

ISBC2012

The First International Symposium
on Biofunctional Chemistry

November 28-30, 2012

at Tokyo Tech Front,
Tokyo Institute of Technology, Japan

Organized by

Division of Biofunctional Chemistry,
The Chemical Society of Japan

ORGANIZING and SCIENTIFIC PROGRAM COMMITTEE

ORGANIZING COMMITTEE

Naoki SUGIMOTO, Chair
Tatsuya NABESHIMA, Vice-Chair
Shigetoshi AONO
Koichi FUKASE
Itaru HAMACHI
Kuniharu IJIRO
Yoshiki KATAYAMA
Hisakazu MIHARA
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Yoshio OKAHATA
Keiko SHIMAMOTO
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Jyunya SHIRAI
Hiroshi SUGIYAMA
Masahiro TAKAGI
Hitoshi TAMIAKI
Yasuteru URANO
Takehiko WADA
Yoshihito WATANABE

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University of Tsukuba
Okazaki Institute for Integrative Bioscience
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Kyoto University
Hokkaido University
Kyushu University
Tokyo Institute of Technology
Hokkaido University
Okayama University
Tokyo Institute of Technology
Suntory Foundation for Life Sciences
The University of Tokyo
Takeda Pharmaceutical Company Limited
Kyoto University
Japan Advanced Institute of Science and Technology
Ritsumeikan University
The University of Tokyo
Tohoku University
Nagoya University

SCIENTIFIC PROGRAM COMMITTEE

Section I: Protein Interaction

Hisakazu MIHARA, Section Chair
Hitoshi TAMIAKI
Takashi OHTSUKI

Tokyo Institute of Technology
Ritsumeikan University
Okayama University

Section II: Functional DNA/RNA

Naoki SUGIMOTO, Section Chair
Hiroshi SUGIYAMA
Takehiko WADA

Konan University
Kyoto University
Tohoku University

Section III: Metals in Chemical Biology

Tatsuya NABESHIMA, Section Chair
Mitsuhiko SHIONOYA
Shigetoshi AONO

University of Tsukuba
The University of Tokyo
Okazaki Institute for Integrative Bioscience

Section IV: Young Researchers Society for Biochemistry

Osami SHOJI, Section Chair
Yasutaka MATSUO
Eiji NAKATA

Nagoya University
Hokkaido University
Kyoto University

Section V: Cell Function of Macromolecules

Koichi FUKASE, Section Chair
Masahiro TAKAGI
Yoshiki KATAYAMA

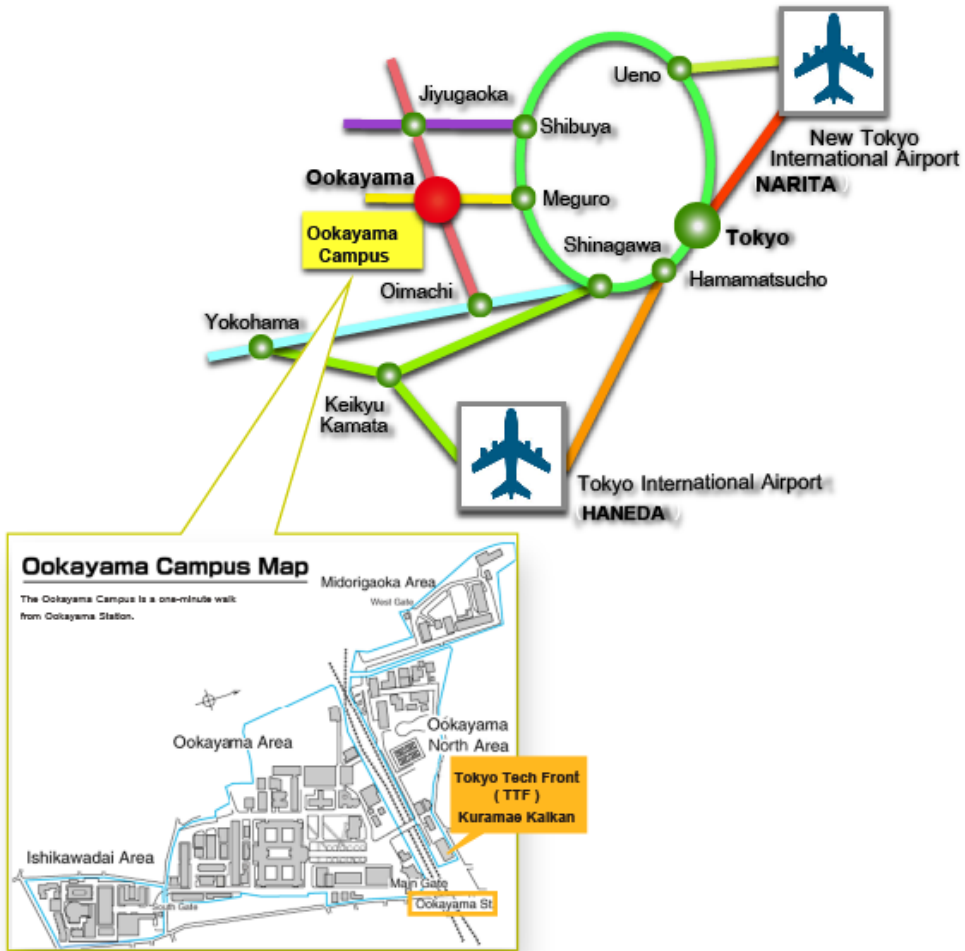
Osaka University
Japan Advanced Institute of Science and Technology
Kyushu University

