

The 17th Annual Meeting of Japanese Society of Plant Microbe Interactions

and

International Symposium of the FSRC Research Project, Kagoshima University

Program of Events

19 September, Wednesday

12:30 Registration at Inamori Auditorium

13:30 to 15:00 Opening and Session I

1 Methane Cycle and Symbiosis of C1-microorganisms with Plants

○Yasuyoshi Sakai, Maiko Sakakibara, Hiroyuki Iguchi, Kousuke Kawaguchi, Hiroya Yurimoto

Div. of Appl. Life Sci., Grad. Sch. of Agric., Kyoto Univ.

2 Growth of C1-yeasts on plant surface and cell physiology

○Kosuke Kawaguchi¹, Hiroya Yurimoto¹, Yasuyoshi Sakai ^{1,2}

¹Div. Appl. Life Sci., Grad. Sch. Agric., Kyoto Univ.,²JST, CREST

3 Apoptotic cell death in lettuce cells is involved in bacterial rot of lettuce caused by *Pseudomonas cichorii*

○Taku Kawakami, Akinori Kiba, Kouhei Ohnishi, Yasufumi Hikichi

Kochi Univ.

4 The mechanisms of regulation in hypersensitive reaction of potato to *Phytophthora infestans*: Control of the generation of active oxygen species by CDPK1 and CDPK2 in host cells

○Naotaka Furuichi¹, Kazutoshi Yokokawa¹, Hiromasa Yagi², Hideo Akutsu², Tsuneyoshi Horigome ³

¹Niigata Univ.CTR., ²Osaka Univ.Protein Inst, ³Niigata Univ.,Sci.

5 Oxolinic Acid-Resistance Mechanism of In Vitro Mutants of *Burkholderia glumae* And Their Survival Fitness on Rice Plants

○Yasufumi Hikichi, Yukiko Maeda, Kouhei Ohnishi, Akinori Kiba

Kochi Univ.

6 The hrp genes of *Pseudomonas cichorii* is essential for its pathogeniucity on eggplant but not lettuce

○Makoto Koyanagi, Masayuki Tanaka, Kouhei Ohnishi, Akinori Kiba, Yasufumi Hikichi
Kochi Univ.

Break

15:15 to 16:45 Session II

7 Expression of the *IRT1* gene in *M. huakuii* subsp. *rengi* promotes metal accumulation in nodules on *Astragalus sinicus*.

Akiko Ike¹, Rutchadaporn Sriprang¹, Mitsuo Yamashita¹ and ○Yoshikatsu Murooka²

¹Osaka Univ. ²Hiroshima Inst. Technol.

8 Study of GFP-tubulin α 6 in root hairs during *Lotus-Mesorhizobium* interaction

○F. M. Perrine-Walker¹, H. Kouchi² and R.W. Ridge³

¹ Department of Biology, Division of Natural Sciences, International Christian University, Mitaka 181-8585, Tokyo, Japan ² Department of Plant physiology, National Institute of Agrobiological Sciences, Tsukuba, 305-8602, Ibaraki, Japan ³ Department of Biology, Division of Natural Sciences, International Christian University, Mitaka 181-8585, Tokyo, Japan

9 Genetic diversity of *Lotus pacificus* indigenous to Southwest Islands of Japan

○Masatsugu Hashiguchi¹, Kazuhiko Saeki², Ryo Akashi¹

¹Univ. of Miyazaki FSRC, ²Nara Woman's Univ.

10 New insight on the genes associated with nodulation of *Lotus japonicus*

Hiroshi Oyaizu, YongYi Li, ○YanXu Wang, Kaori Ishikawa, Keisuke Yokota, Chi-Te Liu, Masahiro Hisatomi, Shino Suzuki, Toshihiro Aono

Biotechnology Res. Center, Univ. Tokyo

11 Characterization and positional cloning of Fix⁻ mutant *LjSYM89* of *Lotus japonicus*

Md.Shakhawat Hossain^{1,2}, ○Yosuke Umehara^{1,2}, Shusei Sato³, Takakazu Kaneko³, Satoshi Tabata³, Masayoshi Kawaguchi^{2,4} and Hiroshi Kouchi^{1,2}.

