

International Joint Workshop “KAUST-AIST-WASEDA Joint Workshop” Record

◆ Outline ◆

Date: March 1–3, 2017

Place: King Abdullah University of Science and Technology (KAUST), Thuwal, Kingdom of Saudi Arabia

Organized by:

- Computational Bioscience Research Center (CBRC), KAUST
- AIST-Waseda University Computational Bio Big-Data Open Innovation Laboratory (CBBD-OIL), National Institute of Advanced Industrial Science and Technology (AIST)
- JSPS Core-to-Core Program “Three Dimensional Development of Lab-Exchange Type Biomedical Science Research Consortium”

Organizers (Co-chairs):

Vladimir Bajic (Named Professor, KAUST/Director of CBRC)

Takashi Gojobori (Distinguished Professor, KAUST/Associate Director of CBRC)

Haruko Takeyama (Professor, Waseda University/Director of CBBD-OIL)

Sachiyo Aburatani (Senior Research Scientist, AIST/Deputy Director of CBBD-OIL)

Program overview:

Joint workshop/Discussion for collaborative research/Facility tour & Get-together

◆ Additional Remarks ◆

Participants from Japan: 9 persons

Ms. Sachiyo Aburatani, the deputy of CBBD-OIL in AIST, Mr. Tomohiro Tamura, the department head of Bioprocess department in Biotechnology field in AIST, Mr. Takeshi Tanaka, a professor of Tokyo University of Agriculture and Technology Graduate School of Engineering (Tokyo University of Agriculture and Technology · the Major of the Cooperation of Advanced Health Science in Waseda University, the concurrent offices),

Mr. Suguru Nishijima, a special researcher in CBBD-OIL in AIST, Mr. Masato Hosokawa, a visiting Researcher Scholar of Nano Life Innovation Research Organization in Waseda University, Mr. Itaru Takeda, a student of the graduate school on Doctor's program for Tokyo University of Agriculture and Technology (cooperative University with AIST),

Mr. Toru Maruyama, a student of the graduate school on Doctor's program for an advanced of Department of Science and Engineering (Technical Trainee, CBBD-OIL in AIST), Mr. Youhei Nishikawa, a student of the graduate school on Doctor's program for an advanced of Department of Science and Engineering, Mr. Takuya Nakanishi, a Visiting Researcher, CBBD-OIL in AIST,

Participants From KAUST: 30–40 persons (the academic, researcher, students belong to CBRC mainly)

◆ Record • Report ◆

28th of February: 7 Japanese participants arrived at the King Abdulaziz International Airport (Jedda, Saudi Arabian), by Emirates Airline EK803. (20 minutes behind the schedule 18:20).

They passed the immigration check successfully by a guidance of KAUST staff. 7 Japanese participants moved to KAUST 80km by separated 3 taxis that KAUST arranged for one hours. They went by taxi into the huge ground in KAUST(residential and academic area in a same academic city; about 36 square km) protected by the double wall and the strict security and then got off at Visitors Center Office for the moment to get New Resident Temporary ID cards and rode in taxis again to move to KAUST INN as an accommodation (checked in at 21:00).

In the morning on 1st ,March : 7 participants who arrived (28th) the day before took a 10 minute-walk to a Campus Dinner in Building 13 to eat a breakfast and then moved to Room 5220 on 5th floor in Ibn Sina Building (Building 3) guided by Mr. Katsuhiko Mineta, Senior Research Scientist and the explanations about all over KAUST and CBRC for 1 hour were given by Mr. Takashi Gojoubori, a Distinguished Professor / vice-president of CBRC. After this, KAUST facilities (mainly Research Building; Including Dr. Mineta's Research Building) for inspection and field trip were guided by Dr. Mineta. After the field trip they moved to a Campus Dinner and had lunch Prof. Gojoubori and Dr. Mineta with a few researchers of KAUST together for exchange opinions.

In the afternoon on 1st of March : First day of Joint Workshop begun on 13:30 in Room 5220 of Building 3 and Mr. Vladimir Bajic, a professor of KAUST/ Director of CBRC had opening remarks and Prof. Gojoubori had an explanation of the aim (the expectation of result for reference and exchange opinions though the investigative compatibility between CBRC and CBBDOIL) and had 4 lectures from KAUST CBRC and 2 lectures from Japan (reference to details on program), 40 seats(there are 5 tables for a long table with 4 chairs separated both sides) were taken roughly in a conference venue and had an active talk.

