

Chemical Biology Laboratory Institute for Chemical Research, Kyoto University

Principal Investigator



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Research Field

As biological processes all stem from chemical events, it should be possible to understand or manipulate biological events by using chemistry. As chemical biologists, our challenge is to discover or design unique organic molecules, 'super tools' that modulate fundamental processes in human cells. *Our job is creation: designing a new world of bioactive synthetic molecules, with unique and novel uses, forms and sizes.* The future for small-molecule applications is open before us, in a range of fields, including future drug discovery and cell therapy. Prof. Uesugi also provides the first edX course from Japan, "The Chemistry of Life," to create a new educational path for millions of learners worldwide.

Research Resources

Wyatt DynaPro PlateReader-II

384-Well DLS Instrument

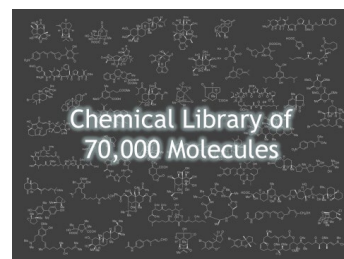


Yokogawa CV1000

96-Well Confocal
Microscope



Chemical Library



Selected Recent Publications

Dr. Uesugi and his co-workers aim to gain a fundamental understanding of biological events through the study of small or mid-sized molecules.

- Takashima, I., et al. Multifunctionalization of cells with a self-assembling molecule to enhance cell engraftment. **ACS Chem. Biol.**, 14, 775–783 (2019).
- Asano, L., et al. Vitamin D metabolite, 25-Hydroxyvitamin D, regulates lipid metabolism by inducing degradation of SREBP/SCAP. **Cell Chem Biol.** 24, 207-217 (2017).
- Mao, D., et al., A synthetic hybrid molecule for the selective removal of human pluripotent stem cells from cell mixtures. **Angew. Chem. Int. Ed.** 56, 1765-1770 (2017).
- Katsuda, Y., et al. A small molecule that represses translation of G-quadruplex-containing mRNA. **J. Am. Chem. Soc.** 138, 9037-9040 (2016).
- Takaya, J., et al. A potent and site-selective agonist of TRPA1. **J. Am. Chem. Soc.** 137, 15859–15864 (2015).
- Sato, S., et al. Live-cell imaging of endogenous mRNAs with a small molecule. **Angew. Chem. Int. Ed.** 54, 1855-1858 (2015).