

FIBER International Symposium

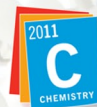
FIBER FORUM 2011

November 6th (Sun) ~ 8th (Tue), 2011

Port Island Campus of Konan University, Kobe, Japan

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

Co-sponsored by the
Chemical Society of Japan



International Year of
CHEMISTRY
2011

Symposium Chair

• **Naoki Sugimoto**

Director of FIBER
Professor, Konan University



• **Janez Plavec**

Professor, head of Slovenian NMR Center
National Institute of Chemistry, Slovenia
NMR studies of cations interactions with G-quadruplexes



• **Jean-Louis Mergny**

Professor, Institute Européen de Chimie et Biologie,
Université Bordeaux, France
Quadruplexes are everywhere



• **Jean-Marc Escudier**

Professor, Laboratoire de Synthèse et Physico-Chimie
de Molécules d'Intérêt Biologique, Université Paul
Sabatier, France

Struction and functionalization of oligonucleotides by means of 5'C-substituted nucleosides



• **John Randolph**

Glen Research Corporation, USA
Some interesting and practical aspects of nucleic acid synthesis



• **Katsuaki Kobayashi**

Assistant Professor, Institute for Molecular Science,
Japan

Fabrication of DNA nanowire by using laser pulling effect

(alphabetical order)

• **Tamaki Endoh**

• **Satoru Nagatoishi**

• **Hisae Tateishi-Karimata**

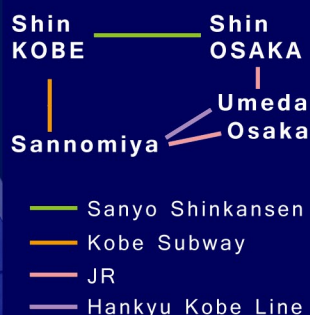
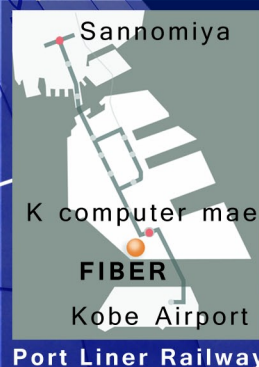
Invited Speakers

FIBER

Location

Symposium Secretariat

FIBER, Konan University
fiber@adm.konan-u.ac.jp
tel:81-78-303-1457
fax:81-78-303-1495



<http://www.konan-fiber.jp/english/index.html>



FIBER International Symposium FIBER Forum 2011

Program & Abstracts

Period : November 6 (Sun)—8 (Tue), 2011

**Venue : Port Island Campus of Konan University,
Kobe, Japan**

**Organizer : Naoki Sugimoto
(Director of FIBER, Konan University)**

Organized by

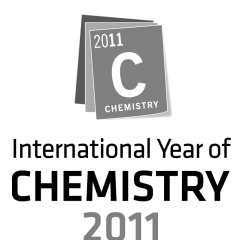
Frontier Institute for Biomolecular Engineering
Research (FIBER), Konan University, Japan

Co-Host

The Council for Hyogo-Kobe Science Cluster

Co-Sponsor

The Chemical Society of Japan



Information for participants and presenters

General Information for participants

1. Reception & Cloak

On-site registration, Receipt, Cloak and other general inquiries are available during the following hours.

Date	Open Hours
Nov. 6 (Sun.)	12:00 – 17:00
Nov. 7 (Mon.)	10:00 – 16:00
Nov. 8 (Tue.)	10:00 – 11:00

2. Welcome Reception*

November 6 (Sunday) 17:00 – (around 1 hour) at the 7F cafeteria of the Port Island Campus of Konan University

*Undergraduate students of cannot attend the reception.

3. Eating Place

Eating place inside the Port Island Campus of Konan University is available. In addition, other eating place adjacent to the Port Island Campus is available. Please ask staffs for details.

Instruction for Presenters

Oral presentation:

1. Presentation place

7F Lecture Room

2. Presentation time

Invited Lectures : Presentation 50 min + Discussion 10 min. (Total: 60 min)

: Presentation 20 min + Discussion 10 min. (Total: 30 min)

Oral presentations: Presentation 20 min + Discussion 10 min. (Total: 30 min)

3. Timing

- 1 ring: Warning—at 5 minutes left to the end of talk
- 2 ring: End of talk—time for discussion
- 3 ring: End of presentation—time for the next speaker

Poster presentation:

During the poster presentation, please stay in the vicinity of your poster for explanation. Some “**Best Poster Awards**” will be given for the students.

1. Presentation place

7F Hall way

2. Set-up and Removal

Set-up: Nov. 6 (Sun.) 12:00 – 13:00, 14:15 – 14:45

Removal: Nov. 7 (Mon.) 15:40 – 18:00

3. Presentation time

Nov. 6 (Sun.) 16:00 – 16:50, All of presenters

Nov. 7 (Mon.) 12:10 – 12:55, Odd numbers

12:55 – 13:40, Even numbers

Conference Program

Day 1: November 6 (Sun.)

