

Hisashi Tanigawa

Curriculum Vitae

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Address

Interdisciplinary Institute of Neuroscience and Technology, Zhejiang University, Kexuelou Room 305
268 KaiXuan Road, Hangzhou, Zhejiang, China 310020

Email

hisashi@zju.edu.cn

Website

<http://www.ziint.zju.edu.cn/index.php>

EDUCATION/DEGREES EARNED

Ph.D. 1996.4 – 2001.3	<u>Osaka University Medical School</u> (2001.3) Major: Physiology (supervisor: Ichiro Fujita)	Osaka, Japan
M.M.S. 1994.4 – 1996.3	<u>Osaka University Medical School</u> (1996.3) Major: Physiology (supervisor: Ichiro Fujita)	Osaka, Japan
B.S. 1989.4 – 1994.3	<u>Tohoku University, Faculty of Science</u> (1994.3) Major: Biology (supervisor: Hiroyuki Ide)	Sendai, Japan

EMPLOYMENT HISTORY

2017.8 – present	<u>Zhejiang University</u> Associate Professor of Zhejiang University Interdisciplinary Institute of Neuroscience and Technology (ZIINT)	Hangzhou, China
2019.1 – 2021.12	<u>Zhejiang University</u> Associate Professor (兼聘) of Department of Neurology of the First Affiliated Hospital, Zhejiang University School of Medicine	Hangzhou, China
2013.4 – 2017.3	<u>Niigata University</u> Associate Professor of Center for Transdisciplinary Research	Niigata, Japan
2011.4 – 2013.3	<u>Niigata University</u> Assistant Professor of Department of Physiology, Niigata University Graduate School of Medical and Dental Sciences (Laboratory of Dr. Isao Hasegawa)	Niigata, Japan
2006.8 – 2011.3	<u>Vanderbilt University</u> Research Associate of Department of Psychology (Laboratory of Dr. Anna W. Roe)	Nashville, TN, USA
2002.3 – 2006.3	<u>RIKEN Brain Science Institute</u> Postdoctoral Associate (Laboratory of Dr. Manabu Tanifuji)	Wako, Japan
2001.4 – 2002.3	<u>Osaka University</u> Postdoctoral fellow of Graduate School of Engineering Science, Supported by Japan Society for the Promotion of Science (Laboratory of Dr. Ichiro Fujita)	Niigata, Japan

HONORS and AWARDS

- | | |
|-----------------|---|
| 2000.9 | Travel Award for the Annual Meeting of Japan Neuroscience Society (Kobe, Japan) |
| 2001.4 – 2002.3 | Japan Society for the Promotion of Science, Postdoctoral Fellowship |
| 1995.4 – 2000.3 | Japan Scholarship Foundation: Scholarship for Graduate Student |
| 1989.4 – 1994.3 | Japan Scholarship Foundation: Scholarship for Undergraduate Student |

MEMBERSHIPS

- Society for Neuroscience
- Japan Neuroscience Society

PUBLICATIONS

RESEARCH ARTICLES IN REFEREED JOURNALS (13 total, 6 at Zheda)

*These authors contributed equally to the work.

†Corresponding author

The Impact Factor is for the year of publication (or closest year to the year of publication), and the times cited was calculated at Scopus (<https://www.scopus.com/>) on December 4, 2022.

Zheda:

- X. Du*, X. Jiang*, I. Kuriki, T. Takahata, T. Zhou, A. W. Roe†, **H. Tanigawa**† (2022) Representation of cone-opponent color space in macaque early visual cortices. Frontiers in Neuroscience. (Impact Factor: 5.152; Times cited: 0)
- H. Tanigawa**, K. Majima, R. Takei, K. Kawasaki, , H. Sawahata, K. Nakahara, A. Iijima, T. Suzuki, Y. Kamitani, Isao Hasegawa† (2022) Decoding distributed oscillatory signals driven by memory and perception in the prefrontal cortex. Cell Reports. (Impact Factor: 9.995; Times cited: 1)
- J. M. Hu, M.Z. Qian, **H. Tanigawa**, X. M. Song†, A. W. Roe† (2020) Focal Electrical Stimulation of Cortical Functional Networks. Cerebral Cortex. 30:5532–5543. (Impact Factor: 5.375; Times cited: 8)
- H. Yin, P. Fu, H. D. Lu, **H. Tanigawa**, A. W. Roe, G. Chen† ((2018) Reply to Doi et al.: Functional architecture matters in the formation of perception. Proc Natl Acad Sci USA. 115:E6969–E6971. (Impact Factor: 9.580; Times cited: 0)
- G. Chen†, H. D. Lu, **H. Tanigawa**, A. W. Roe (2017) Solving visual correspondence between the two eyes via domain-based population encoding in nonhuman primates. Proc Natl Acad Sci USA. 114:13024–13029. (Impact Factor: 9.504; Times cited: 9)
- H. Tanigawa**†, G. Chen, A. W. Roe† (2016) Spatial Distribution of Attentional Modulation at Columnar Resolution in Macaque Area V4. Frontiers in Neural Circuits, 10: 102-113 (Impact Factor: 3.005; Times cited: 2)

