Abstracts of papers presented
at the 2025 Cold Spring Harbor Asia Conference
Awaji Japan

OPTICAL INTERROGATION OF NEURAL STRUCTURE AND DYNAMICS UNDERLYING BEHAVIOR

April 21–April 24, 2025

Arranged by

Guoqiang Bi, *CAS-SIAT and USTC*
Masanori Matsuzaki, *The University of Tokyo*
Mark Hübener, *Max Planck Institute for Biological Intelligence*
Yi Zuo, *University of California, Santa Cruz*

Cold Spring Harbor Conferences Asia
Cold Spring Harbor Laboratory

OPTICAL INTERROGATION OF NEURAL STRUCTURE AND DYNAMICS UNDERLYING BEHAVIOR

Awaji, Japan

Monday, April 21 – Thursday, April 24, 2025

Monday	7:30 pm	**1** Keynote Session
Tuesday	9:00 am	**2** Optical Interrogation of Synaptic Connectivity and Function
Tuesday	2:00 pm	**3** From Neurons to Circuits I
Tuesday	7:00 pm	**Poster Session**
Wednesday	9:00 am	**4** Neural Circuit Basis of Mental Disorders
Wednesday	2:00 pm	**5** From Neurons to Circuits II
Wednesday	6:00 pm	*Cocktails and Banquet*
Thursday	9:00 am	**6** Novel Tool for Brain Imaging
Thursday	1:00 pm	*Excursion to World Cultural Heritage Himeji Castle*[#]

Awaji Yumebutai Conference Center

Meeting venue: Main Hall, 2nd floor of the Conference Center
Poster session: Reception Hall B Foyer, 2nd floor of Conference Center
CSHA office: Room 202

Breakfast*: Coccolare, 2nd floor of Grand Nikko Awaji
Dinner: Reception Hall B, 2nd floor of Conference Center
Lunch: Reception Hall B, 2nd floor of Conference Center
Cocktails: Cielo, 1st floor of Grand Nikko Awaji
Banquet: Stella, 1st floor of Grand Nikko Awaji

***Only available for guests staying at Grand Nikko Awaji*

[#]*Optional – requires sign up*

PROGRAM

MONDAY, April 21—7:00 PM

Opening Remarks

Masanori Matsuzaki
The University of Tokyo

SESSION 1 KEYNOTE SESSION

Chairperson: **Mark Hübener,** Max Planck Institute for Biological Intelligence, Martinsried, Germany

Inferring function and dynamics from structure
Jeff W. Lichtman [35'+10']
Presenter affiliation: Harvard University, Cambridge, Massachusetts. 1

Dendritic spine chemogenetics—A novel approach to synaptic modulation and brain function
Haruo Kasai [35'+10']
Presenter affiliation: The University of Tokyo, Tokyo, Japan. 2

TUESDAY, April 22—9:00 AM

SESSION 2 OPTICAL INTERROGATION OF SYNAPTIC CONNECTIVITY AND FUNCTION

Chairperson: **Ju Lu,** Lehigh University, Bethlehem, Pennsylvania, USA

New tool for brain-wide assessment of changes in synaptic connectivity—Two-timeframe rabies tracing
Mark Hübener [20'+5']
Presenter affiliation: Max Planck Institute for Biological Intelligence, Martinsried, Germany. 3

Live super-resolution imaging reveals regulated phase separation of postsynaptic proteins
Rachel E. Cain, Matthew B. Dalva [10'+5']
Presenter affiliation: Thomas Jefferson University, Philadelphia, Pennsylvania; Tulane University, New Orleans, Louisiana. 4

Stochastic activation of NMDA receptors by ambient glutamate drives all-or-none synaptic potentiation
Guo-Qiang Bi [20'+5']
Presenter affiliation: University of Science and Technology of China, Hefei, China. 5

