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## Alteration of interstellar complex organics in Solar system environments and its relevance to origins of life

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A wide variety of organic compounds including amino acid precursors were detected in extraterrestrial bodies such as meteorites and comets, and their relevance to the generation of life on the primitive Earth has been discussed. Laboratory experiments simulating interstellar dusts in molecular clouds have suggested that complex amino acid precursors could be formed in interstellar environments. We can draw as follows: (1) Complex interstellar organics were introduced to the primitive Solar system; (2) further alteration of organics occurred in meteorite parent bodies, comets and interplanetary dust particles (IDPs); (3) the organics were delivered to the primitive Earth by meteorites, comets and IDPs. It is suggested that IDPs brought much more organics to the Earth than meteorites and comets. We, however, have very little information about organics in IDPs. We are performing laboratory simulation experiments how organic compounds are altered in the solar system environments by using accelerators: Both particles accelerators simulating actions of cosmic rays and solar flares and cyclotrons simulating actions of solar radiation. In addition to them, we are planning the Tanpopo Mission by utilizing the Exposed Facility of the Japanese Experiment Module, the International Space Station: Capture of interplanetary dusts in space and direct exposure of organic compounds to space environments would be done.

Keywords: amino acid precursors, interstellar complex organics, origins of life, interplanetary dust particles, Tanpopo mission, accelerator experiments