Japan

HAN-P-08

Kaori Sakurai

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Research Field(s)	Chemical Biology, Bioorganic Chemistry, Natural Products Chemistry, Carbohydrate Chemistry

Academic Career

B.S., 1996, The University of Tokyo; Ph.D., 2002, Princeton University (advisor: Dan Kahne); Postdoctoral Training, 2003-2006, Harvard University (advisor: David R. Liu); Associate Professor, 2006-2023, Professor, 2023-Present, Tokyo University of Agriculture and Technology

Selected Publications

1. Tsuruno, A., Kamoshita, S., Hosoya, S., Sakurai, K. Dichlorotriazine-based multivalent probe for selective affinity labeling of carbohydrate-binding proteins. Org. Biomol. Chem. 2024. 22, 7659-7663.

2. Fridman, M. Sakurai. K. Deciphering the biological activities of antifungal drugs with chemical probes. Angew. Chem. Int. Ed. 2023, 62, e202211927.

3. Kamoshita, S., Suto, N., Sakurai, K. Multivalent electrophilic probes for affinity labeling of carbohydrate binding proteins. ChemBioChem 2022, 23, e202100388.

4. Suto, N., Kamoshita, S., Hosoya, S., Sakurai K. Exploration of the reactivity of multivalent electrophiles for affinity labeling: sulfonyl fluoride as a highly efficient and selective label. Angew. Chem. Int. Ed. 2021, 60, 17080-17087.

5. Fukaya, K., Urabe, D., Hiraizumi, M., Noguchi, K., Matsumoto, T. Sakurai, K. Computational and experimental analysis on the conformational preferences of anticancer saponin OSW-1. J. Org. Chem. 2020, 85, 339-344.

6. Kimura, M., Sasaki, K., Fukutani, Y., Yoshida, H., Ohsawa, I, Yohda, M., Sakurai, K. Anticancer saponin OSW-1 is a novel class of selective Golgi stress inducer. Bioorg. Med. Chem. Lett. 2019, 29, 1732-1736.

7. Kitamura, K., Itoh, H., Sakurai, K., Dan, S., Inoue, M. Target identification of Yaku'amide B and its two distinct activities against mitochondrial F0F1-ATP synthase. J. Am. Chem. Soc. 2018, 140, 12189-12199.

8. Sakurai, K., Hatai, Y., Okada, A. Gold nanoparticle-based multivalent carbohydrate probes: selective photoaffinity labeling of carbohydrate-binding proteins. Chem. Sci. 2016, 7, 702-706.

Why My Lab?

My lab can offer exciting research projects aimed at unraveling the mechanism of anticancer natural products through chemical approaches. Identifying target proteins is the crucial first step in understanding their action. We design, synthesize, and apply innovative chemical probes to explore cellular destinations and capture target proteins in their native environments. We are pioneering novel

gold-nanoparticle probes to accelerate target discovery. Students in our group learn in an interdisciplinary field combining organic chemistry, biochemistry, proteomics, cell biology, and nanotechnology.