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RESEARCH ARTICLE

THE MEMBRANE - REDOX POTENTIALS THREE - STATE LINE SYSTEM DEPENDENT - FULL 9 STEPPED CYCLE OF PROTON CONDUCTANCE AND THE PHYLOGENETIC RELATIONSHIP OF LIFE PROCESSES

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ABSTRACT

It can be say that there are more close relationship between common descent of all life on Earth and long time formation of membrane - redox potentials three - state line system like structures from the cyanobacteria to Homosapiens during last 4,5 billion years, which generated ATP and NADPH. "Phylogenetic relationship" refers to the relative times in the past that species shared common ancestors. We are proposing the new suggestion about close interrelationship, formed during evolution development of life, demonstrating that all organisms on earth are descended from a single common ancestor by following law full processess, as at first: common descent of all life on Earth from the universal common ancestor, through 16s rRNA gene, 18S rRNA, a set of 355 genes, comprising the three domains of life, archaea, bacteria, and eukaryotes, at second: all living cells have arisen from a single common ancestor that lived 650 million years ago in the Precambrian, at third: 6,331 genes common to all living animals have been identified., at fourth: the genetic code is nearly identical for all known life forms, from bacteria and archaea to animals and plants. at fifth: identical pathways for the biosynthesis of purinenucleotides with participation of ATP generated within membrane - redox potentials three - state line system dependent -full 9 stepped cycle of proton conductance of widely divergent organisms as E.coli, yeast, pigeons, and humans, demonstrating the biological unity of life in the level of ATP/ADP cycle and also in the level of membrane - redox potentials three - state line system dependent - full 9 stepped cycle of proton conductance, at sixth: some 23 proteins are found in all organisms, serving as enzymes carrying out core functions like DNA replication. All living organisms have the same kinds of monomeric subunits and the identity of each organism is preserved by its possession of many sets of nucleic acids and of proteins, which formed with participation of ATP/ADP cycle functioned as one of members of membrane - redox potentials three - state line system dependent - full 9 stepped cycle of proton conductance. It can be say that the continuity of proton conduction depended biosynthesis of ATP and NADPH using the membrane - redox potentials three - state line system like structures from the cyanobacteria to Homosapiens during last 4,5 billion years had been carried out by general principle as common descent of all life on Earth from the last universal common ancestor (LUCA), through 16s rRNA gene, 18S rRNA, , a set of 355 genes, comprising the three domains of life, archaea, bacteria, and eukaryotes, agenetic code is nearly identical for all known lifeforms, from bacteria and archaea to animals and plants. The universality of this code is generally regarded by biologists as definitive evidence in favor of universal common descent owing to membrane - redox potentials three - state line system like structures from the cyanobacteria to Homosapiens during last 4,5 billion years. In such way the membrane - redox potentials three - state line system dependent - full 9 stepped cycle of proton conductance have been formed as final results of phylogenetic relationship of life during last 4,5 billion years.

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INTRODUCTION

Universal common descent through an evolutionary process was first proposed by the British naturalist Charles Darwin in the concluding sentence of his 1859 book On the Origin of Species:

At last last have been appeared a many informations, relating to the universality and the similarities of many aspects of cellular life. These similarities include the energy carrier adenosine triphosphate (ATP), and the fact that all amino acids found in proteins through universal common descent and evidence for homology of the central subunits of Trans membrane ATP asesthrough out all living organisms. Primordial membranes may have been semi permeable and evolved later to the membranes of modern bacteria, and on a second path to those of modern archaea.

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Many organisms all derived from a single ancestor could readily have shared genes that all worked in the same way, and it appears that they have. The most common gene to be used for constructing phylogenetic relationships in prokaryotes is the 16S ribosomal RNA gene since its sequences tend to be conserved among members with close phylogenetic distances, but variable enough that differences can be measured. 18S rRNA is commonly used in fungi for phylogenetics since it has more hypervariable domains than 16S. Divergent organisms as E.coli, yeast , pigeons, and humans have virtually identical same fundamental biochemical organization: genetic information encoded in DNA, transcribed into RNA, through the effect of protein- and RNA-enzymes, then translated into proteins by (highly similar) ribosomes, with ATP, NADPH and others as energy sources, widely shared substances such as cytochrome c further supports universal common descent. Some 23 proteins are found in all organisms, serving as enzymes carrying out core functions like DNA replication, convincing the evidence of a single ancestry. The universal common descent was demonstrated by identity of Calvin cycle with Krebs cycle and identity in the example of Shikimate pathway, HMG Co reductase, Plant-fungi horizontal gene transfer. Plant–fungus horizontal gene transfer is the movement of genetic material between individuals in the plant and funguskingdoms. Some plants may have obtained the shikimate pathway from symbiotic fungi. Fungi and bacteria could have contributed to the phenylpropanoid pathway in ancestral land plants for the synthesis of flavonoids and lignin through horizontal gene transfer. Analysis of DNA sequences suggests that horizontal gene transfer has occurred within eukaryotes from the chloroplast and mitochondrial genomes to the nuclear genome.

