

Takuji Shoda, Ph.D.

#### Degree

- 2005 Ph.D. The University of Tokyo  
2001 Master (Life Science) Tokyo University of Pharmacy and Life Sciences  
1999 Bachelor (Life Science) Tokyo University of Pharmacy and Life Sciences

#### Professional Positions

- 2019.4-Present Section Chief, The First Section, Division of Organic Chemistry, National Institute of Health Sciences  
2017.6-2019.3 Director, Division of Regulatory Science, Department of Innovative Drug Discovery and Development, Japan Agency for Medical Research and Development (AMED)  
2016.11-2017.5 Section Chief, The First Section, Division of Organic Chemistry, National Institute of Health Sciences  
2009.4-2016.11 Senior Researcher, Division of Organic Chemistry, National Institute of Health Sciences  
(2011.1-2012.1) Research Scientist, Yale University, (Research Fellowship, The Uehara Memorial Foundation)  
2006.4-2009.3 Researcher, The First Section, Division of Organic Chemistry, National Institute of Health Sciences  
2005.4-2006.3 Postdoctoral Fellow, The University of Tokyo

#### Publications

1. Koji Yamano, Reika Kikuchi, Waka Kojima, Ryota Hayashida, Fumika Koyano, Junko Kawawaki, **Takuji Shoda**, Yosuke Demizu, Mikihiro Naito, Keiji Tanaka, Noriyuki Matsuda, "Critical role of mitochondrial ubiquitination and the OPTN-ATG9A axis in mitophagy", *J. Cell Biol.*, 219 (9), e201912144, 2020
2. **Takuji Shoda**, Nobumichi Ohoka, Genichiro Tsuji, Takuma Fujisato, Hideshi Inoue, Yosuke Demizu Mikihiro Naito, Masaaki Kurihara, "Targeted protein degradation by chimeric compounds using hydrophobic E3 ligands and adamantane moiety", *Pharmaceuticals*, 13(3), 34, 2020
3. Nobumichi Ohoka, Genichiro Tsuji, **Takuji Shoda**, Takuma Fujisato, Masaaki Kurihara, Yosuke Demizu, Mikihiro Naito, Development of Small Molecule Chimeras

- That Recruit AhR E3 Ligase to Target Proteins”, *ACS Chem. Biol.* 14, 12, 2822-2832, 2019
4. G.Tsuji, T. Hattori, M. Kato, W. Hakamata, H. Inoue, M. Naito, M. Kurihara, Y. Demizu, **T. Shoda\***, “Design and Synthesis of Cell-permeable Fluorescent Nitrilotriacetic Acid Derivatives”, *Bioorg Med Chem.* 26, 5494-5498, 2018
  5. K. Okitsu, T. Hattori, T. Misawa, **T. Shoda**, M. Kurihara, M. Naito, Y. Demizu, “Development of a small hybrid molecule that mediates degradation of His-tag fused proteins” *J. Med. Chem.*, 61, 576-582, 2018
  6. K.Okitsu, T. Misawa, **T. Shoda**, M. Kurihara, Y. Demizu, “Development of an ON/OFF switchable fluorescent probe targeting His tag fused proteins in living cells”, *Bioorg. Med. Chem. Lett.*, 27, 3417-3422, 2017
  7. **Takuji Shoda**, Masashi Kato, Takuma Fujisato, Yosuke Demizu, Hideshi Inoue, Mikihiro Naito, Masaaki Kurihara, “Tamoxifen and fulvestrant hybrid showed potency as a selective estrogen receptor down-regulator”, *Med. Chem.*, 13(3), 206-213, 2017.
  8. Keiichiro Okuhira, **Takuji Shoda**, Risa Omura, Nobumichi Ohoka, Takayuki Hattori, Norihito Shibata, Yosuke Demizu, Ryo Sugihara, Asato Ichino, Haruka Kawahara, Yukihiro Itoh, Minoru Ishikawa, Yuichi Hashimoto, Masaaki Kurihara, Susumu Itoh, Hiroyuki Saito and Mikihiro Naito, “Targeted degradation of proteins localized in subcellular compartments by hybrid small molecules”, *Mol. Pharmacol.*, 91, 159-166, 2017.
  9. T. Misawa, T. Fujisato, Y. Kanda, N. Ohoka, **T. Shoda**, M. Yorioka, M. Makishima, Y. Sekino, M. Naito, Y. Demizu, Masaaki Kurihara, “Design and synthesis of novel selective estrogen receptor degradation inducers based on diphenylheptane skeleton”, *MedChemComm*, 8, 239-246, 2017.
  10. Y. Demizu,<sup>#</sup> N. Shibata,<sup>#</sup> T. Hattori, N. Ohoka, H. Motoi, T. Misawa, **T. Shoda**, M. Naito, M. Kurihara, “Development of BCR-ABL degradation inducers via the conjugation of an imatinib derivative and a cIAP1 ligand”, *Bioorg. Med. Chem. Lett.*, 26 (20), 4865-4869, 2016.
  11. **Takuji Shoda**, Masashi Kato, Takuma Fujisato, Takashi Misawa, Yosuke Demizu, Hideshi Inoue, Mikihiro Naito, Masaaki Kurihara, “Synthesis and evaluation of raloxifene derivatives as a selective estrogen receptor down-regulator”, *Bioorg. Med. Chem.*, 24, 2914-2919, 2016
  12. Samir Gautam, Taehan Kim, **Takuji Shoda**, Sounok Sen, Deeksha Deep, Ragini Luthra, Maria Teresa Ferreira, Mariana G. Pinho, David A. Spiegel, “An Activity-Based Probe for Studying Crosslinking in Live Bacteria,” *Angew. Chem. Int. Ed.*, 54 (36), 10492-10496, 2015.

