

# Clever battery- bio-computer and little brain in shell-less culture systems of chick embryos

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A shell less culture system for chick embryo could be used to produce a clever battery or bio-computer. In this system, after 50 hours after incubating, a heart is emerged which send blood molecules to each side and produces a biological current. This current carries charged particles and molecules and creates an electrical current and differences potential between center of heart and sides of shell-less vessels. If we put two metal bars in center and side of vessel, we can take electrical current and use of it industry. This causes that shell-less culture system plays the role of battery. This battery is clever and by closing another shell less culture system produce different currents. This is because that a collections of neurons are emerged on the heart in shell less culture system which plays the role of a little brain. This little brain exchange information with medium and control voluntary actions of system. For this reason, this system not only has the role of battery but also could be used as a bio-computer.

**Keywords:** clever Bio Battery, Bio computer, electromagnetic waves, neuronal circuit, Little brain, Heart, Chick embryo

## I. INTRODUCTION

Recently, some authors have explored the physical consequences of a new nonlinear electrodynamics, for which the electric field of a point-like charge is finite at the origin [1]. In their mechanism, the static potential profile contains a linear potential leading to the confinement of static charges [1]. This electromagnetics can be obtained from reducing some

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5-dimensional non-linear electromagnetics to four dimensions and using some concepts of supersymmetry [2]. This type of electromagnetic could have many application in biological systems [3]. Using the concepts of this model, we can explore many facts about radiated waves from little brain of the heart in a chick embryo and it's application in constructing a clever bio-battery.

Several years ago, some investigators have proved the existence a little brain on the heart which acts like a real brain in the head [4]. This little brain on the heart is comprised of spatially distributed sensory (afferent), interconnecting (local circuit) and motor (adrenergic and cholinergic efferent) neurones that communicate with others in intrathoracic extracardiac ganglia, all under the tonic influence of central neuronal command and circulating catecholamines. Neurones residing from the level of the heart to the insular cortex form temporally dependent reflexes that control overlapping, spatially determined cardiac indices [5]. Until now, less discussions have been done on this subject. For example, some researchers have argued that cardiac function is under the control of the autonomic nervous system, composed by the parasympathetic and sympathetic divisions, which are finely tuned at different hierarchical levels. They have shown that while a complex regulation occurs in the central nervous system involving the insular cortex, the amygdala and the hypothalamus, a local cardiac regulation also takes place within the heart, driven by an intracardiac nervous system. This complex system consists of a network of ganglionic plexuses and interconnecting ganglions and axons [6]. Now, the question arises that what happen for this little brain during heart transplantation? Recent investigations show that patients who gave hearts from donors, obtain some characteristics of them. One of them was Sylvia who declared that soon after her operation, she felt like drinking beer, something she hadn't particularly been fond of before. Later, she observed an uncontrollable urge to eat chicken nuggets and found herself drawn to visiting the popular chicken restaurant chain, et al [7]. This means that the little brain could be transformed from one body to another during heart transplantation. Motivated by these researches, we explore the existence of the little brain on the heart of chick embryo. To this aim, we produce some shell less culture vessels of chick embryos by using the method in [8]. We will show that first a herat is emerged in these vessels that send currents of charged particles outwards and produce a voltage similar to voltages of a battery. However this bio-battery is clever and by closing another shell less vessel its voltage is changed. This is because that there is a little brain on the heart of chick

embryo which exchange information with other little brains.

The outline of the paper is as follows. In section II, we will construct a bio-batter from shell-less cultures of chick embryos. In section III, we will show that these bio-batteries are clever.

## II. CONSTRUCTING A BIO-BATTER FROM SHELL-LESS CULTURES OF CHICK EMBRYOS



FIG. 1: Emergence of a heart in early stages of formation of a chick embryo.

