

Program of the 13th annual meeting

Oral presentation

01. Flavonoids induce temporal shifts in gene-expression of *nod*-box controlled loci in *Rhizobium* sp. NGR234

Hajime Kobayashi, William J. Broughton, Xavier Perret (LBMPS, University of Geneva)

02. Investigation of mechanism for a transient down-regulation of transcriptional level in soybean micro-callus cells induced by Nod factor of *B. japonicum* USDA 110

Tadashi Yokoyama, Tsuneo Hakoyama, Hiroshi Kouchi, Yasuhiro Arima (Tokyo university of Agriculture and Technology)

03. Approaching mechanism of phosphate transport in arbuscular mycorrhizal fungi: methodology and hypothetical model

Tatsuhiko Ezawa¹, Ryo Ohtomo², Yoko Sekiguchi³, Tetsuro Mimura⁴ (1Nagoya Univ, 2NILGS, 3Nippon Dionex, 4Nara Women's Univ.)

04. Control of nodule number by plant hormone abscisic acid

Akihiro Suzuki, Mitsumi Akune, Mari Kogiso, Yoshihiro Imagama, Ken-ichi Osuki, Toshiki Uchiumi, Shiro Higashi, Mikiko Abe (Faculty of Science, Kagoshima University)

05. Expression and function of nonsymbiotic globin genes of *Lotus japonicus*

Yoshikazu Shimoda¹, Toshiki Uchiumi², Akihiro Suzuki², Keishi Senoo³, Shusei Sato⁴, Satoshi Tabata⁴, Shiro Higashi², Mikiko Abe² (1Grad. Sc. Sci. & Eng., Kagoshima Univ., 2Dept. Chem. & BioSci., Kagoshima Univ., 3Grad. Sc. Agri. Life Sci., Tokyo Univ., 4Kazusa DNA Res. Inst.)

06. Expression analysis of a SNARE-like gene in *Lotus* nodule

Mika Nomura¹, Mai Ha Thu¹, Yoshihiko Hirashima¹, Mariko Isomoto¹, Satoshi Tabata², Erika Asamizu², Kaoru Takegawa¹, Shigeyuki Tajima¹ (1Kagawa University, 2Kazusa DNA Institute)

07. Integration of *Rhizobial* symbiotic plasmid into *Agrobacterium* chromosome

Hiroki Nakatsukasa¹, Toshiki Uchiumi², Akihiro Suzuki², Shiro Higashi², Mikiko Abe² (1Graduate School of Science and Engineering, 2Department of Chemistry and BioScience, Faculty of Science, Kagoshima University)

08. Functional analysis of *TrEnodDR1*, clover symbiotic response gene

Mitsumi Akune¹, Tomoko Shitahta¹, Toshio Aoki³, Akihiro Suzuki², Toshiki Uchiumi², Shiro Higashi², Mikiko Abe² (1Graduate school of Science and Engineering, Kagoshima University, 2Department of Chemistry and Bioscience, Faculty of Science, Kagoshima University, 3College of Bioresource Science, Nihon University)

09. Differential display of mitochondrial proteins from soybean nodules and roots

Shigeyuki Tajima¹, Le Thi-Puuong Hoa¹, Hirokazu Matsushima¹, Mika Nomura¹, Ayako Suekane¹, David A. day² (1Kagawa University, 2University of Western Australia)

10. Expression of Symbiotic Globin-GFP Fusion Gene in the Hairy Root of *Lotus japonicus*

Fumie Furuya¹, Toshiki Uchiumi², Akihiro Suzuki², Mikiko Abe² (1Graduate School of Science and Technology, Kagoshima Univ., 2Department of Chemistry and Bioscience, Kagoshima Univ.)

11. Differential gene expression of *Lotus japonicus* in response to arbuscular mycorrhizal symbiosis
S. Hata and Y. Deguchi (Graduate School of Biostudies, Kyoto University)

12. A Mechanism of cabbage growth promotion induced by root endophytic fungus
Sagiri Teshima Kazunori Sakamoto (Faculty of Horticulture Chiba University)

13. Characterization of a novel symbiotic mutant of *Lotus japonicus* that shows reduced nodule number
Yasuhiro Ooki, Mari Banba, Katsura Izui, Shingo Hata (Graduate School of Biostudies, Kyoto University)

