

Takato HIRANITA

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Curriculum Vitae

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EDUCATION

Graduate School of Pharmaceutical Sciences, Kyushu University, Fukuoka, Japan
Degree: Ph.D. (supervisors: Drs. Tsuneyuki Yamamoto and Kazuhide Inoue) March 2007
Department: Pharmacology (Pharmaceutical Sciences)
Dissertation: "Roles of nicotinic acetylcholinergic transmission in relapse to methamphetamine-seeking behavior"

Graduate School of Pharmaceutical Sciences, Kyushu University, Fukuoka, Japan
Degree: M.S. (supervisor: Dr. Tsuneyuki Yamamoto) March 2004
Department: Pharmacology (Pharmaceutical Sciences)
Thesis: "Nicotine attenuates relapse to methamphetamine-seeking behavior"

Japanese Pharmacist License April 2002

Kyushu University, Fukuoka, Japan
Degree: B.S. (supervisor: Dr. Osamu Shibata) March 2002
Department: Pharmaceutical Sciences

Department of Molecular Bioformatics, Graduate School of Pharmaceutical Sciences, Kyushu University
Research internship (supervisor: Dr. Osamu Shibata) April 2001 - March 2002
Thesis: "Miscibility behavior of dipalmitoylphosphatidylcholine with a single-chain partially fluorinated amphiphile in Langmuir monolayers"

Department of Pharmacy, Kyushu University Hospital, Fukuoka, Japan
Summer interns (supervisor: Dr. Ryozo Oishi) July 2001

RESEARCH EXPERIENCE [and Summary of accomplishments and job responsibilities (see bold)]

Current Position:

A. Staff Fellow; Division of Neurotoxicology at NCTR, U.S. FDA, AR, April 2017 – present [supervisors: Drs. Merle G. Paule (- December 2017) and Sherry Ferguson (January 2018 - present)].

B. Visiting Scientist; Division of Neurotoxicology at NCTR, U.S. FDA, AR, August 2013 – March 2017 (supervisor: Dr. Merle G. Paule).

- 1) Tobacco product use is thought to primarily result from the reinforcing effects of *S*(-)-nicotine, the main constituent of tobacco products. The FDA's Center for Tobacco Products has been collecting scientific evidence to establish a list of the harmful and potentially harmful constituents (HPHCs) in tobacco products and smoke. Further, the reinforcing effects of most non-nicotine tobacco product constituents not listed as HPHCs are largely unknown. My research is to characterize the neurochemical effects of non-nicotine tobacco

product constituents by themselves and their ability to alter the neurochemical effects of *S(-)*-nicotine using *in vivo* brain microdialysis procedures to monitor dopamine (DA) levels in the shell of the nucleus accumbens, a brain region primarily responsible for the reinforcing effects of stimulants, in naïve rats. Locomotor activity is measured concurrently. As with drug self-administration procedures, intravenous route of administration is employed.

I have set up a behavioral and neurochemical pharmacology lab by writing a research project and NCTR animal protocol, installing equipment and instruments, hiring two research assistants with a PhD degree in neuroscience, supervising the assistants and writing a research report. I have been assessing abuse potential of various compounds using *in vivo* microdialysis techniques. Also I reviewed various research protocols and abstracts in preclinical safety/neurotoxicology.

- 2) **Based on my experience of testing cocaine self-administration in squirrel monkeys, I, as a co-investigator, functioned as a research consultant for establishment of *S(-)*-nicotine self-administration procedures using squirrel monkeys.** We are characterizing the size of nicotine dose reductions that will result in a decrease or cessation of nicotine self-administration and changes in patterns of responding for nicotine under a model nicotine reduction policy (i.e., reduction of nicotine levels over time). We are studying the abuse liability of several non-nicotine tobacco product constituents individually and in combination with nicotine. **In addition, the pharmacokinetics of self-administered nicotine and associated neurobiological changes (detected via PET neuroimaging using a DA D2-like receptor antagonist [¹⁸F]fallypride) that accompany nicotine self-administration is being characterized. For the study, I functioned as a research consultant for interpretation of data from the PET imaging.**
- 3) There continue to be increases in the non-medical use of a number of novel ‘designer’ [e.g. synthetic cannabinoids and cathinone analogues] and prescription drugs, and forensic reports have implicated the non-medical use of such chemical entities as a primary cause of death in overdose victims. However, many of these new chemical entities are not regulated. At present, the abuse/reinforcing and toxic potential of the majority of these chemical entities remains unknown. Thus, there is a need to pharmacologically characterize and assess the abuse potential of compounds that the FDA does and might regulate. Due to request from the Drug Enforcement Administration (DEA), I as a PI, am doing pharmacological characterization and abuse potential assessment of various compounds using complementary and pharmacologically-appropriate rodent models.

B. Adjunct Basic Science Associate Professor; Department of Pharmacology and Toxicology, University of Arkansas for Medical Sciences College of Medicine (UAMS), Little Rock AR, April 2016 – present

- 1) I am collaborating with Dr. William Fantegrossi, Professor at UAMS, to pharmacologically characterize and assess the abuse potential of various novel compounds.

Research Associate; Department of Psychology and Neuroscience, Center for Neuroscience, University of Colorado at Boulder, CO, April 2012 – July 2013 (supervisor: Dr. Linda R. Watkins).

I assessed effects of antagonist at a glial innate immune receptor, toll-like receptor type 4 (TLR4) on the reinforcing effects of cocaine and the opioid receptor agonist remifentanyl, and the discriminative-stimulus effects of cocaine. We demonstrated that (+)-naloxone, the TLR4 antagonist, shifted down a dose-effect curve of remifentanyl self administration. In contrast, the opioid receptor antagonists (-)-naloxone and (-)-naltrexone both dose-dependently shifted to the right the remifentanyl dose-effect curve. The present results indicate that the reinforcing effects of mu opioid receptor agonists might result from an activation of the classical mu opioid receptors as well as the novel glial innate immune TLR4s. However, the TLR4-mediated mechanism underlying the reinforcing effects of mu opioid receptor agonists appears to be pharmacologically distinct from the mu opioid receptors. Nonetheless, the present results might suggest a development of the TLR4 antagonists as novel pharmacotherapies to treat opioid abuse. The part of the present study has been published (Hutchinson et al., 2012). On the other hand, a subsequent study demonstrated that (+)-naltrexone, the other TLR4 antagonist, was also more potent in decreasing the maximal effects of cocaine self-administration than in decreasing food-maintained responding. Thus, these results support the development of TLR4 antagonists as medications for stimulant and opioid abuse (Northcutt et al., 2014).

Postdoctoral Fellow; National Institute on Drug Abuse (NIDA), National Institutes of Health (NIH), March 2007 – March 2012 (supervisor: Dr. Jonathan L. Katz).

Studies included efforts aimed at the development of a novel anti-cocaine pharmacotherapy:

- 1) I assessed effects of newly synthesized benztrapine analogues on cocaine self-administration in rats and squirrel monkeys. These studies showed that some of benztrapine analogues selectively antagonized self-administration of cocaine or *d*-methamphetamine over food-maintained behavior and that those analogues by themselves failed to maintain rates of responding above vehicle levels (Hiranita *et al.*, 2009; 2014a). This finding suggests development of benztrapine analogues as medications for cocaine abuse.

I established, implemented and managed very efficient screening methods for novel compounds utilizing *in vivo* pre-clinical drug abuse models using rats in order to expedite their assessment of abuse potential and preclinical efficacy as anti-abuse medications. The drug self-administration procedures are performed in a within-session, within-subject, five-component design that allows assessment of five doses of compounds in a single session (Hiranita *et al.*, 2009). The procedures worked well on various drugs of abuse across pharmacological classes (cocaine as an indirect DA agonist, heroin as a mu-opioid agonist, and ketamine as a non-competitive NMDA glutamate antagonist; Hiranita *et al.*, 2014a). Using the efficient procedures, I have screened more than 50 candidate compounds under in- and out-sourced scientific collaborations and discovered 12 compounds as a cocaine antagonist.

- 2) I compared patterns of cocaine-like discriminative-stimulus effects and stimulation of extracellular DA levels produced by typical and atypical DA uptake inhibitors in rats. In order to explore what predicts whether a DA uptake inhibitor is or is not cocaine-like, I employed drug discrimination and brain microdialysis procedures to compare patterns of cocaine-like discriminative-stimulus effects and stimulation of extracellular DA levels produced by typical DA uptake inhibitors (cocaine, WIN 35,428 and methylphenidate) and benztrapine analogs (AHN 1-005, AHN 2-005 and JHW 007) in rats. Interestingly, the data suggested a markedly distinct pattern of respective effects of typical and atypical DA uptake inhibitors. This study shed light on understanding what constitutes a cocaine-antagonist action of the benztrapine analogs (Kohut *et al.*, 2014).

I expanded my neurochemical and pharmacological skills by conducting studies using *in vivo* microdialysis techniques (with Dr. Gianluigi Tanda) and *in vivo* radioligand binding assays (with Dr. Katz). Using the expanded skill sets, I integrated various data from three procedures (drug self-administration, *in vivo* microdialysis, and *in vivo* radioligand binding) and demonstrated the importance of pharmacodynamic and pharmacokinetic properties to predict abuse potential and preclinical efficacy of novel compounds (Hiranita *et al.*, 2014b).

- 3) I investigated a role of intracellular mobile chaperone proteins, σ receptors (σ Rs) in cocaine self-administration and discrimination, focusing on the interaction between DA transporter and σ Rs. These studies showed that: a) σ R agonists can enhance the reinforcing effects of cocaine; b) the agonists can produce reinforcing effect when substituted for cocaine (Hiranita *et al.*, 2010); c) pretreatments with σ R antagonists are without effects on self-administration of cocaine or *d*-methamphetamine; however, combined treatment with the σ R antagonists and DA uptake inhibitors blocks self administration of cocaine or *d*-methamphetamine (Hiranita *et al.*, 2011; 2014a). These findings suggest a unique interaction between DA transporter and σ Rs. The published study (Hiranita *et al.*, 2011) was chosen as the March 2012 Featured Article on the NIDA-IRP website (<http://irp.drugabuse.gov/hotpaperArchive.php>), indicative of substantial interest in a research field for drug abuse. Further, the published study (Hiranita *et al.*, 2014a) was chosen as a hot paper for *J Pharmacol Exp Ther*.
- 4) I assessed the reinforcing effects of the σ R agonists in drug naïve rats. In contrast to subjects with a history of cocaine self administration, the reinforcing effects of the σ R agonists did not occur in naïve subjects and were distinct from those of cocaine. For example, cocaine self administration was dose-dependently antagonized by the selective DA receptor antagonists as expected. In contrast, none of the DA receptor antagonists affected the self administration of the σ R agonists (DTG and PRE-084). These results suggest a unique reinforcement mechanism that is DA-independent. The lack of the reinforcing effects of the selective σ 1R agonists in naïve subjects were reproduced with (+)-pentazocine. However, the selective σ 1R agonists PRE-084 and (+)-pentazocine were reinforcing after acquisition of cocaine self administration. Thus, these studies on the σ R agonists suggest that cocaine can induce a DA-independent reinforcing mechanism that is pharmacologically-mediated by a non-dopaminergic pathway(s). The published study (Hiranita *et al.*, 2010) was chosen as the July

2010 “Hot” paper on the NIDA-IRP website (<http://irp.drugabuse.gov/hotpaperArchive.php>), also indicative of substantial interest in a research field for drug abuse. I believe that these studies will shed light on understanding the mechanisms underlying the intractability of stimulant abuse and may lead to better medical treatments for stimulant abuse.