Previous institutes:

- Q. X. Wang*, **H. Tanigawa***, I. Fujita† (2017) Postnatal Development of Intrinsic Horizontal Axons in Macaque Inferior Temporal and Primary Visual Cortices. Cerebral Cortex 27: 2708-2726 (Impact Factor: 6.308; Times cited: 5) (Cover illustration)
- K. Nakahara, K. Adachi, K. Kawasaki, T. Matsuo, H. Sawahata, K. Majima, M. Takeda, S. Sugiyama, R. Nakata, A. Iijima, **H. Tanigawa**, T. Suzuki, Y. Kamitani, I. Hasegawa† (2016) Associative-Memory Representations Emerge as Shared Spatial Patterns Of Theta Activity Spanning The Primate Temporal Cortex. Nature Communications 7 (11827): 1-9 (Impact Factor: 12.124; Times cited: 13)
- H. D. Lu†, G. Chen, **H. Tanigawa**, A. W. Roe (2010) A Motion Direction Map in Macaque V2. Neuron 68: 1002-1013 (Impact Factor: 14.027; Times cited: 84)
- H. Tanigawa**, H. D. Lu, A. W. Roe† (2010) Functional Organization for Color and Orientation in Macaque V4. Nature Neuroscience 13: 1542-1548 (Impact Factor: 14.191; Times cited: 126)
- H. Tanigawa**, Q. X. Wang, I. Fujita† (2005) Organization of Horizontal Axons in the Inferior Temporal Cortex and Primary Visual Cortex of the Macaque Monkey. Cerebral Cortex 15: 1887-1899 (Impact Factor: 6.844; Times cited: 54)
- L. H. Xu, **H. Tanigawa**, I. Fujita† (2001) Distribution of Alpha-Amino-3-Hydroxy-5-Methyl-4-Isoxazolepropionate-Type Glutamate Receptor Subunits (GluR2/3) along the Ventral Visual Pathway in the Monkey. Journal of Comparative Neurology 456: 396-407 (Impact Factor: 3.774; Times cited: 21)

H. Tanigawa, I. Fujita†, H. Ojima, M. Kato (1998) Distribution, Morphology, And γ -Aminobutyric Acid Immunoreactivity of Horizontally Projecting Neurons In The Macaque Inferior Temporal Cortex. Journal of Comparative Neurology 401: 129-143 (Impact Factor: 3.774; Times cited: 24)

BOOKS (0)

None.

BOOK CHAPTERS AND REVIEWS (2, 1 at Zheda)

Zheda:

H. Tanigawa (2022) Chapter 3.1: Neural pathways of visual perception. In Encyclopedia of Vision (S. Shioiri, ed.). Asakura Publishing Co., Ltd., Tokyo Japan (written in Japanese)

Previous institutes:

I. Fujita and **H. Tanigawa** (2001) The cortical processing of binocular disparity, shape, and surface in the temporal cortex. In Higher functions of the brain (J. Tanji, S. Yoshizawa, eds.). Asakura Publishing Co., Ltd., Tokyo Japan, pp 23-32. (written in Japanese)

INVITED REVIEW ARTICLES (4, 0 at Zheda)

Previous institutes:

H. Tanigawa, R. Takei, I. Hasegawa (2016) Functional organization of macaque V4 revealed by intrinsic signal optical imaging. Clinical Neuroscience 34: 193-196 (written in Japanese)

H. Tanigawa (2012) Decoding recalled visual memory using electrocorticographic (ECoG) signals. Journal of Japanese Neural Network Society 19: 1542-1548 (written in Japanese)

H. Tanigawa (2010) Functional organization for color and orientation processing in macaque V4. First Authors' Review <http://first.lifesciencedb.jp/archives/1603> (written in Japanese)

I. Fujita, H. Tanaka, **H. Tanigawa** (2001) The cortical processing of binocular disparity and surface in the ventral visual pathway. Vision 13: 87-91 (written in Japanese)

ARTICLES IN CONFERENCE PROCEEDINGS

None.

