

## The 57<sup>th</sup> Japanese Peptide Symposium

November 9 (Monday)

**10:00-10:10**     **Opening Remarks** (Tsuyoshi Kawano)

**10:10–11:06**     **Young Investigator's Oral Presentations** (9 min talk, 5 min discussion & exchange)

**Section 1** (chairs: Yoshiaki Yano, Yuichi Masuda)

**Y-01**     **Iridium-catalyzed proline-selective carbonyl modification**

Tatsuya Mori<sup>1</sup>, Yoshito Takahashi<sup>1</sup>, Risa Yoshii<sup>1</sup>, Takeshi Oishi<sup>2</sup>, Takaaki Sato<sup>1</sup>, Noritaka Chida<sup>1</sup> (<sup>1</sup>Faculty of Science and Technology, Keio University, <sup>2</sup>School of Medicine, Keio University)

**Y-02**     **Development of solid-supported 4-fluorophenyl 3-nitro-2-pyridinesulfenate (Npys-OPh(pF)) as an efficient disulfide-forming agent**

Yan Cui, Akihiro Taguchi, Kiyotaka Kobayashi, Hayate Shida, Kentaro Takayama, Atsuhiko Taniguchi, Yoshio Hayashi (Department of Medicinal Chemistry, Tokyo University of Pharmacy and Life Sciences)

**Y-03**     **Total synthesis of hytramycin V, a cyclic peptide antibiotic**

Tetsuya Inaba, Masahito Yoshida, Hideo Kigoshi (Graduate School of Pure and Applied Sciences, University of Tsukuba)

**Y-04**     ***De novo* design of  $\alpha$ -helix peptides for construction of artificial transmembrane pores**

Masataka Usami, Ryuji Kawano (Department of Biotechnology and Life Science, Tokyo University of Agriculture and Technology)

**11:06–11:20 Break**

**11:20–12:16**     **Young Investigator's Oral Presentations** (9 min talk, 5 min discussion & exchange)

**Section 2** (chairs: Kentaro Takayama, Yuji Yamada)

**Y-05**     **Electrophysiological analysis of cell-penetrating peptides with planar lipid bilayer system**

Chihiro Saito, Yuri Numaguchi, Ryuji Kawano (Department of Life Science and Biotechnology, Tokyo University of Agriculture and Technology)

**Y-06 Evaluation of channel-forming activity and inhibition of A $\beta$ 42 using nervous cell-membrane imitated lipid bilayer device**

Yuri Numaguchi<sup>1</sup>, Keisuke Shimizu<sup>1</sup>, Kaori Tsukakoshi<sup>1</sup>, Yuki Suzuki<sup>2</sup>, Kazunori Ikebukuro<sup>1</sup>, Ryuji Kawano<sup>1</sup> (<sup>1</sup>Department of Life Science and Biotechnology, Tokyo University of Agriculture and Technology, <sup>2</sup>Frontier Research Institute for Interdisciplinary Sciences, Tohoku University)

**Y-07 Extracellular thiol-disulfide exchange reaction produces potent macropinocytosis-inducing peptide analogs**

Jan Vincent V. Arafles, Hisaaki Hirose, Shiroh Futaki (Institute for Chemical Research, Kyoto University)

**Y-08 Artificial viral capsid to deliver biomacromolecules into cytosol**

Kentarou Sakamoto<sup>1</sup>, Hiroto Furukawa<sup>2</sup>, Kazunori Matsuura<sup>2</sup>, Shiroh Futaki<sup>1</sup> (<sup>1</sup>Institute for Chemical Research, Kyoto University, <sup>2</sup>Graduate School of Engineering, Tottori University)

**12:16–12:30 Break**

**12:30–13:30 Lunch Break & Online Seminar**

**13:30–14:00 Break & Poster Checking**

**14:00–15:00 Poster Presentation 1 (P-001 ~ P-026)**

**15:00–16:00 Poster Presentation 2 (P-027 ~ P-052)**

**16:00–16:20 Break**

**16:20–17:16 Young Investigator's Oral Presentations** (9 min talk, 5 min discussion & exchange)

**Section 3** (chairs: Takuyuki Miki, Chie Kojima)

**Y-09 Immunological evaluation of conjugate/co-assembly of peptide antigen and adjuvant as self-adjuvanting anti-breast cancer vaccine candidates**

