Oct. 16 (Fri.) 9:05-9:15

Introductory Remarks: Evolution as a double-edged sword

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The year 2009 is the bicentennial of Charles Darwin's birth. In addition, it is the bicentennial since Jean-Baptiste Lamarck published the book "Zoological Philosophy". It is, therefore, timely to coorganize the international and interdisciplinary symposium entitled "What is Evolution?" with Asia-Pacific Center for Theoretical Physics (APCTP) in Korea, International Institute for Advanced Studies at Kyoto, and Institute of Economic Research of the Kyoto University.

Indeed, we are very familiar with the dichotomy of *'yes' or 'no'* with regard to any given statement but not the complementary relationship of *'yes' and 'no'*. An understanding of this complementary relationship enables us to understand that seemingly irreconcilable views in general need not be contradictory. This provides a good guiding principle for addressing complex problems for which dichotomous answers of *'yes' or 'no'* do not generally apply. Likewise, we have to consider evolution as multiphase dynamical processes involving Darwinian natural selection and Lamarckian inheritance of acquired character. Disease such as cancer and Alzheimer's Diseases can be viewed as microevolution at the cellular and intracellular level, respectively. This implies the double-edged sword of evolution itself.

In the present symposium, we will discuss the topic of "What is Evolution?" from many perspectives from molecules to human beings. Through the extensive discussion of this symposium, we hope to have advanced understanding of evolution, which must be real *evolution* of evolutionary concept.

Oct. 16 (Fri.) 9:30-10:20

A Darwinian Approach to Phantom Perceptions

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It is proposed that expression of neural plasticity is a form of adaptation based on natural selection, where cells or cell groups deprived of sensory input actively go and look for information in order to survive by means of dendritic sprouting. The Darwinian model of brain plasticity can explain some aspects of phantom percepts induced by deprivation of input which was not well explained by classical plasticity without contradicting pertinent data from the neurophysiological, neuroanatomical, functional neuroimaging, and clinical literature. Applying the concept of Darwinian plasticity to phantom pain and phantom sound (tinnitus)permits the development of new treatments for these symptoms. This can be achieved by supplying the missing information via electrical and magnetic stimulation of the auditory and the somatosensory cortices.
The clinical results as well as recent basic neuroscience data suggest that Darwinian and classical plasticity might co-exist and interact in the development of phantom percepts.

Oct. 16 (Fri.) 10:40-11:00

Measurement of Individuality in the Thinking Patterns

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****Elegaphy***

What are the similarities and differences in ways of thought and perceptions between individuals? In this light we classified them into several main groups, such as “image-thinking type” and “verbal-thinking type,” according to their answers to a questionnaire designed to identify patterns of thinking. Each group was provided with the same thinking tasks, while their brain activities were monitored with the SQUID. We deduced from our findings certain patterns, traits and tendencies, as well as individual characteristics.