1. Natl. Inst. Agrobiol Sci, 2. CREST/JST, 3. Kazusa DNA Research Institute, 4. Department of Biol Sci, Grad School of Sci, The Univ. of Tokyo

12 Identification of the causative gene of *Lotus japonicus* hypernodulation mutant klavier

○Erika Oka-Kira¹, Hikota Miyazawa¹, Naoto Sato¹, Guo-Jiang Wu^{2,1}, Shusei Sato³, Satoshi Tabata³, Masaki Hayashi⁴, Kyuya Harada⁴, Masayoshi Kawaguchi^{1,5,1} Department of

Biological Sci, Grad School of Sci, The Univ of Tokyo, ²South China Botanic Garden, ³Kazusa DAN Res Inst, ⁴National Inst Agrobiol Sci, ⁵CREST/JST

Brak

17:00 to 17:45 Session III

13 ALB1 of *Lotus japonicus* is required for infection thread formation

○Koji Yano^{1,2}, Yosuke Umehara², Haruko Imaizumi-Anraku², Shusei Sato³, Satoshi Tabata³, Masayoshi Kawaguchi⁴, Hiroshi Kouchi², Makoto Hayashi¹

¹Univ. of Munich, ²NIAS, ³Kazusa DNA Res. Inst., ⁴Tokyo Univ.

14 Communities of arbuscular *mycorrhizal* and non-*mycorrhizal* fungi colonizing the root of hypernodulating soybean mutant

○Kazunori Sakamoto¹, Maki Tsukui²

¹Grad. Sch. Hort. Chiba Univ., ²Grad. Sch. Sci. Tech. Chiba Univ.

15 *Mycorrhizal*-specific protein phosphorylation signal in *Lotus japonicus*

○Ryo Ohtomo^{1,4}, Tomoko Kojima^{1,4}, Tatsuhiro Ezawa², Masayoshi Kawaguchi^{3,4}

¹Natl.Inst.Livestock Grassland Sci., ²Hokkaido Univ., ³Univ. Tokyo⁴CREST

17:45 to 18:30 Discussion for presentations No. 1 ~ 15

18:45 Welcome reception at Educa

20 September, Thursday

9:00 to 10:00 90 seconds presentations of even number posters

10:00 to 11:15 Poster session (even number posters)

11:15 to 12:00 Discussion for even number posters

12:00 to 14:00 Lunch

Symposium : The molecular aspect of plant-microbe interactions and plant immunity as a clue to enhance plant ability

(Supported by Frontier Science Research Center, Kagoshima University)

14:00 to 14:15

Opening : Toshiki Uchiumi (Kagoshima University, Japan)

14:15 to 14:45

Haruko Imaizumi-Anraku (National Institute of Agrobiological Sciences, Japan)

FUNCTIONAL ANALYSIS OF COMMON SIGNALING PATHWAY IN *LOTUS JAPONICUS*
AND *ORYZA SATIVA*

14:45 to 15:15

Makoto Hayashi (University of Munich, Germany)

EPIDERMAL EVENTS FOR INFECTION OF RHIZOBIA: ROOT HAIR CURLING AND INFECTION

15:15 to 15:45

Krzysztof Szczyglowski (Agriculture and Agri-Food Canada, Canada)

CYTOKININ, SECRET AGENT OF NODULATION

15:45 to 16:15

Martin Parniske (University of Munich, Germany)

INTRACELLULAR ACCOMODATION OF SYMBIOTIC MICROBES BY PLANTS

16:15 to 16:40

Coffee Break

16:40 to 17:10

Ken-ichi Kucho (Kagoshima University, Japan)

ROLES OF THE CLASS 1 PLANT HEMOGLOBIN IN SYBIOTIC NITROGEN FIXATION AS A MODULATOR OF NITRIC OXIDE

17:10 to 17:40

Hirofumi Yoshioka (Nagoya University, Japan)

MAPKs SIGNALING REGULATES NITRIC OXIDE ASSOCIATED¹-MEDIATED NO AND NADPH OXIDASE-DEPENDENT OXIDATIVE BURSTS IN *NICOTIANA BENTHAMIANA*

17:40 to 18:10

Ken Shirasu (RIKEN Plant Science Centre, Japan)

COMMON COMPONENTS IN PLANT AND ANIMAL INNATE IMMUNITY SYSTEMS

19:00 Shokubiken Banquet at Shiroyama Kanko Hotel (shuttle busses will be available from Inamori Auditorium)

21 September, Friday

9:00 to 10:00 90 seconds presentations of odd number posters

10:00 to 11:15 Poster session (odd number posters)

11:15 to 12:00 Discussion for odd number posters

12:00 to 13:00 Lunch

13:00 to 13:45 plenary general meeting

13:45 to 15:30 Session IV

16 Biological resources and tools for functional genomics of *rhizobium*

○Yoshikazu Shimoda¹, Hisayuki Mitsui², Hiroko Kamimatsuse², Kiwamu Minamisawa², Satoshi Tabata¹, Shusei Sato²

¹Kazusa DNA Res. Inst., ²Tohoku Univ.

