



The 23rd Symposium of the Society of Biocatalysis Japan



Photo by DKato_ 寺山公園から望む桜島

28th and 29th September, 2023

Inamori Auditorium, Kagoshima University
1-21-40 Korimoto, Kagoshima 890-0065 Japan

Organized by **The Society of Biocatalysis Japan**

Sponsored by



Daicel Corporation
Amano Enzyme Inc.

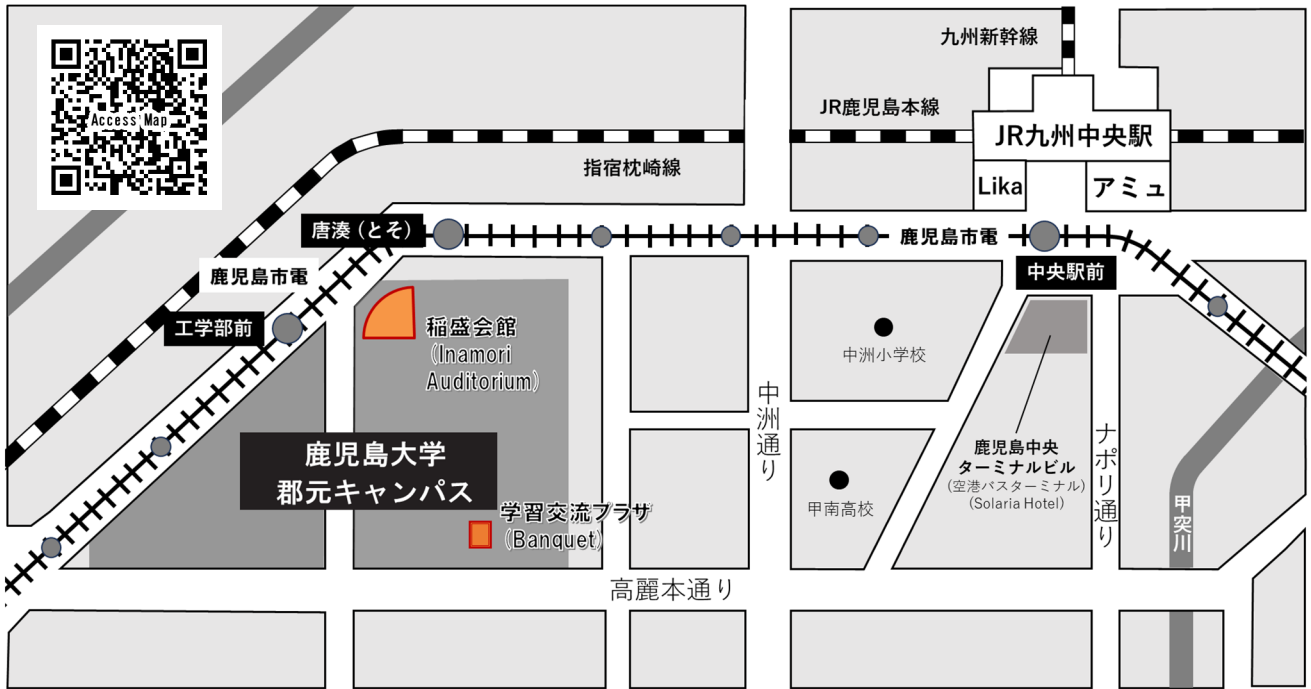


KNC Laboratories Co., Ltd.
KANEKA CORPORATION
Ajinomoto Co., Ltd.

Eat Well, Live Well.



● Access to Inamori Auditorium



● Wifi connectivity

Wifi connection is available via "eduroam".

Visitor accounts will be created during the symposium. Please ask at the registration desk if you are necessary.

