Most Planets May Be Seeded With Life

By Phil Berardelli
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Astronomers have detected a building block of RNA floating within the hot, compact core of a massive star-forming region in the Milky Way. The molecule appears to have formed with all of the other stuff that makes up planets, suggesting that many other worlds are seeded with some of life's ingredients right from birth.

Two of the greatest questions of existence--Are we alone? and How did we get here?--remain unanswered. Clues keep coming, and they are tantalizing. Over the past decade, astronomers have detected organic molecules inside meteorites and even in space (, 28 March). But these latter substances have not been found in the clouds of dust and gas around new stars that can form planets, making their link to life tenuous.

The new find, described this week in the journal *Astro-ph*, is stronger. Using the IRAM radio dish array in France, a team of European astronomers has detected glycolaldehyde--a simple sugar that makes up ribose, one of the constituents of RNA--within the core of what appears to be a coalescing disk of dust and gas in a star-forming region called G31.41+0.31, about 26,000

light-years away. The sugar molecule can apparently form in a simple reaction between carbon monoxide molecules and dust grains.

The discovery is significant for two reasons. First, G31.41+0.31 lies far away from the radiation-filled center of the Milky Way, so if any biological processes start up there, they will have a chance to establish themselves. Second, the abundance of glycolaldehyde in the G31.41+0.31 cloud suggests that the molecule is "common throughout star-forming regions," says astrophysicist and co-author Serena Viti of University College London. The implication is that wherever there is starmaking and planet formation going on, organic building blocks could be assembling as well.

Maybe so, but radio astronomer Karl Menten of the Max Planck Institute for Radio Astronomy in Bonn, Germany, says we're still a long way from observing life taking hold. In our own planet's case, for example, he says, "It is not clear to what extent complex interstellar molecules survived the violent forces accompanying Earth's initial formation."

Astrobiologist Michael Mumma of NASA's Goddard Space Flight Center in Greenbelt, Maryland, says it's possible that life's building blocks arrive on planets after this violent period has passed. Glycolaldehyde, for example, seems to be located in an area of the star-forming region where it could become part of comets. If so, Mumma says, some of those comets could eventually deliver the sugar to young planets.