Section VI: Nanobiotechnology Innovation in Biomolecular Chemistry

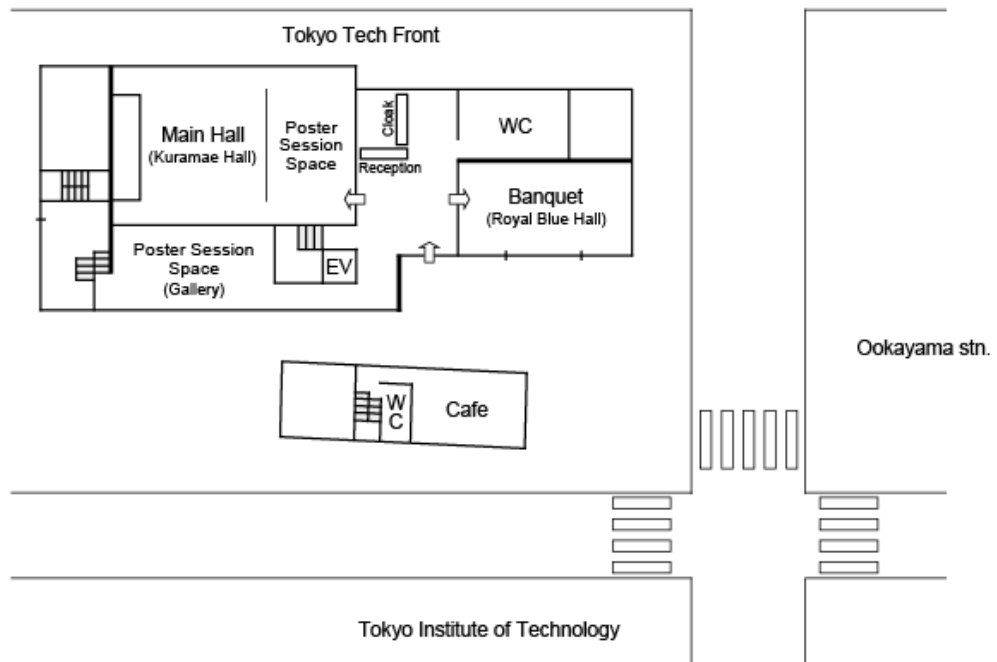
Itaru HAMACHI, Section Chair
Kuniharu IJIRO
Yasuteru URANO

Kyoto University
Hokkaido University
The University of Tokyo

ACCESS MAP



Tokyo Institute of Technology



CONFERENCE SCHEDULE

Registration and Information Desk

November 28th, 2012 8:30 -17:15 at Kuramae Hall

November 29th, 2012 8:30 -17:15 at Kuramae Hall

November 30th, 2012 8:30 -17:15 at Kuramae Hall

Abstract, Name card, Request for receipts, Questions or assistance

Reception (invited speakers and organizers only)

Reception will be held on Wednesday, November 28th from 18:20 in Royal Blue Hall

Banquet (All participants)

Banquet will be held on Thursday, November 29th from 18:20 in Royal Blue Hall

Coffee and refreshments

Coffee and refreshments will be available in the Gallery

NOTE TO THE AUTHORS

Oral Presenters

One LCD projector with PC (Microsoft PowerPoint for Windows, Microsoft PowerPoint for Macintosh) will be available in the oral presentation room. It is expected that you will provide your own PC, and multiplug switches for projector will be ready for you. Please remember to bring your power cable to your presentation (AC 100V, 50 Hz). We also request all the speakers to bring their data by memory sticks (USB type) or CD-R's, in case of trouble with the PC. Please bring the PPT file with the information of its version and your name and title.

---For Macintosh users

Please bring your external output terminal if it is not built into your own computer.

---Before presentation

During the break before your presentation, please hand a PC or a data to the projection staff. Mouse, laser pointer and clock will be prepared on the speakers desk. Please control their slides themselves.

---After presentation

Users of own PC expected to take off their PC after session at the speakers desk. Copy file will be completely deleted by projection staff after the conference.

Poster Presenters

The size of a panel for a poster is 110 cm wide and 160 cm tall. Double-stick tape and thumbtacks will be supplied at the site.

---Poster Set Up

8:30 - 12:00, Wednesday, November 28th

--- Discussion Time

13:40 - 14:20, Wednesday, November 28th Odd-numbered

14:20 - 15:00, Wednesday, November 28th Even-numbered

13:40 - 14:20, Thursday, November 29th Odd-numbered

14:20 - 15:00, Thursday, November 29th Even-numbered

---Poster Removal

12:00 - 12:30, Friday, November 30th

Please keep the poster be presented during the symposium for the participants. Poster that is still on the board after conference will be removed by the Secretariat.

DAYLY SCHEDULE (ISBC 2012 PROGRAM at a Glance)

NOV.28 WED	NOV.29 WED	NOV.30 WED
9:20-9:30 Opening Remarks Naoki Sugimoto (Chair of the Division, Konan University, Japan)		
Section I 9:30-10:10 Donald Hilvert (ETH Zurich, Switzerland) 10:10-10:50 Donald A. Bryant (Pennsylvania State University, USA)	Section III 9:30-10:10 Jung-Hye Roe (Seoul National University, Korea) 10:10-10:50 Yoshitsugu Shiro (RIKEN SPring-8 Center, Japan)	Section V 9:30-10:10 Carston R. Wagner (University of Minnesota, USA) 10:10-10:50 Ick-Chan Kwon (Korea Institute of Science and Technology, Korea)
10:50-11:10 Coffee Break		
11:10-11:50 Sihyun Ham (Sookmyung Women's University, Korea) 11:50-12:30 Takeaki Ozawa (The University of Tokyo, Japan)	11:10-11:50 Yi Lu (University of Illinois at Urbana-Champaign, USA) Gerard Roelfes (University of Groningen, The Netherlands)	11:10-11:50 Mikiko Sodeoka (RIKEN, Japan) Bert Poolman (University of Groningen, The Netherlands)
12:30-13:40 Lunch		
13:40-15:00 Poster session 13:40-14:20 odd numbers 14:20-15:00 even numbers	13:40-15:00 Poster session 13:40-14:20 odd numbers 14:20-15:00 even numbers	Section VI 13:40-14:20 Frank Caruso (The University of Melbourne, Australia) 14:20-15:00 Bing Xu (Brandeis University, USA)

