

# ID 193 The chemical evolution that was caused by adaptability of electronic structure on carbon atom

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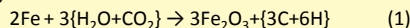


[Point of the presentation] Every thing is made by nature. The creature is made with the environment.

In the early Earth, the environment similar to amniotic fluid had existed, and heterotroph such as bacteria was born.

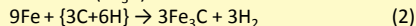
## How organic materials were formed from inorganic materials?

**Carbon dioxide (CO<sub>2</sub>) dissolves in water well.** The iron atom takes oxygen atom from carbon dioxide in the water.



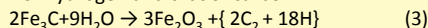
**Electronegativity of carbon is larger than that of hydrogen.**

The released free carbon atom connects with iron atom and compound of iron carbide (Fe<sub>3</sub>C) are made.



**Electronegativity of iron is smaller than that of hydrogen.**

Iron carbide reacts with water. The reaction produces Fe<sub>2</sub>O<sub>3</sub> and free atom of hydrogen and that of carbon.

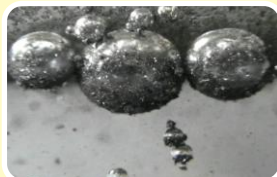


These carbon atoms and hydrogen atoms form the bubble in which gas is covered with organic molecules in the water. The macro structure of membrane puts the organic molecules regularly side by side owing to interaction among the other molecules.

## How metabolism arose in primordial soup?

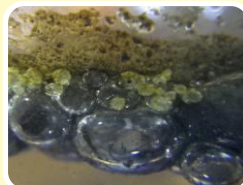
**Electronic state of each atom is selected among possible states through mutual interactions with the surroundings.** The electronic state of each atom will be changed to fit the situation. The environment produces the chemical. The environment may play the role of a mould of molecules. Those were evolved by trial and error, and natural selection.

The life interacts with the environment and those exist simultaneously.



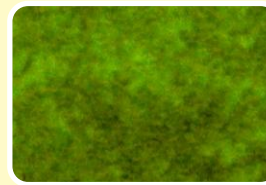
Ecosystem of Molecule

- Membrane has the nature like one huge molecule. It will prolong the life span, if each element copes with the situation.



Ecosystem of Bubble

- The bubble that prolong the life span makes possible to enlarge the constituents.



Ecosystem on Ribosome

- Every biochemical reaction makes action by the mechanism that supplies to demand for survive.

## What is the beginning of chain reaction in a creature?

**Situation of each atom is changing at all the time by Brownian motion of molecules in water.** The energy of room temperature may change neighboring atoms in the water. If the situation is changed by a reaction, the next reaction takes place in the renewed environment.

## How chemical evolution for creature was taken place?

**Biochemical reaction was organized by mutual interactions among neighboring atoms due to Brownian motion of molecules in water.** The Brownian motion of molecule in water is intense like thermal motion of molecule in gas.

## What is the environment the first creature was born?

**It must be sea water in the early Earth. The stereo structure of water is a spiral. The facts may explain the gap between the origin of homochirality and the origin of life.**

## What is principle of the organization on creature?

**The existence of creature is the life span of creature.** The life is preserved by a link of chain reactions. A part of the chain operates as a catalytic reaction. A new experience may form a modified system.

## How mutation in evolution takes place?

**Randomness of mutation in a creature is not perfect, because every action depends on the environment.** The biochemical reaction is organized by the mechanism of "supply for demand". Rewards from circumstances make the popularization of new attempt.

## How primitive protein was made from amino acid?

**Penetrating hole in a membrane is possible to produce a thread of protein.** The thread prolongs the life span of the membrane. Now, an endoplasmic reticulum of ribosome produces the protein.

## What is the most primitive creature?

**The ribosome that possesses metabolism for survival is a candidate.** The dialectical activities due to adaptability of atom and Brownian motion had developed the technologies to live.

## Why triplet code on nucleotide is used in the gene system?

**It is a technological development for reproduction of protein.** The triplet code of nucleotide became to be used after the processing in which transfer-RNA and ribosome-RNA had been used.

## How creature inherited behavior?

**Polyribosome makes a series of the enzymes.** A messenger RNA is used to form a polyribosome for a series of enzymes. The DNA is the stable molecule and the reproduction is easy. So, even if there is a very little reverse transcription from RNA to DNA, DNA remains. As the result of try and error, the matter is produced when it was needed.

## How eukaryote was born in the Earth?

**When a cell becomes big by the developments, the range of Brownian motion becomes small. The cell becomes to need to move by itself.** Then, the eukaryote was born. It stores the thread of long DNA in a nucleus, and it possesses facilities for the protoplasmic movement in a cell.

## References

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