PROGRAM AT A GLANCE

Thursday, 28th September, 2023

In English Day

9:00- 9:20	Registration
9:20- 9:30	Announcement about the schedule of this meeting & Opening Remark
9:30-10:30	IL1 : Prof. Uwe Bornscheurer (University of Greifswald, Germany)
10:30-10:45	1 min short presentation for poster (odds number)
10:45-11:45	P _{odd} & PH : Poster presentaiton (odds number & High School Students)
	Lunch
13:00-13:40	IL2 : Dr. Josh K Michener (Oak Ridge National Laboratory, USA)
13:40-14:40	IL3 : Prof. Michael Mueller (University of Freiburg, Germany)
14:40-14:55	1 min short presentation for poster (even number)
14:55-15:55	P _{even} : Poster presentation (even number)
16:00-16:40	IL4 : Prof. Takeshi Sugai (Keio University, Japan)
16:40-17:20	O1, O2 : Oral presentation
18:00-20:00	Banquet (at Study Lounge, Student Community Plaza)

Friday, 29th September, 2023

In Japanese Day

9:00- 9:40	IL5 : Prof. Masato Ikeda (Gifu University, Japan)
9:40-10:20	IL6 : Prof. Seiji Negoro (University of Hyogo, Japan)
	Break
10:35-10:55	OH1 : Special oral presentation (Ikeda Gakuen High school)
11:00-12:00	O3-O5 : Oral presentation
	Lunch
13:15-14:15	O6-O8 : Oral presentation
14:15-14:55	O9, O10 : Oral presentation
	Break
15:15-15:55	IL7 : Prof. Kohsuke Honda (Osaka University, Japan)
15:55-16:35	IL8 : Prof. Hiroshi Kanzaki (Okayama University, Japan)
16:40-17:00	Award Ceremony & Closing Remark

● Core Times of Poster Presentation on Thursday, 28th September

10:45-11:45 : odds number & High School Students

14:55-15:55 : even number

Posters should be displayed until 15:00 (break time in afternoon) of the second day.

● Oral Presentation Details

10 min presentation followed by 9 min Q&A (1 min changeover time)

LIST OF INVITED LECTURES

- IL1 **Enzyme discovery & engineering to create suitable biocatalysts**
Uwe T. Bornscheuer
Institute of Biochemistry, University of Greifswald, Greifswald, Germany.
- IL2 **Biocatalyst discovery for sustainable chemical production and recycling**
Joshua K. Michener
Oak Ridge National Laboratory, USA.
- IL3 **Green versus Sustainable Chemistry: some insights from biocatalytic and (retro)biosynthetic analyses**
Michael Mueller
Institute of Pharmaceutical Sciences, University of Freiburg, Freiburg, Germany.
- IL4 **Chemo-enzymatic transformation of carbohydrates and glycosides towards the syntheses of bioactive substances**
Takeshi Sugai
Faculty of Pharmacy, Keio University, Japan.
- IL5 **Modular and hybrid molecular design to construct supramolecular materials**
Masato Ikeda
Gifu University, Japan.
- IL6 **Structural and functional analysis of nylon hydrolase and enzymatic approach for recycling of nylons**
Seiji Negoro, Dai-ichiro Kato and Naoki Shibata
University of Hyogo, Kagoshima University, Japan.
- IL7 **Design and Implementation of In Vitro Synthetic Pathway with Thermophilic Enzymes**
Kohsuke Honda
International Center for Biotechnology, Osaka University, Japan.
- IL8 **Biocatalyst-mediated synthesis of bioactive 'Unnatural' natural products**
Hiroshi Kanzaki
Okayama University, Japan

