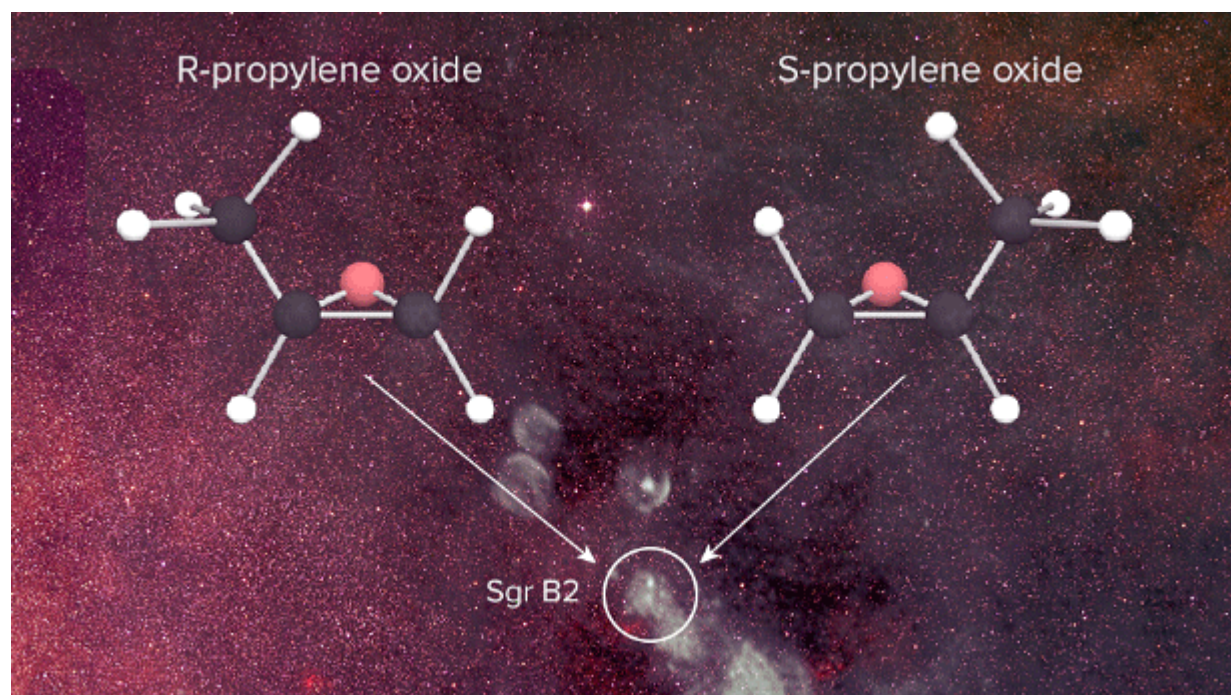




## Interstellar Find Adds Life to Old Debate

By Emily Singer



Scientists have found a chiral molecule, propylene oxide, in a star-forming region called Sagittarius B2.

Many organic molecules have handedness — like our left and right hands, they can come in one of two mirror-image forms. This property, known as chirality, is a major aspect of life on Earth. The sugars that form the backbone of our DNA are all right-handed. The molecular building blocks that make our proteins are left-handed. As we noted in "[New Twist Found in the Story of Life's Start](#)," a 2014 article on the origins of chirality, the question of how this extreme chirality came into being is a major mystery in the origins of life. Did it arise biologically after the advent of life? Or did chemical and physical forces conspire to create chiral molecules before life arose?

In a [new discovery](#), reported last week in *Science*, researchers identified the first complex organic chiral molecule in interstellar space. The molecule, propylene oxide, was found floating in a cloud of

dust and gas known as Sagittarius B2 and is one of the most structurally intricate chemicals found in space to date.

[abstractions]

Scientists think that collisions between particles swirling through interstellar dust clouds can create simple organic molecules. The ice that forms on grains of interstellar dust within these clouds can then link these molecules into increasingly complex structures. The molecules emit telltale signatures that scientists can detect using radio telescopes. The new findings emerged from the Prebiotic Interstellar Molecular Survey, a decade-long project at the National Science Foundation's Green Bank Telescope.

Scientists hope the findings will help them figure out how chiral molecules are formed in space, which could in turn illuminate the origins of chirality here on Earth. "By discovering a chiral molecule in space, we finally have a way to study where and how these molecules form before they find their way into meteorites and comets," said Brett McGuire, a chemist and Jansky postdoctoral fellow with the National Radio Astronomy Observatory in Charlottesville, Va., in a statement from the observatory.

Yet many scientists are skeptical that purely physical phenomena, such as the arrival of circularly polarized light coming from a supernova, would be enough to explain the extreme chirality of life. In our 2014 story, we spoke with two researchers who had doubts about such theories. [Marcelo Gleiser](#), a theoretical physicist at Dartmouth College, noted that the purely physical theories describing the origins of life's chirality create "a beautiful union between life and nonlife." But these physical biases are too small to account for life's extreme chirality, he said. Gerald Joyce, a biochemist at the Scripps Research Institute in La Jolla, Calif., echoed that sentiment, saying that the effect of these physical forces, such as polarized light or radioactive decay, would be lost in the noise of chemical reactions. "Such a small asymmetry in the universe is not enough to move the needle," he said.

For more on chirality and the origins of life, check out [our story](#).