RESULTS AND DISCUSSION

It can be say that there are more close relationship between common descent of all life on Earth and long time formation of membrane - redox potentials three - state line system like structures from the cyanobacteria to Homosapiens during last 4,5 billion years, which generated ATP and NADPH. Before formation of the evolutionary late electron, proton transporting systems as “Donators + membrane - redox potentials three - state line system + O_2 + ADP + Pi + H^+ + $nH^+_{membrane\ space}$ = (ATP + heat energy) + H_2O + nH^+_{matrix}+ CO_2 ensuring “ADP - ATP cycle for chemical energy”, some organisms, mostly micro - organisms had been developed the systems to live as acidophile: optimal growth at pH values less than 3, alkaliphile: optimal growth at pH values above10, endolith: live within rocks, or deep (a mile or more) underground; antarctic lichens, halophile: require high salt content, hyperthermophile: requires T>80◦C, up to 121◦C; hydrothermal vents, hot springs, volcanos, lithoautotrophes: liveinig neousrocksandutilizeno organic products of photo synthesis or sunlight, needonly CO_2, $H_2O$and H_2 to sustain themselves by general principle of common descent. We are proposing the new suggestion about close interrelationship, formed during evolution development of life, demonstrating that all organisms on earth are descended from a single common ancestor by following lawfullprocessess, as at first: common descent of all life on Earth from the universal common ancestor, through 16s rRNA gene, 18S rRNA, a set of 355 genes, comprising the three domains of life, archaea, bacteria, and eukaryotes, at second: all living cells have arisen from a single common ancestor that lived 650 million years ago in the Precambrian, at third: 6,331 genes common to all living animals have been identified., at fourth: the genetic code is nearly identical for all known life forms, from bacteria and archaeato animals and plants. at fifth: identical pathways for the biosynthesis of purine nucleotides with participation of ATP generated within membrane - redox potentials three - state line system dependent - full 9 stepped cycle of proton conductance of widely divergent organisms as E. coli, yeast, pigeons, and humans, demonstrating the biological unity of life in the level of ATP/ADP cycle and also in the level of membrane - redox potentials three - state line system dependent - full 9 stepped cycle of proton conductance, at sixth: some 23 proteins are found in all organisms, serving as enzymes carrying out core functions like DNA replication. All organisms on earth are descended from a single common ancestor, which have been confirmed by these facts as all life forms on earth have a common system as universal use of DNA to store genetic informations, a universal genetic code ribosome technique of protein synthesis, DNA triplets coding for same amino acid, the use of proteins and lipids to make membranes, the use of the ADP - ATP cycle for chemical energy, nucleic acids are needed to make proteins, yet proteins are needed to make nucleic acids and the interrelationship between the processes of photosynthesis and cellular respiration (e.g, recycling of oxygen and carbon dioxide) by using of membrane - redox potentials three - state line system dependent - full 9 stepped cycle of proton conductance.

The earth is 4,54 billion years-if collapse the planet entire history into a single calendar year, before October the planet consisted of single cells since life first emerged in March, multicellular organisms had evolved by the start of October, the dinososaurs ruled the world until the evening of 26 December, Humans have only existed for 30 minutes (Ed Yong). The optimal safety continuity of planet entire history of life needed at first: the enough quantity of RNA and DNA molecules, at second :the enough quantity of RNA and DNA molecules needed the enough quantity of ATP, NADPH and purine, pyrimidine bases, at third: the enough quantity of ATP, NADPH and purine, pyrimidine bases needed the membrane - redox potentials three - state line system like structures from the cyanobacteria to Homosapiens. Identical pathways for the biosynthesis of purinenucleotides with participation of ATP, formed within membrane - redox potentials three - state line system dependent -full 9 stepped cycle of proton conductance of widely divergent organisms, formation of the biological unity of life in the level of proton, electron flows within membrane - redox potentials three - state line system dependent - full 9 stepped cycle of proton conductance” have been appeared as follows:

- The participation of evolutionary late electron, proton transporting systems as “Donators + membrane - redox potentials three - state line system + O_2 + ADP + Pi + H^+ + $nH^+_{membrane\ space}$ = (ATP + heat energy) + H_2O + nH^+_{matrix}+ CO_2in the biosynthesis of purine base molecules have been appeared as the first stage: ribose-5 phosphate + ATP = 5-phosphoribosyl – alpha - pyrophosphate (PRPP), the second stage: PRPP + glutamine + H_2O = betta - 5-phosphoribosylamine, the third stage:betta - 5-phosphoribosylamine + ATP + glycine = glycinamidribotide(GAR), the fourth stage: GAR + N10-formyl-TNF = formylglycinamid ribotide (FGAR), the fifth stage: ATP + glutamine + FGAR = Formylglycinamidribotide (FGAM), at the sixth stage:

FGAM + ATP= 5-aminoimidazole ribotide (AIR), the seventh stage: CO_2 + AIR = carboxyaminoimidazoleribotide (CAIR), the eighth stage: CAIR + aspartate + ATP = 5 - aminoimidazole - 4-(succinylocarboxyamide) ribotide (SACAIR), the ninth stage: SACAIR=fumarate+5-aminoimidazole - 4-carboxamideribotide (AICAR), the tenth stage: AICAR + N10-formyl-TNF = 5-formaminoimidazole- 4-carboxamideribotide (FAICAR), the eleventh stage: FAICAR= H_2O + inosine monophosphate (IMP)by principle as "nucleic acids are needed to make proteins,yet proteins are needed to make nucleic acids" in the all widely divergent organisms as E.coli, yeast, pigeons, and humans.

- The biosynthesis of purine base molecules have been strongly needed the participation of evolutionary late electron, proton transporting systems as "Donators + membrane - redox potentials three - state line system + O_2 + ADP + Pi + H^+ + $nH^+_{membrane\ space}$ = (ATP + heat energy) + H_2O + nH^+_{matrix} + CO_2" and also the participation of membrane - redox potentials three - state line system, where formed such very important macroerg compounds as ATP, ADP in the all widely divergent organisms as E.coli, yeast, pigeons, and humans.

- The participation of evolutionary late electron, proton transporting systems as "Donators + membrane - redox potentials three - state line system + O_2 + ADP + Pi + H^+ + $nH^+_{membrane\ space}$ = (ATP + heat energy) + H_2O + nH^+_{matrix} + CO_2" in the ATP dependent biosynthetic pathway of purine base molecules have been appeared as the first stage: ribose-5 phosphate + ATP = 5-phosphoribosyl-alpha-pyrophosphate (PRPP), the second stage: PRPP + glutamine + H_2O = betta-5-phosphoribosylamine, the third stage: betta-5-phosphoribosylamine + ATP + glycine = glycinamidribotide (GAR), the fourth stage: GAR + N10-formyl-TNF = formylglycinamidribotide (FGAR), the fifth stage: ATP + glutamine + FGAR= Formylglycinamidribotide (FGAM), at the sixth stage: FGAM + ATP= 5-aminoimidazole ribotide (AIR), the seventh stage: CO_2 + AIR= carboxyaminoimidazoleribotide(CAIR), the eighth stage: CAIR+ aspartate + ATP =5 -aminoimidazole - 4 -(succinylocarboxyamide) ribotide (SACAIR),the ninth stage: SACAIR = fumarate+5 - aminoimidazole - 4-carboxamideribotide (AICAR), the tenth stage: AICAR + N10 -formyl- TNF = 5-formaminoimidazole - 4-carboxamideribotide (FAICAR), the eleventh stage: FAICAR= H_2O +inosine monophosphate (IMP).In such way 5-phosphoribosyl - alpha-pyrophosphate (PRPP) molecules, which have been synthesized with participation of ATP-ADP cycle and also CO_2, ATP molecules formed within reaction mediums as "Donators + membrane - redox potentials three - state line system + O_2 + ADP + Pi + H^+ + $nH^+_{membrane\ space}$ = (ATP + heat energy) + H_2O + nH^+_{matrix} + CO_2" owing to the clockwise normal flow of electrons and protons by including in the structure of inosine monophosphate (IMP) after conducting the abovementioned corresponding reactions became the unseparable structural parts of purine base molecules, also DNA, RNA molecules in the all widely divergent organisms as E.coli, yeast, pigeons, and humans.