17 Exploration of gene repertoire in twenty endophytic bacteria in rice plants

○Takakazu Kaneko¹, Kiwamu Minamisawa², Yasukazu Nakamura¹, Akiko Watanabe¹, Akiko Ono¹, Manabu Yamada¹, Mitsuyo Kohara¹, Tadashi Sato², Tadashi Abe², Shima Eda², Nirinya Sudtachat², Hisayuki Mitsui², Manav Itakura², Satoshi Tabata¹

¹ Kazusa DNA Res.Inst.,²Tohoku Univ.

18 Activation of *Sinorhizobium fredii* USDA191 NodD1 in the presence of specific flavonoids: solubilization and stabilization

○Yohei Takada¹, Won-Seok Kim², Hari B Krishnan², Hitoshi Ashida¹, Ken-ichi Yoshida¹

¹Grad. Sch. Agr. Sci.Kobe Univ., ² Plant Genet. Res. Unit, Univ. of Missouri.

19 A study on nodule progression and maintenance factors of *rhizobium*

Shino Suzuki¹, Tadahiro Suzuki¹, Seiji Wakao¹, Kazuyoshi Kawahara², Toshihiro Aono¹, ○ Hiroshi Oyaizu¹

¹ Biotechnology Res.Center,Univ. Tokyo,²College of Engineering, Kanto Gakuin Univ.

20 The identification of genes for modification of cyclic glucans and their role in symbiotic processes in *Mesorhizobium loti*

○Yasuyuki Kawaharada, Shima Eda, Hisayuki Mitsui, Kiwamu Minamisawa
Graduate School of life Science, Tohoku Univ.

21 Two distinct catalases and nitrogen fixation in *Mesorhizobium loti* MAFF303099

○Masaki Hanyu^{1,2}, Hanae Fujimoto¹, Kouhei Tejima¹, Kazuhiko Saeki¹

¹ Nara Women's Univ.,² Osaka Univ.

22 Comparison of rhizosphere microbial communities among plant families.

○Atsushi Okubo, Shuichi Sugiyama
Hirosaki Univ.

15:30 to 16:15 Disuccion for presentation No. 16 – 22.

16:15 Closing and Departure

2007 JSPMI Poster presentation program

Even numbers, 20 September, Wednesday 9:00 – 11:15

Odd numbers, 21 September, Thursday 9:00 – 11:15

P1 Effect of Temperatures on the Global Expression of *Bradyrhizobium japonicum* USDA 110 in Response to Soybean Seed Extract and Genistein

○Min Wei¹, Takuji Ohwada¹, Tadashi Yokoyama², Kiwamu Minamisawa³, Hisayuki Mitsui³, Manabu Itakura³, Takakazu Kaneko⁴, Satoshi Tabata⁴, Kazuhiko Saeki⁵, Hirofumi Oomori⁶, Shigeyuki Tajima⁷, Toshiki Uchiumi⁸, Mikiko Abe⁸

¹Obihiro Univ of Agriculture and Veterinary Medicine, ²Tokoyo Univ of Agriculture and Technology, ³Tohoku Univ, ⁴Kazusa DNA Res.Inst, ⁵Nara Women`s Univ, ⁶Osaka Univ, ⁷Kagawa Univ, ⁸Kagoshima Univ,

P2 Endophytic diazotrophs in sweet potatoes

○Junko Terakado^{1,2}, Yoshinari Ohwaki¹, Fukuyo Tanaka¹, Tadakatsu Yoneyama³, Shinsuke Fujihara¹

¹NARC, ²JSPS, ³Univ. Tokyo

P3 Improvement of the chimeric gene reporter for RIVET to detect genes that express during establishment of symbiosis

○Eriko Ishida¹, Elina Mishima^{1,2}, Kazuhiko Saeki¹

¹Nara Women's Univ., ²Osaka Univ.

