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Male (born in 1980)

Associate Professor

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Education/Career

2003(H.15) **B.Sc.** in Department of Biophysics & Biochemistry

The University of Tokyo (Prof. Masayuki Yamamoto)

2005(H.17) **M.Sc.** in Graduate School of Science, Biophysics & Biochemistry

The University of Tokyo (Prof. Yoshinori Watanabe)

2008(H.20) **Ph.D. (Science)**

Graduate School of Science, Biophysics & Biochemistry

The University of Tokyo (Prof. Yoshinori Watanabe)

2008(H.20)-2009(H.21) **Postdoctoral Associate**

Institute of Molecular and Cellular Biosciences,

The University of Tokyo (Prof. Yoshinori Watanabe)

2009(H.21)- 2012(H.24) **Postdoctoral Fellow**

Laboratory of Chemistry & Cell Biology

The Rockefeller University (Prof. Tarun Kapoor)

2012(H.24)-2018(H.30) **ERATO project Group Leader**

Graduate School of Pharmaceutical Sciences

ERATO Kanai Life-Science Catalysis Project (Prof. Motomu Kanai)

The University of Tokyo

2016(H.24)-2021(R.3) **Project Lecturer**

Graduate School of Pharmaceutical Sciences

The University of Tokyo (Prof. Motomu Kanai)

2021(R.3)- 2022(R.4) **Project Associate Professor**

Graduate School of Pharmaceutical Sciences

The University of Tokyo (Prof. Motomu Kanai)

2022(R.4)-present **Associate Professor**

Graduate School of Pharmaceutical Sciences

The University of Tokyo (Prof. Motomu Kanai)

Fellowships & Grants

2005-2008 JSPS Research Fellowship for Young Scientists (DC1)
2009-2011 JSPS Postdoctoral Fellow for Research Abroad
2011 Marie-Josée and Henry Kravis Fellowship Postdoctoral Fellowship
2012 The Uehara Memorial Foundation, research fellowship
2014-2018 Grant-in-Aid for Young Scientists (A) #26711001
2016-2018 Grant-in-Aid for Scientific Research on Innovative Areas #16H01300
2017 薬学振興会 平成 29 年度海外派遣研究者等旅費助成 [travel expenses grant]
2017 The Naito Foundation, 2017 年度 内藤記念特定研究助成金
2018 The Uehara Memorial Foundation, 平成 29 年度 研究奨励金
2018-2019 Grant-in-Aid for Challenging Exploratory Research # 18K19138
2019 公益財団法人 持田記念医学薬学振興財団 2019 年度研究助成金
2019 公益財団法人 東京生化学研究会 2019 年度研究奨励金(I)
2019 かなえ医薬振興財団 2019 年度(第 48 回)研究助成金
2021 公益財団法人薬学振興会令和 2 年度基礎的研究助成
2021-2024 Grant-in-Aid for Scientific Research (B) # 21H02074
2022 一般財団法人材料科学技術振興財団令和 3 年度研究助成

Awards

2010 第 27 回井上研究奨励賞 (Inoue Research Award for Young Scientists)
2016 優秀ポスター賞(第 39 回日本分子生物学会年会)
2019 平成 31 年度科学技術分野の文部科学大臣表彰 若手科学者賞

Publication List (*Corresponding author)

1. Adamson C, Kajino H, **Kawashima SA***, Yamatsugu K*, Kanai M*. Live-Cell Protein Modification by Boronate-Assisted Hydroxamic Acid Catalysis. *Journal of the American Chemical Society*, 143, 14976-14980 (2021).
2. Fujiyoshi K, **Kawashima SA**, Yamatsugu K, Kanai M. A Single-Step Asymmetric Phosphodiester Synthesis from Alcohols with Phosphoenolpyruvate Phosphodiester. *Synlett*, 32:1135-1140 (2021).
3. Fujiwara Y, Yamanashi Y, Sato Y, Kujirai T, Kurumizaka H, Kimura H, Yamatsugu K*, **Kawashima SA***, Kanai M*. Live-Cell Epigenome Manipulation by Synthetic Histone Acylation Catalyst System. *PNAS*, 118(4):e2019554118 (2021).
4. Kajino H, Nagatani T, Oi M, Kujirai T, Kurumizaka H, Nishiyama A, Nakanishi M, Yamatsugu K, **Kawashima SA***, Kanai M*. Synthetic hyperacetylation of nucleosomal histones. *RSC Chemical Biology*, 1:56-59 (2020).

