

Research article

# THE ROLE OF MEMBRANE STRUCTURES IN THE BIOENERGETIC PROCESSES CONDUCTED IN THE MEMBRANE - REDOX POTENTIAL, A THREE STATE LINE SYSTEM DEPENDENT - FULL 9 STEPPED CYCLE OF PROTON CONDUCTANCE.

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## ABSTRACT

By our opinions the creation of proton gradient in the intermembrane space of mitochondria and following transfer of proton to matrix through ATP synthase in the 6-th stage of the full 9 stepped cycle of proton conductance inside human body would be early evolutionary connected with these facts that according to Nick Lane, and William F. Martin - Archaeal lipids are typically composed of isoprenoid chains linked by ether bonds to an sn-glycerol-1-phosphate (G1P) backbone, bacterial lipids are typically composed of fatty acids in ester linkage to an sn-glycerol-3-phosphate (G3P) skeleton.

Addition of a glycerol-phosphate headgroup reduces proton permeability substantially, as the polar headgroup cannot cross the hydrophobic interior of the membrane, the phospholipids of archaea and bacteria incorporate different stereoisomers of glycerol phosphate (Nick Lane, and William F. Martin 2012), all these changes by our opinions served the crucial role in creation of such powerful bioenergetic system as the membrane - redox potential, a three state line system dependent - full 9 stepped cycle of proton conductance inside human body (Ambaga and Tumen-Ulzii, 2015).



All processes occurred in the 6-th stage of the full 9 stepped cycle of proton conductance inside human body is existed in close relationship with these events as all energy that biological systems use is ultimately harnessed through chemiosmotic coupling across membranes (Nick Lane, and William F. Martin, 2012).

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**Key words:** the bioenergetic processes, the membrane - redox potential, a three state line system dependent - full 9 stepped cycle of proton conductance, membrane bioenergetics.

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## INTRODUCTION

Membrane bioenergetics are universal, yet the phospholipid membranes of archaea and bacteria - the deepest branches in the tree of life - are fundamentally different (Nick Lane, and William F. Martin, 2012), according to our opinions the evolutionary continuum of these membrane structures is the membrane - redox potential, a three state line system dependent - full 9 stepped cycle of proton conductance inside human body (Ambaga and Tumen-Ulzii, 2015).

A lipid bilayer membrane is undoubtedly necessary for the function of membrane proteins such as the ATPase and Ech (Nick Lane, and William F. Martin 2012) and bioenergetic need of the three domains of life as the archaea, bacteria, and eukaryotes closely connected with the membrane - redox potential, a three state line system, belonging to some corresponding stages of the full 9 stepped cycle of proton conductance (Ambaga and Tumen-Ulzii, 2015).

Recent phylogenetic studies show that eukaryotes are secondarily derived, they are genomic chimeras, arising from an endosymbiosis between a bacterium and an archaeal host cell (Victor Sojo, Andrew Pomiankowski, Nick Lane, 2015), it should be said that eukaryotes bioenergetic need basically consumed by the membrane - redox potential, a three state line system dependent - full 9 stepped cycle of proton conductance inside human body (Ambaga and Tumen-Ulzii, 2015).

Phospholipid side chains are typically isoprenoids in archaea and fatty acids in bacteria i.e. archaeal lipids have an sn-glycerol-1-phosphate (glycerol-1-phosphate -dehydrogenase) headgroup, while bacteria use the mirror structure sn-glycerol-3-phosphate (glycerol-3-phosphate-dehydrogenase) (Nick Lane, and William F. Martin 2012), but which evolutionary remained continuum have been repeated in the membrane - redox potential, a three state line system, belonging to in some corresponding stages of the full 9 stepped cycle of proton conductance inside human body (Ambaga and Tumen-Ulzii, 2015).

But until now no any literature findings, relating to significance of membrane structures in the bioenergetic processes, which occurred in the full 9 stepped cycle of proton conductance inside human body.