P4 Isolation of bacterial endophyte in *Lotus japonicus*

Yasuyuki Kawaharada¹, Manabu Itakura¹, Takakazu Kaneko², Sima Eda¹, Hisayuki Mitsui¹, Satoshi Tabata², ○Kiwamu Minamisawa¹

¹Tohoku Univ., ²Kazusa DNA Res. Inst.

P5 Regulation of symbiosis mediated by bacterial DNA adenine methylation

○Hiroyuki Ichida^{1,2}, Tomoki Matsuyama³, Tomoko Abe² and Takato Koba¹

¹Graduate School of Science and Technology, Chiba Univ., ²Nishina Center and ³Discovery Res. Inst., RIKEN

P6 Genetic transformation of the nitrogen-fixing bacterium *Frankia*

○Ken-ichi Kucho, Kentaro Kakoi, Masatoshi Yamaura, Toshiki Uchiumi, Mikiko Abe

Department of Chemistry and Science, Faculty of Science, Kagoshima University

P7 Nodule bacteria of *Acacia mangium* after the forest fire in East Kalimantan, Indonesia

○Aiko Setoyama¹, Iida Atsushi¹, Titik K. Prana², Eiji Suzuki³, Ken-ichi Kucho⁴, Toshiki Uchiumi⁴, Shiro Higashi⁴, Mikiko Abe⁴

¹ Grad. Sc. Sci & Eng., Kagoshima Univ., ² Res. Center for Biology, LIPI Indonesia, ³ Dept. Earth & Environ. Sci., Kagoshima Univ., ⁴Dept. Chem & Biosci., Kagoshima Univ.

P8 RFLP analysis of *Frankia* in the nodules of actinorhizal plants growing under natural conditions

○Yuki Nagashima, Hiroyuki Masuda and Hideo Sasakawa
Grad. Sch. of Natur. Sci. & Tech., Okayama Univ.

P9 Characterization of NO-inducing lipopolysaccharides from *Mesorhizobium loti*

○Hashimoto Masahito¹, Daishi Honda¹, Kenji Kajiyama¹, Yasuo Suda¹, Maki Nagata², Ken-ichi Kucho³, Mikiko Abe³, Toshiki Uchiumi³

¹ Dept. of Nanostruct. & Adv. Mater., Kagoshima Univ., ² Grad. Sch. of Sci. & Tech., Kagoshima Univ., ³ Dept. of Chem. & Biosci., Kagoshima Univ.

P10 Screening for the *Frankia* gene specifically induced by root exudate of host plant

○Masatoshi Yamaura¹, Mikiko Abe², Toshiki Uchiumi², Shiro Higashi², Ken-ichi Kucho²

¹Graduate School of Science and Engineering, Kagoshima University, ²Faculty of Science, Kagoshima University

P11 Characterization of *Sinorhizobium meliloti TolC* and its role in symbiosis

○Yukiko Mori, Shima Eda, Hisayuki Mitsui, Kiwamu Minamisawa
Graduate School of Life Sciences, Tohoku University

P12 Behavior of *Arabidopsis* roots inoculated with isolates from rhizosphere soil

○Hiroshi Akasaka, Jun Wasaki, Yoshimi Tanaka, Susumu Ito
CRIS, Hokkaido Univ.

P13 Heterologous complementation analysis of *Sinorhizobium meliloti bacA* mutant with the *bacA* homologue of *Mesorhizobium loti* MAFF303099

○Junpei Maruya^{1,2}, Artur Muszynski³, Russell W Carson³, Kazuhiko Saeki¹

¹Department of Biological Sciences, Faculty of Science, Nara Women's Univ., Nara, Japan

²Department of Biological Sciences, Graduate School of Science, Osaka Univ., Osaka, Japan

³Complex Carbohydrate Research Center, Univ. of Georgia, Athens, GA, USA

P14 Effects of crushed bamboos mulch on the growth and the nodulation of soybean (*Glycine max* L. Merrill)

○Hisako Watanabe¹, Takeo Yamakawa²

¹Division of Bioresource and Bioenvironmental Sciences, Kyushu University, ²Faculty of agriculture, Kyushu University

P15 Exploration of genes for competitive nodulation by signature-tagged mutagenesis in *Bradyrhizobium japonicum*.

