Nozomu Yachie, Ph.D.

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Specially Appointed Professor
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SELECTED RECOGNITIONS/FELLOWSHIPS

2026.06-Today	**Council Member** Science Council of Japan
2026.02	**Inoue Prize for Science** The Inoue Foundation for Science
2025.05	**Kobe Prize Young Investigator Award** The Nakatani Foundation
2024.09	**Nagase Grand Prize** The Frontier Salon Foundation
2024.03	**JSPS Prize** Japan Society for the Promotion of Science
2023.04-Today	**CIFAR Fellow** MacMillan Multiscale Human Program Canadian Institute for Advanced Research
2022.01	**Allen Distinguished Investigator Award** Allen Institute
2020.09-Today	**Canada Research Chair (Tier 2) in Synthetic Biology** Canadian Institute for Health Research (CIHR)
2020.04	**Minister's Young Scientists Award** Ministry of Education, Culture, Sports, Science and Technology, Japan
2014.10-2018.03	**PRESTO Researchership** Japan Science and Technology Agency (JST)
2012.04-2014.03	**Banting Postdoctoral Fellowship** National Sciences and Engineering Research Council of Canada (NSERC)
2007.04-2012.03	**JSPS Fellowships (DC1, PD and 'to Research Abroad')** Japan Society for the Promotion of Science

EDUCATION

2009.03	Ph.D., Systems Biology Program, **Keio University SFC**
2007.03	M.M.G., Bioinformatics Program, **Keio University SFC**
2005.03	B.A., Faculty of Environmental Information, **Keio University SFC**

POSITIONS HELD

2020.09-Today

Professor (2023.07-Today)

Associate Professor (2020.09-2023.06)

The University of British Columbia
School of Biomedical Engineering
Faculty of Applied Science & Faculty of Medicine

(2022.07-2026.08)
Director of Research and Associate Director
School of Biomedical Engineering

2023.03-Today

Specially Appointed Professor

The University of Osaka
Premium Research Institute for Human Metaverse Medicine (PRIMe)

2025.04-Today

Visiting Scientist

The Seattle Hub for Synthetic Biology
Chan Zuckerberg Initiative, Allen Institute, and University of Washington

2020.09-Today

Visiting Professor (2023.10-Today)

Visiting Associate Professor (2020.09-2023.08)

The University of Tokyo
Research Center for Advanced Science and Technology (RCAST)

2023.04-2025.03

Guest Professor (Global)

Keio University
Graduate School of Media and Governance

2014.06-2021.12

Adjunct Associate Professor (2015.04-2021.12)

Adjunct Assistant Professor (2014.06-2015.03)

Keio University
Graduate School of Media and Governance, and
Institute for Advanced Biosciences

2014.07-2020.08

Associate Professor

The University of Tokyo
Synthetic Biology Division,
Research Center for Advanced Science and Technology (RCAST), and
Department of Advanced Interdisciplinary Studies (AIS),
Graduate School of Engineering

(2015.04-2020.08)
Department of Biological Sciences, Graduate School of Science

(2018.04-2020.08)
PEAK and GPES Programs, Graduate School of Arts and Sciences

Director (2018.01-2019.10)
Laboratories for Systems Biology and Medicine

2010.04-2014.06 **Postdoctoral Fellow** (with Dr. Frederick Roth)

(2010.04-2010.11)
Harvard Medical School
Department of Biological Chemistry and Molecular Pharmacology

(2010.12-2014.06)
University of Toronto
Donnelly Centre for Cellular and Biomolecular Research

2009.04-2010.03 **Postdoctoral Fellow** (with Dr. Masaru Tomita)

Keio University
Institute for Advanced Biosciences

BIOSKETCH

After completing a B.A. in Environment and Information Studies at Keio University in 2005, I obtained an M.M.G. in Bioinformatics (with Honors, 2007) and a Ph.D. in Systems Biology (2009) under Dr. Masaru Tomita at Keio University. I then undertook a postdoctoral fellowship at Dr. Frederick Roth's laboratory at Harvard Medical School and subsequently moved with Dr. Roth to the University of Toronto in 2010. During my Ph.D. and postdoctoral training, I developed several integrative data analysis methods and a high-throughput protein interaction technology using DNA barcodes and high-throughput DNA sequencing. My graduate school and postdoctoral training were supported by three fellowships (2007-2009 for Ph.D. study; 2009-2010 for postdoctoral study; and 2010-2012 for Research Abroad) from the Japan Society for the Promotion of Science (JSPS) and Canada's Banting Postdoctoral Fellowship (2012-2014).

Upon completing my postdoctoral work in July 2014, I was appointed as an Associate Professor (tenured) at the Research Center for Advanced Science and Technology (RCAST) at the University of Tokyo and started a lab to develop new biotechnologies, including DNA event recording methods, to map high-content cell lineage and cell differentiation trajectories during mammalian development. From 2014 through 2018, I received a salary award from the PRESTO program of the Japan Science and Technology Agency (JST). From 2018 to 2019, I served as Director of Laboratories for Systems Biology and Medicine (LSBM) at the University of Tokyo and led the group by framing strategic research collaborations and engaging with university leadership, funding agencies, and ministries.

In September 2020, I was awarded the Canada Research Chair (Tier 2) in Synthetic Biology and moved my research group to UBC's School of Biomedical Engineering (SBME) as an Associate Professor (tenure-track). From July 2022 to August 2026, I have served as the Director of Research at UBC SBME. In July 2023, I was promoted to Full Professor (tenured).

In March 2023, I took an adjunct position at the University of Osaka's Premium Institute for Human Metaverse Medicine (PRIMe) as a Specially Appointed Professor. I currently manage another laboratory in Osaka with two Specially Appointed Associate Professors and two Specially Appointed Assistant Professors, focusing on AI and advanced mouse engineering.

Since 2019, I have been a grant program advisor for two grant programs, "Multicellular Systems" and "Digital Transformation of Biology," at JST. Since 2023, I am also a CIFAR Fellow in the MacMillan Multiscale Human Program. I have received several other awards, including the Minister's Young Scientists Award from the Ministry of Education and Science, Japan (2020), the Allen Distinguished Investigator Award from the Allen Institute (2022), the JSPS Prize from the Japan Society for the Promotion of Science (2024), the Nagase Prize (2024), the Kobe Prize Young Investigator Award (2025), and the Inoue Prize for Science (2026).

SCIENTIFIC CONTRIBUTIONS

(Yachie N is a *first and/or **corresponding author)

Genome editing: My group has contributed to the development of many CRISPR genome-editing systems, including one of the first-generation base editors, Target-AID (***Science*** 2016); Cas9-NG, which expands the targeting scope of Cas9 beyond the restrictive protospacer adjacent motif (***Science*** 2018); and Target-ACEmax, which enables simultaneous C->T and A->G substitutions (***Nature Biotechnology*** 2020**). We have also recently helped develop a Cas12f-based compact genome-editing tool (***Cell*** 2023).

DNA event recording: My team has been actively developing DNA event recording technologies in which molecular events in each cell are progressively recorded on a synthetic DNA tape, allowing an animal's dynamic biological history to be read from its DNA (***Science*** 2022**). We have developed a new deep distributed computing platform to reconstruct the lineage of an extremely large number of sequences (***Nature Biotechnology*** 2022**). This year, we have developed a microRNA activity-dependent genome-editing system, called cuffed guide RNA (cgRNA), as a key event recording system for scalable molecular profiling of cells (***bioRxiv*** 2026**).

Retrospective clone isolation: We recently established a retrospective clone isolation method that enables analysis of cells "back in time" and interrogation of the initial cellular states that give rise to a target future state (***Nature Biotechnology*** 2026**).

