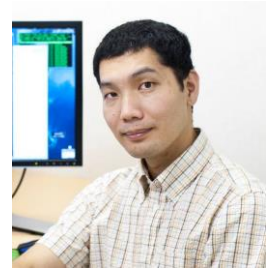


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Education:

1993-1996: Ph.D., Neuroscience, Department of Anatomy and Developmental Biology, University College London, (University of London, UK) (Ph.D. awarded in April 1997)
1990-1993: B.Sc. (1st Class Honours), Computer Science, University College London (University of London, UK)

Work experience:

2011-present Team Leader, RIKEN Brain Science Institute, Japan
2009-present Affiliate Associate Professor, Saitama University Brain Science Institute
2004-2011 Unit Leader, RIKEN Brain Science Institute, Japan
2003-2004 Research Assistant Professor, Center for Molecular and Behavioral Neuroscience, Rutgers University, Newark, NJ
2000-2001 Postdoctoral Fellow, Department of Biological Sciences, Columbia University, New York, NY (Mentor: Rafael Yuste)
1996-2002 Postdoctoral Fellow, Center of Molecular and Behavioral Neuroscience, Rutgers University, Newark, NJ (Mentor: György Buzsáki)

Editorial positions:

Review Editor, Frontiers in Neural Circuits, 2012-present
Review Editor, Frontiers in Cellular Neuroscience, 2014-present
Editorial Board, Progress in Brain Research, 2014-present
Executive Editor, OA Neurosciences, 2013-present

Awards and fellowships received:

UCL Japan Scholarship (1993)
Overseas Research Students Awards (1994-1996)
Human Frontier Long-Term Fellowship (1998-2000)
Uehara Memorial Foundation Fellowship (2000-2001)
Epilepsy Foundation Research Training Fellowship (2003-2004)

Grants received:

- Grant-in-Aid for Scientific Research on Priority Areas from the Ministry of Education, Culture, Sports, Science and Technology (Grant #17022048) ¥2,700,000 Year 2005
- Grant-in-Aid for Scientific Research on Priority Areas from the Ministry of Education, Culture, Sports, Science and Technology (Grant #18053026) ¥6,100,000 Year 2006-2007
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- Grant-in-Aid for Challenging Exploratory Research from the Ministry of Education, Culture, Sports, Science and Technology (Grant #21650081) ¥3,100,000 Year 2009-2010
- Saitama Regional Innovation Cluster Program (Principal Investigator: Junichi Nakai), ¥4,630,000, Year 2010-2012
- Grant-in-Aid for Innovative Research from the Ministry of Education, Culture, Sports, Science and Technology (Grant #23115522) ¥5,400,000 Year 2011-2012
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- Grant-in-Aid for Challenging Exploratory Research from the Japan Society for the Promotion of Science (Grant #16K13116) ¥2,700,000 Year 2016-2017
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Ph.D. Thesis:

Hirase H., "Performance analysis of a partially connected recurrent associative net", Ph.D. thesis, University College London – University of London, UK, 1997

Research Articles:

- Hirase H., Recce M, (1996) A search for the optimal thresholding sequence in an associative memory. *Network: Computation in Neural Systems* 7: 741-758
- Csicsvari J, Hirase H., Czurko A, Buzsaki G (1998) Reliability and state dependence of pyramidal cell-interneuron synapses in the hippocampus: an ensemble approach in the behaving rat. *Neuron* 21:179-189.
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- Tanaka M, Wang X, Mikoshiba K, [Hirase H](#), Shinohara Y (2017, in press) Hippocampal LFP changes by rearing condition and their dependence on inositol trisphosphate receptor type 2 in mice. *J Physiol (London)*

Book Chapters/Proceedings:

- [Hirase H](#) and Recce M., "Performance analysis of progressive recall in partially connected recurrent networks", Proceedings of the International Conference on Artificial Neural Networks (ICANN'95), 1995, pp509-514.
- [Hirase H](#) and Recce M., "Interneuron plasticity in associative networks", Computational Neuroscience: Trends in Research, 1997 pp:347-351, Plenum, New York (CNS'96 Computational neuroscience meeting, MA, USA)
- Buzsaki G., Carpi, D., Csicsvari, J., Dragoi, G, Harris, K.D., Henze, D. A., [Hirase H](#). Maintenance and modification of firing rates and sequences in the hippocampus: does sleep play a role? In Maquet, P., Smith, C., and Stickgold, R. (eds). Sleep and Plasticity. Oxford University Press., Oxford. 2003. Pp. 247-270.
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- Takata N., Shinohara S., Ohkura M., Mishima T., Nakai J. and [Hirase H](#), "Imaging of Astrocytic Activity in Living Rodents", In Helmchen F. and Weber B. (eds.), Optical Imaging of Neocortical Dynamics, Neuromethods 2014, 85:191-207, Humana Press, Springer Science+Business Media, New York

Reviews/Comments:

- Buzsaki G, Csicsvari J, Dragoi G, Harris K, Henze D, [Hirase H](#) (2002) Homeostatic maintenance of neuronal excitability by burst discharges in vivo. *Cereb Cortex* 12:893-899.
- [Hirase H](#) (2002) Local field potential and neuronal firing in rat hippocampus. *Saibo Kogaku (Cell Engineering)*, 21: 999-1003 (Japanese).
- [Hirase H](#) (2005) A multi-photon window onto neuronal-glia-vascular communication. *Trends Neurosci* 28:217-219.
- [Hirase H](#), Takata N (2007) In vivo measurements of astrocyte dynamics. *Brain Nerve* 59:773-781 (Japanese).
- Shinohara Y, [Hirase H](#) (2009) Size and receptor density of glutamatergic synapses: a viewpoint from left-right asymmetry of CA3-CA1 connections. *Frontiers in Neuroanatomy* 3:10.
- Sik A, Kocsis B, [Hirase H](#) (2013) A new challenge in neurosciences. *OA Neurosciences* 2013 1:1.
- [Hirase H](#), Iwai Y, Takata N, Shinohara Y, Mishima T (2014) Volume transmission signalling via astrocytes. *Philos Trans R Soc Lond B Biol Sci* 369:20130604.
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- Nuriya M, [Hirase H](#) (2016) Involvement of astrocytes in neurovascular communication. *Progress in Brain Research* 225:41-62.
- Masamoto K, Yamada K, [Hirase H](#) (2016) Neurovascular coupling - what next? *Progress in Brain Research* 225:269-272.
- Monai H, [Hirase H](#) (2016) Astrocytic calcium activation in a mouse model of tDCS – extended discussion. *Neurogenesis* 3, DOI: 10.1080/23262133.2016.1240055
- Monai H, [Hirase H](#) (2016, submitted) Astrocytes as a target of transcranial direct current stimulation (tDCS) to treat depression, *Neuroscience Research (special issue)*

Invited Lectures/Symposia:

Third International Congress of the World Federation of Sleep Research Societies, October 2001, Punta del Este, Uruguay, "Memory formation during sleep"

International Symposium: Glial Activities in Neural Plasticity and Information Processing, January 2005, Tokyo, Japan, "Calcium dynamics of cortical astrocytes in vivo"

7th European Meeting on Glial Cell Function in Health and Disease (EUROGLIA), May 2005, Amsterdam, Netherlands. "Calcium dynamics of cortical astrocytes in vivo"

6th FENS Forum of European Neuroscience Satellite Symposium on Synaptic and Extrasynaptic Signaling Versus Glia, July, 2008, Geneva, Switzerland, "Neuroglia communication through S100B"

11th Annual Japanese-American Kavli Frontiers of Science Symposium, December 2008, Irvine, USA, "Optical measurement and control of neural activity"

29th Naito Conference on GLIA WORLD, October 2010, Kanagawa, Japan, "Astrocytic modulation of local field potential and synaptic plasticity"

1st Japanese-French Frontiers of Engineering Symposium, October 2008, Grenoble, France, "In vivo investigation of astrocytic dynamics"

Gordon Research Conference: Glial Biology, March 2011, Ventura, USA, "Astrocytic modulation of sensory-evoked LFP response"

