Keita Tsujimura, Ph.D

Chief Scientific Director
Rett syndrome Organization Japan (RSOJ)
Email: t.keita@npo-rett.jp

WORK EXPERIENCE:

2023- Present Pharmaceutical company Japan

Research Scientist - Department of Pharmacology, Drug Discovery & Disease Research Laboratory

2020-2023 Nagoya University Aichi, Japan

Group Director (Designated Lecturer/ Laboratory Head) - Group of Brain Function and development, Institute of Neuroscience, Graduate school of Science

2020-2023 Nagoya University Aichi, Japan

Unit Leader (Frontier special unit) - Research unit for developmental disorders, Institute for Advanced Research

2021-2022 Harvard Medical School / Massachusetts General Hospital Boston, United States

Visiting Lecturer - Department of Radiology, Athinoula A. Martinos Imaging Center

2017-2020 Nagoya University Aichi, Japan

Unit Leader - Research unit for developmental disorders, Institute for Advanced Research

2015-2020 Nagoya University Nagoya, Japan

Designated assistant professor - Graduate school of Medicine

1. Department of Psychiatry (4/2017-9/2020)
2. Department of Pharmacology (10/2015-3/2017)

2013-2015 Kyushu University Fukuoka, Japan

Designated assistant professor - Graduate school of Medicine

2010-2013. Nara Institute for Science and Technooogy (NAIST) Nara, Japan

Researcher - Graduate school of Biological Science

EDUCATION:

- **Nara Institute for Science and Technology, Ph.D.** in **Biological Science** (Apr 2007–Mar 2010)
- **Nara Institute for Science and Technology, M.S.** in **Biological Science** (Apr 2005–Mar 2007)
- **Tokyo University of Science, B.A.** in **Chemistry** (Apr 2001–Mar 2005)

QUALIFICATIONS:

- Business English level, PROGOS English Speaking Skill: CEFR(CEFR-J) Level"B1 High" (2023).
- Ph.D. degree (Biological Science; Mar 2010)

Research achievements

Publications

- **Research article**
- **First author, Corresponding author, or Last author**

1) **Tsujimura K**. (First author), Abematsu M., Kohyama J., et al., Neuronal differentiation of neural precursor cells is promoted by the methyl-CpG-binding protein MeCP2. ***Exp Neurol*** 219, 104-111 (2009)
2) Guo W., **Tsujimura K.**(Co-First author)., Otsuka MI., et al. VPA Alleviates Neurological Deficits and Restores Gene Expression in a Mouse Model of Rett Syndrome. ***PLOS ONE***, 9(6), e100215 (2014)
3) **Tsujimura K.,** Irie K., Nakashima H., et al., miR-199a links MeCP2 with mTOR signaling and its dysregulation leads to Rett syndrome phenotypes. ***Cell Rep***, 12(11), 1887-1901 (2015)
4) Irie K., **Tsujimura K.**(Corresponding author)., Nakashima H., et al. MicroRNA-214 promotes dendritic development by targeting the schizophrenia-associated gene Quaking (Qki). ***J Biol Chem***, 291, 13891-13904 (2016)
5) Nakashima, H., **Tsujimura, K.** (Corresponding author), Irie, K., et al., Canonical TGF-β Signaling Negatively Regulates Neuronal Morphogenesis through TGIF/Smad Complex-Mediated CRMP2 Suppression. ***J Neurosci*** 38, 4791-4810 (2018)
6) Nakashima, H., **Tsujimura,** K. (Corresponding author)., Irie, K., et al., MeCP2 controls neural stem cell fate specification through miR-199a-mediated inhibition of BMP-Smad signaling. ***Cell Rep*** **3**5(7), 109124 (2021)
7) Akaba, Y., **Tsujimura, K.**(Corresponding/Last author), et al., Comprehensive Volumetric Analysis of Mecp2-null Mouse Model for Rett syndrome by T2 Weighted 3D Magnetic Resonance Imaging. ***Front***