<p>Section II 15:00-15:40 Thomas Carell (Ludwig-Maximilians-University, Germany) 15:40-16:20 Jonathan B. Chaires (University of Louisville, USA)</p>	<p>Section V 15:00-15:30 Satoshi Yamaguchi (The University of Tokyo, Japan) 15:30-16:00 Akira Onoda (Osaka University, Japan) 16:00-16:30 Hirohide Saito (Kyoto University, Japan)</p>	<p>15:00-15:20 Coffee Break 15:20-16:00 Vasilis Ntziachristos (Technical University of Munich, Germany) 16:00-16:40 Shoji Takeuchi (The University of Tokyo, Japan)</p>
<p>16:20-16:40 Coffee Break</p>	<p>16:30-17:00 Coffee Break</p>	<p>16:40-17:20 【Plenary Lecture】 Yoshio Okahata (Tokyo Institute of Technology, Japan)</p>
<p>16:40-17:20 Kazuhiko Nakatani (Osaka University, Japan) 17:20-18:00 Xiang Zhou (Wuhan University, China)</p>	<p>17:00-17:30 Hiromu Kashida (Nagoya University, Japan) 17:30-18:00 Satoshi Nishimura (The University of Tokyo, Japan)</p>	<p>17:20-17:30 Closing Remarks Tatsuya Nabeshima (Vice Chair of the Division, Tsukuba University)</p>
<p>18:20- Welcome Reception (Royal Blue Hall)</p>	<p>18:20- Banquet (Royal Blue Hall)</p>	

PROGRAM

INVITED SPEAKERS

NOVEMBER 28 WED (KURAMAE HALL)

9:20 – 9:30

Opening Remarks

Naoki Sugimoto

Chair of the Division, Konan University, Japan

SECTION I PROTEIN INTERACTION

9:30 – 10:10 (Chair: Hisakazu Mihara, Tokyo Institute of Technology)

O I-1 Designer Enzymes

Donald Hilvert

ETH Zurich, Switzerland

10:10 – 10:50 (Chair: Hitoshi Tamiaki, Ritsumeikan University)

O I-2 Characterization of Chlorosomes Containing Bacteriochlorophylls *e* and *f*

Donald A. Bryant

Pennsylvania State University, USA

Coffee Break (10:50 – 11:10)

11:10 – 11:50 (Chair: Hisakazu Mihara, Tokyo Institute of Technology)

O I-3 Understanding Protein Aggregation in Water

Sihyun Ham

Sookmyung Women's Univerisity, Korea

11:50 – 12:30 (Chair: Takashi Ohtsuki, Okayama University)

O I-4 Imaging and Control of Biological Functions Using Protein-Fragment Reconstitution Analyses

Takeaki Ozawa

The University of Tokyo, Japan

Lunch (12:30 – 13:40)

Poster Session (13:40 – 15:00)

SECTION II FUNCTIONAL DNA/RNA

15:00 – 15:40 (Chair: Takehiko Wada, Tohoku University)

O II-1 The Chemistry of Stem Cell Development

Thomas Carell

Ludwig-Maximilians-University, Germany

15:40 – 16:20 (Chair: Naoki Sugimoto, Konan University)

O II-2 An Integrated Discovery Platform for G-Quadruplex Binding Drugs

Jonathan B. Chaires

University of Louisville, USA

Coffee Break (16:20 – 16:40)

16:40 – 17:20 (Chair: Naoki Sugimoto, Konan University)

O II-3 Small Organic Molecules Regulating RNA Structure and Function

Kazuhiko Nakatani

Osaka University, Japan

17:20 – 18:00 (Chair: Hiroshi Sugiyama, Kyoto University)

O II-4 Targeting to Nucleic Acid: Drug Design and Biomedical Applications

Xiang Zhou

Wuhan University, China

NOVEMBER 29 THU (KURAMAE HALL)

SECTION III METALS IN CHEMICAL BIOLOGY

9:30 – 10:10 (Chair: Shigetoshi Aono, Okazaki Institute for Integrative Bioscience)

O III-1 Metal-Dependent Gene Regulation in Bacteria

Jung-Hye Roe

Seoul National University, Korea

10:10 – 10:50 (Chair: Shigetoshi Aono, Okazaki Institute for Integrative Bioscience)

O III-2 Functional Characterization of Some Hemoproteins Based on Their Molecular Structures

Yoshitsugu Shiro

RIKEN SPring-8 Center, Japan

Coffee Break (10:50 – 11:10)

11:10 – 11:50 (Chair: Mitsuhiro Shionoya, The University of Tokyo)

O III-3 Metallo- DNazymes and Their Applications in Directed Assembly of Nanomaterials, Sensing and Imaging

Yi Lu

University of Illinois at Urbana-Champaign, USA

11:50 – 12:30 (Chair: Mitsuhiro Shionoya, The University of Tokyo)

