

第 44 回国際核酸化学シンポジウム  
日本核酸化学会第 1 回年会

# ISNAC 2017

The 44<sup>th</sup> International Symposium on Nucleic Acids Chemistry 2017  
The 1<sup>st</sup> Annual Meeting of Japan Society of Nucleic Acids Chemistry

## Program & Abstracts

**Period** November 14 (Tue)–16 (Thu), 2017

**Venue** Tokyo University of Science  
Katsushika Campus Library Hall

**Organizer** Takeshi Wada (Tokyo University of Science)

# ISNAC 2017

**The 44<sup>th</sup> International Symposium on Nucleic Acids Chemistry 2017**

**The 1<sup>st</sup> Annual Meeting of Japan Society of Nucleic Acids Chemistry**

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Venue

**Tokyo University of Science,  
Katsushika Campus Library Hall**

6-3-1 Niijuku, Katsushika-ku, Tokyo 125-8585 JAPAN

Symposium Organizer

Prof. **Takeshi Wada**

Department of Medicinal and Life Science

Faculty of Pharmaceutical Sciences

Tokyo University of Science

Sponsored by

**Japan Society of Nucleic Acids Chemistry**

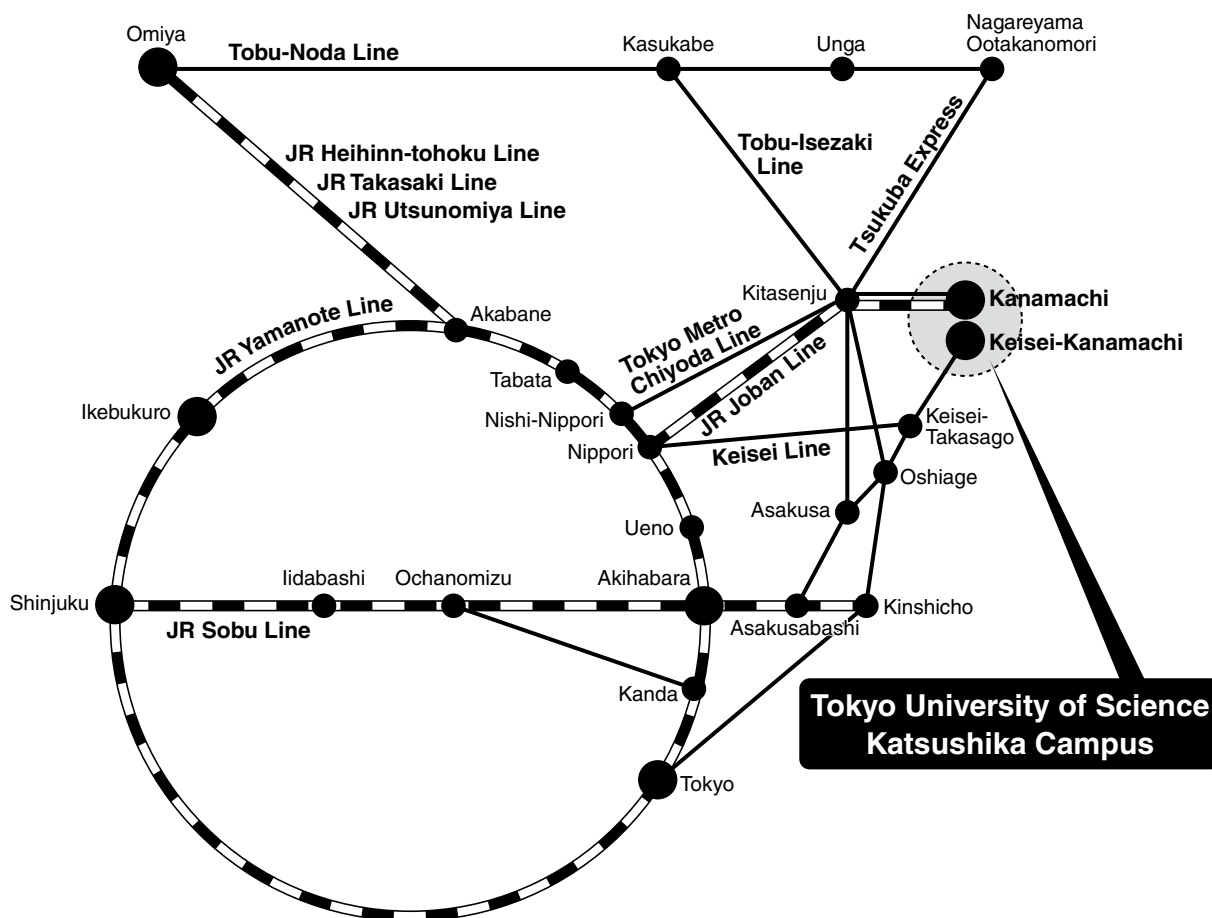
## **Executive Committee for ISNAC2017**

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## Around the Venue



### ■ From Narita Airport

Take the Keisei Honsen/main Line to Keisei-Takasago Station.  
Transfer to the Keisei Kanamachi Line and take it to Keisei-Kanamachi Station.  
Travel time : about 1 hour 29 minutes.

### ■ From Haneda Airport

Take the Tokyo Monorail to Hamamatsucho Station.  
Transfer to the JR Yamanote Line / Keihin-Tohoku Line and take it to Nishi-Nippori Station.  
Transfer to the Tokyo Metro Chiyoda Line and take it to Kanamachi Station.  
Travel time : about 1 hour 14 minutes.

Take the Keikyu Line to Sengakuji Station. Transfer to the Toei Asakusa Line and take it to Keisei-Takasago Station (via Oshiage Station).