○Takashi Okubo, Hisayuki Mitsui, Shima Eda, Kiwamu Minamisawa
Graduate School of Life Sciences, Tohoku University

P16 The role of *ncr* genes in differentiation of bacteroids of non-galegoide symbiotic system.

○ Grigor ZEHIROV¹, Peter MERGAERT², Hironobu ISHIHARA³, Toshiki UCHIUMI⁴, Benoit ALUNNI², Willem Van de VELDE², Adam KONDOROSI², and Eva KONDOROSI²
¹Institute of Plant Physiology, BAS, ²Institut de Sciences du Végétal-CNRS, ³Grad. Sc. Sci. & Eng., Kagoshima Univ., ⁴Faculty of Science, Kagoshima University

P17 Comparative study of responses on 3 phylogenetically different *Bradyrhizobium* groups to diverse flavonoids in terms of *nodY-lacZ* expression

○ Tadashi Yokoyama

Tokyo University of Agriculture and Technology

P18 Bacteroids in *L. japonicus* nodule expressing *NCR* gene of *M. truncatula*

○ Hironobu Ishihara¹, Grigor Zehirov², Benoit Alunni³, Willem Van de Velde³, Peter Mergaert³, Kenichi Kucho², Mikiko Abe², Toshiki Uchiumi²
¹Graduate School of Science and Engineering, Kagoshima University, ²Faculty of Science, Kagoshima University, ³Institut de Sciences du Vegetal-CNRS

P19 Functional difference of two catalases under free-living and symbiotic conditions in *Mesorhizobium loti* MAFF303099

○ Hanae Fujimoto¹, Masaki Hanyu^{1,2}, Kouhei Tejima¹, Kazuhiko Saeki¹

¹ Nara Women's Univ., ² Osaka Univ.

P20 Inducement of cluster root formation in white lupin by rhizobacteria.

○ Yusuke Unno^{1,2}, Takuro Shinano³, Mitsuru Osaki¹

¹Grad. Agric., Hokkaido Univ., ²JSPS, ³CRIS, Hokkaido Univ.

P21 Characterization of mitochondrial proteins from *Lotus japonicus* and soybean nodules.

○ Hatthaya Arunothayanan¹, Mika Nomura², Shigeyuki Tajima³,

¹ Faculty of Agriculture, Kagawa university

P22 Mutation of *GmNFR1* gene in non-nodulating soybeans

○ Masaki Hayashi¹, Michiyo Arai², Yosuke Umehara¹, Zhengjun Xia¹, Shoichiro Akao³, Kazunori Sakamoto⁴, Hiroshi Kouchi¹ and Kyuya Harada¹
¹ Natl. Inst. Agrobiol. Sci., ²Fukushima Agri. Tech. Centre, ³Fac. Agri. Univ. Miyazaki, ⁴Grad. Sch. Hort. Chiba Univ.

P23 Screening of nitrogen fixation related bacteroid proteins in soybean.

○ Ayaka Noda¹, DAO VAN TAN¹, Rie Hamaguti¹, Kensuke Kato¹, Kiwamu Minamizawa², Manabu Itakura², Mika Nomura¹, Sigeyuki Tajima¹

¹Faculty of Agriculture, Kagawa Univ, ²Department of Life science, Tohoku Univ

P24 Functional analysis of receptor-like kinase genes of *Lotus japonicus*

○ Yoshikazu Shimoda¹, Yasukazu Nakamura¹, Satoshi Tabata¹, Shusei Sato¹

¹Kazusa DNA Res. Inst.

P25 Genetic and chemical analysis of Nops, nodulation outer proteins, candidates secreted by

the type III secretion system in *Mesorhizobium loti* MAFF303099

○Saori Okabe¹, Shin Okazaki², Michael Göttfert², Kazuhiko Saeki¹¹ Nara Women's Univ.,² Dresden University of Technology

P26 Expression and functional analysis of LjPDR1

○Akifumi Sugiyama¹, Nobukazu Shitan¹, Shusei Sato², Satoshi Tabata², Kazufumi Yazaki¹

¹Rish, Kyoto University, ²Kazusa DNA Res. Inst.

P27 Effect of Difference of Inoculation Method and Inoculum density of *Bradyrhizobium japonicum* USDA110 on Production of Soybean (*Glycine max* L. Merr.)

