# The 48th NIPS International Symposium
# "Neural circuitry and plasticity underlying brain function"

**Okazaki Conference Center (OCC), Okazaki, Aichi**

**October 31 – November 2, 2017**

## Program

October 31 (Tue)

12:15 – 13:30 Registration

13:30 – 13:40 Opening remarks
**Keiji Imoto** (Director General, NIPS, Japan)

13:40 – 13:45 Introduction
**Yumiko Yoshimura** (NIPS, Japan)

*Chair: Yoshio Hata (Tottori University, Japan)*

**Session 1: Activity- and experience dependent developmental mechanisms**

13:45 –14:20 S1-1 **Yumiko Yoshimura** (NIPS, Japan)
"The roles of visual experience in the maturation of neural responses in the primary visual cortex"

14:20 –14:55 S1-2 **Kenichi Ohki** (the University of Tokyo, Japan)
"Gap junctions in postnatal excitatory neurons regulate spine density and response reliability"

14:55 – 15:10 Coffee Break

*Chair: Takuji Iwasato (National Institute of Genetics, Japan)*

15:10 – 15:45 S1-3 **Madoka Narushima** (NIPS, Japan)
"The metabotropic glutamate receptor subtype 1 mediates experience-dependent maintenance of mature synaptic connectivity in the dorsal lateral geniculate nucleus"

15:45 –16:20 S1-4 **Nobuhiko Yamamoto** (Osaka University, Japan)
"Activity-dependent mechanisms for thalamocortical circuit formation"

16:20 – 16:35 Coffee Break

*Chair: Mariko Miyata (Tokyo Women's Medical University, Japan)*

**Session 2: Multimodal integration and plasticity**

16:35 –17:10 S2-1 **Patrick Kanold** (University of Maryland, USA)
"Crossmodal induced refinement of auditory cortex circuits"

17:10 –17:45 S2-2 **Seung-Hee Lee** (KAIST, Korea)
"Neural circuits for sensory integration"

**Short Talk 1:** *Chair: Rie Kimura (NIPS, Japan)*

17:45 –18:00 ST1-1 **Tzu-Huei Kao** (the University of Tokyo, Japan)
"Roles of synaptic activity in climbing fiber to Purkinje cell synapse elimination in the developing cerebellum"

18:00 –18:15 ST1-2 **Mieko Morishima** (NIPS, Japan)
"Pyramidal cell subtype-dependent inhibitory-excitatory circuits in layer 5 of the rat frontal cortex"

18:15 –18:30 ST1-3 **Eriko Kuramoto** (Kagoshima University, Japan)
"Local connections of excitatory neurons to parvalbumin-containing interneurons in motor-associated cortical areas of mice"

18:30 – Dinner for invited speakers & Discussion

November 1 (Wed)

**Special Lecture 1** *Chair: Yumiko Yoshimura (NIPS, Japan)*

9:00 – 10:00 **Edward M. Callaway** (Salk Institute, USA)
"Imaging the mouse visual system: parallel pathways and visual cortical areas"

10:00 – 10:15 Coffee Break

*Chair: Takeshi Yagi (Osaka University, Japan)*

**Session 3: Molecular mechanisms for formation and elimination of neural circuits**

10:15 – 10:50 S3-1 **Denis Jabaudon** (University of Geneva, Switzerland )
"Dynamic control of neuronal diversity in the developing neocortex"

10:50 – 11:25 S3-2 **Kazuo Emoto** (the University of Tokyo, Japan)
"Molecular and cellular basis for neurite remodeling in Drosophila"

11:25 – 12:00 S3-3 **Tomomi Shimogori** (RIKEN, Japan)
"Activity dependent Btbd3 protein dynamics for selective dendrite morphogenesis in developing neurons"

12:00 – 12:20 Group photo

12:20 – 13:30 Lunch with Discussion

**Special Lecture 2** *Chair: Yumiko Yoshimura (NIPS, Japan)*

13:30 – 14:30 **Haruo Kasai** (the University of Tokyo, Japan)
"Dopamine actions on the dendritic spines and conditioning behaviors"

14:30 – 14:45 Coffee Break

**Short Talk 2:** *Chair: Kenji Hayashi (NIPS, Japan)*

14:45 – 15:00 ST2-1 **Shin-ichi Higashijima** (NIBB, Japan)
"Axially-confined in vivo single-cell labeling by primed conversion using blue and red lasers with conventional confocal microscopes"

15:00 – 15:15 ST2-2 **Ichiro Aoki** (Nagoya University, Japan)
"BK potassium channels resist premature memory overwriting in *C. elegans*"