- 5) I assessed the effects of a variety of test compounds such as DA uptake inhibitors and σ R ligands in rats trained to discriminate injections of cocaine from saline. This study indicated the lack of cocaine-like discriminative-stimulus effects of the σ R agonists DTG and PRE-084 in rats regardless of their route of administration (i.p., s.c. and i.v.) (Hiranita *et al.*, 2011;22(5-6):525-30); however, the agonists can enhance cocaine’s discriminative effects, and that enhancement is not mediated by σ Rs. These findings also suggest a DA-independent reinforcing mechanism of the σ R agonists.
- 6) I assessed abuse liability of the DA uptake inhibitors RTI-371 and RTI-336 and their effects on cocaine self administration. RTI compounds are developing as medications for cocaine abuse. The present study is assessing abuse liability of RTI-371 and RTI-336 and their effects on cocaine self administration. The data suggest that RTI-371: a) have little if any liability of their abuse, and b) are more potent in decreasing cocaine self-administration than in decreasing food-maintained behavior. In contrast, RTI-336, an enantiomer of RTI-371, a) has the abuse liability, and b) potentiates the reinforcing effects of cocaine (Hiranita *et al.*, 2014b). The published study (Hiranita *et al.*, 2014b) was chosen as the November 2014 “Hot” paper on the NIDA-IRP website, also indicative of substantial interest in a research field for drug abuse.
- 7) Modafinil is FDA-approved for the treatment of narcolepsy and sleep-related disorders. It has also been tested off-label as cognitive enhancer. Several reports show its non-medical use in college populations, just like other psychostimulants, to improve cognitive abilities and get more successful grades, raising concerns about its abuse liability. Clinical results suggest efficacy of modafinil in the treatment of stimulant abuse. However, the precise mechanisms of modafinil’s effects are not fully understood. Therefore, I assessed abuse liability of modafinil and the effects on cocaine self administration. Despite lack of the reinforcing effects of modafinil by itself, the data suggested a capacity of modafinil to enhance the reinforcing effects of cocaine.
- 8) I, as a co-investigator, determined the role of specific receptors in food reinforcement mechanisms with behavioral economic mathematical models in genetically engineered animals. I have focused on DA receptor subtypes (Soto *et al.*, 2015) and cannabinoid CB1 receptors.
- 9) The reinforcing effects of amphetamines, substrates for the DA transporter (DAT), and cocaine, a DAT inhibitor, have in common a capacity to increase extracellular DA levels in terminal regions of mesolimbic dopaminergic neurons. Amphetamines, after concentration in cytoplasm via DAT, are thought to release DA into synapse cleft through actions at the vesicular monoamine transporter (VMAT). In efforts to discover novel potent and selective ligands for VMAT2, a series of enantiomeric 10-substituted-tetrabenazine (TBZ) derivatives was designed, synthesized, and screened for displacement of radioligands bound to VMAT2 (labelled with [3 H]dihydro-TBZ) and DAT ([3 H]WIN 35,428). The most potent ($K_i=8.77$ nM) and selective (no displacement up to 0.1 mM with [3 H]WIN 35,428) compound [(+)CYY477-1] was studied for its behavioral effects alone and in combination with *d*-methamphetamine and cocaine. (+)CYY477-1 was not self administered above saline levels. Pretreatment with (+)CYY477-1 dose-dependently decreased the maximal self administration of *d*-methamphetamine and *d*-amphetamine but not cocaine. Further, the VMAT2 inhibitor, dihydro-TBZ (0.032 mg/kg, ip), also decreased maximal self administration of *d*-methamphetamine, however with less apparent potency than (+)CYY477-1. Neither (+)CYY477-1 nor dihydro-TBZ had effects on food-reinforced behavior at doses that decreased drug self administration. The present results suggest distinct effects of VMAT and DAT inhibitors on the reinforcing effects of substrates or DAT inhibitors. Further, the VMAT may serve as a specific target for the development of treatments for amphetamine abuse.

Doctoral Research, Kyushu University, April 2004 - March 2007

I studied the role of acetylcholine receptors in reinstatement of methamphetamine-seeking behavior using a reinstatement model in rats trained to self-administer methamphetamine. I demonstrated the possibility of the nicotine acetylcholine receptor agonists, the cannabinoid CB1 receptor antagonists, the radical scavengers and the corticotropin-releasing factor receptor antagonists, as anti-relapse agents. In addition, I demonstrated interactions between cannabinoid CB1 and $\alpha_4\beta_2$ nicotinic acetylcholine receptors in reinstatement of methamphetamine-seeking behavior. Furthermore, I identified brain regions responsible for reinstatement of

methamphetamine-seeking behavior. A part of the study was chosen as a Poster Presentation Award in The College International Neuropsychopharmacology Asia Pacific Regional Meeting (Pattaya, Thailand, 2006, March), and a travel award for the College on Problems of Drug Dependence 68th Annual Meeting, was granted by the Japanese Forum on Nicotine and Drug Dependence Studies (Scottsdale, Arizona, 2006, June).

I established a reinstatement model of methamphetamine self-administration in rats. My focus was on the discovery of a medication to prevent relapse to methamphetamine abuse, with primary attention on targets fitting well to the mission of DNS, such as a cognitive enhancer (an acetylcholinesterase inhibitor donepezil: Hiranita *et al.*, 2006). Further, I found that an anti-stroke compound edaravone can decrease methamphetamine self-administration. In addition, I studied brain regions responsible for reinstatement of methamphetamine-seeking behavior by using intracranial microinjection, histological, and microscopic techniques. Finally, I learned several behavioral procedures for cognition (object or spatial recognition) and anxiety (plus maze task).

Masters Research, Kyushu University, April 2002 - March 2004.

I established reinstatement model of methamphetamine-seeking behavior in rats and demonstrated the possibility of nicotine as anti-craving agents.

Internship at Kyushu University, April 2001 - March 2002

Lipid rafts have been modeled by a Langmuir monolayer biomembrane model where a one-molecule thick layer of an insoluble organic material spread onto an aqueous subphase. I studied miscibility behavior of dipalmitoylphosphatidylcholine with a single-chain partially fluorinated amphiphile in Langmuir monolayers. The studies indicated the use of phospholipid preparations as lung surfactants.

I learned various pharmaceutical sciences including medicinal chemistry, biophysics, biology, molecular sciences, genetics, pharmacology, physiology, pharmacodynamics, pharmacokinetics, toxicology, and pharmacy laws in Pharmaceutical Sciences at Kyushu University. I then earned a pharmacist license in Japan.

PUBLICATIONS (Publications below can be found in PubMed, Scopus Citation Overview or Researchgate: https://www.researchgate.net/profile/Takato_Hiranita/?ev=hdr_xprf)

- My publications have been cited by 1,400 scientific articles as of 3/14/2018 (<http://scholar.google.com/citations?user=nAZFhaUAAAAJ&hl=en>)

- 1) **Hiranita T**, Goodwin AK, Orru M, Thorn DA, and Paule MG. Yields of Various Cigarette Product Constituents in Mainstream Smoke. *SciFed Journal of Addiction Therapy*. Accepted
- 2) Naylor JE, **Hiranita T**, Matazel KS, Zhang X, Paule MG, and Goodwin AK. Positron emission tomography Imaging of Nicotine-Induced Dopamine Release in Squirrel Monkeys using with [18F]Fallypride PET. *Drug Alcohol Depend.* 2017;179:254-259
- 3) **Hiranita T**, Hong WC, Kopajtic TA, and Katz JL. Sigma Receptor Effects of N-Substituted Benzotropine Analogs: Implications for Antagonism of Cocaine Self Administration. *J Pharmacol Exp Ther*, 2017: 362(1):2-13
- 4) Hong WC, Yano H, **Hiranita T**, McCurdy CR, Su T-P, Amara SG, and Katz JL. Modulation of Dopamine Transporter Conformation and Cocaine Binding by Sigma-1 Receptors Potentiates Cocaine Self Administration in a behavioral model. *J Biol Chem*, 2017: 292(27):11250-11261
- 5) **Hiranita T**. Lack of Effects of Toll-Like Receptor 4 antagonists on the Reinforcing Effects of Cocaine and Remifentanyl. *J Alcohol Drug Depend.* 2016; 4: e135
- 6) **Hiranita T** and Freyberg Z. Importance of Substrate-Coupled Proton Antiport by the Vesicular Monoamine Transporter in the Actions of Amphetamines in Drosophila Brain. *J Alcohol Drug Depend.* 2016; 4: e136
- 7) Katz JL, **Hiranita T**, Hong WC, Job MO, and McCurdy CR. A Role for Sigma receptors in Stimulant Self-administration and Addiction. Felix Kim and Gavril W. Pasternak (eds.) *Sigma Proteins - Molecular Pharmacology in Physiology and Pathophysiology, Handbook of Experimental Pharmacology*. In press.
- 8) **Hiranita T**. DAT Conformation Does Not Predict the Ability of Atypical Dopamine Uptake Inhibitors to Substitute for Cocaine. *J Alcohol Drug Depend.* 2016; 4: e132
- 9) **Hiranita T**. Identification of Antagonists Selective for Sigma Receptor Subtypes that are Active In vivo. *J Alcohol Drug Depend.* 2016; 4: e131