○Youko Fukushima¹, Takeo Yamakawa²

¹Division of Bioresource and Bioenvironmental Sciences, Kyushu Univ., ²Faculty of agriculture, Kyushu Univ.

P28 Analysis of ABCB-type ATP-binding cassette proteins responding to nodule formation in *Lotus japonicus*

○Kojiro Takanashi¹, Akifumi Sugiyama¹, Shusei Sato², Satoshi Tabata², Kazufumi Yazaki¹

¹Kyoto Univ, ² Kazusa DNA Res.Inst.

P29 Characteristics of *Bradyrhizobium japonicum* isolated from soybean nodules cultivated in a heavy soil upland field converted from paddy field.

○Takashi Sato, Sayuri Yoshimoto, Yui Nakamura, Yoshihiro Kaneta

Dept. Biol. Sci., Akita Pref. Univ.

P30 Responses of *Lotus japonicus* to symbiotic and pathogenic bacteria

○Maki Nagata¹, Yoshikazu Shimoda², Fuyuko Shimoda-Sasakura³, Ei-ichi Murakami¹, Akihiro Suzuki⁴, Mikiko Abe⁵, Ken-ichi Kuchō⁵, Shiro Higashi⁵, Toshiki Uchiumi⁵

¹Grad. Sc. Sci & Eng., Kagoshima Univ., ²Kazusa DNA Res. Inst., ³FSRC., Kagoshima Univ., ⁴ Fac. Agr., Saga Univ., ⁵Fac. Sci., Kagoshima Univ.

P31 β-Phenethylamine production in legume root nodules -Cross inoculation test of rhizobia isolated from soybean and peanut-

○Takuya Ando¹, Hiroko Sawada², Junko Terakado^{2 3}, Shinsuke Fujihara^{1 2}

¹Univ.Tsukuba, ²NARC, ³JSPS

P32 Screening of symbiotic SNARE genes of *Lotus japonicus*.

○Misa Komi¹, Tomomi Manabe¹, Kumina Nagaoka¹, Erika Asamizu², Shusei Sato², Satoshi Tabata², Kaoru Takegawa¹, Mika Nomura¹, Sigeyuki Tajima¹

¹Faculty of Agriculture, Kagawa Univ.²Kazusa DNA Research Institute

P33 Plant transformation by rhizobitoxine-producing *Agrobacterium tumefaciens*

○Ryota Haramaki¹, Masayuki Sugawara¹, Satoko Nonaka², Hiroshi Ezura², Shima Eda¹, Hisayuki Mitsui¹, Kiwamu Minamisawa¹

¹Graduate School of Life Sciences, Tohoku University, ²Gene Research Center, Graduate

School of Life and Environmental Sciences, University of Tsukuba

P34 Characterization of *enf* (enhanced nitrogen fixation) mutants of *Lotus japonicus*

○ Youichiro Imazato¹, Ayaka Yamauchi¹, Akiyoshi Tominaga¹, Toyoaki Anai¹, Toshiki Uchiumi², Mikiko Abe², Ken-ichi Kucho², Shiro Higashi², Masatsugu Hashiguchi³, Ryo Akashi³, Shusei Sato⁴, Takakazu Kaneko⁴, Satoshi Tabata⁴, Susumu Arima¹, * Akihiro Suzuki¹

¹ Saga Univ., ² Kagoshima Univ., ³ Univ. of Miyazaki, ⁴ Kazusa DNA Res. Inst.

P35 Regulatory mechanisms of salicylic acid biosynthesis in *Arabidopsis bah1* mutant

○ Takashi Yaeno¹, Koh Iba²

¹ Grad. Sch. Systems Life Sciences, Kyushu Univ., ² Dept. Biol., Kyushu Univ.

P36 Functional analysis of FEN1 that controls nitrogen fixing activity in nodules of *Lotus japonicus*

○ Tsuneo Hakoyama^{1,3}, Kaori Niimi¹, Hirokazu Watanabe¹, Ryohei Tabata¹, Junichi Matsubara¹, Shusei Sato², Yasukazu Nakamura², Satoshi Tabata², Haruko Imaizumi-Anraku³, Masayoshi Kawaguchi⁴, Hiroshi Kouchi³, Norio Suganuma¹

¹ Aichi Univ. of Edu., ² Kazusa DNA Research Inst., ³ NIAS, ⁴ Univ. of Tokyo

P37 Cell biological analyses of *Arabidopsis* defense response against powdery mildew infection

○ Noriko Inada¹, Yohsuke Moriyama¹, Wong Hann Ling²

¹ NAIST, Grad. Schl of Bioscience, Plant Unit, ² NAIST, Grad. Schl of Bioscience, Plant Molecular Genetics

P38 The role of *HAR1* in defense mechanism against *Pseudomonas syringae* in *Lotus japonicus*.