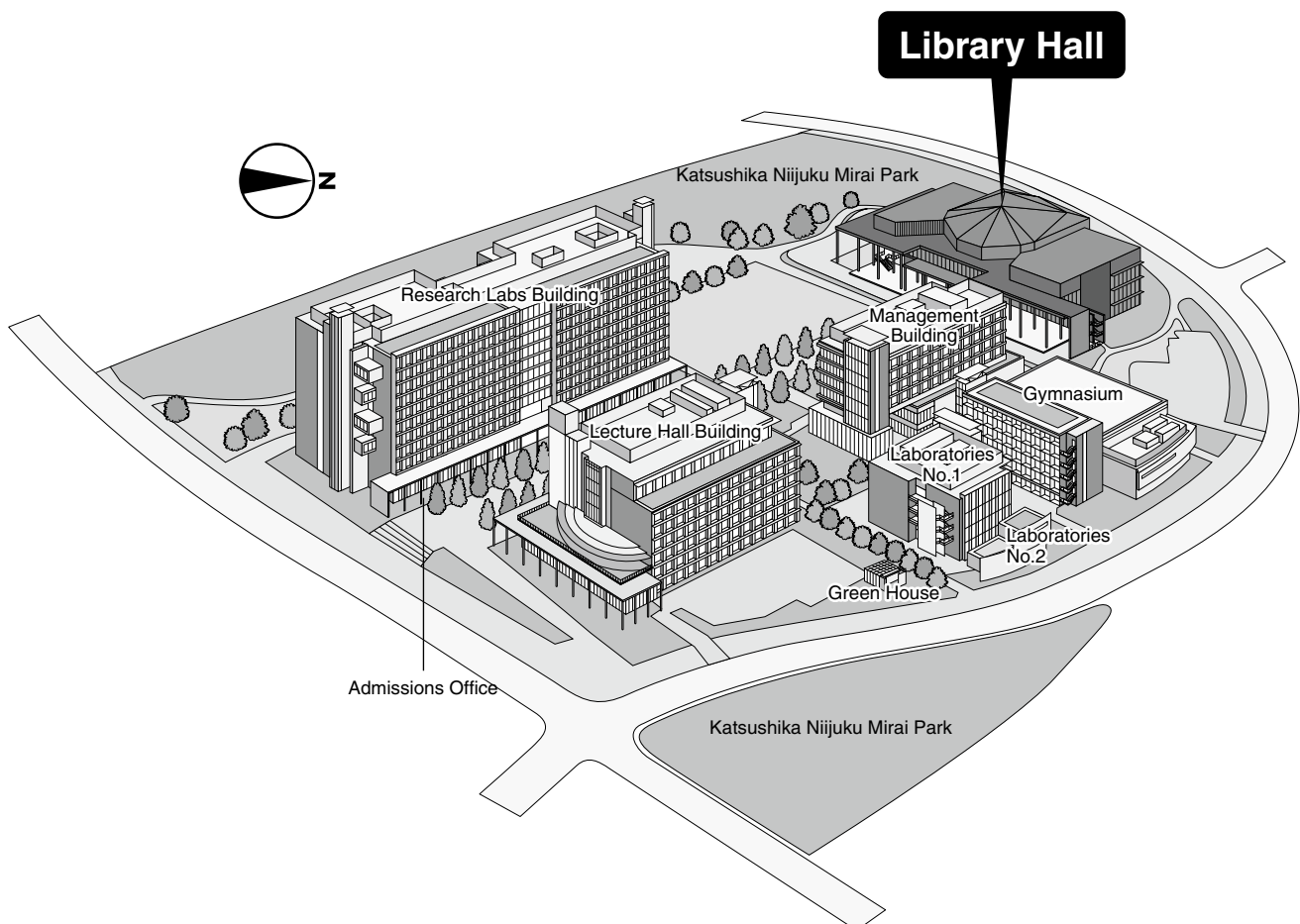
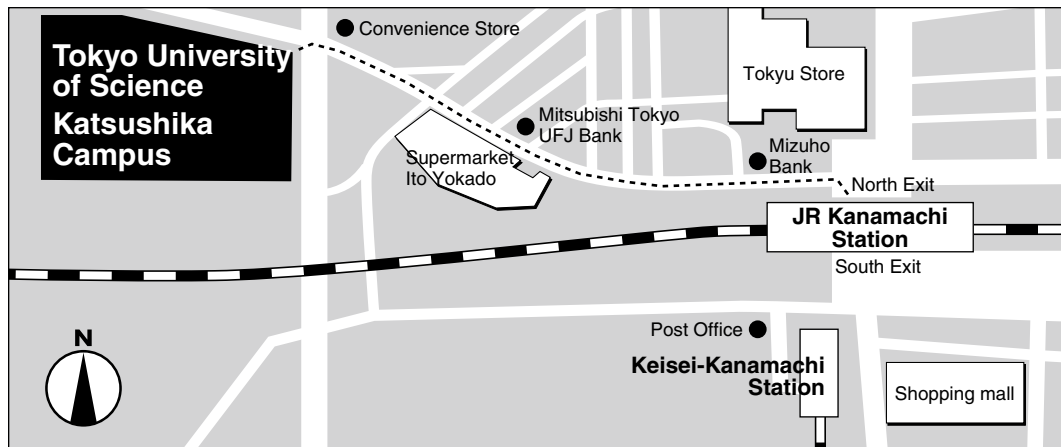
### ■ From Tokyo Station

Take the JR Yamanote Line / Keihin-Tohoku Line to Nishi-Nippori Station.  
Transfer to the Tokyo Metro Chiyoda Line and take it to Kanamachi Station.  
Travel time : about 33 minutes.

### ■ From Ueno Station

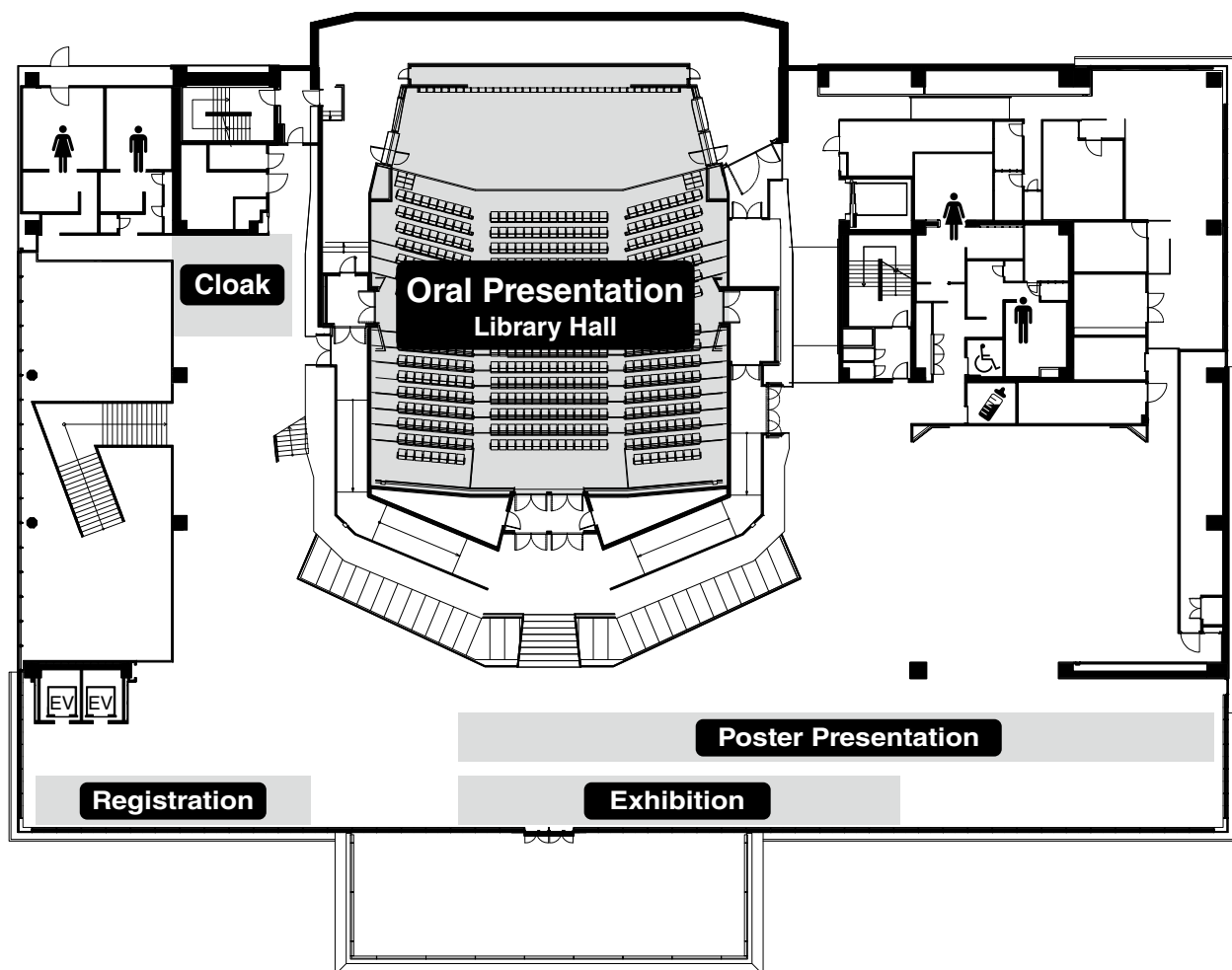
Take the JR Joban Line (rapid service) to Kita-Senju Station.  
Transfer to the JR Joban Line (local service) and take it to Kanamachi Station.  
Travel time : about 30 minutes.

