

# Scientific Program

## June 30 (Saturday) Opening Ceremony & Plenary Lectures

---

### Centennial Hall

**10:30-10:45** Opening Ceremony

**10:45-17:30** Plenary Lectures

**PL-01** Exploitation of plant and animal enzymes, and the soluble expression of genes for the enzymes  
*10:45-11:15* Yasuhisa Asano

**PL-02** Molecular mechanism of PET biodegradation and PHA biosynthesis  
*11:15-11:45* Kyung-Jin Kim

**PL-03** A new era of biocatalysis and biotransformation: tailor-making biocatalyst towards bioproducts  
*11:45-12:15* Dongzhi Wei

---

**12:15-13:45**

**Lunch Break**

---

**PL-04** Microbial metabolisms pioneering novel bioprocesses  
*13:45-14:15* Jun Ogawa, Shigenobu Kishino, Akinori Ando, Michiki Takeuchi, Ryotaro Hara and Makoto Hibi

**PL-05** Multi-enzyme Cascade Reactions Using Catalytic Inclusion Bodies  
*14:15-14:45* Seung-Goo Lee, Soo-Jin Yeom, Gui Hwan Han and Dae-Hee Lee

**PL-06** Enzymatic production of *N*-acetyl glucosamine and *N*-acetyl chitobiose by two novel chitinases from *Paenibacillus barengoltzii*  
*14:45-15:15* Zhengqiang Jiang and Shaoqing Yang

---

**15:15-16:00**

**Group Picture & Coffee Break**

---

**PL-07** Nano-architecture of bacterial cytochrome P450 system and cofactor regeneration system using PCNA as a protein scaffold  
*16:00-16:30* Teruyuki Nagamune and Hidehiko Hirakawa

**PL-08** Bacterial Cytochrome P450 BM3 as a Biocatalyst for Generation of Human Metabolites of Drugs and Bioactive Compounds  
*16:30-17:00* Chul-Ho Yun

**PL-09** Computational enzyme redesign for regio- and enantioselective hydroamination reactions  
*17:00-17:30* Bian Wu

---

**18:30-20:30**

**Banquet at Hotel Heian no Mori Kyoto**

---

## July 1 (Sunday) Oral Presentations 09:30-11:10

---

### Room I

#### 09:30-10:50 Oral Session I-1

- O-01** Enzymatic systems involved in sinigrin metabolisms in lactic acid bacteria  
09:30-09:50 Hiroko Watanabe, Shigenobu Kishino, Riku Usami, Yudai Aoki, Wataru Aoki, Hiroyuki Suganuma and Jun Ogawa
- O-02** A ribonucleolytic ASCH domain from *Zymomonas mobilis*  
09:50-10:10 Bo-Na Kim, Minsang Shin, Sung Chul Ha, Suk-Youl Park, Pil-Won Seo, Hye-Ji Kim, Andreas Hofmann and Jeong-Sun Kim
- O-03** Bacterial Enzymes Catalyzing the Synthesis of 1,8- Dihydroxynaphthalene, a Key Precursor of Dihydroxynaphthalene Melanin, from *Sorangium cellulosum*  
10:10-10:30 Yusuke Sone, Shuto Nakamura, Makoto Sasaki, Fumihito Hasebe, Seung-Young Kim and Nobutaka Funa
- O-04** Activating mutations promote the activation of human MAP kinase 1 (MEK1) in cancers: A molecular dynamics simulation study  
10:30-10:50 Ye Liu, Jingxuan Zhu, Zhengfei Yu, Xiaopian Tian, Dong Xu and Weiwei Han
- 

### Room II

#### 09:30-10:50 Oral Session II-1

- O-05** Attenuated Substrate Inhibition of a Haloketone Reductase by Loop Engineering Based on Structural and Computational Analyses  
09:30-09:50 Huilei Yu, Yuepeng Shang, Qi Chen and Jianhe Xu
- O-06** Simultaneous control of three chiral centers with microbial carbonyl reductases  
09:50-10:10 Makoto Hibi, Xuan Shi, Takuya Miyakawa, Masaru Tanokura and Jun Ogawa
- O-07** Enzyme engineering based on X-ray structures and profiling of substrate library: alcohol dehydrogenases for stereospecific synthesis of valuable chiral alcohols  
10:10-10:30 Yao Nie, Shanshan Wang, Xiaoqing Mu and Yan Xu
- O-08** Elucidation of the intra- and inter-molecular electron transfer pathways of glucoside 3-dehydrogenase from *Rhizobium radiobacter*  
10:30-10:50 Ryota Miyazaki, Wakako Tsugawa, Tomohiko Yamazaki, Katsuhiko Kojima and Koji Sode
- 

