

# Cognitive Neurobiology

## 1. Staffs (April, 2009)

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## 2. Education

### 1. Fundamentals of sensory organ and nervous system

Somatosensory, visual, auditory and chemical senses are basic sensory modalities of humans. Stimuli arising from the environment are detected by sensory organs, and processed and transmitted through sensory nervous system. Finally, sensory information is conveyed to the brain. The objects of this study are understanding the anatomy of peripheral nervous system and the physiology of sensory processing in subcortical nervous system.

### 2. Practical course for physiology

This course contains four experiments, 1) electrophysiology of somatosensory cortex, 2) reflexes of eye movements, 3) electromyograms of masticatory muscles, 4) autonomic control and automaticity of the heart. The objects of this practical course is to understand the basic physiological mechanism of human adaptive behaviour, the fundamentals of experimental techniques and how to present the results of experiments.

### 3. Central nervous system

Understanding the environment and planning appropriate actions are major functions of human brain. The main objects of this study are to understand the mechanisms of sensation and integration of information processing in the brain.

## 3. Research Subjects

- 1) Brain mechanisms of symbol manipulation.
- 2) Neuronal mechanisms of tactile recognition.
- 3) Neuronal mechanisms of multimodal processing in the primary auditory cortex.

## 4. Publications

### Original Article

1. Obayashi, S., Nagai, Y., Suhara, T., Okauchi, T., Inaji, M., Iriki, A., & Maeda, J.. Monkey brain activity modulated by reward preferences: A positron emission tomography study. *Neuroscience Research* 64(4) 421-428, 2009
2. Yamazaki, Y., Hashimoto, T., & Iriki, A.. The posterior parietal cortex and non-spatial cognition. *F1000 Biology Reports* 1: doi 10.3410/B1-74, 2009
3. Ojima H, Taoka M, Iriki A. Adaptive changes in firing of primary auditory cortical neurons following illumination shift from light to dark in freely moving guinea pigs. *Cereb Cortex*. Epub ahead, May 22. 2009

### Review Article

### Book