14. Resistance mechanisms of potato to *Phytophthora infestans*: Control mechanisms of NADPH oxidase for the generation of active oxygen species
Furuichi, N.1, Suzuki, F.2, Matsuzaki, M.3, Horigome, T.1, Ohnishi, K.1, Tanaka H.4, Tukahara T.4
(1Center for Transdisciplinary Research, 2Fac. Agriculture, 3Grad. Scie. Tech., Niigata University 4Insti. Protein, Osaka University)

15. Isolation and Characterization of a Branching Factor from Root Exudates of *Lotus japonicus*
Kohki Akiyama, Ken-ichi Matsuzaki, Hideo Hayashi (Graduate School of Agriculture and Biological Sciences, Osaka Prefecture University)

16. The genotype-specific nodulation genes for soybean harboring *Rj*-genes. - Tn5 insertion site in nodulation mutants of *B. japonicum* strain Is-1 -
Hirohito Tsurumaru, Takeo Yamakawa, Natsuko Kawanami, Masao Sakai and Motoki Ikeda (Division of Bioresource and Bioenvironmental Sciences, Kyushu University)

17. Molecular evolution of cytochrome P450s involved in legume-microbe interactions
Yuji Sawada, Tomoyoshi Akashi, Toshio Aoki, Shin-ichi Ayabe (Department of Applied Biological Sciences, Nihon University)

18. Generation and distribution program of *Lotus japonicus* activation-tagged lines
Toshio Aoki, Ryujiro Imaizumi, Shin-ichi Ayabe (Department of Applied Biological Sciences, Nihon University)

19. Expression analysis of *nifH* gene in free-living and endophytic *Herbaspirillum* sp. B501gfp1 by RT-PCR
Mu You, Tsuyoshi Isawa, Kiwamu Minamisawa (Graduate School of Life Sciences, Tohoku University)

20. *Mesorhizobium loti* genes that perturb symbiotic capacity of *Rhizobium etli* with *Lotus japonicus*
Masaki Hanyu, Yoshiyuki Hattori, Kazuhiko Saeki (Department of Biology, Graduate School of Science, Osaka University)

21. Saturated linkage map pair of *Lotus japonicus* Gifu B-129 and Miyakojima MG-20, developed by using HEGS (High Efficiency Genome Scanning)/AFLP-SSR
Xinwang Wang¹, Akifumi Shimizu¹, Yasuhiro Murakami¹, Haruko Imaizumi-Anraku¹, Shusei Sato², Satoshi Tabata², Shinji Kawasaki¹ (1National Institute of Agrobiological Sciences (NIAS), 2Kazusa DNA Institute)

22. Identification and functional analyses of a calcium channel involved in pathogenic signal transduction
Kazuyuki Kuchitsu^{1, 2}, Takamitsu Kurusu¹, Yasuhiro Kadota¹ (1Department of Applied Biological Science, 2Genome & Drug Research Center, Tokyo University of Science)

23. Cell cycle-dependence of elicitor-induced programmed cell death in suspension-cultured tobacco BY-2 cells

Poster Presentation

01. Detection of endophytic diazotrophs from stems of sugarcane (*Saccharum officinarum* L.) by PCR method

Masahiro Goto¹, Shotaro Ando², Hiroaki Hayashi¹, Toru Fujiwara¹, Tadakatsu Yoneyama¹ (1Graduate School of Agricultural and Life Sciences, The University of Tokyo, 2National Institute of Livestock and Grassland Science)

02. Effects of P supply and atmospheric CO₂ concentration on functional and structural diversity of soil microorganisms in the rhizosphere of white lupin

Jun Wasaki, Annett Rothe, Angelika Kania, Guenter Neumann, Ellen Kandeler, Volker Roemheld, Takuro Shinano, Mitsuru Osaki (Graduate School of Agriculture, Hokkaido University)

03. Root nodule formation of soybean cutting plantlets injected leaf extracts of Williams82 and NOD1-3. - In search of Key substances relating to supernodulation -

Hiroko Yamaya, Yasuhiro Arima, Tadashi Yokoyama (Tokyo University of Agriculture and Technology)

04. Effect of glycine betaine on the nodulation of root nodule bacteria

Takuji Ohwada¹, Youko Kuwana¹, Hiroshi Masuda¹, Katsuichi Tsuchida², Tomoyuki Machi², Takayuki Kaji², Matsuo Uemura³, Takashi Kamata³, Norio Murata⁴ (1Department of Agricultural and Life Sciences, Obihiro University of Agriculture and Veterinary Medicine, 2Tokachi Agricultural Cooperative, 3Cryobiosystem Research Center, Iwate University, 4Department of Regulation Biology, National Institute for Basic Research)