- 10) Tanda G, Mereu M, **Hiranita T**, Quarterman JC, Coggiano M, Katz JL. Lack of Specific Involvement of (+)-Naloxone and (+)-Naltrexone on the Reinforcing and Neurochemical Effects of Cocaine and Opioids. *Neuropsychopharmacology*. 2016;41(11):2772-81
- 11) Katz JL, **Hiranita T**, Kopajtic TA, Mesangeau C, Narayanan S, Abdelazeem AH, and McCurdy CR. Blockade of Cocaine or Sigma Receptor Agonist Self-Administration by Selective Sigma Receptor Subtype-Selective Antagonists. *J Pharmacol Exp Ther*. 2016;358(1):109-24. Impact Factor: 3.972 in 2014.
- 12) **Hiranita T**. Identification of the sigma-2 receptor distinct from the progesterone receptor membrane component 1 (PGRMC1). *J Alcohol Drug Depend*. 2016; 4: e130
- 13) Freyberg Z, Sonders MS, Aguilar JI, **Hiranita T**, Karam CS, Flores J, Pizzo AB, Zhang Y, Farino ZJ, Chen A, Martin CA, Kopajtic TA, Fei H, Hu G, Lin YY, Mosharov EV, McCabe BD, Freyberg R, Wimalasena K, Hsin LW, Sames D, Krantz DE, Katz JL, Sulzer D, Javitch JA. Mechanisms of amphetamine action illuminated through optical monitoring of dopamine synaptic vesicles in *Drosophila* brain. *Nat Commun*. 2016;7:10652. 2014 Impact Factor: 11.470.
- 14) **Hiranita T**. (-)-*Trans*- Δ^9 -Tetrahydrocannabinol-Like Discriminative-Stimulus Effects of Gabapentin in *Cannabis* Users. *J Alcohol Drug Depend*. 2016; 4: e129
- 15) **Hiranita T**. Self Administration of JWH-018, a Synthetic Cannabinoid, in Experimentally Naïve Rats. *J Alcohol Drug Depend*. 2015; 3: e128
- 16) **Hiranita T**. Preclinical Efficacy of Novel Vesicular Monoamine Transporter 2 Inhibitors as Antagonists of d-Methamphetamine Self-Administration in Rats. *J Alcohol Drug Depend*. 2015; 3: e127
- 17) **Hiranita T**. Self Administration of an Endogenous Cannabinoid 2-Arachidonoylglycerol in Experimentally Naïve Rats. *J Alcohol Drug Depend*. 2015; 3: e126
- 18) **Hiranita T**. Cocaine Antagonists; Studies on Cocaine Self-Administration. *J Alcohol Drug Depend*. 2015; 3: e125.
- 19) Katz JL, Hong WC, **Hiranita T**, and Su TP. A Role for σ Rs in Stimulant Self-administration and Addiction. *Behav Pharmacol*. 2016; 27(2-3 Spec Issue):100-15. Impact Factor: 2.148 in 2014.
- 20) **Hiranita T**, and Collins GT. Differential roles for dopamine D1-like and D2-like receptors in mediating the reinforcing effects of cocaine: convergent evidence from pharmacological and genetic studies. *J Alcohol Drug Depend*. 2015; 3: e124
- 21) Soto PL, **Hiranita T**, Xu M, Hursh SR, Grandy DK, Katz JL. Dopamine D₂-Like Receptors and Behavioral Economics of Food Reinforcement. *Neuropsychopharmacology*. 2016;41(4):971-8. Impact Factor: 7.048 in 2014.
- 22) **Hiranita T**, *In Vivo* Significance of *In Vitro* Studies on G-Protein-Coupled Receptor Heteromers, *J Alcohol Drug Depend*. 2015; 3: e120
- 23) **Hiranita T**, Medications Discovery: Importance of Assessment of Drug Self Administration Dose-Effect Curves, *J Alcohol Drug Depend*. 2015; 3: e121
- 24) **Hiranita T**, and Thorn DA. Trace amine-associated receptor type 1 as a target for the development of treatments for stimulant abuse, *J Alcohol Drug Depend*. 2015; 3: e122
- 25) Northcutt AL, Hutchinson MR, Wang X, Baratta MV, **Hiranita T**, Cochran TA, Pomrenze MB, Galer EL, Kopajtic TA, Li CM, Amat J, Larson G, Cooper DC, Huang Y, O'neill CE, Yin H, Zahniser NR, Katz JL, Rice KC, Maier SF, Bachtell RK and Watkins LR (2015) DAT isn't all that: cocaine reward and reinforcement requires Toll Like Receptor 4 signaling. *Mol Psychiatry*. 20(12):1525-37. Impact Factor: 15.147.
- 26) Goodwin AK, **Hiranita T**, and Paule MG. The reinforcing effects of nicotine in human and nonhuman primates: A review of intravenous self-administration evidence and future directions for research. *Nicotine Tab Res*. 17(11):1297-310. 2013 Impact Factor: 2.805.
- 27) Tanda G, Mereu M, **Hiranita T**, Newman AH, and Katz JL. (\pm)-Modafinil potentiates cocaine self-administration but not the effects on DA levels in rodents. *Drug Alcohol Depend*, 2015; 146:e116. Impact Factor: 3.28.
- 28) **Hiranita T**, Wilkinson DS, Hong WC, Zou MF, Kopajtic TA, Soto PL, Lupica CR, Newman AH, Katz JL. 2-isoxazol-3-phenyltropane derivatives of cocaine: molecular and atypical system effects at the dopamine transporter. *J Pharmacol Exp Ther*. 2014;349(2):297-309. Impact Factor: 3.891.
- 29) Kohut SJ, **Hiranita T**, Hong SK, Ebbs AL, Tronci V, Green J, Garcés-Ramírez L, Chun LE, Mereu M, Newman AH, Katz JL, Tanda G. Preference for distinct functional conformations of the dopamine transporter alters the relationship between subjective effects of cocaine and stimulation of mesolimbic dopamine. *Biol Psychiatry*. 2014;76(10):802-9. 2012 Impact Factor: 9.247.

- 30) Soto PL, **Hiranita T**, David G, and Katz JL, Dopamine D2 Receptors and Choice for Response Alternatives Differing in Reinforcement Frequency, *Psychopharmacology*, 2014; 231(16):3169-77. Impact Factor: 4.016.
- 31) **Hiranita T**, Kohut SJ, Soto PL, Tanda G, Kopajtic TA, and Katz JL, Preclinical efficacy of N-substituted benzotropine analogs as antagonists of methamphetamine self-administration in rats. *J Pharmacol Exp Ther*. 2014a; 348:174–191. 2012 Impact Factor: 3.891.
- 32) **Hiranita T**, Soto PL, Tanda G, Kopajtic TA, and Katz JL. Stimulants as specific inducers of dopamine-independent sigma agonist self-administration in rats. *J Pharmacol Exp Ther*. 2013; 347(1):20-9. 2012 Impact Factor: 3.891.
- 33) **Hiranita T**, Mereu M, Soto PL, Tanda G, Katz JL. Self-administration of cocaine induces dopamine-independent self-administration of sigma agonists. *Neuropsychopharmacology*. 2013;38(4):605-15. 2012 Impact Factor: 8.678.
- 34) Li LB, **Hiranita T**, Hayashi S, Newman AH and Katz JL. The stereotypy-inducing effects of N-substituted benzotropine analogs alone and in combination with cocaine do not account for their blockade of cocaine self-administration. *Psychopharmacology (Berl)*. 2013;225:733-742. 2012 Impact Factor: 4.016.
- 35) **Hiranita T**. Role of the σ Rs for Development of Medications. *J Alcohol Drug Depend*. 2013; 2(2): 1000e109
- 36) Hutchinson MR, Northcutt AL, **Hiranita T**, Wang X, Lewis S, Thomas J, van Steeg K, Kopajtic TA, Loram L, Sfregola C, Galer E, Miles NE, Bland ST, Amat J, Rozeske RR, Maslanik T, Chapman T, Strand K, Fleshner M, Bachtell RK, Somogyi AA, Yin H, Katz JL, Rice KC, Maier SF, Watkins LR. Opioid activation of toll-like receptor 4 importantly contributes to drug reinforcement. *J Neurosci*. 32(33):11187-11200. 2012 Impact Factor: 6.908.
- 37) **Hiranita T**, Soto PL, Kohut SJ, Kopajtic TA, Cao J, Newman AH, Tanda G, and Katz JL. Decreases in Cocaine Self Administration with Dual Inhibition of Dopamine Transporter and Sigma Receptors. *J Pharmacol Exp Ther*. 2011;339:662-677. Selected as the March 2012 Featured Article on the NIDA-IRP website. In addition, selected as a highlighted paper for *J Pharmacol Exp Ther*. 2012 Impact Factor: 3.891.
- 38) **Hiranita T**, Soto PL, Tanda G, and Katz JL. Lack of Cocaine-Like Discriminative-Stimulus Effects of σ Receptor Agonists in Rats. *Behav Pharmacol*. 2011;22(5-6):525-30. 2011 Impact Factor: 2.720.
- 39) Katz JL, Su TP, **Hiranita T**, Hayashi T, Tanda G, Kopajtic TA, and Tsai SY. A Role for Sigma Receptors in Stimulant Self Administration and Addiction. *Pharmaceuticals*. 2011; 4:880-914. 2011 Impact Factor: N/A.
- 40) Garcés-Ramírez L, Green JL, **Hiranita T**, Kopajtic KA, Mereu M, Thomas A, McCurdy CR, Katz JL, and Tanda G, Sigma Receptor Agonists: Receptor Binding and Effects on Mesolimbic Dopamine Neurotransmission Assessed by Microdialysis. *Biol Psychiatry*. 2011; 69(3):208-17. 2011 Impact Factor: 8.283.
- 41) **Hiranita T**, Soto PL, Tanda G, and Katz JL. Reinforcing Effects of σ -Receptor Agonists in Rats Trained to Self-Administer Cocaine. *J Pharmacol Exp Ther*. 2010; 332(2):515-24. 2010 Impact Factor: 4.017. Selected as the July 2010 “Hot” paper on the NIDA-IRP website.
- 42) **Hiranita T**, Yamamoto T, and Nawata Y. A tryptamine-derived catecholaminergic enhancer, (-)-1-(benzofuran-2-yl)-2-propylaminopentane [(-)-BPAP], attenuates reinstatement of methamphetamine-seeking behavior in rats. *Neuroscience*. 2009; 165(2):300-12. 2009 Impact Factor: 3.293.
- 43) Nawata Y, **Hiranita T**, and Yamamoto T. A Cannabinoid CB(1) Receptor Antagonist Ameliorates Impairment of Recognition Memory on Withdrawal from MDMA (Ecstasy). *Neuropsychopharmacology*. 2010; 35(2):515-20. 2010 Impact Factor: 6.685.
- 44) Soto PL, **Hiranita T**, and Katz JL. Citalopram enhances cocaine’s subjective effects in rats. *Behav Pharmacol*. 2009; 20 (8):759-762. 2010 Impact Factor: 2.530.
- 45) **Hiranita T**, Soto PL, Newman AH, and Katz JL. Assessment of reinforcing effects of benzotropine analogues and their effects on cocaine self-administration: comparisons with monoamine uptake inhibitors. *J Pharmacol Exp Ther*. 2009;329(2):677-86. 2009 Impact Factor: 4.093.
- 46) **Hiranita T**, Nawata Y, Sakimura K, and Yamamoto T. Methamphetamine-seeking behavior is due to inhibition of nicotinic cholinergic transmission by activation of cannabinoid CB1 receptors. *Neuropharmacology*. 2008;55(8):1300-6. 2008 Impact Factor: 3.383.
- 47) Sakae N, Yamasaki N, Kitaichi K, Fukuda T, Yamada M, Yoshikawa H, **Hiranita T**, Tatsumi Y, Kira J, Yamamoto T, Miyakawa T, and Nakayama KI. Mice lacking the schizophrenia-associated protein FEZ1 manifest hyperactivity, and enhanced responsiveness to psychostimulants. *Hum Mol Genet*. 2008;17(20):3191-203. 2008 Impact Factor: 7.249.