# Map of the Venue



## Library, Tokyo University of Science

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# Program

## Day 1: November 14 (Tue)

9:00-10:00	JSNAC General Meeting		
10:00-10:10	Opening Remarks		
10:10-10:40	<b>Memorial Lecture for the Late Prof. Morio Ikehara</b> Eiko Ohtsuka, Shigenori Iwai		
10:40-11:05	Break		
11:05-11:45	<b>Invited Lecture</b> Chair: Shigenori Iwai Osaka Univ.	<b>IL-01</b>	Peptide-PMO conjugates for the treatment of neuromuscular diseases <u>Michael Gait</u> MRC Senior Staff and Programme Leader, MRC Laboratory of Molecular Biology
11:45-12:00	<b>Oral Presentations</b> Chair: Shigeori Takenaka Kyushu Inst. of Tech.	<b>10-01</b>	Thiol Modified Naphthyridine Carbamate Dimer Accumulated on CGG Repeat DNA <u>Takeshi Yamada</u> , Shouta Miki, Kazuhiko Nakatani Department of Regulatory Bioorganic Chemistry, The Institute of Scientific and Industrial Research (ISIR), Osaka University.
12:00-12:15		<b>10-02</b>	RNA Interference by Intracellular Buildup of siRNA <u>Yasuaki Kimura</u> <sup>1)</sup> , Hideto Maruyama <sup>2)</sup> , Ryota Oikawa <sup>1)</sup> , Genichiro Tsuji <sup>1)</sup> , Shizuya Yoshinaga <sup>1)</sup> , Naoko Abe <sup>1)</sup> , Satoshi Shuto <sup>2)</sup> , Akira Matsuda <sup>2)</sup> , Yoshihiro Ito <sup>3)</sup> , Hiroshi Abe <sup>1)</sup> 1) Graduate School of Science, Nagoya University, 2) Graduate School of Pharmaceutical Sciences, Hokkaido University, 3) RIKEN Center for Emergent Matter Science
12:15-12:30		<b>10-03</b>	Selective alkylation of T-T mismatched bases in DNA <u>Kazumitsu Onizuka</u> <sup>1)</sup> , Akira Usami <sup>1)</sup> , Yudai Yamaoki <sup>2)3)</sup> , Tomohito Kobayashi <sup>1)</sup> , Madoka E. Hazemi <sup>1)</sup> , Tomoko Chikuni <sup>1)</sup> , Masato Katahira <sup>2)3)</sup> , Fumi Nagatsugi <sup>1)</sup> 1) Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, 2) Institute of Advanced Energy, Kyoto University, 3) Graduate School of Energy Science, Kyoto University
12:30-12:45		<b>10-04</b>	Specific Detection of 8-oxo-dGTP in Aqueous Media using Cyclen-Metal Complexes <u>Yasufumi Fuchi</u> , Takashi Fukuda, Shigeki Sasaki Graduate School of Pharmaceutical Sciences, Kyushu University
12:45-13:35	Lunch Break		
13:35-15:05	Poster Presentations (Odd Numbers)		
15:05-15:20	<b>Oral Presentations</b> Chair: Takehiko Wada Tohoku Univ.	<b>10-05</b>	Construction of Topologically Interlocked DNAs Inside a DNA Scaffold <u>Arivazhagan Rajendran</u> <sup>1)</sup> , Seo-jeong Park <sup>2)</sup> , Eiji Nakata <sup>1)</sup> , Youngjoo Kwon <sup>2)</sup> , Takashi Morii <sup>1)</sup> 1) Institute of Advanced Energy, Kyoto University, 2) College of Pharmacy, Ewha Womans University
15:20-15:35		<b>10-06</b>	Novel DNA aptamer assemblies that control growth factor signaling and cellular functions <u>Ryosuke Ueki</u> <sup>1)</sup> , Saki Atsuta <sup>1)</sup> , Ayaka Utsumi <sup>1)</sup> , Yohei Hayashi <sup>2)</sup> , Shinsuke Sando <sup>1)</sup> 1) Department of Chemistry and Biotechnology, Graduate School of Engineering, The University of Tokyo, 2) Laboratory of Gene Regulation, Faculty of Medicine, University of Tsukuba

15:35-15:50	<b>Oral Presentations</b> Chair: Akihiro Ohkubo Tokyo Inst. of Tech.	<b>1O-08</b> Development of Photoresponsive DNA Nanostructure Integrated Nucleic Acid Medicine <u>Seigi Yamamoto</u> , Noriko Saito-Tarashima, Noriaki Minakawa Graduate School of Pharmaceutical Science, Tokushima University
15:50-16:05		<b>1O-09</b> Observation of biophysical property of G-quadruplex in a confined nanospace <u>Masayuki Endo</u> <sup>1)2)</sup> , Prakash Shrestha <sup>3)</sup> , Sagun Jonchhe <sup>3)</sup> , Tomoko Emura <sup>2)</sup> , Kumi Hidaka <sup>2)</sup> , Hiroshi Sugiyama <sup>1)2)</sup> , Hanbin Mao <sup>3)</sup> 1) Institute for Integrated Cell-Material Sciences, Kyoto University, 2) Department of Chemistry, Kyoto University, 3) Department of Chemistry and Biochemistry, Kent State University
16:05-16:30	<b>Break</b>	
16:30-17:10	<b>Invited Lecture</b> Chair: Hiroyuki Asanuma Nagoya Univ.	<b>IL-02</b> PyrrolidinyI peptide nucleic acid: A conformationally constrained PNA with unusual hybridization properties <u>Tirayut Vilaivan</u> Department of Chemistry, Faculty of Science, Chulalongkorn University
17:10-17:25	<b>Oral Presentations</b> Chair: Kazushige Yamana Univ. of Hyogo	<b>1O-10</b> Chimeric RNA oligonucleotides: Synthesis and function as mRNA in cell-free translation reactions <u>Tomoko Fujino</u> <sup>1)</sup> , Takeru Suzuki <sup>2)</sup> , Koudai Okada <sup>2)</sup> , Kanako Kogashi <sup>2)</sup> , Ken-ichi Yasumoto <sup>3)</sup> , Kazuhiro Sogawa <sup>3)</sup> , Hiroyuki Isobe <sup>1)4)</sup> 1) Department of Chemistry, The University of Tokyo, 2) Department of Chemistry, Tohoku University, 3) Department of Biomolecular Sciences, Tohoku University, 4) JST ERATO, Isobe Degenerate $\pi$ -Integration Project
17:25-17:40		<b>1O-11</b> Live-cell Imaging of an Endogenous Protein with a Small Molecule <u>Kathleen Beverly Pe</u> <sup>1)</sup> , Kenji Yatsuzuka <sup>1)</sup> , Motonari Uesugi <sup>1)2)</sup> , Shin-ichi Sato <sup>1)</sup> 1) Institute for Chemical Research, Kyoto University, 2) Institute for Integrated Cell-Material Sciences (WPI-iCeMS), Kyoto University
17:40-17:55		<b>1O-12</b> Base modification of RNA to enhance the performance of RNA tools in cells <u>Yi Kuang</u> , Callum J.C. Parr, Shunsuke Wada, Kaoru R. Komatsu, Hirohide Saito Center for iPS Cell Research and Application, Kyoto University