5. Mizumoto S, Xi S, Fujiwara Y, **Kawashima SA**, Yamatsugu K, Kanai M. Hydroxamic Acid-Piperidine Conjugate is an Activated Catalyst for Lysine Acetylation under Physiological Conditions. *Chemistry—An Asian Journal*, 15(6):833-839 (2020).
6. Domon K, Puripat M, Fujiyoshi K, Hatanaka M, **Kawashima SA**, Yamatsugu K, Kanai M. Catalytic Chemoselective O-Phosphorylation of Alcohols. *ACS Central Science*, 6(2):283-292 (2020).
7. Hamajima W, Fujimura A, Fujiwara Y, Yamatsugu K*, **Kawashima SA***, Kanai M*. Site-Selective Synthetic Acylation of a Target Protein in Living Cells Promoted by a Chemical Catalyst/Donor System. *ACS Chemical Biology*, 14:1102-1109 (2019).
8. Kobayashi Y, **Kawashima SA***. Bub1 kinase- and H2A phosphorylation-independent regulation of Shugoshin proteins under glucose-restricted conditions. *Scientific Reports*, 9:2826 (2019).
9. Chen Z, Suzuki H, Kobayashi Y, Wang AC, DiMaio F, **Kawashima SA**, Walz T, & Kapoor TM. Structural Insights into Mdn1, an Essential AAA Protein Required for Ribosome Biogenesis. *Cell*, 175:822-834 (2018).
10. Yamatsugu K, Furuta M, Xi S, Amamoto Y, Liu J, **Kawashima SA**, Kanai M. Kinetic analyses and structure-activity relationship studies of synthetic lysine acetylation catalysts. *Bioorganic & Medicinal Chemistry*, 26:5359-5367 (2018).
11. Ishiguro T, Tanabe K, Kobayashi Y, Mizumoto S, Kanai M, **Kawashima SA***. Malonylation of histone H2A at lysine 119 inhibits Bub1-dependent H2A phosphorylation and chromosomal localization of shugoshin proteins. *Scientific Reports*, 8:7671 (2018).
12. Yamatsugu K*, **Kawashima SA***, Kanai M*. Leading Approaches in Synthetic Epigenetics for Novel Therapeutic Strategies. *Current Opinion in Chemical Biology*, 46:10-17 (2018).
13. Tanabe K, Liu J, Kato D, Kurumizaka H, Yamatsugu K, Kanai M*, **Kawashima SA***. LC-MS/MS-based quantitative study of the acyl group- and site-selectivity of human sirtuins to acylated nucleosomes. *Scientific Reports*, 8:2656 (2018).
14. Ishiguro T, Amamoto Y, Tanabe K, Liu J, Kajino H, Fujimura A, Aoi Y, Osakabe A, Horikoshi N, Kurumizaka H, Yamatsugu K, **Kawashima SA***, Kanai M*. Synthetic chromatin acylation by artificial catalyst system. *Chem*, 2:840-859 (2017).