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- 50) **Hiranita T**, Nawata Y, Sakimura K, Anggadiredja K, and Yamamoto T. Suppression of methamphetamine-seeking behavior by nicotinic agonists. *Proc Natl Acad Sci U S A.*, 2006;103(22):8523-7. 2008 Impact Factor: 2.380.
- 51) Nakahara H, Nakamura S, **Hiranita T**, Kawasaki H, Lee S, Sugihara G, and Shibata S. Mode of Interaction of Amphiphilic α -Helical Peptide with Phosphatidylcholines at the Air-Water Interface. *Langmuir.* 2006;22:1182-92. 2008 Impact Factor: 4.097.
- 52) Sakimura K, **Hiranita T**, Miyamoto M, Nagata K, and Yamamoto T. Drug-craving animal models and mechanisms. *Nippon Yakurigaku Zasshi.* 2005;126:24-9. 2005 Impact Factor: N/A.
- 53) Anggadiredja K, Nakamichi M, **Hiranita T**, Tanaka H, Shoyama Y, Watanabe S, and Yamamoto T. Endocannabinoid system modulates relapse to methamphetamine seeking: possible mediation by the arachidonic acid cascade. *Neuropsychopharmacology*, 2004;29:1470-1478. 2008 Impact Factor: 6.835. Cited 100 times as of 05/23/2015.
- 54) Anggadiredja K, Sakimura K, **Hiranita T**, and Yamamoto T. Naltrexone attenuates cue- but not drug-induced methamphetamine seeking: a possible mechanism for the dissociation of primary and secondary reward. *Brain Res.* 2004;1021: 272-276. 2008 Impact Factor: 2.494.
- 55) **Hiranita T**, Anggadiredja K, Fujisaki C, Watanabe S, and Yamamoto T. Nicotine attenuates relapse to methamphetamine-seeking behavior (craving) in rats, In Current Status of Drug Dependence / Abuse Studies, edited by Ali, Nabeshima, Yanagita, *Ann NY Acad Sci.* 2004;1025: 504-507. 2008 Impact Factor: 2.303.
- 56) Yamamoto T, Anggadiredja K, and **Hiranita T**. New perspectives in the studies on endocannabinoid and cannabis: a role for the endocannabinoid-arachidonic acid pathway in drug reward and long-lasting relapse to drug taking. *J Pharmacol Sci.* 2004;96(4): 382-8. 2008 Impact Factor: 2.599.
- 57) **Hiranita T**, Nakamura S, Kawachi M, Courrier HM, Vandamme TF, Krafft MP, and Shibata O. Miscibility behavior of dipalmitoylphosphatidylcholine with a single-chain partially fluorinated amphiphile in Langmuir monolayers. *J Colloid Interface Sci.* 2003;265(1):83-92. 2008 Impact Factor: 2.443.

MANUSCRIPTS UNDER REVIEW

- 1) Hong WC, Wasko MJ, Wilkinson DS, **Hiranita T**, Li L, Hayashi S, Snell DB, Coggiano MA, Madura JD, Surratt CK, and Katz JL. Dopamine Transporter Dynamics of N-Substituted Bzotropine Analogs with Atypical Behavioral Effects. *J Pharmacol Exp Ther*

FUNDING AND FELLOWSHIPS

- 1) Principal investigator (PI)
 - \$1,746,321.05 from the Center for Tobacco Products, March 2014 - September 2015, “C13071/E0753801: Assessment of effects of tobacco product constituents on extracellular dopamine levels in the nucleus accumbens in rats”
 - \$2,423,060.65 from Drug Enforcement Administration, September 2016 - January 31 , 2022 “C16014/E0763601: Pharmacological characterization and abuse potential assessment of various novel compounds in rodents: An NCTR/UAMS Interagency Agreement with DEA”
 - \$3,443,198.51 from the Center for Tobacco Products, August 2017 - March 2018, “C16024 Self administration of nicotine in rats: adolescent exposure and ex vivo confirmation. Project 1”
- 2) Co-investigator

- PI: Dr. Amy K Goodwin from the Center for Tobacco Products, March 2014- February 2017, “C13070/E0753701: Aspects of nicotine self-administration in a nonhuman primate”
 - PI; Dr. Linda R. Watkins, The Fiscal Year 2011 (FY11) Peer Reviewed Medical Research Program (PRMRP) Investigator-Initiated Research Award from the Department of Defense (DoD) office of the Congressionally Directed Medical Research Programs (CDMRP), “Combating Drug Abuse by Targeting Toll-Like Receptor 4 (TLR4),”
- 3) Appointment
- Behavioral Pharmacologist position at Division of Neurotoxicology at National Center for Toxicological Research, Food and Drug Administration (supervisor: Dr. Merle Paule), August 2013- present
 - Research Associate position at Department of Psychology & Neuroscience, The Center for Neuroscience, University of Colorado at Boulder (supervisor: Dr. Linda R. Watkins), April 2012- July 2013
- 4) Fellowship
- Japan Society for the Promotion of Science Research Fellowship for Japanese Biomedical and Behavioral Researchers at NIH (supervisor: Dr. Jonathan L. Katz), March 2009- February 2011 for studies on effects of combinations with typical DA uptake inhibitors and the selective σ R antagonists on cocaine self-administration for a development of dual DAT/ σ Rs inhibitions as a potential combined target approach for medical treatments for cocaine abuse
 - Foreign Visiting Fellow in NIDA, March 2007- March 2012 (supervisor: Dr. Jonathan L. Katz)
 - Research Assistant Award in Kyushu University (supervisor: Dr. Tsuneyuki Yamamoto), April 2005- March 2007

EDITORIAL ACTIVITIES

- 1) Editor
- Editor-in-Chief for Journal of Alcoholism and Drug Dependence (9/3/2015-) (<http://www.esciencecentral.org/journals/editorialboardJALDD.php>) (edited 11 manuscripts)
 - Executive Editor for Gavin Journal of Addiction Research and Therapy (7/11/2016-) (<http://gavinpublishers.com/addiction-editorial-board/>) (edited 1 manuscript)
- 2) Editorial Board
- Frontiers in Neuropharmacology (4/19/2015-) (<http://loop.frontiersin.org/people/230806/overview>)
 - Mental Health and Addiction Research (1/22/2016-) ([http://www.oatext.com/Mental-Health-and-Addiction-Research-MHAR.php#Editorial Board](http://www.oatext.com/Mental-Health-and-Addiction-Research-MHAR.php#Editorial_Board))
 - Gavin Journal of Addiction Research and Therapy (3/25/2016-) (<http://gavinpublishers.org/index.php/addiction-research-and-therapy/about/editorialTeam>)
 - Journal of Addiction Research (12/15/2016-) (<http://www.opastonline.com/editorial-board-jar/>)
- 3) Invited Reviewer:
- Brain, Behavior, and Immunity (one manuscript)
 - Behavioral Pharmacology (one manuscript)
 - Frontiers in Neuroscience (one manuscript)
 - Frontiers in Pharmacology (17 manuscripts)
 - Journal of Drug and Alcohol Research (JDAR) (six manuscripts)
 - Neurotoxicology (one manuscript)
 - Neurotoxicology and Teratology (three manuscripts)
 - Pharmacology, Biochemistry and Behavior (one manuscript)
 - Scientific Reports (one manuscript)
 - The International Journal of Neuropsychopharmacology (one manuscript)
 - The Society for Research on Nicotine and Tobacco (ten abstracts)

- Toxicology in vitro (three manuscripts)

HONORS AND AWARDS

- 1) Invited talk
 1. **Hiranita T**, Sigma1 receptors: induction of dopamine-independent reinforcement and a viable target for medications discovery specific for stimulant abuse, a seminar at University of Arkansas for Medical Sciences (UAMS) (Little Rock, AR, January, 2016, invited by Prof. William Fantegrossi)
 2. **Hiranita T**, Sigma1 receptors: induction of dopamine-independent reinforcement and a viable target for medications discovery specific for stimulant abuse, a seminar at Addictive Substance Project, Tokyo Metropolitan Institute of Medical Science (Tokyo, Japan, July 6, 2015, invited by Drs. Hideko Yamamoto and Kazutaka Ikeda)
 3. **Hiranita T**, Sigma1 receptors: induction of dopamine-independent reinforcement and a viable target for medications discovery specific for stimulant abuse, a seminar at Department of Life Innovation, Graduate School of Pharmaceutical Sciences, Kyushu University (Fukuoka, Japan, June 30, 2015, invited by Pro. Makoto Tsuda)
 4. **Hiranita T**, Sigma1 receptors: induction of dopamine-independent reinforcement and a viable target for medications discovery specific for stimulant abuse, a seminar at Department of Psychology and Behavioral Neuroscience, Hamamatsu University School of Medicine (Hamamatsu, Japan, June 26, 2015, invited by Pro. Daiichiro Nakahara)
 5. **Hiranita T**, and Katz JL, Pharmacology of self-administration of a non-selective sigma1/2 receptor agonist, 1,3-di-o-tolylguanidine (DTG), and its induction of sigma1-mediated reinforcement, in rats ASPET behavioral pharmacology symposium for Sigma Receptors in Health and Disease (chair: Dr. Habibeh Khoshbouei), Annual meeting of Experimental Biology (Boston, MA, March 28 – April 1, 2015)
 6. **Hiranita T**, Combined Dopamine Transporter and σ -Receptor Targeting for Stimulant Abuse Pharmacotherapies. NCTR, U. S. FDA, (Jefferson, AR, January, 2013), invited by Dr. Merle G. Paule
 7. **Hiranita T**, Reinforcing effect of σ receptor agonists in rats. The Alcohol & Drug Abuse Research Center - McLean Hospital - Harvard Medical School (invited by Dr. S. Barak Caine) (Belmont, MA, March, 2010)
 8. **Hiranita T**, Reinstatement of methamphetamine-seeking behavior in rats. Section seminar at Behavioral Neuroscience Branch, IRP/NIDA/NIH (invited by Dr. Yavin Shaham) (Baltimore, MD, December, 2009)
 9. **Hiranita T**, Yamamoto T, Nicotine attenuates methamphetamine-seeking behavior. Psychopharmacological Symposium of Drug and Nicotine (Tokyo, September, 2006), invited by Dr Tomoji Yanagita
- 2) Invited reviewer for grants
 1. NCTR-Internal review of four research proposals for the Office of Minority Health (OMH) Intramural Research Program, Office of the Chief Scientist (OCS) Intramural Grant programs at FDA
- 3) Selected speaker
 1. **Hiranita T**, Self administration of nicotine in rats: adolescent exposure and *in vivo* neuroimaging, CTP/NCTR ANNUAL PLANNING MEETING at NCTR, U. S. FDA (Jefferson, AR, June 6, 2016), selected by Dr. Bradley J. Schnackenberg
 2. **Hiranita T**, Assessment of effects of tobacco product constituents on extracellular dopamine levels in the nucleus accumbens in rats, CTP/NCTR ANNUAL PLANNING MEETING at NCTR, U. S. FDA (Jefferson, AR, April 14, 2015), selected by Dr. Bradley J. Schnackenberg
- 4) Travel Award
 1. The CPDD (College on Problems of Drug Dependence) Travel Award to the NIDA Mini-Convention at the Society for Neuroscience meeting in 2012. **Hiranita T**, Mereu M, Tanda G, Kopajtic TA, Mesangeau C, McCurdy CR and Katz JL, Combined dopamine transporter and σ receptor actions: effects of σ receptor subtype
 2. Fellows Award for Research Excellence, granted by the Scientific Directors of the Winners Institutes and Centers and Office of Research on Women's Health 2010 (<http://archives.drugabuse.gov/DirReports/DirRep909/DirectorReport20.html>), Effects of combinations with typical DA uptake inhibitors and the selective σ R antagonists on cocaine self-administration