## Day 2: November 15 (Wed)

9:00-9:40	<b>Invited Lecture</b> Chair: Shigeki Sasaki Kyushu Univ.	<b>IL-03</b> Chemically modified siRNAs for human therapeutics: From Principles to Patients <u>Muthiah Manoharan</u> Alnylam Pharmaceuticals
9:40-9:55	<b>Break</b>	
9:55-10:10	<b>Oral Presentations</b> Chair: Yoshihito Ueno Gifu Univ.	<b>20-01</b> Improved DNA scission activity of <i>Thermus thermophilus</i> Argonaute with artificial nucleic acids <u>Yuichiro Aiba</u> <sup>1)</sup> , Kanae Yamaguchi <sup>1)</sup> , Osami Shoji <sup>1)</sup> , Yoshihito Watanabe <sup>2)</sup> 1) Department of Chemistry, Graduate School of Science, Nagoya University, 2) Research Center for Materials Science, Nagoya University
10:10-10:25		<b>20-03</b> Cationic polymer improves cooperativity of allosteric nucleic acid enzyme <u>Orakan Hanpanich</u> , Naohiko Shimada, Atsushi Maruyama Tokyo Institute of Technology, Department of Bioscience and Biotechnology
10:25-10:40	<b>Oral Presentations</b> Chair: Atsushi Maruyama Tokyo Inst. of Tech.	<b>20-04</b> Specificity modulation of Thioflavin T as a fluorescent probe for bioanalysis <u>Yuka Kataoka</u> , Hiroto Fujita, Seiji Tobita, Masayasu Kuwahara Graduate School of Science and Technology, Gunma University
10:40-10:55		<b>20-05</b> Polymerase Synthesis of Ligand-bearing Unnatural Oligonucleotides toward Metal-mediated DNA Assembly <u>Yusuke Takezawa</u> , Teruki Kobayashi, Mitsuhiko Shionoya Department of Chemistry, Graduate School of Science, The University of Tokyo
10:55-11:05	<b>Break</b>	
11:05-11:45	<b>Invited Lecture</b> Chair: Junji Kawakami Konan Univ.	<b>IL-04</b> Noncanonical DNA: structure, function and modulation <u>Kyeong Kyu Kim</u> <sup>1)2)</sup> 1) Department of Molecular Cell Biology, Sungkyunkwan University School of Medicine, 2) Department of Health Sciences and Technology, Samsung Advanced Institute for Health Sciences and Technology, Sungkyunkwan University
11:45-12:00	<b>Break</b>	
12:00-12:15	<b>Oral Presentations</b> Chair: Hirohide Saito Kyoto Univ.	<b>20-07</b> Novel RNA Architecture Formed by Eight RNA Strands Containing Fourteen G- A- and U-tetrads <u>Chao-Da Xiao</u> , Takumi Ishizuka, Yan Xu Division of Chemistry, Department of Medical Sciences, Faculty of Medicine, University of Miyazaki,
12:15-12:30		<b>20-08</b> Interaction between non-coding RNA and TLS/FUS protein, and structural change <u>Tsukasa Mashima</u> <sup>1)2)</sup> , Takashi Nagata <sup>1)2)</sup> , Nesreen Hamad <sup>1)2)</sup> , Shunsuke Ozawa <sup>1)2)</sup> , Yudai Yamaoki <sup>1)</sup> , Keiko Kondo <sup>1)</sup> , Hiroki Watanabe <sup>3)4)</sup> , Ryoma Yoneda <sup>5)</sup> , Takayuki Uchihashi <sup>3)</sup> , Riki Kurokawa <sup>5)</sup> , Masato Katahira <sup>1)2)</sup> 1) Institute of Advanced Energy, Kyoto University, 2) Graduate School of Energy Science, Kyoto University, 3) Graduate School of Science, Nagoya University, 4) Research Institute of Biomolecule Metrology Co., Ltd., 5) Research Center for Genomic Medicine, Saitama Medical University
12:30-12:45		<b>20-09</b> Optical Absorption Spectroscopy of Double-Stranded DNA-Encased Single-Walled Carbon Nanotubes Hybrids <u>Lijun Wang</u> , Kazuo Umemura Department of Physics, Tokyo University of Science

12:45-13:35	<b>Lunch Break</b>		
13:35-15:05	<b>Poster Presentations (Even Numbers)</b>		
15:05-15:45	<b>Invited Lecture</b> Chair: Takashi Morii Kyoto Univ.	<b>IL-05</b>	Development of novel oligonucleotides as potential molecules for precision therapy of neuromuscular diseases <u>Rakesh Naduvile Veedu</u> <sup>1)2)</sup> 1) Centre for Comparative Genomics, Murdoch University, 2) Institute for Neurological and Translational Science
15:45-16:00	<b>Oral Presentations</b> Chair: Hiroshi Abe Nagoya Univ.	<b>20-10</b>	Nucleobase azide–ethynylribose click chemistry: stabilizing oligonucleotide duplexes and stem-loop structures <u>Yoshiaki Kitamura</u> <sup>1)</sup> , Ryo Asakura <sup>1)</sup> , Koki Terazawa <sup>1)</sup> , Aya Shibata <sup>1)</sup> , Masato Ikeda <sup>1)2)</sup> , Yukio Kitade <sup>1)3)</sup> 1) Graduate School of Engineering, Gifu University, 2) United Graduate School of Drug Discovery and Medical Information Sciences, Gifu University, 3) Faculty of Engineering, Aichi Institute of Technology
16:00-16:15		<b>20-11</b>	Topological effect of non-canonical DNA structures on DNA replication <u>Shuntaro Takahashi</u> <sup>1)</sup> , John A. Brazier <sup>2)</sup> , Naoki Sugimoto <sup>1)3)</sup> 1) Frontier Institute for Biomolecular Engineering Research (FIBER), Konan University, 2) Department of Pharmacy, University of Reading, 3) Graduate School of Frontiers of Innovative Research in Science and Technology (FIRST), Konan University
16:15-16:30		<b>20-12</b>	Circularization of short DNA/RNA — A simple and interesting story of intermolecular and intramolecular Ran An <sup>1)2)</sup> , Qi Li <sup>1)</sup> , Yiqiao Fan <sup>1)</sup> , Kai Cheng <sup>1)</sup> , Yixiao Cui <sup>1)</sup> , Tiange Hanxu <sup>1)</sup> , Yaping Zhang <sup>1)</sup> , Makoto Komiyama <sup>1)3)</sup> , <u>Xingguo Liang</u> <sup>1)2)</sup> 1) College of Food Science and Engineerig, Ocean Universtity of China, 2) Laboratory for Marine Drugs and Bioproducts of Qingdao National Laboratory for Marine Science and Technology, 3) National Institute for Materials Science (NIMS)
16:30-16:40	<b>Break</b>		
16:40-17:20	<b>Invited Lecture</b> Chair: Takeshi Wada Tokyo Univ. of Science	<b>IL-06</b>	Pharmacologic Properties of Stereopure Oligonucleotides <u>Chandra Vargeese</u> <sup>1)2)</sup> Drug Discovery, Wave Life Sciences

