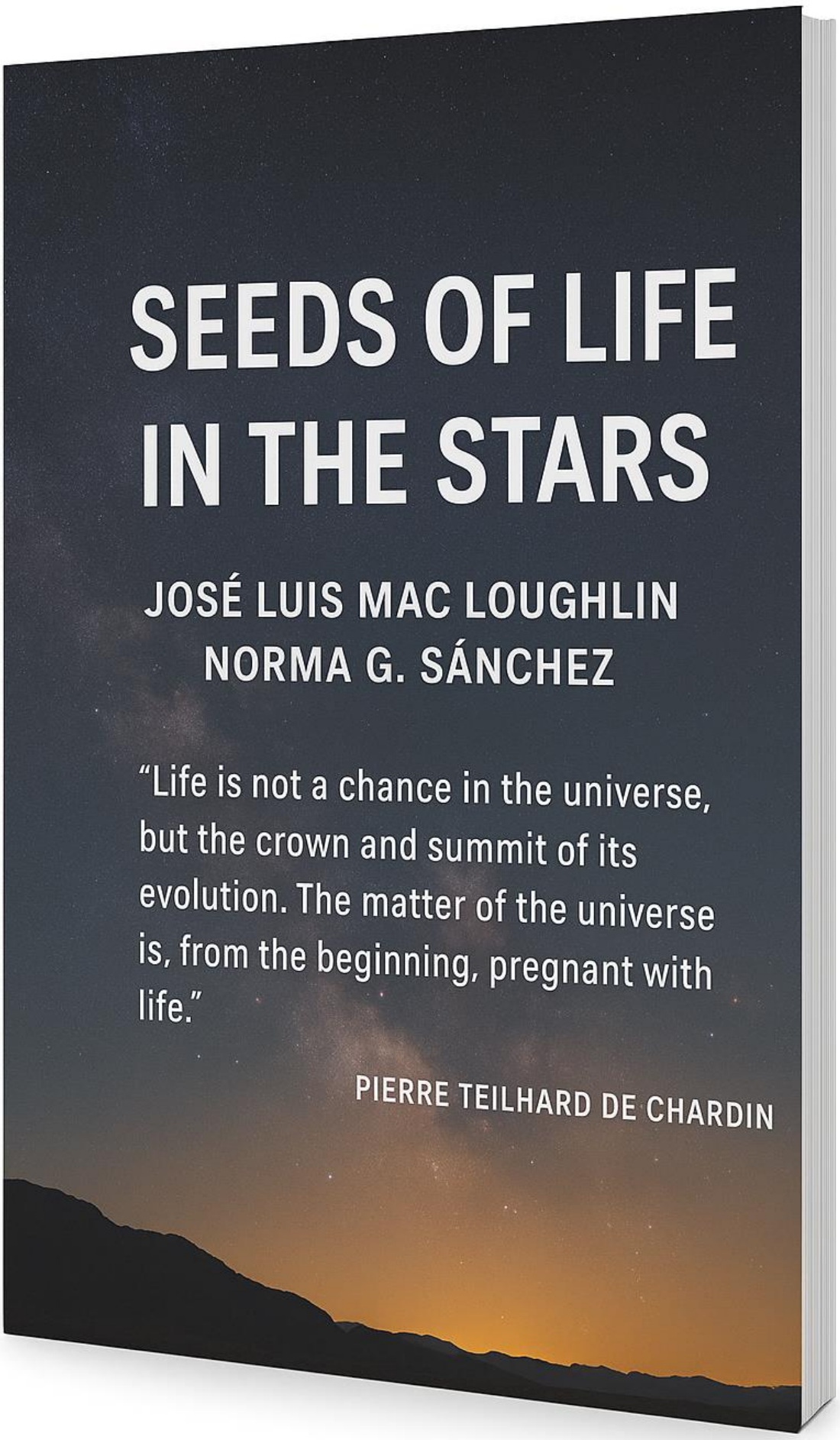
SEEDS OF LIFE
IN THE STARS
JOSÉ LUIS MAC LOUGHLIN
NORMA G. SÁNCHEZ
“Life is not a chance in the universe, but the crown and summit of its evolution. The matter of the universe is, from the beginning, pregnant with life.”
PIERRE TEILHARD DE CHARDIN