- The participation of evolutionary late electron, proton transporting systems as "Donators + membrane - redox potentials three - state line system + O_2 + ADP + Pi + H^+ + nH + membrane space = (ATP + heat energy) + H_2O + nH + matrix + CO_2" in the biosynthesis of pyrimidine ribonucleotideshave been appeared as ATP+HCO3 +glutamine+ H_2O= carbamoyl phosphate ,carbomoylphosphate+aspartate = carbamoyl aspartate, carbamoyl aspartate= H_2O + dihydroorotate , dihydroorotate +quinone= orotate, orotate +PRPP=orotidine monophosphate (OMP) , OMP= CO_2 + uridine monophosphate(UMP).

- The biosynthetic reaction of formation of 5-phosphoribosyl-alpha-pyrophosphate (PRPP) which conducted as well as ribose-5 phosphate+ATP=5-phosphoribosyl-alpha-pyrophos phate have been strongly needed the participation of evolutionary late electron, proton transporting systems as "Donators + membrane - redox potentials three - state line system + O_2 + ADP + Pi + H^+ + nH + membrane space = (ATP + heat energy) + H_2O + nH + matrix + CO_2" where formed such very important macroergic compounds as ATP and reducing agent as NADPH.

- The biosynthesis of deoxyribonucleotides have been strongly needed the participation of evolutionary late electron, proton transporting systems as "Donators + membrane - redox potentials three - state line system + O_2 + ADP + Pi + H^+ + nH + membrane space = (ATP + heat energy) + H_2O + nH + matrix + CO_2" where formed such very important macro-erg compounds as ATP, ADP and powerful reducing agent as NADPH.

The participation of evolutionary late electron, proton transporting systems as "Donators + membrane - redox potentials three - state line system + O_2 + ADP + Pi + H^+ + nH + membrane space = (ATP + heat energy) + H_2O + nH + matrix + CO_2" in the *biosynthesis of deoxyribonucleotide* shave been appeared as in first stage: NADPH+FAD= FADH2, at second stage: FADH2+S=S thoredoxin= SH-SH thoredoxin+ NADP, at third stage: SH-SH thoredoxin+ S=S ribonucleotides = SH-SH ribonucleotides + S=S thoredoxin, at fourth stage: SH-SH ribonucleotides+NDP= dNDP, at fifth stage:dNDP+ ATP= dNTP. In thisconnection by us postulated that the planet entire history of life processes strongly connected with membrane - redox potentials three - state line system like ATP, NADPH generating structures from the cyanobacteria to Homosapiens during last 4,54 billion years through 16s rRNA gene, 18S rRNA, a set of 355 genes, comprising the three domains of life, archaea, bacteria, and eukaryotes owing to the continuity of proton conduction depended biosynthesis of ATP and NADPH and some 23 proteins are found in all organisms, serving as enzymes carrying out core functions like DNA replication. All living organisms have the same kinds of monomeric subunits and the identity of each organism is preserved by its possession of many sets of nucleic acids and of proteins, which formed with participation of ATP/ADP cycle functioned as one of members of membrane - redox potentials three - state line system dependent - full 9 stepped cycle of proton conductance. Many studies have demonstrated that such widely divergent organisms as E.coli, yeast, pigeons, and humans have virtually

identical pathways for the biosynthesis of purinenucleotides thereby further demonstrating the biological unity of life. All organisms on earth are descended from a single common ancestor, which have been confirmed by these facts that all life forms on earth have a common system as universal use of DNA to store genetic informations, a universal genetic code, ribosome technique of protein synthesis, DNA triplets coding for same aminoacid, the use of proteins and lipids to make membranes, the use of the ADP-ATP cycle for chemical energy, nucleic acids are needed to make proteins, yet proteins are needed to make nucleic acids and also the interrelationship between the processes of photosynthesis and cellular respiration (recycling of oxygen and carbon dioxide) by using of membrane - redox potentials three - state line system dependent - full 9 stepped cycle of proton conductance. It can be say that the continuity of proton conduction depended biosynthesis of ATP and NADPH using the membrane - redox potentials three - state line system like structures from the cyanobacteria to Homosapiens during last 4,5 billion years had been carried out by general principle as common descent of all life on Earth from the last universal common ancestor through 16s rRNA gene, 18S rRNA, , a set of 355 genes, comprising the three domains of life, archaea, bacteria, and eukaryotes, a genetic code is nearly identical for all known life forms, from bacteria and archaea to animals and plants. The universality of this code is generally regarded by biologists as definitive evidence in favor of universal common descent owing to membrane - redox potentials three - state line system like structures from the cyanobacteria to Homosapiens during last 4,5 billion years. In such way the membrane - redox potentials three - state line system dependent - full 9 stepped cycle of proton conductance have been formed as final results of phylogenetic relationship of life processes during last 4,5 billion years.

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