

## *Curriculum Vitae*

**Yasuaki Kimura**

**Associate Professor**

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### ■ Education/Career

- 2008/3            **B.Sc**    Department of Pharmaceutical Sciences  
The University of Tokyo (Prof. Masakatsu Shibasaki)
- 2010/3            **M.Sc**    Graduate School of Pharmaceutical Sciences  
The University of Tokyo (Prof. Masakatsu Shibasaki)
- 2013/3            **Ph.D (Pharmaceutical Sciences)**  
Graduate School of Pharmaceutical Sciences  
The University of Tokyo (Prof. Motomu Kanai)
- 2013/4 – 2015/6    **ERATO Project Researcher**  
ERATO Kanai Life-Science Catalysis Project  
Graduate School of Pharmaceutical Sciences  
The University of Tokyo (Prof. Motomu Kanai)
- 2015/4 – 2015/6    **Specially Appointed Assistant Professor**  
Graduate School of Pharmaceutical Sciences  
The University of Tokyo (Prof. Motomu Kanai)
- 2015/7– 2020/6    **Assistant Professor**  
Graduate School of Science, Department of Chemistry  
Nagoya University (Prof. Hiroshi Abe)
- 2017/6– 2020/6    **Assistant Professor**  
Institute for Advanced Research, Nagoya University

2020/7– 2022/5    **Lecturer**  
Graduate School of Science, Department of Chemistry  
Nagoya University (Prof. Hiroshi Abe)

2022/6– Present    **Associate Professor**  
Graduate School of Science, Department of Chemistry  
Nagoya University (Prof. Hiroshi Abe)

■ **Fellowships**

2010/4 – 2013/3    Research Fellow of the Japan Society for the Promotion of Sciences (DC1)

2019 – 2020        [Toyota Riken Scholar](#) (Toyota Physical and Chemical Research Institute)

■ **Memberships**

The Pharmaceutical Society of Japan

The Chemical Society of Japan

Japan Society of Nucleic Acids Chemistry

The Japanese Society for Chemical Biology

The Society of Synthetic Organic Chemistry of Japan

■ **Awards**

[Elected Member of the Otsu Conference 2011](#) (since 2010 to present)

2018 Ohtsuka Awards

(ISNAC Outstanding Oral Presentation Award for Young Scientist)

■ **Publication List**

1. Abe, N.; Imaeda, A.; Inagaki, M.; Li, Z.; Kawaguchi, D.; Onda, K.; Nakashima, Y.; Uchida, S.; Hashiya, F.; [Kimura, Y.](#); Abe, H.

“Complete Chemical Synthesis of Minimal Messenger RNA by Efficient Chemical Capping Reaction.”

*ACS Chem. Biol.* **2022.**, *17*, 1308–1314.

2. Yoshida, Y.; Zheng, T.; Tanabe, W.; Tomoike, F.; Hashiya, F.; Suzuki, T.; Hirota, S.; Saiki, Y.; Horii, A.; Hirayama, A.; Soga, T.; [Kimura, Y.](#); Abe, H.

“Development of Fluorophosphoramidate as a Biocompatibly Transformable Functional Group and its Application as a Phosphate Prodrug for Nucleoside

Analogs.”

*ChemMedChem* **2022**, e202200188, *in press*.