17:20-17:35	<b>Oral Presentations</b> Chair: Noriaki Minakawa Tokushima Univ.	<b>20-13</b> Design and synthesis of bio-labile protecting groups for oligonucleotide prodrugs <u>Hisao Saneyoshi</u> , Takayuki Ohta, Kazuma Terasawa, Yuta Yamamoto, Akira Ono Department of Material and Life Chemistry, Faculty of Engineering, Kanagawa University
17:35-17:50		<b>20-14</b> Creation of Safe and Secure Cancer Cell/Tissue Selective Oligonucleotide Therapeutics Strategy with Intracellular Condition Responsible Peptide Ribonucleic Acids (PRNAs) and MMP Activatable PEG/Arg-Conjugated Smart Delivery System <u>Takehiko Wada</u> <sup>1)</sup> , Masato Inagaki <sup>1)</sup> , Hiroka Sugai <sup>1)</sup> , Ryohei Uematsu <sup>1)</sup> , Mitsuo Asai <sup>1)</sup> , Moeka Matsushima <sup>1)</sup> , Ikuhiko Nakase <sup>2)</sup> , Asako Yamayoshi <sup>3)</sup> , Seiji Sakamoto <sup>1)</sup> , Satoru Ishibashi <sup>4)</sup> , Yasuyuki Araki <sup>1)</sup> , Takanori Yokota <sup>4)</sup> 1) Institute of Multidisciplinary Research for Advanced Materials (IMRAM), Tohoku University, 2) Nanoscience and Nanotechnology Research Center, Osaka Prefecture University, 3) NHakubi Center & Department of Science, Kyoto University, 4) Department of Neurology and Neurological Science, Tokyo Medical and Dental University
19:00-	<b>Exchange Meeting</b>	Asakusa View Hotel

### Day 3: November 16 (Thu)

9:00-9:40	<b>Invited Lecture</b> Chair: Akira Ono Kanagawa Univ.	<b>IL-07</b> High-affinity and high-stability DNA aptamer generation by genetic alphabet expansion and mini-hairpin DNA technologies <u>Ichiro Hirao</u> Institute of Bioengineering and Nanotechnology
9:40-9:55	<b>Oral Presentations</b> Chair: Akimitsu Okamoto Univ.of Tokyo	<b>30-01</b> Aggregate formation of RNA duplex with BODIPY units and its application to gene regulation <u>Kazuhito Tanabe</u> , Ryohsuke Kurihara, Wataru Asahi College of Science and Engineering, Aoyama Gakuin University
9:55-10:10		<b>30-02</b> Efficient initiation of <i>in vitro</i> mRNA transcription with Cap 0, Cap 1 and Cap 2 oligonucleotide primers <u>Alexandre Lebedev</u> , Dongwon Shin, Krist T. Azizian, Sabrina Shore, Jordana M. Henderson, Anton P. McCaffrey, Richard I. Hogrefe Trilink Biotechnologies, San Diego, USA
10:10-10:20	<b>Break</b>	
10:20-11:00	<b>Invited Lecture</b> Chair: Takeshi Wada Tokyo Univ. of Science	<b>IL-08</b> Use of nucleic acid chemistry and DNA chip to synthesize and select antibacterial glycoclusters <u>François Morvan</u> Institut des Biomolécules Max Mousseron, UMR 5247, Université de Montpellier, CNRS, ENSCM, 34095
11:00-11:15	<b>Oral Presentations</b> Chair: Shinsuke Sando Univ. of Tokyo	<b>30-03</b> DNA Nanotechnology and Next Gen Sequencing-Based Approach to Inferring Spatial Properties of Nanoscale Structures <u>Ian Hoffeecker</u> , Giulio Bernardinelli, Björn Högberg Department of Medical Biochemistry and Biophysics, Karolinska Institutet
11:15-11:30		<b>30-04</b> Synthesis and Properties of Cyclic Oligonucleotides Containing Acyl Groups <u>Tanasak Kaewsomboon</u> , Shuhei Nishizawa, Ritsu Hashimoto, Yu Miyake, Takashi Kanamori, Hideya Yuasa, Akihiro Ohkubo Department of Life Science and Technology, School of Life Science and Technology, Tokyo Institute of Technology
11:30-11:40	<b>Break</b>	
11:40-12:20	<b>Invited Lecture</b> Chair: Masayuki Fujii Kindai Univ.	<b>IL-09</b> Application of Staudinger Reaction for the Synthesis of DNA/RNA Analogues Modified at the Phosphorus <u>Dmitry Stetsenko</u> <sup>1)2)</sup> , Boris Chelobanov <sup>1)2)</sup> , Ekaterina Burakova <sup>1)</sup> , Darya Prokhorova <sup>1)2)</sup> , Polina Chalova <sup>2)</sup> , Alyona Zakhryamina <sup>2)</sup> , Anna Ilyina <sup>2)</sup> , Kristina Klabenkova <sup>2)</sup> , Svetlana Vasilyeva <sup>1)</sup> , Alesya Fokina <sup>1)</sup> 1) Institute of Chemical Biology and Fundamental Medicine, Siberian Branch of the Russian Academy of Sciences, 2) Novosibirsk State University
12:20-12:35	<b>Oral Presentations</b> Chair: Toshihiko Ihara Kumamoto Univ.	<b>30-05</b> PCR-free miRNA quantification by pyrene-modified probes <u>Akio Kobori</u> <sup>1)</sup> , Yu Watari <sup>1)</sup> , Kosuke Nakajima <sup>1)</sup> , Asako Yamayoshi <sup>2)</sup> , Akira Murakami <sup>3)</sup> 1) Kyoto Institute of Technology, 2) The Hakubi Center for Advanced Research, 3) Kyoto Pharmaceutical University
12:35-12:50		<b>30-06</b> Lead(II)-Specific Peroxidase Activity of Split Quadruplex DNA-Hemin Complex to Detect Target Gene <u>Ryo Akiba</u> , <u>Hidetaka Torigoe</u> Department of Applied Chemistry, Faculty of Science, Tokyo University of Science