## Result and conclusion

In world literature we can see more about electron transport, conductance, but what about proton circulation all information limited by thermine as proton translocation between mitochondria matrix and intermembrane space, but after our new suggestion as the membrane - redox potential, a three state line system dependent -full 9



stepped cycle of proton conductance inside human body (Ambaga and Tumen-Ulzii, 2015) have been started the use of terminology as proton conductance.

All these processes connected with proton conductance conducted with participation of membrane structures belonging to membrane - redox potential, a three state line system dependent - full 9 stepped cycle of proton conductance inside human body.

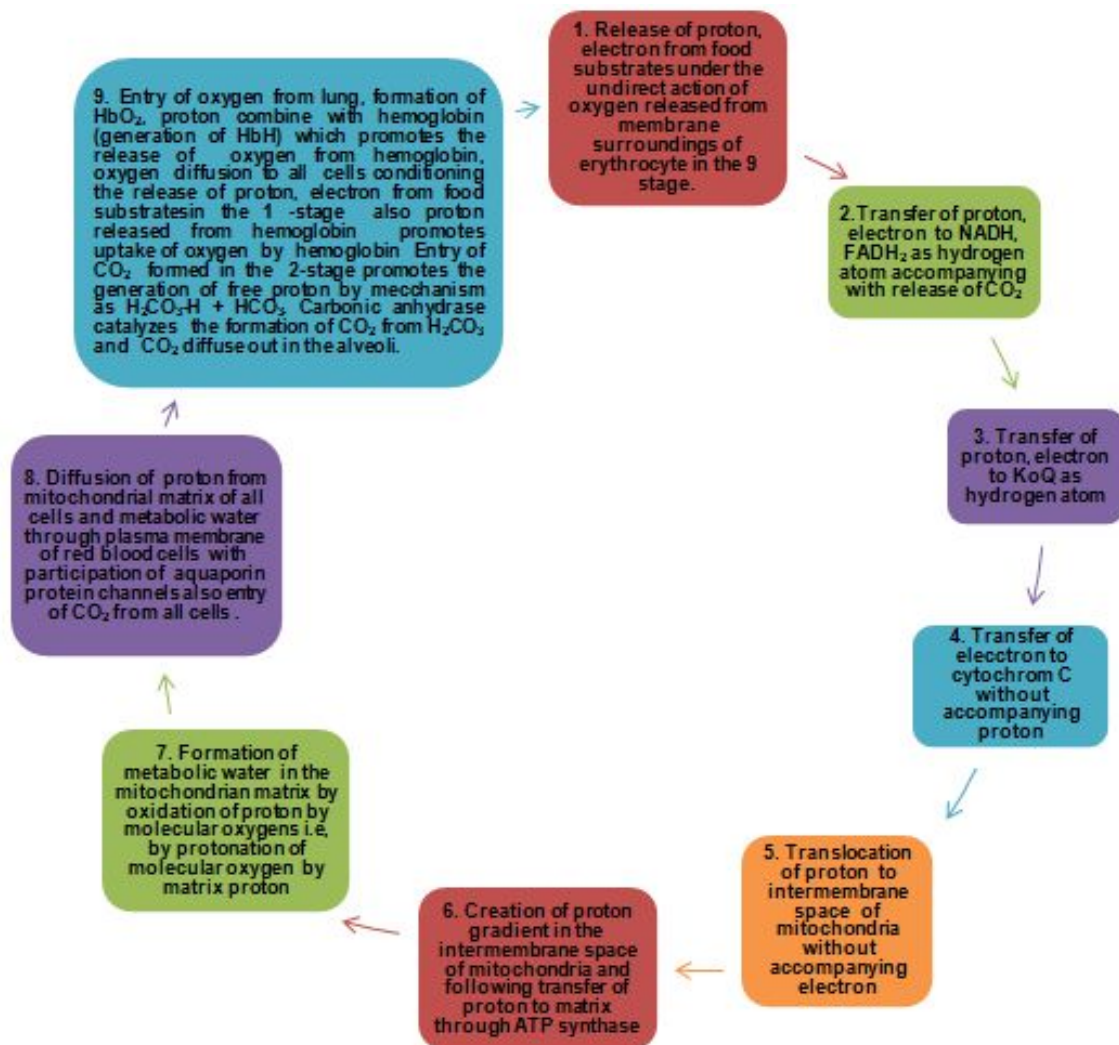
According to the full 9 stepped cycle of proton conductance inside human body proposed by Ambaga and Tumen-Ulzii (2015) 6-th stage of the full 9 stepped cycle of proton conductance inside human body is distinguished by creation of proton gradient in the intermembrane space of mitochondria and following transfer of proton to matrix through ATP synthase.