Synaptic machinery for molecular homeostasis
Chao Sun [10'+5']
Presenter affiliation: DANDRITE, Aarhus, Denmark; Aarhus University, Aarhus, Denmark. 6

Break

Intracellular and extracellular biochemical signal computation in synaptic plasticity
Ryohei Yasuda [20'+5']
Presenter affiliation: Max Planck Institute for Neuroscience, Jupiter, Florida. 7

Dendritic compartment-specific regulation of spine density for cortical circuit maturation
Ryo Egashira, Toshikazu Baba, Meng-Tsen Ke, Nao Nakagawa-Tamagawa, Yoshiaki Tagawa, Takeshi Imai [10'+5']
Presenter affiliation: Kyushu University, Fukuoka, Japan. 8

Are new spines necessary for long term memory storage?
Hiranmay Joag, Nigel Whittle, Kenta Hagihara, Andreas Lüthi, Tobias Bonhoeffer [20'+5']
Presenter affiliation: Max Planck Institute for Biological Intelligence, Martinsried, Germany. 9

SPONSOR TALK

Transforming precision imaging—New technology updates
Akira Saito [20'+5']
Presenter affiliation: Evident Corporation, Tokyo, Japan. 10

SESSION 3 FROM NEURONS TO CIRCUITS I

Chairperson: **Masayuki Sakamoto,** Kyoto University, Kyoto, Japan

Functional diversity of inhibitory neurons during novelty processing
Marina Garrett [20'+5']
Presenter affiliation: Allen Institute for Neural Dynamics, Seattle, Washington. 11

Developmental principles that instruct long-range cortico-cortical connectivity in the mouse visual cortex
Matthew W. Jacobs, John Ratliff, Alec L. Soronow, Hylen T. James, Jorin Eddy, Euiseok J. Kim [10'+5']
Presenter affiliation: University of California, Santa Cruz, Santa Cruz, California. 12

Mapping different excitatory and inhibitory input types onto single cortical pyramidal neurons
Elly Nedivi, Aygul Balcioglu, Josiah Boivin, Bettina Schmerl [20'+5']
Presenter affiliation: Massachusetts Institute of Technology, Cambridge, Massachusetts. 13

Spontaneous histaminergic neuron dynamics prime memory accessibility
Yoshikazu Morishita, Yuki Takamura, Kyoka Nishimura, Yuto Yokoi, Rentaro Idutsu, Natsuko Hitora-Imamura, Masabumi Minami, Hiroshi Nomura [10'+5']
Presenter affiliation: Nagoya City University, Nagoya, Japan; Hokkaido University, Sapporo, Japan. 14

Break

Distinct basal forebrain cholinergic nuclei mediate reinforcement learning and modality-specific blocking
Weimin Gu, Yuanxi Li, Yang Yang [20'+5']
Presenter affiliation: ShanghaiTech University, Shanghai, China. 15

Microcircuits in the marmoset prefrontal cortex with a large volume electron microscopy, ATUM-Blade-TEM
Yoshiyuki Kubota [10'+5']
Presenter affiliation: National Institute for Physiological Sciences, Okazaki, Japan; RIKEN Center for Brain Science, Wako, Japan; Jichi Medical School, Shimono, Japan. 16

An ensemble activity in the prelimbic cortex specific for fear recall
Hayato Kondo, Keisuke Ota, Masatoshi Inoue, Hajime Fujii, Haruhiko Bito [20'+5']
Presenter affiliation: The University of Tokyo Graduate School of Medicine, Tokyo, Japan. 17

Movie reconstruction from mouse visual cortex activity
Joel Bauer, Troy W. Margrie, Claudia Clopath [10'+5']
Presenter affiliation: University College London, London, United Kingdom; Imperial College, London, United Kingdom. 18

Imaging the brain at high spatiotemporal resolution
Na Ji [20'+5']
Presenter affiliation: University of California, Berkeley, Berkeley, California. 19