12:50-13:40	<b>Lunch Break</b>		
13:40-14:20	<b>Invited Lecture</b> Chair: Naoki Sugimoto Konan Univ.	<b>IL-10</b>	<b>Targeting DNA with ruthenium complexes</b> <u>Christine Cardin</u> University of Reading, Department of Chemistry
14:20-14:35	<b>Oral Presentations</b> Chair: Kohji Seio Tokyo Inst. of Tech.	<b>30-07</b>	<b>The effects of CpG methylation on the structure and the binding property against proteins of G-quadruplex forming DNAs</b> <u>Kazunori Ikebukuro</u> <sup>1)</sup> , Shiori Saito <sup>1)</sup> , Wataru Yoshida <sup>2)</sup> , Kaori Tsukakoshi <sup>1)</sup> 1) Department of Biotechnology and Life Science, Graduate School of Engineering, Tokyo University of Agriculture and Technology, 2) School of Bioscience and Biotechnology, Tokyo University of Technology
14:35-14:50		<b>30-08</b>	<b>Recognition of c-di-GMP by a riboswitch represses translation through masking the SD element distant from the aptamer domain</b> <u>Yoshiya Ikawa</u> <sup>1)</sup> , Saki Inuzuka <sup>1)</sup> , Hitoshi Kakizawa <sup>1)</sup> , Kei-ichiro Nishimura <sup>2)</sup> , Hiroyuki Furuta <sup>2)</sup> , Shigeyoshi Matsumura <sup>1)</sup> 1) Graduate School of Science & Engineering, University of Toyama, 2) Graduate School of Engineering, Kyushu University
14:50-15:05		<b>30-09</b>	<b>Design of naphthalene diimide carrying preference for parallel tetraplex nucleic acid</b> <u>Shigeori Takenaka</u> <sup>1)2)</sup> , Yuka Sato <sup>1)</sup> , Hiroki Minematsu <sup>1)</sup> , Shinobu Sato <sup>1)2)</sup> 1) Department of Applied Chemistry, Kyushu Institute of Technology, 2) Research Center for Biomicrosensing Technology, Kyushu Institute of Technology
15:05-15:20		<b>30-10</b>	<b>Crystal structure of the human ribosomal decoding A site in complex with G418 possessing readthrough activity</b> <u>Hiroki Kanazawa</u> <sup>1)</sup> , Nao Tsurumi <sup>2)</sup> , Jiro Kondo <sup>1)2)</sup> 1) Graduate School of Science and Technology, Sophia University, 2) Department of Materials and Life Sciences, Sophia University
15:20-15:35	<b>Oral Presentations</b> Chair: Fumi Nagatsugi Tohoku Univ.	<b>30-11</b>	<b>Synthesis of Oligodeoxyribonucleotides Containing 2-<i>N</i>-Heteroarylguanine Residues and Their Effect on Higher-order Structure Stability</b> <u>Takeshi Inde</u> , Yoshiaki Masaki, Astuya Maruyama, Yu Ito, Naoaki Makio, Yuya Miyatake, Takahito Tomori, Mitsuo Sekine, Kohji Seio Department of Life Science and Technology, Tokyo Institute of Technology
15:35-15:50		<b>30-12</b>	<b>Construction of a bienzyme immobilizing microelectrode by cross-linked DNA scaffolds and its application to analysis of cellular metabolism</b> <u>Yu Hirano</u> , Masaki Ikegami, Keiko Kowata, Yasuo Komatsu Bioproduction Research Institute, National Institute of Advanced Industrial Science and Technology (AIST)
15:50-	<b>Closing Remarks</b>		

- P115** Immunochemical Sensing of Epigenomic Modification Using An Alkylating Immobilization Linker  
Takaaki Kurinomaru, Naoshi Kojima, Ryoji Kurita  
 Biomedical Research Institute, National Institute of Advanced Industrial Science and Technology (AIST)
- P116** Evaluation of Alkylating PI Polyamide Conjugates Targeting RUNX Binding Sites  
Rina Maeda<sup>1)</sup>, Gengo Kashiwazaki<sup>2)</sup>, Shunsuke Obata<sup>2)</sup>, Toshikazu Bando<sup>2)</sup>, Hiroshi Sugiyama<sup>2)3)</sup>  
 1) Graduate School of Advanced Integrated Studies in Human Survivability, Kyoto University, 2) Department of Chemistry, Graduate School of Science, Kyoto University, 3) Institute for Integrated Cell-Material Sciences (iCeMS), Kyoto University
- P117** Gultathione-labile protecting groups for phosphodiester moieties  
Takayuki Ohta, Yuta Yamamoto, Akira Ono, Hisao Saneyoshi  
 Department of Material and Life Chemistry, Faculty of Engineering, Kanagawa University
- P118** Creation of intracellular condition-responsible oligonucleotide therapeutics system with Peptide Ribonucleic Acids (PRNAs)-DNA chimera: Synthesis of chimeric PRNA-DNA derivatives incorporated with PRNA-Phenylboronic acid unit  
Yuri Fukuyo<sup>1)</sup>, Masahito Inagaki<sup>1)</sup>, Ryohei Uematsu<sup>1)</sup>, Mitsuo Asai<sup>1)</sup>, Daisuke Unabara<sup>1)</sup>, Yasuyuki Araki<sup>1)</sup>, Seiji Sakamoto<sup>1)</sup>, Satoru Ishibashi<sup>2)</sup>, Takanori Yokota<sup>2)</sup>, Takehiko Wada<sup>1)</sup>  
 1) Institute of Multidisciplinary Research for Advanced Materials (IMRAM), Tohoku University, 2) Department of Neurology and Neurological Science, Tokyo Medical and Dental University
- P119** The development of SiO<sub>2</sub> nanoparticle delivery system for nucleotide prodrugs to increase their antiviral and anticancer activity  
Svetlana Vasilyeva<sup>1)</sup>, Alexander Shtil<sup>2)</sup>, Albina Petrova<sup>2)</sup>, Sergei Balakhnin<sup>3)</sup>, Polina Achigecheva<sup>4)</sup>, Vladimir Silnikov<sup>1)</sup>, Inga Grin<sup>1)</sup>, Dmitry Stetsenko<sup>1)</sup>  
 1) Institute of Chemical Biology and Fundamental Medicine, Siberian Branch of the Russian Academy of Sciences, 2) N. N. Blokhin Cancer Research Centre, Moscow, Russia, 3) Institute of Molecular Pathology and Pathomorphology, Novosibirsk, Russia, 4) State Research Centre of Virology and Biotechnology "Vector", Koltsovo, Russia
- P120** Synthesis of RNA Having an Acetylamino Group at the 5'-End to Prepare an siRNA Modified at the 5'-Terminus  
Reiko Iwase, Tsuyohito Maekawa  
 Graduate School of Science & Engineering, Teikyo University of Science
- P121** Synthesis of a novel phosphotriester backbone for intracellularly activated prodrugs  
Junichiro Yamamoto, Kenji Hagiwara, Takashi Sawada, Masakazu Honma, Atsushi Miwa, Toshiyuki Atsumi, Fumikazu Shinohara  
 Innovative Technology Laboratories, Kyowa Hakko Kirin Co., Ltd.
- P122** Effects of PEG-modification on the endo-position of an antisense oligonucleotide on tumor accumulation and tumor permeability  
Kenji Hagiwara<sup>1)</sup>, Kana Kurihara<sup>2)</sup>, Masakazu Honma<sup>1)</sup>, Junichiro Yamamoto<sup>1)</sup>, Fumikazu Shinohara<sup>1)</sup>  
 1) Innovative Technology Laboratories, Research Functions Unit, R & D Division, Kyowa Hakko Kirin Co., Ltd., 2) Research Core Function Laboratories, Research Functions Unit, R & D Division, Kyowa Hakko Kirin Co., Ltd.
- P123** Spontaneous Aggregation of DNA-Modified Anisotropic Nanoparticles for Gene Diagnosis and Directed Assembly  
Guoqing Wang<sup>1)</sup>, Yoshitsugu Akiyama<sup>2)</sup>, Naoki Kanayama<sup>3)</sup>, Tohru Takarada<sup>1)</sup>, Mizuo Maeda<sup>1)</sup>  
 1) RIKEN, 2) Tokyo University of Science, 3) Shinshu University