3. Young Scientist Travel Award in Experimental Biology 2009 (New Orleans, Louisiana, 2009, April), granted by The American Society for Pharmacology and Experimental Therapeutics (<http://www.aspet.org/awards/aspet/2009-winners/>), **Hiranita T**, Newman AH, and Katz JL, Block of cocaine self-administration by dual inhibition on dopamine transporter and sigma (σ) receptors.
4. The College on Problems of Drug Dependence (CPDD) 68th Annual Meeting (Scottsdale, Arizona, 2006, June), granted by Japanese Forum on Nicotine and Drug Dependence Studies
- 5) Poster Presentation Award. The College International Neuropsychopharmacology (CINP) Asia Pacific Regional Meeting, (Pattaya, Thailand, 2006, March), **Hiranita T**, Sakimura K, Nawata Y, Anggadiredja K, Yamamoto T, Hippocampal nicotinic activators are possible craving killers in methamphetamine dependence.
- 6) Media coverage
 1. Editor's Choice article in issue 17(11) for Goodwin AK, **Hiranita T**, and Paule MG. The reinforcing effects of nicotine in human and nonhuman primates: A review of intravenous self-administration evidence and future directions for research. *Nicotine Tab Res.*
 2. A Figure 2 panel A was chosen as a front cover for *J Pharmacol Exp Ther* (2014; 349) from **Hiranita T**, Wilkinson DS, Hong WC, Zou MF, Kopajtic TA, Soto PL, Lupica CR, Newman AH, and Katz JL, Abuse Liability and Potential of 3-Substituted Phenyltropane Dopamine Uptake Inhibitors as Medications for Cocaine Abuse, *J Pharmacol Exp Ther*, 2014b; 349(2):297-309.
 3. The November 2014 Featured Article on the NIDA-IRP website, **Hiranita T**, Wilkinson DS, Hong WC, Zou MF, Kopajtic TA, Soto PL, Lupica CR, Newman AH, and Katz JL, Abuse Liability and Potential of 3-Substituted Phenyltropane Dopamine Uptake Inhibitors as Medications for Cocaine Abuse, *J Pharmacol Exp Ther*, 2014b; 349(2):297-309.
 4. A highlighted paper for *J Pharmacol Exp Ther*. **Hiranita T**, Kohut SJ, Soto PL, Tanda G, Kopajtic TA, and Katz JL, Preclinical efficacy of N-substituted benzotropine analogs as antagonists of methamphetamine self-administration in rats. *J Pharmacol Exp Ther*. 2014; 348:174–191.
 5. The March 2012 Featured Article on the NIDA-IRP website (<http://irp.drugabuse.gov/hotpaperArchive.php>), **Hiranita T**, Soto PL, Kohut SJ, Kopajtic TA, Cao J, Newman AH, Tanda G, and Katz JL. Decreases in Cocaine Self Administration with Dual Inhibition of Dopamine Transporter and Sigma Receptors. *J Pharmacol Exp Ther*. 2011;339:662-677.
 6. A highlighted paper for *J Pharmacol Exp Ther*. **Hiranita T**, Soto PL, Kohut SJ, Kopajtic TA, Cao J, Newman AH, Tanda G, and Katz JL. Decreases in Cocaine Self Administration with Dual Inhibition of Dopamine Transporter and Sigma Receptors. *J Pharmacol Exp Ther*. 2011;339:662-677.
 7. The July 2010 “Hot” paper on the NIDA-IRP website (<http://irp.drugabuse.gov/hotpaperArchive.php>), **Hiranita T**, Soto PL, Tanda G, and Katz JL. Reinforcing Effects of σ -Receptor Agonists in Rats Trained to Self-Administer Cocaine. *J Pharmacol Exp Ther*. 2010; 332(2):515-24
 8. A part of my studies was introduced by The University of Mississippi (Ole Miss) as “New Hope for Addicts” (http://pharmacy.olemiss.edu/alumni/enewsletters/2013/february/feb_addicts.html)

ORAL PRESENTATIONS

- 1) **Hiranita T**, Janowsky A, Eshleman AJ, Fukuda S, Urquhart K, Prioleau C, Bale AS, Tella SR, Paule MG and Fantegrossi WE, Pharmacological Characterization of Furanyl Fentanyl: Radioligand Binding and Analgesia, Annual meeting of Society for Neuroscience (Washington DC, November 11—15, 2017)
- 2) Naylor J, Goodwin AK, Matazel K, **Hiranita T**, Paule MG, Positron emission tomography imaging of nicotine-induced dopamine release in squirrel monkeys using [18F]Fallypride, 79th Annual Scientific Meeting of the College on Problems of Drug Dependence (Montréal, Canada, June 17—22, 2017)
- 3) **Hiranita T**, Self administration of nicotine in rats: adolescent exposure and *in vivo* neuroimaging, CTP/NCTR ANNUAL PLANNING MEETING at NCTR, U. S. FDA (Jefferson, AR, June 6, 2016)
- 4) **Hiranita T**, Sigma1 receptors: induction of dopamine-independent reinforcement and a viable target for medications discovery specific for stimulant abuse, a seminar at University of Arkansas for Medical Sciences (UAMS) (Little Rock, AR, January, 2016, invited by Prof. William Fantegrossi)

- 5) **Hiranita T**, Sigma1 receptors: induction of dopamine-independent reinforcement and a viable target for medications discovery specific for stimulant abuse, a seminar at Addictive Substance Project, Tokyo Metropolitan Institute of Medical Science (Tokyo, Japan, July 6, 2015, invited by Drs. Hideko Yamamoto and Kazutaka Ikeda)
- 6) **Hiranita T**, Sigma1 receptors: induction of dopamine-independent reinforcement and a viable target for medications discovery specific for stimulant abuse, a seminar at Department of Life Innovation, Graduate School of Pharmaceutical Sciences, Kyushu University (Fukuoka, Japan, June 30, 2015, invited by Pro. Makoto Tsuda)
- 7) **Hiranita T**, Sigma1 receptors: induction of dopamine-independent reinforcement and a viable target for medications discovery specific for stimulant abuse, a seminar at Department of Psychology and Behavioral Neuroscience, Hamamatsu University School of Medicine (Hamamatsu, Japan, June 26, 2015, invited by Pro. Daiichiro Nakahara)
- 8) **Hiranita T**, Assessment of effects of tobacco product constituents on extracellular dopamine levels in the nucleus accumbens in rats, CTP/NCTR ANNUAL PLANNING MEETING at NCTR, U. S. FDA, (Jefferson, AR, April 14, 2015)
- 9) **Hiranita T**, and Katz JL, Pharmacology of self-administration of a non-selective sigma1/2 receptor agonist, 1,3-di-o-tolylguanidine (DTG), and its induction of sigma1-mediated reinforcement in rats, ASPET behavioral pharmacology symposium for Sigma Receptors in Health and Disease (invited speaker), Annual meeting of Experimental Biology (Boston, MA, March 28 – April 1, 2015)
- 10) **Hiranita T**, Kopajtic TA, Tanda G, Newman AH, and Katz JL, N-Substituted Benztropine Analogs as Sigma-Receptor Antagonists. Annual Meeting at Behavioral Pharmacology Society (San Diego, CA, April 26, 2014)
- 11) Katz JL, Hong WC, Wilkinson DS, Zou MF, Kopajtic TA, Soto PL, Lupica CR, Newman AH, and **Hiranita T**, 2-Isloxazol-3-Phenyltropane Derivatives of Cocaine: Molecular and Atypical System Effects at the Dopamine Transporter. Annual Meeting at Behavioral Pharmacology Society (San Diego, CA, April 26, 2014)
- 12) Katz JL, **Hiranita T**, Lopez JB, Brellenthin A, Mesangeau C, Alsharif W, Kopajtic TA, Coggiano M, Jamalapuram S, Tsai SY, Avery BA, Su T-P, Tanda G, and McCurdy CR. Preclinical efficacy of the dual sigma receptor antagonist dopamine uptake inhibitor, CM699, as a medication for stimulant abuse. Annual meeting of Experimental Biology (San Diego, CA, April 26-30, 2014)
- 13) **Hiranita T**, Soto PL, Wilkinson, DB, Tanda G, and Katz JL. A yoked-control study of the effects of self-administered cocaine on subsequent reinforcing effects of sigma-1 receptor agonists. Annual Meeting at Behavioral Pharmacology Society (Boston, MA, April, 2013)
- 14) Katz JL, McCurdy CR, and **Hiranita T**, Validation of σ -Receptor Agonist Self Administration as a Method for *in vivo* Characterization of σ -Receptor Agonist or Antagonist Activity. Annual Meeting at Behavioral Pharmacology Society (Boston, MA, April, 2013)
- 15) **Hiranita T**, Reinforcement Metastasis and Discovery of Medications for Stimulant Abuse. Science for non-scientist, NIDA-IRP (Baltimore, MD, April, 2013)
- 16) **Hiranita T**, Combined Dopamine Transporter and σ -Receptor Targeting for Stimulant Abuse Pharmacotherapies. NCTR, U. S. FDA, (Jefferson, AR, January, 2013), invited by Dr. Merle G. Paule
- 17) Tanda G, Mereu M, **Hiranita T**, Prisinzano T, Newman AH and Katz JL. Psychostimulant-like effects of (\pm)-Modafinil. Annual Meeting at Society for Neuroscience (New Orleans, LA, October, 2012)
- 18) **Hiranita T**, Combined dopamine transporter and σ -receptor actions: specificity of self administered drug, Fellows research lunch (NIDA-IRP, Baltimore, MD, June, 2012)
- 19) **Hiranita T**, Mereu M, Tanda G, Kopajtic TA, Mesangeau C, McCurdy CR, Katz JL, Combined dopamine transporter and σ receptor actions selectively decrease cocaine self administration. 55th Annual Behavioral Pharmacology Society Meeting (San Diego, CA, April, 2012)
- 20) Katz JL, **Hiranita T**, Mereu M, Soto PL, Tanda G. Combined dopamine transporter and σ receptor actions specifically decrease cocaine self administration. 55th Annual Behavioral Pharmacology Society Meeting (San Diego, CA, April, 2012)
- 21) Watkins LR, Northcutt A, **Hiranita T**, Ramos K, O'Neill CE, Kopajtic TA, Theberge F, Shaham Y, Bachtell BK, Katz JL, Maier SF, Rice KC, Hutchinson MR, Activation of TLR4 pathways by opiates & cocaine: implications for abuse & treatment. NIDA/NIAAAA symposium (Bethesda, MD, 2011, November)
- 22) **Hiranita T**, Tanda G, Katz JL, A Comparison of the Modulation of the Discriminative-Stimulus and