TUESDAY, April 22—7:00 PM

POSTER SESSION

Shared pallidum-centered structural and molecular mechanism underlying distinct classes of antidepressants
Yoshifumi Abe, Kenji Tanaka
Presenter affiliation: Keio University School of Medicine, Tokyo, Japan. 20

A cerebello-thalamo-cortical pathway transmits signals that contributes to modulating and learning movement initiation time
Rie Ako, Shin-Ichiro Terada, Masanori Matsuzaki
Presenter affiliation: The University of Tokyo, Graduate School of Medicine, Tokyo, Japan. 21

Multiple metacognitive signals support solving credit assignments about ambiguous error sources.
Takuya Anzai, Aurelio Cortese
Presenter affiliation: Advanced Telecommunications Research Institute International, Kyoto, Japan; Nara Institute of Science and Technology, Nara, Japan. 22

CB1 and CB2 receptors differentially modulate the cognitive impact of maternal immune activation and perinatal cannabinoid exposure
Han-Ting Chen, Ken Mackie
Presenter affiliation: Indiana University, Bloomington, Indiana. 23

Beneficial effect of human enteric glia transplantation in brain repair—MRI and behavioral assessment
Nina Colitti, Edwige Rice, Franck Desmoulin, Isabelle Loubinoux, Carla Cirillo
Presenter affiliation: Toulouse NeuroImaging Center (ToNIC), Toulouse, France. 24

Development of TMP-tag based chemigenetic neuromodulator sensors for multiplex imaging
Shengwei Fu, Zizhe Zhou, En Ji, Yuqi Zhang, Sunlei Pan, Yaohan Huang, Yu Zheng, Xiaoyan Cui, Ting Wang, Junwei Zhang, Zhixing Chen, Yulong Li
Presenter affiliation: Peking University, Beijing, China. 25

Rational engineering of XCaMP-C, a versatile genetically-encoded Ca^{2+} indicator for all-optical interrogation, multiplex imaging, and quantitative Ca^{2+} imaging
Hajime Fujii, Keisuke Ota, Yayoi Kondo, George Cai, Richard Song, Haobo Song, Michiko Okamura, Hayato Kondo, Masatoshi Inoue, Haruhiko Bito
Presenter affiliation: University of Tokyo Graduate School of Medicine, Toyko, Japan. 26

Distinct regulation of RhoGAP and RhoGEF proteins for NMDAR-dependent synaptic competition during developmental dendrite remodeling
Satoshi Fujimoto, Marcus N. Leiwe, Shuhei Aihara, Tetsushi Niiyama, Takeshi Imai
Presenter affiliation: Kyushu University, Fukuoka, Japan. 27

Cocaine-induced alterations in brain activity: a whole-brain, data-driven investigation
Mark Christian Guinto, Yuto Shimazaki, Taku Nagai, Katsuyuki Kunida, Atsushi Kasai, Junichiro Yoshimoto
Presenter affiliation: Fujita Health University, Toyoake, Japan. 28

Two-photon functional mapping of hierarchical processing in marmoset visual cortex
Takayuki Hashimoto, Teppei Matsui, Masato Uemura, Tomonari Murakami, Kohei Kikuta, Toshiki Kato, Daigo Takeuchi, Reia Shikimachi, Zhiyu Zhang, Kenichi Ohki
Presenter affiliation: The University of Tokyo, Tokyo, Japan. 29

Input-output architecture of the claustrum
Takahiro Hino, Miho Urabe, Yuriko Mishima, Ayako Ajima, Rumiko Mizuguchi, Momoko Shiozaki, Nobuhiko Miyasaka, Yoshihiro Yoshihara
Presenter affiliation: RIKEN, Saitama, Japan. 30

Modular organization of cerebellar climbing fiber inputs for reinforcement learning
Huu Hoang, Shinichiro Tsutsumi, Masanori Matsuzaki, Masanobu Kano, Keisuke Toyama, Kazuo Kitamura, Mitsuo Kawato
Presenter affiliation: ATR Institute International, Kyoto, Japan. 31