After first day's discussion, from 18:00 almost all the participants (30 persons) of the workshop got together at the restaurant 10minutes walk far from the venue to discuss and to exchange researches and cultures. 2 participants from Japan (attendance from the second day) arrived at KAUST INN about at 21:00.

In the morning on 2nd of March: the 9 participants to be all greeted the second day of Joint -Workshop. After their breakfast by catering, the second day started at 9:15. The 3 lectures from KAUST CBRC and 3 lectures from Japan were full with averaged 40 audiences. The lectures were so successful that 10 chairs were added in the venue and more better meeting than first day. The catering for lunch in the venue was a good chance for a discussion and an exchange opinion.

In the afternoon on 2nd of March: the second half of the second day started at 13:30 and 9 students both sides had research presentations and then They had an active discussion and encouragement through Questions and Answers. After this Ms. Sachiyo Aburatani, the deputy of CBBDOIL had a greeting including an introduction of AIST and CBBDOIL, Mr. Gojoubori, a professor of KAUST and a vice president of CBRC generalized (Expectations for the synergistic effect by exchange opinions and cooperation and mutual benefits and the traction of the creation of new industries) and closed the joint -workshop. Almost all participants (30 persons) of the Joint Workshop got together a restaurant 10- minute by car from the venue at 18:00 for a dinner to enjoy a talk and a discussion for future joints to come in sight and to deepen friendship.

3rd of March: After a short meeting and breakfast at a dinner with 9 participants from 8 o'clock, the guidance by Professor Gojoubori and Dr. Mineta they made an inspection of the construction condition of the huge King Abdullah Economic City KAEC 173 square km for the huge new capital city project which the former King Abdullah by led set up as

same as KAUST was set up and then made a field trip to University Area and Residence Area and Invitation of Enterprise Area in KAUST University town, they cultivated a better understanding of the economy of Kingdom of Saudi Arabia and the industrial policy and the high educational policy and the industrial joint policy. Through the discussion and lunch with Prof. Gojoubori and Dr. Mineta, they exchanged significant ideas about the future developing exchange between CBRC and CBBB-OIL. After this, they moved to Visitors Center Office by three taxis arranged by KAUST to return the temporary visitors cards at 16:20 and moved from KAUST to the King Abdulaziz International Airport. (20:20 departed by Emirates airline EK804)

◆ Program ◆

1st March 2017 (Wed)

11:45–13:00 Lunch

13:30–13:40 Opening remarks

Vladimir BAJIC (Named Professor and Director of CBRC, KAUST)

13:40–13:50 About the workshop

Takashi GOJOBORI (Distinguished Professor and Associate Director of CBRC, KAUST)

13:50–14:20 A hybrid pipeline for marine metagenomics

Takashi GOJOBORI (Distinguished Professor and Associate Director of CBRC, KAUST)

14:20–14:50 Droplet-based microfluidic device for single-cell genomics

Masahito HOSOKAWA (Adjunct Researcher, Research Organization for Nano & Life Innovation, Waseda University; PRESTO Researcher, Japan Science and Technology Agency)

14:50–15:20 Metagenomics of the Red sea for the bioprospecting,

Katsuhiko MINETA (Senior Research Scientist, CBRC, KAUST)

15:20–15:30 Coffee break

15:30–16:00 Biosynthetic Synthetic Biology

Raik GRÜNBERG (Senior Research Scientist, CBRC, KAUST)

16:00–16:30 Biofuel production by marine diatoms: Approach by genetic manipulation and multi-omics analysis

Tsuyoshi TANAKA (Professor, Institute of Engineering, Tokyo University of Agriculture and Technology (TUAT); Cooperative Major in Advanced Health Science, TUAT/Waseda University)

16:30–17:00 Special Lecture: Extending annotation for antibiotic biosynthesis pathways

Vladimir BAJIC (Named Professor and Director of CBRC, KAUST)

17:00–17:15 Wrap up

18:00–20:00 Dinner

2nd March 2017 (Thu)

8:45–9:15 Breakfast

9:15–9:45 Protein bioinformatics: from sequence to structure to function

Xin GAO (Associate Professor, CBRC, KAUST)