BOOK REVIEWS

None.

WORKING PAPERS and BOOKS (3, 3 at Zheda)

Zheda:

X. Du, X. Jiang, I. Kuriki, T. Zhou, A. W. Roe†, **H. Tanigawa**†, Spatial distribution of hue selectivity in DKL color space in macaque early visual cortex (*under preparation*).

T. Zhou, I. Hasegawa, **H. Tanigawa**†, Directional functional connectivity through neural oscillation between macaque inferotemporal and prefrontal cortices during object perception (*under preparation*).

CONFERENCES

INVITED PRESENTATIONS

Zheda:

H. Tanigawa (2019) Hue maps of the DKL color space at columnar resolution in the early visual cortex of macaques. The 15th Asia-Pacific Conference on Vision (APCV) (Osaka, Japan)

Previous institutes:

H. Tanigawa (2015) Decoding from ECoG signals reveals the contents of color imagery in macaque inferior temporal and prefrontal cortices. The 11th Biennial Conference of Chinese Neuroscience Society (Wuzhen, China)

H. Tanigawa (2012) Functional architecture for color and shape processing in macaque V4. NIPS workshop “Understanding Visual Perception: Physiological, Psychophysical, and Computational Approaches” (Okazaki, Japan)

RECENT CONFERENCES

Zheda:

T. Zhou, X. Xia, K. Kawasaki, I Hasegawa, **H. Tanigawa** (2022) Memory recall-related information flow between the inferotemporal and prefrontal cortices through neural oscillations. Annual meeting of Society for Neuroscience (San Diego, US; Poster presentation, online)

D. Hu, **H. Tanigawa** (2022) Relationship between horizontal connections and functional structure in macaque anterior inferotemporal cortex. Annual meeting of the Chinese Neuroscience Society (Suzhou, China; Poster presentation)

X. Xia, T. Zhou, K. Kawasaki, I Hasegawa, **H. Tanigawa** (2022) Frequency-specific patterns of communications between the inferotemporal and prefrontal cortices during memory recall. Annual meeting of the Chinese Neuroscience Society (Suzhou, China; Poster presentation)

T. Zhou, Isao Hasegawa, **H. Tanigawa** (2021) Directional functional connectivity through neural oscillation between macaque inferotemporal and prefrontal cortices during object perception. Annual meeting of the Chinese Neuroscience Society (Chongqing, China; Poster presentation)

X. Du, I. Kuriki, X. Jiang, T. Zhou, **H. Tanigawa** (2019) Spatial distribution of hue selectivity in DKL color space in macaque early visual cortex. Annual meeting of the Japan Neuroscience Society (Niigata, Japan; Poster presentation)

Previous institutes:

H. Tanigawa, R. Takei, K. Majima, K. Kawasaki, H. Sawahata, H. Nakahara, A. Iijima, T. Suzuki, Y. Kamitani, I. Hasegawa (2016) Decoding recalled color imagery using ECoG signals in macaque inferior temporal and prefrontal cortices. Annual meeting of Society for Neuroscience (San Diego, CA, USA; Poster presentation)

H. Sasaki, **H. Tanigawa**, K. Kawasaki, A. Iijima, A. Suzuki, T. Hasegawa, I. (2016) Directional influences through theta band activity between macaque inferior temporal and prefrontal cortices during memory retrieval. Annual meeting of the Japan Neuroscience Society (Yokohama, Japan; Poster presentation)

H. Tanigawa, R. Takei, K. Majima, K. Kawasaki, H. Sawahata, K. Nakahara, T. Suzuki, Y. Kamitani, I. Hasegawa (2015) Decoding from ECoG signals reveals the contents of color imagery in macaque inferior temporal and prefrontal cortices. Annual meeting of the Japan Neural Network Society (Tokyo, Japan; Poster presentation)

R. Takei, **H. Tanigawa**, K. Majima, K. Kawasaki, H. Sawahata, H. Nakahara, A. Iijima, T. Suzuki, Y. Kamitani, I. Hasegawa (2014) Decoding from ECoG signals reveals the contents of color imagery in macaque inferior

temporal and prefrontal cortices. Annual meeting of the Japan Neuroscience Society (Yokohama, Japan; Poster presentation)

FUNDING

Current:

Year-year Funding source, grant number, “grant title”, (role, direct amount).