### Room III

#### 09:30-10:50 Oral Session III-1

- O-09** Enzymatic characterization of unsaturated fatty acid metabolism in gut microorganisms generating bioactive fatty acids  
09:30-09:50 Michiki Takeuchi, Shigenobu Kishino, Si-Bum Park, Nahoko Kitamura and Jun Ogawa
- O-10** Enzymatic synthesis of multi-functional C9 carboxylic acids from C18 ricinoleic acid  
09:50-10:10 Hee-Jeong Cha, Eun-Ji Seo, Hye-Jin Jo, Ji-Won Song and Jin-Byung Park
- O-11** Biosynthesis of C9 carboxylic acids from renewable oils and fatty acids  
10:10-10:30 Eun-Ji Seo, Jung-Hoo Lee, Choul-Gyun Lee, Jong Moon Park and Jin-Byung Park
- O-12** Efficient production of the drug candidates epitheafalgallin 3-O-gallate (ETFGg) and indirubin derivatives by the oxidative reactions of laccase and styrene monooxygenase  
10:30-10:50 Nobuya Itoh and Hiroshi Toda
- 

10:50-11:10

Coffee Break

---

## July 1 (Sunday) Oral Presentations 11:10-14:10

---

### Room I

#### 11:10-12:30 Oral Session I-2

- O-13** Engineering of the shikimate pathway in *Corynebacterium glutamicum* for the production of aromatics  
11:10-11:30 Henry Syukur Purwanto, Mi-Sook Kang, Lenny Ferrer, Sang-Soo Han, Jin-Young Lee, Han-xiao Ying, Jin-Ho Lee and Hak-Sung Kim
- O-14** Oligopeptide synthesis by internal adenylation domains involved in nonribosomal peptide synthesis  
11:30-11:50 Tomoko Abe, Kenta Kobayashi, Sho Kawamura, Tatsuya Sakaguchi, Kiwamu Shiiba and Michihiko Kobayashi
- O-15** Discovery and application of potential heterologous transcription factors and target genes of filamentous fungi in *Penicillium oxalicum*  
11:50-12:10 Chengqiang Xia, Zhonghai li and Xin Song
- O-16** Discovery of new catalytic activity of hemoglobin  
12:10-12:30 Toshiki Nagakubo, Takuto Kumano, Yoshiteru Hashimoto and Michihiko Kobayashi
- 

### Room II

#### 11:10-12:30 Oral Session II-2

- O-17** Evolutionary creation of new phenol-lyase through combination of rational library design and fluorescence-based genetic enzyme screening system  
11:10-11:30 Kil Koang Kwon, Soo-Jin Yeom, Eugene Rha and Seung-Goo Lee
- O-18** Design of Carbonic Anhydrase and its Site-specific Immobilization for Efficient Enzymatic CO<sub>2</sub> Sequestration Process  
11:30-11:50 Seung Pil Pack, Sung Ho Kim, Ki Sung Park, Jong Ki Kim and Ryeo Gang Son
- O-19** Crystal structure based rational engineering of tyrosine decarboxylase for efficient preparation of tyramine  
11:50-12:10 Guochao Xu, Mingyang Jiang, Haixia Zhu and Ye Ni
- O-20** Disulfide bond mediated protein engineering of Lysine decarboxylase from *Selenomonas ruminantium*  
12:10-12:30 Hye-Young Sagong, Hwaseok Hong and Kyung-Jin Kim
- 

### Room III

#### 11:10-12:30 Oral Session III-2

- O-21** EziG – A tool for solving process challenges in biocatalysis  
11:10-11:30 Hans-Jürgen Federer
- O-22** Biocatalytic transformation of water-insoluble chemicals using a lipophilic whole-cell biocatalyst  
11:30-11:50 Kohsuke Honda, Tomohiro Ono, Kenji Okano, Ryoma Miyake, Yasumasa Dekishima and Hiroshi Kawabata
- O-23** Modularization of *in vitro* metabolic pathway for the salvage synthesis of NAD<sup>+</sup>  
11:50-12:10 Hironori Taniguchi, Kenji Okano and Kohsuke Honda
- O-24** Controlled Orientation of Active Sites in a Nanostructured Multienzyme Complex  
12:10-12:30 Inchan Kwon
- 

