Science & Technology

Is Anybody out There? Let’s do the Math

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Brian Stauffer / Theispot.com

What are the chances of life existing on another planet?

Complete the equation below and you may have your answer. Created by Columbia astronomer Caleb Scharf and University of Glasgow chemist Lee Cronin, the equation basically states that the odds of life emerging (abiogenesis) on any given planet are directly tied to the variety of its chemical elements (Nb) and the total

quantity of its atoms and molecules at any given time (fc). In other words, the richer a planet's chemical soup and the larger the pot, the better the chances of living organisms.

The idea that a chemically diverse environment is most likely to spawn life is not a new one, but Scharf and Cronin hope that by expressing this premise in an elegant equation, they will inspire debate among scientists and perhaps new research into the potential fertility of distant planets.

"Within a few years, we should have telescopes powerful enough to help us infer the chemical compositions of planets orbiting distant stars," says Scharf, who describes the equation in more detail in the July 19 issue of the *Proceedings of the National Academy of Sciences*. "If we put our minds to it, we may even be able to detect the presence of large amounts of oxygen or carbon dioxide in their atmospheres, which could be signs of metabolic processes occurring on their surfaces. We want to encourage these types of investigations."

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