LIST OF ORAL PRESENTATIONS

- O1 **Dynamic Kinetic Resolution of 2-Hydroxy Biaryl Atropisomers via Lipase-Catalyzed Enantioselective O-Acylation**
○ Neha Dhiman, Gamal A.I. Moustafa, Kengo Kasama, Kyohei Kanomata, Shuji Akai
Graduate School of Pharmaceutical Sciences, Osaka University
- O2 **Biocatalytic reduction of prochiral bulky-bulky ketones by engineered alcohol dehydrogenase**
○ Zhongyao Tang¹, Yuuki Takagi¹, Afifa Ayu Koesoema¹, Tomoko Matsuda
Department of Life Science and Technology, School of Life Science and Technology, Tokyo Institute of Technology
- O3 (P11) **Development of Chemical Pretreatment Techniques for High-Efficiency Enzymatic Nylon Monomerization**
○ Yuki Shiraishi¹, Risa Yokoyama¹, Yoko Furuno¹, Tatsuo Kaneko², Seiji Negoro³, Dai-ichiro Kato¹
1: Kagoshima University, 2: Jiangnan University, 3: University of Hyogo
- O4 **Soluble production of L-amino acid oxidase by mutagenesis towards biotransformation via keto acid**
○ Ayuta Nakahara, Wakana Asanuma, Yosuke Toyotake, Mamoru Wakayama, Daisuke Matsui
Ritsumeikan Univ.
- O5 **Microbial transformation of polymethoxyfavonoids and their antiobesity effect**
○ Koshin Kimoto, Miki Sugiyama, Ryohei Kono, Hiroto Utsunomiya, Yoshiharu Okuno
Advanced engineering Faculty, National Institute of Technology, Wakayama College, National Institute
- O6 **Novel polyamide 4-degrading enzyme from a marine bacterium**
○ Saito Yusuke, Honda Masayoshi, Furuno Yoko, Kato Dai-ichiro, Abe Hideki, Yamada Miwa
Iwate Univ., Fac. Agric., Iwate Univ., Fac. Eng., Tokyo Univ. Sci., Grad. Sch. Sci., Kagoshima Univ., CSRS, RIKENS
- O7 **Soluble expression of polyamide 4-degrading enzyme in recombinant *Escherichia coli***
○ Shunko Sato, Miwa Yamada
Iwate University Graduate School, Iwate University
- O8 **Improving the ability of lipase-catalyzed dynamic kinetic resolution of tertiary alcohols**
○ Satoshi Horino, Karla Wagner, Anke Hummel, Kyohei Kanomata, Harald Gröger, Shuji Akai
Graduate school of pharmaceutical sciences Osaka University, Faculty of Chemistry, Bielefeld University
- O9 **A New Family of Peptide Cyclases Enabled Streamlined Chemoenzymatic Synthesis of Cyclic Peptide**
○ Kenichi Matsuda, Masakazu Kobayashi, Kei Fujita, Toshiyuki Wakimoto
Faculty of Pharmaceutical Sciences, Hokkaido University
- O10 (P29) **Lipase/H₂SO₄ as cocatalyst for dynamic kinetic resolution of alcohols**
○ Kyohei Kanomata, Jihoon Moon, Takusho Kin, Karin Mizuno, Shuji Akai
Graduate School of Pharmaceutical Sciences, Osaka University

LIST OF POSTER PRESENTATIONS

- P01 **Synthetic studies of avenolide using biocatalytic reactions as key reactions**
○Keigo Sugimoto, Keigo Kakumaru, Atsushi Sakurai, Takashi Monna, Ken-ichi Fuhshuku
Department of Interdisciplinary Science and Engineering, Meisei University
- P02 **Enzymatic Approaches for Enantioselective Lactone Synthesis**
○Lan Huong Le Viet, Mayumi Tamura, Tomoko Matsuda
School of Life Science and Technology, Tokyo Institute of Technology
- P03 **Development of the polyrotaxane accumulated 1-deoxynojirimycin to control the activity of α -glucosidase such as membrane enzyme**
○Yuta Tenma, Akihiko Hatano, Atsushi Kato
Shibaura Institute of Technology, University of Toyama
- P04 **Tannase-catalyzed galloylation of alcohols in the mixed solvent system of hexane/tert-butanol**
○Renshiro Otaka, Hideo Kojima
Grad. Sch. Sci., Osaka Metropolitan Univ.
- P05 **Lipase-catalyzed benzyloxycarbonylation of alcohols in the deep eutectic solvent system of choline chloride/urea**
○Taito Nagamoto, Yuto Yamamoto, Hideo Kojima
Grad. Sch. Sci., Osaka Metropolitan Univ.
- P06 **Asymmetric reduction of ketones using aquatic plants as whole-cell biocatalyst**
○Yuya Machi, Hideo Kojima
Grad. Sch. Sci., Osaka Metropolitan Univ.
- P07 **Asymmetric reduction of ketones using *Pisum sativum* seedlings as whole-cell biocatalysts**
○Ryota Shimamoto, Yuya Machi, Hideo Kojima, Satomi Takeda
Grad. Sch. Sci., Osaka Metropolitan Univ.
- P08 **Additive effects on asymmetric reduction of ketones using cyanobacterium *Synechocystis* sp. PCC 6803**
○Satsuki Fukui, Hideo Kojima, Satomi Takeda, Rio Yamanaka
Grad. Sch. Sci, Osaka Metropolitan Univ., Pharm. Sci., Himeji Dokkyo Univ.
- P09 **Lipase-catalyzed allyloxycarbonylation of alcohols using allyl phenyl carbonate**
○Yuto Yamamoto, Hideo Kojima
Grad. Sch. Sci., Osaka Metropolitan Univ.
- P10 **Synthesis of 4-substituted gentianine from swertiamarin**
Sakurako Shimizu, Hinata Matsuo, ○Ryoya Kaneko, Takaya Noguchi, Yasuaki Hirai, Mikio Fujii
School of Pharmacy, International University of Health and Welfare. The Mt. Fuji Institute for Nature and Biology, Showa University.
- P11 (O3) **Development of Chemical Pretreatment Techniques for High-Efficiency Enzymatic Nylon Monomerization**
○Yuki Shiraishi¹, Risa Yokoyama¹, Yoko Furuno¹, Tatsuo Kaneko², Seiji Negoro³, Dai-ichiro Kato¹
1:Kagoshima University, 2: Jiangnan University, 3:University of Hyogo
- P12 **Stereo-selective synthesis of rare alliin isomers using microbial Fe(II)/ α -ketoglutarate-dependent dioxygenases**
○Taku Mizutani, Ryosuke Kanzawa, Ryotaro Hara, Makoto Ueda, Jun Ogawa
Grad., Sch., Agric., Kyoto Univ., NIT, Oyama College
- P13 **Development of the α -glucosidase inhibitors accumulated 1-deoxynojirimycin with DNA origami**
○Nagihito Miyahara, Ryu Mayumi, Akihiko Hatano, Atsushi Kato
Shibaura Institute of Technology, University of Toyama
- P14 **Characterization and gene cloning of fatty acid amide-synthesizing enzyme in *Mycobacterium* sp. AKU 2014**
○Kouhei Yokoo, Tatsuo Fukao, Ryotaro Hara, Makoto Ueda, Jun Ogawa
Grad., Sch., Agric., Kyoto Univ., NIT, Oyama College