Seeing the unseen—Endocannabinoid oscillations in the somatosensory cortex
Jui-Yen Huang, Gautam Chauhan, Scott J. Barton, Yulong Li, Ken Mackie, Hui-Chen Lu
Presenter affiliation: Indiana University, Bloomington, Indiana. 32

Novel 6-DOF platform and mesoscale two-photon calcium imaging reveal integrative roles of the parietal cortex through ground tilt representation
Fumiya Imamura, Hiroto Imamura, Yoshikazu Isomura, Riichiro Hira
Presenter affiliation: Institute of Science Tokyo, Tokyo, Japan. 33

Balanced corticocortical connectivity shapes distinct subspaces of temporal and behavior representations in the secondary motor cortex and posterior parietal cortex
Hiroto Imamura, Fumiya Imamura, Yoshikazu Isomura, Riichiro Hira
Presenter affiliation: Institute of Science Tokyo, Tokyo, Japan. 34

Isotonic and minimally invasive optical clearing media for live cell imaging *ex vivo* and *in vivo*
Shigenori Inagaki, Nao Nakagawa-Tamagawa, Nathan Z. Huynh, Yuki Kambe, Rei Yagasaki, Satoshi Manita, Satoshi Fujimoto, Takahiro Noda, Misato Mori, Aki Teranishi, Hikari Takeshima, Yuki Naitou, Katsuhiko Hayashi, Kazuo Kitamura, Yoshiaki Tagawa, Satoru Okuda, Tatsuo Sato, Takeshi Imai
Presenter affiliation: Kyushu University, Fukuoka, Japan. 35

Optimization of rabies virus vector based on CVS strain for efficient monosynaptic tracing
Satoshi Nonomura, Maki Fujiwara, Mayuko Nakano, Emiko Tanaka, Ken-ichi Inoue
Presenter affiliation: Kyoto University, Inuyama, Japan. 36

Brain-wide mapping and hippocampal calcium imaging of neuronal circuits involved in encoding of objects, places and behaviors during free exploration in mice
Olga Ivashkina, Anna Ivanova, Viktor Plusnin, Nikita Pospelov, Olga Rogozhnikova, Nikita Saveliev, Vladimir Sotskov, Ksenia Toropova, Konstantin Anokhin
Presenter affiliation: Lomonosov Moscow State University, Moscow, Russia. 37

Distributed sensorimotor processing in the rat cortex revealed by a novel visual two-step reaction time task
Masanori Kawabata, Yoshikazu Isomura
Presenter affiliation: Institute of Science Tokyo, Tokyo, Japan. 38

Functional reorganization of orientation representation after eye opening in the mouse primary visual cortex
Fumiaki Kishino, Takashi Yoshida, Masato Uemura, Sigrid Trägenap, Matthias Kaschube, Kenichi Ohki
Presenter affiliation: University of Tokyo, Tokyo, Japan; WPI-IRCN, Tokyo, Japan; Institute for AI and Beyond, Tokyo, Japan. 39

Early song learning experiences regulate dynamic changes of the auditory to motor circuit in zebra finches
Joanna A. Komorowska-Müller, Shinobu Nomura, Yuichi Morohashi, Bernd Kuhn, Yoko Yazaki-Sugiyama
Presenter affiliation: Okinawa Institute of Science and Technology, Tancha, Japan. 40

A multimodal dataset linking wide-field calcium imaging to behavior changes in mice during an operant lever-pull task
Masashi Kondo, Keisuke Sehara, Rie Harukuni, Ryo Aoki, Shoya Sugimoto, Yasuhiro R. Tanaka, Masanori Matsuzaki, Ken Nakae
Presenter affiliation: The University of Tokyo, Graduate School of Medicine, Tokyo, Japan. 41