15. Amamoto Y, Aoi Y, Nagashima N, Suto H, Yoshidome D, Arimura Y, Osakabe A, Kato D, Kurumizaka H, **Kawashima SA***, Yamatsugu K*, Kanai M*. Synthetic Posttranslational Modifications: Chemical Catalyst-Driven Regioselective Histone Acylation of Native Chromatin. *Journal of the American Chemical Society*, 139(22):7568-7576 (2017).
16. **Kawashima SA*****, Chen Z**, Aoi Y, Patgiri A, Kobayashi Y, Nurse P, Kapoor TM*. Potent, Reversible, and Specific Chemical Inhibitors of Eukaryotic Ribosome Biogenesis. *Cell*, 167(2):512-524 (2016). (**Equal contribution)
17. Takemoto A, **Kawashima SA**, Li JJ, Jeffery L, Yamatsugu K, Elemento O, Nurse P. Nuclear envelope expansion is crucial for proper chromosomal segregation during a closed mitosis. *Journal of Cell Science*, 129(6):1250-1259 (2016).
18. Kimura Y, Saito N, Hanada K, Liu J, Okabe T, **Kawashima SA***, Yamatsugu K*, Kanai M*. Supramolecular Ligands for Histone Tails by Employing a Multivalent Display of Trisulfonated Calix[4]arenes. *Chembiochem*, 16(18):2599-2604 (2015).
19. Chang F, **Kawashima SA**, Brady S. Mutations in the proteolipid subunits of the vacuolar H⁺-ATPase provide resistance to indolotryptoline natural products. *Biochemistry*, 53(45):7123-7131 (2014).
20. Aoi Y**, **Kawashima SA****, Simanis V, Yamamoto M, Sato M. Optimization of the analogue-sensitive Cdc2/Cdk1 mutant by in vivo selection eliminates physiological limitations to its use in cell cycle analysis. *Open Biology*, 4(7) (2014). (**Equal contribution)
21. Aoi Y, Sato M, Sutani T, Shirahige K, Kapoor TM, **Kawashima SA***. Dissecting the first and the second meiotic divisions using a marker-less drug-hypersensitive fission yeast. *Cell Cycle*, 13(8):1327-1334 (2014).
22. Komatsu H, Shindo Y, **Kawashima SA**, Yamatsugu K, Oka K, Kanai M. Intracellular activation of acetyl-CoA by an artificial reaction promoter and its fluorescent detection. *Chemical Communications*, 49(28):2876-2878 (2013).
23. **Kawashima SA**, Takemoto A, Nurse P, Kapoor TM. A chemical biology strategy to analyze rheostat-like protein kinase-dependent regulation. *Chemistry & Biology*, 20(2):262-271 (2013).
24. Li X, Foley EA, **Kawashima SA**, Molloy KR, Li Y, Chait BT, Kapoor TM. Examining post-translational modification-mediated protein-protein interactions using a chemical proteomics

approach. *Protein Science*, 22(3):287-295 (2012).

25. **Kawashima SA**, Takemoto A, Nurse P, Kapoor TM. Analyzing fission yeast multidrug resistance mechanisms to develop a genetically tractable model system for chemical biology. *Chemistry & Biology*, 19(7):893-901 (2012).

26. **Kawashima SA**, Yamagishi Y, Honda T, Ishiguro K, Watanabe Y. Phosphorylation of H2A by Bub1 prevents chromosomal instability through localizing shugoshin. *Science*. 327(5962):172-177 (2010).

27. Hauf S, Biswas A, Langeegger M, **Kawashima SA**, Tsukahara T, Watanabe Y. Aurora controls sister kinetochore mono-orientation and homolog bi-orientation in meiosis-I. *The EMBO Journal*, 26(21):4475-4486 (2007).

28. **Kawashima SA**, Tsukahara T, Langeegger M, Hauf S, Kitajima TS, Watanabe Y. Shugoshin enables tension-generating attachment of kinetochores by loading Aurora to centromeres. *Genes & Development*, 21(4):420-435 (2007).

29. Kitajima TS, Sakuno T, Ishiguro K, Iemura S, Natsume T, **Kawashima SA**, Watanabe Y. Shugoshin collaborates with protein phosphatase 2A to protect cohesin. *Nature*, 441(7089):46-52 (2006).

30. Kitajima TS, **Kawashima SA**, Watanabe Y. The conserved kinetochore protein shugoshin protects centromeric cohesion during meiosis. *Nature*, 427(6974):510-517 (2004).