In this section, using the radiated waves and currents of the little brain on the heart, we will construct a bio-battery.. To this aim, we will consider the process of formation of a chick embryo out of shell and egg in a container (See figure 1). This helps us to observe all stages and details without needing to imagine or using MRI. To obtain this shell-less culture system, we will use of the method which has been proposed in [8]. Similar to [8], a 450 ml polystyrene plastic cup was applied as the pod for the culture vessel. A 1-1.5

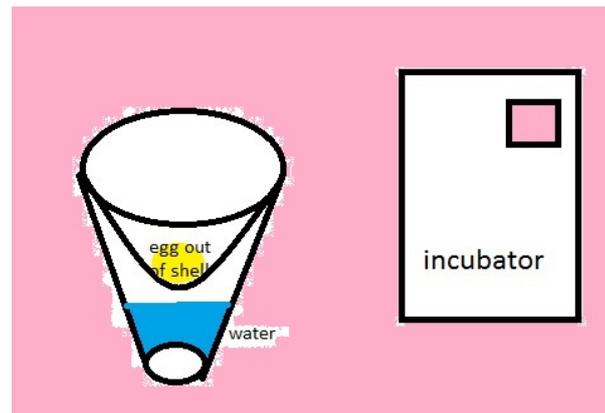


FIG. 2: The method for producing shell-less culture system (chick embryo out of shell).

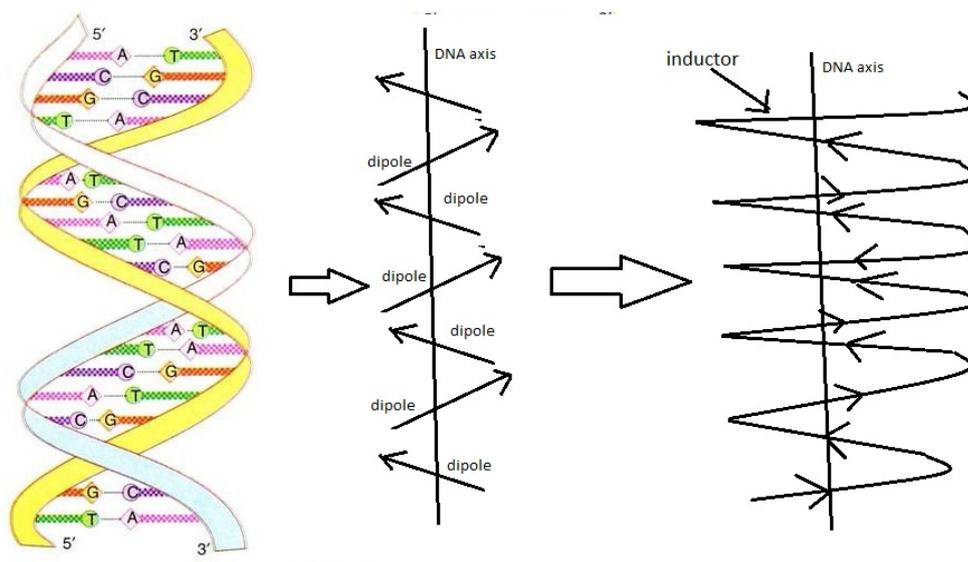


FIG. 3: A DNA is coiled around an axis and acts similar to an inductor [3].

cm diameter hole was made in the side of the cup approximately 2 cm from the bottom, and the hole was plugged with a cotton pledget as a filter. A 2mm diameter plastic tube was inserted through the space between the pledget and the hole to provide an oxygen supply. An aqueous solution (40ml) of benzalkonium chloride was then added to the cup. A polymethylpentene film was formed into a concave shape, carefully avoiding wrinkles and installed as an artificial culture vessel in the pod. A polystyrene plastic cover was placed on top of the culture vessel. For ex-ovo mechanism (Shell-less culture method), fertilized chicken eggs were not incubated before transferring to the culture vessels. Their eggshell was wiped and cracked and the whole egg contents were transferred to the culture vessel

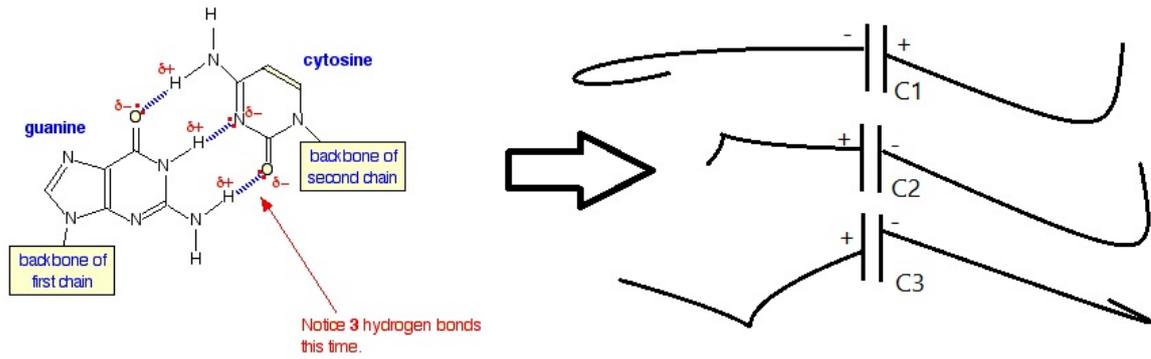


FIG. 4: Gaunine and cytosine bases form G-C pairs which have an structure similar to capacitors [3]