Neurosci 16, 885335 (2022)

8) Akaba Y., **Tsujimura, K.**（Corresponding/Last author）, et al., miR-514a promotes neuronal development in human iPSC-derived neurons. ***Front Cell Dev Biol*** 7:11:1096463 (2023)

9) **Tsujimura, K.** (First author), et al., Abnormal Structural Alteration of SVZ tractography fibers in Autism Spectrum Disorder Brain. ***In preparation***

10) Irie K., **Tsujimura, K.**(Corresponding author), et al., MeCP2 controls dendritic morphogenesis via miR-199a-mediated Qki downregulation. ***In preparation***

11) Akaba Y., **Tsujimura, K.**（Corresponding/Last author）, et al., Dysregulation of MeCP2/miR-199a pathway contributes MECP2-duplication syndrome phenotypes. ***Submitted***

12) Narita H., **Tsujimura, K.**(Last author), et al., C Diffuse but non-homogeneous brain atrophy in Rett syndrome: MRI volumetric study ***Submitted***

- Co-author

13) Kohyama J, **Tsujimura K**, et al., BMP-induced REST regulates establishment and maintenance of astrocytic identity. ***J Cell Biol*** **189**, 159-170 (2010)

14) Abematsu M., **Tsujimura K.**, Yamano M., et al., Neurons derived from transplanted neural stem cells restore disrupted neuronal circuitry in a mouse model of spinal cord injury. ***J Clin Invest***, **120** (9), 3255-66 (2010)

15) Juriandi B., **Tsujimura K.**, et al., Induction of superficial cortical layer neurons from mouse embryonic stem cells by valproic acid. ***Neurosci Res*** **72**, 23-31 (2012)

16) Fujimoto Y., **Tsujimura K**., et al. Treatment of a mouse model of spinal cord injury by transplantation of human induced pluripotent stem cell-derived long-term self-renewing neuroepithelial-like stem cells. ***Stem Cells*** **30**, 1163-1173 (2012)

17) Juriandi B, **Tsujimura K**., et al. Reduced adult hippocampal neurogenesis and cognitive impairments following prenatal administration of the antiepileptic drug, valproic acid. ***Stem Cell Reports,*** **5**, 1-14 (2015)

18) Sekiguchi, M., **Tsujimura, K.**, et al. ARHGAP10, which encodes Rho GTPase-activating protein 10, is a novel gene for schizophrenia risk. ***Transl Psychiatry*** **10**, 247 (2020)

19) Kato, H., **Tsujimura, K.**, et al. Rare genetic variants in the gene encoding histone lysine demethylase 4C (KDM4C) and their contribution to susceptibility to schizophrenia and autism spectrum disorder. ***Transl Psychiatry*** **10**, 421 (2020)

20) Shiohama, H., **Tsujimura, K.**, et al. Small Nucleus Accumbens and Large Cerebral Ventricles in Infants and Toddlers Prior to Receiving Diagnoses of Autism Spectrum Disorder. ***Cereb Cortex*** **283**, (2021)

21) Takeguchi R, **Tsujimura K.**, et al. Structural and functional changes in the brains of patients with Rett syndrome: A multimodal MRI study. ***J Neurol Sci*** **441**, 120381 (2022)

22) Suzuki T, **Tsujimura K.**, et al. Pathological gait in Rett syndrome: Quantitative evaluation using three-dimensional gait analysis. ***Eur J Paediatr Neurol*** **42**, 15-21 (2023)

23) Yonemoto K, **Tsujimura K.**, et al. Heterogeneity and mitochondrial vulnerability configurate the divergent immunoreactivity of human induced microglia-like cells. ***Clin Immunol*** **255**, 109756 (2023)

24) Taira R, **Tsujimura K.**, et al. Gnao1 is a molecular switch that regulates the Rho signaling pathway in differentiating neurons. ***Sci Rep*** 14, 17097 (2024)