New Discovery on Seeds of Life in the Stars,

Teilhard de Chardin, and Mac Laughlin & Sanchez

Fractal Unification

In August 2025, a team of the Atacama Large Millimeter/submillimeter Array (ALMA) collaboration published in the *Astrophysical Journal Letters* (Ref 1) : **17 complex organic molecules** had been detected in the planet-forming disk around the young star **V883 Orionis**. Among them were **ethylene glycol** and **glycolonitrile**, key chemical precursors to sugars, amino acids, and nucleotides—the molecular **alphabet of life**.

Their presence in the birthplaces of planets suggests that the cosmos itself assembles a chemical starter kit long before any ocean or biosphere appears.

This discovery and earlier ones (eg Ref 2) carries profound implications. It suggests that the **ingredients of biology are not limited to Earth or its comets**, but are naturally assembled in the very cradles where planets form. In other words, the universe may provide every young world with a **chemical starter kit for life**.

Pierre Teilhard de Chardin anticipated such a vision in 1955 (Refs 3, 4), as **José Luis Mac Loughlin and Norma G. Sanchez** described in **a wider and modern quantum framework** in Oct 2024 Ref 5.

This discovery provides strong evidence that key building blocks of life may be assembled in space and survive—or even thrive—during the transition from interstellar clouds to the planet-forming stage, challenging earlier "chemical reset" scenarios.

Context: Other Recent Findings in the Field

In a broader sense of the field, here are other related recent discoveries:

- In **June 2025**: detection of **rare isotopes of methanol** in the planet-forming disk around **HD 100453**, also published in *Astrophysical Journal Letters*. This provides key insights into the isotopic composition of organic elements in planet-forming disks.
- In **April 2024**: MIT reported a first interstellar detection of **2-methoxyethanol**, a 13-atom molecule, in star-forming regions like **NGC 6334I**, via ALMA observations published in *Astrophysical Journal Letters* news.mit.edu.

Importance:

1. Direct Link to the Building Blocks of Life

- Ethylene glycol is related to **sugars**, while glycolonitrile can lead to **amino acids and nucleotides**.
- These are not just simple molecules like methane or water—they are **"prebiotic" molecules** that could directly contribute to life's chemistry.

- Finding them in a planet-forming disk means the seeds of life may already be present **before planets even form**.

2. Challenges the "Chemical Reset" Hypothesis

- Old view: during the collapse of a molecular cloud into a star and planets, most complex molecules would be destroyed, forcing chemistry to "restart" from scratch.
- New view (supported by this discovery): complex molecules **survive and evolve** during planet formation.
- This means planets (like Earth once was) may inherit a **pre-enriched chemical toolkit** from their birth cloud.

3. Expands the Known Chemical Diversity in Space

- Before this, most detections were simpler molecules (water, methanol, formic acid).
- Detecting **17 different COMs, including new ones**, shows that **protoplanetary disks are chemically rich**, and capable of hosting **complex organic chemistry at large scales**.

4. Implications for Habitability Elsewhere

- If such molecules are common in planet-forming environments, then **life's ingredients are likely widespread across the galaxy**.

- This strengthens the idea that Earth's life is not unique, but part of a **cosmic continuum of chemistry**.

5. Observational Breakthrough

- Instruments like **ALMA** (Atacama Large Millimeter/submillimeter Array) made this possible.
- The discovery demonstrates how **astrochemistry is advancing**, allowing us to detect molecules that were impossible to see even a decade ago.

-Big Picture

This discovery **connecting astronomy to biology** shows that the **chemical precursors of life don't need a planet to form—*they are already "assembled" in space and delivered to young planets during their birth*.**

In other words: life may not start from scratch on planets—it may **inherit a cosmic starter kit**.