- P124** Development of novel drug delivery system for targeting circulating microRNA  
Asako Yamayoshi<sup>1)2)</sup>, Ryo Konishi<sup>2)3)</sup>, Akio Kobori<sup>3)</sup>, Naoto Yamashita<sup>4)</sup>, Eishi Ashihara<sup>4)</sup>, Akira Murakami<sup>4)</sup>, Hiroshi Sugiyama<sup>2)5)</sup>  
 1) The Hakubi Center for Advanced Research, Kyoto University, 2) Department of Chemistry, Graduate School of Science, Kyoto University, 3) Graduate School of Science and Technology, Kyoto Institute of Technology, 4) Department of Clinical and Translational Physiology, Kyoto Pharmaceutical University, 5) iCeMS, Kyoto University
- P125** Direct observation of photoresponsive DNA nanodevice and its self-assembly  
Yuu Kamada<sup>1)</sup>, Elena Willner<sup>3)</sup>, Yuki Suzuki<sup>1)</sup>, Tomoko Emura<sup>1)</sup>, Kumi Hidaka<sup>1)</sup>, Hendrik Dietz<sup>3)</sup>, Hiroshi Sugiyama<sup>1)2)</sup>, Masayuki Endo<sup>1)2)</sup>  
 1) Department of Chemistry, Graduate School of Science, Kyoto University, 2) Institute for Integrated Cell-Material Sciences, 3) Physik Department, Walter Schottky Institute, Technische Universität München
- P126** DNA Hybridization-driven Peptide Ligation  
Gosuke Hayashi<sup>1)</sup>, Masafumi Yanase<sup>1)</sup>, Yu Nakatsuka<sup>1)</sup>, Akimitsu Okamoto<sup>1)2)</sup>  
 1) Department of Chemistry and Biotechnology, Faculty of Engineering, The University of Tokyo, 2) Research Center for Advanced Science and Technology, The University of Tokyo
- P127** Preparation of functional fibrin gels using a modified DNA aptamer and the effects on apoptosis  
Hiroto Fujita, Miyuki Shiina, Yusuke Inoue, Masayasu Kuwahara  
 Graduate School of Science and Technology, Gunma University
- P128** Oligonucleotides Analogues and Conjugates as Splice-Correcting Agents for Duchenne Muscular Dystrophy  
Alesya Fokina<sup>1)</sup>, Graham McClorey<sup>2)</sup>, Boris Chelobanov<sup>1)3)</sup>, Ekaterina Burakova<sup>1)</sup>, Andrei Arzumanov<sup>4)</sup>, Wang Meiling<sup>3)</sup>, Masayuki Fujii<sup>5)</sup>, Michael Gait<sup>4)</sup>, Matthew Wood<sup>2)</sup>, Dmitry Stetsenko<sup>1)3)</sup>  
 1) Institute of Chemical Biology and Fundamental Medicine, Siberian Branch of the Russian Academy of Sciences, 2) Department of Physiology, Anatomy and Genetics, University of Oxford, 3) Novosibirsk State University, 4) MRC Laboratory of Molecular Biology, 5) Kindai University
- P129** Characterization of the cytidine deamination properties of human APOBEC3B by real-time NMR, which are quite different from those of APOBEC3G  
Li Wan<sup>1)2)</sup>, Takashi Nagata<sup>1)2)</sup>, Ryo Morishita<sup>3)</sup>, Akifumi Takaori-Kondo<sup>4)</sup>, Masato Katahira<sup>1)2)</sup>  
 1) Institute of Advanced Energy, Kyoto University, 2) Graduate School of Energy Science, Kyoto University, 3) CellFree Sciences Co., Ltd., Matsuyama, Ehime, Japan, 4) Department of Hematology and Oncology, Graduate School of Medicine, Kyoto University
- P130** Chemical construction of DNA-encoded one-bead one-compound library and its application  
Ryo Yoshiba, Ryosuke Ueki, Jumpei Morimoto, Shinsuke Sando  
 Department of Chemistry and Biotechnology, Graduate School of Engineering, The University of Tokyo
- P131** Synthetic mRNA devices that detect endogenous signals and control mammalian cell fate  
Shunsuke Kawasaki, Hirohide Saito  
 Department of Life Science Frontiers, Center for iPS Cell Research and Application, Kyoto University
- P132** In vitro selection of DNA aptamers to a growth factor receptor and their characterization  
Saki Atsuta<sup>1)</sup>, Ryosuke Ueki<sup>1)</sup>, Ayaka Utsumi<sup>1)</sup>, Yohei Hayashi<sup>2)</sup>, Shinsuke Sando<sup>1)</sup>  
 1) Department of Chemistry and Biotechnology, Graduate School of Engineering, The University of Tokyo, 2) Laboratory of Gene Regulation, Faculty of Medicine, University of Tsukuba