Heterogeneity of structure-function connectivity coupling in the mouse cortex
Ruixiang Li, Teppei Matsui, Aya Ito-Ishida
Presenter affiliation: RIKEN Center for Brain Science, Wako, Japan; Doshisha University, Kyoto, Japan. 42

Are microcolumns the anatomical basis of selective information processing in visual attention?
Qingrui Liu, Hisato Maruoka, Toshihiko Hosoya, Shigeo Okabe
Presenter affiliation: The University of Tokyo, Tokyo, Japan. 43

Behavioral and neural mechanisms of adaptive foraging in *C. elegans*
Yu Liu, Tianhe Li, Yi Lu, Chi Zhang, Chao Gao, Junjie Wang, Siyu Ning, Jiahui An, Ni Ji
Presenter affiliation: Chinese Academy of Medical Sciences & Peking Union Medical College, Beijing, China; Chinese Institute for Brain Research, Beijing, Beijing, China. 44

In vivo imaging reveals neuronal computations underlying cephalopod polarization vision
Tomoyuki Mano, Konstantinos Tsaridis, Yutaka Kojima, Thi Thu Van Dinh, Giovanni Masucci, Teresa L. Iglesias, Chun Yen Lin, Makoto Hiroi, Sam Reiter
Presenter affiliation: Okinawa Institute of Science and Technology (OIST) Graduate University, Okinawa, Japan. 45

Cortical representation of automatic behaviors
Nicholas J. Michelson, Pankaj K. Gupta, Timothy H. Murphy
Presenter affiliation: University of British Columbia, Vancouver, Canada. 46

Representational maps as indicators of network homeostasis in the neocortex
Takahiro Noda, Jens-Bastian Eppler, Dominik F. Aschauer, Matthias Kaschube, Yonatan Loewenstein, Simon Rumpel
Presenter affiliation: Kyushu University, Fukuoka, Japan; Johannes Gutenberg University-Mainz, Mainz, Germany. 47

Exploring the link between genes regulating temperature acclimation and neural circuit modifications
Akane Ohta, Moe Tezuka, Seiya Kamino, Atsushi Kuhara
Presenter affiliation: Konan University, Kobe, Japan. 48

Hierarchical processing of predictive coding in the mammalian brain
Fumitaka Osakada
Presenter affiliation: Nagoya University, Nagoya, Japan. 49

Optical interrogation of calcium and genomic responses in neuronal circuits of mice with intact and impaired memory
Olga Rogozhnikova, Olga Ivashkina, Ksenia Toropova, Anna Ivanova, Tatyana Zamorina, Viktor Plusnin, Nikita Pospelov, Konstantin Anokhin
Presenter affiliation: Lomonosov Moscow State University, Moscow, Russia. 50

A novel synapse marking tool for dissecting structural plasticity
Polina Rusina, Jonas Wilhelm, Dietmar Schreiner, Runyu Mao, Kai Johnsson, Peter Scheiffele
Presenter affiliation: University of Basel, Basel, Switzerland. 51

Light microscopy-based connectome mapping
Biswanath Saha, Satoshi Fujimoto, Koki Ishikawa, Yuta Fukuda, Kenichi Ohki, Takeshi Imai
Presenter affiliation: Kyushu University, Fukuoka, Japan. 52

Priming motor circuits facilitates functional recovery after stroke
Kenta Abe, Tatsuo K. Sato, Takashi R. Sato
Presenter affiliation: Kagoshima University, Kagoshima, Japan. 53

Behavioral adaptation and plasticity of the neural activity of the brain in an optical brain-machine interface.
Akinori Y. Sato, Keita Hori, Konosuke Kitajima, Kentaro Ibuka, Kei N. Ito, Ryosuke F. Takeuchi, Fumitaka Osakada
Presenter affiliation: Graduate School of Pharmaceutical Sciences, Nagoya, Japan. 54

