Medicinal-Chemical Biology (Medicinal Chemistry)

1. Staffs and Students (April, 2010)

Professor	Hirokazu TAMAMURA	
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	Jun SATO,	Aiko OGAWA,
	Mayo Kamirura,	Keita Otuka,
	Tsuyoshi OKUDA,	Kazuyasu KAWASHIMA,
	Mao Komoriya,	Arisa URABE,
	Mika SHISHIDO,	Shunsuke SEIKE,
	Ryota SEIKE,	Akira SOMA,
	Atsumi MORI,	Hiroshi ARAI,
	Taro OZAKI,	Chiaki KANBE,
	Ken WATANABE	

2. Purpose of Education

Our department teaches chemical biology targeted to elucidation and regulation of biological phenomena based on organic chemistry and adavanced synthetic chemistry, medicinal chemistry and advanced drug discovery of a post-genomena era. Our department performs periodically journal clubs and research progress meetings.

3. Research Subjects

1) Development of conformational-constrained templates for drug discovery.
2) Development of bio-probes, bio-sensing, medicinal chemistry towards chemical biology.
3) Structural analysis of the interactions between receptors/enzymes and their ligands.
4) Development of applications of zinc finger protein for gene therapy and nano technology.

4. Publications

Original Article

1) Yamada Y, Ochiai C, Yoshimura K, Tanaka T, Ohashi N, Narumi T, Nomura W, Harada S, Matsushita S, Tamamura H. CD4 Mimics Targeting the Mechanism of HIV. Bioorg Med Chem Lett 20：354-358, 2010.
2) Nakahara T, Nomura W, Ohba K, Ohya A, Tanaka T, Hashimoto C, Narumi T, Murakami T, Yamamoto N, Tamamura H. Remodeling of Dynamic Structures of HIV-1 Envelope Proteins Leads to Synthetic Antigen Molecules Inducing Neutralizing Antibodies. Bioconjugate Chem 21(4): 709-714, 2010.
3) Melchionna R, Carlo AD, Mori RD, Cappuzzello C, Barberi L, Musarò A, Cencioni C, Fujii N, Tamamura H, Crescenzi M, Maurizio C. Napolitano CM, Germani A. Induction of Myogenic Differentiation by SDF-1 via CXCR4 and CXCR7 Receptors. Muscle Nerve 41(6): 828-835, 2010.
4) Yoshimura K, Harada S, Shibata J, Hatada M, Yamada Y, Ochiai C, Tamamura H, Matsushita S. Enhanced Exposure of Human Immunodeficiency Virus Type 1 Primary Isolate Neutralization Epitopes through Binding of CD4 Mimetic Compounds. J Virol 84(15): 7558-7568, 2010.
5) Suzuki S, Urano E, Hashimoto C, Tsutsumi H, Nakahara T, Tanaka T, Nakanishi Y, Maddali K, Han Y, Hamatake M, Miyauchi K, Pommier Y, Beutler JA, Sugiura W, Fuji H, Hoshino T, Itotani K, Wataru W, Narumi T, Yamamoto N, Komano JA, Tamamura H. Peptide HIV-1 Integrase Inhibitors from HIV-1 Gene Products. J Med Chem 53 (14): 5356-5360, 2010.
6) Suzuki S, Maddali K, Hashimoto C, Urano E, Ohashi N, Tanaka T, Ozaki T, Arai H, Tsutsumi H, Narumi T, Nomura W, Yamamoto N, Pommier Y, Komano JA, Tamamura H. Peptidic HIV Integrase Inhibitors Derived from HIV Gene Products: Structure-Activity Relationship Studies. Bioorg Med Chem 18: 6771-6775, 2010.
7) Narumi T, Ochiai C, Yoshimura K, Harada S, Tanaka T, Nomura W, Arai H, Ozaki T, Ohashi N, Matsushita S,

Tamamura H. CD4 Mimics Targeting the HIV Entry Mechanism and their Hybrid Molecules with a CXCR4 Antagonist. Bioorg Med Chem Lett 20: 5853–5858, 2010.

8) Aoki T, Shimizu S, Urano E, Futahashi Y, Hamatake M, Tamamura H, Terashima K, Murakami T, Yamamoto N, Komano J. Improvement of Lentiviral Vector-mediated Gene Transduction by Genetic Engineering of the Structural Protein Pr55Gag. Gene Ther 17(9): 1124-1133, 2010.
9) Narumi T, Hayashi R, Tomita K, Kobayashi K, Tanahara N, Ohno H, Naito T, Kodama E, Matsuoka M, Oishi S, Fujii N. Synthesis of Biological Evaluation of Selective CXCR4 Antagonists Containing Alkene Dipeptide Isosteres. Org Biomol Chem 616-621, 2010.
10) Nomura W, Mino T, Narumi T, Ohashi N, Masuda A, Hashimoto C, Tsutsumi H, Hirokazu Tamamura H. Development of Crosslink-Type Tag-Probe Pairs for Fluorescent Imaging of Proteins. Biopolymers: Peptide Science, 94: 843-852, 2010.
11) Tanaka T, Nomura W, Narumi T, Masuda A, Tamamura H. Bivalent Ligands of CXCR4 with Rigid Linkers for Elucidation of Dimerization State in Cells. J Am Chem Soc. 132 (45): 15899-15901, 2010.