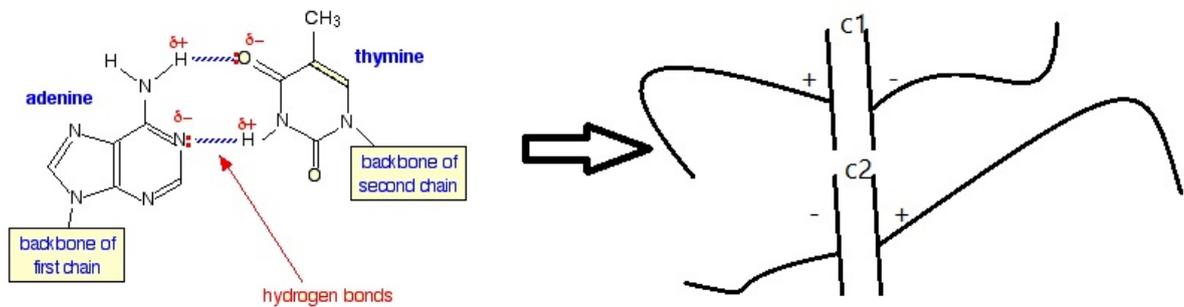


FIG. 5: Adenine-Thymine form A-T paris that play the role of capacitors in a DNA [3]

without pre-incubating period. The culture vessels were maintained at  $38^{\circ}C$  and rotated with 120 clockwise twice a day. After 58 h, in most of vessels, chick embryo is emerged (See figure 2).

In figure 1, we show that the heart of a chick embryo is one of first organs that form. This is because that heart send blood molecules to other cells and contributes in transmission of food and oxygen. However, heart could have another main role in trasmission of information to other cells. Before formation of brain, the little brain on the hear controlls evolutions of body and send some signals to other cells. These signals could be carried by blood molecules.

Now, the question arises that what is the origin of the little brain on the heart. We can response to this question by considering the electronic structure of DNAs of initial stem cells in a chick embryo. Previously, it has been shown that genes in a DNA could have an structure like a receiver or sender radio waves [3]. For example, genes in a DNA could

