Tasuku Hirayama

CMI-P-13

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Research Keywords

Imaging, Fluorescent probes, Bioinorganic chemistry

Academic Career

B.S., 2004, Kyoto University; Ph.D., 2009, Kyoto University (advisor: Yukio Yamamoto); Postdoctral fellow. 2009-2010, University of California, Berkeley (advisor: Christopher J. Chang); Assistant professor, 2010-2015, Gifu Pharmaceutical University; Associate Professor, 2016-2024, Gifu Pharmaceutical University; Professor, 2025-present, Gifu Pharmaceutical University

Selected Publications

Hirayama, T. et al. N-Oxide-Driven Heme-Activatable Biomolecule Labeling for Visualization of Labile Heme in Living Cells and Mouse Brain. J. Am. Chem. Soc. 2025. in press, https://doi.org/10.1021/jacs.5c04990.

Hirayama, T. et al. Inhibition of Ferroptosis by N-Oxide-Based Fluorescent Probes via Selective Oxidation of Ferrous Ions. Chem. Sci. 16 (25), 11240–11245 (2025).

Hirayama, T. et al. Molecular Imaging of Labile Heme in Living Cells Using a Small Molecule Fluorescent Probe. J. Am. Chem. Soc. 144 (9), 3793–3803 (2022).

Hirayama, T. et al. High-Throughput Screening for the Discovery of Iron Homeostasis Modulators Using an Extremely Sensitive Fluorescent Probe. ACS Sens. 5 (9), 2950–2958 (2020).

Hirayama, T. et al. A Universal Fluorogenic Switch for Fe(II) Ion Based on N-Oxide Chemistry Permits the Visualization of Intracellular Redox Equilibrium Shift towards Labile Iron in Hypoxic Tumor Cells. Chem. Sci. 8 (7), 4858–4866 (2017)

Hirayama, T. et al. A Highly Selective Turn-on Fluorescent Probe for Iron(II) to Visualize Labile Iron in Living Cells. Chem. Sci. 4 (3), 1250–1256 (2013)

Why My Lab?

My lab can offer...

Chemical probe design, fluorescent probes of iron and heme, advanced instruments for synthetic chemistry, and imaging techniques.