Keita Ito<sup>1</sup>, Yoshiyuki Manabe<sup>1,2</sup>, Taku Aiga<sup>1</sup>, Tsung-Che Chang<sup>1</sup>, Kazuya Kabayama<sup>1,2</sup>, Shino Ohshima<sup>3</sup>, Yoshie Kametani<sup>3</sup>, Hiroto Furukawa<sup>4</sup>, Hiroshi Inaba<sup>4</sup>, Kazunori Matsuura<sup>4</sup>, Koichi Fukase<sup>1,2</sup> (<sup>1</sup>Graduate School of Science, Osaka University, <sup>2</sup>Project Research Center for Fundamental Sciences, Osaka University, <sup>3</sup>School of Medicine, Tokai University, <sup>4</sup>Graduate School of Engineering, Tottori University)

- Y-10 Investigation of the immunogenicity of mirror-image single-domain antibody**  
Keisuke Aoki<sup>1</sup>, Motohiro Nonaka<sup>2</sup>, Shinsuke Inuki<sup>1</sup>, Hiroaki Ohno<sup>1</sup>, Shinya Oishi<sup>1,3</sup>  
(<sup>1</sup>Graduate School of Pharmaceutical Sciences, Kyoto University, <sup>2</sup>Graduate School of Medicine, Kyoto University, <sup>3</sup>Department of Medicinal Chemistry, Kyoto Pharmaceutical University)
- Y-11 Changes in structure and stability of p53 family tetramerization domain in vertebrate evolution**  
Shuya Sakaguchi<sup>1</sup>, Natsumi Nakagawa<sup>1</sup>, Rui Kamada<sup>1,2</sup>, James G. Omichinski<sup>2</sup>, Kazuyasu Sakaguchi<sup>1,2</sup> (<sup>1</sup>Laboratory of Biological Chemistry, Department of Chemistry, Faculty of Science, Hokkaido University, <sup>2</sup>Laboratory of Biological Chemistry, Graduate School of Chemical Sciences and Engineering, Hokkaido University, <sup>3</sup>Department of Biochemistry and Molecular Medicine, University of Montreal)
- Y-12 Development of  $\alpha$ -dystroglycan binding peptide modified liposomes for muscle targeting delivery system**  
Eri Sasaki, Yuka Kimura, Nobuhito Hamano, Kei Nirasawa, Keisuke Hamada, Yamato Kikkawa, Tsuyoshi Miura, Yoko Endo-Takahashi, Motoyoshi Nomizu, Yoichi Negishi (School of Pharmacy, Tokyo University of Pharmacy and Life Sciences)
- 17:16–17:30 Break**
- 17:30–18:26 Young Investigator’s Oral Presentations** (9 min talk, 5 min discussion & exchange)  
**Section 4** (chairs: Yuki Goto, Tetsuo Narumi)
- Y-13 Exploratory studies on the development of anti-HIV-1 peptides based on HIV-1 capsid fragments**  
Kofi Baffour-Awuah Owusu<sup>1</sup>, Kohei Tsuji<sup>1</sup>, Rongyi Wang<sup>1</sup>, Takuya Kobayakawa<sup>1</sup>, Moemi Kaneko<sup>1</sup>, Tsutomu Murakami<sup>2</sup>, Hirokazu Tamamura<sup>1</sup> (<sup>1</sup>Institute of Biomaterials and Bioengineering, Tokyo Medical and Dental University (TMDU), <sup>2</sup>AIDS Research Center, National Institute of Infectious Diseases)

**Y-14 A new thiol additive for one-pot sequential peptide ligation-desulfurization chemistry**  
Kento Ohkawachi<sup>1</sup>, Daishiro Kobayashi<sup>1</sup>, Kyohei Morimoto<sup>1</sup>, Akira Shigenaga<sup>2</sup>,  
Masaya Denda<sup>1</sup>, Kenzo Yamatsugu<sup>3</sup>, Motomu Kanai<sup>3</sup>, Akira Otaka<sup>1</sup> (<sup>1</sup>Institute of  
Biomedical Sciences and Graduate School of Pharmaceutical Sciences, Tokushima  
University, <sup>2</sup>Faculty of Pharmacy and Pharmaceutical Sciences, Fukuyama  
University, <sup>3</sup>Graduate School of Pharmaceutical Sciences, The University of  
Tokyo)

**Y-15 Development of antimicrobial peptide foldamers based on Magainin 2 sequence**  
Motoharu Hirano<sup>1,2</sup>, Chihiro Goto<sup>1,2</sup>, Takashi Misawa<sup>2</sup>, Yosuke Demizu<sup>1,2</sup>  
(<sup>1</sup>Graduate School of Medical Life Sciences, Yokohama City University, <sup>2</sup>National  
Institute of Health Sciences)