13. **Takuji Shoda**, Masashi Kato, Takuma Fujisato, Keiichiro Okuhira, Yosuke Demizu, Hideshi Inoue, Mikihiro Naito, Masaaki Kurihara, "Synthesis and evaluation of tamoxifen derivatives with a long alkyl side chain as selective estrogen receptor down-regulators," *Bioorg. Med. Chem.*, 23, 3091-3096, **2015**
14. Hiroko Yamashita, Yosuke Demizu, Takashi Misawa, **Takuji Shoda**, Masaaki Kurihara, "Synthesis of a bis-cationic  $\alpha,\alpha$ -disubstituted amino acid (9-amino-bispidine-9-carboxylic acid) and its effects on the conformational properties of peptides," *Tetrahedron* 71, 2241-2245, **2015**, doi:10.1016/j.tet.2015.02.076
15. Takaya Nagakubo, Yosuke Demizu, Yasunari Kanda, Takashi Misawa, **Takuji Shoda**, Keiichiro Okuhira, Yuko Sekino, Mikihiro Naito, and Masaaki Kurihara, "Development of Cell-Penetrating R7 Fragment-Conjugated Helical Peptides as Inhibitors of Estrogen Receptor-Mediated Transcription", *Bioconjugate Chem.*, 25, 1921-1924, **2014**
16. Naoya Hirata, Shigeru Yamada, **Takuji Shoda**, Masaaki Kurihara, Yuko Sekino, and Yasunari Kanda, "Sphingosine-1-phosphate promotes expansion of cancer stem cells via S1PR3 by a ligand-independent Notch activation", *Nat. Commun.*, 5:4806 doi: 10.1038/ncomms5806, **2014**
17. Christopher G. Parker, Markus K. Dahlgren, Don T. Li, Eugene F. Douglass, **Takuji Shoda**, Navneet Jawanda, Krasimir A. Spasov, Robert A. Domoal, Richard Sutton, Karen S. Anderson, William L. Jorgensen, David A. Spiegel, "Illuminating HIV-1 gp120–Ligand Recognition through Computationally-Driven Optimization of Antibody-Recruiting Molecules", *Chemical Science*, 5, 2311-2317, **2014**
18. Hiroko Yamashita, Yosuke Demizu, **Takuji Shoda**, Yukiko Sato, Makoto Oba, Masakazu Tanaka, Masaaki Kurihara, "Amphipathic short helix-stabilized peptides with cell-membrane penetration," *Bioorg. Med. Chem. Lett.*, 22 (8), 2403-2408, **2014**
19. **Takuji Shoda**, Keiichiro Okuhira, Masashi Kato, Yosuke Demizu, Hideshi Inoue, Mikihiro Naito, Masaaki Kurihara, "Design and synthesis of tamoxifen derivatives as a selective estrogen receptor down-regulator", *Bioorg. Med. Chem. Lett.*, 24 (1), 87-89, **2014**
20. Yosuke Demizu, Keiichiro Okuhira, Hiromi Motoi, Akiko Ohno, **Takuji Shoda**, Kiyoshi Fukuhara, Haruhiro Okuda, Mikihiro Naito, Masaaki Kurihara, "Design and synthesis of estrogen receptor degradation inducer based on a protein knockdown strategy," *Bioorg. Med. Chem. Lett.*, 22, 1793-1796, **2012**
21. **Takuji Shoda**, Kiyoshi Fukuhara, Yukihiko Goda, Haruhiro Okuda, "Enzyme-Assisted Synthesis of the Glucuronide Conjugate of Psilocin, a Hallucinogenic Component of Magic Mushroom," *Drug Test. Anal.*, 3 (9), 594-596, **2011**

