

Japan-US Brain Research Cooperative Program
The Group Joint Study Report [field: emotionality & memory]

1. The Representative of Group Joint Study:

Affiliation/ Title/ Name

The University of Tokyo / Professor /Yoshitaka Oka

2. The Project Title:

Cell physiological studies on the peptidergic neuromodulation of the olfactory system

3. Japanese Investigator's Name, Title, Affiliation and Phone Number:

Chief:

Yoshitaka Oka, Professor, The University of Tokyo, Tel: 03-5841-4438

Collaborator:

Yasuhisa Akazome, Assistant Professor, The University of Tokyo, Tel:03-5841-4436

Hideki Abe, Assistant Professor, The University of Tokyo, Tel: 03-5841-4438

Takafumi Kawai, Graduate Student, The University of Tokyo, Tel: 03-5841-4438

4. U.S. Investigator's Name, Title, and Affiliation:

Chief:

Heather Eisthen, Associate Professor, Michigan State University

Collaborator:

Gianluca Polese, Research Associate, Michigan State University

5. The Term of Research: From Y.2006 M.4 D.1 To Y.2009 M.3 D.31 (3 Years)

6. The Abstract, the Result and the Significance of Research(300 Words):

Dr. Oka's lab has been one of the leading research groups studying the GnRH peptidergic nerve system, and they originally proposed the now widely-accepted idea that the terminal nerve GnRH (TN-GnRH) system is a neuromodulatory system. In parallel, Dr. Eisthen's group has been publishing pioneering studies on the neuromodulatory effects of TN-derived peptides (GnRH and NPY-like peptides) on odorant responses and voltage-gated ion channels in olfactory receptor neurons. Because the two groups had common scientific interests and complementary areas of expertise, we began a collaborative project to examine the effects of GnRH peptidergic neuromodulation in a more realistic and natural context. The US team visited the Japanese team for two weeks in May 2005 and performed preliminary experiments in which we successfully stimulated the TN in goldfish and examined the effects on odorant responses. The US team member, Dr. Gianluca Polese, visited Japan for two weeks in August 2006 to do patch clamp recording and single-cell RT-PCR studies of the goldfish olfactory receptor neurons. Dr. Oka visited Michigan State University in October 2007 to discuss plans on the collaborative work with the US team. The US team member, Dr. Heather Eisthen visited Japan in March 2008 and 2009, and stayed for a month each year to do collaborative work with Dr. Akazome on the molecular cloning of NPY and GnRH receptors in the axolotl, in which Dr. Eisthen has already found neuromodulatory effects of NPY and GnRH on the olfactory responses of the olfactory epithelium. In November 2008, Dr. Abe and Mr. Kawai stayed in the Michigan State University to do collaborative work on the neuromodulatory effects of GnRH peptides on the olfactory responses of the goldfish olfactory epithelium. All of these collaborative studies worked very well and are beginning to form the bases for further future collaborations.

7. The Others (Other Comments):

None