

Curriculum Vitae

Masanori Murayama

Team Leader

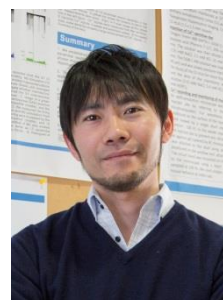
RIKEN Center for Brain Science (CBS)

Work Address: Laboratory for Haptic Perception
and Cognitive Physiology,

RIKEN Center for Brain Science,

2-1 Hirosawa Wako Saitama 351-0198, Japan.

E-mail: masanori.murayama@riken.jp



Research Interest

Neural mechanisms of sensory processing

Education

Ph.D. March 2006, Tokyo University of Pharmacy and Life Science
(2005-2006, Prof. Hiroyoshi Miyakawa; 2001-2005, Prof. Yoshihisa Kudo).

B.S. March 2001, Tokyo University of Pharmacy and Life Science
(1997-2001, Prof. Yoshihisa Kudo).

Scientific Employment

Present Appointments

Apr. 2018-present Team Leader, Laboratory for Haptic Perception and Cognitive Physiology,
Center for Brain Science, RIKEN, Japan.

Apr. 2017-present Adjunct Associate Professor, Brain and Body System Science Institute,
Saitama University, Japan.

Mar. 2016 – present Adjunct Associate Professor, Department of Electrical and Electronic
Engineering, Tokyo University of Agriculture and Technology, Japan.

Previous Appointments

Feb. 2017 – Mar. 2018 Senior team leader at BSI, RIKEN.

Mar. 2010 – Jan. 2017 Team leader, Laboratory for Behavioral Neurophysiology, Brain Science
Institute (BSI), RIKEN, Japan.

Apr. 2012-Mar. 2016 Adjunct Associate Professor, School and Graduate school of Bioscience
and Biotechnology, Tokyo Institute of Technology, Japan.

Apr. 2006 - Feb. 2010 Post-doctoral fellow, Department of Physiology, University of Bern,
Switzerland.

Scientific Training

- Summer 2010 Transcranial flavoprotein fluorescence imaging, Department of Neurophysiology (Prof. Shibuki), Brain Research Institute, Niigata University, Japan.
- Winter 2005 Two-photon microscope for in vivo experiments, immunofluorescent and immunochemistry staining techniques, Hirase Research Unit (Dr. Hirase), BSI RIKEN, Japan.
- Winter 2003 In vivo whole-cell patch-clamp recording from anaesthetized rats, Center for Molecular and Behavioral Neuroscience, (Prof. Buzsáki), Rutgers University, USA.
- Summer 2003 Unit recordings from monkey and rats. Department of System Neurophysiology (Prof. Nanbu), National Institute for Physiological Science (NIPS), Japan.
- Summer 2002 Two-photon Ca²⁺ imaging from spines of CA1 pyramidal cells using rat hippocampal slices. Department of Cell Physiology (Prof. Kasai), NIPS, Japan.
- Summer 2001 Making amplifiers for electrophysiology, Technical Division, NIPS, Japan.

Awards


- 2016 The Young Scientists' Prize, the Commendation for Science and Technology by the Minister of Education, Culture, Sports, Science and Technology, Japan.
- 2016 Young Investigator Award, Physiological Society of Japan.
- 2015 Encouragement Award, the 8th Japanese Association for the Study of Musculoskeletal Pain.
- 2010 Young Investigator Award, Japan Neuroscience Society.
- 2010 Himura-Wagner Award, the 13th Conference of Peace through Mind/Brain Science.
- 2009 Travel Fellowship, Swiss Society for Neuroscience.
- 2007 Second prize for poster presentation, the 3rd annual meeting of Clinical Neuroscience in Bern.

Certification

- 2000 Advanced biotechnological engineer, Japan Association of Biotechnology Education.

Peer-Reviewed Publications (* corresponding author)

1. The Roles of Cortical Slow Waves in Synaptic Plasticity and Memory Consolidation. *Miyamoto D, Hirai D, *Murayama M. **Front Neural Circuits** 11, 92, 2017 (perspective article).
2. Dendritic spikes in sensory perception.*Manita M, Miyakawa M, Kitamura K and *Murayama M. **Front Cell Neurosci.** 15;11:29 (2017) (review article).