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| 15:15 – 15:30 | ST2-3 **Shuntaro Izawa** (Nagoya University, Japan)<br>“MCH neurons in the hypothalamus impairs memory during sleep” |
| 15:30 – 15:45 | ST2-4 **Eisuke Koya** (University of Sussex, United Kingdom)<br>“Changes in appetitive associative strength and reward value modulate the Intrinsic excitability of nucleus accumbens neuronal ensembles” |
| 15:45 – 18:00 | Flash talk, Poster Session |
| 18:00 – 20:00 | Party for all participants |

November 2 (Thu)

*Chair: Junichi Nabekura (NIPS, Japan)*

**Session 4:** **Learning and memory**

9:00 –9:35 S4-1 **Wenbiao Gan** (New York University School of Medicine, USA)
"Dendritic branches are independent units for memory storage and generalization"

9:35 –10:10 S4-2 **Masanori Murayama** (RIKEN, Japan)
"Top-down cortical circuit for perception and memory consolidation in mice"

10:10 –10:45 S4-3 **Takaki Komiyama** (UCSD, USA)
"Imaging neural ensembles during learning"

10:45 – 11:00 Coffee Break

*Chair: Hiromu Yawo (Tohoku University, Japan)*

**Session 5:** **Subcellular mechanisms for information processing**

11:00 –11:35 S5-1 **Hiroshi Kuba** (Nagoya University, Japan)
"Tonotopic differentiation of dendritic computation in sound localization circuit"

11:35 –12:10 S5-2 **Yoshiyuki Kubota** (NIPS, Japan)
"The Diversity of Cortical Inhibitory Synapses"

12:10 – 12:15 Closing remarks
**Yumiko Yoshimura** (NIPS, Japan)

**Poster Presentations**

P1, ST1-1

Roles of synaptic activity in climbing fiber to Purkinje cell synapse elimination in the developing cerebellum

Tzu-Huei Kao, Kyouko Matsuyama, Naofumi Uesaka & Masanobu Kano

P2, ST1-2

Pyramidal cell subtype-dependent inhibitory-excitatory circuits in layer 5 of the rat frontal cortex.

Mieko Morishima & Yasuo Kawaguchi

P3, ST1-3

Local connections of excitatory neurons to parvalbumin-containing interneurons in motor-associated cortical areas of mice

Eriko Kuramoto, Hiroyuki Hioki, Yasuhiro R Tanaka, Haruki Iwai, Atsushi Yamanaka, Tetsuya Goto & Takeshi Kaneko

P4, ST2-1

Shin-ichi Higashijima, Atsushi Taniguchi, Yukiko Kimura & Shigenori Nonaka

Axially-confined in vivo single-cell labeling by primed conversion using blue and red lasers with conventional confocal microscopes

P5, ST2-2

BK potassium channels resist premature memory overwriting in *C. elegans*

Ichiro Aoki, Michihiro Tateyama, Takushi Shimomura, Kunio Ihara, Yoshihiro Kubo & Ikue Mori

P6, ST2-3

MCH neurons in the hypothalamus impairs memory during sleep

Shuntaro Izawa, Ryo Inoue, Srikanta Chowdhury, Yasutaka Mukai & Akihiro Yamanaka

P7, ST2-4

Changes in appetitive associative strength and reward value modulate the Intrinsic excitability of nucleus accumbens neuronal ensembles

Joe Ziminski, Meike Sieburg, Sabine Hessler, Gabriella Margetts-Smith, Hans S Crombag & Eisuke Koya

P8

Development of the photoactivatable depalmitoylating enzyme to manipulate PSD-95 palmitoylation states

Takashi Kanadome, Norihiko Yokoi, Yuko Fukata & Masaki Fukata

P9

Down-regulation of Calcium/calmodulin-dependent serine protein kinase (CASK) disrupts excitatory-inhibitory balance of synapses by down-regulation of GluN2B.

Takuma Mori, Enas Ahmed Fathalla Kasem, Xueshan Cao, Xue Li, Taiga Kurihara, Takeshi Uemura, Toru Yanagawa & Katsuhiko Tabuchi

P10

Patterned neuronal activity increases BDNF promoter activity in upper layer neurons of the developing cortex

Yumi Miyasaka & Nobuhiko Yamamoto

P11

DNA polymerase β is required for active DNA demethylation in postnatal development of cortical neurons

Akiko Uyeda, Noriyuki Sugo, Kohei Onishi, Teruyoshi Hirayama, Takeshi Yagi & Nobuhiko Yamamoto

P12

Long-term in vivo imaging of neonates reveals a dynamic mechanism of dendritic refinement of cortical neuron

Shingo Nakazawa, Hidenobu Mizuno & Takuji Iwasato

P13

Three transgenic reporter rat strains for connectomics and optogenetics studies of the brain.