O III-4 Enantioselective Catalysis by Artificial Metalloenzymes Based on DNA

Gerard Roelfes

University of Groningen, The Netherlands

Lunch (12:30 – 13:40)

Poster Session (13:40 – 15:00)

SECTION IV YOUNG RESEARCHERS SOCIETY FOR BIOCHEMISTRY

15:00 – 15:40 (Chair: Eiji Nakata, Kyoto University)

O IV-1 Photo-Cleavable Chemical Tools Working at Biointerfaces for Externally Controlling Biomolecules and Living Cells

Satoshi Yamaguchi

The University of Tokyo, Japan

15:30 – 16:00 (Chair: Yasutaka Matsuo, Hokkaido University)

O IV-2 Programmed Hemoprotein Assemblies toward Biodevices

Akira Onoda

Osaka University, Japan

16:00 – 16:30 (Chair: Yasuyuki Yamada, Nagoya University)

O IV-3 Synthetic RNA-Protein Complexes for Controlling Cell Signaling

Hirohide Saito

Kyoto University, Japan

Coffee Break (16:30 – 17:00)

17:00 – 17:30 (Chair: Shinya Hagihara, Tohoku University)

O IV-4 Preparation of Novel Artificial Base Pairs for Functionalization of DNA

Hiromu Kashida

Nagoya University, Japan

17:30 – 18:00 (Chair: Tomoya Hirano, Tokyo Medical and Dental University)

O IV-5 In Vivo Multi-Photon Molecular Imaging Technique Visualizes Parenchymal and Interstitial Cell Cross-Talks in Chronic Inflammatory and Adult Common Disease Applications

Satoshi Nishimura

The University of Tokyo, Japan

NOVEMBER 30 FRI (KURAMAE HALL)

SECTION V CELL FUNCTION OF MACROMOLECULES

9:30 – 10:10 (Chair: Koichi Fukase, Osaka University)

O V-1 Chemically Self-Assembled Nanostructures (CSANS) for Targeted Drug, Protein and Oligonucleotide Delivery

Carston R. Wagner

University of Minnesota, USA

10:10 – 10:50 (Chair: Yoshiki Katayama, Kyushu University)

O V-2 Visualizing Enzyme Activities in Theragnosis

Ick-Chan Kwon

Korea Institute of Science and Technology, Korea

Coffee Break (10:50 – 11:10)

11:10 – 11:50 (Chair: Carston R. Wagner, University of Minnesota)

O V-3 Cell Death Control Molecules

Mikiko Sodeoka

RIKEN, Japan

11:50 – 12:30 (Chair: Kouhei Tsumoto, The University of Tokyo)

O V-4 Traffic in Crowded Environments and Osmosensing Mechanisms of Membrane Transport Proteins

Bert Poolman

University of Groningen, The Netherlands

Lunch (12:30 – 13:40)

SECTION VI NANOBIO TECHNOLOGY INNOVATION IN BIOMOLECULAR CHEMISTRY

13:40 – 14:20 (Chair: Kuniharu Ijiro, Hokkaido University)

O VI-1 Moving into the Biological Realm with Designer Particles Prepared via Materials Chemistry and Template Assembly

Frank Caruso

The University of Melbourne, Australia

14:20 – 15:00 (Chair: Kuniharu Ijiro, Hokkaido University)

O VI-2 Biological Functions and Applications of Self-Assembly of Small Molecules in Cellular Environment

Bing Xu

Brandeis University, USA

Coffee Break (15:00 – 15:20)

15:20 – 16:00 (Chair: Itaru Hamachi, Kyoto University)

O VI-3 Multispectral Optoacoustic Tomography (MSOT) for Advancing Nano-Medicine

Vasilis Ntziachristos

Technical University of Munich, Germany

16:00 – 16:40 (Chair: Itaru Hamachi, Kyoto University)

O VI-4 Microfluidic Technology for Biomolecular Processing

Shoji Takeuchi

The University of Tokyo, Japan

16:40 – 17:20 (Chair: Naoki Sugimoto, Konan University)

PL A Translating Ribosome along mRNA Monitored on a Quartz Crystal Microbalance

Yoshio Okahata

Tokyo Institute of Technology, Japan

17:20 – 17:30

Closing Remarks

Tatsuya Nabeshima

Vice Chair of the Division, Tsukuba University, Japan

POSTER PROGRAM

NOVEMBER 28 & 29 (POSTER SESSION SPACE)

