

Curriculum Vitae (as of March, 2019)

Ryota Homma, Ph.D.

Assistant Professor, Research

Department of Neurobiology and Anatomy

McGovern Medical School

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Education:

1994	B.Sc. (Physics)	Department of Physics, Faculty of Science Tokyo Institute of Technology, Japan
1996	M.Sc. (Biophysics)	Graduate School of Arts and Sciences The University of Tokyo, Japan
1999	Ph.D. (Biophysics)	Graduate School of Arts and Sciences The University of Tokyo, Japan

Trainings:

04/1999 – 10/2004	Research Scientist (Advisor: Manabu Tanifuji) Laboratory for Integrative Neural Systems RIKEN Brain Science Institute Wako, Saitama, Japan
11/2004 – 07/2010	Postdoctoral Associate (Advisor: Lawrence B. Cohen) Department of Cellular and Molecular Physiology Yale University School of Medicine New Haven, Connecticut, U.S.A.

Academic Appointments:

- 06/2010 – 07/2012 Associate Research Scientist (PI: Lawrence B. Cohen)
Department of Cellular and Molecular Physiology
Yale University School of Medicine
New Haven, Connecticut, U.S.A.
- 08/2012 – 10/2016 Research Scientist (PI: Shin Nagayama)
Department of Neurobiology and Anatomy
McGovern Medical School
The University of Texas Health Science Center
at Houston (UTHealth)
Houston, Texas, U.S.A.
- 11/2016 – present Assistant Professor, Research
Department of Neurobiology and Anatomy
McGovern Medical School
The University of Texas Health Science Center
at Houston (UTHealth)
Houston, Texas, U.S.A.

Other professional activity:

- 2005-2011 Seasonal postdoctoral investigator
(Advisor: Lawrence B. Cohen)
Marine Biological Laboratory
Woods Hole, Massachusetts, U.S.A.

Memberships:

- The Biophysical Society of Japan (1994–Present)
Japanese Neuroscience Society (1999–Present)
Society for Neuroscience (1999–Present)
The Association for Chemoreception Sciences (2005–Present)

Publication List:

[Original Research Article]

- R. Homma, T. Kouyama, M. Yamada, Y. Niimura, A.V. Krivosheev, T. Hara, and S. Kawato
“Time-resolved Study of Effect of Chlorpromazine on Mobility of Cytochrome P450 and Phospholipids in the Inner Membrane of Adrenocortical Mitochondria”
Journal of Pharmaceutical and Biomedical Analysis, **15** (1997) 1215-1222
- T. Kimoto, H. Mukai, R. Homma, T. Bettou, D. Nishimura, Y. Ohta, and S. Kawato
“Imaging of Calcium Oscillations and Activity of Cytochrome P-450_{scc} in Adrenocortical Cells”
Oxygen Homeostasis and Its Dynamics, **1** (1998) 252-259
- R. Homma, T. Kimoto, Y. Niimura, A.K. Krivosheev, T. Hara, Y. Ohta, and S. Kawato
“Real-time fluorescence analysis on molecular mechanisms for regulation of cytochrome P450_{scc} activity upon steroidogenic stimulation in adrenocortical cells”
Journal of Inorganic Biochemistry, **82** (2000) 171-180
- M. Fukuda, R. Uma Maheswari, R. Homma, and M. Tanifuji
“Contribution of blood volume changes to intrinsic optical signals”
International Congress Series, **1235** (2002) 165-171
- R. Uma Maheswari, H. Takaoka, R. Homma, H. Kadono, and M. Tanifuji
“Implementation of optical coherence tomography (OCT) in visualization of functional structures of cat visual cortex”
Optics Communications, **202** (2002) 47-54
- R. Uma Maheswari, H. Takaoka, R. Homma, H. Kadono, and M. Tanifuji
“Functional imaging of cat primary visual cortex with optical coherence tomography”
Proceedings of SPIE, **4619** (2002) 128-136
- R. Uma Maheswari, H. Takaoka, H. Kadono, R. Homma, and M. Tanifuji
“Novel functional imaging technique from brain surface with optical coherence tomography enabling visualization of depth resolved functional structure *in vivo*”
Journal of Neuroscience Methods, **124** (2003) 83-92
- R. Uma Maheswari, R. Homma, H. Kadono, and M. Tanifuji
“Functional optical coherence tomography to reveal functional architecture of cat visual cortex *in vivo*”
Proceedings of SPIE, **5140** (2003) 77-83
- M. Fukuda, R. Uma Maheswari, R. Homma, M. Matsumoto, M. Nishizaki, and M. Tanifuji
“Activity-dependent Changes in Blood Volume to Submillimeter-scale Functional Domains in Cat Visual Cortex”