Cellular networks: Through protein interaction analysis of disease mutants, we have shown that cancers and other human diseases are often mediated by complex cellular networks (***Cell*** 2015). Furthermore, using DNA barcoding and deep sequencing, we have developed a new high-throughput protein interaction technology that enabled a single researcher to screen the protein interactions of at least 2.5 million protein pairs in 2–3 weeks (***Molecular Systems Biology*** 2016***). A similar approach also enabled us to establish a high-throughput method to identify non-additive effects of multigenic mutations on a target phenotype (***Cell Systems*** 2020**).

Laboratory automation: My team is also contributing to the development of laboratory and data analysis automation platforms. We established humanoid robots to automate various molecular and cellular biology experiments (***Nature Biotechnology*** 2017*). More recently, we established a new framework to efficiently share reproducible DNA materials and construction protocols (***Nature Communications*** 2022**). We also developed a universal tool to interpret and translate high-throughput sequencing read structures, accelerating the development of new sequencing-based assays (***Science Advances*** 2023**).

Genomics: In genomics, we established a new theoretical framework to scalably measure the spatial genomics of large tissues without microscopy (***Cell Systems*** 2023**). This year, we developed a method to encode all available single-cell genomic data worldwide into a single tree structure and demonstrated that this hierarchical representation of cells advances diverse applications of single-cell resources, including AI model construction and evaluation, analysis of developmental cell differentiation, global contextualization of cells in the human body across more than 100 diseases, and evolutionary developmental analysis of single cells (***bioRxiv*** 2026**).

PUBLICATIONS

+Equal contribution. *(Co-)corresponding authors. Yachie N is **bolded and double-underlined**. Trainees from the laboratory are single-underlined.

Preprints and manuscripts in press or in revision

77- Kiyota B*, Lee C, Yao H & **Yachie N*** (2026) Global tree encoding of atlas-scale single-cell genomics. ***bioRxiv*** https://www.biorxiv.org/content/10.64898/2026.08.31.747971

76- Adel A+, Shuto Y+, Kawasaki S, Lu Y, Ono H, Omura SN, Nakagawa R, Suleimenova A, Robinson M, Stephan TL, Mori H, Kiyota B, Chopra S, Baatartsogt N, Hayakawa M, Kashiwakura Y, Ohmori T, Flannigan R, Underhill TM, Hoodless PA, Aburatani H, Saito H, Nureki O* & **Yachie N*** (2026) A cuffed CRISPR guide RNA for microRNA activity-dependent genome editing. ***bioRxiv*** https://www.biorxiv.org/content/10.64898/2026.08.08.743703

75- Afanassiev A, Wei K, **Yachie N**, Sugioka K & Schiebinger G (2026) DemuxHMM: Large-Scale Single-Cell Embryo Profiling via Recombination Barcoding. ***bioRxiv*** https://www.biorxiv.org/content/10.64898/2026.02.23.703392

74- Rafi AM, Kiyota B, **Yachie N** & de Boer C (2026) Characterizing homology-induced data leakage and memorization in genome-trained sequence models. ***bioRxiv*** https://www.biorxiv.org/content/10.1101/2025.01.22.634321

73- Baccouche A, Adel A, **Yachie N**, Fujii T & Genot AJ (deceased). License to cut: Smart RNA guides for conditional control of CRISPR-Cas9. https://www.biorxiv.org/content/10.1101/2022.10.26.513620v1

72- Baccouche A, Montagne K, **Yachie N**, Fujii T & Genot AJ (deceased). Quantitative assaying of SpCas9-NG with fluorescent reporters. https://www.biorxiv.org/content/10.1101/2022.08.04.502727v1

Peer-reviewed articles

70- Okamura E, Matsumoto S, Mizutani E, Murata K, Tanimoto Y, Dinh TTH, Suzuki H, Kuno A, Kang W, Mikami N, Ema T, Morimoto K, Kato K, Matsumoto T, Masuyama N, Kijima Y, Nagae G, Muto M, Morimura T, Mori H, Sugiyama F, Takahashi S, Aburatani H, Woltjen K, **Yachie N**, Mizuno S & Ema M (2026) Highly efficient and

low-mosaicism piggyBac transgenesis platform for rapid founder phenotyping.
iScience 29, 116648

69- Ishiguro S+, Ishida K+, Sakata RC+, Ichiraku M, Takimoto R, Yogo R, Kijima Y, Mori H, Tanaka M, King S, Tarumoto S, Tsujimura T, Bashth O, Masuyama N, Adel A, Toyoshima H, Seki M, Oh JH, Archambault AS, Nishida K, Kondo A, Kuhara S, Aburatani H, Klein Geltink RI, Yamamoto T, Shakiba N, Takashima Y & **Yachie N*** (2026) A multi-kingdom genetic barcoding system for precise clone isolation.
Nature Biotechnology 44, 616-629

68- Hasegawa M, Xu B, Maeda K, Seki M, Cai F, Cui R, Ando R, Nakagawa S, Sakamoto A, Boycott C, Yatabe H, Nishida M, Matsumoto K, Iwabuchi-Yoshida C, Aki S, Yamagata K, Tsuchida R, Takahashi M, Kuribayashi F, Kidoya H, Hirata H, Matsumoto S, Sando S, Yanai H, **Yachie N** & Osawa T (2026) Tolerance to extracellular acidic pH facilitates tumor plasticity.
Cell Reports 2026 https://www.sciencedirect.com/science/article/pii/S2211124726003049

67- Omura SN, Nakagawa R, Kajimoto S, Okazaki S, Ishiguro S, Mori H, Onishi K, Kashiwakura Y, Hiramoto T, Horinaka K, Tanaka M, Hirano H, Jividen K, Yamashita K, Tsai SQ, **Yachie N**, Ohmori T, Nishimasu H & Nureki O (2026) Engineering a compact high-fidelity *Staphylococcus aureus* Cas9 variant with broader targeting range and mechanistic insights into its activation.
Nature Communications, published online https://www.nature.com/articles/s41467-026-71626-2

66- Chanthra N, Murphy S, Miyamoto M, Masuyama N, **Yachie N**, Kwon C & Uosaki H (2026) Transcriptome-based maturation assessment revealed pro-maturation transcription factors of cardiomyocytes.
Frontiers in Bioengineering and Biotechnology 14, 1717996

65- **Yachie N***. (2025) Harnessing evolution to infer protein networks.
Nature Reviews Genetics, published online https://www.nature.com/articles/s41576-025-00919-x

64- Chapagain S, Salcedo-Porras N, Abdolahzadeh A, Zhang Y, Pereira HS, Flibotte S, Low K, Young C, Wu Y, Wang S, Ishiguro S, **Yachie N***, Patel T, Babaian A & Jan E (2025) Discovery of functional factorless internal ribosome entry site-like structures through virome mining.
PLOS Pathogens, 21, e1013255

63- Gorochowski TE, Brockhurst MA, Ceroni F, Iwasaki YW & **Yachie N** (2025) The Japan-UK Synthetic Biology Conference, Spring 2025: Strengthening Global Links to Engineer Biology.
ACS Synthetic Biology, 14, 1873-1878

62- Ishikawa J, Kato K, Kannan S, Okazaki S, Ishiguro S, Yamashita K, **Yachie N**, Nishizawa T, Zhang F & Nishimasu H. (2025) Structural insights into RNA-guided RNA editing by the Cas13b-ADAR2 complex.
Nature Structural & Molecular Biology, published online https://www.nature.com/articles/s41594-025-01529-1

61- Nakane T, Nakagawa R, Ishiguro S, Okazaki S, Mori H, Shuto Y, Yamashita K, **Yachie N**, Nishimasu H & Nureki O. (2024) Structure and engineering of *Brevibacillus laterosporus* Cas9.
Communications Biology **7**, 803