40 minutes odd numbers, then 40 minutes even numbers

- P1** **Development of Zinc Finger Enzymes for Genome Engineering**
Wataru Nomura, Akemi Masuda, Hirokazu Tamamura
Department of Medicinal Chemistry, Institute of Biomaterials and Bioengineering, Tokyo Medical and Dental University
- P2** **Novel Methods for Blocking the Amyloidogenesis of Prion Proteins**
Masatoshi Saiki¹, Tomoya Miyazaki¹, Hisayuki Morii², Shinji Hashimoto¹
1 Faculty of Engineering, Tokyo University of Science
2 National Institute of Advanced Industrial Science and Technology (AIST)
- P3** **The Regulation Mechanism of Gene Expression in Translation Termination**
Shuntaro Takahashi^{1,2}, Naoki Sugimoto^{2,3}, Yoshio Okahata²
1 Frontier Institute for Biomolecular Engineering Research (FIBER), Konan University
2 Department of Biomolecular Engineering, Tokyo Institute of Technology
3 Faculty of Frontiers of Innovative Research in Science and Technology (FIRST), Konan University
- P4** **Selective Localization of Alzheimer's Amyloid Beta and Peptide-Induced Membrane Dynamics**
Masamune Morita, Mun'delanji Vestergaard, Tsutomu Hamada, Masahiro Takagi
School of Materials Science, Japan Advanced Institute of Science and Technology
- P5** **Rational Alteration of Enzyme: Introduction of CH/ π Interaction to the Transition State**
Daiki Yoshida, Yasuko Nakano, Tadashi Ema
Division of Chemistry and Biochemistry, Graduate School of Natural Science and Technology, Okayama University
- P6** **The Effect of Oxidized Cholesterol on the Membrane Dynamics Induced by Alzheimer's Amyloid Beta**
Huong Thi Thanh Phan, Takahiro Hata, Masamune Morita, Tsuyoshi Yoda, Mun'delanji Vestergaard, Tsutomu Hamada, and Masahiro Takagi
School of Materials Science, Japan Advanced Institute of Science and Technology
- P7** **Protein Labeling with Split SNAP-Tag by Protein-Protein Interaction Dependent Reconstitution in Living Cells**
Tatsuhiko Naoki, Masayasu Mie, Eiry Kobatake
Dept of Biological Information, Tokyo Institute of Technology
- P8** **A Simple Approach for the Reconstitution of Hemoproteins**
Norifumi Kawakami¹, Osami Shoji², Yoshihito Watanabe¹
1 Research Center for Materials Science, Nagoya University
2 Department of Chemistry, Graduate School of Science, Nagoya University

- P9** **Holoabzyme and Site-Directed Chemical Mutation**
Takeshi Tsumuraya, Fumihiro Ishikawa, Ikuo Fujii
Department of Biological Science, Graduate School of Science, Osaka Prefecture University
- P10** **Creation of Simultaneous Dual-Color Sensing System for Caspase Activities Using Split-Fluorescent Proteins**
Seiji Sakamoto, Anna Hugo, Mika Terauchi, Yasuyuki Araki, Takehiko Wada
Institute of Multidisciplinary Research for Advanced Materials, Tohoku University
- P11** **Cell Selective Drug Delivery Using Cell Penetrating α -Helix Peptides Conjugated with Gold Nanoparticles**
Hyejin Park, Hiroshi Tsutsumi, Hisakazu Mihara
Department of Bioengineering, Graduate School of Bioscience and Biotechnology, Tokyo Institute of Technology
- P12** **Development of the Time-Resolved CD System for Detection of Structural Change Dynamics of Biomolecules (XVII) - Study on the Dynamics of Photo-Induced Structural Change of Photoactive Yellow Protein by Time-Resolved CD Measurement -**
Makoto Murakami, Yoshiki Hamada, Yasuyuki Araki, Seiji Sakamoto, Mihoko Ui, Kazushi Kinbara, Takehiko Wada
Institute of Multidisciplinary Research for Advanced Materials, Tohoku University
- P13** **Development of New DNA Sensors Based on Unique Interactions between Hydrated Ionic Liquids and DNAs**
Hisae Tateishi-Karimaita¹, Naoki Sugimoto^{1,2}
1 Frontier Institute for Biomolecular Engineering Research (FIBER), Konan University
2 Faculty of Frontiers of Innovative Research in Science and Technology (FIRST), Konan University
- P14** **Suppression of Gene Expression Depending on Stability and Position of G-Quadruplexes in Open Reading Frame**
Tamaki Endoh¹, Naoki Sugimoto^{1,2}
1 Frontier Institute for Biomolecular Engineering Research (FIBER), Konan University
2 Faculty of Frontiers of Innovative Research in Science and Technology (FIRST), Konan University
- P15** **Construction of Stable DNA Three-way Junctions Based on Metal Complexation**
Yusuke Takezawa, Jean-Louis H. A. Duprey, Shuhei Yoneda, Mitsuhiko Shionoya
Department of Chemistry, Graduate School of Science, The University of Tokyo
- P16** **Self-localizing Ligands: New Tools for Conditional Control of Protein Translocation and Cell Signaling**
Manabu Ishida¹, Hideaki Watanabe², Kazumasa Takigawa², Yasutaka Kurishita³, Itaru Hamachi³, Shinya Tsukiji¹
1 Top Runner Incubation Center for Academia-Industry Fusion, Nagaoka University of Technology
2 Department of Bioengineering, Nagaoka University of Technology
3 Department of Synthetic Chemistry and Biological Chemistry, Graduate School of Engineering, Kyoto University
- P17** **Physiological Function and Some Properties of Possible Aerotaxis Transducer Htr8 from Extremely Halophilic Archaeon *Haloarcula japonica***

Toshitaka Matsubara¹, Tepei Tadikara¹, Yoshihiro Kubota¹, Takayuki Kosaka¹, Takatoshi Ozawa¹, Rie Yatsunami¹, Toshiaki Fukui¹, Kaoru Nakasone², Nobuyuki Fujita³, Mitsuo Sekine³, Tomonori Takashina⁴, Satoshi Nakamura¹

1 Department of Bioengineering, Tokyo Institute of Technology

2 Department of Biotechnology and Chemistry, Kinki University

3 National Institute of Technology and Evaluation

4 Department of Applied Bioscience, Toyo University

P18 Analysis of Carotenoids in *Haloarcula japonica* and Characterization of *Ha. japonica crtI* Homologs

Ai Ando¹, Rie Yatsunami¹, Shinichi Takaichi², Toshiaki Fukui¹, Kaoru Nakasone³, Nobuyuki Fujita⁴, Mitsuo Sekine⁴, Tomonori Takashina⁵, Satoshi Nakamura¹