**Y-16 The use of cysteinylprolyl imide peptide as an Fmoc-compatible crypto-thioester**  
Koki Nakatsu<sup>1</sup>, Masafumi Yanase<sup>1</sup>, Gosuke Hayashi<sup>2</sup>, Akimitsu Okamoto<sup>1,3</sup>  
(<sup>1</sup>Department of Chemistry and Biotechnology, The University of Tokyo,  
<sup>2</sup>Department of Biomolecular Engineering, Graduate School of Engineering,  
Nagoya University, <sup>3</sup>Research Center for Advanced Science and Technology, The  
University of Tokyo)

**18:26–18:40 Break**

**18:40–19:10 Invite Lecture (I)** (chairs: Tsuyoshi Kawano, Kazunori Matsuura)

**IL-01 Neuropeptides, receptors, and their biological roles in the sister group of  
vertebrates, *Ciona intestinnalis* Type A**  
Honoo Satake (Bioorganic Research Institute, Suntory Foundation for Life Sciences)

**November 10 (Tuesday)**

**10:00–11:06 Oral Presentations** (15 min talk, 7 min discussion & exchange)

**Section 1** (O-01–03) (chairs: Toru Kawakami, Yoshio Hayashi)

**O-01 Chemical synthesis of ubiquitin derivatives containing non-canonical unit**

Kohei Sato<sup>1,2,3</sup>, Yoshinori Taguchi<sup>2</sup>, Takuma Nishizawa<sup>1</sup>, Sayuri Takeo<sup>2</sup>, Shoko Tanaka<sup>3</sup>, Nobuyuki Mase<sup>1,2,3</sup>, Tetsuo Narumi<sup>1,2,3</sup> (<sup>1</sup>Department of Engineering, Graduate School of Integrated Science and Technology, Shizuoka University, <sup>2</sup>Faculty of Engineering, Shizuoka University, <sup>3</sup>Graduate School of Science and Technology, Shizuoka University)

**O-02 Density functional theory (DFT)-based insights into reaction mechanism of phosphate catalyzed N-S acyl transfer of *N*-sulfanylethylanilide (SEAlide)**

Akira Shigenaga (Faculty of Pharmacy and Pharmaceutical Sciences, Fukuyama University)

**O-03 Structure-activity relationship study on macrocyclic bace1 inhibitors containing a hydrophobic cross-linked structure**

Kazuya Kobayashi<sup>1</sup>, Takuya Otani<sup>1</sup>, Yasunao Hattori<sup>2</sup>, Kenichi Akaji<sup>1</sup> (<sup>1</sup>Department of Medicinal Chemistry, Kyoto Pharmaceutical University, <sup>2</sup>Center for Instrumental Analysis, Kyoto Pharmaceutical University)

**11:06–11:25 Break**

**11:25–12:09 Oral Presentations** (15 min talk, 7 min discussion & exchange)

**Section 2** (O-04–05) (chairs: Akira Otaka, Hironobu Hojo)

**O-04 Noncovalent interactions in the chloroalkene-type RGG peptidomimetics stabilize the beta-turn structure**

Tetsuo Narumi<sup>1,2,3</sup>, Yuki Kodama<sup>2</sup>, Yuna Kato<sup>1</sup>, Kosuke Arai<sup>1</sup>, Sayuri Takeo<sup>3</sup>, Tatsuki Masuzawa<sup>4</sup>, Kohei Sato<sup>1,2,3</sup>, Nobuyuki Mase<sup>1,2,3</sup>, Takanori Oyoshi<sup>4</sup> (<sup>1</sup>Department of Engineering, Graduate School of Integrated Science and Technology, Shizuoka University, <sup>2</sup>Graduate School of Science and Technology, Shizuoka University, <sup>3</sup>Faculty of Engineering, Shizuoka University, <sup>4</sup>Department of Science, Graduate School of Integrated Science and Technology, Shizuoka University)

**O-05 Interplay between amino acid sequences and lipid compositions in the GXXXG-mediated self-association of transmembrane helices as revealed by single-pair FRET**

Yoshiaki Yano, Takayuki Morise, Katsumi Matsuzaki (Graduate School of Pharmaceutical Sciences, Kyoto University)