60- Nakayama Y, Fujiu K, Oshima T, Matsuda J, Sugita J, Matsubara TJ, Liu Y, Goto K, Kani K, Uchida R, Takeda N, Morita H, Xiao Y, Hayashi M, Maru Y, Hasumi E, Kojima T, Ishiguro S, Kijima Y, **Yachie N**, Yamazaki S, Yamamoto R, Kudo F, Nakanishi M, Iwama A, Fujiki R, Kaneda A, Ohara O, Nagai R, Manabe I & Komuro I. (2024) Heart failure promotes multimorbidity through innate immune memory.
Science Immunology 9, eade3814

59- Tsubouchi A, An Y, Kawamura Y, Yanagihashi Y, Murata Y, Teranishi K, Ishiguro S, Aburatani H, **Yachie N** & Ota S. (2024) Pooled CRISPR screening of high-content cellular phenotypes by ghost cytometry.
Cell Reports Methods, 4, 100737

58- Kawasaki F, Mimori T, Mori Y, Aburatani H, **Yachie N**, Sato I & Ota S. (2023) Computational Design of Synthetic Optical Barcodes in Microdroplets.
Advanced Optical Materials, 2302564

57- Hino T, Omura SN, Nakagawa R, Togashi T, Takeda SN, Hiramoto T, Tasaka S, Hirano H, Tokuyama T, Uosaki H, Ishiguro S, Kagieva M, Yamano H, Ozaki Y, Motooka D, Mori H, Kirita Y, Kise Y, Itoh Y, Matoba S, Aburatani H, **Yachie N**, Karvelis T, Siksnys V, Ohmori T, Hoshino A & Nureki O. (2023) An AsCas12f-based compact genome-editing tool derived by deep mutational scanning and structural analysis.
Cell 186, 4920-4935.e23

56- Greenstreet L+, Afanassiev A+, Kijima Y+, Heitz M+, Ishiguro S, King S, **Yachie N*** & Schiebinger G*. (2023) DNA-GPS: A theoretical framework for optics-free spatial genomics and synthesis of current methods.
Cell Systems 14, 844-859.e4

55- **Yachie N*** & Nika Shakiba*. (2023) Tenure time loopers.
Nature Biotechnology 41, 1375–1377

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54- Darwish M, Hattori S, Nishizono H, Miyakawa T, **Yachie N** & Takao K. (2023) Comprehensive behavioral analyses of mice with a glycine receptor alpha 4 deficiency.
Molecular Brain 16, 44

53- Kijima Y, Evans-Yamamoto D, Toyoshima H & **Yachie N***. (2023) A universal sequencing read interpreter.
Science Advances 9, add2793 **(featured on the cover)**

52- Masuyama N, Konno N & **Yachie N***. (2022) Molecular recorders to track cellular events (perspective).
Science 377, 469-470

51- Mori H & **Yachie N***. (2022) A framework to efficiently describe and share reproducible DNA materials and construction protocols.
Nature Communications 13, 2894

50- Nakagawa R, Ishiguro S, Okazaki S, Mori H, Tanaka M, **Yachie N**, Nishimasu H & Nureki O. (2022) Engineered Campylobacter jejuni Cas9 variant with enhanced activity and broader targeting range.
Communications Biology 5, 211

49- Evans-Yamamoto D, Rouleau FD, Nanda P, Makanae K, Liu Y, Després PC, Matsuo H, Seki M, Dube AK, Ascencio D, **Yachie N*** & Landry CR*. (2022) BFG-PCA: tools and resources that expand the potential for binary protein interaction discovery.
Nucleic Acids Research gkac045

48- Després PC, Dubé AK, Yachie N, Landry CR. (2022) High-Throughput Gene Mutagenesis Screening Using Base Editing.
Methods in Molecular Biology 2477, 331-348

47- Konno N, Kijima Y+, Watano K+, Ishiguro S+, Ono K, Tanaka M, Mori H, Masuyama N, Pratt D, Ideker T, Iwasaki W & **Yachie N*.** (2022) Deep distributed computing to reconstruct extremely large lineage trees.
Nature Biotechnology 40, 566–575 **(featured on the cover)**

46- Suzuki G, Saito Y, Seki M, Evans-Yamamoto D, Negishi M, Kakoi K, Kawai H, Landry CR, **Yachie N*** & Mitsuyama T*. (2021) Machine learning approach for discrimination of genotypes based on bright-field cellular images.
npj Systems Biology and Applications 7, 31

45- Fukushima T, Tanaka Y, Adachi K, Masuyama N, Asada S, Ishiguro S, Mori H, Seki M, **Yachie N**, Goyama S & Kitamura T. (2021) CRISPR/Cas9-mediated Base-editing Enables a Chain Reaction Through Sequential Repair of sgRNA Scaffold Mutations.
Scientific Reports 11, 23889

44- Ishiguro S and **Yachie N*** (2020) Highly-multiplexed analysis of genome editing outcomes in mammalian cells.
Methods in Molecular Biology 2312, 193-223

43- Kim JH, Seo Y, Jo M, Jeon H, Kim YS, Kim EJ, Seo D, Lee WH, Kim SR, **Yachie N**, Zhong Q, Vidal M, Roth FP & Suk K. (2020) Interrogation of kinase genetic interactions provides a global view of PAK1-mediated signal transduction pathways.
Journal of Biological Chemistry 295, 16906-16919

42- Sakata RC+, Ishiguro S+, Mori H+, Tanaka M, Tastuno K, Ueda H, Yamamoto S, Seki M, Masuyama N, Nishida K, Nishimasu H, Arakawa K, Kondo A, Nureki O, Tomita M, Aburatani H and **Yachie N*** (2020) Base editors for simultaneous introduction of C-to-T and A-to-G mutations.
Nature Biotechnology 38, 865-869 **(featured on the cover)**

41- Kim J-H, Seo Y, Jo M, Jeon H, Lee W-H, **Yachie N**, Zhong Q, Vidal M, Roth FP & Suk K. (2020) Yeast-Based Genetic Interaction Analysis of Human Kinome.
Cells (MPDI) 9, 1156

40- Després PC, Dubé AK, Seki M, **Yachie N*** and Landry CR* (2020) Systematic perturbation of yeast essential genes using base editing.
Nature Communications 11, 1871

39- Nishizono H, Darwish M, Uosaki H, Masuyama N, Seki M, Abe H, **Yachie N** and Yasuda R (2020) Use of Freeze-thawed Embryos for High-efficiency Production of Genetically Modified Mice.
Journal of Visualized Experiments 158, e60808

38- Murai Y, Masuda T, Onuma Y, Evans-Yamamoto D, Takeuchi N, Mori H, Masuyama N, Ishiguro S, **Yachie N** and Arakawa K (2020) Complete Genome Sequence of Bacillus sp. Strain KH172YL63, Isolated from Deep-Sea Sediment.
Microbiology Resource Announcements 9, e00291-20

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37- Celaj A, Gebbia M, Musa L, Cote AG, Snider J, Wong V, Ko M, Fong T, Bansal P, Mellor JC, Seesankar G, Nguyen M, Zhou S, Wang L, Kishore N, Mani R, Stagljar I, Suzuki Y, **Yachie N*** & Roth FP* (2020) Dissecting Complex Multi-Drug Resistance Traits with High-Order Genetic Analysis.
Cell Systems 9, 1–14

36- Marchant A, Cisneros AF, Dubé AK, Gagnon-Arsenault I, Ascencio D, Jain HA, Aubé S, Eberlein C, Evans-Yamamoto D, **Yachie N** & Landry CR. (2019) The role of structural pleiotropy and regulatory evolution in the retention of heteromers of paralogs.
eLife 8, e46754

