

CV

Masaaki Komatsu

Professor

Department of Physiology

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Brief CV

Education

1. Juntendo University School of Medicine, Ph.D. course 1997-2001
2. Juntendo University School of Medicine, Post-doc (Supervisor Prof. Eiki Kominami) Study on yeast autophagy
3. The Tokyo Metropolitan Institute of Medical Science, Post-doc (Supervisor Prof. Keiji Tanaka) 2002-2004 Study on mammalian autophagy using mouse genetics

Professional carrier

1. 2004-2007 Assistant professor, Juntendo University School of Medicine
2. 2007-2008 Associate professor, Juntendo University School of Medicine
3. 2008-2010 Principle Investigator, The Tokyo Metropolitan Institute of Medical Science
4. 2010- 2014 Project Leader, Tokyo Metropolitan Institute of Medical Science
5. 2014- Professor, Department of Biochemistry, Niigata University School of Medicine
6. 2018 Professor, Department of Physiology, Juntendo University Graduate School of Medicine

Awards

1. 2006 FAOBMB, Young Scientist Award
2. 2006 The Japanese Biochemical Society, Young Investigator Award
3. 2009 The Molecular Biology Society of Japan, Young Investigator Award
4. 2010 Ministry of Education, Culture, Sports, Science and technology-Japan, Young Scientist Award
5. 2014 & 2015 THOMSON REUTERS Highly Cited Researchers
6. 14th (FY2017) JSPS Prize
7. 14th (FY2017) Japan Academy Medal
8. 2019 -2022 Clarivate Highly Cited Researchers
9. 2024 Kakiuchi Samuro Memorial Award

Important publications (selected)

Autophagy-related papers

1. Komatsu M (1 of 13),...*Chiba T. Impairment of starvation-induced and constitutive autophagy in Atg7-deficient mice. **J Cell Biol.** 2005 May 9;169(3):425-34.
2. Komatsu M (1 of 11),...*Tanaka K. Loss of autophagy in the central nervous system causes neurodegeneration in mice. **Nature** 2006 Jun 15;441(7095):880-4.
3. Komatsu M (1 of 9),...*Yue Z. Essential role for autophagy protein Atg7 in the maintenance of axonal homeostasis and the prevention of axonal degeneration. **Proc Natl Acad Sci U S A** 2007 Sep 4;104(36):14489-94.
4. #Takamura A, #Komatsu M (2 of 10),...*Mizushima N. Autophagy-deficient mice develop multiple liver tumors. **Genes Dev.** 2011 Apr 15;25(8):795-800. #Equal contribution.
5. *Mizushima N, *Komatsu M. Autophagy: renovation of cells and tissues. **Cell** 2011 Nov 11;147(4):728-41.
6. Ueno T, *Komatsu M. Autophagy in the liver: functions in health and disease. **Nat Rev Gastroenterol Hepatol.** 2017 Mar;14(3):170-184.

Selective autophagy related papers

7. Komatsu M (1 of 25),...*Tanaka K. Homeostatic levels of p62 control cytoplasmic inclusion body formation in autophagy-deficient mice. **Cell** 2007 Dec 14;131(6):1149-63.

8. *[Komatsu M](#) (1 of 19),...*Yamamoto M. The selective autophagy substrate p62 activates the stress responsive transcription factor Nrf2 through inactivation of Keap1. **Nat Cell Biol.** 2010 Mar;12(3):213-23.
9. Ichimura Y,...*[Komatsu M](#) (20 of 20). Phosphorylation of p62 activates the Keap1-Nrf2 pathway during selective autophagy. **Mol Cell** 2013 Sep 12;51(5):618-31.
10. Saito T,...*[Komatsu M](#) (38 of 38). p62/Sqstm1 promotes malignancy of HCV-positive hepatocellular carcinoma through Nrf2-dependent metabolic reprogramming. **Nat Commun.** 2016 Jun 27;7:12030.
11. Saito T,...*[Komatsu M](#) (19 of 19). Autophagy regulates lipid metabolism through selective turnover of NCoR1. **Nat Commun.** 2019 Apr 5;10(1):1567.