**12:09–12:30 Break**

**12:30–13:30 Lunch Break & Online Seminar**

**13:30–14:00 Break & Poster Checking**

**14:00–15:00 Poster Presentation 3 (P-053~P-078)**

**15:00–16:00 Poster Presentation 4 (P-079~P-103)**

**16:00–16:20 Break**

**16:20–17:26 Oral Presentations** (15 min talk, 7 min discussion & exchange)  
**Section 3 (O-06–08)** (chairs: Hidehito Mukai, Ikuhiko Nakase)

**O-06 Lysosomal enzyme replacement therapy using H16 peptide**

Takashi Iwasaki, Taiki Hayashi, Nodoka Murakami, Tsuyoshi Kawano (Graduate School of Sustainability Science, Tottori University)

**O-07 Endogenous protein expression imaging by fluorogenic ZIP tag-probe system**

Wataru Nomura<sup>1,2</sup>, Takumi Kamimura<sup>2</sup>, Takuya Kobayakawa<sup>2</sup>, Hirokazu Tamamura<sup>2</sup> (<sup>1</sup>Graduate School of Biomedical and Health Sciences, Hiroshima University, <sup>2</sup>Institute of Biomaterials and Bioengineering, Tokyo Medical and Dental University (TMDU))

**O-08 Development of bivalent inhibitors of polo-like kinase 1 with great affinity enhancement**

Kohei Tsuji<sup>1,2</sup>, David Hyme<sup>2</sup>, Buyong Ma<sup>3</sup>, Ruth Nussinov<sup>3</sup>, Hirokazu Tamamura<sup>1</sup>, Terrence R. Burke, Jr.<sup>2</sup> (<sup>1</sup>Institute of Biomaterials and Bioengineering, Tokyo Medical and Dental University (TMDU), <sup>2</sup>Chemical Biology Laboratory, Center for Cancer Research, National Cancer Institute, National Institutes of Health, <sup>3</sup>Cancer and Inflammation Program, Leidos Biomedical Research, Inc., Frederick National Laboratory for Cancer Research, National Cancer Institute at Frederick)

**17:26–17:35 Break**

**17:35–18:19 Oral Presentations** (15 min talk, 7 min discussion & exchange)  
**Section 4** (O-09–10) (chairs: Motoyoshi Nomizu, Kazuyasu Sakaguchi)

**O-09 Development of *de novo* peptides for construction of artificial protein condensates in intracellular space**

Takayuki Miki, Taichi Nakai, Keigo Kajiwara, Hiroki Takahashi, Masahiro Hashimoto, Hiroshi Tsutsumi, Hisakazu Mihara (School of Life Science and Technology, Tokyo Institute of Technology)

**O-10 Structural modification of microtubules by encapsulation of proteins using a tau-derived peptide**

Hiroshi Inaba<sup>1</sup>, Takahisa Yamamoto<sup>1</sup>, Takashi Iwasaki<sup>2</sup>, Arif Md. Rashedul Kabir<sup>3</sup>, Akira Kakugo<sup>3</sup>, Kazuki Sada<sup>3</sup>, Kazunori Matsuura<sup>1</sup> (<sup>1</sup>Graduate School of Engineering, Tottori University, <sup>2</sup>Graduate School of Agricultural Sciences, Tottori University, <sup>3</sup>Graduate School of Science, Hokkaido University)

**18:19–18:30 Break**

**18:30–19:00 Invite Lecture (II)** (chairs: Kazunori Matsuura, Tsuyoshi Kawano)

**IL-02 Chemical modification of endogenous proteins in living systems**

Itaru Hamachi (Department of Synthetic Chemistry and Biological Chemistry, Graduate School of Engineering, Kyoto University)

**19:00–19:30 Invite Lecture (III)** (chairs: Kazunori Matsuura, Tsuyoshi Kawano)

**IL-03 Peptide bionanodesign: Old forms for new functions**

Max Ryadnov (Biometrology research area, National Physical Laboratory, UK)

**November 11 (Wednesday)**

**10:00–11:06 Oral Presentations** (15 min talk, 7 min discussion & exchange)

**Section 5** (O-11–13) (chairs: Shiroh Futaki, Hisakazu Mihara)

**O-11 Three-dimensional cell culture using laminin peptide-conjugated agarose microgels**

Yuji Yamada, Chihiro Yoshida, Keisuke Hamada, Yamato Kikkawa, Motoyoshi Nomizu (School of Pharmacy, Tokyo University of Pharmacy and Life Sciences)

**O-12 Curvature-sensing peptides to distinguish bacterial extracellular membrane vesicles from cells in cultured medium**

