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Position

Team Leader (Laboratory Head)

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Education:

1990-1994	Kyoto University, Faculty of Engineering, Japan: B.S.
1994-1996	Kyoto University, Department of Molecular Engineering, Japan: M.S.
1996-1999	Kyoto University, Department of Molecular Engineering, Japan: Ph.D. (Prof. Isao Morishima)

Employment:

1996 – 1999	JSPS Predoctoral Fellowships (DC1)
1999 – 2002	Special Postdoctoral Fellow of Science, RIKEN Brain Science Institute, Japan (Dr. Nobuyuki Nukina)
2002 – 2006	Postdoctoral Fellow, Howard Hughes Medical Institute and University of California-San Francisco, Department of Cellular and Molecular Pharmacology, USA (Prof. Jonathan Weissman)
2003 – 2005	JSPS Postdoctoral Fellow for Research Abroad (UCSF)
2005 – 2009	PRESTO Researcher, Japan Science and Technology (2005-2006: UCSF)
2006 – 2011	Unit Leader (PI), Tanaka Research Unit, RIKEN Brain Science Institute, Japan
2011 – 2018	Team Leader (PI), Laboratory for Protein Conformation Diseases, RIKEN Brain Science Institute, Japan
2018 – Present	Team Leader (PI), Laboratory for Protein Conformation Diseases, RIKEN Center for Brain Science, Japan
2016– Present	Visiting Professor, Tokyo Medical and Dental University, Japan
2018– Present	Visiting Professor (divisional director in RIKEN), Tokyo Medical and Dental University, Japan
2018– Present	Visiting Professor, Saitama University, Japan

Award:

2008	The Young Scientists' Prize, The Commendation for Science and Technology by the Minister of Education, Culture, Sports, Science and Technology, Japan
2013	JSPS (Japan Society for the Promotion of Science) Prize, Japan

List of full publications

[Original Articles]

(1) Sugiyama, S., and **Tanaka, M.** Distinct segregation patterns of yeast cell-peripheral proteins uncovered by a method for protein segregatome analysis. *Proc. Natl. Acad. Sci. U. S. A.*, in press

(2) Hui, K.K., Takashima, N., Watanabe, A., Chater, T.E., Matsukawa, H., Nekooki-Machida, Y., Nilsson, P., Endo, R., Goda, Y., Saido, T.C., Yoshikawa, T., **Tanaka., M.** GABARAPs dysfunction by autophagy deficiency in adolescent brain impairs $GABA_A$ receptor trafficking and social behavior. *Sci Adv.*, 5(4), eaau8237 (2019).

(3) Endo, R., Takashima, N., Nekooki-Machida, Y., Komi, Y., Hui, K.K., Takao, M., Akatsu, H., Murayama, S., Sawa, A., and **Tanaka, M.** TDP-43 and DISC1 Co-Aggregation Disrupts Dendritic Local Translation and Mental Function in FTLD. *Biol. Psychiatry*, 84, 509-521 (2018).

(4) Chen, C.W. **Tanaka, M.** Genome-Wide Translation Profiling by Ribosome-Bound tRNA Capture. *Cell Rep.*, 23, 608-621 (2018).

(5) Ohhashi, Y., Yamaguchi, Y., Kurahashi, H., Kamatari, Y.O. Sugiyama, S., Uluca, B., Piechatzek, T., Komi, Y., Shida, T., Müller, H., Hanashima, S., Heise, H., Kuwata, K., **Tanaka, M.** Molecular basis for diversification of yeast prion strain conformation. *Proc. Natl. Acad. Sci. U. S. A.*, 115, 2389-2394 (2018)..

(6) **Tanaka, M.***, Ishizuka, K., Nekooki-Machida, Y., Endo, R., Takashima, N., Sasaki, H., Komi, Y., Gathercole, A., Huston, E., Ishii, K., Hui, K.K., Kurosawa, M., Kim, S.H., Nukina, N.,Takimoto, E., Houslay, M.D., Sawa, A.* Aggregation of scaffolding protein DISC1 dysregulates phosphodiesterase 4 in Huntington's disease. *J. Clin. Invest.*, 127, 1438-1450 (2017). *Corresponding authors

(7) Toyoshima, M., Akamatsu, W., Okada, Y., Ohnishi, T., Balan, S., Hisano, Y., Iwayama, Y.,Toyota, T., Matsumoto, T., Itasaka, N., Sugiyama, S., **Tanaka, M.**, Yano, M., Dean, B., Okano, H., Yoshikawa, T. Analysis of induced pluripotent stem cells carrying 22q11.2 deletion. *Transl. Psychiatry*, 6, e934 (2016).