3. Top-down cortical input during NREM sleep consolidates perceptual memory. Miyamoto D, Hirai D, Fung CCA, Inutsuka A, Odagawa M, Suzuki T, Boehringer R, Adaikkan C, Matsubara C, Matsuki N, Fukai T, McHugh TJ, Yamanaka A, *Murayama M. **Science** 352(6291) 1315-1318 Jun 2016.
4. Brief hind paw stimulation is sufficient to induce delayed somatosensory discrimination learning in C57BL/6 mice. Hirasawa N, Yamada K, *Murayama M. **Behavioural Brain Research** 301 102-109 Mar 2016.
5. Craniotomy for cortical voltage-sensitive dye imaging in mice. Suzuki T, *Murayama M. **Bio-protocol**, 6, 3, Feb 2016.
6. The fiber-optic imaging and manipulation of neural activity during animal behavior. Miyamoto D, *Murayama M. **Neuroscience Research** 103 1-9 Feb 2016 (review article).
7. Manita S, Suzuki T, Homma C, Matsumoto T, Odagawa M, Yamada K, Ota K, Matsubara C, Inutsuka A, Sato M, Ohkura M, Yamanaka A, Yanagawa Y, Nakai J, Hayashi Y, Larkum ME, *Murayama M. A top-down cortical circuit for accurate sensory perception. **Neuron** 86(5):1304-16 (2015).
 **Highly Cited Paper** according to the Thomson Reuters Web of Science: As of July/August 2017, this highly cited paper received enough citations to place it in the top 1% of the academic field of Neuroscience & Behavior based on a highly cited threshold for the field and publication year.
8. Spike detection from noisy neural data in linear-probe recordings. *Takekawa T, Ota K, Murayama M, *Fukai T. **Eur J Neuroscience** 39(11) 1943-1950 Jun 2014.
9. Fiber-optic calcium monitoring of dendritic activity in vivo. Murayama M, *Larkum ME. **Cold Spring Harbor Protocols** 2012 218-225 Feb 2012.
10. The cellular basis of GABA(B)-mediated interhemispheric inhibition. Palmer LM, Schulz JM, Murphy SC, Ledergerber D, Murayama M, *Larkum ME. **Science** 335 (6071) 989-993 Feb 2012.
11. Inhibitory regulation of dendritic activity in vivo. Palmer L, Murayama M, *Larkum ME. **Front Neural Circuits** 6, 26, 2012 (review article).
12. Optical recording of neuronal activity with a genetically-encoded calcium indicator in anesthetized and freely moving mice. Lütcke H†, Murayama M†, Hahn T, Margolis DJ, Astori S, Zum Alten Borgloh SM, Göbel W, Yang Y, Tang W, Kügler S, Sprengel R, Nagai T, Miyawaki A, Larkum ME, *Helmchen F, *Hasan MT. **Frontiers in Neural Circuits** 4, 9 Apr 2010. † co-first author.
13. Enhanced dendritic activity in awake rats. Murayama M, *Larkum ME. **PNAS** 106(48) 20482-20486 Dec 2009.
14. In vivo dendritic calcium imaging with a fiberoptic periscope system. Murayama M, *Larkum ME. **Nature Protocols** 4(10) 1551-1559 2009.

15. Dendritic encoding of sensory stimuli controlled by deep cortical interneurons. Murayama M, Pérez-Garci E, Nevian T, Bock T, Senn W, *Larkum ME. **Nature** 457(7233) 1137-1141 Feb 2009.
16. Fiberoptic system for recording dendritic calcium signals in layer 5 neocortical pyramidal cells in freely moving rats. Murayama M, Pérez-Garci E, Lüscher HR, *Larkum ME. **Journal of Neurophysiology** 98 1791-1805 Sep 2007.
17. Optical monitoring of progressive synchronization in dentate granule cells during population burst activities. Murayama M, Miyazaki K, Kudo Y, Miyakawa H, *Inoue M. **Eur J Neuroscience** 21 3349-3360 Jun 2005.

Book Chapters (in English)

1. Chapter 13. Dendritic integration in vivo, Palmer L, Murayama M, Larkum ME. **Dendrites** (3rd edition), Oxford University Press, Edited by Greg Stuart, Nelson Spruston, and Michael Häusser (2016).
2. Chapter 82. Fiber-Optic Calcium Monitoring of Dendritic Activity. Murayama M, Larkum ME. **Imaging in Neuroscience: A Laboratory Manual**, Cold Spring Harbor Laboratory Press, Edited By Fritjof Helmchen & Arthur Konnerth (2011).

Invited Talks abroad

1. Murayama M (2018). Circuit and cellular mechanisms of perceptual memory consolidation. The UK-Japan Spring Neuroscience Symposium, UK.
2. Murayama M (2018). Cortical mechanisms of sensory perception and memory consolidation. The 2nd NCC-Synapsy Conference on The Neurobiology of Mental Health, Switzerland.
3. Murayama M (2017). Cortical mechanisms of sensory perception and memory consolidation. The IBS Conference on East Asian Neuroscience Cooperation, Korea.
4. Murayama M (2017). Cortical top-down circuit for sensory perception and memory consolidation. The Feed-forward and feedback processing meeting. France.
5. Murayama M (2016). Cortical top-down circuit for sensory perception and memory consolidation. Animal Consciousness Meeting, WA.
6. Murayama M (2016). When and where does sensory perception occur? The Japan-UK FoS symposium, UK.
7. Murayama M (2016). Cortical top-down circuit for sensory perception and memory consolidation. The 3rd Annual Meeting of Mongolian Neuroscience Society, Mongolia.
8. Murayama M (2016). A top-down cortical circuit for perception and memory consolidation. Uppsala University, Sweden.
9. Murayama M (2016). A top-down cortical circuit for perceptual memory consolidation during NREM sleep. The U.S.-Japan Brain Research Cooperative Program: Current Trends and

Future Directions of Synaptic Plasticity Research, MD.

10. Murayama M (2016). Top-Down Input for Perception and Memory Consolidation. Seminar at New York University-Shang-hai, China.
11. Murayama M (2015). Reverberating cortical circuit for accurate sensory perception. Brain Conference 2015, Korea.
12. Murayama M (2015). Optogenetic control of cortical circuit and sensory perception. Multidisciplinary Brain Science 2015, Mongolia.
13. Murayama M (2015). Top-down input is required for accurate sensory perception. Gordon Research Conference: Dendrites, CA.
14. Murayama M (2014). Top-down input is required for accurate sensory perception. 79th Cold Spring Harbor Symposium on Quantitative Biology Cognition, NY.
15. Murayama M (2013). Cortical Architecture of a Sensory-Motor Circuit. Chinese Neuroscience Meeting, China.

Other academic activities

<Manuscript Reviewer>

Science, Nature Neuroscience, Frontiers in Neural Circuits and etc.

<Committee out of RIKEN>

Homepage Committee of Japan Neuroscience Society (2013-present).