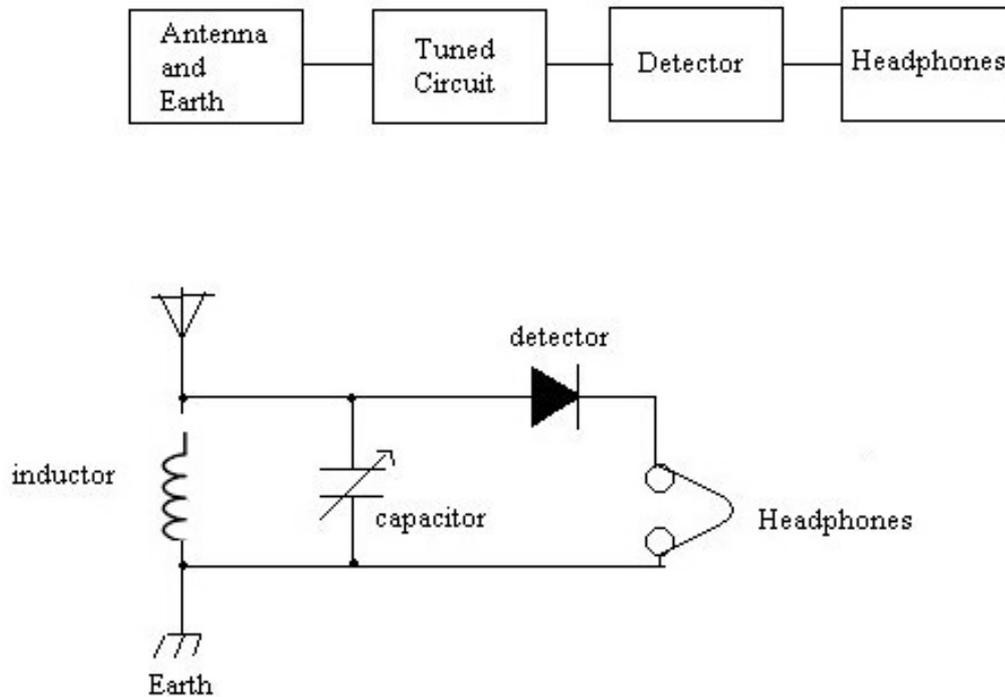


FIG. 6: Each gene of DNA acts like the receiver or sender of waves [3]

coil around some axes such as their electronic charges produce magnetic fields similar to the magnetic field of an inductor (See figure 3). Also, guanine and cytosine bases form G-C pairs which have a structure similar to capacitors (See figure 4). Or Adenine-Thymine form A-T pairs that play the role of capacitors in a DNA (See figure 5). Thus, each gene could have an electronic circuit similar to the electronic circuit of a receiver or sender of radio waves (See figure 6). To transmit signals of each gene, we need a circuit similar to circuits of genes. These circuits are formed by neurons (See figure 7). Neurons have several terminals in dendrite or axon ends. This is because that each gene produces several types of waves. These waves are produced by several coiling of genes around different axes in a DNA (See figure 8). A collection of these circuits produce the little brain on the heart and also another collection of circuits form the brain interior of a head.

In figure 10, we will show the radiated currents of the heart of chick embryo in the early stages. These currents are taken by a scope which connects to the heart. This figure shows that heart emits some current. This current produces a voltage in different points of vessels.

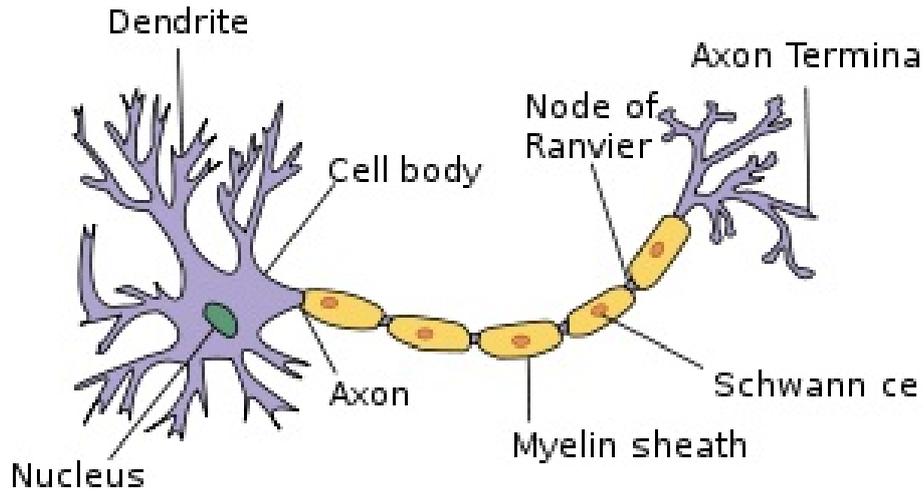


FIG. 7: The structure of a neuron.

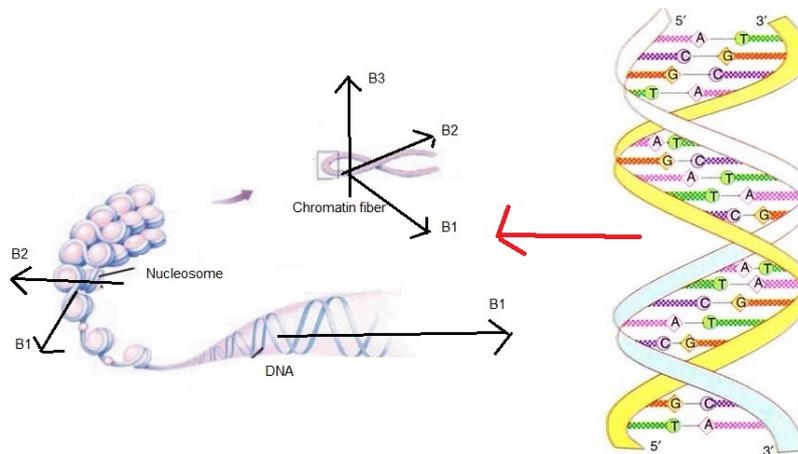


FIG. 8: DNA and its genes coiled many times around various axes and emit several types of fields.

