

12 November 2008

By: Tudor Vieru, Science Editor



Human evolution might have had a little help from our little protein friends  
EvolveFish

## Protein Chains Can Regulate Themselves

*This sheds new light on the course of evolution*

Scientists discovered that several protein chains inside the human body have the ability to condition their own evolution, which seems to hold the key to understanding how living organisms adapt to natural selection. This find could explain how people evolved to the point where they took over the planet and became the dominant species on Earth.

A biochemical network essential for metabolism, dubbed the electron transport chain (ETC), yielded the surprising find, as scientists experimenting on it discovered that any outside influences on the chain were repelled by the proteins composing it. Furthermore, the same proteins acted to restore any imbalance that might have been caused by tampering with the chain.

This find suggests that foreign influences on these protein ensembles have been repelled throughout human evolution, which would mean that they are much older than we are. This hypothesis is mind-boggling, seeing how scientists thus far believed that evolution was a continuous process, in that humans evolve due to "improvements" in their genetic make-ups.

"The discovery answers an age-old question that has puzzled biologists since the time of Darwin: How can organisms be so exquisitely complex, if evolution is completely random, operating like a 'blind watchmaker'? Our new theory extends Darwin's model, demonstrating how organisms can subtly direct aspects of their own evolution to create order out of randomness," explained Princeton Department of Chemistry associate research scholar, Raj Chakrabarti.

"In this paper, we present what is ostensibly the first quantitative experimental evidence, [...] that nature employs evolutionary control strategies to maximize the fitness of biological networks. Control theory offers a direct explanation for an otherwise perplexing observation and indicates that evolution is operating according to principles that every engineer knows," he added.

Chakrabarti concluded that "Such principles are fully consistent with the principles of natural selection. Biological change is always driven by random mutation and selection, but at certain pivotal junctures in evolutionary history, such random processes can create structures capable of steering subsequent evolution toward greater sophistication and complexity."