- Reinforcing Effects of Cocaine by Sigma Receptor Ligands. Annual meeting of the Society for Stimulus Properties of Drugs (Washington DC, November, 2011)
- 23) Tanda G, Kohut SJ, **Hiranita T**, Hong SK, Ebbs AL, Tronci V, Green J, Garcés-Raimírez L, Chun L, Zou MF, Mereu M, Newman AH, Katz JL, The Relation between Stimulation of Mesolimbic Dopamine and Discriminative-Stimulus Effects among Typical and Atypical Dopamine Uptake Inhibitors in Rats. Annual meeting of the Society for Stimulus Properties of Drugs (Washington DC, November, 2011)
 - 24) **Hiranita T**, Katz JL, Contributions of dopamine D1-like and dopamine D2-like receptors to the self-administration of cocaine in rats. 54th Annual Behavioral Pharmacology Society Meeting (Washington DC, April, 2011)
 - 25) **Hiranita T**, Novel dopamine-independent reinforcing mechanism induced by cocaine self-administration, Fellows research lunch (NIDA, Baltimore, MD, October, 2010)
 - 26) **Hiranita T**, Soto PL, Tanda G, Katz JL, Cocaine exposure and the reinforcing effects of sigma receptor agonists, ISGIDAR (Scottsdale, AZ, June, 2010)
 - 27) **Hiranita T**, Tanda G, Kopajtic TA, Newman AH and Katz JL, Decreases in cocaine self-administration by dual inhibition of the dopamine transporter and antagonism of σ receptors. 53rd Annual Behavioral Pharmacology Society Meeting (Anaheim, CA, April, 2010)
 - 28) Katz JL, Li S-M, O'Callaghan MJ, **Hiranita T**, Agoston GE, Cao J, Newman AH, N-Substituted benztropine analogues: high affinity and selective dopamine transporter ligands with minimal cocaine-like Behavioral effects. 53rd Annual Behavioral Pharmacology Society Meeting (Anaheim, CA, April, 2010)
 - 29) **Hiranita T**, Reinforcing effect of σ receptor agonists in rats. The Alcohol & Drug Abuse Research Center - McLean Hospital - Harvard Medical School (invited by Dr. S. Barak Caine) (Belmont, MA, March, 2010)
 - 30) **Hiranita T**, Reinstatement of methamphetamine-seeking behavior in rats. Section seminar at Behavioral Neuroscience Branch, IRP/NIDA/NIH (invited by Dr. Yavin Shaham) (Baltimore, MD, December, 2009)
 - 31) **Hiranita T**, Tanda G, Kopajtic TA, Newman AH and Katz JL, Reinforcing effects of sigma-receptor agonists in cocaine-experienced and naïve rats. Annual Meeting at Society for Neuroscience (Chicago, IL, October, 2009)
 - 32) Tanda G, Garcés-Ramírez L, Green JL, **Hiranita T**, and Katz JL, Neurochemical effects of sigma receptor agonists, a dopamine-microdialysis study in rats. Annual Meeting at Society for Neuroscience (Chicago, IL, October, 2009)
 - 33) Katz JL, **Hiranita T**, Tanda G, Garcés-Ramírez L, and Green JL, Studies of reinforcing and neurochemical effects of sigma receptor ligands. 52nd Annual Behavioral Pharmacology Society Meeting (New Orleans, LA, April, 2009)
 - 34) **Hiranita T**, Newman AH, and Katz JL, Substitution of σ -receptor agonists for cocaine in rats trained to self-administer cocaine. Behavioral Pharmacology Society (San Diego, CA, April, 2008)
 - 35) Yamamoto T, Nawata Y, and **Hiranita T**, Possibility of controlling drug craving with the pharmacotherapy; interconnection between preclinical and clinical research, Involvement of cannabinoid CB1 and nicotinic acetylcholine receptors in reinstatement of methamphetamine-seeking behavior using self-administration, Scientific Meetings associated with alcohol and Drug Dependence (Yokohama, Japan, September, 2008)
 - 36) Nawata Y, **Hiranita T**, Yamamoto T, Blockade of reinstatement of methamphetamine-seeking behavior by corticotropin-releasing factor receptor type1 antagonist, Scientific Meetings associated with alcohol and Drug Dependence (Yokohama, Japan, September, 2008)
 - 37) Yamamoto T, and **Hiranita T**, Involvement of ACh receptor and cannabinoid CB1 receptors in the prelimbic cortex and the nucleus accumbens on reinstatement of methamphetamine-seeking behavior, Symposium of academic frontiers in Hokuriku University (Kanazawa, Japan, September, 2007)
 - 38) **Hiranita T**, Nawata Y, Kitaichi K, Yamamoto T, Role of corticotropin-releasing factor in reinstatement of methamphetamine-seeking behavior, The 80th annual meeting of The Japanese Pharmacological Society (Nagoya, Japan, March, 2007)
 - 39) **Hiranita T**, Nawata Y, Kitaichi K, Yamamoto T, Involvement of corticotropin-releasing factor in reinstatement of methamphetamine-seeking behavior, The 59th annual meeting in Southwestern Japanese branch of The Japanese Pharmacological Society (Naha, Japan, November, 2006)
 - 40) **Hiranita T**, Nawata Y, Kitaichi K, Yamamoto T, Methamphetamine-seeking behavior (craving) – Interrelation between cannabinoid CB1 and $\alpha 4\beta 2$ nicotinic ACh receptors -, The 27th Annual Meeting of the Japanese

- Narcotic Research Conference (Wakayama, Japan, September, 2006)
- 41) Kitaichi K, Nakayama H, Nawata Y, **Hiranita T**, Yamamoto T, Involvement of organic cation transporter-3 on the effect of methamphetamine and behavior of monoamines, The 12th meeting of the Japanese behavioral pharmacological studies (Ishikawa, Japan, September, 2006)
 - 42) **Hiranita T**, Nawata Y, Kitaichi K, Yamamoto T, Suppression of methamphetamine-seeking behavior by a cannabinoid CB1 receptor antagonist via the activation of nicotinic transmission in the prelimbic cortex, The 36th Annual Meeting of the Japanese Society of Neuropsychopharmacology (Nagoya, Japan, September, 2006)
 - 43) Nawata Y, **Hiranita T**, Kitaichi K, Yamamoto T, Cognitive impairment induced by MDMA (Ecstasy) involves cannabinoid CB1 receptors, The 36th Annual Meeting of the Japanese Society of Neuropsychopharmacology (Nagoya, Japan, September, 2006)
 - 44) **Hiranita T**, Yamamoto T, Nicotine attenuates methamphetamine-seeking behavior. Psychopharmacological Symposium of Drug and Nicotine (Tokyo, September, 2006), invited by Dr Tomoji Yanagita
 - 45) Sakimura K, **Hiranita T**, Inoue K, Yamamoto T, Cross-talk of endocannabinoid system/glutamate neuronal system in relapse to methamphetamine-“craving”, The 79th annual meeting of The Japanese Pharmacological Society (Yokohama, Japan, March, 2006)
 - 46) Nawata Y, **Hiranita T**, Inoue K, Yamamoto T, Involvement of endocannabinoid system on MDMA-seeking behavior, The 79th annual meeting of The Japanese Pharmacological Society (Yokohama, Japan, March, 2006)
 - 47) Nawata Y, **Hiranita T**, Yamamoto T, Involvement of cannabinoid CB1 receptors on MDMA (\pm 3,4-methylenedioxyamphetamine; “Ecstasy”)-induced impairment of cognitive function, The 15th Annual Meeting of the Japanese young Researcher’s Society of Neurobehavioral Pharmacology (Chiba, Japan, March, 2006)
 - 48) Sakimura K, Hiranita T, Yamamoto T, The Role of the limbic system in the relapse to methamphetamine-seeking, The 15th Annual Meeting of the Japanese young Researcher’s Society of Neurobehavioral Pharmacology (Chiba, Japan, March, 2006)
 - 49) **Hiranita T**, Sakimura K, Nawata Y, Anggadiredja K, Inoue K, Yamamoto T, Amygdaloid nicotinic activation attenuates methamphetamine-“craving”, The 58th annual meeting in Southwestern Japanese branch of The Japanese Pharmacological Society (Nagasaki, Japan, November, 2005)
 - 50) **Hiranita T**, Sakimura K, Nawata Y, Anggadiredja K, Yamamoto T, Hippocampal nicotinic activation inhibits methamphetamine-“craving”. The 35th annual meeting of Japanese Society of Neuropsychopharmacology (Osaka, Japan, July, 2005)
 - 51) Nawata Y, **Hiranita T**, Yamamoto T, Effect of MDMA on reinstatement of drug-seeking behavior and cognitive function—from the view point of endocannabinoid system, The 35th annual meeting of Japanese Society of Neuropsychopharmacology (Osaka, Japan, July, 2005)
 - 52) Kubota T, **Hiranita T**, Yamaguchi T, Yamamoto T, Involvement of arachidonic acid cascade on morphine-seeking behavior and development of the physical dependence, The 35th annual meeting of Japanese Society of Neuropsychopharmacology (Osaka, Japan, July, 2005)
 - 53) **Hiranita T**, Sakimura K, Anggadiredja K, Fujisaki C, Yamamoto T, Role of nicotinic acetylcholinergic receptors in core of nucleus accumbens in methamphetamine-seeking behavior (“craving”), The 8th annual meeting of Japanese Forum on Nicotine and Drug Dependence Studies (Nagoya, Japan, March, 2005)
 - 54) Kubota T, **Hiranita T**, Yamaguchi T, Yamamoto T, Role of arachidonic acid cascade on morphine-seeking behavior and development of the physical dependence, The 14th Annual Meeting of the Japanese young Researcher’s Society of Neurobehavioral Pharmacology (Yokohama, Japan, March, 2005)
 - 55) **Hiranita T**, Miyamoto M, Sakimura K, Anggadiredja K, Fujisaki C, Yamamoto T, Activation of rat nicotinic cholinergic system in the prelimbic cortex attenuates reinstatement of methamphetamine-seeking behavior, The 78th annual meeting of The Japanese Pharmacological Society (Yokohama, Japan, March, 2005)
 - 56) Sakimura K, **Hiranita T**, Anggadiredja K, Yamamoto T, Endocannabinoid system in the amygdala and nucleus accumbens: Role in relapse to methamphetamine seeking, The 78th annual meeting of The Japanese Pharmacological Society (Yokohama, Japan, March, 2005)
 - 57) Yamamoto T, Anggadiredja K, **Hiranita T**, Involvement of endocannabinoid system in reinstatement of methamphetamine-“craving”, The 6th meeting of the Japanese Affection, cognition and behavior studies (Osaka, Japan, November, 2004)
 - 58) Fujisaki C, Yamamura Y, **Hiranita T**, Yamamoto T, Effect of newly synthesized (-)-BPAP on MAP-seeking