14th Annual Meeting of the Korean Society for Brain and Neural Science, September 2011, Seoul, Korea "Astrocytic modulation of local field potential in vivo"

International Astrocyte School, March 2011, 2012, 2014, Bertinoro, Italy, "Modulation of sensory induced cortical plasticity by astrocytic calcium elevation" (permanent advisory board)

First International Symposium on In Vivo Microscopy, May 2012, Helsinki, Finland, "Cholinergic modulation of in vivo barrel cortical plasticity via astrocytes"

SFB 894 Calcium Signaling: Molecular Mechanisms and Integrative Functions, September 2012, Saarland University, Homburg, Germany, "Astrocyte calcium signaling transforms cholinergic modulation to cortical plasticity in vivo"

Cajal Institute seminar, September 2012, Madrid, Spain, "Astrocyte Ca²⁺ surges, gamma oscillations, and synaptic plasticity"

UAB Mini Symposium: Physiology and Pathophysiology of Astroglia, October 2012, Birmingham, AL, "Astrocyte calcium signaling in plasticity of local cortical circuits in vivo"

11th European Meeting on Glial Cells in Health and Disease (Euroglia), July 2013, Berlin, Germany, "Astrocytic Ca²⁺ surges, gamma oscillations, and synaptic plasticity" Invited seminar at Scuola Normale Superiore, April 2014, Pisa, Italy, "Experience enhances gamma oscillations and interhemispheric asymmetry in the hippocampus"

Special Neuroscience Seminar, October 2014, Paris Descartes University, Paris, France. "Ca²⁺ signaling of astrocytes in cortical plasticity and blood flow"

Kick-off meeting of Human Frontiers Research Program, October 2014, Bordeaux, France. "Astrocytic Ca²⁺ surges, gamma oscillations, and synaptic plasticity"

Glial heterogeneity SPP 1757 Symposium, October 2014, Dusseldorf, Germany. "Ca²⁺ signaling of astrocytes in cortical plasticity and blood flow"

The 3rd "International Institute for Advanced Studies" Conference of Novel Developments on the Study of Life and Biological Systems Based on Genome Engineering and Imaging Science", October 2014, Kyoto, Japan, "Ca²⁺ signaling of astrocytes in cortical plasticity"

Special Seminar, November, 2014, University of Minnesota, Minneapolis, "An attempt to monitor and manipulate astrocytic Ca²⁺ signaling in the cerebral cortex"

International Symposium 2014 (Current trends on neurobiology), Ulsan National Institute of Science and Technology, Ulsan, Korea, November 2014, "Experience-dependent development of gamma oscillations and interhemispheric asymmetry in the hippocampus"

27th International Symposium on Cerebral Blood Flow, Metabolism and Function & 12th International Conference on Quantification of Brain Function with PET (BRAIN 2015), June, 2015, Vancouver, Canada. "Cerebral blood flow modulation can occur independently of large cytosolic Ca²⁺ signaling in astrocytes"

6th FAONS Congress and Chinese Neuroscience Society Conference, September, 2015, Wuzhen, China, "Cortical plasticity induced via volume transmitter-activated glia"

1st IBRO/APRC Chandigarh Neuroscience Symposium, February, 2016, Chandigarh, India, "Cortical plasticity induced via volume transmitter-activated glia"

Invited seminar at National Institute of Neuroscience (NCNP), May 2016, Tokyo, Japan. "Activation of astrocytes by transcranial direct current stimulation" (in Japanese)

Special Seminars, May 2016, Korean Institute of Science and Technology (KIST) and Yonsei University, "Astrocyte-mediated synaptic plasticity promoted by volume-transmitted neuromodulators"

DNP/CBTN Seminar, August 2016, University of Copenhagen, "Transcranial direct current stimulation, astrocytes, and glycogen in the mouse brain"

NYC Neuromodulation 2017, January 2017, New York, NY "tDCS metaplasticity and astrocytic calcium in mice"

International Astrocyte School, March 2017, Bertinoro, Italy, "Role of astrocytic calcium elevation in transcranial direct current stimulation in mice" (permanent advisory board)