The ATP synthase was a product of long selection during the early phases of evolution, but like other proteins, it is as universal as the ribosome, and it displays the same deep phylogenetic split between archaea and bacteria (Nick Lane, and William F. Martin, 2012) and harnessing energy as ion gradients across membranes is as universal as the genetic code (Nick Lane, and William F. Martin, 2012) owing to participation of membrane structures belonging to membrane - redox potential, a three state line system dependent - full 9 stepped cycle of proton conductance inside human body (Ambaga and Tumen-Ulzii, 2015).

By our opinions the creation of proton gradient in the intermembrane space of mitochondria and following transfer of proton to matrix through ATP synthase in the 6-th stage of the full 9 stepped cycle of proton conductance inside human body would be early evolutionary connected with these facts that according to Nick Lane, and William F. Martin - Archaeal lipids are typically composed of isoprenoid chains linked by ether bonds to an sn-glycerol-1-phosphate (G1P) backbone, bacterial lipids are typically composed of fatty acids in ester linkage to an sn-glycerol-3-phosphate (G3P) skeleton.

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**Figure 1. Full 9 stepped cycle of proton conductance inside human body**

Until recently now, in one hand nobody put question relating to which side of cells and body moved  $nH^+$ <sub>matrix</sub> not participating in formation of metabolic water and in other hand nobody put question relating to how entered hydrogen ions, which combined with hemoglobin, which promotes the release of oxygen from hemoglobin, hydrogen ions are released from hemoglobin, which promotes the uptake of oxygen by hemoglobin to erythrocytes.

We elucidate all these processes by proposing the idea about existing the membrane - redox potential, a three state line system dependent - full 9 stepped cycle of proton conductance inside human body (Ambaga and Tumen-Ulzii, 2015) 9- th stage is distinguished by entry of oxygen from lung, formation of HbO<sub>2</sub>, proton combine with hemoglobin (generation of HbH) which promotes the release of oxygen from hemoglobin, oxygen diffusion to all cells conditioning the release of proton, electron from food substrates.

All processes occurred in this stage of the full 9 stepped cycle of proton conductance inside human body conducted according to such lawful processes as transport of oxygen from respiratory organ - lung to

peripheral tissues - cells, transport of carbon dioxide and protons from peripheral tissues-cells to respiratory organ - lung for subsequent excretion.

9- th stage of the membrane - redox potential, a three state line system dependent -full 9 stepped cycle of proton conductance inside human body (Ambaga and Tumen-Ulzii, 2015) is distinguished by these facts, that after haemoglobin binds to oxygen in the lungs due to the high oxygen concentrations, facilitates its release in the tissues, particularly those tissues in most need of oxygen.

In the 9-th stage of the full 9 stepped cycle of proton conductance inside human body (Ambaga and Tumen-Ulzii, 2015) hydrogen ions combine with hemoglobin, which promotes the release of oxygen from hemoglobin, also hydrogen ions are released from hemoglobin, which promotes the uptake of oxygen by hemoglobin.

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