- **Review**

  1) **Tsujimura K.** (Corresponding author)., Nakashima H., Irie K., et al. Emerging roles for miRNA-based post-transcriptional regulation in neuronal morphogenesis and neurodevelopmental disorders. ***RNA&DISEASE***, **3**, e1456 (2016)

  2) Shiohama, H., **Tsujimura, K.**, Quantitative Structural Brain Magnetic Resonance Imaging Analyses: Methodological Overview and Application to Rett Syndromme. ***Front Neurosci*** (2022)

  3) **Tsujimura, K.**, et al. microRNA biology on Brain Development and Neuroimaging Approach. ***Brain Sci*** (2022)

- **Book**

  1) **Tsujimura, K.**, Nakashima, K. Rett Syndrome and Stem cell Research. "Stem Cell Genetics for Biomedical Research ", ***Springer,*** 27-41 (2018)

  2) **Tsujimura, K.** MicroRNA and human diseases; MicroRNAs in Neurological Diseases, "MicroRNA: From Bench to Beside", ***Elsevier,*** 317-329 (2022)

Patent

1. Patent 6869587・**Keita Tsujimura,** Norio Ozaki, Hiroshi Abe, Yasuaki Kimura "Method for detection of miRNA processing and its application"・Nagoya University・14/03/2019
2. Patent pending PCT/JP2020/2568・**Keita Tsujimura,** Norio Ozaki, Hiroshi Abe, Yasuaki Kimura "Method for detection of miRNA processing and its application"・Nagoya University・14/03/2019
3. Patent pending 2021-088243・**Keita Tsujimura,** "Method for detection of Protein-Protein Interaction and its application"・Nagoya University・26/05/2021
4. Patent pending 2022-070553・**Keita Tsujimura,** Jun Natsume "Method for evaluation of efficacy of drugs and diagnose fot Rett syndrome"・Nagoya University・22/04/2022

Research Funds (Total more than 200,000,000 yen [JPY])

Japan Agency for Medical Research and Development (AMED) The iD3 booster DNW-21014 (Validation stage)：2021-2022（Principal Investigator）
Project Name：Drug discovery for developmental disorders
Amount：8,800,000 yen (JPY)

Japan Agency for Medical Research and Development (AMED) Practical Research Project for Rare/Intractable Diseases, Research and Development (R&D) on rare and/or intractable diseases; Drug Discovery (Discovery phase: Step 0)：2021-2023（Principal Investigator）
Project Name：Development of miRNA pathology-based effective therapeutic drug for Rett syndrome
Amount：93,210,000 yen (JPY)

Japan Agency for Medical Research and Development (AMED) Practical Research Project for Rare/Intractable Diseases, Research and Development (R&D) on rare and/or intractable diseases; Regenerative/Gene/Cell therapy (Discovery phase: Step 0)：2021-2023（Co-Principal Investigator; PI: Keiichiro Suzuki [Osaka University]）

Project Name：Development of innovative gene editing technology for developmental disorders
Amount：19,500,000 yen (JPY)

Japan Science and Technology Agency (JST) Program for Creating Start-ups from Advanced Research and Technology (START; SCORE University promotion type) ：2021（Principal Investigator）
Project Name：Innovative drug discovery platform for rare diseases
Amount：10,400,000 yen (JPY)

Japan Society for the Promotion of Science (JSPS) Grants-in-Aid for Scientific Research (KAKENHI) Grant-in-Aid for Scientific Research (C) ：2021-2023（Principal Investigator）
Project Name：Understanding mechanisms of brain function and development by non-coding RNA
Amount：4,030,000 yen (JPY)

Riken-Nagoya university joint research program grant: 2021-2022（Principal Investigator）
Project Name：Elucidation of pathogenesis of developmental disorders by precise control of MECP2 gene expression
Amount: 500,000 yen (JPY)

Tokai Network for Global Leading Innovators, GAP Fund for Startup preparation: 2021-2022（Principal Investigator）
Project Name：Development of drug discovery platform by non-coding RNA detection technique
Amount: 1,500,000 yen (JPY)

