

## 冥王代における生命誕生場：間欠泉モデル Birth place of life on Hadean Earth: Geyser model

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Including us human being, life cannot survive with water only. The presence of water itself does not mean the emergence of life automatically. So what is life? Life is composed of three major big molecules, which is (1) carbon (sugar), big monster molecules, (2) metabolism which is the key to get energy. It does not work without P + K which is given from only landmass (provider of nutrients), and (3) self-replication, based on base pair. These 3 molecules are enclosed by membrane. That is life.

So where such molecules for life body are made on Hadean Earth. The most possible place for this process is geyser which locates below the ground. The reason why geyser is thought to be the most suitable site to synthesize building blocks for life body is (1) the ceiling of geyser located below the ground enable gases to be concentrated, such as CO, NH<sub>3</sub>, CH<sub>4</sub>, HCN, PO<sub>4</sub><sup>3-</sup> and so on. (2) Amino acid or peptide is possible to be synthesized as necessary material can be provided within cavity of geyser. (3) Periodicity is maintained due to the nature of geyser. (4) Heat source is secured due to the presence of uranium ore deposit which is the alternative heat source instead of solar energy.