- P15 **Enzyme-mediated Enantioselective Hydrolysis of 1,2-Diol Monotosylate Derivatives Bearing a β -Methallyl Group as a Masked Methyl Ketone Structure**
 ○Hiroki Aiba, Yoshihito Takahashi, Yuki Kono, Kazutsugu Matsumoto
Faculty of Science and Engineering, Meisei University
- P16 **CO₂ Fixation Reaction With *Thermoplasma acidophilum* Malate Dehydrogenase**
 ○Yuri Oku, Kristian Ray Angelo Are, Shusuke Ohshima, and Tomoko Matsuda
Department of Life Science and Technology, Tokyo Institute of Technology
- P17 **Distribution of mammalian gut microbiota capable of converting C-glycoside mangiferin into its aglycone norathyriol**
 ○ Y. Uga (M2) 1, U. Hasanah 1, H. Kayaki 2, H. Kawakami 2, Y. Nishitani 2, H. Kuwahara 2, T. Nitoda 1, H. Kanzaki 1
 1 *Grad. Sch. Environ. Life Sci., Okayama Univ.*, 2 *Maruzen Pharmaceuticals*
- P18 **Microbial production of biodegradable polymer by oleaginous yeast *Lipomyces starkeyi***
 ○Akihiro Ishioka, Prihardi Kahar, Chiaki Ogino
Faculty of Engineering, Kobe University
- P19 **Development of nylon hydrolase (nylC) for long-chain nylon degradation**
 Yukino Teraoka, Chiaki Ogino, Yutaro Mori
Department of Chemical Science and Engineering, Faculty of Engineering, Kobe University
- P20 **Construction and validation of a metabolic model for thermophilic actinomycetes**
 ○Togo Yamada, Chiaki Ogino, Yutaro Mori
Faculty of Engineering, Kobe University
- P21 **Modification of nanobody with SpyTag-SpyCatcher to PAA-TiOx NPs**
 ○Tsubasa Matsuzawa, Chiaki Ogino
Faculty of Engineering, Kobe University
- P22 **Differences between wild type and hyphae-dispersed type of *Aspergillus oryzae* in the observation of cell organelles**
 ○Suzuki Tomohiro¹, Matsumoto Kotone¹, Wakai Satoshi^{2,3}, Kondo Akihiko², Chiaki Ogino
Grad. Sch. Eng, Kobe Univ. Grad. Sch. Sci. Technol. Innov., Kobe Univ. JAMSTEC
- P23 **Inhibitory sensitivity of β -N-acetylglucosaminidase from *Enterococcus* sp. MK26 to N,N,N-trimethyl- β -D-glucosaminium-containing compounds**
 ○K. Morioka, H. Ono, M. Koide, S. Suganuma, T. Nitoda, H. Kanzaki
Grad. Sch. Environ. Life Sci., Okayama Univ.
- P24 **Development of L-penicillamine production process by enzymatic reaction**
 ○Toru Watanabe, Yuichi Iwamoto, Akira Iwasaki.
 KANEKA CORPORATION
- P25 **Discovery of a giant enzyme for plant secondary metabolism: Purification and characterization of tuliposide B-converting enzyme in a wild tulip**
 Taiji NOMURA, ○Yasuo KATO
Biotechnol. Res. Cent., Toyama Pref. Univ.
- P26 **Laccase-catalyzed synthesis of an odor-active compound, rotundone, and purification**
 ○Satoru Umezawa, Yuki Tokura, Kuniki Kino
 T. Hasegawa Co., LTD., . Dept. Appl. Chem., Sch. Adv. Sci. Eng., Waseda Univ.
- P27 **The effects of amino acid substitution on the nylon hydrolytic activity of NylC-like protein from *Leucobacter triazinivorans* (LtNylC)**
 ○Sayaka Iizasa, Dai-ichiro Kato
Graduate School of Science and Engineering, Kagoshima University
- P28 **A novel marine bacterium degrading the monomer unit of itaconate-derived nylon-6i**
 ○Yoko Furuno¹, Risa Yokoyama¹, Kaito Miyazaki¹, Tatsuo Kaneko², Seiji Negoro³, Dai-ichiro Kato¹
 1: *Kagoshima University*, 2: *Jiangnan University*, 3: *University of Hyogo*
- P29 (O10) **Lipase/H₂SO₄ as cocatalyst for dynamic kinetic resolution of alcohols**
 ○Kyoei Kanomata, Jihoon Moon, Takusho Kin, Karin Mizuno, Shuji Akai
Graduate School of Pharmaceutical Sciences, Osaka University