Axonal wiring and neural dynamics of noradrenergic subsystems involved in traumatic social learning
Kaoru Seiriki, Shunsuke Maeda, Leo Kojima, Yuzuka Fujimoto, Taiyou Baba, Hiroki Rokujo, Tomoki Nitta, Takanobu Nakazawa, Atsushi Kasai, Takatoshi Hikida, Hitoshi Hashimoto
Presenter affiliation: Osaka University, Suita, Osaka, Japan. 55

Population-level sleep homeostasis in social insects
Shinnosuke Nomura, Haruna Fujioka, Makoto Hiroi, Chika Shimizu, Reiter Sam, Shoi Shi
Presenter affiliation: University of Tsukuba, Ibaraki, Japan. 56

Stimulated Raman scattering imaging visualizes the water dynamics in the brain
Takanori Shinotsuka, Yasuyuki Ozeki, Masato Yasui, Mutsuo Nuriya
Presenter affiliation: Keio University, Tokyo, Japan. 57

Mechanisms for plastic landmark anchoring in zebrafish compass neurons
Ryosuke Tanaka, Ruben Portugues
Presenter affiliation: Technical University of Munich, Munich, Germany. 58

Neural mechanisms of sensorimotor transformation in the superior colliculus—Integration of visual inputs and locomotion encoding
Kota Tokuoka, Keisuke Yonehara
Presenter affiliation: National Institute of Genetics, Mishima, Japan. 59

Revealing the functional hierarchy of the cephalopod visual system
Konstantinos Tsaridis, Tomoyuki Mano, Yutaka Kojima, Thi Thu Van Dinh, Teresa Iglesias, Giovanni Masucci, Chun Yen Lin, Makoto Hiroi, Sam Reiter
Presenter affiliation: Okinawa Institute of Science and Technology (OIST), Onna, Japan. 60

CaliAli—A comprehensive suite for multi-session extraction of somatic and dendritic neuron signals in one-photon calcium imaging
Pablo Vergara, Satoshi Manita, Yuteng Wang, Sakthivel Srinivasan, Zhe Dong, Yu Feng, Iyo Koyanagi, Deependra Kumar, Yoan Cherasse, Toshie Naoi, Yuki Sugaya, Takeshi Sakurai, Masanobu Kano, Tristan Shuman, Denise Cai, Masashi Yanagisawa, Kazuo Kitamura, Masanori Sakaguchi
Presenter affiliation: University of Yamanashi, Yamanashi, Japan; University of Tsukuba, Tsukuba, Japan. 61

Integrated 3D perturbation and high-speed whole-brain imaging system
Xiaoou Wang, Zhiyuan Wang, Shilin Fang, Yu Mu
Presenter affiliation: Center for Excellence in Brain Science and Intelligence Technology (Institute of Neuroscience), Shanghai, China; School of Future Technology, Beijing, China. 62

Development of chemigenetic fluorescence lifetime-based biosensors for detecting neurotransmitters
Zhenghua Wang, Helen Farrants, Luke D. Lavis, Eric R. Schreiter, Yulong Li
Presenter affiliation: State Key Laboratory of Membrane Biology, Beijing, China; Peking University, Beijing, China. 63

Short-chain fatty acids regulate neural activity in excitatory neurons of the bed nucleus of the stria terminalis
Wei-Li Wu
Presenter affiliation: National Cheng Kung University, Tainan, Taiwan, China. 64

Identification of new temperature-signaling neurons through a combination of transcriptome analysis and calcium imaging in *C. elegans*
Sho Yabuuchi, Hiroaki Teranishi, Toshihiro Iseki, Natsune Takagaki, Yohei Minakuchi, Atsushi Toyoda, Akane Ohta, Atsushi Kuhara
Presenter affiliation: Konan University, Kobe, Japan. 65

