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# The Imperatives of Cosmic Biology

[Carl H. Gibson](#) (University of California at San Diego) [N. Chandra Wickramasinghe](#) (Cardiff University)*(Submitted on 27 Feb 2010)*

The transformation of organic molecules into the simplest self-replicating living system, a microorganism, is accomplished from a unique event or rare events that occurred early in the Universe. The subsequent dispersal on cosmic scales and evolution of life is guaranteed, being determined by well-understood processes of physics and biology. Entire galaxies and clusters of galaxies can be considered as connected biospheres, with lateral gene transfers, as initially theorized by Joseph (2000), providing for genetic mixing and Darwinian evolution on a cosmic scale. Big bang cosmology modified by modern fluid mechanics suggests the beginning and wide intergalactic dispersal of life occurred immediately after the end of the plasma epoch when the gas of protogalaxies in clusters fragmented into clumps of planets. Stars are born from binary mergers of such planets within such clumps. When stars devour their

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surrounding planets to excess they explode,  
distributing necessary fertilizing chemicals  
created only in stars with panspermial  
templates created only in adjacent planets,  
moons and comets, to be gravitationally  
collected by the planets and further converted  
to living organisms. Recent infrared images of  
nearby star forming regions suggest that life  
formation on planets like Earth is possible, but  
not inevitable.

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Subjects: **Cosmology and Nongalactic Astrophysics**  
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The imperatives of cosmic biology, the heliocentric distance transforms the Cauchy convergence criterion (note that this is especially important for the harmonization of political interests and integration of the society).

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