35- Masuyama N, Mori H & **Yachie N*** (2019) DNA barcodes evolve for high-resolution cell lineage tracing.
Current Opinion in Chemical Biology 52, 63-71

34- Ishiguro S, Mori H & **Yachie N*** (2019) DNA event recorders send past information of cells to the time of observation.
Current Opinion in Chemical Biology 52, 54-62

33- Evans-Yamamoto D, Takeuchi N, Masuda T, Murai Y, Onuma Y, Mori H, Masuyama N, Ishiguro S, **Yachie N** & Arakawa K (2019) Complete Genome Sequence of Psychrobacter sp. Strain KH172YL61, Isolated from Deep-Sea Sediments in the Nankai Trough, Japan.
Microbiology Resource Announcements 8, e00326-19

32- Dandage R, Després PC, **Yachie N** & Landry CR (2019) beditor: A computational workflow for designing libraries of guide RNAs for CRISPR base editing.
Genetics 212, 377-385

31- Mori H, Evans-Yamamoto D, Ishiguro S, Tomita M & **Yachie N*** (2019) Fast and global detection of periodic sequence repeats in large genomic resources.
Nucleic Acids Research 47, e8

30- Nishimasu H, Shi X, Ishiguro S, Gao L, Hirano S, Okazaki S, Noda T, Abudayyeh OO, Gootenberg JS, Mori H, Oura S, Holmes B, Tanaka M, Seki M, Hirano H, Aburatani H, Ishitani R, Ikawa M, **Yachie N**, Zhang F & Nureki O (2018) Engineered CRISPR-Cas9 nuclease with expanded targeting space.
Science 361, 1259-1262

29- Després PC, Dubé AK, Nielly-Thibault L, **Yachie N** & Landry CR (2018) Double Selection Enhances the Efficiency of Target-AID and Cas9-Based Genome Editing in Yeast.
G3: Genes, Genomes, Genetics 8, 3163-3171

28- Jo M+, Chung AY+, **Yachie N+**, Seo M, Jeon H, Nam Y, Seo Y, Kim E, Zhong Q, Vidal M, Park HC, Roth FP & Suk K (2017) Yeast genetic interaction screen of human genes associated with amyotrophic lateral sclerosis: identification of MAP2K5 kinase as a potential drug target.
Genome Research 27, 1487-1500

27- Ghanegolmohammadia F, Yoshida M, Ohnuki S, Sukegawa Y, Okada H, Obara K, Kihara A, Suzuki K, Kojima T, **Yachie N**, Hirata D & Ohya Y (2017) Systematic analysis of Ca2+ homoeostasis in Saccharomyces cerevisiae based on chemical-genetic interaction profiles.
Molecular Biology of the Cell 28, 3415-3427

26- **Yachie N**, Robotic Biology Consortium & Natsume T (2017) Robotic crowd biology with Maholo LabDroids (Correspondence).
Nature Biotechnology 35, 310

25- Nishida K, Arazoe T, **Yachie N**, Banno S, Kakimoto M, Tabata M, Mochizuki M, Miyabe A, Araki M, Hara KY, Shimatani Z & Kondo A (2016) Targeted nucleotide editing using hybrid prokaryotic and vertebrate adaptive immune systems.
Science 353, aaf8729

24- **Yachie N+,***, Petsalaki E+, Mellor JC, Weile J, Jacob Y, Verby M, Ozturk SB, Li S, Cote AG, Mosca R, Knapp JJ, Ko M, Yu A, Gebbia M, Sahni N, Yi S, Tyagi T, Sheykhkarimli D, Roth JF, Wong C, Musa L, Snider J, Liu Y-C, Yu H, Braun P, Stagljar I, Hao T, Calderwood MA, Pelletier L, Aloy P, Hill DE, Vidal M & Roth FP* (2016) Pooled-matrix protein interaction screens using Barcode Fusion Genetics.
Molecular Systems Biology 12, 863 **(featured on the cover)**

23- Rich MS, Payen C, Rubin AF, Ong GT, Sanchez MR, **Yachie N**, Dunham MJ & Fields S (2016) The Effects of Cis-Regulatory Mutations in the SUL1 Gene on Sulfate-Limited Fitness in Yeast.
Genetics 203, 191-202

22- Sahni N, Yi S, Taipale M, Fuxman Bass JI, Coulombe-Huntington J, Yang F, Peng J, Weile J, Karras GI, Wang Y, Kovács IA, Kamburov A, Krykbaeva I, Lam MH, Tucker G, Khurana V, Sharma A, Liu Y-Y, **Yachie N**, Zhong Q, Shen Y, Palagi A, San-Miguel A, Fan C, Balcha D, Dricot A, Jordan DM, Walsh JM, Shah AA, Yang X,

Stoyanova AK, Leighton A, Calderwood MA, Jacob Y, Cusick ME, Salehi-Ashtiani K, Whitesell LJ, Sunyaev S, Berger B, Barabási A-L, Charloteaux B, Hill DE, Hao T, Roth FP, Xia Y, Walhout AJM, Lindquist S & Vidal M (2015) Widespread Macromolecular Interaction Perturbations in Human Genetic Disorders.
Cell 3, 647-660

21- Soma A, Sugahara J, Onodera A, **Yachie N**, Kanai A, Watanabe S, Yoshikawa H, Ohnuma M, Kuroiwa H, Kuroiwa T & Sekine Y (2013) Identification of highly-disrupted tRNA genes in nuclear genome of the red alga, Cyanidioschyzon merolae 10D.
Scientific Reports 3, 2321

20- Suzuki Y, Stam J, Novotny M, **Yachie N**, Lasken RS & Roth FP (2012) The Green Monster process for the generation of yeast strains carrying multiple gene deletions.
Journal of Visualized Experiments 70, e4072

19- Nozaki T, **Yachie N**, Ogawa R, Kratz A, Saito R & Tomita M (2011) Tight associations between transcription promoter type and epigenetic variation in histone positioning and modification.
BMC Genomics 12, 416

18- Nozaki T, **Yachie N**, Ogawa R, Saito R & Tomita M (2011) Computational analysis suggests a highly bendable, fragile structure for nucleosomal DNA.
Gene 476, 10-14

17- **Yachie N**, Saito R, Sugiyama N, Tomita M & Ishihama Y (2011) Integrative features of the yeast phosphoproteome and protein–protein interaction map.
PLOS Computational Biology 7, e1001064

16- Imamura H, **Yachie N**, Saito R, Ishihama Y & Tomita M (2010) Towards the systematic discovery of signal transduction networks using phosphorylation dynamics data.
BMC Bioinformatics 11, 232

15- **Yachie N**, Saito R, Sugahara J, Tomita M & Ishihama Y (2009) In silico analysis of phosphoproteome data suggests a rich-get-richer process of phosphosite accumulation over evolution.
Molecular Cellular Proteomics 8, 1061-1071

14- **Yachie N**, Ohashi Y & Tomita M (2008) Stabilizing synthetic data in the DNA of living organisms.
Systems and Synthetic Biology 2, 19-25

13- Sugahara J, Kikuta K, Fujishima K, **Yachie N**, Tomita M & Kanai A (2008) Comprehensive analysis of archaeal tRNA genes reveals rapid increase of tRNA introns in the order Thermoproteales.
Molecular Biology and Evolution 25, 2709-2716

12- Soma A, Onodera A, Sugahara J, Kanai A, **Yachie N**, Tomita M, Kawamura F & Sekine Y (2007) Permuted tRNA genes expressed via a circular RNA intermediate in Cyanidioschyzon merolae.
Science 318, 450-453

