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A new Central dogma for life in the Universe after 1958

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It is more than 10 years since a session dedicated to interaction of "Life-Water-Mineral-Atmosphere" (initially "Life-Water-Mineral") was established in JpGU Meeting. Every year, lots of examples and case studies for understanding the interaction of "Life-Water-Mineral-Atmosphere" were presented and there were increasing enthusiasm and passion in discussion at this session. The session is now a place of very ordinary scientific discussion and communication but not a special opportunity for meeting of different fields of scientists any more. Probably due to its foreseen role in the JpGU, this session evolves to an Union session from a Baiogeosciences session this year.

Depth of interdisciplinary discussion at this session has become greater in recent years. However, it is also frequent that discussion goes like skew lines between the scientists of different background fields. As one of the possible rational horizons, an energy mass balance concept of life, habitability or interaction between Life and Environment has been pointed. This concept is commonly applicable to any living system in everywhere of the Earth, in any the scale and the period, and even in the Universe. In other words, it can be a principal rationale for the interdisciplinary scientists comprehensively to approach "Life", and can be much more crucial than "Central dogma" for life stated by Francis Crick in 1958 and re-stated in a Nature paper published in 1970. It is uncertain why Everett Shock, Tori Hoehler and their groups, primary researchers of biogeochemistry of microbial energy metabolisms, have never declared so, but I would like to propose that an energy mass balance concept of life, habitability or interaction between Life and Environment is a new "Central dogma" for life.

Keywords: habitability, central dogma, energy mass balance