05. Growth dynamics of cortical microtubules in inoculated root hairs of *Lotus japonicus*

Vassileva Valya, Ridge Robert, Kouichi Hiroshi (International Christian University)

06. Investigation of nodulation gene inducing compounds of *Mesorhizobium loti* from Lotus roots exudates

Katsuhiko Kojima, Tadashi Yokoyama, Yasuhiro Arima (Tokyo university of Agriculture and Technology)

07. Isolation of Nod factor-specific genes which are up-regulated in soybean suspension-cultured cells within a short time after treatment with Nod factor of *B. japonicum* USDA 110. - Focusing on differences of responses between fungal Elicitor and Nod factor treatment with soybean cells -

Akinori Yamada, Tadashi Yokoyama, Yasuhiro Arima (Tokyo university of Agriculture and Technology)

08. Study on plant and bradyrhizobial gene expression of soybean nodules in different growth stages using macro array hybridization

Sirilak Kaewsuralikhit, Tadashi Yokoyama, Yasuhiro Arima (Tokyo university of Agriculture and Technology)

09. Increase of polyphosphate content in the host plant roots during the colonization of arbuscular mycorrhizal fungi

Ryo Ohtomo, Masanori Saito (National Institute of Livestock and Grassland Science)

10. Systemic affection of brassinolide on the reduction of nodule formation in a super-nodulating soybean line (En6500)

Junko Terakado^{1, 2}, Shinsuke Fujihara¹, Shigeko Goto³, Ryoko Kuratani³, Tadakatsu Yoneyama³

(1NARC, 2JSPS, 3University of Tokyo)

11. Response of 14-3-3 gene expression to nitrate in soybean nodules

Hiroyuki Fujikake, Akihiko Yamazaki, Norikuni Ohtake, Kuni Sueyoshi, Hiroshi Kouchi, Takuji Ohya (Faculty of Agriculture, Niigata University)

12. Characterization of root nodules with silencing of leghemoglobin genes

Hirotaka Kumagai, Kenshirou Shimomura, Shigeyuki Tajima, Hiroshi Kouchi (NIAS, Kagawa Univ.)

13. Strategy of lupin and lotus for phytate utilization is associated with phytate utilizing bacteria

Yusuke Unno, Kenzo Okubo, Jun Wasaki, Takuro Shinano, Mitsuru Osaki (Graduate School of Agriculture, Hokkaido University)

14. Expression analyses of hemoglobin genes in *Alnus firma* symbiosis with *Frankia*

F. Sasakura¹, K. Takenouchi¹, T. Uchiumi², A. Suzuki², S. Higashi², M. Abe² (1Grad. Sc. Sci. & Eng., Kagoshima Univ., 2Dept. Chem. & BioSci., Kagoshima Univ.)

15. Novel genes encoding glutamate-rich proteins involved in nodule development of *Lotus japonicus*

Norio Suganuma¹, Atsuko Yamamoto¹, Ai Itou¹, Tsuneo Hakoyama¹, Mari Banba², Shingo Hata², Masayoshi Kawaguchi³, Hiroshi Kouchi⁴ (1Aichi University of Education, 2Kyoto University, 3University of Tokyo, 4National Institute of Agrobiological Resources)

16. Functional analysis of nodule PEPC gene in transgenic *Lotus japonicus*

Miho Fujii¹, Mika Nomura¹, Shingo Hata², Shigeyuki Tajima¹ (1Kagawa University, 2Kyoto University)

17. Transformation of *Sinorhizobium meliloti* by electroporation

Naofumi Ito, Yoshikatu Sato, Hisayuki Mitsui, Kiwamu Minamisawa (Graduate School of Life Sciences, Tohoku University)

18. Expression of leghemoglobin in the nodule formed by *mcp* deleted mutant of *Sinorhizobium meliloti*

Ikuyo goth, Shintarou Hirase, Kou Kannda, Hiroki Miyazawa, Akira Tabuchi, Birgit Scharf, Paul Muschler, Ruediger Schmitt (Dept Biosci & Biotech, Shinshu University, Lehr Stuhl fuer Genetik, Universitaet Regensburg)

19. A large-scale cDNA array reveals transcriptional changes of *Lotus japonicus* during arbuscular mycorrhiza development

Y. Deguchi, Y. Shimoda, S. Shechetka, M. Banba, Y. Ooki, A. Suzuki, T. Uchiumi, S. Higashi, M. Abe, H. Kouchi, K. Izui, S. Hata (Kyoto University, Kagoshima University, NIAS)