- behavior, The 57th annual meeting in Southwestern Japanese branch of The Japanese Pharmacological Society (Fukuoka, Japan, November, 2004)
- 59) Sakimura K, **Hiranita T**, Miyamoto M, Anggadiredja K, Yamamoto T, Involvement of endocannabinoid system in basolateral amygdala in methamphetamine-taking and the seeking behavior, The 10th meeting of the Japanese behavioral pharmacological studies (Miyagi, Japan, August, 2004)
 - 60) Yamamoto T, **Hiranita T**, Sakimura K, How to detect drug craving—behavioral pharmacological strategy—, summer seminar of pharmacology in 2004 “stress, anxiety and dependence-How to perform the behavioral experiment and the strategy” (Kanagawa, Japan, August, 2004)
 - 61) Sakimura K, Anggadiredja K, **Hiranita T**, Yamamoto T, Role of basolateral amygdala in reinstatement of methamphetamine-seeking behavior—association with endocannabinoid system, The 34th annual meeting of Japanese Society of Neuropsychopharmacology (Tokyo, Japan, July, 2004)
 - 62) Fujisaki C, Morimoto M, Tohara M, **Hiranita T**, Kubota T, Narumiya S, Yamamoto T, Behavioral pharmacological characteristics of mouse with prostanoid EP receptor deficiency, The 34th annual meeting of Japanese Society of Neuropsychopharmacology (Tokyo, Japan, July, 2004)
 - 63) **Hiranita T**, Fujisaki C, Miyamoto M, Anggadiredja K, Watanabe S, Yamamoto T Effect of nicotine on methamphetamine-seeking behavior (“craving”), The 13th Annual Meeting of the Japanese young Researcher’s Society of Neurobehavioral Pharmacology (Kobe, Japan, March, 2004)
 - 64) Yamamoto T, K. Anggadiredja, **Hiranita T**, Watanabe S, Symposium—research trend and new development in endogenous brain cannabinoid—“Involvement of endocannabinoid in drug dependence and brain reward system”, The 77th annual meeting of The Japanese Pharmacological Society (Osaka, Japan, March, 2004)
 - 65) Yamamoto T, Anggadiredja K, **Hiranita T**, Fujisaki C, Miyamoto M, Watanabe S, Clarifying the mechanism of relapse to abusive drugs-seeking behavior and the investigation of the craving killers, The 36th annual meeting of Studying the drug treatment using psychotropic drugs (Osaka, Japan, December, 2003)
 - 66) **Hiranita T**, Fujisaki C, Miyamoto M, Anggadiredja K, Watanabe S, Yamamoto T, Effect of nicotine on reinstatement of methamphetamine-seeking behavior in rats, The 33rd annual meeting of Japanese Society of Neuropsychopharmacology (Nara, Japan, October, 2003)
 - 67) Nakamura S, **Hiranita T**, Hirano M, Courrier HM, Krafft MP, Vandamme T, Shibata O, Effect of a partially fluorinated amphiphile on pulmonary alveolus model, The 42nd annual meeting of Japanese Oil Chemists’ Society (Nagoya, Japan, September, 2003)
 - 68) Nakamura S, **Hiranita T**, Hirano M, Courrier HM, Krafft MP, Vandamme T, Shibata O, Interfacial behavior of a partially fluorinated amphiphile using a pulmonary alveolus model—the possibility of clinical application to disease of respiratory system, The 56th annual meeting of Division of Colloid and Surface Chemistry, (Tokushima, Japan, September, 2003)
 - 69) Yamamoto T, Anggadiredja K, **Hiranita T**, Yamaguchi T, Watanabe S, workshop—changes of intracellular messenger system in methamphetamine intoxication ; involvement of endocannabinoid/arachidonic acid cascade in methamphetamine-seeking behavior using a drug self-administration paradigm, The 38th annual meeting of the Japanese Medical Society of Alcohol and Drug Studies (Tokyo, Japan, July, 2003)
 - 70) Anggadiredja K, **Hiranita T**, Yamatani T, Nakamichi M, Watanabe S, Yamamoto T, Role of cannabinoid system in relapse to methamphetamine seeking, The 76th annual meeting of The Japanese Pharmacological Society (Fukuoka, Japan, March, 2003)
 - 71) Nakamura S, **Hiranita T**, Lee S, Sugihara G, Shibata O, Two dimensional formation and phase behavior of an artificial surfactant/a pulmonary alveolus model (DPPC), The 19th annual meeting in Kyushu branch of The Pharmaceutical Society of Japan (Fukuoka, Japan, December, 2002)
 - 72) **Hiranita T**, Hirano M, Nakamura S, Courrier HM, Krafft MP, Shibata S, Binary monolayer behavior of a single-chain partially fluorinated amphiphile/lipid (DPPC), The 40th annual meeting of Japanese Oil Chemists’ Society/The 15th annual meeting of Intercollege seminar of The Physicochemistry (Fukuoka, Japan, December, 2001)
 - 73) **Hiranita T**, Hirano M, Nakamura S, Courrier HM, Krafft MP, Shibata S, Binary monolayer behavior of a single-chain partially fluorinated amphiphile/lipid (DPPC), The 18th annual meeting in Kyushu branch of The Pharmaceutical Society of Japan (Kumamoto, Japan, December, 2001)

POSTER PRESENTATIONS

- 1) Fantegrossi WE, Janowsky A, Eshleman AJ, Fukuda Saki, Gogoi J, Prioleau C, Fang Li, Tella SR, Paule MG and **Hiranita T**. Pharmacological Characterization of Synthetic Cannabinoid MAM-2201: Radioligand Binding and Abuse-Related Effects. 2nd ASPET/CNPHARS Joint Meeting on Pharmacology (Hangzhou, China, November 2 – 5, 2017)
- 2) **Hiranita T**. Kopajtic TA, Newman AH, and Katz JL. Pharmacological Specificity of Effects of N-Substituted Benztropine Analogs on Cocaine Self Administration in Rats, Substance Abuse Mini-Symposium for UAMS / University of Tennessee Health Science Center Research (Little Rock, AR, June 8, 2016).
- 3) **Hiranita T**. Kopajtic TA, Newman AH, and Katz JL. Pharmacological Specificity of Effects of N-Substituted Benztropine Analogs on Cocaine Self Administration in Rats, Annual meeting of Experimental Biology (San Diego, CA, April 2 – 6, 2016).
- 4) **Hiranita T**, Kopajtic TA, Lin YY, Hsin LW, and Katz JL, *d*-Methamphetamine self-administration in rats: specific antagonism with blockade of the vesicular monoamine transporter. Annual meeting of Society for Neuroscience (Chicago, IL, October 17 – 21, 2015)
- 5) Zanettini C, **Hiranita T**, Watkins LR, Selfridge BR, Rice KC, and Katz JL, Effects of the non-opioid (+)-naltrexone and the peripherally active (+)N-methylnaltrexone in rats self-administering the mu agonist remifentanyl. Annual meeting of Society for Neuroscience (Chicago, IL, October 17 – 21, 2015)
- 6) Tanda G, Mereu M, **Hiranita T**, Chen L, Lopez J, Ciggiano M, Quarterman J, Newman AH, Katz JL, Reinforcing and neurochemical effects differentiate modafinil from methylphenidate in their interactions with cocaine. Annual meeting of Society for Neuroscience (Chicago, IL, October 17 – 21, 2015)
- 7) **Hiranita T**, and Katz JL, Pharmacology of self-administration of a non-selective sigma1/2 receptor agonist, 1,3-di-o-tolylguanidine (DTG), and its induction of sigma1-mediated reinforcement in rats, Annual meeting of Experimental Biology (Boston, MA, March 28 – April 1, 2015)
- 8) Tanda G, Mereu M, **Hiranita T**, Chun LE, Lopez JP, Coggiano MA, Quarterman JC, Newman AH, and Katz JL, Interactions of modafinil or methylphenidate with the reinforcing and neurochemical effects of cocaine. Annual meeting of Experimental Biology (Boston, MA, March 28 – April 1, 2015)
- 9) **Hiranita T**, Kopajtic TA, Mesangeau C, McCurdy CR, and Katz JL, Self-Administration of the Sigma-Receptor Agonist, DTG, in Experimentally Naïve Rats. Annual meeting of Society for Neuroscience (Washington DC, November 15-19, 2014)
- 10) Soto PL, **Hiranita T**, Xu M, Grandy D, Katz JL, Behavioral economics in dopamine D2-like receptor mutant mice. Annual meeting of Society for Neuroscience (Washington DC, November 15-19, 2014)
- 11) Tanda G, Mereu M, **Hiranita T**, Newman AH, and Katz JL, (\pm)Modafinil potentiates cocaine self-administration but not the effects on DA levels in rodents. 76th Annual Meeting of College on Problems of Drug Dependence (San Juan, Puerto Rico, June 14-19, 2014)
- 12) **Hiranita T**, Kopajtic TA, Mesangeau C, Narayanan S, McCurdy CR, and Katz JL, The dopamine uptake inhibitor, WIN 35,428, has sigma2 receptor agonist effects that contribute to its self-administration. Annual meeting of Experimental Biology (San Diego, CA, April 26-30, 2014)
- 13) Katz JL, **Hiranita T**, Lopez JB, Brellenthin A, Mesangeau C, Alsharif W, Kopajtic TA, Coggiano M, Jamalapuram S, Tsai SY, Avery BA, Su T-P, Tanda G, and McCurdy CR. Preclinical efficacy of the dual sigma receptor antagonist dopamine uptake inhibitor, CM699, as a medication for stimulant abuse. Annual meeting of Experimental Biology (San Diego, CA, April 26-30, 2014)
- 14) **Hiranita T**, Soto PL, Tanda G, Newman AH and Katz JL, Abuse Liability Assessment and Preclinical Indicators of N-substituted Benztropine (BZT) Analogs as Medications for Stimulant Abuse. Annual meeting of Society for Neuroscience in (San Diego, CA, November 9-13, 2013)
- 15) Katz JL, Zou MF, Kopajtic TA, Soto PL, Lupica CR, Newman AH, and **Hiranita T**, Abuse Liability and Potential of 3-Substituted Phenyltropane Dopamine Uptake Inhibitors as Medications for Cocaine Abuse, Annual meeting of Society for Neuroscience in (San Diego, CA, November 9-13, 2013)
- 16) **Hiranita T**, Soto PL, Tanda G, and Katz JL. Specificity of cocaine-induced dopamine-independent sigma agonist self-administration. Annual Meeting at Experimental Biology (Boston, MA, April, 2013)
- 17) Wilkinson DS, **Hiranita T**, Mereu M, Tanda G, Newman AH and Katz JL, *In vivo* binding of N-substituted benztropine analogs and antagonism of cocaine self-administration. Annual Meeting at Experimental Biology

- (Boston, MA, April, 2013)
- 18) **Hiranita T**, Mereu M, Tanda G, Kopajtic TA, Mesangeau C, McCurdy CR and Katz JL. Combined dopamine transporter and σ receptor actions: effects of σ receptor subtype. Annual Meeting at Society for Neuroscience (New Orleans, LA, October, 2012)
 - 19) Katz JL, **Hiranita T**, Mereu M, Soto PL, and Tanda G. Combined dopamine transporter and σ receptor actions: specificity of self-administered drug. Annual Meeting at Society for Neuroscience (New Orleans, LA, October, 2012)
 - 20) **Hiranita T**, Mereu M, Tanda G, Kopajtic TA, Mesangeau C, McCurdy CR and Katz JL. Combined dopamine transporter and σ receptor actions: effects of σ receptor subtype. The 2012 NIDA Mini-Convention: Frontiers in Addiction Research (New Orleans, LA, October, 2012). Travel Award from College on Problems of Drug Dependence
 - 21) **Hiranita T**, Li LB, Hayashi S, Cao JJ, Newman AH, and Katz JL. The Stereotypy-Inducing Effects of Atypical Dopamine Uptake Inhibitors Do Not Account for their Blockade of Cocaine Self Administration. Annual Meeting at Experimental Biology (San Diego, CA, April, 2012)
 - 22) Mereu M, Chun L, **Hiranita T**, Cao JJ, Newman AH, Katz JL & Tanda G. Rimcazole attenuates Cocaine-induced stimulation of mesolimbic Dopamine related to its abuse and dependence. Annual Meeting at Experimental Biology (San Diego, CA, April, 2012)
 - 23) **Hiranita T**, Mereu M, Kopajtic TA, Soto PL, Kohut SJ, Tanda G, Katz KL, Combined dopamine transporter and σ receptor actions decrease cocaine self administration. Annual Meeting at Society for Neuroscience (Washington DC, November, 2011)
 - 24) **Hiranita T**, Tanda G, Kopajtic TA, and Katz JL, Cocaine (Coc) Self Administration (SA) Induces the Reinforcing Effects of the Selective σ_1 -Receptor (σ_1R) Agonists. The Early Career Investigators Poster Session (Co-sponsored by NIDA/NIAAA/APA, and APA Divisions 28 and 50), American Psychological Association, 119th Annual Meeting (Washington DC, August, 2011)
 - 25) **Hiranita T**, Tanda G, Soto PL, Kohut SJ, Kopajtic TA, and Katz JL, Cocaine self administration induces the reinforcing effects of the selective σ_1 -receptor agonists. Annual Meeting at Experimental Biology (Washington DC, April, 2011)
 - 26) **Hiranita T**, Tanda G, Kopajtic TA, and Katz JL., Cocaine (Coc) Self Administration (SA) Induces the Reinforcing Effects of the Selective σ_1 -Receptor (σ_1R) Agonists. Annual Meeting at Japanese Pharmacological Society (Yokohama, Japan, March, 2011)
 - 27) **Hiranita T**, Tanda G, Kopajtic TA, Newman AH, and Katz JL, Effects of N-substituted benztropine analogs on self-administration of the sigma-receptor agonist 1,3-di-(2-tolyl)guanidine (DTG) in rats trained to self-administer either cocaine or DTG. Annual Meeting at Society for Neuroscience (San Diego, CA, November, 2010)
 - 28) **Hiranita T**, Kopajtic TA, Cao JJ, Newman AH, and Katz JL, Evaluation of N-Substituted Benztropine (BZT) Analogs for Cocaine Antagonist Effects in Rats Trained to Self-Administer Cocaine. Annual Meeting at Experimental Biology (Anaheim, AZ, April, 2010)
 - 29) Tanda G, **Hiranita T**, Garcés-Ramírez L, Green JL, Kopajtic TA, Katz JL, Neurochemical and reinforcing effects of sigma receptor agonists in rats. 13th General Meeting of European Behavioral Pharmacology Society (Rome, Italy, September, 2009)
 - 30) **Hiranita T**, Newman AH, and Katz JL, Block of cocaine self-administration by dual inhibition on dopamine transporter and sigma (σ) receptors. Annual Meeting at Experimental Biology (New Orleans, LA, April, 2009)
 - 31) **Hiranita T**, Newman AH, and Katz JL, Block of cocaine self-administration by dual inhibition on dopamine transporter and sigma (σ) receptors. Graduate Student-Postdoc Best Abstract Competition at The American Society for Pharmacology and Experimental Therapeutics (New Orleans, LA, April, 2009)
 - 32) Kopajtic TA, Cao JJ, **Hiranita T**, Tanda G, Newman AH, Katz JL, Development of dual inhibitors of the dopamine transporter and sigma receptors. Annual Meeting at Experimental Biology (New Orleans, LA, April, 2009)
 - 33) Tanda G, Garcés-Ramírez L, Green JL, **Hiranita T**, and Katz JL, Effects of acute administration of sigma receptor ligands on mesolimbic dopamine neurotransmission in rats. Annual Meeting at Experimental Biology (New Orleans, LA, April, 2009)
 - 34) **Hiranita T**, Kopajtic TA, Newman AH, and Katz JL, Regulation of Cocaine Self-administration in Rats by