Kenichi Kawano<sup>1</sup>, Fumiaki Yokoyama<sup>2</sup>, Jun Kawamoto<sup>2</sup>, Takuya Ogawa<sup>2</sup>, Tatsuo Kurihara<sup>2</sup>, Shiroh Futaki<sup>1</sup> (<sup>1</sup>Laboratory of Biofunctional Design Chemistry, Institute for Chemical Research, Kyoto University, <sup>2</sup>Laboratory of Molecular Microbial Science, Institute for Chemical Research, Kyoto University)

**O-13 Immune-stimulatory helix–loop–helix peptide: selective inhibition of CTLA-4–B7 interaction**

Daisuke Fujiwara<sup>1</sup>, Tharanga M. R. Ramanayake Mudiyanse<sup>2</sup>, Masataka Michigami<sup>1</sup>, Zhengmao Ye<sup>1</sup>, Norimitsu Inoue<sup>3</sup>, Kikuya Sugiura<sup>2</sup>, Ikuo Fujii<sup>1</sup> (<sup>1</sup>Graduate School of Science, Osaka Prefecture University, <sup>2</sup>Graduate School of Life and Environmental Sciences, Osaka Prefecture University, <sup>3</sup>Department of Tumor Immunology, Osaka International Cancer Institute)

**11:06–11:25 Break**

**11:25–12:09 Oral Presentations** (15 min talk, 7 min discussion & exchange)

**Section 6** (O-14–15) (chairs: Ikuo Fujii, Ayami Matsushima)

**O-14 Development of small affinity peptide ligands for human antibody purification**

Abdur Rafique, Yuji Ito (Graduate School of Science and Engineering, Kagoshima University)

**O-15 Site-specific covalent conjugation of IgG antibodies by CCAP method using Z33 affinity peptide: its application for drug and diagnostic reagent**

Satoka Mori<sup>1,3</sup>, Yukinari Kato<sup>2</sup>, Mika K. Kaneko<sup>2</sup>, Abdur Rafique<sup>1</sup>, Yuji Ito<sup>1</sup> (<sup>1</sup>Graduate School of Science and Engineering, Kagoshima University, <sup>2</sup>Graduate School of Medicine, Tohoku University, <sup>3</sup>Denka Innovation Center)

**12:09–12:30 Break**



**13:30–13:50 Lunch Break & Online Seminar**

**13:50–14:56 Oral Presentations** (15 min talk, 7 min discussion & exchange)  
**Section 7 (O-16–18)** (chairs: Hirokazu Tamamura, Takaki Koide)

**O-16 Pharmacokinetic control of cyclosporine A employing polymeric nanocarriers designed by flash nanoprecipitation**

Hideyuki Sato<sup>1</sup>, Yuuki Kaneko<sup>1</sup>, Kurt D Ristroph<sup>2</sup>, Hoang D Lu<sup>2</sup>, Hak-Kim Chan<sup>3</sup>, Robert K Prud'homme<sup>2</sup>, Kohei Yamada<sup>1</sup>, Satomi Onoue<sup>1</sup> (<sup>1</sup>Laboratory of Biopharmacy, School of Pharmaceutical Sciences, University of Shizuoka, <sup>2</sup>Department of Chemical & Biological Engineering, Princeton University, <sup>3</sup>Advanced Drug Delivery Group, Faculty of Pharmacy, The University of Sydney)

**O-17 Investigation of the thioflavin-T binding mechanism using a peptide self-assembly mimicking protein**

Sae Namioka<sup>1</sup>, Norio Yoshida<sup>2</sup>, Hiroyuki Konno<sup>1</sup>, Koki Makabe<sup>1</sup> (<sup>1</sup>Graduate School of Science and Engineering, Yamagata University, <sup>2</sup>Department of Chemistry, Graduate School of Science, Kyushu University)

**O-18 Detection of ligand-protein interactions using reactive peptide and/or intein tags capable of activating reporter enzymes**

Tsuyoshi Takahashi, Hiroaki Hagiwara (Graduate School of Science and Technology, Gunma University)

**14:56–15:10 Break**

**15:10–16:10 Lectures of the Young Investigator Award**  
(chairs: Yoshio Hayashi, Hisakazu Mihara)

**AL-01 Development of new peptide synthetic methodology based on disulfide bond formation: revival of Npys chemistry**

Akihiro Taguchi (Tokyo University of Pharmacy and Life Sciences)

**AL-02 Construction of functional soft materials using phage-displayed peptides**

Toshiki Sawada (Tokyo Institute of Technology)

**16:10–16:20 Closing Remarks** (Kazunori Matsuura)