Phase-separation and autophagy related papers

12. Sánchez-Martín P,...*[Komatsu M](#) (6 of 6). NBR1-mediated p62-liquid droplets enhance the Keap1-Nrf2 system. **EMBO Rep.** 2020 Jan 9:e48902.
13. #Kageyama S, #Gudmundsson SR...*Eskeline E-L, *[Komatsu M](#) (21 of 21). p62/SQSTM1-droplet serves as a platform for autophagosome formation and anti-oxidative stress response. **Nat Commun.** 2021 Jan 4;12(1):16.
14. #Kurusu R, #Fujimoto Y, #*Morishita H,... *[Komatsu M](#) (19 of 19). Integrated proteomics identifies p62-dependent selective autophagy of the supramolecular vault complex. **Dev Cell** 2023 S1534-5807(23)00191-0.
15. Ikeda R,... *Ichimura Y, *Noda NN, *[Komatsu M](#) (20 of 20). Phosphorylation of phase-separated p62 bodies by ULK1 activates a redox-independent stress response. **EMBO J.** 2023 e113349.

UFM1 related papers

16. [Komatsu M](#),...*Tanaka K (1 of 10). A novel protein-conjugating system for Ufm1, a ubiquitin-fold modifier. **EMBO J.** 2004 May 5;23(9):1977-86.
17. Tatsumi K,... *Yamamoto M, *[Komatsu M](#) (13 of 13). The Ufm1-activating enzyme Uba5 is indispensable for erythroid differentiation in mice. **Nat Commun.**, 2011 Feb 8;2:181.
18. #Muona M, #Ishimura R,...*Lehesjoki AE, *[Komatsu M](#) (28 of 28). Biallelic Variants in UBA5 Link Dysfunctional UFM1 Ubiquitin-like Modifier Pathway to Severe Infantile-Onset Encephalopathy. **Am J Hum Genet.** 2016 Sep 1;99(3):683-694.
19. #Nahorski MS, #Maddirevula S, #Ishimura R,...*Woods CG, *[Komatsu M](#) (26 of 27), *Alkuraya FS. Biallelic UFM1 and UFC1 mutations expand the essential role of ufmylation in brain development. **Brain** 2018 Jul 1;141(7):1934-1945.
20. Ishimura R,... *[Komatsu M](#) (20 of 20). The UFM1 system regulates ER-phagy through the ufmylation of CYB5R3. **Nat Commun.** 2022 Dec 21;13(1):7857.
21. Ishimura R, Ito S, Mao G, Komatsu-Hirota S, *Inada T, *Noda NN, *[Komatsu M](#). Mechanistic insights into the roles of the UFM1 E3 ligase complex in ufmylation and ribosome-associated protein quality control. **Sci Adv.** 2023 doi: 10.1126/sciadv.adh.3635.
22. *[Komatsu M](#), *Inada T, *Noda NN. The UFM1 system. **Mol. Cell** 2024 Jan 4;84(1):156-169. doi: 10.1016/j.molcel.2023.11.034.
23. *[Komatsu M](#), *Noda NN, *Inada T. The mechanistic basis and cellular functions of UFMylation. **Nat Rev Mol Cell Biol.** 2026 doi.org/10.1038/s41580-025-00944-y

Brief bio.

Masaaki Komatsu, PhD, is Professor of Physiology at Juntendo University Graduate School of Medicine. His research focuses on the molecular mechanisms of selective autophagy and ubiquitin-like modification systems, particularly the regulation of p62/SQSTM1 condensates and the UFM1 pathway. He has contributed to the understanding of how autophagy maintains cellular proteostasis and protects against tissue injury and disease. His laboratory employs biochemical, structural, and in vivo approaches to elucidate the dynamic regulation of protein quality control.