

Yuichiro AIBA, Ph. D. (Associate Professor)

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Place of Birth Toyama, Japan



EDUCATION:

Mar. 2005	B.S.	Department of Chemistry and Biotechnology, Faculty of Engineering, The University of Tokyo, Tokyo, Japan
Mar. 2007	M.S. in Chemistry	Department of Chemistry and Biotechnology, School of Engineering, The University of Tokyo, Tokyo, Japan
Mar. 2010	Ph.D. in Chemistry	Department of Chemistry and Biotechnology, School of Engineering, The University of Tokyo, Tokyo, Japan (Prof. Makoto Komiyama)

ACADEMIC APPOINTMENTS:

Apr. 2010 – Mar. 2011	<u>Project Assistant Professor</u>	Research Center for Advanced Science and Technology, The University of Tokyo, Japan (Prof. Makoto Komiyama)
Apr. 2011 – Mar. 2012	<u>Project Assistant Professor</u>	Department of Chemistry and Biotechnology, School of Engineering, The University of Tokyo, Japan
Jul. 2015 – Jun. 2020	<u>Assistant Professor</u>	Department of Chemistry, Graduate School of Science, Nagoya University, Japan (Prof. Yoshihito Watanabe & Prof. Osami Shoji)
Jul. 2020 – Mar. 2021	<u>Associate Professor / Lecturer</u>	Department of Chemistry, Graduate School of Science, Nagoya University, Japan (Prof. Osami Shoji)
Apr. 2021 – present	<u>Associate Professor</u>	Department of Chemistry, Graduate School of Science, Nagoya University, Japan (Prof. Osami Shoji)

PROFESSIONAL AND RESEARCH APPOINTMENTS:

- Apr. 2007 – Mar. 2010 Research Fellow (DC1) of JSPS
the Japan Society for the Promotion of Science, Japan
- Sep. 2008 – Nov. 2008 Visiting Researcher,
Department of Chemistry, University of Turku, Finland
(Prof. Harri Lönnberg)
- Apr. 2012 – Sep. 2012 Researcher
Life Science Center of TARA, University of Tsukuba, Japan
(Prof. Makoto Komiyama)
- Sep. 2012 – Sep. 2014 JSPS Postdoctoral Fellow for Research Abroad
the Japan Society for the Promotion of Science, Japan
- Sep. 2012 – Jun. 2015 Postdoctoral Research Fellow II
Department of Pharmacology, University of Texas Southwestern Medical
Center, USA (Prof. David R. Corey)
- Nov. 2015 – present Visiting researcher
SPring-8 Center, RIKEN, Japan

AWARDS:

- Feb. 2012 Inoue Research Award for Young Scientists,
Inoue Foundation for Science
- Jun. 2012 Presentation Award for Young Scientists of 22nd symposium on Polymers
and Biosciences,
Research Group on Polymers and Biosciences, The Society of Polymer
Science, Japan

RESEARCH INTERESTS:

Biological Chemistry:

Peptide & protein engineering, Functionalization of hemoproteins by chemical modification

Nucleic Acid Chemistry:

Development of a novel artificial nucleic acid based on PNA and its application to genetic engineering, Nucleic acid diagnostic tools and nucleic acid medicines utilizing PNA

KEYWORDS:

PNA, peptide nucleic acid, invasion, peptide, DNA, RNA, protein, biopolymer, heme

SELECTED PUBLICATIONS:

1. M. Shibata, O. Shoji*, Y. Aiba*
"Recognition of mismatched sites in double-stranded DNA by a pair of partially non-complementary PNAs" *Chem. Lett.*, **53**, upae234 (2024), doi:10.1093/chemle/upae234.
2. Y. Yokoyama, S. Ariyasu, M. Karasawa, C. Kasai, Y. Aiba, H. Sugimoto, O. Shoji*
"Bacterial Acyl Homoserine Lactones Triggered Non-Native Substrate Hydroxylation Catalyzed by Directed-Evolution-Derived Cytochrome P450BM3 Mutants."
ChemCatChem, e202401641, (2024), doi:10.1002/cctc.202401641.
3. K. Suzuki, J. K. Stanfield, K. Omura, Y. Shisaka, S. Ariyasu, C. Kasai, Y. Aiba, H. Sugimoto, O. Shoji*
"A Compound I Mimic Reveals the Transient Active Species of a Cytochrome P450 Enzyme: Insight into the Stereoselectivity of P450-Catalysed Oxidations."
Angew. Chem. Int. Ed., **62**, e202215706 (2023), doi: 10.1002/anie.202215706.
✳Selected as a frontispiece
4. K. Omura, Y. Aiba*, K. Suzuki, S. Ariyasu, H. Sugimoto, O. Shoji*
"A P450 Harboring Manganese Protoporphyrin IX Generates a Manganese Analog of Compound I by Activating Dioxygen" *ACS Catal.*, **12**, 11108–11117 (2022), doi:10.1021/acscatal.2c01345.
✳Selected as a supplementary cover
5. Y. Aiba*, M. Shibata, O. Shoji*
"Sequence-Specific Recognition of Double-Stranded DNA by Peptide Nucleic Acid Forming Double-Duplex Invasion Complex" *Appl. Sci.*, **12**, 3677 (2022), doi:10.3390/app12073677.
6. H. Nanaura, H. Kawamukai, A. Fujiwara, T. Uehara, Y. Aiba, M. Nakanishi, T. Shiota, M. Hibino, P. Wiriyasermkul, S. Kikuchi, R. Nagata, M. Matsubayashi, Y. Shinkai, T. Niwa, T. Mannen, N. Morikawa, N. Iguchi, T. Kiriya, K. Morishima, R. Inoue, M. Sugiyama, T. Oda, N. Kodera, S. Toma-Fukai, M. Sato, H. Taguchi, S. Nagamori, O. Shoji, K. Ishimori, H. Matsumura, K. Sugie, T. Saio*, T. Yoshizawa*, and E. Mori*
"C9orf72-derived arginine-rich poly-dipeptides impede phase modifiers"
Nat. Commun., **12**, 5301 (2021), doi:10.1038/s41467-021-25560-0.
7. Y. Aiba*, G. Urbina, M. Shibata and O. Shoji*
"Investigation of the Characteristics of NLS-PNA: Influence of NLS Location on Invasion Efficiency"
Appl. Sci., **10**, 8663 (2020), doi:10.3390/app10238663.
8. M. Hibino, Y. Aiba*, and O. Shoji*
"Cationic guanine: positively charged nucleobase with improved DNA affinity inhibits self-duplex formation." *Chem. Commun.*, **56**, 2546-2549 (2020), doi:10.1039/D0CC00169D.
✳Selected as an inside back cover
9. M. Hibino, Y. Aiba*, Y. Watanabe, and O. Shoji*
"Peptide Nucleic Acid Conjugated with Ru-complex Stabilizing Double-Duplex Invasion Complex Even under Physiological Conditions."
ChemBioChem, **19**, 1601-1604 (2018), doi:10.1002/cbic.201800256. **✳Selected as a cover**
10. M. Komiyama*, Y. Aiba, T. Ishizuka, and J. Sumaoka
"Solid-phase synthesis of pseudo-complementary peptide nucleic acids."
Nat. Protoc. **3**, 646–654 (2008), doi:10.1038/nprot.2008.6.