Tokai National Higher Education and Research system, Startup preparation fund: 2021（Principal Investigator）
Project Name：Commercialization of drug discovery platform by microRNA processing detection technique
Amount: 1,000,000 yen (JPY)

Rett syndrome support organization, 10th Memorial Research grant：2021（Principal Investigator）
Project Name：Development of innovative gene therapy method for Rett syndrome
Amount：1,000,000 yen (JPY)

Japan Society for the Promotion of Science (JSPS) Grants-in-Aid for Scientific Research (KAKENHI) Grant-in-Aid for Scientific Research (A) ：2021-2024（Co-Principal Investigator; PI: Keiichiro Suzuki [Osaka University]）
Project Name：Development of innovative genome editing therapeutic avenue at embryonic stage
Amount：8,580,000 yen (JPY)

Japan Agency for Medical Research and Development (AMED) Practical Research Project for Rare/Intractable Diseases, Research and Development (R&D) on rare and/or intractable diseases; Genome medicine project (G)：2020-2022（Co-Principal Investigator; PI: Kenjiro Kosaki [Keio University]）
Project Name：Achieving a diagnosis for all through deciphering structural variants and making sense of

non-coding mutations
Amount：30,000,000 yen (JPY)

Nagoya University・Program for Promoting the Enhancement of Research Universities・Setting up young researcher units・”frontiers” for the advancement of new and undeveloped fields : 2020-2021（Principal Investigator）
Project Name：Research Unit for Developmental Disorders
Amount：3,000,000 yen (JPY)

Japan Agency for Medical Research and Development (AMED) Practical Research Project for Rare/Intractable Diseases：2019-2021（Principal Investigator）
Project Name : Elucidation of the molecular pathogenesis of developmental disorders caused by MECP2 variations and development of novel diagnostic and therapeutic avenues
Amount：24,000,000 yen (JPY)

Japan Agency for Medical Research and Development (AMED) The iD3 booster DNW-17001 (Screening stage)：2020（Principal Investigator）
Project Name：Exploration of innovative drug for developmental disorders
Amount：10,000,000 yen (JPY)

Japan Agency for Medical Research and Development (AMED) The iD3 booster DNW-17001 (Screening stage)：2019（Principal Investigator）
Project Name：Exploration of innovative drug for developmental disorders
Amount：20,000,000 yen (JPY)

Japan Agency for Medical Research and Development (AMED) The iD3 booster DNW-17001 (Validation stage)：2018（Principal Investigator）
Project Name：Exploration of innovative drug for developmental disorders
Amount：16,000,000 yen (JPY)

Japan Agency for Medical Research and Development (AMED) The iD3 booster DNW-17001 (Validation stage)：2017（Principal Investigator）
Project Name：Exploration of innovative drug for developmental disorders
Amount：10,000,000 yen (JPY)

Nagoya University・Program for Promoting the Enhancement of Research Universities・Setting up young researcher units for the advancement of new and undeveloped fields：2017-2019（Principal Investigator）
Project Name：Innovative drug discovery research unit for mental disorders
Amount：3,000,000 yen (JPY)

Japan Society for the Promotion of Science (JSPS) Grants-in-Aid for Scientific Research (KAKENHI) Grant-in Scientific Research on Innovation Areas “Constructive understanding of multi-scale dynamism of neuropsychiatric disorders” ：2019-2020（Principal Investigator）
Project Name：Constructive understanding of multi-scale dynamism of Rett syndrome
Amount：7,800,000 yen (JPY)

Rett syndrome support organization, Research grant：2019（Principal Investigator）
Project Name：Elucidation of pathogenic neural circuits of Rett syndrome and development of therapeutic avenue
Amount：1,000,000 yen (JPY)

Japan Society for the Promotion of Science (JSPS) Grants-in-Aid for Scientific Research (KAKENHI) Grant-in-Aid for Scientific Research (C) ：2018-2020（Principal Investigator）
Project Name：Elucidation of common molecular mechanism of MECP2 abnormal disorders
Amount：3,400,000 yen (JPY)