1 Department of Bioengineering, Tokyo Institute of Technology

2 Nippon Medical School

3 Department of Biotechnology and Chemistry, Kinki University

4 National Institute of Technology and Evaluation

5 Department of Applied Bioscience, Toyo University

P19 Use of Poly(ethylene glycol) for the Study of Nucleic Acid Interactions

Shu-ichi Nakano^{1,2}, Hidenobu Hirayama¹, Yuuichi Kitagawa¹, Daisuke Yamaguchi¹, Hayato Sangan¹, Daisuke Miyoshi^{1,2}, Naoki Sugimoto^{1,2}

1 Faculty of Frontiers of Innovative Research in Science and Technology (FIRST), Konan University

2 Frontier Institute for Biomolecular Engineering Research (FIBER), Konan University

P20 Molecular Crowding Effects on DNA G-Quadruplex

Daisuke Miyoshi^{1,2}, Takeshi Fujimoto¹, Shu-ichi Nakano^{1,2}, Naoki Sugimoto^{1,2}

1 Faculty of Frontiers of Innovative Research in Science and Technology (FIRST), Konan University

2 Frontier Institute for Biomolecular Engineering Research (FIBER), Konan University

P21 Single Molecule Level DNA Analysis Based on Charge Transfer Measurement

Kiyohiko Kawai¹, Atsushi Maruyama², Tetsuro Majima¹

1 The Institute of Scientific and Industrial Research (SANKEN), Osaka University

2 Institute for Materials Chemistry and Engineering, Kyushu University

P22 The Invention of Intracellular Environmental Response Artificial Nucleic Acid (PRNA) and its Applications to Cancer Cell Specific Oligonucleotide Therapeutics

Uematsu Ryo¹, Mizutani Tatsuya¹, Sakamoto Seiji¹, ARAKI Yasuyuki¹, Yamayoshi Asako², Nakase Ikuhiko³, Murakami Akira², Futaki Shiroh³, Inoue Yoshihisa², Wada Takehiko¹

1 Institute of Multidisciplinary Research for Advanced Materials (IMRAM), Tohoku University

2 Kyoto Institute of Technology, 3Institute of Chemical Research, Kyoto University

P23 The Interaction between Sugar Linked Schiff Based Zn Complexes and DNA under the Crowded Conditions

Misaki Nakai¹, Akari Hirata¹, Hironobu Fukuda¹, Shigenobu Yano^{2,3}, Yasuo Nakabayasi¹

1 Materials and Bioengineering, Kansai University

2 Innovative Collaboration Center, Kyoto University

3 Graduate School of Material Science, Nara Institute of Science and Technology

P24 Development of Various Functional Fluorescent Molecules Based on the Construction of

Coumarin Library

Tomoya Hirano¹, Takuya Shiraishi¹, Haruka Sakai², Marie Kinoshita², Aya Tanatani², Hiroyuki Kagechika¹

1 Institutes of Biomaterials and Bioengineering, Tokyo Medical and Dental University

2 Department of Chemistry, Faculty of Science, Ochanomizu University

P25 A Method for Site-Specific Glycosylation of Proteins

Azusa Yakata¹, Kenichi Hatanaka², Takashi Ohtsuki¹

1 Graduate School of Science and Technology, Okayama University

2 Institute of Industrial Science, The University of Tokyo

P26 Synthesis of Proteins Including a Non-natural Amino Acid in Mammalian Cells

Takuma Ohtsuka¹, Satoshi Neki¹, Kodai Machida², Hiroaki Imataka², Takashi Ohtsuki¹

1 Dept. of Med. Bioeng. Sci., Okayama University

2 Dept. of Mat. Sci. and Chem., University of Hyogo

P27 Development of Hypoxia-Sensitive Fluorescence Probes for Multicolor Imaging

Kenjiro Hanaoka, Wen Piao, Tetsuo Nagano

Graduate School of Pharmaceutical Sciences, The University of Tokyo

P28 Development of a Red Fluorescence Probe for Monitoring Dynamics of Cytoplasmic Calcium Ion

Takahiro Egawa, Kenjiro Hanaoka, Yuichiro Koide, Tetsuo Nagano

Graduate School of Pharmaceutical Sciences, The University of Tokyo

P29 Role of Hydrogen Bonds in HutZ, Heme Degradation Enzyme from *Vibrio cholerae*

Yukari Sekine¹, Takeshi Uchida^{1,2}, Toshitaka Matsui³, Masao Ikeda-Saito³, Koichiro Ishimori^{1,2}

1 Graduate School of Chemical Sciences and Engineering, Hokkaido University

2 Department of Chemistry, Faculty of Science, Hokkaido University

3 Institute of Multidisciplinary Research for Advanced Materials, Tohoku University

P30 Structural Basis for the Transcriptional Regulation of Heme Homeostasis in *Lactococcus lactis*

Hitomi Sawai¹, Hiroshi Sugimoto², Masaru Yamanaka¹, Yoshitsugu Shiro², Shigetoshi Aono¹

1 Okazaki Institute for Integrative Bioscience and Institute for Molecular Science, National Institutes of Natural Sciences

2 RIKEN SPring-8 Center, Harima Institute

P31 An Artificial Metalloenzyme; Utilization of Mononuclear Metalloprotein Containing 4-His Metal Binding Motif