Large-scale simulation of biophysical neural network models on the supercomputer Fugaku
Tadashi Yamazaki, Kaaya Akira, Rin Kuriyama, Mari Iura, Taira Kobayashi, Jun Igarashi
Presenter affiliation: The University of Electro-Communications, Tokyo, Japan. 66

Neural activity related to the local-position cue detection during visual discrimination in the mouse visual cortex
Takashi Yoshida, Kumiko Saitou, Kenichi Ohki
Presenter affiliation: The University of Tokyo, Tokyo, Japan; Institute for AI and Beyond, Tokyo, Japan. 67

A tissue distortion-minimizing clearing method for brain-wide profiling of diverse architectures
Jingtan Zhu, Xiaomei Liu, Zhang Liu, Tingting Yu, Dan Zhu
Presenter affiliation: Huazhong University of Science and Technology, Wuhan, China. 68

Genome-wide mapping of transcription factor dynamics during neuronal long-term potentiation using deaminase-based footprinting
Yuan Yuan, Chunxian Yang, Dubai Li, Yuxuan Pang, Fengdan Yu, Xiaoliang S. Xie
Presenter affiliation: Peking University, Beijing, China. 69

WEDNESDAY, April 23—9:00 AM

SESSION 4 NEURAL CIRCUIT BASIS OF MENTAL DISORDERS

Chairperson: **Weijian Zong,** Norwegian Institute of Science and Technology, Trondheim, Norway

Sudden bursts of otherwise suppressed cell ensembles cause meltdown-like attack in ASD mouse models
Akiko Hayashi-Takagi [20'+5']
Presenter affiliation: RIKEN, Wako, Japan. 70

Think positively—Novel mechanisms of modulating synaptic plasticity and pain and implications for brain disease
Kevin Beier [10'+5']
Presenter affiliation: University of California, Irvine, Irvine, California. 71

Targeting insulo-frontal pathway to reduce stress-evoked cognitive rigidity
Shaorong Ma, Kuan Hong Wang, Yi Zuo [20'+5']
Presenter affiliation: UC Santa Cruz, Santa Cruz, California. 72

Dissociating hallucinogenic and neuroplastic effects of psychedelics
Ju Lu, Jacob J. Baker, Michelle Tjia, Yi Zuo [10'+5']
Presenter affiliation: University of California Santa Cruz, Santa Cruz, California; Lehigh University, Bethlehem, Pennsylvania. 73

Break

Multifaceted roles of microglia in the cortex
Wen-Biao Gan [20'+5']
Presenter affiliation: Shenzhen Bay Laboratory, Shenzhen, China. 74

Inhibitory neuron development—A key to understanding social behavior and autism spectrum disorder
Yoshinobu Nakamura, Winda Ariyani, Aito Narita, Goichi Miyoshi [10'+5']
Presenter affiliation: Gunma University Graduate School of Medicine, Maebashi, Japan. 75

Neuronal and circuit dysfunction in Alzheimer's disease
Arthur Konnerth [20'+5']
Presenter affiliation: Technical University of Munich, Munich, Germany. 76

Microglia in cross modal plasticity
Hiroaki Wake [10'+5']
Presenter affiliation: National Institute for Physiological Sciences, Okazaki, Japan; Nagoya University Graduate School of Medicine, Nagoya, Japan. 77

WEDNESDAY, April 23—2:00 PM

SESSION 5 FROM NEURONS TO CIRCUITS II

Chairperson: **Takeshi Imai,** Kyushu University, Fukuoka, Japan

The how and why of sleep
Yang Dan [20'+5']
Presenter affiliation: University of California, Berkeley, Berkeley, California. 78

Activity-dependent organization of prefrontal hub-networks for associative learning and signal transformation
Masakazu Agetsuma [10'+5']
Presenter affiliation: National Institutes for Quantum Science and Technology, Chiba, Japan; National Institute for Physiological Sciences, Okazaki, Japan. 79