- Cerebral Cortex*, **15** (2005) 823-833
- H. Ojima, M. Takayanagi, D. Potapov, and R. Homma
 “Isofrequency Band-like zones of Activation Revealed by Optical Imaging of Intrinsic Signals in the Cat Primary Auditory Cortex”
Cerebral Cortex, **15** (2005) 1497-1509
- N.A. Laskaris, E.K. Kosmidis, D. Vučinić, and R. Homma
 “Understanding and Characterizing Olfactory Responses”
IEEE Engineering in Medicine and Biology Magazine, **27** (2008) 69-79.
- R. Homma, L.B. Cohen, E.K. Kosmidis, and S.L. Youngentob
 “Perceptual stability during dramatic changes in olfactory bulb activation maps and dramatic declines in activation amplitudes”
European Journal of Neuroscience, **29** (2009) 1027-1034
- R. Homma, Y. Kovalchuk, A. Konnerth, L.B. Cohen, and O. Garaschuk
 “In vivo functional properties of juxtglomerular neurons in the mouse olfactory bulb”
Frontiers in Neural Circuits, **7** (2013) 23
- S. Kikuta, M.L. Fletcher, R. Homma, T. Yamasoba, and S. Nagayama
 “Odorant response properties of individual neurons in an olfactory glomerular module”
Neuron, **77** (2013) 1122-1135
- Y. Kovalchuk, R. Homma, Y. Liang, A. Maslyukov, M. Hermes, T. Thestrup, O. Griesbeck, J. Ninkovic, L.B. Cohen, and O. Garaschuk
 “In vivo odourant response properties of migrating adult-born neurons in the mouse olfactory bulb”
Nature Communications, **6** (2015) 6349
- C.L. Neveu, R.M. Costa, R. Homma, S. Nagayama, D.A. Baxter, and J.H. Byrne
 “Unique configurations of compression and truncation of neuronal activity underlie L-DOPA–induced selection of motor patterns in *Aplysia*”
eNeuro, **4** (2017) ENEURO.0206-17.2017
- O. Braubach, T. Tombaz, T. Geiller, R. Homma, T. Bozza, L.B. Cohen, and Y. Choi
 “Sparsened neuronal activity in an optogenetically activated olfactory glomerulus”
Scientific Reports, **8** (2018) 14955
- *R. Homma, *X. Lv, T. Sato, F. Imamura, S. Zeng, and S. Nagayama (*equal contribution)
 “Narrowly confined and glomerulus-specific onset latencies of odor-evoked calcium transients in the juxtglomerular cells of the mouse main olfactory bulb”
eNeuro, **6** (2019) ENEURO.0387-18.2019

[Review Article]

R. Homma, B.J. Baker, L. Jin, O. Garaschuk, A. Konnerth, L.B. Cohen, C.X. Bleau, M. Canepari, M. Djurisic, and D. Zecevic

“Wide-field and two-photon imaging of brain activity with voltage- and calcium-sensitive dyes”

Methods in Molecular Biology, **489** (2009) 43-79

R. Homma, B.J. Baker, L. Jin, O. Garaschuk, A. Konnerth, L.B. Cohen, and D. Zecevic

“Wide-field and two-photon imaging of brain activity with voltage- and calcium-sensitive dyes”

Philosophical Transactions of the Royal Society B, **364** (2009) 2453-2467

K.J. Muller, G. Tschepnakis, R. Homma, J.G. Nicholls, L.B. Cohen, and J. Eugenin

“Optical analysis for circuitry for respiratory rhythm in isolated brainstem of foetal mice”

Philosophical Transactions of the Royal Society B, **364** (2009) 2485-2491

S. Fink, Y. Kovalchuk, R. Homma, B. Schwendele, S. Drenberger, L.B. Cohen, O. Griesbeck, and O. Garaschuk

“In vivo functional imaging of the olfactory bulb at single-cell resolution”

NeuroMethods, **67** (2012) 21-43

S. Nagayama, R. Homma, and F. Imamura

“Neuronal organization of olfactory bulb circuits”

Frontiers in Neural Circuits, **8** (2014) 98

[Invited Lecture]

R. Homma

“Imaging neuronal activity with voltage- and calcium-sensitive dyes”

In the Educational Course at *Brain&BrainPET09* (Chicago, IL, June 29 – July 3, 2009)

[Selected Poster Presentations]

R. Homma and M. Tanifuji

“*In vivo* optical imaging with voltage-sensitive dyes revealed that the onset latency of visually evoked depolarization is different from site to site in macaque area TE.”

Sixth IBRO World Congress of Neuroscience (Jul 10-15, 2003, Prague, Czech Republic)

R. Homma and M. Tanifuji

“Comparison of functional maps in macaque area TE revealed by in vivo optical imaging with voltage-sensitive dye and intrinsic signal imaging.”

Society for Neuroscience Annual Meeting (Nov 8-12, 2003, New Orleans, LA)

R. Homma, L. B. Cohen, E. Kosmidis, and S. Youngentob

“Toward an estimate of the number of receptor neuron spikes needed for odorant identification”

Society for Neuroscience Annual Meeting (Nov 12-16, 2007, San Diego, CA)

R. Homma, L.B. Cohen, O. Garaschuk, and A. Konnerth

“Heterogeneity of the odor-evoked response within a glomerulus of the mouse olfactory bulb”

International Symposium for Olfaction and Taste 15 (Jul 21-26, 2008, San Francisco, CA)

Y. Kovalchuk, R. Homma, Y. Liang, A. Maslyukov, M. Hermes, Y. Ninkovic,

M. Götz, L. Cohen, and O. Garaschuk

“Rapid maturation of odor-evoked signaling in adult-born juxtglomerular neurons of the mouse olfactory bulb”

The 10th Göttingen Meeting of the German Neuroscience Society (Mar 13-16, Göttingen, Germany)

O. R. Braubach, T. Tombaz, Y. Choi, M. Allahverdizadeh, T. Bozza, L. B. Cohen, and R.

Homma

“*In vivo* optophysiological analysis of the glomerular unit response in mice”

Association for Chemoreception Sciences 35th Annual Meeting (Apr 17-20, 2013, Huntington Beach, CA)

R. Homma, L. Xiaohua, Z. Shaoqun, and S. Nagayama

“High-speed recording of odor-evoked calcium transient in the olfactory bulb neurons using an AOD-based two-photon microscope”

Society for Neuroscience Annual Meeting (Nov 15-19, 2014, Washington, DC)

Peer-review of the work of other researchers:

(Funding Agency)

The Israel Science Foundation

(Journals)

Journal of Neuroscience Methods

Journal of Biophotonics

International Journal of Nanomedicine