

**New Fundamental Questions in Astrobiology.** M. Ebrahimi , M. H. Yoosefi I and M. Tabatabaifar, 39, Hayati Sarkany,1 Niroye Havaei, Piroozi St, Tehran, Iran, iranastrobiology@gmail.com, civick@gmail.com

**Introduction:** Commonly the beginning of all sciences comes back to one to several questions. These questions usually end up in more elaborate ones which result in development of different sciences. The first and general questions are known as fundamental questions whose authenticity and accuracy are crucial in formation of elaborate questions. Astrobiology as one of the most important branches of interdisciplinary science, corresponding to most of other sciences, is originated from fundamental questions. As a matter of fact, the pertinent researchers are trying to answer such questions and consequently, remove the impediments before progression of such sciences. Therefore, the researchers must pay a circumspect attention on the questions to prevent any alteration which could bring about a substantial disorientation in the targets and perspectives regarding the subject of the science.

**Discussion:** The common questions stated on astrobiology are as following:

How does life begin and evolve? (Where did we come from?)

Does life exist elsewhere in the universe? (Are we alone?)

What is life's future on Earth and beyond? (Where are we going in space?)

These are very general questions, and no one

expects that definitive answers will easily be found[1]. It must be noted that considering interdisciplinary sciences such as astrobiology, fundamental questions are much more

important in defining a legitimate roadmap for the development of such newborn sciences. Hence, a specific attention must be paid on the questions to attain the favorable results due to overlap of different sciences in interdisciplinary sciences.

Ambiguity of questions stated above on astrobiology has caused emergence of different troubles and disputes as following:

- 1) While the questions are still left controversial between researchers, the targets as well as the case studies respecting astrobiology are not defined properly and therefore, there is a significant need in clarifying the questions.
- 2) Conceptually it is proven that progression of most of sciences depend on well-defined case studies to reach the ideal targets. Considering astrobiology, the case studies which are mainly defined as discovering approach to find the origin and mechanism of biological systems not only in the world but also in the gigantic universe are a state of trouble. Hence, reaching to a compromise on the case-study is crucial to answer the questions appropriately.
- 3) Although it is apparent that different sciences are influential in astrobiology, the importance and effectiveness of each one of them are not elaborated separately to guide researches into a common insight of the major.

- 4) Due to vague and general questions stated on astrobiology, implementing a definitive management on the researches is substantially difficult which could probably lead to equivocal results out of investigations.
- 5) It seems that the stated questions cannot make an appropriate link between biology and astronomy as the main concepts of astrobiology and even could be sometimes misleading in approaching the main targets.

Concerning the above mentioned disputes over the fundamental questions, five substitute questions are recommended as following which are believed to expedite the process of reaching the main targets:

- 1) How do non-biological and chemical parameters in the universe affect the provenance of life and evolution of the biological system in the universe?
- 2) What are different sorts of life?
- 3) What are the main needs for living?
- 4) What are the main factors affecting the evolution of life and the biological system in the universe?
- 5) What are the threats imposed on life by animate and inanimate objects?

Eventually, it must be noted that all these questions should be regarded in all the li-

fespan of the universe from the beginning to the end.

**Summary:** It is well understood that beginning of all sciences comes back to some fundamental questions which are also influencing the development of the science. The stated questions on astrobiology are controversial and need to be revised thoroughly. In this regard, five alternative questions are recommended to substitute the previous ones in order to unify the researches to reach the main targets of astrobiology.

**Conclusion:** In this study a conceptual attempt is made to remove the ambiguity in the fundamental questions regarding astrobiology and it is highly believed that orienting the investigations on astrobiology toward answering the recommended questions could be beneficial in attaining the main goals and targets and making an appropriate compromise between all overlapping sciences to answer the upcoming questions and problems in the world.

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**Reference:** [1] D. Morrison. (2001) *ASTROBIOLOGY*, 1, 3-13