

Cognitive Neurobiology

1. Staffs (April, 2010)

Professor	Masato Taira
Junior Associate Professor	Hisayuki Ojima
Assistant Professor	Narumi Katsuyama
Graduate Students	Eriko Tachi

2. Education

1. Lectures of unit "Nerve and Sense"

A series of lectures on the conduction · transmission of neuronal excitation, somatic sensation, vision, gustation, olfaction, audition, and equilibratory sense will be taught. Basic mechanisms of the nervous system and the mechanisms of sensation and perception will be learned.

2. Lectures of unit "Motor System"

A series of lectures on the mechanisms of muscle contraction and its regulation and the related reflexes will be taught. Basic structure of the skeletal muscle and the physiological mechanism of its contraction, and deep sensation and skeletal muscular reflexes will be learned.

3. Lectures of unit "Central Nervous System"

A series of lectures on the behavior, emotion, sleep and higher brain function will be taught. Functions of the central nervous system will be learned.

4. Lectures of unit "Biologoy of Mastication and Deglutition"

A series of lectures on the neural mechanisms of mastication and deglutition will be taught. Regulatory mechanisms of the mastication system will be learned.

5. Lecture on unit "Eating, Digestion, and Absorption"

A series of lectures on the mechanisms of salivation and the motility · digestion · absorption of digestive organs will be taught. Functions of a set of digestive organs starting with the oral cavity will be learned.

6. Unit of "Practice in Physiological Functions"

The purpose of the practice is to learn about the physiological mechanisms underlying the normal functions of human body through experiments. The goal is to master the basic experimental procedures, and to experience the capturing and analysing data in order to draw conclusions.

3. Research Subjects

1. Neural Mechanisms of control of motor behavior.

Research is aimed at understanding the brain mechanisms of execution and control of the motion and behavior of animals and human.

2. Neuronal mechanisms for perception and cognition.

Research is aimed at understanding the brain mechanisms of perception and cognition of objects through vision and tactile sense of animals and human.

3. Processing of natural sounds in auditory cortex

Research is aimed at understanding the brain mechanisms of hearing and vocalization of animals.

4. Publications

Original Article

1. Katsuyama N, Yamashita A, Sawada K, Naganuma T, Sakata H, Taira M: Functional and histological properties of caudal intraparietal area of macaque monkey., *Neuroscience*, 167:1-10, 2010
2. Katsuyama N, Usui N, Nose I, Taira M: Perception of object motion in three-dimensional space induced by cast shadows. *Neuroimage*, Epub 2010 Aug 6.
3. Katsuyama N, Imamura K, Onoe H, Tanaka HK, Onoe K, Tsukada H, Watanabe Y: Cortical activation during color discrimination task in macaques as revealed by positron emission tomography. *Neurosci Lett.*, 484:168-173., 2010
4. 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*, 20:339-351, 2010
5. Sato N, Sakata H, Tanaka YL, Taira M: Context-dependent place-selective responses of the neurons in the medial parietal region of macaque monkeys, *Cereb Cortex*, 20:846-858, 2010

6. Yamashita A, Fuchs E, Taira M, Hayashi M: Amyloid beta ($A\beta$) protein- and amyloid precursor protein (APP)-immunoreactive structures in the brains of aged tree shrews, *Curr Aging Sci.*, 3:230-238, 2010

Book

1. Ojima H, Rouiller EM : Auditory cortical projections to the Medial geniculate body (pp.171-188). In *The Auditory Cortex*. Edt. Winer JA, Schreiner CE. Springer. Dec 30. 2010.
2. Taira Masato, Katsuki Nakamura (translation supervised): *Physiology of Behavior*, Carlson NR. 3th ed. Maruzen. 2010