Kawano Masanori Memorial Public Interest Incorporated Foundation for Promotion of Pediatrics ：2018（Principal Investigator）
Project Name：Elucidation of common molecular mechanism of Rett syndrome and MECP2 duplication syndrome
Amount：500,000 yen (JPY)

Japan Society for the Promotion of Science (JSPS) Grants-in-Aid for Scientific Research (KAKENHI) Grant-in-Aid for Young Scientist (B) ：2016-2017（Principal Investigator）
Project Name：Regulation of axon formation by developmental disorder causative gene MeCP2
Amount：3,380,000 yen (JPY)

Award

5th Japanese Society of RNAi/Extracellular Vesicles, Best presentation award, Hiroshima, 29-31/08/2013

Outreach activities/Social activities

1. **Opinion exchange meeting between AMED project group (PI: Keita Tsujimura) and MECP2 duplication syndrome support organization**, Online, 05/09/2021
2. **Opinion exchange meeting between AMED project group (PI: Keita Tsujimura) and Rett syndrome support organization**, Online, 29/08/2021
3. **Opinion exchange meeting between AMED project group (PI: Keita Tsujimura) and MECP2 duplication syndrome support organization**, Online, 21/02/2021
4. **Keita Tsujimura**, “Unraveling the Mechanisms of Brain Development from Genes”, Aichi Science Festival 2020, Sakae, Nagoya, 02/11/2020
5. **Opinion exchange meeting between AMED project group (PI: Keita Tsujiumura) and Investigation Team of Rett syndrome support organization**, Nagoya University, 15/07/2020
6. **Keita Tsujimura**, “Elucidation of mechanisms of developmental disorders -Challenging for development of therapeutic methods”, Aichi Science Festival 2019, Nagoya University Café “ Science and Me”, 20/11/2019
7. **Keita Tsujimura**, “Brain and diseases”, Nagoya University Open Lecture, 21/03/2019
8. **Keita Tsujimura**, “Common molecular mechanisms of developmental psychiatric disorders” Aichi Developmental Disability Center・Division of Genetics, Lecture for medical doctor 27/12/ 2018

Educational activities

1. Basic Biochemistry, November-December /2020 Undergraduate school of Science, Nagoya University
2. Special Lecture of Biological Science 2/5 (English), November 11-12/2020 Undergraduate school of Science and Graduate school of School (G30 International program Graduate student), Nagoya University
3. Basic Biology course June-July/2020, Undergraduate school of Science, Nagoya University
4. Neuroscience Course (English) Basic medical course, October 11/2019, Graduate school of medicine, Nagoya University
5. Integrative Graduate Education and Research Program in Green Natural Sciences, October /2019 Graduate school of science, Nagoya University

Academic activities

1. 2021-2023 Ethical review board (IRB) member, Nagoya University
2. Organizer, Workshop for the advancement of new and undeveloped fields, "Understanding brain development and disease pathogenesis", Nagoya University, February 3/2021

Peer reviews

Psychiatry and Clinical Neuroscience, August/2021
Psychiatry and Clinical Neuroscience, July/2021
Cellular Signaling, April/2021
Cellular Signaling, March/2021
Molecular Psychiatry, March/2021
Cellular Signaling-1, February2021
Cellular Signaling-2, February2021
Journal of Neurochemistry, January/2021
Cellular Signaling-2, January/2021
Stem Cell, December/2020
Journal of Neurochemistry, December/2020
Stem Cell, November/2020
Molecular Psychiatry, September/2020
Frontiers in Cell and Developmental Biology, May/2020
Cellular Signaling, September/2019
Psychiatry and Clinical Neuroscience, December/2018

Achievements of Industry-academia Collaboration

Joint research contract with Olympus corporation (2017-2021)
Joint research contract with Oji Holdings Corporation (2021-2022)