(8) Suzuki, G., Weissman, J.S. and **Tanaka, M.** [*KIL-d*] protein element confers antiviral activity via catastrophic viral mutagenesis. *Mol. Cell*, 60, 651-660 (2015).

(9) Nilsson, P., Sekiguchi, M., Akagi, T., Izumi, S., Komori, T., Hui, K., Sörgjerd, K., **Tanaka, M.**, Saito, T., Iwata, N., Saido, T.C. Autophagy-related protein 7 deficiency in APP transgenic mice decreases Aβ in multivesicular bodies and induces Aβ accumulation in the Golgi. *Am. J. Pathol.*, 185(2), 305-13 (2015).

(10) Nilsson, P., Loganathan, K., Sekiguchi, M., Matsuba, Y., Hui, K., Tsubuki, S., **Tanaka, M.**., Iwata, N., Saito, T., and Saido, T.C. Aβ secretion and plaque formation depend on autophagy. *Cell Reports*, 5, 61-69 (2013).

(11) Suzuki G. Shimazu N., and **Tanaka, M.** A yeast prion, Mod 5, promotes acquired drug resistance and cell survival under environmental stress. **Science**, *336*, 335-339 (2012).

(12) Tonoki, A., Kuranaga, E., Ito, N., Nekooki-Machida, Y., **Tanaka, M.**, Miura, M. Aging causes distinct characteristics of polyglutamine amyloids *in vivo*. *Genes Cells* 16, 557-564 (2011).

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(15) Nekooki-Machida, Y., Kurosawa, M., Nukina, N., Ito, K., Oda, T., and **Tanaka, M.** Distinct conformations of *in vitro* and *in vivo* amyloids of huntingtin-exon1 show different cytotoxicity. *Proc. Natl. Acad. Sci. U. S. A.*, 106, 9678-9684 (2009).

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(21) **Tanaka, M.**, Chien, P., Naber, N., Cooke, R., and Weissman, J.S. Conformational Variations in an Infectious Protein Determine Prion Strain Differences. *Nature* 428, 323-328 (2004).

(22) **Tanaka, M.**, Machida, Y., Niu, S., Ikeda, T., Jana, N.R., Doi, H., Kurosawa, M., Nekooki, M., and Nukina, N. Trehalose alleviates polyglutamine-mediated pathology in a mouse model of Huntington disease. *Nat. Med*. 10, 148-154 (2004).

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[Reviews and Books]

(1) **Tanaka, M.** and Komi, Y. Layers of structure and function in protein aggregation. *Nat. Chem. Biol.*, 11, 373-377 (2015).

(2) Sugiyama, S. and **Tanaka, M.** Self-propagating amyloid as a critical regulator for diverse cellular functions. *J. Biochem*, 155, 345-351 (2014).

(3) Suzuki G, **Tanaka, M.** Active conversion to the prion state as a molecular switch for cellular adaptation to environmental stress. *BioEssays*, 35, 12-16 (2013).

(4) Suzuki G, **Tanaka, M.** Expanding the yeast prion world: Active prion conversion of non-glutamine/asparagine-rich Mod5 for cell survival. *Prion*, 7, 109-113 (2013).

(5) **Tanaka, M.** Tracking a toxic polyglutamine epitope. *Nat. Chem. Biol.* 7, 861-862 (2011).

(6) **Tanaka, M.** A protein transformation protocol for introducing yeast prion particles into yeast. *Methods in Enzymology (Guide to Yeast Genetics: Functional Genomics, Proteomics and Other Systems Analysis)*, 470, 681-693 (2010).

(7) **Tanaka, M.**, and Weissman, J.S. An efficient protein transformation protocol for introducing prions into yeast. *Methods in Enzymology (Amyloid, Prions, and Other Protein Aggregates, Part B)*, 412, 185-200 (2006).

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