Yohsuke Fukai

Researcher

Nonequilibrium Physics of Living Matter
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Work

Apr. 2025-present	Postdoctoral Researcher, Nonequilibrium Physics of Living Matter Laboratory, RIKEN Pioneering Research Institute.
Sep. 2022-Mar. 2025	Postdoctoral Researcher, Nonequilibrium Physics of Living Matter Riken Hakubi Research Team, RIKEN Center for Biosystems Dynamics Research.
Apr. 2019-Sep. 2022	Special Postdoctoral Researcher, Nonequilibrium Physics of Living Matter Riken Hakubi Research Team, RIKEN Center for Biosystems Dynamics Research.

Education

Apr. 2016-Mar. 2019	Ph. D. course, Dept. of Physics, Grad. Shool of Science, The University of Tokyo **Doctor of Philosophy**, Physics, the University of Tokyo, 2019.
Oct. 2017-Dec. 2017	Visiting student in School of Physics, College of Sciences, Georgia Inst. of Technology.
Apr. 2015-Sep. 2017	Visiting student in Dept. of Physics, School of Science, Tokyo Inst. of Technology.
Apr. 2014-Mar. 2016	Master course, Dept. of Physics, Grad. Shool of Science, The University of Tokyo **Master of Science**, Physics, the University of Tokyo, 2016.
Apr. 2012-Mar. 2014	Bachelor course, Dept. of Physics, Faculty of Science, The University of Tokyo **Bachelor of Science**, Physics, the University of Tokyo, 2014.
Apr. 2010-Mar. 2012	Bachelor course, College of Arts and Sciences, The University of Tokyo.

Teaching Experience

Oct. 2015-Feb. 2016	Teaching assistant of undergraduate class "Physics experiment II: Phase transitions" (Liquid crystal experiments), Dept. of Physics, Faculty of Science, The Univ. of Tokyo.

Grants and Fellowships

Sep. 2024-present	ACT-X Research Area "Life and Information" Japan Science and Technology Agency.
Apr. 2022-present	Grant-in-Aid for Early-Career Scientists Japan society for the promotion of science.
Apr. 2019-Sep. 2022	Special Postdoctoral Researcher Program RIKEN.
Apr. 2017-Mar. 2019	Research Fellow of the Japan Society for the Promotion of Science (DC2) Japan Society for the Promotion of Science.
Sep. 2014-Mar. 2019	Advanced Leading Graduate Course for Photon Science fellowship student The University of Tokyo.

Publications

Y. T. Fukai et al., "Gene-scale in vitro reconstitution reveals histone acetylation directly controls chromatin architecture", Science Advances **11**, eadx9282 (2025) DOI: 10.1126/sciadv.adx9282

T. A. Katoh et al., "Optical microscopic imaging, manipulation, and analysis methods for morphogenesis research", Microscopy **73**, 226–242 (2024) DOI: 10.1093/jmicro/dfad059

Y. T. Fukai and K. Kawaguchi, "LapTrack: linear assignment particle tracking with tunable metrics", Bioinformatics **39**, btac799 (2023) DOI: 10.1093/bioinformatics/btac799

Y. T. Fukai and K. A. Takeuchi, "Initial perturbation matters: Implications of geometry-dependent universal Kardar–Parisi–Zhang statistics for spatiotemporal chaos", Chaos: An Interdisciplinary Journal of Nonlinear Science **31**, 111103 (2021) DOI: 10.1063/5.0071658

T. Iwatsuka et al., "Direct Evidence for Universal Statistics of Stationary Kardar-Parisi-Zhang Interfaces", Physical Review Letters **124**, 250602 (2020) DOI: 10.1103/PhysRevLett.124.250602

Y. T. Fukai and K. A. Takeuchi, "Kardar-Parisi-Zhang Interfaces with Curved Initial Shapes and Variational Formula", Physical Review Letters **124**, 060601 (2020) DOI: 10.1103/PhysRevLett.124.060601

Y. T. Fukai, "Experimental and numerical investigation of universal fluctuations in out-of-equilibrium interface growth", en, Ph. D. Thesis (the University of Tokyo, Tokyo, Japan, 2018)

Y. T. Fukai and K. A. Takeuchi, "Kardar-Parisi-Zhang Interfaces with Inward Growth", Physical Review Letters **119**, 030602 (2017) DOI: 10.1103/PhysRevLett.119.030602

International Conference Activities

Yohsuke T. Fukai, "Tools for constructing trustable lineage tree by automatic tracking and manual correction", Poster Session presented at "GloBIAS Conference 2025", Kobe, Japan October, 2025.

Yohsuke T. Fukai, Tomoya Kujirai, Masatoshi Wakamori, Setsuko Kanamura, Lisa Yamauchi, Somayeh Zeraati, Chiharu Tanegashima, Mitsutaka Kadota, Hitoshi Kurumizaka, Takashi Umehara and Kyogo Kawaguchi, "Gene-scale in vitro reconstitution reveals direct control of chromatin architecture by histone acetylation patterns", Poster Session presented at "RIKEN BDR Symposium 2025", Kobe, Japan March, 2025.

Yohsuke T. Fukai, Tomoya Kujirai, Masatoshi Wakamori, Hitoshi Kurumizaka, Takashi Umehara and Kyogo Kawaguchi, "Reconstituted long chromatin array reveals modification pattern-dependent structure", Poster Session presented at "SMC complexes: orchestrating diverse genome functions", Numazu, Japan October, 2024.

Yohsuke T. Fukai, Keiichi Tamai, Hiroki Yamaguchi and Tetsuya Hiraiwa, "Universal interface fluctuations for absorbing phase transitions", Oral Session presented at "Recent developments in Kardar-Parisi-Zhang universality", Kyoto, Japan September, 2024.

Yohsuke T. Fukai and Kyogo Kawaguchi, "Reconstitution and characterization of long chromatin array with defined nucleosome modification patterns and positional barcodes", Poster Session presented at "RIKEN BDR Symposium 2024", Kobe, Japan March, 2024.

Yohsuke T. Fukai and Kyogo Kawaguchi, "Single-molecule observation of long chromatin array reveals modification-pattern-dependent fluctuations", Poster Session presented at "28th International Conference on Statistical Physics, Statphys28", Tokyo, Japan August, 2023.

Yohsuke T. Fukai and Kyogo Kawaguchi, "Reconstitution and observation of long chromatin array with defined nucleosome modification patterns", Poster Session presented at "RIKEN BDR Symposium 2023", Kobe, Japan March, 2023.

Tingying Peng, Yohsuke Fukai, Timothy Morello, Nicholas Schaub and Yu Liu, "BaSiCPy - a Python tool for microscopy illumination correction", Poster Session presented at "Bioengineering Solutions for Biology and Medicine 2022", Munich, Germany July, 2022.

Yohsuke T. Fukai and Kyogo Kawaguchi, "Reconstituting and observing long chromatin with defined nucleosome modification patterns", Poster Session presented at "RIKEN BDR Symposium 2022", March, 2022.

Seminars

Yohsuke T. Fukai, "Software development toward fine-tunable and automatable bioimage analysis in Python", Helmholtz Munich (Online), Germany June, 2022.

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