20. Molecular Cloning and Functional Analysis of Pea Apyrases

Tsujimura, K., Takahashi, H., Kawahara, T., Kiba, A., Miura, A., Inagaki, Y., Yamamoto, M., Ichinose, Y., Toyoda, K., Shiraishi, T (The Plant Pathology Laboratory, Faculty of Agriculture, Okayama University)

21. Promotion of nodulation under conditions with low density of bradyrhizobia by irradiation with low energy electron beam onto soybean (*Glycine max* L.) seeds

Shu Fujimaki¹, Norikuni Ohtake², Sayuri Ito², Takashi Hara², Kuni Sueyoshi², Hidefumi Takeshita¹, Takuji Ohya², Tamikazu Kume¹ (1Takasaki Radiation Chemistry Research Establishment, Japan Atomic Energy Research Institute, 2Department of Applied Biological Chemistry, Faculty of Agriculture, Niigata University)

22. Activation of *LjCbp1* promoter in *Lotus japonicus* roots during colonization with arbuscular mycorrhizal fungi

Kohki Akiyama, Asami Iwashita, Hideo Hayashi (Graduate School of Agriculture and Biological

Sciences, Osaka Prefecture University)

23. Genetic Analyses and Mapping of the Symbiotic Mutant Line G106-21 of *Lotus japonicus*

Wenli Chen, Yosuke Umehara, Hiroshi Kouchi (Laboratory of Nitrogen Fixation, National Institute of Agrobiological Sciences (NIAS))

24. Estimation of endophytic nitrogen fixation associated with sweet potato using ^{15}N natural abundance and ^{15}N tracer dilution method

Yoshinari Ohwaki, Yasuhiro Takahata, Tadakatsu Yoneyama, Shinsuke Fujihara (National Agricultural Research Center)

25. Partial Purification of a Branching Factor from Root Exudates of Carrot

Ken-ichi Matsuzaki, Kohki Akiyama, Hideo Hayashi (Graduate School of Agriculture and Biological Sciences, Osaka Prefecture University)

26. Host range of *Frankia* strains isolated from the root nodules of 4 actinorhizal plants

Yuki Nagashima, Chiharu Tani, Hideo Sasakawa (Faculty of Agriculture, Okayama University)

27. Root surface responses on leguminous tree, *Paraserianthes falcataria* inoculated with its symbiont

Shiro Wakabayashi¹, Titik K. Prana³, Hiroko Kawasaki-Nakagawa⁴, Tatsuji Seki⁴, Toshiki Uchiumi², Akihiro Suzuki², Shiro Higashi², Mikiko Abe² (1Graduate School of Science and Engineering, Kagoshima University, 2Department of Chemistry and BioScience, Faculty of Science, Kagoshima University, 3Indonesian Institute of Science, R&D Center for Biotechnology, 4The International Center for Biotechnology, Osaka University)

28. Gene silencing of nodule-enhanced phosphoenolpyruvate carboxylase (LjPEPC1) by expression of hairpin RNA in *Lotus japonicus*

Kenshiro Shimomura, Shigeyuki Tajima, Hiroshi Kochi (The United Graduate School of Agricultural Sciences, Ehime University)

29. Stress tolerance of root nodule bacteria isolated from *Acacia mangium*

Shinya Nagatome¹, Amy Ngon², Toshiki Uchiumi², Achara Nuntagij³, Somsak Kotepong³, Akihiro Suzuki², Shiro Higashi², Mikiko Abe² (1Laboratory of Plant and Microbe Interaction, Graduate School of Science and Engineering, Kagoshima University, 2Laboratory of Plant and Microbe Interaction, Department of Chemistry and BioScience, Faculty of Science, Kagoshima University, 3Soil Microbiology Research Group, Division of Soil Science, Department of Agriculture)

30. Investigation of soybean seed nitrogen response genes using *Lotus japonicus* cDNA macroarrays

Ohtake Norikuni¹, Ito Sayuri¹, Fujikake Hiroyuki¹, Yamazaki Akihiko¹, Sueyoshi Kuni¹, Ohyama Takuji¹, Kouchi Hiroshi² (1Facul. of Agriculture, Niigata Univ., 2Dept. Plant Physiology, National Institute of Agrobiological Sciences)

31. Gene expression patterns in early senescent nodules of *Lotus japonicus*

Mari Banba¹, Svetlana Chechetka¹, Yasuhiro Ooki¹, Norio Sukanuma², Hiroshi Kouchi³, Katsura Izui¹, Shingo Hata¹ (1Grad. Schl. Biostudies, Kyoto Univ., 2Dept. Life Sci., Aichi Univ. of Education, 3Dept. Plant Physiology, NIAS)

32. Expression analysis of three *Lotus japonicus* genes for phosphate transporters

Kanae Ashida¹, Keita Iguchi², Yuichi Deguchi¹, Katura Izui^{1, 2}, Shingo Hata^{1, 2} (1Grad. Schl. Biostudies, Kyoto Univ., 2Dept. Agric., Kyoto Univ.)