Thus, the shell-less culture vessel acts like a bio-battery (See figure 9).

### III. CLEVER BIO BATTERY OR BIO COMPUTER

In this section, we will show that bio-battery is clever and two little brains of two bio-batteries can exchange information with each other. To this aim, we connect one end of a shell less culture vessel (bio-battery) to another vessel (bio-battery) and another end to an scope (See figure 10). These bio-batteries interact with each other via exchanging waves. We measure the currents which are emerged during connecting two vessels to each other

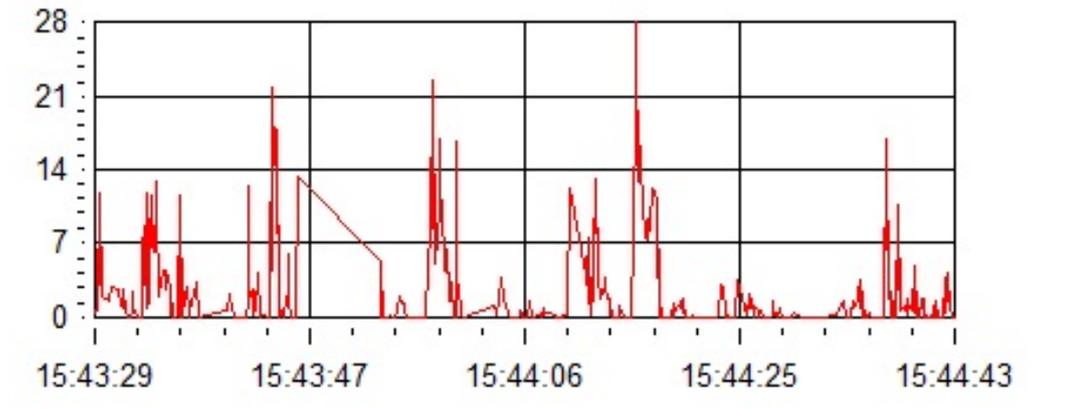


FIG. 9: signals of little brain in absence of brain in early stages of a chick embryo.