12:00 –	Registration	
13:00 – 13:10	Opening Remarks	Naoki Sugimoto (Director of FIBER, Konan University)
13:15 – 14:15	Invited Lecture Chair: Hisae Tateishi-Karimata	IL-1 NMR studies of cation interactions with G-quadruplexes Janez Plavec
14:15 – 14:45	Coffee Break	
14:45 – 15:15	Oral presentations Chair: Tamaki Endoh	OP-1 DNA duplexes show the unique behaviors in a hydrated ionic liquid Hisae Tateishi-Karimata
15:15 – 15:25	Preparation of next speaker	
15:25 – 15:55	Invited Lecture Chair: Tamaki Endoh	IL-2 Fabrication of DNA nanowire using laser pulling effect Katsuaki Kobayashi
16:00 – 16:50	Poster Presentation (All numbers)	
17:00 –	Welcome Reception	

Day 2: November 7 (Mon.)

10:30 – 11:30	Invited Lecture Chair: Tamaki Endoh	IL-3 Functionalization and structuration of nucleic acids by means of 5'-C substituted or conformationally constrained nucleosides Jean-Marc Escudier
11:40 – 12:05	Lunch	
12:10 – 13:40	Poster presentations (Odd numbers) 12:10 – 12:55, (Even numbers) 12:55 – 13:40	
13:40 – 13:50	Preparation of next speaker	
13:50 – 14:20	Oral presentations Chair: Hisae Tateishi-Karimata	OP-2 Characterization of hydration change through the interaction between DNA G-quadruplex and thrombin Satoru Nagatoishi
14:20 – 14:30	Preparation of next speaker	
14:30 – 15:00	Oral presentations Chair: Hisae Tateishi-Karimata	OP-3 Application of allosteric RNA-protein interaction for gene regulation and biosensor Tamaki Endoh
15:00 – 15:40	Coffee Break	
15:40 – 16:40	Invited Lecture Chair: Satoru Nagatoishi	IL-4 Unusual nucleic acid structures: applications to biology, nano- and bio-technologies Jean-Louis Mergny
16:50 –	Poster Awards & Ceremony	

Day 3: November 8 (Tue.)

10:30 – 11:00	Invited Lecture Chair: Satoru Nagatoishi	IL-5 Some interesting and practical aspects of nucleic acid synthesis John Randolph
11:10 –	Closing Remarks	

List of Invited Lectures

IL-1

NMR studies of cation interactions with G-quadruplexes

Janez Plavec

(Slovenian NMR center, National Institute of Chemistry, Faculty of Chemistry and Chemical Technology, University of Ljubljana, and EN-FIST Centre of Excellence, Slovenia)

IL-2

Fabrication of DNA nanowire using laser pulling effect

Katsuaki Kobayashi,¹ Sho Fujii,² and Masa-aki Haga²

(¹Department of Life and Coordination-Complex Molecular Science, Institute for Molecular Science (IMS), Japan, ²Department of Applied Chemistry, Faculty of Science and Engineering, Chuo University, Japan)

IL-3

Functionalization and structuration of nucleic acids by means of 5'-C substituted or conformationally constrained nucleosides

Jean-Marc Escudier

(CNRS, Laboratoire de Synthèse et Physico-Chimie de Molécules d'Intérêt Biologique, Université Paul Sabatier, France)

IL-4

Unusual nucleic acid structures: applications to biology, nano- and bio-technologies

Jean-Louis Mergny

(INSERM U869, Institut Européen de Chimie et Biologie, Université de Bordeaux, France)

IL-5

Some interesting and practical aspects of nucleic acid synthesis

John Randolph

(Glen Research Corporation, USA)

List of Oral Presentations

OP-1

DNA duplexes show the unique behaviors in a hydrated ionic liquid

Hisae Tateishi-Karimata

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

OP-2

Characterization of hydration change through the interaction between DNA G-quadruplex and thrombin

Satoru Nagatoishi

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

OP-3

Application of allosteric RNA-protein interaction for gene regulation and biosensor

Tamaki Endoh

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

List of Poster Presentations

P-01

RNA binding properties of ascidian Y-box protein, CiYB-1

Takahito Nishikata

(Faculty of Frontiers of Innovative Research in Science and Technology (FIRST), and Frontier Institute for Biomolecular Engineering Research (FIBER), Konan University, Japan)

P-02

A new and advantageous experimental system for analyzing the dual targeting mechanism of mitochondrial protein

Hirokazu Ishii

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

P-03

Effect of G-quadruplex derived from natural mRNAs on translation elongation

Yu Kawasaki

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

P-04

Rapid detection of telomerase activity based on Rnase H cleavage of probe RNA

Hidenobu Yaku

(Faculty of Frontiers of Innovative Research in Science and Technology (FIRST), and Frontier Institute for Biomolecular Engineering Research (FIBER), Konan University, Japan)