33. Systematics of legume symbionts

Hiroyuki Sawada¹, Toshiki Uchiumi², Mikiko Abe², Masahito Hayatsu³, Kenichi Tsuchiya¹ (1National Institute for Agro-Environmental Sciences, 2Kagoshima University, 3Shizuoka University)

34. Development of activation tagging method using hairy root system of sweetclover

Akihiro Suzuki, Peter L. De Hoff, Angie Lee, Toshiki Uchiumi, Mikiko Abe, Ann M Hirsch (Faculty of Science, Kagoshima University, University of California, Los Angeles)

35. Nodulation performance of *Mesorhizobium loti* noll mutant and biological activity of Nod factor with deacetylated fucosyl residue at reducing end

Satoshi Shibata¹, Hisayuki Mitui², Hiroshi Kouchi¹ (1Department of Plant Physiology, National Institute of Agrobiological Sciences, 2Graduate School of Life Sciences, Tohoku University)

36. Effect of microbial nitrogen fixation by aggregation of biopolysaccharide with metal cation

Takayoshi Kobayashi, Daisuke Asakawa, Yuuki Yazawa, Yasuyuki Takiguchi, Tatsuaki Yamaguchi (Department of Industrial Chemistry, Faculty of Technology, Chiba Institute of Technology)

37. Rice plants associated a nitrogen feed by biopolysaccharide

Yasuyuki Takiguchi, Koji Hiratsuka, Yuki Yazawa, Takayoshi Kobayashi, Tatsuaki Yamaguchi (Department of Industrial Chemistry, Faculty of Technology, Chiba Institute of Technology)

38. Establishment and ecological role of symbiotic microorganisms in acid sulfate soil

Miya Nomachi, Eitaro Mizutani, Takanori Maki, Tatsuhiro Ezawa (Faculty of Agricultural Science, Nagoya University)

39. Colonization and function of anaerobic nitrogen-fixing consortium

Asami Saito, Bin Ye, Mu You, Kiwamu Minamisawa (Graduate School of Life Sciences, Tohoku University)

40. Nodulation phenotype and early nodulation gene expression analysis of transgenic *Lotus japonicus* with heterologous ethylene receptor gene

Noriyuki Nukui, Hiroshi Ezura, Kiwamu Minamisawa (Graduate School of Life Sciences, Tohoku University)

41. Salicylic acid-induced sensitization of pathogenic signals in suspension-cultured tobacco (BY-2) cells

Yoko Nakagawa¹, Yasuhiro Kadota¹, Hajime Tomatsu¹, Tatsuaki Goh¹, Kazuyuki Kuchitsu¹, 2 (1Department of Applied Biological Science, 2Genome & Drug Research Center, Tokyo University of Science)

42. Resources for post-genome researches of *Bradyrhizobium japonicum*

Takuji Oowada¹, Kiwamu Minamisawa², Manabu Itakura², Takakazu Kaneko³, Satoshi Tabata³, Tadashi Yokoyama⁴, Kazuhiko Saeki⁵, Hirofumi Oomori⁵, Shigeyuki Tajima⁶, Toshiki Uchiumi⁷ (1Department of Agricultural Chemistry, Obihiro University of Agriculture University, 2Graduate School of Life Sciences, Tohoku University, 3Kazusa DNA Research Institute, 4Tokyo University of Agriculture and Technology, 5Department of Biology Graduate School of Science, Osaka University, 6Department of Life Science, Kagawa University, 7Department of Chemistry and BioScience, Faculty of Science)

43. Improved gene-disruption methods in *Mesorhizobium loti* for non-polar and marker-less knockout mutants

Junpei Maruya, Kazuhiko Saeki (Department of Biology, Graduate School of Science, Osaka University)

Special Lecture

Lifestyle of a symbiotic bacterium as a model for complex microbial commensalisms

Teruhiko Beppu and Kenji Ueda (Life Science Research Center, College of Bioresource Sciences, Nihon University)