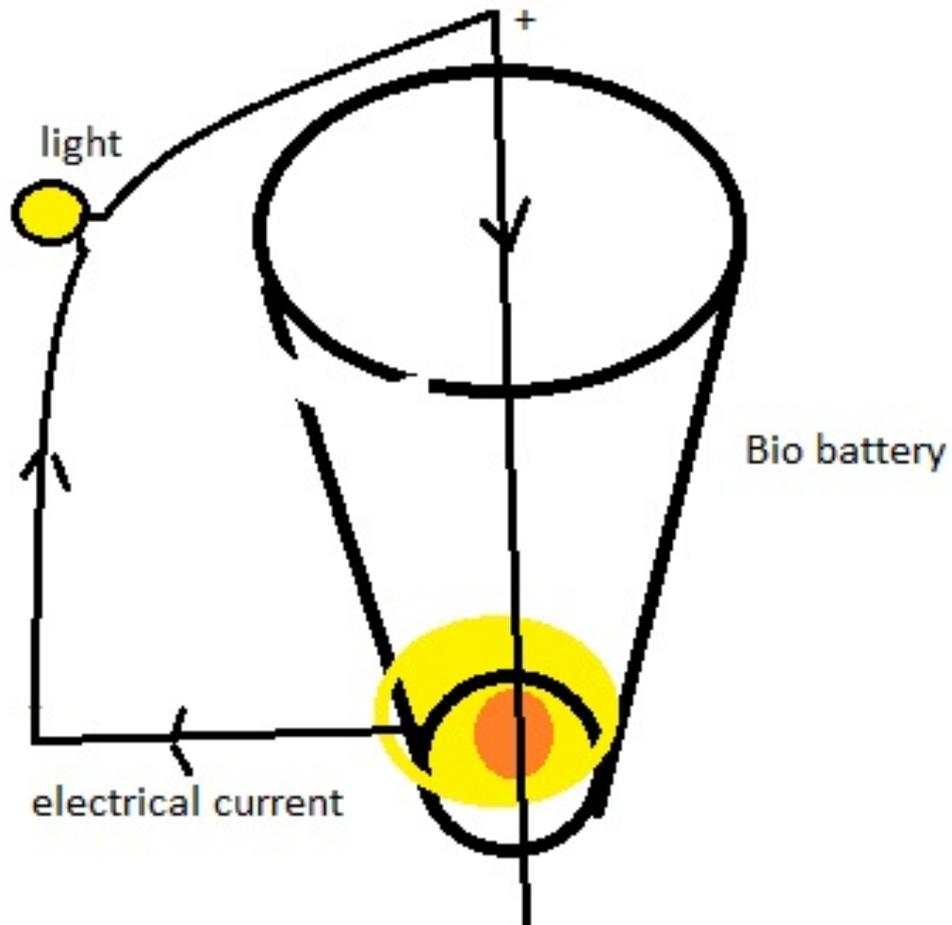


FIG. 10: Constructing bio-battery by using shell-less culture system.

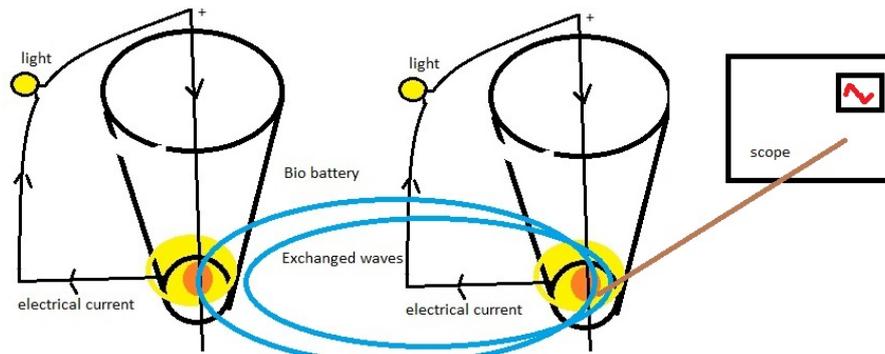


FIG. 11: A circuit of two shell less culture vessels (bio-batteries) and scope

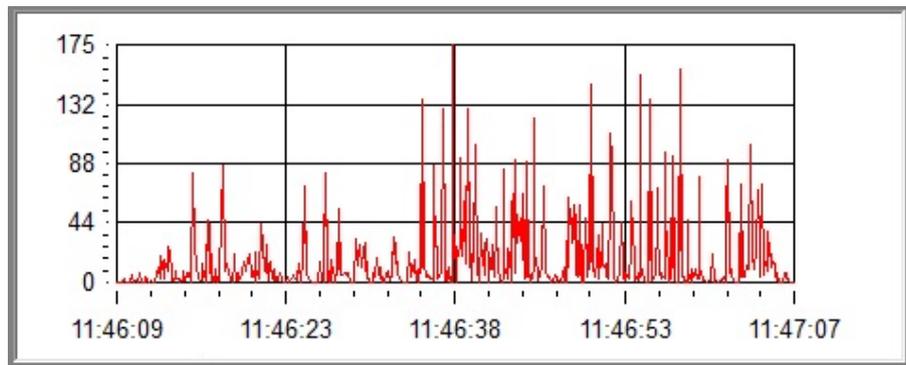


FIG. 12: signals of bio-battery in the present of another bio-battery.

and present them in figure (11). Comparing figure 8 and 11, we observe that bio-battery determine the existence of another bio-batter and has a voluntary action.

#### IV. SUMMARY AND DISCUSSION

In this research, we have constructed a clever battery and bio-computer by using the shell less culture system for chick embryo. We have shown that two days after incubating, a heart is produced in this system which send blood and charged particles and creates an electrical current. This electrical current produces a differences in potential and voltage between center and sides of container or vessels of chick embryo. By puting two metal bars in two different points of this system, we took this voltage and applied it in industry. We have argued that this bio-batter is clever and determines the existece of another bio-batter. Echanging information between two bio-battery and some voluntary actions of it gave some

reasons for the existence of a little brain on the heart. This little brain was emerged by a collections of initial neurons on the heart and played the main role in voluntary actions. Consequently, bio-batter has the brain and could play the role of bio-computer.

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