- P133** DNA libraries with the base-appended base (BAB) modification is extremely useful to aptamer selection  
Hirota Minagawa<sup>1)</sup>, Kentaro Onodera<sup>2)</sup>, Tatsuro Kasai<sup>2)</sup>, Hiroto Fujita<sup>2)</sup>, Masayasu Kuwahara<sup>2)</sup>, Naoto Kaneko<sup>1)</sup>, Katsunori Horii<sup>1)</sup>, Iwao Waga<sup>1)</sup>  
 1) Innovation Laboratory, NEC Solution Innovators, 2) Graduate School of Science and Technology, Gunma University
- P134** Evaluation of interactions between DNA G-quadruplex and small biomolecules selected by high-throughput screening  
Kazuya Tanabe<sup>1)</sup>, Daisuke Miyoshi<sup>1)</sup>, Naoki Sugimoto<sup>1)2)</sup>, Shu-ichi Nakano<sup>1)</sup>  
 1) Faculty of Frontiers of Innovative Research in Science and Technology (FIRST), Konan University, Kobe, Japan, 2) Frontier Institute for Biomolecular Engineering Research (FIBER), Konan University, Kobe, Japan
- P135** Synthesis of long DNA wires containing metallo-base pairs  
Kenta Ishikawa, Hisao Saneyoshi, Akira Ono  
 Department of material & life chemistry, Faculty of engineering, Kanagawa University
- P136** Effect of ribonucleotide backbone on mutagenic potential and repair mechanism of 7,8-dihydro-8-oxoguanine  
Akira Sassa<sup>1)</sup>, Manabu Yasui<sup>2)</sup>, Hiroyuki Sasanuma<sup>3)</sup>, Shunichi Takeda<sup>3)</sup>, Kaoru Sugasawa<sup>4)</sup>, Masamitsu Honma<sup>2)</sup>, Kiyoe Ura<sup>1)</sup>  
 1) The Department of Biology, Graduate School of Science, Chiba University, 2) The Division of Genetics and Mutagenesis, National Institute of Health Sciences, 3) Department of Radiation Genetics, Graduate School of Medicine, Kyoto University, 4) Biosignal Research Center, Kobe University
- P137** Crystal structures of oligonucleotides having metallo-base pairs  
Akira Ono<sup>1)</sup>, Toru Sugawara<sup>1)</sup>, Hikari Ito<sup>1)</sup>, Misato Goto<sup>1)</sup>, Hisao Saneyoshi<sup>1)</sup>, Jiro Kondo<sup>2)</sup>  
 1) Department of material & life chemistry, Faculty of engineering, Kanagawa University, 2) Faculty of Science and Technology, Department of Materials and Life Sciences, Sophia University
- P138** Sensitivity Gains using Microflow LC/MS for Oligonucleotide Analysis  
Maki Terasaki<sup>1)</sup>, Kenji Hirose<sup>1)</sup>, Michael Donegan<sup>2)</sup>, James Murphy<sup>2)</sup>  
 1) Nihon Waters K.K., 2) Waters Corporation
- P139** Synthesis and duplex formation of oligonucleotides with 1,2-diamine groups  
Takahiro Atsugi, Hisao Saneyoshi, Akira Ono  
 Department of Materials and Life Chemistry, Kanagawa University
- P140** Synthesis of cell-permeable fluorogenic oligonucleotides  
Yuta Yamamoto, Akira Ono, Hisao Saneyoshi  
 Department of Material & Life Chemistry, Faculty of Engineering, Kanagawa University
- P142** Design of fluorescent peptide nucleic acid probes targeting double stranded-RNAs  
Yusuke Sato, Takaya Sato, Seiichi Nishizawa  
 Department of Chemistry, Graduate School of Science, Tohoku University

# Abstract

## Invited Lecture

- IL-01** Michael Gait
- IL-02** Tirayut Vilaivan
- IL-03** Muthiah Manoharan
- IL-04** Kyeong Kyu Kim
- IL-05** Rakesh Naduvile Veedu
- IL-06** Chandra Vargeese
- IL-07** Ichiro Hirao
- IL-08** François Morvan
- IL-09** Dmitry Stetsenko
- IL-10** Christine Cardin

## Oral Presentations

## Poster Presentations

## Acknowledgments

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- NARD Institute, LTD.
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(Alphabetical order)

# ISNAC2017 Program at a Glance

	14-Nov, Tue	15-Nov, Wed	16-Nov, Thu
9:00	9:00~10:00 <b>JSNAC General Meeting</b>	9:00~9:40 <b>Invited Lecture</b> IL-03 Muthiah Manoharan	9:00~9:40 <b>Invited Lecture</b> IL-07 Ichiro Hirao
10:00	10:00~10:10 <b>Opening Remarks</b> 10:10~10:40 <b>Memorial Lecture for the Late Prof. Morio Ikehara</b> Eiko Ohtsuka, Shigenori Iwai	9:40~9:55 <b>Break</b> 9:55~10:55 <b>Oral Presentations</b> 9:55 20-01 Yuichiro Aiba 10:10 20-03 Orakan Hanpanich 10:25 20-04 Yuka Kataoka 10:40 20-05 Yusuke Takezawa	9:40~10:10 <b>Oral Presentations</b> 9:40 30-01 Kazuhito Tanabe 9:55 30-02 Alexandre Lebedev
11:00	10:40~11:05 <b>Break</b> 11:05~11:45 <b>Invited Lecture</b> IL-01 Michael Gait	10:55~11:05 <b>Break</b> 11:05~11:45 <b>Invited Lecture</b> IL-04 Kyeong Kyu Kim	10:10~10:20 <b>Break</b> 10:20~11:00 <b>Invited Lecture</b> IL-08 François Morvan
12:00	11:45~12:45 <b>Oral Presentations</b> 11:45 10-01 Takeshi Yamada 12:00 10-02 Yasuaki Kimura 12:15 10-03 Kazumitsu Onizuka 12:30 10-04 Yasufumi Fuchi	11:45~12:00 <b>Break</b> 12:00~12:45 <b>Oral Presentations</b> 12:00 20-07 Chao-Da Xiao 12:15 20-08 Tsukasa Mashima 12:30 20-09 Lijun Wang	11:00~11:30 <b>Oral Presentations</b> 11:00 30-03 Ian Hoffecker 11:15 30-04 Tanasak Kaewsomboon
13:00	12:45~13:35 <b>Lunch Break</b>	12:45~13:35 <b>Lunch Break</b>	11:30~11:40 <b>Break</b> 11:40~12:20 <b>Invited Lecture</b> IL-09 Dmitry Stetsenko
14:00	13:35~15:05 <b>Poster Presentations</b> ( Odd Numbers )	13:35~15:05 <b>Poster Presentations</b> ( Even Numbers )	12:20~12:50 <b>Oral Presentations</b> 12:20 30-05 Akio Kobori 12:35 30-06 Hidetaka Torigoe
15:00	15:05~16:20 <b>Oral Presentations</b> 15:05 10-05 Arivazhagan Rajendran 15:20 10-06 Ryosuke Ueki 15:35 10-08 Seigi Yamamoto 15:50 10-09 Masayuki Endo	15:05~15:45 <b>Invited Lecture</b> IL-05 Rakesh Naduvile Veedu	12:50~13:40 <b>Lunch Break</b>
16:00	16:05~16:30 <b>Break</b> 16:30~17:10 <b>Invited Lecture</b> IL-02 Tirayut Vilaivan	15:45~16:30 <b>Oral Presentations</b> 15:45 20-10 Yoshiaki Kitamura 16:00 20-11 Shuntaro Takahashi 16:15 20-12 Xingguo Liang	13:40~14:20 <b>Invited Lecture</b> IL-10 Christine Cardin
17:00	17:10~17:55 <b>Oral Presentations</b> 17:10 10-10 Tomoko Fujino 17:25 10-11 Kathleen Beverly Pe 17:40 10-12 Yi Kuang	16:30~16:40 <b>Break</b> 16:40~17:20 <b>Invited Lecture</b> IL-06 Chandra Vargeese	14:20~15:50 <b>Oral Presentations</b> 14:20 30-07 Kazunori Ikebukuro 14:35 30-08 Yoshiya Ikawa 14:50 30-09 Shigeori Takenaka 15:05 30-10 Hiroki Kanazawa 15:20 30-11 Takeshi Inde 15:35 30-12 Yu Hirano
18:00		17:20~17:50 <b>Oral Presentations</b> 17:20 20-13 Hisao Saneyoshi 17:35 20-14 Takehiko Wada	15:50~16:00 <b>Closing Remarks</b>
19:00		19:00~ <b>Exchange Meeting</b> Venue: Asakusa View Hotel	
20:00			
21:00			