3. Yoshida, Y.; Honma, M.; Kimura, Y.; Abe, H.  
“Structure, Synthesis and Inhibition Mechanism of Nucleoside Analogues as HIV-1 Reverse Transcriptase Inhibitors (NRTIs).”  
*ChemMedChem* **2021**, *16*, 743-766.
4. Yamaoka, K.; Oikawa, R.; Abe, N.; Nakamoto, K.; Tomoike, F.; Hashiya, F.; Kimura, Y.; Abe, H., Completely  
“Chemically Synthesized Long DNA Can be Transcribed in Human Cells.”  
*ChemBioChem* **2021**, *22*, 3273-3276.
5. Hiraoka, H.; Shu, Z.; Tri Le, B.; Masuda, K.; Nakamoto, K.; Fangjie, L.; Abe, N.; Hashiya, F.; Kimura, Y.; Shimizu, Y.; Veedu, R. N.; Abe, H.  
“Antisense Oligonucleotide Modified with Disulfide Units Induces Efficient Exon Skipping in mdx Myotubes through Enhanced Membrane Permeability and Nucleus Internalization. “  
*ChemBioChem* **2021**, *22*, 3437-3442.
6. Kawaguchi, D.; Kodama, A.; Abe, N.; Takebuchi, K.; Hashiya, F.; Tomoike, F.; Nakamoto, K.; Kimura, Y.; Shimizu, Y.; Abe, H.  
“Phosphorothioate Modification of mRNA Accelerates the Rate of Translation Initiation to Provide More Efficient Protein Synthesis.”  
*Angew. Chem. Int. Ed.*, **2020**, *59*, 17403.
7. Fujita, H.; Oikawa, R.; Hayakawa, M.; Tomoike, F.; Kimura, Y.; Okuno, H.; Hatashita, Y.; Fiallos Oliveros, C.; Bito, H.; Ohshima, T.; Tsuneda, S.; Abe, H.; Inoue, T.  
“Quantification of native mRNA dynamics in living neurons using fluorescence correlation spectroscopy and reduction-triggered fluorescent probes.”  
*Journal of Biological Chemistry*, **2020**, *295*, 7923-7940.
8. Nakamoto, K.; Abe, N.; Tsuji, G.; Kimura, Y.; Tomoike, F.; Shimizu, Y.; Abe, H.  
“Chemically synthesized circular RNAs with phosphoramidate linkages enable rolling circle translation.”  
*Chemical Communications*, **2020**, *56*, 6217-6220.

9. Nguyen H. N; Suzuki K.; Kimura Y.; Hirokawa T.; Murakami-Tonami Y.; Abe H.  
“Synthesis and biological evaluation of NMDI 14 derivatives as anti-mesothelioma agents” *Heterocycles*, **2020**, *100*, 253.
10. Shu Z., Ota A., Takayama Y., Katsurada Y.; Kusamori K., Abe N., Nakamoto K., Tomoike F., Tada S.; Ito Y., Nishikawa M., Kimura Y.; Abe H.  
“Intracellular delivery of Antisense DNA and siRNA with amino groups masked with disulfide units”  
*Chemical and Pharmaceutical Bulletin*, **2020**, *68*, 129.
11. Kimura, Y.; Shu, Z.; Ito, M.; Abe, N.; Nakamoto, K.; Tomoike, F.; Shuto, S.; Ito, Y.; Abe, H.  
“Intracellular build-up RNAi with single-strand circular RNAs as siRNA precursors”  
*Chemical Communications*, **2020**, *56*, 466.
12. Tian, S.; Terai, G.; Kobayashi, Y.; Kimura, Y.; Abe, H.; Asai, K.; Ui-Tei, K.  
“A robust model for quantitative prediction of the silencing efficacy of wild-type and A-to-I edited miRNAs”  
*RNA Biology*, **2020**, *17*, 264.
13. Kawaguchi, D.; Shimizu, S.; Abe, N.; Hashiya, F.; Tomoike, F.; Kimura, Y.; Abe, H.  
“Translational control by secondary-structure formation in mRNA in a eukaryotic system” *Nucleosides, Nucleotides & Nucleic Acids*, **2020**, *39*, 195-203.
14. Imaeda, A.; Tomoike, F.; Hayakawa, M.; Nakamoto, K.; Kimura, Y.; Abe, N.; Abe, H.  
“N<sup>6</sup>-methyl adenosine in siRNA evades immune response without reducing RNAi activity” *Nucleosides, Nucleotides & Nucleic Acids*, **2019**, *38*, 972.
15. Shu, Z.; Tanaka, I.; Ota, A.; Fushihara, D.; Abe, N.; Kawaguchi, S.; Nakamoto, K.; Tomoike, F.; Tada, S.; Ito, Y.; Kimura, Y.; Abe, H.  
“Disulfide-unit conjugation enables ultrafast cytosolic internalization of antisense DNA and siRNA”  
*Angewandte Chemie International Edition*, **2019**, *58*, 6611-6615.
16. Shishido, Y.; Tomoike, F.; Kuwata, K.; Fujikawa, H.; Sekido, Y.; Murakami-Tonami, Y.;