P-05

Screening of Designed Peptides to stabilize a DNA G-quadruplex structure

Noriko Matsui

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

P-06

PNA-peptide conjugates for addressable accumulation of silica

Kazuma Nagai

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

P-07

Design of a nitric oxide sensor protein using iron complex with dithiocarbamate-peptide conjugate

Hiroshi Miyazaki

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

P-08

Quantitative analysis of DNA adsorption and desorption on graphene oxide

Takeshi Fujimoto

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

P-09

Development of the light induced oxidase by using electric charge transportation inside DNA

Katsuhiko Matsumoto

(Institute of Advanced Energy, Kyoto University, Japan)

P-10

Fusion proteins with fluorescent and luminescent proteins to detect amyloid β peptide localization and aggregation

Kenji Usui

(Faculty of Frontiers of Innovative Research in Science and Technology (FIRST), and Frontier Institute for Biomolecular Engineering Research (FIBER), Konan University, Japan)

P-11

Loops in DNA G-quadruplex regulate thermodynamics and hydration of G-quadruplex

Daisuke Miyoshi

(Faculty of Frontiers of Innovative Research in Science and Technology (FIRST), and Frontier Institute for Biomolecular Engineering Research (FIBER), Konan University, Japan)

P-12

Cellular metabolite analogs enhance enzymatic activities of various hydrolases

Kazuya Koumoto,^{1,2} Eisuke Deguchi,¹ Shiro Sehata,¹ Yuichi Nakagawa¹ (¹Department of Nanobiochemistry, Faculty of Frontiers of Innovative Research in Science and Technology (FIRST), Konan University, ²Frontier Institute for Biomolecular Engineering Research (FIBER), Konan University, Japan)

P-13

Self-assembly of polydeoxyadenylic acid studied at the single-molecule level

Sooyeon Kim

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

P-14

pH-induced conformational change of i-motif DNA

Jungkweon Choi

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

P-15

Aggregation mechanism of polyglutamine peptides in water by replica exchange molecular dynamics simulations

Miki Nakano,¹ Kuniyoshi Ebina,¹ and Shigenori Tanaka²

(¹Graduate School of Human Development and Environment, Kobe University, Japan, ²Graduate School of System Informatics, Department of Computational Science, Kobe University, Japan)

P-16

Fragment molecular orbital calculation with solvation effect based on Poisson-Boltzmann equation

Yoshio Okiyama

(Institute of the Industrial Science, the University of Tokyo, Japan)

P-17

New fragmentation of fragment molecular orbital method applicable to fragment based drug design

Chiduru Watanabe

(Institute of the Industrial Science, the University of Tokyo, Japan)

P-18

Change of transcription efficiency caused by formation of hairpin and G-quadruplex structure in nascent RNA

Ryoya Ono

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

P-19

Transcriptional activity depended on the stability of the noncanonical structure in the template DNA

Noburu Isono

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

P-20

Fine modulation of onco-miRNA miR-21 function by synthetic oligonucleotides

Koji Nagahama

((Faculty of Frontiers of Innovative Research in Science and Technology (FIRST), and Frontier Institute for Biomolecular Engineering Research (FIBER), Konan University, Japan)

P-21

Comparative analysis of an RNA-protein interaction on surface and in solution

Junji Kawakami

(Faculty of Frontiers of Innovative Research in Science and Technology (FIRST) and Frontier Institute for Biomolecular Engineering Research (FIBER), Konan University, Japan)

P-22

Secondary structure of histidine dependent ribozyme

Yoshie Yamaguchi

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

P-23

Adenine-riboswitch structure analysis by selective 2'-hydroxyl acylation and primer extension (SHAPE) under molecular crowding

Vinit Kumar

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

P-24

Quantitative analysis for single mismatches in RNA duplexes under the cell-like condition

Kentaro Murakami

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

P-25

Effect of molecular crowding on the Stability of DNA duplex with internal mismatches

Yuki Maeda

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

P-26

Confinement effect on the structure and stability of G-rich DNA in nanocavity water pools of reverse micelle

Smritimoy Pramanik

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

P-27

Construction of PNA-peptides controlling DNA G-quadruplex structure depending on Calpain activity

Keita Kobayashi

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

P-28

Metal ion binding for the hairpin dimerization of DNA and RNA oligonucleotides in non-aqueous solutions

Shu-ichi Nakano

(Faculty of Frontiers of Innovative Research in Science and Technology (FIRST), and Frontier Institute for Biomolecular Engineering Research (FIBER), Konan University, Japan)

P-29

Influence of the agarose gel environment on the thermal stability of DNA and PNA duplexes

Daisuke Yamaguchi

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

P-30

Ligand-assisted complex of two DNA hairpin loops

Changfeng Hong

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

P-31

Synthesis of hydrophobic DNA and its localization on lipid bilayer membrane surface

Shingo Makishi

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