11- Watanabe Y, Kishi A, **Yachie N**, Kanai A & Tomita M (2007) Computational analysis of microRNA-mediated antiviral defense in humans.
FEBS Letters 581, 4603-4610

10- Matsui M, **Yachie N**, Okada Y, Saito R & Tomita M (2007) Bioinformatic analysis of post-transcriptional regulation by uORF in human and mouse.
FEBS Letters 581, 4184-4188

9- **Yachie N**, Sekiyama K, Sugahara J, Ohashi Y & Tomita M (2007) Alignment-based approach for durable data storage into living organisms.
Biotechnology Progress 23, 501-505

8- Negishi Y, Nakamura H, **Yachie N**, Saito R & Tomita M (2007) eXpanda: an integrated platform for network analysis and visualization.
In Silico Biology 7, 141-144

7- Sugahara J, **Yachie N**, Arakawa K & Tomita M (2007) In silico screening of archaeal tRNA-encoding genes having multiple introns with bulge-helix-bulge splicing motifs.
RNA 13, 671-681

6- **Yachie N**, Arakawa K & Tomita M (2006) On the interplay of gene positioning and the role of rho-independent terminators in *Escherichia coli*.
FEBS Letters 580, 6909-6914

5- Shinoda K, **Yachie N**, Masuda T, Sugiyama N, Sugimoto M, Soga T & Tomita M (2006) HybGFS: a hybrid method for genome-fingerprint scanning.
BMC Bioinformatics 7, 479

4- Shinoda K, Sugimoto M, **Yachie N**, Sugiyama N, Masuda T, Robert M, Soga T & Tomita M (2006) Prediction of liquid chromatographic retention times of peptides generated by protease digestion of the Escherichia coli proteome using artificial neural networks.
Journal of Proteome Research 5, 3312-3317

3- Sugahara J, **Yachie N**, Sekine Y, Soma A, Matsui M, Tomita M & Kanai A (2006) SPLITS: a new program for predicting split and intron-containing tRNA genes at the genome level.
In Silico Biology 6, 411-418

2- **Yachie N**, Numata K, Saito R, Kanai A & Tomita M (2006) Prediction of non-coding and antisense RNA genes in Escherichia coli with Gapped Markov Model.
Gene 372, 171-181

1- Watanabe Y, **Yachie N**, Numata K, Saito R, Kanai A & Tomita M (2006) Computational analysis of microRNA target recognition in Caenorhabditis elegans.
Gene 365, 2-10

TALKS

232- *Invited talk,* Japan Science and Technology Agency GTeX Program, July 26, 2026 (Zoom)
231- *Invited talk,* DANDRITE, Aarhus University, July 3, 2026 (Aarhus, Denmark)
230- *Invited talk,* Helmholtz Institute iBIO, July 1, 2026 (Munich, Germany)
229- *Invited talk,* 2026 Synthetic Biology: Engineering, Evolution and Design (SEED), June 17, 2026 (Denver, USA)
228- *Invited talk,* RNAxUBC, June 12, 2026 (Vancouver, Canada)
227- *Invited talk,* Osaka Sangyo University, June 10, 2026 (Osaka, Japan)
226- *Invited talk,* University of Toronto Donnelly Centre, June 2, 2026 (Toronto, Canada)
225- *Organizer and speaker,* Canada-Japan Strategic Workshop on AI-Driven Biomedical Innovation, May 28, 2026 (Tokyo, Japan)
224- *Invited talk,* Kyoto University Center for iPS Cell Research and Application, May 25, 2026 (Kyoto, Japan)
223- *Invited talk,* UBC Single-Cell Symposium, April 29, 2026 (Vancouver, Canada)
222- *Invited talk,* STEMCELL Technologies, April 10, 2026 (Vancouver, Canada)
221- *Invited talk,* Kyoto University, ASHBi, March 4, 2026 (Kyoto, Japan)
220- *Organizer and speaker,* MASSIV 1.0, January 19, 2026 (Vancouver, Canada)
219- *Invited talk,* The Lady Davis Institute for Medical Research, McGill University, December 15, 2025 (Montreal, Canada)
218- *Invited talk,* The University of Tokyo, December 10, 2025 (Tokyo, Japan)
217- *Session chair and speaker,* The 48th Annual Meeting of the Molecular Biology Society of Japan, December, 2025 (Yokohama, Japan)
216- *Invited talk,* Chan Zuckerberg Biohub, November 20, 2025 (Palo Alto, US)
215- *Invited talk,* Cascadia 6.0, October 23, 2025 (Seattle, US)
214- *Invited talk,* The 54th Naito Conference on the Forefront of Biology with Genome Editing, October 8, 2025 (Hokkaido, Japan)
213- *Invited talk,* Engineering & Safeguarding Synthetic Life, September 18, 2025 (Manchester, UK)
212- *Invited talk,* Keio University Faculty of Pharmacy, September 8, 2025 (Zoom)
211- *Invited talk,* University of Tokyo School of Medicine, August 25, 2025 (Tokyo, Japan)
210- *Invited talk,* Joint Meeting of JSCB 77th and JSDB 58th, July 16, 2025 (Nagoya, Japan)
209- *Invited talk,* JST CREST Single-Cell Mathematical Biology Workshop, July 14, 2025 (Kyushu, Japan)
208- *Invited talk,* ACMB-JSMB2025, July 11, 2025 (Kyoto, Japan)
207- *Invited talk,* RNA Society of Japan, July 9, 2025 (Sendai, Japan)
206- *Invited talk,* JSPS Research Fellow-DC Friendship Meeting 2025, July 5, 2025 (Kyoto, Japan)
205- *Invited talk,* The 15th Int'l Workshop on Advanced Genomics, July 4, 2025 (Tokyo, Japan)
204- *Invited talk,* JST CREST Cell Control Workshop, July 2, 2025 (Zoom)
203- *Invited talk,* The 10th Annual Meeting of the Japanese Society for Genome Editing, June 17, 2025 (Tokyo, Japan)
202- *Invited talk,* BIOZENTRUM, Universität Basel, May 5, 2025 (Basel, Switzerland)
201- *Invited talk,* The 2nd Annual Bellairs Meeting on Genome Engineering and Repair, April 27, 2025 (Barbados)
200- *Invited talk,* iSeminar, Nagoya University, April 17, 2025 (Zoom)
199- *Invited talk,* Tokyo University of Agriculture and Technology, March 27, 2025 (Tokyo, Japan)
198- *Invited talk,* The Japanese Society for Young Bioinformatics Researchers (Biowakate), March 29, 2025 (Zoom)
197- *Invited talk,* A*STAR, March 24, 2025 (Singapore)
196- *Invited talk,* The 70th Annual Meeting of the Japan Society for Reproductive Medicine, March 22, 2025 (Yokohama, Japan)
195- *Invited talk,* UK-Japan Synthetic Biology Conference, February 4, 2025 (Osaka, Japan)
194- *Invited talk,* Kyoto University ASHBi Retreat, January 31, 2025 (Shiga, Japan)
193- *Invited talk,* Kobe Prize Young Investigator Symposium, January 26, 2025 (Tokyo, Japan)
192- *Invited talk,* University of Pittsburgh, December 16, 2024 (Pittsburgh, US)
191- *Invited talk,* SynBYSS Conference, December 10, 2024 (Honolulu, US)
190- *Invited talk,* Kumamoto University, December 1, 2024 (Kumamoto, Japan)
189- *Session chair and speaker,* The 47th Annual Meeting of the Molecular Biology Society of Japan, November 29, 2024 (Fukuoka, Japan)

