

The 1st A3 Foresight Symposium on “Chemical & Synthetic Biology of Natural Products”

August 21-23, 2016. Shanghai Jiao Tong University

Sunday, 21 August

Arrival & on-site registration at hotels

Preparatory meetings of each delegation

Monday, 22 August

8:00 Boarding shuttle bus to the campus

Opening Ceremony

Chair: Linqun BAI, Shanghai Jiao Tong University, China

08:30–08:40 Welcome address by Deputy Dean Prof. Yan FENG

08:40–08:55 Address by Dr. HIROTA from JSPS Beijing Representative Office

08:55–09:05 Address by Academician of CAS Prof. Zixin DENG

09:05–09:15 Project introduction by Prof. Eung-Soo KIM

09:15–09:25 Project introduction by Prof. Yasuo OHNISHI

09:25–09:35 Project introduction by Prof. Linqun BAI

09:35–10:00 **Group photo & coffee break**

Session PI-1 (20 min talk + 5 min discussion)

Chair: Yasuo OHNISHI, The University of Tokyo

10:00–10:25 Dr. Yohei KATSUYAMA, The University of Tokyo (Prof. Ohnishi's lab)

Biosynthetic studies on polycyclic polyketides produced by *Streptomyces*

10:25–10:50 Prof. Hiroyasu ONAKA, The University of Tokyo

Secondary metabolism activation in actinomycetes by chemical or physical communication

10:50–11:15 Prof. Tomohisa KUZUYAMA, The University of Tokyo

Enzyme-catalyzed [4+2]-cycloaddition required for macrocyclization of spirotetranate-containing polyketides

11:15–11:40 Prof. Fumitaka KUDO, Tokyo Institute of Technology

Biosynthetic study of macrocyclic polyketide antibiotics

11:40- 13:00 Lunch

Session PI-2 (20 min talk + 5 min discussion)

Chair: Eung-Soo KIM, Inha University

13:00–13:25 Prof. Heung-Shick LEE, Korea University, Korea

What do *whiB*-like genes do in *Corynebacterium glutamicum*?

13:25–13:50 Prof. Pil KIM, Catholic University, Korea

The Actinobacterium, *Corynebacterium glutamicum*: industrial host

13:50–14:15 Prof. Yun Suk HUH, Inha University, Korea

Rapid and simple detection of biomolecules using the dual-plasmonic platform integrated with Localized surface plasmon resonance and Surface-enhanced Raman spectroscopy

14:15–14:40 Prof. Eung-Soo KIM, Inha University, Korea

Biotechnology potential of rare actinomycetes

14:40–15:00 Coffee break

Session PI-3 (20 min talk + 5 min discussion)

Chair: Linquan BAI, Shanghai Jiao Tong University

15:00–15:25 Prof. Gongli TANG, Shanghai Institute of Organic Chemistry, CAS, China

New insights into the biosynthesis of aromatic polyketide kosinostatin

15:25–15:50 Prof. Yuemao SHEN, Shandong University, China

Synthetic and chemical biology approaches to the discovery and structural optimizations of ansamycins

15:50–16:15 Prof. Shuangjun LIN, Shanghai Jiao Tong University, China

Biosynthesis of microbial alkaloids

16:15–16:40 Prof. Jianting ZHENG, Shanghai Jiao Tong University, China

Structural and functional dissection of modular polyketide synthases

16:40–18:00 Campus & School Tour

(Program discussion on management, collaboration, exchange visit, etc.)

18:00–20:30 Dinner

20:30 Boarding shuttle bus to the hotel

Tuesday, 23 August

8:00 Boarding shuttle bus to the campus with luggage

Session YR-1 (10 min talk + 3 min discussion)

Chair: Prof. Yuhui SUN, Wuhan University

08:30–08:43 Dr. Shumpei ASAMIZU, the University of Tokyo (Prof. Onaka's lab)

Secondary metabolite induction by mycolic acid-containing bacteria in *Streptomyces*

- 08:43–08:56 Dr. Yoshinori SUGAI, the University of Tokyo (Prof. Onaka's lab)
Mode of action by goadsporin, the inducer of secondary metabolism and morphogenesis in actinomycetes
- 08:56–09:09 Dr. Taro SHIRAIISHI, the University of Tokyo (Prof. Kuzuyama's group)
Biosynthetic studies of the nucleoside antibiotic A-94964
- 09:09–09:22 Dr. Si-sun CHOI, Inha University (Prof. ES Kim's lab)
Construction of bacteria cell factory for muconic acid biosynthesis via metabolic pathway reconstitution
- 09:22–09:35 Dr. Hanna LEE, Inha University (Prof. ES Kim's lab)
Redesign of aromatic amino acid biosynthesis pathway for the production of *cis,cis*-muconic acid in *E. coli*
- 09:35–09:48 Dr. Tingting HUANG, Shanghai Jiao Tong University (Prof. Lin's group)
Biosynthesis of pyridomycin, an anti-mycobacterial antibiotic
- 09:48–10:01 Dr. Ming JIANG, Shanghai Jiao Tong University (Prof. Deng's group)
Post-PKS tailoring steps in kinamycin and murayaquinone biosynthesis

10:01–10:20 Coffee break

10:20-11:53 Session YR-2 (3 min presentation competition)

Chairs: Dr. Tingting HUANG & Dr. Ming JIANG, Shanghai Jiao Tong University

Postdocs or students from Japan:

Dr. Hiroya TOMITA, Dr. Wei Li THONG, Akane HIRAYAMA, Kei SATO, Kaoru SONE, Takeshi TSUNODA, Du DANYAO, Hayama TSUTSUMI, Ryota HAGIHARA, Taichi CHISUGA, Shusuke SATO

Students from Korea:

Hee-Ju NAH, Hye-Jin KIM, Hye-rim PYEON, Seo Yeong OH, Palan LEE, Daegyung KIM, Jin-young JANG, Dong Seok LEE, Su-In CHOI

Students from China:

Zhen QI, Xinjuan NING, Xinran WANG, Qinqin ZHAO, Yuanting WU, Xiaojie ZHANG, Huixin XIE, Yucong ZHOU, Xiaoman LI, Yanrong SHI, Peng SHI

11:53–12:00 short break

12:00–12:15 Closing Ceremony

Chair: Linquan BAI, Shanghai Jiao Tong University, China

12:15-13:30 Lunch

13:30 Boarding shuttle bus to Pudong International Airport with luggage & departure

Presentation from Postdocs or students (Japan)

1. Dr. Hiroya TOMITA (Prof. Ohnishi's lab)
Identification of an enzyme catalyzing tyrosine nitration involved in rufomycin biosynthesis
2. Dr. Wei Li THONG (Prof. Kuzuyama's group)
Novel polyketides discovered via activation of "orphan" biosynthetic gene clusters
3. Akane HIRAYAMA (Prof. Kudo's group)
Biosynthetic study of aminocyclitol-containing antibiotics
4. Kei SATO (Prof. Ohnishi's lab)
Functional analysis of the type II polyketide synthase exploiting enzymes catalyzing beta-alkylation
5. Kaoru SONE (Prof. Ohnishi's lab)
In vitro analysis of biosynthesis of 4-methyloxazoline-containing nonribosomal peptides, JBIR-34 and -35
6. Takeshi TSUNODA (Prof. Ohnishi's lab)
Studies on pyrrolidine ring formation in the biosynthesis of JBIR-126
7. Du DANYAO (Prof. Ohnishi's lab)
Production and biosynthetic study of a novel amide-containing polyene produced by activating a cryptic biosynthetic gene cluster in *Streptomyces* sp. MSC090213JE08
8. Hayama TSUTSUMI (Prof. Ohnishi's lab)
Analysis of the pathway for the biosynthesis of benzastatins
9. Ryota HAGIHARA (Prof. Ohnishi's lab)
Novel natural products synthesized by a secondary metabolite-specific nitrous acid biosynthetic pathway
10. Taichi CHISUGA (Prof. Kudo's group)
Biosynthetic study of β -amino acid-containing natural products
11. Shusuke SATO (Prof. Kudo's group)
Functional analysis of radical SAM enzymes

Presentation from students (Korea)

1. Hee-Ju NAH (Prof. ES Kim's lab)
Streptomyces artificial chromosome system for utilizing large biosynthetic gene cluster in various hosts
2. Hye-Jin KIM (Prof. ES Kim's lab)
Novel NPP polyene antibiotics exhibiting lower toxicity and improved antifungal activity
3. Hye-rim PYEON (Prof. ES Kim's lab)
Heterologous expression of pikromycin biosynthetic gene cluster using pSBAC system
4. Seo Yeong OH (Prof. YS Huh's lab)
LSPR sensor for the detection of bacteria in food
5. Palan LEE (Prof. TJ Jeon's lab)
Simultaneous detection and immortalization of pathogens in a microfluidic device
6. Daegyung KIM (Prof. TJ Jeon's lab)
Microfluidic Skin Model for Dermal Wound Healing Assay
7. Jin-young JANG (Prof. ES Kim's lab)
Production of Polyene NPP derivatives in a rare actinomycete, *Pseudonocardia autotrophica*
8. Dong Seok LEE (Prof. HS LEE's lab)
The *whcD* gene of *Corynebacterium glutamicum* plays roles in cell division and envelope formation
9. Su-In Choi (Prof. P Kim's lab)
Biosynthesis of actinobacterial heme and the uses

Presentation from students (China)

1. Zhen QI (Prof. Bai's group)

Directed accumulation of pimaricin derivatives with reduced cytotoxicity via PKS domain manipulation

2. Xiran WANG (Prof. Bai's group)

PKS gene overexpression with strong endogenous promoters resulted in improved geldanamycin production

3. Xinjuan NING (Prof. Bai's group)

Identification and relieving post-PKS modification bottlenecks in ansamitocin biosynthesis

4. Qinqin ZHAO (Prof. Bai's group)

Establishing an efficient genetic manipulation system for the acarbose producer *Actinoplanes* sp.

5. Xiaojie ZHANG (Prof. Bai's group)

Functional comparative genomic studies on salinomycin over-production

6. Yuanting WU (Prof. Bai's group)

Morphological engineering of *Actinosynnema pretiosum* ATCC31280 for improved ansamitocin production

7. Huixin XIE (Prof. Bai's group)

Functional comparative genomics of acarbose production

8. Yucong ZHOU (Prof. Bai's group)

Over-expression and crystallization of polyene TEs

9. Xiaoman LI (Prof. YM Shen's lab)

Synthetic biology approach to the synthesis of D-alanyl maytansinol

10. Yanrong SHI (Prof. YM Shen's lab)

Synthetic biology approach to the structural optimizations of rifamycin

11. Peng SHI (Prof. YM Shen's lab)

Biosynthesis of a class of new meta-geranyl para-amino benzoic acids