Learning in intelligent systems
Hiroshi Makino [20'+5']
Presenter affiliation: Keio University School of Medicine, Tokyo, Japan. 80

Neural correlates of prediction error and action value in mice primary somatosensory and primary motor cortex
Naohiro Yamauchi, Kenji Doya [10'+5']
Presenter affiliation: Okinawa Institute of Science and Technology, Okinawa, Japan. 81

Break

Decoding the location of touch during active sensing
David Kleinfeld [20'+5']
Presenter affiliation: UC San Diego, La Jolla, California. 82

Multisensory processing in mouse posterior parietal cortex
Adrian Roggenbach, Shuting Han, Fritjof Helmchen [20'+5']
Presenter affiliation: University of Zurich, Zurich, Switzerland. 83

Molecular and neural activity signatures of claustrum neurons in stress and vigilance behaviors
Masato Tanuma, Yoshihisa Yokoyama, Jin Ohkubo, Naotaka Ochi, Kaoru Seiriki, Hiroshi Nomura, shun Yamaguchi, Hiroyuki Okuno, Joshua P. Jonansen, Hitoshi Hashimoto, Atsushi Kasai [10'+5']
Presenter affiliation: Osaka University, Suita, Japan; Nagoya University, Nagoya, Japan. 84

Spatiotemporal dynamics of the frontoparietal network in behaving common marmosets
Masanori Matsuzaki [20'+5']
Presenter affiliation: The University of Tokyo, Tokyo, Japan; RIKEN, Wako, Japan. 85

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Lightfield 4D keeping pace with the pulse of life—High-speed physiological and neuronal processes captured in 3D
Annette Bergter, Xianke Shi [20'+5']
Presenter affiliation: Carl Zeiss Microscopy GmbH, Jena, Germany. 86

WEDNESDAY, April 23—6:00 PM

CONFERENCE BANQUET

THURSDAY, April 24—9:00 AM

SESSION 6 NOVEL TOOLS FOR BRAIN IMAGING

Chairperson: **Yang Yang,** ShanghaiTech University, Shanghai, China

Spying on neuromodulation by constructing chemigenetic GPCR based fluorescent sensors
Yulong Li [20'+5']
Presenter affiliation: PKU-IDG/McGovern Institute for Brain Research, Beijing, China; Peking University, Beijing, China. 87

Bright and photostable voltage indicators for imaging neural activity
Peng Zou [10'+5']
Presenter affiliation: Peking University, Beijing, China. 88

A flexible two-photon fiberscope for all-optical circuits manipulation in freely moving mice
Valentina Emiliani [20'+5']
Presenter affiliation: Vision Institute, Sorbonne Université, INSERM, CNRS, Paris, France. 89

Fluorescent barcode vectors—A multiplexed tracing toolkit for mesoscopic axonal projection
Daichi Moriyasu, Satoshi Fujimoto, Biswanath Saha, Fuyuki Kamizono, Hikari Takeshima, Yuki Ishida, Akiya Watakabe, Itaru Imayoshi, Takeshi Imai [10'+5']
Presenter affiliation: Kyushu University, Fukuoka, Japan. 90

Break

Miniature two-photon microscope for studying brain microcircuits in freely moving animals
Weijian Zong [20'+5']
Presenter affiliation: Kavli Institute for Systems Neuroscience, Trondheim, Norway. 91

Genetically encoded biosensors for monitoring neuronal activity and biochemical signaling *in vivo*
Masayuki Sakamoto [10'+5']
Presenter affiliation: Kyoto University, Kyoto, Japan. 92

Measuring input-output relationships of individual neurons in vivo
Kaspar Podgorski, Michael Xie, Maedeh Seyedolmohadesin, Adrian Negrean, Manni He, Abhi Aggarwal, Lucas Kinsey, Adam Charles, Karel Svoboda [20'+5']
Presenter affiliation: Allen Institute, Seattle, Washington. 93

Closing Remarks