188- *Invited talk,* Allen Institute Seattle Hub for Synthetic Biology, October 15, 2024 (Seattle, US)
187- *Invited talk,* Sado Conference 2024, July 25, 2024 (Sado, Japan)
186- *Invited talk (plenary lecture),* The 76th Annual Meeting of the Japan Society for Cell Biology, July 17, 2024 (Tsukuba, Japan)
185- *Invited talk,* Young Researchers' Meeting in Cell Biology, July 16, 2024 (Tsukuba, Japan)
184- *Invited talk,* The Frontier Salon, July 5, 2024 (Tokyo, Japan)
183- *Invited talk,* The Allen Frontier Symposium 2024, June 25, 2024 (Seattle, US)
182- *Invited talk,* The 54th Annual Meeting of the Japan Society of Developmental Biologists, June 20, 2024 (Kyoto, Japan)
181- *Invited talk,* Keio University, June 19, 2024 (Zoom)
180- *Invited talk,* Nagoya City University Life Science Seminar, June 18, 2024 (Nagoya, Japan)
179- *Invited talk,* The 27th Science in Japan Forum, June 13, 2024 (Washington DC, US)
178- *Invited talk,* Centre for Heart Lung Innovation, June 7, 2024 (Vancouver, Canada)
177- *Invited talk,* CIFAR McMillan Multiscale Human Meeting, May 3, 2024 (New York City, US)
176- *Invited talk,* Jichi Medical School, March 8, 2024 (Shimotsuke, Japan)
175- *Invited talk,* Osaka University WPI-PRIMe International Symposium, Frontiers in Human Metaverse Medicine, February 29, 2024 (Osaka, Japan)
174- *Invited talk, The SANKEN International Symposium, Osaka University,* Osaka University, January 12, 2024 (Osaka, Japan)
173- *Invited talk,* The 46th Annual Meeting of the Molecular Biology Society of Japan, December 7, 2023 (Kobe, Japan)
172- *Session chair,* The 46th Annual Meeting of the Molecular Biology Society of Japan, December 6, 2023 (Kobe, Japan)
171- *Invited talk,* UBC LSI Seminar, September 22, 2023 (Vancouver, Canada)
170- *Invited talk,* UBC Advanced Genomics and Genome Engineering Workshop, September 8, 2023 (Vancouver, Canada)
169- *Session chair,* The 56th Annual Meeting of the Japanese Society of Developmental Biologists, June 23, 2023 (Sendai, Japan)
168- *Invited talk,* Central Institute for Experimental Animals, July 25, 2023 (Tokyo, Japan)
167- *Invited talk,* SynBYSS seminar series, July 20, 2023 (Zoom)
166- *Invited talk (keynote lecture),* The 16th Annual Meeting of the Japanese Society for Epigenetics, June 19, 2023 (Tokyo, Japan)
165- *Invited talk (keynote lecture),* The 8th Annual Meeting of the Japanese Society for Genome Editing, June 8, 2023 (Tokyo, Japan)
164- *Invited talk,* StemCellTalks, May 19, 2023 (Calgary, Canada)
163- *Invited talk,* University of Utah, May 5, 2023 (Utah, US)
162- *Invited talk,* Ochanomizu University, January 23, 2023 (Zoom)
161- *Invited talk,* Simon Fraser University, January 20, 2023 (Vancouver, Canada)
160- *Invited talk,* Kyoto University ASHBi Seminar, January 9, 2023 (Zoom)
159- *Invited talk,* Keio University School of Medicine, December 9, 2022 (Tokyo, Japan)
158- *Invited talk,* The 51st Annual Meeting of the Japanese Society for Immunology, December 8, 2022 (Kumamoto, Japan)
157- *Invited talk,* The University of Tokyo, School of Science, December 5, 2022 (Tokyo, Japan)
156- *Session chair,* The 45th Annual Meeting of the Molecular Biology Society of Japan, December 1, 2022 (Chiba, Japan)
155- *Invited talk,* SEEDS Conference 2022, October 9, 2022 (Tokyo, Japan)
154- *Invited talk,* The Virtual Human Development Consortium, October 5, 2022 (Vancouver, Canada)
153- *Invited talk,* University of Washington Genome Science Department Combi Seminar, September 28, 2022 (Seattle, US)
152- *Invited talk,* STEMCELL Technologies, September 23, 2022 (Zoom)
151- *Invited talk,* Japan Young Researchers Society of Biochemistry, August 28, 2022 (Sendai, Japan)
150- *Invited talk,* Juntendo University, July 27, 2022 (Tokyo, Japan)
149- *Invited talk,* Keio-Stanford Webinar: Pattern Formation and Stem Cell Development, July 22, 2022 (Zoom)
148- *Invited talk,* Boston Japanese Researcher's Society Izayoi Workshop, July 8, 2022 (Zoom)
147- *Invited talk,* JSPS Holistic Brain Project Workshop, June 23, 2022 (Zoom)
146- *Session chair,* ISSCR 2022 Modeling Stem Cells through Time and Space, June 17, 2022 (San Fransisco, US)
145- *Invited talk,* Genome BC board meeting, June 10, 2022 (Vancouver, Canada)
144- *Invited talk,* 55th Annual Meeting for the Japanese Society of Developmental Biology (JSDB2022), June 1, 2022 (Zoom)
143- *Invited talk,* CIHR Institutes of Genetics, IAB 44, May 28, 2022 (Vancouver, Canada)
142- *Invited talk,* Society of Biotechnology Japan Young Researchers Symposium, May 26, 2022 (Zoom)
141- *Invited talk,* CIFAR program meeting, May 22, 2022 (Toronto, Canada)
140- *Invited talk,* The University of Tokyo, Laboratory for Systems Biology and Medicine, April 17, 2021 (Zoom)
139- *Invited talk,* UBC BIG22, March 23, 2022 (Vancouver, Canada)
138- *Invited talk,* Future Trends and Emerging Technologies in Synthetic Biology (Japan-Australia Synthetic Biology Symposium), March 15, 2022 (Zoom)
137- *Invited talk,* BC Cancer Research Centre, January 17, 2022 (Zoom)
136- *Invited talk,* The 4th ExCELLS Symposium, National Institutes of Natural Sciences, December 20, 2021 (Zoom)
135- *Invited talk,* The Frontier of Animal and Plant Reseraches, Kobe Univeristy, December 15, 2021 (Zoom)
134- *Invited talk,* The 44th Annual Meeting of the Molecular Biology Society of Japan, December 3, 2021 (Zoom)
133- *Invited talk,* Japan Science for the Promotion of Science, Replication of Non-Genome Program, November 23, 2021 (Zoom)
132- *Invited talk,* Japanese San Francisco Bay Area Seminar, October 30, 2021 (Zoom)
131- *Invited talk,* BC Children's Hospital, October 27, 2021 (Zoom)
130- *Invited talk,* MIT Bioengineering, October 20, 2021 (Zoom)
129- *Invited talk,* BioDojo, April 30, 2021 (Zoom)
128- *Invited talk (keynote),* UBC SBME Research Day, University of British Columbia, March 10, 2021 (Zoom)
127- *Invited talk,* 2021 BCRegMed Annual Symposium, May 18, 2021 (Zoom seminar)