Hiroyuki Igarashi, Keiko Ikeda, Hiroshi Onimaru, Ryosuke Kaneko, Kyo Koizumi, Kaoru Beppu, Kayo nishizawa, Ko Matsui, Kazuto Kobayashi, Yuchio Yanagawa, Shin-Ichi Muramatsu, Toru Ishizuka, Hiromu Yawo

P14

Cross-modal reorganization of the whisker-barrel conditioning–optogenetic analysis

Kenta Abe & Hiromu Yawo

P15
Distant area-targeting axonal branches of layer 2/3 neurons develop more rapidly than locally targeting branches in mouse neocortex
Yuichiro Oka, Yuka Lin, Sheena Y.X. Tiong, Miyuki Doi, Tatsuya Sasaki, Tokuichi Iguchi & Makoto Sato

P16
Targeting enveloped viruses to multiple, distinct populations for neural circuit analysis.
Toshiaki Suzuki & Fumitaka Osakada

P17
Balanced inhibition controls the output of neurons tuned to low-frequency sound at avian cochlear nucleus
Mohammed AL-Yaari, Rei Yamada & Hiroshi Kuba

P18
Parvalbumin-positive interneurons regulate neuronal ensembles in visual cortex
Masakazu Agetsuma, Jordan P. Hamm, Kentaro Tao, Shigeyoshi Fujisawa & Rafael Yuste

P19
Functional analysis of layer 5 microcolumns in mouse primary visual cortex
Taisuke Yoneda, Hisato Maruoka, Seiichiro Sakai, Nao Nakagawa & Toshihiko Hosoya

P20
Connexin-43 in postnatal excitatory neurons regulate spine density and reliable response
Kenji Hayashi & Kenichi Ohki

P21
Multiscale Calcium imaging in visual cortex of marmoset monkeys
Takayuki Hashimoto, Masato Uemura, Teppei Matsui, Tomonari Murakami & Kenichi Ohki

P22
Visual experience is required for establishing feature-selective synchronization in the upper but not lower layer in primary visual cortex
Ayako W Ishikawa, Yukio Komatsu & Yumiko Yoshimura

P23
Influence of the postnatal experience on the cortical neural connections predetermined by the gene-regulation during the embryonic stage.
Etsuko Tarusawa, Makoto Sanbo, Masumi Hirabayashi, Takeshi Yagi & Yumiko Yoshimura

P24
Developmental role of endocannabinoids for binocular correspondence in mouse visual cortex
Katsuro Kameyama, Taisuke Yoneda, Takahiro Gotou, Keiko Terata, Kenji Sakimura, Masanobu Kano & Yoshio Hata

P25
Revealing a ventral stream extending to temporal cortex in mice
Nana Nishio, Hiroaki Tsukano, Atsushi Aiba, Manabu Abe, Meiko Kawamura, Kenji Sakimura, Junichi Nakai & Katsuei Shibuki

P26
Corticocortical projection-dependent subcircuits in layer 2/3 of rat frontal cortex
Yoshifumi Ueta & Yasuo Kawaguchi

P27
Conserved properties of dendrites in pyramidal cell
Alsayed A. Mohamed, Noboru Yamaguchi, Sayuri Hatada, Hiroko Kita, Joachim Lübke, Yasuo Kawaguchi & Yoshiyuki Kubota

P28
Direct corticomotoneuronal connections are transiently formed in a juvenile subprimate mammal: phylogenic implication
Naoyuki Murabe, Takuma Mori, Satoshi Fukuda, Noriko Isoo, Takae Ohno, Hiroaki Mizukami, Keiya Ozawa, Yumiko Yoshimura & Masaki Sakurai

P29
Cortical astrocytes prime the induction of spine plasticity and mirror image pain
Kei Eto, Tatsuya Ishikawa & Junichi Nabekura

P30

Downregulation of KCC2 accelerates motor functional recovery after axonal injury

Takuya Toda & Junichi Nabekura

P31

Melanin-concentrating hormone neurons negatively regulates hippocampal pyramidal cells and memory

Srikanta Chowdhury, Shuntaro Izawa & Akihiro Yamanaka

P32

Olfactory neural circuits involved in physiological changes

Kunio Kondoh, Zhonghua Lu, Xiaolan Ye, David P. Olson, Bradford B. Lowell & Linda B. Buck

P33

Tuning properties of goldfish olfactory receptor neurons to food odors and sex pheromones

Koji Sato & Peter W. Sorensen