12:30-14:10

Lunch Break

---

## July 1 (Sunday) Oral and Poster Presentations 14:10-18:00

---

### Room I

#### 14:10-15:30 Oral Session I-3

- O-25**  
14:10-14:30 Identification of a novel biosynthetic pathway of UDP-GalNAc from thermophilic archaeon *Sulfolobus tokodaii*  
Yutaka Kawarabayasi
- O-26**  
14:30-14:50 Structural insights into Trehalose 6-phosphate phosphatases of *Pseudomonas aeruginosa*, and a new high-flux 11C microfocus MX Beamline at the Pohang Accelerator Laboratory  
Suk-Youl Park
- O-27**  
14:50-15:10 Structural basis for the unusual ring reconstruction by novel isomerase in fungal meroterpenoid biosynthesis  
Takahiro Mori and Ikuro Abe
- O-28**  
15:10-15:30 New enzymes for bacterial peptidoglycan biosynthesis  
Ruoyin Feng, Yasuharu Satoh, Yasushi Ogasawara, Tohru Yoshimura and Tohru Dairi
- 

### Room II

#### 14:10-15:30 Oral Session II-3

- O-29**  
14:10-14:30 Comparison of inhibitory activities of resveratrol and caffeic acid against  $\alpha$ -glucosidase  
Jiang Lili, Zhang Zhongmin, Wang Zhen and Liu Yong
- O-30**  
14:30-14:50 Exploring the enzyme sources from fungus-growing termite and its symbiotic microbes  
Shuzhe Jiang, Jingjing Li, Chunjing Cao, Yulong Shen and Jinfeng Ni
- O-31**  
14:50-15:10 Engineered active zymogen of microbial transglutaminase  
Noriho Kamiya, Takashi Matsuzaki, Ryo Sato, Kounosuke Hayashi, Rie Wakabayashi and Kosuke Minamihata
- O-32**  
15:10-15:30 Single amino acid substitution of choline lysoplasmalogen-specific phospholipase D resulted in LysoPAF-specific enzyme  
Daisuke Sugimori, Takayuki Oyama, Koki Kawahara, Kazutaka Murayama and Shin-ichi Sakasegawa
- 

### Room III

#### 14:10-15:30 Oral Session III-3

- O-33**  
14:10-14:30 A novel enantioselective synthetic route to (*R*)- $\gamma$ -valerolactone via chemoenzymatic reduction/dehydration of levulinic acid  
Young Joo Yeon, Jisu Park, Wanseo Lee, Chan Hyun Lee and Dohoon Lee
- O-34**  
14:30-14:50 Metabolic engineering of *Ralstonia eutropha* for biosynthesis of poly(3-hydroxybutyrate-co-3-hydroxyhexanoate) from structurally unrelated sugars  
Menxiao Zhang, Izumi Orita, Satoshi Nakamura and Toshiaki Fukui
- O-35**  
14:50-15:10 Functional expression of aerobic CO dehydrogenase to utilize C1 steel mill waste gas  
Jinhee Lee, Inchan Kwon and Young Hwan Kim
- O-36**  
15:10-15:30 Metabolic engineering of *Escherichia coli* for fermentative production of 1-propanol  
Michihiko Kataoka, Mitsuru Matsubara, Ryo Hasegawa and Yuhki Hattori
- 

15:30-18:00

Poster Presentations in Rooms III-V

---

## July 2 (Monday) Oral Presentations 09:30-10:50

---

### Room I

#### 09:30-10:30 Oral Session I-4

- O-37** New insights in to functions of 2-oxoglutarate/Fe (II)-dependent oxygenase  
09:30-09:50 Baolei Jia, Xiaomeng Jia, Kyung Hyun Kim and Che Ok Jeon
- O-38** Biochemical and genetic characterization of fungal proline hydroxylase in *Aspergillus pachycristatus* echinocandin biosynthesis  
09:50-10:10 Feng Zhang, Weixin Zhang, Xiangfeng Meng, Guanjun Chen and Weifeng Liu
- O-39** Enzyme engineering of a D-threonine aldolase for D-threonine production  
10:10-10:30 Soo-Jin Yeom and Sung-Hyun Park
- 