ZIINT:

2019 - 2024 变革性技术关键科学问题重点专项 项目名称“脑机融合的脑信息认知关键技术研究” (参加, 24.6 万元)

2019 - 2022 国家自然科学基金 面上项目, 31872776, “猕猴前额叶皮层中与工作记忆和注意相关的功能结构及其可塑性研究” (主持, 59 万元)

Completed:

ZIINT:

2018 - 2019 浙江大学基本科研业务费专项资金, “The relationship between neuronal oscillatory activity and functional columnar organization in macaque monkey visual cortex” (主持, 15 万元)

Previous institutes:

2015 - 2017 Grant-in-Aid for Scientific Research (C), 15K01851, from Japan Society for Promotion of Science, “Separation and integration of color- and shape-processing in primate cortical pathway for object vision” (**project coordinator**, 3,900,000 Japanese Yen)

2014 - 2016 Grant-in-Aid for Scientific Research (A), 26242088, from Japan Society for Promotion of Science, “From vision to communication: information flow in cerebral circuitry revealed by electrocorticography (ECoG)” (**project partner**, 1,400,000 Japanese Yen; Project total, 34,500,000 Japanese Yen)

2013 - 2015 Grant-in-Aid for Scientific Research (C), 25350996, from Japan Society for Promotion of Science, “Approach for face area in rodent using high-density electrocorticography (ECoG) and optogenetics” (**project partner**, 200,000 Japanese Yen; Project total, 3,100,000 Japanese Yen)

2011 - 2012 Grant-in-Aid for Young Scientists (Start-up), 23800026, from Japan Society for Promotion of Science, “Analysis of brain mechanisms for memory retrieval of color and face using electrocorticography (ECoG)” (**project coordinator**, 3,250,000 Japanese Yen)

2011 - 2012 Grant for Promotion of Niigata University Research Projects, 23B008, from Niigata University, “Analysis of brain mechanisms for perception and memory retrieval of color, face, and letter using electrocorticography (ECoG)” (**project coordinator**, 2,000,000 Japanese Yen)

2001 - 2002 Grant-in-Aid for JSPS Fellows, 01J00636, from Japan Society for Promotion of Science, “Functional role of horizontal connections for object-feature-selective columns in monkey higher visual association cortex” (**project coordinator**, 1,200,000 Japanese Yen)

RESEARCH GRANTS CURRENTLY UNDER REVIEW

None.

TEACHING

COURSES

Zheda:

Systematic Neuroscience Course: “Attention and Working Memory”, Zhejiang University, 2018 – current.

Previous institutes:

Physiology: “Visaul Pathway in the Cerebral Cortex”, Niigata University School of Medecine, 2010 – 2016.

Physiological experimentation, Niigata University School of Medecine, 2010 – 2016.

GRADUATE STUDENTS and POSTDOCTORAL RESEARCHERS under my supervision

POSTDOCTORAL RESEARCHERS

Current:

None.

Former:

胡嘉明 (2017 – 2019) Exploring the response patterns induced by electrical stimulation in cat visual cortex (co-supervision)

GRADUATE STUDENTS

Current:

Zheda:

李成鹏 (2020 – present) PhD course

胡丹玲 (2019 – present) PhD course

周涛 (2018 – present) PhD course

夏星 (2020 – present) Master course

Former:

Zheda:

杜潇 (2018 – 2022) PhD course (co-supervision)

蒋心蕊 (2018 – 2021) Master course

刘杰逊 (2017 – 2019) Master course

Previous institutes:

Hiromu Sasaki, M.A. 2015-2017 Niigata University, Graduate School of Science and Technology (co-supervision)

Ren Takei, M.A., 2014-2016 Niigata University, Graduate School of Science and Technology (co-supervision)

UNDERGRADUATE RESEARCH PROJECTS SUPERVISED

None.

Current undergraduates:

None.

Former undergraduates:

Previous institutes:

Soo Ryum Yang, 2008 – 2010, Vanderbilt University, Department of Psychology

S. R. Yang, **Tanigawa H**, Roe AW (2010) “Feature-based attentional modulation in the hemodynamic responses of macaque V4”, Society for Neuroscience Annual Meeting (San Diego, CA; Poster)