22. 内山 奈穂子, 花尻(木倉) 瑠理, 正田 卓司, 福原 潔, 合田 幸広, “デザイナーナードラッグとして検出された合成カンナビノイドの異性体分析について” *薬学雑誌*, 131 (7), 1141-1147, 2011
23. 橋井則貴, 川崎ナナ, 正田卓司, 福原 潔, 品川麻衣, 榛葉信久, 河合健蔵, 嶋村英雄, 余田 光, 奥田晴宏, 山口照英, “ヘパリン純度試験に関する研究 (第 5 報)<sup>1</sup>H-NMR によるヘパリンナトリウム確認試験及び純度試験に関する研究” *医薬品医療機器レギュラトリーサイエンス*, 41 (6), 469-476, 2010
24. Takuji Shoda, Kiyoshi Fukuhara, Yukihiko Goda, Haruhiro Okuda, “4-Hydroxy-3-Methoxy- methamphetamine Glucuronide as a Phase II Metabolite of MDMA: Enzyme-Assisted Synthesis and Involvement of Human Hepatic UGT2B15 in the Glucuronidation,” *Chem. Pharm. Bull.*, 57 (5): 472-475, 2009
25. 橋井則貴, 川崎ナナ, 高倉大輔, 伊藤さつき, 川原信夫, 正田卓司, 杉本直樹, 齧島由二, 品川麻衣, 榛葉信久, 宮田一義, 岡村隆志, 塚本秀樹, 千秋和久, 長谷川泰介, 河合健蔵, 余田 光, 掛樋一晃, 合田幸広, 奥田晴宏, 棚元憲一, 山口照英 “<sup>1</sup>H-NMR によるヘパリンナトリウム純度試験に関する研究” *医薬品研究*, 39 (10), 651-659, 2008
26. Matsumoto Takuya, Yasuteru Urano, Takuji Shoda, Hirotatsu Kojima, Tetsuo Nagano, “A thiol- reactive fluorescence probe based on donor-excited photoinduced electron transfer: key role of ortho substitution,” *Org. Lett.*, 9(17), 3375-3377, 2007
27. Kiyoshi Fukuhara, Shinji Oikawa, Nana Hakoda, Yasunori Sakai, Yusuke Hiraku, Takuji Shoda, Shinichi Saito, Naoki Miyata, Shosuke Kawanishi, Haruhiro Okuda, “9-Nitroanthracene derivative as a precursor of anthraquinone for photodynamic therapy,” *Bioorg. Med. Chem.*, 15 (11), 3869-3873, 2007
28. Jie Ouyang, Chenguang Ouyang, Yuki Fujii, Yoshiharu Nakano, Takuji Shoda, Tetsuo Nagano, “Synthesis and Fluorescent Properties of 2-(1*H*-Benzimidazol-2- yl)-phenol Derivatives,” *J. Heterocyclic Chem.*, 41, 359-365, 2004
29. Takuji Shoda, Kazuya Kikuchi, Hirotatsu Kojima, Yasuteru Urano, Hirokazu Komatsu, Koji Suzuki, Tetsuo Nagano, “Development of selective, visible light-excitable, fluorescent magnesium ion probes with a novel fluorescence switching mechanism” *Analyst*, 128 (6), 719-723, 2003
30. Wataru Nishii\*, Takuji Shoda\*, Nagisa Matsumoto, Takeshi Nakamura, Yoshihisa Kudo, Kenji Takahashi, \*These authors contributed equally to this work. “In situ visualization of caspase-1-like activity associated with promotion of hippocampal cell death” *FEBS Lett.*, 518 (1-3), 149-153, 2002