### Room II

#### 09:30-10:30 Oral Session II-4

- O-40** Molecular modification in *Trichoderma Reesei* Cel7A for decreasing bind lignin non-productively  
09:30-09:50 Xu Fang, Suhao Niu, Baojie Jiang and Dan Feng
- O-41** Promoter engineering and multi-direction transcriptional programing in *Bacillus subtilis*  
09:50-10:10 Zhenghui Lu, Yunyun Shi, Xin Yuan and Guimin Zhang
- O-42** Alteration of substrate specificity of insect-derived FAD dependent glucose dehydrogenase from *Drosophila melanogaster* (*Dm* GDH)  
10:10-10:30 Alimuddin, Katsuhiko Kojima, Ryutaro Asano, Wakako Tsugawa, Kazunori Ikebukuro and Koji Sode
- 

### Room III

#### 09:30-10:30 Oral Session III-4

- O-43** Direct preparation of Cas9 ribonucleoprotein from *E. coli* for seamless DNA assembly  
09:30-09:50 Wenqiang Li, Lixin Ma and Yi Liu
- O-44** CRISPR-based genome editing and transcriptional repression systems in *Pseudomonas putida* KT2440  
09:50-10:10 Jun Sun, Lirong Yang, Jianping Wu and Sheng Yang
- O-45** Molecular Evolution of TYROSINASE: new reaction mechanisms and its application  
10:10-10:30 Byung-Gee Kim, Sang Hyuk Lee, Hyun Kim, Uk-Jae Lee, Pyung Gang Lee, Han Bit Song and Hee Won Noh
- 

10:30-10:50

Coffee Break

---

## July 2 (Monday) Oral Presentations & Closing Ceremony 10:50-12:30

---

### Room I

#### 10:50-11:50 Oral Session I-5

- O-46**  
10:50-11:10  
Discovery of lytic polysaccharide monoxygenases and its effects in oxidative degradation of chitin and cellulose  
Haichuan Zhou, Huiyan Zhang, Yong Zhao, Jiu Ju, Zuochen Yu and Heng Yin
- O-47**  
11:10-11:30  
The PT/S-box of modular cellulase AcCel12B plays a key role in the hydrolysis of insoluble cellulose  
Yuwei Li, Junling Wang, Limei Wang, Hao Tong, Mingwei Bu, Gui Gao, Weiwei Han and Zuoming Zhang
- O-48**  
11:30-11:50  
Biochemical and genetic analyses of *cod4* and *cod7* gene reveal that chitin deacetylation is involved in polar growth in *Aspergillus fumigatus*  
Mingming Xie, Yang Lü, Xiaobing Zhao, Jianchen Su, Hongge Chen, Jean-Paul Latgé and Cheng Jin
- 

### Room II

#### 10:50-11:50 Oral Session II-5

- O-49**  
10:50-11:10  
What is happening in an artificial self-sufficient cytochrome P450?  
Hidehiko Hirakawa
- O-50**  
11:10-11:30  
Beating Bias in Directed Evolution of Proteins: Combining High-Fidelity On-Chip Solid-Phase Gene Synthesis with Efficient Gene Assembly for Combinatorial Library Construction  
Aitao Li, Carlos G. Acevedo-Rocha, Zhoutong Sun and Manfred T. Reetz
- O-51**  
11:30-11:50  
Construction of lactate sensor with improved shelf life by employing a novel stable electron mediator with the combination engineered lactate oxidase  
Maya Fitriana, Noya Loew, Kentaro Hiraka, Koji Sode, Kazunori Ikebukuro and Wakako Tsugawa
- 

### Room III

#### 10:50-11:50 Oral Session III-5

- O-52**  
10:50-11:10  
Deriving Chemically Essential Interactions Based on Active Site Alignments and Quantum Chemical Calculations: A Case Study on Glycoside Hydrolases  
Yinliang Zhang, Zeming Fang, Wei Fang, Xuecheng Zhang, Haiyan Liu and Yazhong Xiao
- O-53**  
11:10-11:30  
Metabolic regulation of yeast *Saccharomyces cerevisiae* by "G body" formation under hypoxia  
Natsuko Miura and Mitsuyoshi Ueda
- O-54**  
11:30-11:50  
Identification of novel regulatory genes controlling expression of the raw starch-digesting glucoamylase gene in *Penicillium oxalicum* and genetic engineering for improving the production of the raw starch-digesting glucoamylase  
Shuai Zhao, Long Wang, Mei-Yuan Zhang, Ya-Ru Xiong, Qi-Peng He, Jiu-Xiang Wang, Li-Hao Fu and Jia-Xun Feng
- 

12:00-12:30

**Closing Ceremony Centennial Hall**

---