- Kameda, T.; Abe, N.; Kimura, Y.; Shuto, S.; Abe, H.  
“A Covalent Inhibitor for Glutathione S-Transferase Pi (GSTP1-1) in Human Cells.”  
*ChemBioChem*, **2019**, *20*, 900.
17. Abe, H. Kimura, Y.  
“Chemical Ligation Reactions of Oligonucleotides for Biological and Medicinal Applications”  
*Chemical and Pharmaceutical Bulletin*, **2018**, *66*, 117.
18. Maruyama, H.; Oikawa, R.; Hayakawa, M.; Takamori, S.; Kimura, Y.; Abe, N.; Tsuji, G.; Matsuda, A.; Shuto, S.; Ito, Y.; Abe, H.  
“Chemical ligation of oligonucleotides using an electrophilic phosphorothioester”  
*Nucleic Acids Research*, **2017**, *45*, 7042.
19. Shishido, Y.; Tomoike, F.; Kimura, Y.; Kuwata, K.; Yano, T.; Fukui, K.; Fujikawa, H.; Sekido, Y.; Murakami-Tonami, Y.; Kameda, T.; Shuto, S.; Abe, H.  
“A covalent G-site inhibitor for glutathione S-transferase Pi (GSTP1-1)”  
*Chemical Communications*, **2017**, *53*, 11138.
20. Kimura, Y.; Saito, N.; Hanada, K.; Liu, J.; Okabe, T.; Kawashima, S. A.; Yamatsugu, K.; Kanai, M.  
“Supramolecular Ligands for Histone Tails by Employing a Multivalent Display of Trisulfonated Calix[4]arenes”  
*ChemBioChem*, **2015**, *16* (18), 2599.
21. Kimura, Y.; Ito, S.; Shimizu, Y.; Kanai, M.  
“Catalytic Anomeric Aminoalkynylation of Unprotected Aldoses”  
*Org. Lett.* **2013**, *15*, 4130.
22. Kimura, Y.; Yamatsugu, K.; Kanai, M.; Echigo, N.; Kuzuhara, T.; Shibasaki, M.  
“Design and Synthesis of Resin-Conjugated Tamiflu Analogs for Affinity Chromatography”  
*Bull. Korean. Chem. Soc.* **2010**, *31*, 588. (dedication issue to Professor Sunggak Kim).
23. Hiasa, M.; Isoda, Y.; Kishimoto, Y.; Saitoh, K.; Kimura, Y.; Kanai, M.; Shibasaki, M.; Hatakeyama, D.; Kirino, Y.; Kuzuhara, T.

“Inhibition of MAO-A and stimulation of behavioural activities in mice by the inactive prodrug form of the anti-influenza agent oseltamivir”

*British J. Pharmacology* **2013**, *169*, 115.

24. Kimura, Y.; Yamatsugu, K.; Kanai, M.; Echigo, N.; Kuzuhara, T.; Shibasaki, M.  
“Design and synthesis of immobilized Tamiflu analog on resin for affinity chromatography”  
*Tetrahedron Lett.* **2009**, *50*, 3205. (50 th Anniversary Special Issue)
25. Morita, M.; Drouin, L.; Motoki, R.; Kimura, Y.; Fujimori, I.; Kanai, M.; Shibasaki, M.  
“Two Methods for Catalytic Generation of Reactive Enolates Promoted by a Chiral Poly Gd Complex: Application to Catalytic Enantioselective Protonation Reactions”  
*J. Am. Chem. Soc.* **2009**, *131*, 3858. (featured by *Synfacts* **2009**, 626.)
26. Yamatsugu, K.; Yin, L.; Kamijo, S.; Kimura, Y.; Kanai, M.; Shibasaki, M.  
“A synthesis of Tamiflu based on a barium-catalyzed Diels-Alder-type reaction”  
*Angew. Chem. Int. Ed.* **2009**, *48*, 1070. (featured by *Synfacts* **2009**, 702.)

#### ■ Books

阿部洋, 木村康明, Shu Zhaoma

オリゴ核酸を10分で細胞質内へ送達! -核酸医薬実用化への新たな一歩  
化学, 化学同人, Vol. 74, No.8, p 34-37 (2019)

阿部洋, 木村康明

細胞内化学反応を利用したRNA干渉法の副作用回避  
PHARM STAGE p.58-61, Vol.18, No.7, 技術情報協会 (2018)

木村康明, 阿部洋

機能性核酸合成を指向した化学的核酸連結反応  
「中分子医薬に資するペプチド・核酸・糖鎖の合成技術」  
シーエムシー出版, p. 171-180 (2018)

阿部洋, 木村康明

「RNA干渉医薬の実現に向けた新手法の開発」  
*Biophilia*, Vol. 6, No. 1, p.9-15 (2017)