LIST OF ORAL & POSTER PRESENTATIONS BY HIGH SCHOOL STUDENTS

- PH01
OH1 **Volcanic gases measurement in Sakurajima volcanic area using simple alkaline filter paper method**
○Yu Yoshii, ○Chiyono Kawamoto, ○Kokoro Kurose
Ikeda High School
- PH02 **Study on the transmitted light of cellophane**
○Momoka Iwakiri, ○Daichi Uehara, ○Ryutaro Uchiyama, Ryoga Mizuguchi, Taichi Yuasa
Ikeda high school
- PH03 **Stress Experienced by Zebra Fish in Saltwater**
Ryutaro Okamura, ○Yuta Ito, ○Yuimi Ryuzozi, Kanta Suzuki, Taketo Uehigashi
Ikeda Gakuen Ikeda Junior & Senior High School
- PH04 **Cherry Blossom Forecasting - Proposal of Ikeda Model**
Rin Amiya, Masato Ina, Yuu Hamasaki, Kayo Nakazono, Himawari Iwai, Yori Sonoda
Ikeda High School
- PH05 **Analysis of visible color differences**
Tatsuya Uemoto, Kaiji Sakamoto, Hirokazu Tokunaga, Reia Watanabe
Ikeda High school
- PH06 **Development of a measuring device for phosphorus concentration in rivers and sea**
○Yumeno IJICHI, ○Aoi MIZUMOTO, Yuki SAKODA, Keisuke MATSUOKA, Saya ISHIZAKI
Kokubu High School
- PH07 **Distribution of the Hepaticae *Leptolejeunea elliptica* in Kirishima Geopark, Kagoshima**
○Riko Yaeo, ○Natsune Yamamoto, Honoka Sako and Miu Yotsumoto
Kokubu High School
- PH08 **First records of the freshwater shrimp *Caridina laoagensis* (Decapoda: Atyidae) in the Kyushu Island, Yakushima Island and Kuchinoerabujima Island, Japan**
○Kantaro Souma, Kousei Sumiyoshi and Koumei Tamura
Kokubu High School
- PH09 **Recent distribution and egg bearing status of freshwater caridean shrimps and prawns (Atyidae and Palaemonidae) in Kagoshima Prefecture, Japan**
○Shuto Kawano, Takahiro Tsuzaki and Masahiko Machida
Kokubu High School