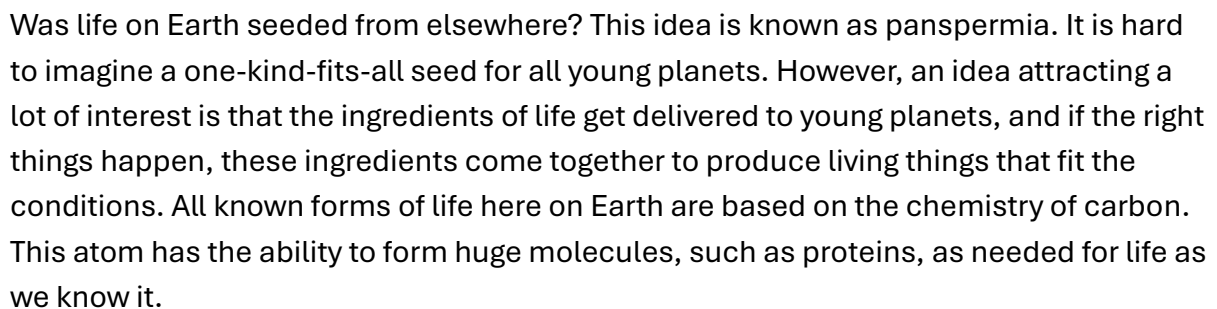


Ken Tapping, 6th October, 2026



Spectral data of organic molecules detected in interstellar ice by the James Webb Space Telescope in a star forming region.

However, most of the material in space is in the form of enormous, dark, cold clouds of dust and gas. Not only do they block the light coming from objects behind or within them, everything in the cloud is far too cold to emit light. However, it turns out that even at those low temperatures, perhaps stoked with a little ultraviolet light from newborn stars, the materials in the clouds slowly react, producing a witch's brew of chemicals, which imprint their signatures on radio waves. These easily escape from the clouds and we can detect them with our radio telescopes. What we found is stunning. The carbon atoms in those clouds have been combining with each other and atoms of other elements to produce so many different molecules that as yet only a fraction of them have been identified. However, the ones we have include amino acids and many other chemicals that form the basis of life as we know it. Since that cloud material forms new stars and planets, these ingredients must go into every newly formed world. Unfortunately, there is a big problem with this.

The story of a new planetary system, like our Solar System starts with something, such as a nearby exploding star, destabilizing a dust cloud, causing it to collapse. The dust and gas coalesces into lumps, which collide and stick together into bigger lumps, eventually forming a star and its planets. The enormous amount of heat released in these collisions means that planets start off as balls of molten rock. Any organic precursors to life would have been destroyed. This is what we believe happened on Mercury, Venus, Earth and Mars. The event that we think changed everything happened around 4 billion years ago, half a billion years after the Solar System formed, in an event referred to as the "Late Heavy Bombardment".

In the Outer Solar System, far beyond the planets, lie billions of lumps of unused construction material, so deeply frozen they have remained unchanged since the beginning. Periodically, one of these is disturbed so that it plummets into the inner Solar System, forming a comet as it warms and evaporates in the Sun. Space probes and telescopes have revealed that these objects are not just dirty ice. They contain those carbon-based building blocks for life.

Roughly four billion years ago there was a great disturbance in the outer Solar System, which resulted in a huge number of those objects heading inwards, where many of them collided with the inner planets, delivering those seeds of life. By that time the Earth had a cool, solid surface, and possible oceans, providing the ingredients for the story of life to start. It is very likely that, back then, Mars was a warm, watery world, so maybe the story started there too. That is why Mars interests us so much.

Saturn rises at dusk and Mars around 1am. Jupiter rises an hour or so later. The Moon will be New on 9th October.

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