

## 【Grant-in-Aid for Scientific Research(S)】

### Integrated Science and Innovative Science (Comprehensive fields)



## Title of Project : Minds Underwater, Minds in the Forest Comparative Cognitive Science of Primates and Cetaceans

Masaki Tomonaga

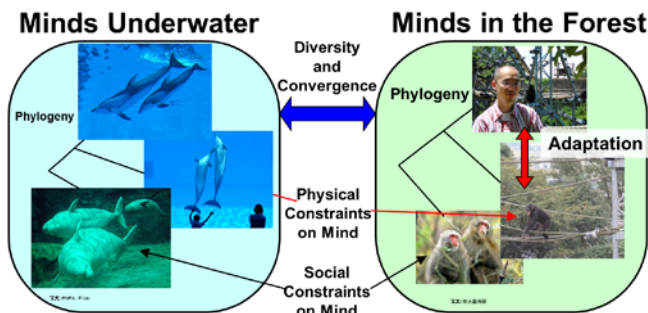
( Kyoto University, Primate Research Institute, Associate Professor )

Research Area : Comprehensive Fields

Keyword : Primates, Cetaceans, Evolution of Mind, Body, Comparative Cognitive Science

#### 【Purpose and Background of the Research】

What is human unique in our mind? To answer this issue, we need to dissociate the properties shared with the other animals from our mind. We investigate the evolutionary factors emerging these two faces of mind, that is, uniqueness and commonality, from the perspective of comparative cognitive science. Nonhuman primates are frequently used for the study of comparative cognition. In addition to them, however, our project also focuses on the other group of mammals, Cetaceans, who adapted to the completely different environments from ours, the sea. Unique minds have evolved in each species under the constraints of phylogeny and adaptation. Our goal is to clarify the similarities and differences of these “Minds Underwater” and “Minds in the Forest”. We also pay much attention to developmental perspective. Our project tries to understand “What is Human?” from the broader and hierarchical perspectives of comparative cognitive science.



#### 【Research Methods】

We mainly study the two groups of animals. One is Primates, such as chimpanzees (including humans) and the other is Cetaceans, especially dolphins. Studying the effects of phylogenetic relations and adaptation on the cognitive abilities in these two groups concurrently enables us to promote the projects in the more dynamical manner. Experimental and observational studies with Primates are mainly conducted in the Primate Research Institute, Kyoto University, and the collaborating zoos. Studies with captive

dolphins are mainly conducted in collaborative aquariums, such as Port of Nagoya Public Aquarium, and Kujukushima Aquarium. We also investigate the behavior and cognition of wild dolphins. Research Topics are as follows. 1) Behavioral synchronization and social cognition, 2) Imitative and observational learning, 3) individual recognition, 4) Understanding of the physical causality, 5) Physical constraints on object manipulation and tool use, 6) Social intelligence and its development, 7) Physical and social cognition in wild dolphins.

#### 【Expected Research Achievements and Scientific Significance】

This is the first big project of cognitive studies of dolphins in Japan. Furthermore, it is quite unique that the principal investigators are the Primate researchers. We will provide new perspective to the cetacean studies and promote the breakthrough. At the same time, cetacean researchers in our team will also provide new perspectives to the primate studies. These bi-directional promotions will establish the long-lasting bases of comparative studies of dolphin cognition and behavior in Japan. Our results will further provide the good opportunities for the people to pay much more attention to the conservation of these two minds underwater and in the forest.

#### 【Publications Relevant to the Project】

Kaneko T, Tomonaga, M (2011) The perception of self-agency in chimpanzees (*Pan troglodytes*). *Proc B Roy Soc* doi:10.1098/rspb.2011.0611

Tomonaga et al. (2010). Bottlenose dolphins' (*Tursiops truncatus*) theory of mind as demonstrated by responses to their trainers' attentional states. *Int J Comp Psychol* 23: 386-400.

【Term of Project】 FY2011-2015

【Budget Allocation】 162,000 Thousand Yen

#### 【Homepage Address and Other Contact Information】

<http://www.pri.kyoto-u.ac.jp/koudou-shinkei/hikou/staff/tomonaga/indexj.html>  
tomonaga@pri.kyoto-u.ac.jp