Nobutaka Fujieda, Ken-ichi Ishihama, Yuki Taniguchi, and Shinobu Itoh

Graduate School of Engineering, Osaka University

P32 Metal Cluster Formations and Their Functions in the Assembled Protein Cavity

Yuya Tanaka, Satoshi Abe, Takafumi Ueno

Graduate School of Bioscience and Biotechnology, Tokyo Institute of Technology

P33 Preparation of Photoinduced Hydrogen Evolution System Using Membrane Bound Hydrogenase with Phospholipid

Hidehiro Ito, Ichiro Okura, Toshiaki Kamachi

Department of Bioengineering, Tokyo Institute of Technology

- P34 Heme Demetallation Enzyme from *Vibrio cholerae***
Takeshi Uchida¹, Miho Sasaki², Koichiro Ishimori¹
1 Department of Chemistry, Faculty of Science, Hokkaido University
2 Department of Chemistry, School of Science, Hokkaido University
- P35 Cytoprotective Effects of Nonheme Iron and Manganese Complexes with Superoxide Dismutase Activity**
Yutaka Hitomi^{1,2}, Shoko Matsuda¹, Akiko Nomura², Yuji Iwamoto¹, Akihiro Kashida¹, Kengo Arakawa¹, Masashito Kodera^{1,2}
1 Department of Molecular Chemistry and Biochemistry, Doshisha University
2 Centre for Nanoscience Research, Doshisha University
- P36 Synthesis of Sugar Coated Lanthanide Nanoparticles for 5-Aminolevulinic Acid Mediated Near-Infrared Photodynamic Therapy**
Atsushi Shimoyama¹, Hiroya Watase¹, Yu Liu¹, Izumi Sotokawa¹, Shun-ichiro Ogura¹, Yuichiro Hagiya¹, Kiwamu Takahashi², Katsushi Inoue², Tohru Tanaka², Hideya Yuasa¹
1 Graduate School of Bioscience and Biotechnology, Tokyo Institute of Technology
2 SBI Pharmaceuticals Co., Ltd.
- P37 Unique Catalytic Activity of a Posttranslational Heterocyclase Revealed via an Artificial In Vitro Biosynthesis System**
Yuki Goto^{1,2}, Yumi Ito¹, Yasuharu Kato¹, Shotaro Tsunoda¹, Hiroaki Suga¹
1 Department of Chemistry, Graduate School of Science, The University of Tokyo
2 PRESTO, JST
- P38 Model of Avian Magnetic Compass: Artificial Radical Pair System Induced by Blue Light**
Yoshimi Oka
Frontier Research Core for Life Sciences, University of Toyama
- P39 Biosynthesis of Bacteriochlorophylls in Phototrophic Bacteria Performing Anoxygenic Photosynthesis**
Yusuke Tsukatani¹, Haruki Yamamoto², Jiro Harada³, Taichi Yoshitomi¹, Tadashi Mizoguchi¹, Yuichi Fujita², and Hitoshi Tamiaki¹
1 Graduate School of Life Sciences, Ritsumeikan University
2 Graduate School of Bioagricultural Science, Nagoya University
3 Department of Medical Biochemistry, Kurume University School of Medicine
- P40 Enhancement of the Hydrolytic Activity of Cellulose Nanocrystal Fibers by Novel Incubation Methods**
Hiromichi Okura¹, Masahisa Wada², Takeshi Serizawa¹
1 Department of Organic and Polymeric Materials, Tokyo Institute of Technology
2 Graduate School of Agricultural and Life Science, The University of Tokyo
- P41 Novel Strategy to Control Fluorescent Property of Asymmetric Xanthene Scaffold toward Rationally Designable Fluorescent Probe**
Eiji Nakata, Takashi Morii

- P42 Penetrating Live Cells via a Screw Structured Motif of Bacteriophage T4**
Nusrat J M Sanghamitra¹, Hiroshi Inaba², Dan Ohtan Wang¹, Suji Kanamaru³, Fumio Arisaka³, Kazuhiro Aiba¹, Norio Nakatsuji¹, Susumu Kitagawa^{1,2}, Takafumi Ueno^{1,3}
1 Institute of Integrated Cell-Material Science, Kyoto University
2 Graduate School of Engineering, Kyoto University
3 Graduate School of Bioscience and Biotechnology, Tokyo Institute of Technology
- P43 Interaction between Flavonoids and a Biomimetic Membrane**
Bindu Chahal, Mun'delanji C.Vestergaard, Tsuyoshi Yoda, Masahiro Takagi
School of Materials Science, Japan Advanced Institute of Science and Technology
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Hiroki Himeno, Tsutomu Hamada, Masahiro Takagi
School of Materials Science, Japan Advanced Institute of Science and Technology
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Shunsuke Furutani¹, Naoki Shozen¹, Hidenori Nagai², Yuri Aoyama¹, Izumi Kubo¹
1 Department of Bioinformatics, Faculty of Engineering, SOKA university
2 National Institute of Advanced Industrial Science and Technology (AIST)
- P46 On the Performance of Newly Developed Near Infrared Window-Emitting Firefly Luciferin Analogs for Deep Site Imaging**
Satoshi Iwano, Obata Rika, Satoshi Kojima, Takashi Hirano, Shojiro Maki, Haruki Niwa
Department of Engineering Science, The University of Electro communications
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Satoshi Abe, Takafumi Ueno
Department of Biomolecular Engineering, Tokyo Institute of Technology
- P48 Synthesis and Performance of a New Firefly Luciferin Analog Emitting Light within Near-Infrared (NIR) Window**
Kazuto Ito¹, Nobuo Kitada¹, Satoshi Iwano¹, Rika Obata¹, Shojiro Maki¹, Haruki Niwa¹, Tsuyoshi Saito², Shigeru Nishiyama²
1 Department of Engineering science, The University of Electro-Communications
2 Department of Chemistry, Faculty of Science and Technology, Keio University
- P49 Development of New Firefly Luciferin Analogs**
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Department of Engineering Science, The University of Electro-Communications
- P50 Synthesis of Fluorescent Unnatural Streptavidin and Application to Molecular Biosensor for Biotin**
Xianwei Zhu¹, Hiroaki Shinohara²
1 Graduate School of Innovative Life Science for Education, University of Toyama