126- *Invited talk,* BioDojo, April 30, 2021 (Zoom seminar)
125- *Invited talk (keynote),* TRINITY Symposium (Keynote), Hiroshima University, March 17, 2021 (Zoom seminar)
124- *Invited talk,* NARA Institute of Science and Technology (NAIST), December 4, 2020 (Zoom seminar)
123- *Invited talk,* Notch Therapeutics, November 17, 2020 (Virtual seminar)
122- *Invited talk,* Cascadia 2020, November 5, 2020 (Virtual conference)
121- *Invited talk,* The University of British Columbia, BC Children PITCH seminar series, October 6, 2020 (Zoom seminar)
120- *Invited talk,* Japan Science and Technology Agency, National Bioscience Database Center, October 4, 2020 (Virtual conference)
119- *Invited talk,* LADEC2020, October 3, 2020 (Virtual conference)
118- *Invited talk,* The University of British Columbia, MSL seminar series, September 23, 2020 (Zoom seminar)
117- *Invited talk,* CRISPR and Beyond: Perturbations at Scale to Understand Genomes, September 23, 2020 (Wellcome Genome Campus, UK, Virtual conference)
116- *Invited talk,* The 64th Annual Meeting of the Japan College Rheumatology, August 23, 2020 (Virtual conference)
115- *Invited talk,* The University of Tokyo, School of Medicine, April 14, 2020 (Zoom seminar)
114- *Invited talk,* The University of Tokyo, The Institute of Medical Science, April 5, 2020 (Zoom seminar)
113- *Invited talk,* NEDO Festa, December 18, 2019 (Osaka, Japan)
112- *Invited talk,* AMED Symposium, December 13, 2019 (Tokyo, Japan)
111- *Session chair,* The 42nd Annual Meeting of the Molecular Biology Society of Japan, December 6, 2019 (Fukuoka, Japan)
110- *Invited talk,* Augmented Cell Engineering Symposium, December 4, 2019 (Tokyo, Japan)
109- *Invited talk,* Hiroshima University, November 26, 2019 (Hiroshima, Japan)
108- *Invited talk,* Frontiers in Genome Engineering 2019, November 26, 2019 (Kobe, Japan)
107- *Invited talk,* Kumamoto University, November 21, 2019 (Kumamoto, Japan)
106- *Invited talk,* Asian Synthetic Biology Association 2019, October 28, 2019 (Chengdu, China)
105- *Invited talk,* Takeda New Insight Cross Talk Meeting, October 19, 2019 (Tokyo, Japan)
104- *Invited talk,* The University of Tokyo Friday Lecture for High School and University Students, October 18, 2019 (Tokyo, Japan)
103- *Invited talk,* University of Toronto, Donnelly Centre, October 10, 2019 (Toronto, Canada)
102- *Invited talk,* NARA Institute of Science and Technology (NAIST), September 24, 2019 (Nara, Japan)
101- *Invited talk,* The 91st Annual Meeting of Genetic Society of Japan, September 13, 2019 (Fukui, Japan)
100- *Invited talk,* The 68th Annual Meeting of Japan Society of Analytical Chemistry 2019, September 11, 2019 (Chiba, Japan)
99- *Invited talk,* Society of Young Scientists in Biophysics, Summer School, August 28, 2019 (Kobe, Japan)
98- *Invited talk,* Takato Symposium, August 22, 2019 (Takato, Japan)
97- *Invited talk,* The 40th Annual Meeting of Japanese Society of Inflammation and Regeneration, July 16, 2019 (Kobe, Japan)
96- *Invited talk,* Nagoya University, July 8, 2019 (Nagoya, Japan)
95- *Invited talk,* The 13th Intn'l Workshop on Advanced Genomics, June 26, 2019 (Tokyo, Japan)
94- *Invited talk,* The University of Tokyo, Graduate School of Agricultural and Life Sciences, June 19, 2019 (Tokyo, Japan)
93- *Invited talk,* Advanced Biomeasurement Meeting, May 24, 2019 (Tokyo, Japan)
92- *Invited talk,* Q-Bio Meeting: Interface between Immunology & Quantitative Biology, May 20, 2019 (Tokyo, Japan)
91- *Invited talk,* TECAN, April 24, 2019 (Tokyo, Japan)
90- *Invited talk,* The 63rd Annual Meeting of the Japan College Rheumatology, April 15, 2019 (Kyoto, Japan)
89- *Invited talk,* Tohoku University, March 19, 2019 (Sendai, Japan)
88- *Invited talk,* Single Cell Biology Meets Diagnostics, March 5, 2019 (Uppsala, Sweden)
87- *Invited talk,* JSPS "Cell Diversity" Workshop, February 28, 2019 (Sendai, Japan)
86- *Invited talk,* Keystone Symposium: Genome Engineering, February 22, 2019 (Victoria, Canada)
85- *Invited talk (keynote lecture),* Life Science Frontier Meeting 2018, October 6, 2018 (Mishima, Japan)
84- *Invited talk,* Max Planck Institute Florida for Brain Sciences, December 10, 2018 (Palm Beach, US)
83- *Invited talk,* University of Texas, December 7, 2018 (Texas, US)
82- *Invited talk,* The 41st Annual Meeting of the Molecular Biology Society of Japan, November 28, 2018 (Yokohama, Japan)
81- *Invited talk,* Asian Synthetic Biology Association, November 23, 2018 (Jeju, South Korea)
80- *Invited talk,* Cell Mapping Symposium, October 29, 2018 (San Diego, US)
79- *Invited talk,* JST ImPACT Noji Artificial Cell Program, September 28, 2018 (Tokyo, Japan)
78- *Invited talk,* NARA Institute of Science and Technology (NAIST), September 27, 2018 (Nara, Japan)
77- *Invited talk,* Japanese Biochemical Society, September 26, 2018 (Kyoto, Japan)
76- *Invited talk,* Joint Yeast Biology Symposium, September 13, 2018 (Fukuoka, Japan)
75- *Invited talk,* Japanese Society for Biotechnology, DBTL Symposium, September 7, 2018 (Osaka, Japan)
74- *Invited talk,* Japanese Society for Biotechnology, Mammalian cell culture, September 7, 2018 (Osaka, Japan)
73- *Invited talk,* BIO tech 2018, June 28, 2018 (Tokyo, Japan)
72- *Invited talk,* The 3rd Annual Meeting of The Japanese Society for Genome Editing, June 19, 2018 (Hiroshima, Japan)
71- *Invited talk,* CIFAR Genetic Networks Workshop, June 2, 2018 (Toronto, Canada)
70- *Invited talk,* The University of British Columbia, May 28, 2018 (Vancouver, Canada)
69- *Invited talk,* University of Toronto, Donnelly Centre, May 23, 2018 (Toronto, Canada)
68- *Invited talk (plenary lecture),* PROTEO 18th Annual Symposium (Plenary Talk), May 18, 2018 (Quebec City, Canada)
67- *Invited talk,* Club d'édition génomique de l'Université Laval, May 16, 2018 (Quebec City, Canada)
66- *Invited talk,* Nippon Medical School, May 11, 2018 (Tokyo, Japan)
65- *Invited talk,* Forum-Management for Tomorrow, April 26, 2018 (Tokyo, Japan)
64- *Invited talk,* Osaka University IPR Seminar: BioNetworks in Health and Diseases, April 18, 2018 (Osaka, Japan)
63- *Invited talk,* 17th Congress on the Japanese Society for the Regenerative Medicine, March 23, 2018 (Yokohama, Japan)