9:45–10:15 Metagenomic analysis of the human gut microbiome using single-molecule real-time sequencing technology

Suguru NISHIJIMA (Project Researcher, CBBB-OIL, AIST)

10:15–10:45 Semantic prioritization of causative variants

Robert HOEHNDORF (Assistant Professor, CBRC, KAUST)

10:45–11:00 Coffee break

11:00–11:30 Structural equation models for inferring regulatory systems in the cell

Sachiyo ABURATANI (Deputy Director of CBBB–OIL and Senior Research Scientist of Biotechnology Research Institute for Drug Discovery (BRD), AIST)

11:30–12:00 Photosynthetic marine cell factory isolation, modelling and cell engineering pipeline for sustainable production

John ARCHER (Principal Research Scientist, CBRC, KAUST)

12:00–12:30 Special Lecture: Microbial Conversion of Vitamin D3 –Innovation to Industrialization–

Tomohiro TAMURA (Director of Bioproduction Research Institute (BPRI), AIST)

12:30–13:30 Lunch

13:30–15:00 **Student flash talks**

Development of Red Sea cyanobacterial factory strains: Isolation and characterization

Yi Mei NG (CBRC, KAUST)

Design, construction and validation of synthetic gene mobilization vectors for cyanobacterial factory strains

Khairunnisa MOHAMMED (CBRC, KAUST)

Droplet microfluidics for low bias and contamination free whole genome amplification of single cells

Yohei NISHIKAWA (Waseda University)

Ontology–based representation learning on biological knowledge graphs

Mona ALSHARANI (CBRC, KAUST)

Multi–omics analysis to decipher inter–specific crosstalk in coral holobiont

Toru MARUYAMA (Waseda University)

Design of a high–throughput assay to assess and inhibit weak protein–protein interactions

Abdullah ALDEHAIMAN (CBRC, KAUST)

Revealing the Activated Pathways for Antifungal Agent biosynthesis in Fungi

Itaru TAKEDA (TUAT/AIST)

Modeling interactions between enteric pathogens

Alyaa MOHAMED (CBRC, KAUST)

Isolation of Cellulolytic microorganisms from the Red Sea and Characterization of their Cellulase genes

Siham FATANI (CBRC, KAUST)

15:00–15:10 Closing remarks:

Sachiyo ABURATANI (Deputy Director of CBBB–OIL and Senior Research Scientist of BRD, AIST)

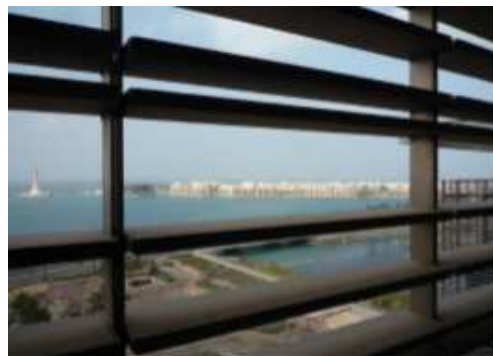
Takashi GOJOBORI (Distinguished Professor and Associate Director of CBRC, KAUST)

18:00–20:00 Dinner

◆Workshop scenery◆ ※ Only Japanese participants were taken photos by consideration of religion and culture.



The venue before opening
(Building 3, Room 5220)



The view from the venue floor
(KAUST is seen in the left depths)



Dr. Masato Hosokawa's Lecture

(in the afternoon first of March)



Prof. Tsuyosi Tanaka's Lecture

(in the afternoon first of March)



Dr. Suguru Nishijima's lecture
(in the morning 2nd of March)



Dr. Sachiyo Aburatani's lecture
(in the morning 2nd of March)



Dr. Tomohiro Tamura's Lecture



Dr. Youhei Nishikawa's lecture

(in the morning 2nd of March)



Mr. Toru Maruyama's lecture
(in the afternoon 2nd of March)

(in the afternoon 2nd of March)



Mr. Itaru Takeda's lecture
(in the afternoon 2nd of March)



Prof. Takashi Gojoubori (left end) and 9 Japanese participants (3rd of March)/ taken Photos by Dr. Katsuhiko Mineta :
KAUST appearance behind (the symbolic building of KAUST)