This new discovery resonates strongly with Teilhard's vision, because:

1. **Cosmic Continuity of Life's Ingredients**
    - Teilhard argued that life is not an accident confined to Earth, but part of a larger unfolding of the universe.

- Detecting complex organic molecules in planet-forming disks suggests that the **“stuff of life” is woven into the very fabric of the cosmos**, which echoes his idea of an inherent *directionality* or *tendency toward life*.

2. **No Absolute Break Between Physics, Chemistry, and Biology**
    - *For Teilhard, evolution proceeds through increasing complexity.*
    - Here we see chemistry in space producing **prebiotic molecules**, **astro biology** — exactly the kind of continuum he envisioned.
3. **The Mind Dimension of Matter**
    - Teilhard spoke of matter becoming intelligence, thought or “spirit” *through complexification*.
    - While this discovery is framed in purely scientific terms, it underlines the **latent potential of the cosmos to generate life and mind** — a concept Teilhard would interpret as part of the universe’s trajectory.

Thus, in a way, the last discoveries on complex organic macromolecules in forming planetary disks can be seen as a modern scientific convergence (at least by now at the physico-chemical level) of Teilhard’s work: that **life is written into the cosmos from the very beginning**, not an afterthought.

Here are a few of Teilhard de Chardin’s words that really resonate with the discovery of complex organic molecules in space

Teilhard's Anticipation of a Living Cosmos

The French scientist director of Research at CNRS **Pierre Teilhard de Chardin (1881–1955)** , paleontologist, Jesuit and philosopher, envisioned something strikingly similar. In *The Human Phenomenon*

Theilard de Chardin wrote:

"Life is not an accident in the universe, but the very crown and crest of its evolution. The stuff of the universe is, from the beginning, pregnant with life."

For Teilhard de Chardin, evolution was not confined to Earth, nor was life a cosmic fluke. Instead, he saw the universe itself as oriented toward **increasing complexity and consciousness**. The discovery in Orion's disk brings this framework into sharper focus: even before planets exist, the cosmos is already preparing the raw chemistry of life.

From Matter to Thought /Intelligence / Conscience

Teilhard often described matter and spirit (conscience) not as opposites but as two aspects of a single reality. In *The Heart of Matter* he observed:

"There is neither spirit nor matter in the world; the stuff of the universe is spirit-matter. No other substance but this could have produced the human molecule."

The molecules now observed in V883 Orionis are not alive. Yet they embody this **threshold quality**: they are bridges between simple atoms and the living cell. They represent what Teilhard might call **spirit-matter in its earliest stirrings**, an evolutionary tension within the cosmos itself.

Direction in the Universe

The discovery also challenges the idea that the chemistry of life must begin anew on every planet. Instead, it supports the view that the universe **hands down a legacy of molecular complexity**, ensuring that life is seeded with the fruits of cosmic evolution, **as it was highlighted by Mc Loughlin and Sanchez in their 2024 Quantum unification work Ref 5.**

Teilhard captured this vision in *The Human Phenomenon*:

"From the beginning, the world has been moving toward life, and from life toward thought. Matter is the matrix of spirit."

Today's astrochemistry echoes this. Stars and their disks are not sterile factories of dust and gas. They are laboratories in which matter is prepared for life, and perhaps for thought.

Why this fits so well

Teilhard often wrote in a philosophical**, visionary way**, while modern astrochemistry speaks in data and spectra. But both describe similar fact: The universe is not sterile — it is *alive with potential*, and life may be a natural flowering of *cosmic evolution*.

Conclusion: A Universe in Labor

Teilhard once described the cosmos as *"a universe in labor, striving to give birth to spirit."* The ALMA observations of 2025 provide a modern scientific image of that labor: **molecules of life swirling in the disks of new stars**, waiting to seed the surfaces of planets yet unborn.

In this light, the boundary between science and conscience becomes porous. The astronomers' spectra and Teilhard's cosmic vision could converge: the universe is alive with potential, already carrying within itself the promise of life and mind, **as anticipated and described by Mac Loughlin and Sanchez in 2024 within a larger and modern Fractal Quantum framework (Ref 5)**

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