- Sigma (σ) Receptors. Annual Meeting at Society for Neuroscience (Washington DC, November, 2008)
- 35) **Hiranita T**, Newman AH, and Katz JL, Assessment of Reinforcing Effects of Benzotropine Analogues and Their Effects on Cocaine Self-Administration: Comparisons with Monoamine Uptake Inhibitors. Annual Meeting at Experimental Biology (San Diego, CA, April, 2008)
 - 36) Yamamoto T, **Hiranita T**, Nawata Y, Kagamiishi Y, The role of corticotrophin-releasing factor in cue- and methamphetamine-induced reinstatement of methamphetamine-seeking in rats, CINP 50th Annual Meeting (Munich, German, July, 2008)
 - 37) **Hiranita T**, Nawata Y, Anggadiredja K, and Yamamoto T, Attenuation of methamphetamine-seeking behavior by a cannabinoid CB1 receptor antagonist via the activation of nicotinic transmission in the prelimbic cortex. The College on Problems of Drug Dependence 69th Annual Meeting (Quebec City, Canada, June, 2007)
 - 38) Nawata Y, **Hiranita T**, Kitaichi K, and Yamamoto T, The involvement of the cannabinoid system in drug-seeking behavior and cognitive impairment after MDMA withdrawal, The College on Problems of Drug Dependence 69th Annual Meeting (Quebec City, Canada, June, 2007)
 - 39) Nawata Y, **Hiranita T**, Kitaichi K, Yamamoto T, Cannabinoid system serves as a modulator of cognitive impairment arising withdrawal of MDMA, International college of Geriatric Psychopharmacology 6th Annual Scientific Meeting (Hiroshima, Japan, October, 2006)
 - 40) Kitaichi K, Nakayama H, Nawata Y, **Hiranita T**, Yamamoto T, The roles of organic cation transporter-3 on the effect of methamphetamine, International college of Geriatric Psychopharmacology 6th Annual Scientific Meeting (Hiroshima, Japan, October, 2006)
 - 41) **Hiranita T**, Sakimura K, Nawata Y, Anggadiredja K, Yamamoto T, Hippocampal nicotinic activators are possible craving killers in methamphetamine dependence. CINP Asia Pacific Regional Meeting, (Pattaya, Thailand, March, 2006)-Poster Award
 - 42) Yamamoto T, **Hiranita T**, Anggadiredja K, Nicotinic agonists inhibit reinstatement of methamphetamine-seeking behavior in rats, ACNP 44th Annual Meeting, (Waikoloa, HI, December, 2005)
 - 43) Yamamoto T, Anggadiredja K, **Hiranita T**, Endocannabinoid system modulates relapse to methamphetamine seeking: possible mediation by the arachidonic acid cascade, International symposium for opioid and pain-related peptide in Sendai (Sendai, Japan, July, 2004)
 - 44) Anggadiredja K, Nakamichi M, **Hiranita T**, Watanabe S, Yamamoto T, A role of the endocannabinoid system in relapse to methamphetamine seeking: Mediation through the arachidonic acid cascade, The 9th South East Asian-Western Pacific Meeting of Pharmacologists (Bussan, South Korea, August, 2003)
 - 45) **Hiranita T**, Anggadiredja K, Fujisaki C, Watanabe S, Yamamoto T, Nicotine attenuates relapse to methamphetamine seeking behavior (craving) in rats, International society for neurochemistry/Japanese forum on nicotine and drug dependence studies (Kyoto, Japan, July, 2003)
 - 46) Yamamoto T, Anggadiredja K, Yamatani T, **Hiranita T**, Watanabe S, Involvement of the endocannabinoid system in relapse to psychostimulants-taking: Mediation through the arachidonic acid cascade, 13th Annual Symposium on the Cannabinoids (Toronto, Canada, June, 2003)
 - 47) **Hiranita T**, and Katz JL, Effects of Sigma Receptor Ligands on the Discriminative-Stimulus Effects of Cocaine in Rats. Annual meeting of Society for Neuroscience (San Diego, CA, November 12 – 16, 2016)

POSTER PRESENTATIONS TO BE PRESENTED

- 1) **Hiranita T**, Janowsky A, Eshleman AJ, Fukuda S, Prioleau C, Li F, Tella SR, Paule MG and Fantegrossi WE, Pharmacological Characterization of Six Synthetic Opioids: Radioligand Binding and Analgesia Activities, Annual meeting of College on Problems of Drug Dependence (San Diego, CA, June 9-14, 2018)
- 2) Fantegrossi WE, Janowsky A, Eshleman AJ, Fukuda S, Gogoi J, Russell LN, Prioleau C, Li F, Tella SR, Paule MG and **Hiranita T**, *In vitro* and *in vivo* pharmacology of “bath salts” constituent 4-chloro-N-ethylcathinone: radioligand binding and locomotor stimulant effects. Annual meeting of College on Problems of Drug Dependence (San Diego, CA, June 9-14, 2018)

PROFESSIONAL AND ACADEMIC AFFILIATIONS

- 1) The Japanese Pharmacological Society (Student Affiliate) 2004-2006, (Member) 2007-2010
- 2) Japanese Society of Neuropsychopharmacology (Student Affiliate) 2004-2006, (Member) 2007
- 3) Japanese Forum on Nicotine and Drug Dependence Studies (Student Affiliate) 2005-2006, (Member) 2007
- 4) American Society for Pharmacology and Experimental Therapeutics (ASPET, Member) 2008-present
- 5) The Society for Neuroscience (SfN, Member) 2008-present
- 6) Behavioral Pharmacology Society (BPS, Member) 2010-present
- 7) The Society for Stimulus Properties of Drugs (SSPD, Member) 2011-present
- 8) The Society for Research on Nicotine and Tobacco (SRNT, Member) 2013-present

TECHNICAL AND SPECIALIZED SKILLS

- 1) Assessment of abuse potential
- 2) Assessment of preclinical efficacy of novel compounds as anti-abuse medications
- 3) Identification of brain regions responsible for drug-taking behavior
- 4) Cannulation of intravenous catheter in >1,000 rats and mice
- 5) Stereotactic Surgery (intracranial cannulation) in >400 rats
- 6) Histology (cresyl violet staining)
- 7) Drug administration (IP, IV, SC, PO, intracranial)
- 8) Various behavioral testing procedures (drug self-administration, drug discrimination, place conditioning, locomotor activity, object or spatial recognition, plus maze and forced swimming)
- 9) *In vivo* microdialysis in rats and mice
- 10) *In vitro* and *in vivo* radioligand binding assay
- 11) PCR, ELISA, Northern blotting, and Western blotting
- 12) LCMS (especially HPLC) with rodent tissue

TEACHING EXPERIENCE

1. Research assistant
 - **Department of Pharmacology, Graduate School of Pharmaceutical Sciences, Kyushu University, April 2004 – March 2007.** Trained and supervised 14 graduate students in behavioral assessments, pharmacology procedures, and data analysis and presentation.
 - **Supervision of summer interns within the National Institutes of Health Summer Internship Program in Biomedical Research, Summer, 2007 – 2012 (4 hours per day during summer months).** The NIH SIP [<http://www.training.nih.gov/student/sip/>] provides internships to students from high school to graduate school on a competitive basis. The applicants are at the NIH in a research laboratory for at least eight weeks, and at the end of the Program participate in a poster session in which they present their work to the NIH scientific community. I worked with several of these students in their research and in preparing their posters. Some of these projects were eventually published.
2. Principal investigator
 - **Supervision of two research assistants in NCTR/FDA, May 2014 – September 2015.** Supervising two PhD-level (in neuroscience) research assistants in behavioral and neurochemical assessments, pharmacology procedures, and data analysis.
 - **Supervision of four research assistants in NCTR/FDA, August 2017 – March 2018.** Supervising one PhD- (in neuroscience) and three master-level research assistants in behavioral and neurochemical assessments, pharmacology procedures, and data analysis.
 - **Supervision of two research assistants in UAMS, September 2016 – present.** Supervising one master- and

one BS-level research assistants in behavioral assessments, pharmacology procedures, and data analysis.

3. Technical assistance. Teaching a skill set for a drug self-administration procedures (particularly intravenous catheter implantation and maintenance).

- Dr. Jean Lud Cadet, Intramural Research Program, National Institute on Drug Abuse,
- Dr. Tsutomu Suzuki, and his colleagues, Hoshi University School of Pharmacy and Pharmaceutical Science, Japan,
- Dr. Bob Hienz and his colleagues, Johns Hopkins Medical School,
- Dr. Tomohisa Mori and his colleagues, Hoshi University School of Pharmacy and Pharmaceutical Science, Japan,
- Mr. Katsuya Sakimura, Takeda Pharmaceutical Company Limited
- Dr. Russell J Amato, Vanderbilt University
- Dr. Michael Owens, UAMS

REFERENCES (Letters available upon request)

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