○ Tomomi Nakagawa¹, Kasumi Takeuchi¹, Masayoshi Kawaguchi^{2,3}, Hiroshi Kouchi¹

¹ NIAS, ² Tokyo Univ., ³ JST/CREST

P39 Isolation of a high activity nitrogen fixer, *Paenibacillus* sp. IM2-2 from the root-inside of gramineous plant, *Poa acroleuca*

○ Tetsuya Nagashima, Hitoshi Takeuchi, Ruiko Shibayama, Takeshi Uozumi

Graduate School of Agriculture, Meiji University

P40 Nitric oxide generation against plant pathogen in the leaf of *Lotus japonicus*

○ Ei-ichi Murakami¹, Maki Nagata¹, Kucho Ken-ichi², Mikiko Abe², Akihiro Suzuki³, Shiro Higashi², Toshiki Uchiumi²

¹ Grad. Sc. Sci & Eng., Kagoshima Univ., ² Fac. Sci., Kagoshima Univ., ³ Fac. Agr., Saga Univ.

P41 Isolation of a novel nitrogen fixer, *Acinetobacter* sp. AM12 from the rhizosphere of *Miscanthus sinensis*

○ Hitoshi Takeuchi, Tetsuya Nagashima, Ruiko Shibayama, Masayoshi Baba, Takeshi Uozumi Graduate School of Agriculture, Meiji University

P42 Branching factors for ecto- and arbuscular *mycorrhizal* fungi in *Eucalyptus* roots

Kohki Akiyama^{1,2}, OSayuri Ueda¹, Hideo Hayashi¹

¹Osaka Prefecture Univ., ²CREST

P43 Isolation and identification of nitrogen-fixing bacterial strains, 1A-3, 3M-3 and 8A-7, from rhizosphere of graminaceous plants

ORuiko Shibayama, Hitoshi Takeuchi, Tetsuya Nagashima, Takeshi Uozumi

Graduate School of Agriculture, Meiji University

P44 Stereospecificity of saturated strigolactone analogs in hyphal branching of arbuscular *mycorrhizal* fungi

Kohki Akiyama^{1,2}, OShin Ogasawara¹, Hideo Hayashi¹

¹Osaka Prefecture Univ., ²CREST

P45 Analysis of QTLs for infection thread formation in *Lotus japonicus*.

ONoriyuki Nukui¹, Kenji Kato⁴, Takahiro Gondo², Sachiko Isobe³, Shin-ichi Ayabe⁴, Toshio Aoki⁴

¹Genaris, Inc., ²Miyazaki Univ. Frontier Science Research Center, ³Kazusa DNA Res.Inst., ⁴Nihon Univ. College of Bioresource sciences.

P46 Identification of hyphal growth inhibitors against AM fungi in the root exudates from an AM non-host plant white lupin (*Lupinus albus*)

Kohki Akiyama^{1,2}, OFumiaki Tanigawa¹, Hideo Hayashi¹

¹Osaka Prefecture Univ., ²CREST

P47 Effect of rhizosphere microorganism on utilization of soil phytate as a P source by *Lotus japonicus*.

OSakiko Nakashima¹, Shoichi Okajima¹, Yusuke Unno^{1,4}, Takuro Shinano², Benjamin L. Turner³, Mitsuru Osaki¹

¹Grad.Agr., Hokkaido Univ., ²CRIS, Hokkaido Univ., ³Smithsonian Tropical Res.Inst., ⁴JSPS

P48 ATP-dependent polyphosphate synthetic activity in arbuscular *mycorrhizal* fungi -Induction by phosphate and enzymatic characterization-

OChiharu Tani¹, Ryo Ohtomo², Mitsuru Osaki¹, Tatsuhiro Ezawa¹

¹Hokkaido Univ., ²National Institute of Livestock and Grassland Science