62- *Invited talk,* Japan Association of Technology Executives, March 12, 2018 (Tokyo, Japan)
61- *Invited talk,* Annual Meeting for Systems and Synthetic E. coli Biology, March 20, 2018 (Awaji, Japan)
60- *Invited talk,* National Institute for Basic Biology, March 5, 2018 (Okazaki, Japan)
59- *Invited talk,* ConBio2017: Single Cell Biology Symposium, December 6, 2017 (Kobe, Japan)
58- *Invited talk,* ConBio2017: ShinBio Symposium, December 6, 2017 (Kobe, Japan)
57- *Invited talk,* Japanese Society for Cell Synthesis Research, October 20, 2017 (Kyoto, Japan)
56- *Invited talk,* Kyoto University, Institute for Frontier Medical Sciences, September 20, 2017 (Kyoto, Japan)
55- *Invited talk,* Japan Human Proteome Organization (JHUPO), July 27, 2017 (Osaka, Japan)
54- *Invited talk,* Kyoto University, Graduate School of Agriculture, July 18, 2017 (Kyoto, Japan)
53- *Invited talk,* Kyushu University, Medical Institute of Bioregulation, July 6, 2017 (Fukuoka, Japan)
52- *Invited talk,* Japan Research Industries and Industrial Technology Association (JRIA), June 29, 2017 (Tokyo, Japan)
51- *Invited talk,* Japan Bioindustry Association, May 15, 2017 (Tokyo, Japan)
50- *Invited talk,* Japanese Society of Developmental Biologists, May 10, 2017 (Tokyo, Japan)
49- *Invited talk,* CIFAR Genetic Networks Workshop, April 27, 2017 (Tokyo, Japan)
48- *Invited talk,* Tottori University, Chromosome Engineering Research Center, April 17, 2017 (Tottori, Japan)
47- *Invited talk,* RIKEN Sakura Symposium, March 30, 2017 (Yokohama, Japan)
46- *Invited talk,* Annual Meeting for Systems and Synthetic E. coli Biology, March 15, 2017 (Awaji, Japan)
45- *Invited talk,* The University of Tokyo, School of Pharmaceutical Sciences, February 27, 2017 (Tokyo, Japan)
44- *Invited talk,* Physical Approaches for Growing and Evolving Populations, February 11, 2017 (Tokyo, Japan)
43- *Invited talk,* Okinawa Institute of Science and Technology Graduate University (OIST), February 8, 2017 (Okinawa, Japan)
42- *Invited talk,* Japanese Society for Quantitative Biology, January 8, 2017 (Okazaki, Japan)
41- *Invited talk,* The molecular Biology Society of Japan, December 2, 2016 (Yokohama, Japan)
40- *Invited talk,* International Conference on Single Cell Research 2016, November 16, 2016 (Tokyo, Japan)
39- *Invited talk,* The 8th IMS Seminar on Human Disease Biology, RIKEN IMS, October 28, 2016 (Tokyo, Japan)
38- *Invited talk,* Informatics in Biology, Medicine and Pharmacology, September 30, 2016 (Tokyo, Japan)
37- *Invited talk,* Bayer Innovation Day, September 8, 2016 (Yokohama, Japan)
36- *Invited talk,* Keio University, School of Medicine, August 9, 2016 (Tokyo, Japan)
35- *Invited talk,* Kyoto University, School of Medicine, June 16, 2016 (Kyoto, Japan)
34- *Invited talk,* The University of Tokyo, BIO UT 2016 (Plenary Talk), April 23, 2016 (Tokyo, Japan)
33- *Invited talk,* CIFAR Genetic Networks Workshop, April 16, 2016 (Toronto, Canada)
32- *Invited talk,* The University of Tokyo, Institute of Medical Science, IIS Retreat, March 31, 2016 (Tokyo, Japan)
31- *Invited talk,* Chemical Society of Japan, March 27, 2016 (Kyoto, Japan)
30- *Invited talk,* The University of Tokyo, Institute of Industrial Science, March 19, 2016 (Tokyo, Japan)
29- *Invited talk,* International Symposium on Genome Microbiology, March 6, 2016 (Tokyo, Japan)
28- *Invited talk,* Spiber, Inc., March 1, 2016 (Tsuruoka, Japan)
27- *Invited talk,* BMB2015: Illumina Seminar, December 1, 2015 (Kobe, Japan)
26- *Invited talk,* BMB2015: Single Cell Workshop, December 1, 2015 (Kobe, Japan)
25- *Invited talk,* Kobe University, Innovative BioProduction Kobe, August 5, 2015 (Kobe, Japan)
24- *Invited talk,* RIKEN Center for Sustainable Resource Center, July 29, 2015 (Wako, Japan)
23- *Invited talk,* Toyota Physical and Chemical Research Institute, July 27, 2015 (Tokyo, Japan)
22- *Invited talk,* NARA Institute of Science and Technology (NAIST), July 22, 2015 (Nara, Japan)
21- *Invited talk,* Cancer and Metabolism, July 16, 2015 (Kanazawa, Japan)
20- *Invited talk,* NGS Field, July 2, 2015 (Tsukuba, Japan)
19- *Invited talk,* RIKEN Quantitative Biology Center, QBiC Retreat, June 21, 2015 (Osaka, Japan)
18- *Invited talk,* Illumina Genome Summit 2015, June 4, 2015 (Tokyo, Japan)
17- *Invited talk,* RIKEN Quantitative Biology Center, May 26, 2015 (Osaka, Japan)
16- *Invited talk,* Kyoto University, Center for iPS Research and Application, May 25, 2015 (Kyoto, Japan)
15- *Invited talk,* Keio IAB-Osaka BIKEN Joint Workshop, March 5, 2015 (Osaka, Japan)
14- *Invited talk,* The University of Tokyo, Graduate School of Science, February 9, 2015 (Tokyo, Japan)
13- *Invited talk,* National Institute of Advanced Industrial Science and Technology (AIST), December 26, 2014 (Tokyo, Japan)
12- *Invited talk,* Okazaki Institute for Integrative Bioscience, November 21, 2014 (Okazaki, Japan)
11- *Invited talk,* The University of Tokyo, Graduate School of Science, November 18, 2014 (Nara, Japan)
10- *Invited talk,* Mie University, School of Medicine, October 29, 2014 (Mie, Japan)
9- *Invited talk,* Advanced Telecommunications Research Institute International, October 14, 2014 (Mie, Japan)
8- *Invited talk,* RIKEN Tanabata Meeting, Yokohama, Japan, July 11, 2014
7- *Invited talk,* Harvard Medical School, Center of Cancer Systems Biology Retreat 2013, MA, USA, September 12, 2013
6- *Invited talk,* Yokohama City University, School of Medicine, Yokohama, Japan, October 1, 2012
5- *Invited talk,* RIKEN Plant Science Center, Yokohama, Japan, October 4, 2012
4- *Invited talk,* Harvard Medical School, Center of Cancer Systems Biology Retreat 2012, MA, USA, September 14, 2012
3- *Invited talk,* Harvard Medical School, Center of Cancer Systems Biology, MA, USA, April 10, 2012
2- *Invited talk,* Brandeis University, MA, USA, April 9, 2012
1- *Invited talk,* National Institute of Genetics, Mishima, Japan, February 19, 2009

Peer-reviewer participation

- **For journals:** *Science (3), Nature (5), Nature Biotechnology (6), Nature Methods (2), Nature Genetics, Nature Chemical Biology (2), Nature Cell Biology, Nature Nanotechnology, Nature Communications (9), Nature Protocols, Cell, Cell Genomics (2), Cell Chemical Biology, Cell Reports, Cell Reports Methods, Molecular Systems Biology, Genome Biology, Nucleic Acids Research (3), GEN Biotechnology*, *PNAS* (2)*, Bioinformatics*, *BMC Bioinformatics* (2), *BMC Biology*, *Journal of Theoretical Biology* (3), *Journal of Proteomics*, *Journal of Molecular Biology*, *Scientific Reports* (3), *PLOS Biology, PLOS One*, *npj Systems Biology and Applications (6)*, *Journal of Visualized Experiments*
- **Grants:** NSERC (a total of 2 applications), Japan Science and Technology Agency (227), Japan Society for the Promotion of Science (45), Medicine by Design (6 applications), CIFAR (35), Stem Cell Network