P51 NMR Spectroscopic Approaches to the Conformational Dynamics of Oligosaccharides by Paramagnetic Tagging

Takumi Yamaguchi^{1,2,3}, Ying Zhang^{1,2,3}, Koichi Kato^{1,2,3}

1 Institute for Molecular Science and Okazaki Institute for Integrative Bioscience, National Institutes of Natural Sciences,

2 Sch. Phys. Sci., The Graduate University for Advanced Studies

3 Grad. Sch. Pharm. Sci., Nagoya City University

P52 Organic Nanotube Drug Nanocarrier

Wuxiao Ding, Mitsutoshi Masuda, Toshimi Shimizu

Nanotube Research Center, National Institute of Advanced Industrial Science and Technology (AIST)

P53 Design and Construction of Hydrogels Composed of Gold Nanoparticle and Filamentous Virus

Toshiki Sawada, Takeshi Serizawa

Department of Organic and Polymeric Materials, Tokyo Institute of Technology

P54 Shape-Dependent Cellular Uptakes of Gold Nanoparticles and Their Vaccine Immunogenicity

Tatsuya Matsunaga¹, Kenichi Niikura², Tadaki Suzuki³, Shintaro Kobayashi⁴, Hiroki Yamaguchi⁴, Takafumi Ninomiya⁵, Hirofumi Sawa⁴, Kuniharu Ijiro²

1 Graduate School of Chemical Sciences and Engineering, Hokkaido University

2 RIES, Hokkaido University

3 Dept. of Pathol., NIID

4 CZC, Hokkaido University

5 Sapporo Medical University School of Medicine

P55 Molecular Design of Synthetic Viral Capsids

Kazunori Matsuura¹, Yuusaku Mizuguchi², Nobuo Kimizuka²

1 Graduate School of Engineering, Tottori University

2 Graduate School of Engineering, Kyushu University

P56 Evaluation of Importance of Nuclear Import in Artificial Viral Gene Delivery Using Programmable Cellular Image Tracer

Takeshi Nagasaki¹, Takeshi Kawazu¹, Kazumi Hakamada², Yusuke Oda³, Jun Miyake², Kazuo Maruyama³

1 Graduate School of Eeg., Osaka City University

2 Graduate School of Eng. Sci., Osaka University

3 Faculty of Pharm. Sci., Teikyo University

P57 Characterization of Crystallizing Lysozyme Solutions by Forward Light Scattering

Takashi Wakamatsu¹, Hiroshi Koibuchi²

1 Department of Electrical and Electronics System Engineering, Ibaraki National College of Technology

2 Department of Mechanical and Systems Engineering, Ibaraki National College of Technology

P58 Application of Chaperone-like Activity of Amyloid Fibril of Peptides from α A-Crystallin for

Treatment of Neurodegenerative Disorders

Sayuri Fukuhara, Tatsutoshi Nishigaki, Nobuhiko Tsuchiya, Tomonori Waku and Naoki Tanaka

Department of Bio-molecular Engineering, Kyoto Institute of Technology

P59 PET-Dependent Fluorescence Sensing of Enzymatic Reactions Using Large and Tunable pKa Shifts of Aliphatic Amines

Yuji Oshikawa, Manabu Nakazono, Akio Ojida

Graduate School of Pharmaceutical Sciences, Kyushu University

P60 Design of a Highly Reactive Peptide Tag-Probe Pair for Selective Covalent Labeling of Cell Proteins

Shigekazu Tabata¹, Munetsugu Kido¹, Kazushi Tani¹, Itaru Hamachi², Akio Ojida¹

1 Graduate School of Pharmaceutical Sciences, Kyushu University

2 Department of Synthetic Chemistry and Biological Chemistry, Kyoto University

P61 Red/Near-Infrared Fluorescent Ar,O-BODIPY Dyes Bearing a Water-Soluble Tag: Their Application to Cellular Staining

Masaki Yamamura, Shinya Yazaki, Michio Shimamura, Tatsuya Nabeshima

Graduate School of Pure and Applied Sciences & Tsukuba Research Center for Interdisciplinary Materials Science, University of Tsukuba

P62 Unidirectional Cloning with a Sandwiched Zinc Finger Nuclease

Tomoaki Mori^{1,2}, Kazuki Shinomiya¹, Yasuhiro Aoyama^{1,3}, Takashi Sera^{1,2}

1 Department of Synthetic Chemistry and Biological Chemistry, Graduate School of Engineering, Kyoto University

2 Graduate School of Natural Science and Technology, Okayama University

3 Faculty of Science and Engineering, Doshisha University.

P63 Encapsulation of Drugs in Virus-like Particles and Their Glutathione-Triggered Release in Cells

Kenichi Niikura¹, Naotoshi Sugimura², Hirofumi Sawa³, Kuniharu Ijiri¹

1 Research Institute for Electronic Science, Hokkaido University

2 Graduate School of Chemical Sciences and Engineering, Hokkaido University

3 Research Center for Zoonosis Control, Hokkaido University