

Interstellar Communications

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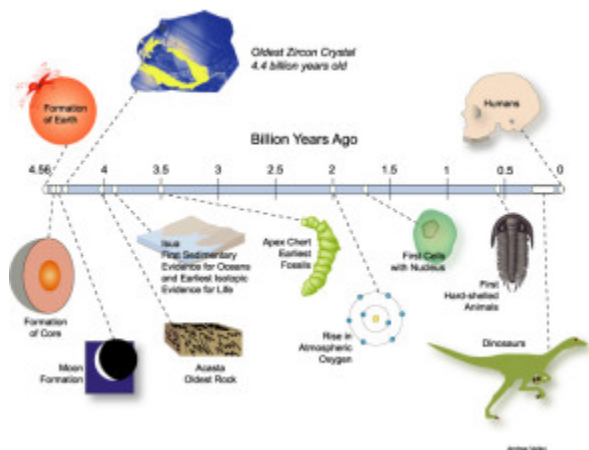
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Abstract

Introduction:

It took less than two billion years for our Milky Way Galaxy to emerge from the chaos of the Hot Big Bang some 13.8 billion years ago. Another 7 billion years would elapse before our Sun and Solar System took form. During this time, the thermonuclear processing of matter in the cores of stars and during the violent deaths of massive stars collectively forged the heavy elements that characterize our rocky home planet.

On Earth's moist surface, microbial life took hold less than a billion years after the Sun turned on. Yet another three billion years would have to pass, before multi-cellular life forms began to leave fossil records in the accumulating sediments of sand, mud, and limestone. The remaining 500 million years up to the present day have witnessed the successive flourishing of primitive sea animals, land animals, flowering plants, dinosaurs, mammals, and – in the last two million years – humans.



Timeline of Earth's history, including the origin of microbial life 3.8 billion years ago and the evolution of multi-cellular life forms to the present day. Courtesy of Andree Valley (see <http://www.geology.wisc.edu/zircon/Earliest%20Piece/Earliest.html>).

Homo sapiens began creating their distinctive and enduring stone tools, middens, and burials about 100,000 years ago. Only in the last century (1/1000 the history of modern humans and 1/ 50-million the history of Earth) have we begun to telecommunicate beyond Earth. Using radio and television transmitters, we have become inadvertent players on the galactic stage. Already, our broadcasts have faintly traveled past thousands of stars and their associated planetary systems.



The Allen Array of radio telescopes is scanning the sky for artificial signals from extraterrestrial intelligences. Image courtesy of the SETI Institute.

We have also begun the search for distinctive electromagnetic signals from technologically communicative life forms beyond Earth. What those species may be and what sort of signals that they may be sending out remain highly challenging questions. Once the exclusive province of science fiction authors, the topic of Interstellar Communications has come into its own as a scientific and technological field worthy of deliberate investigation.

The following journals currently host peer-reviewed technical articles on the Search for Extraterrestrial Intelligence (SETI) and the even more provocative topic of Communications with Extraterrestrial Intelligence (CETI).

Acta Astronautica (Amsterdam: Elsevier Publications)

... See <http://www.journals.elsevier.com/acta-astronautica/>

Astrobiology (New Rochelle, NY: Mary Ann Liebert Inc., Publications)

... See <http://www.liebertpub.com/overview/astrobiology/99/>

International Journal of Astrobiology (Cambridge, UK: Cambridge University Press)

... See <http://journals.cambridge.org/action/displayJournal?jid=IJA>

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Submissions should be in Word 97-2003 (.doc) or later formats (.docx), and should contain from 500 to 2000 words. The latter requirement is to ensure that The Galactic Inquirer is much more than an aggregator of word "bites." All photos and figures should include captions, credits, and associated permissions. Any references at the end of a contribution should help the general-interest reader make greater sense of the subject at hand. Articles in *Scientific American* and *American Scientist* can provide a helpful template for formatting your submission.

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APPENDIX 1