Form 2-4-2

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

1. The Representative of Group Joint Study:
Affiliation/ Title/ Name

Dept of Psychobiology, Tohoku University Graduate School of Medicine /Professor/Ichiro Sora

Molecular Neurobiology, National Institute on Drug Abuse/Intramural Research Program / Branch Chief/ George R Uhl

2. The Project Title:

Molecular genetics of substance abuse
with human genome scanning and transgenic animal models

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

Chief : Ichiro Sora, Professor, Dept of Psychobiology,
Tohoku University Graduate School of Medicine, +81-22-717-7808
Collaborator : Yohtaro Numachi, Associate Professor
Collaborator; Hideaki Kobayashi, Research Fellow
Collaborator; Arihisa Ohara, Graduate student, Doctor's Course of Medical
Collaborator; Hiroshi Komatsu, Graduate student, Doctor's Course of Medical
Collaborator's Affiliation and Phone Number are same as Chief's.

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

Chief : George R Uhl, Branch Chief, Molecular Neurobiology,
National Institute on Drug Abuse/Intramural Research Program,
National Institutes of Health, +1-410-550-2843 ext146
Collaborator : F. Scott Hall, Senior Scientist, Molecular Neurobiology,
National Institute on Drug Abuse/Intramural Research Program,
National Institutes of Health, +1-410-550-2843 ext147

5. The Term of Research: From 2005, April 1 To 2007, March 31 (3 Years)

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

Japanese investigators (Chief, Ichiro Sora) and United States investigators (Chief, Dr. George R Uhl) have studied the group joint research for molecular mechanisms of substance abuse using the transgenic animal models and human genetic analysis. The rewarding effects of several drugs can be eliminated by genetic deletion of a single gene that encodes a single drug target. Opioid reward was eliminated in μ opiate receptor gene knockouts. However, psychostimulants reward could not be eliminated by knockout of any of the three major molecular targets: the

plasma membrane transporters for dopamine (DAT), serotonin (SERT), and norepinephrine (NET).

Ichiro Sora organized multi-institutional joint research project, Japanese Genetics Initiative for Drug Abuse (JGIDA), and studied the association between psychostimulant dependence and candidate genes. Genome-wide association (GWA) can elucidate molecular genetic bases for human individual differences in complex phenotypes that include vulnerability to addiction. Dr. Uhl at NIH and Ichiro Sora identified the candidate gene loci for substance abuse with association-based genome scanning method using DNA microarray in Japanese psychostimulant dependence patient collected by JGIDA.

7. The Others (Other Comments):

Not particular