

Plant Biotechnology

Volume 38, Number 1, March 2021

Original Papers

Identification of genes involved in <i>Meloidogyne incognita</i> -induced gall formation processes in <i>Arabidopsis thaliana</i> Reira Suzuki, Takashi Ueda, Takuji Wada, Masaki Ito, Takashi Ishida, Shinichiro Sawa	1
3-Phenyllactic acid, a root-promoting substance isolated from Bokashi fertilizer, exhibits synergistic effects with tryptophan Yuko Maki, Hiroshi Soejima, Toru Kitamura, Tamizi Sugiyama, Takeo Sato, Masaaki K. Watahiki, Junji Yamaguchi.	9
New insights into the intraspecific cytoplasmic DNA diversity, maternal lineages classification and conservation issues of Tunisian pearl millet landraces Leila Riahi, Marwa Snoussi, Mériam Ben Romdhane, Nejia Zoghlami	17
Expression of soybean plant hemoglobin gene family under abiotic stresses Masato Araragi, Airi Ikeura, Toshiki Uchiumi	23
Hyperosmotic stress-induced somatic embryogenesis and its continuous culture in Japanese honewort (<i>Cryptotaenia japonica</i>) Mugito Kato, Hajime Shiota	31
In vitro acclimatization of <i>Curcuma longa</i> under controlled iso-osmotic conditions Nutwadee Chintakovid, Rujira Tisarum, Thapanee Samphumphuang, Thanyaporn Sotesaritkul, Suriyan Cha-um	37
Epidermal cell-patterning genes of the stem parasitic plant <i>Cuscuta campestris</i> are involved in the development of holdfasts Sabrina Sultana, Daiki Fujiwara, Koh Aoki	47
<i>Mesorhizobium</i> sp. J8 can establish symbiosis with <i>Glycyrrhiza uralensis</i> , increasing glycyrrhizin production Ikuko Kusaba, Takahiro Nakao, Hiroko Maita, Shusei Sato, Ryota Chijiiwa, Emi Yamada, Susumu Arima, Mareshige Kojoma, Kanji Ishimaru, Ryo Akashi, Akihiro Suzuki.	57
Integrated transcript and metabolite profiling reveals coordination between biomass size and nitrogen metabolism in <i>Arabidopsis</i> F ₁ hybrids Naoya Sugi, Quynh Thi Ngoc Le, Makoto Kobayashi, Miyako Kusano, Hiroshi Shiba	67
Two aquaporins, SIP1;1 and PIP1;2, mediate water transport for pollen hydration in the <i>Arabidopsis</i> pistil Endang Ayu Windari, Mei Ando, Yohei Mizoguchi, Hiroto Shimada, Keima Ohira, Yasuaki Kagaya, Tetsuya Higashiyama, Seiji Takayama, Masao Watanabe, Keita Suwabe.	77
Novel assays to monitor gene expression and protein-protein interactions in rice using the bioluminescent protein, NanoLuc Ken-ichiro Taoka, Zenpei Shimatani, Koji Yamaguchi, Mana Ogawa, Hiromi Saitoh, Yoichi Ikeda, Hiroko Akashi, Rie Terada, Tsutomu Kawasaki, Hiroyuki Tsuji	89
Allelopathic activities of three carotenoids, neoxanthin, crocin and β -carotene, assayed using protoplast co-culture method with digital image analysis Hamako Sasamoto, Sakae Suzuki, Hossein Mardani-Korrani, Yutaka Sasamoto, Yoshiharu Fujii	101
Fertile <i>Arabidopsis cyp704b1</i> mutant, defective in sporopollenin biosynthesis, has a normal pollen coat and lipidic organelles in the tapetum Keiko Kobayashi, Kae Akita, Masashi Suzuki, Daisaku Ohta, Noriko Nagata	109
Ribosome biogenesis factor OLI2 and its interactor BRX1-2 are associated with morphogenesis and lifespan extension in <i>Arabidopsis thaliana</i> Shugo Maekawa, Shuichi Yanagisawa.	117

—Invited Paper—

- Development of selection method for *Glycyrrhiza uralensis* superior clones with high-glycyrrhizic acid contents using DNA sequence polymorphisms in glycyrrhizic acid biosynthetic genes
Takayuki Inui, Noriaki Kawano, Daisuke Araho, Yukiyoshi Tamura, Nobuo Kawahara,
Kayo Yoshimatsu 127

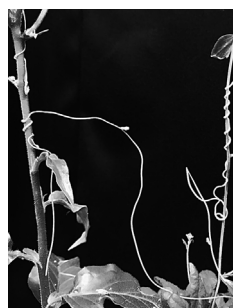
Short Communications

- Database mining of plant peptide homologues
Na Yuan, Chihiro Furumizu, Baolong Zhang, Shinichiro Sawa 137
- Induction of adventitious shoots and tetraploids in *Antirrhinum majus* L. by treatment of antimetabolic agents in vitro without plant growth regulators
The Su Hlaing, Haruka Kondo, Ayumi Deguchi, Kazumitsu Miyoshi 145

Notes

- A simple method for *in planta* tomato transformation by inoculating floral buds with a sticky *Agrobacterium tumefaciens* suspension
Chika Honda, Kaoru Ohkawa, Hiroaki Kusano, Hiroshi Teramura, Hiroaki Shimada 153
- Calcium sulfate and calcium carbonate as root-knot-nematode attractants and possible trap materials to protect crop plants
Syuuto Toyoda, Morihiro Oota, Hayato Ishikawa, Shinichiro Sawa 157
- The accumulation of recombinant miraculin is independent of fruit size in tomato
Azusa Ono, Kyoko Hiwasa-Tanase, Satoko Nonaka, Hiroshi Ezura 161
- MassBase: A large-scaled depository of mass spectrometry datasets for metabolome analysis
Takeshi Ara, Nozomu Sakurai, Hideyuki Suzuki, Koh Aoki, Kazuki Saito, Daisuke Shibata. 167
- Nucleoside derivatives of 5-methylcytosine suppress 5-azacytidine-induced reactivation of a silent transgene in suspension-cultured tobacco cells
Kazutoshi Yamagishi, Yoshio Kikuta 173
- Preculture in an enriched nutrient medium greatly enhances the *Agrobacterium*-mediated transformation efficiency in *Arabidopsis* T87 cultured cells
Takayuki Hata, Kazuki Mukae, Soichiro Satoh, Mitsuhiro Matsuo, Junichi Obokata 179
- NaCl dependent production of coniferin in *Alluaudiopsis marnieriana* suspension cultured cells
Takuma Yoshioka, Yunosuke Itagaki, Yutaka Abe, Nobuo Kawahara, Yukihiro Goda, Yoshihiro Ozeki, Akiyo Yamada 183

HIGS method controlled the gene expression of a parasitic plant, *Cuscuta campestris*



Stem parasitic plant, *Cuscuta campestris*, develops an attachment structure called “holdfast” on the surface of its stem contacting to the host plant. Epidermal cells of holdfasts showed outgrowth, in which epidermal cell-patterning genes of *C. campestris* were hypothesized to be involved. To prove this hypothesis, Host-Induced Gene Silencing (HIGS) method was employed (S. Sultana *et al.*, pp. 47–56). Artificial miRNA targeting one of the *C. campestris* epidermal cell-patterning genes was produced in the first host, *Nicotiana tabacum* (left), loaded to parasitizing *C. campestris* (center), and then the effect of HIGS was evaluated by letting *C. campestris* parasitize to the second host, *Arabidopsis thaliana* (right). This approach successfully silenced the target gene of *C. campestris*, and repressed the outgrowth of the holdfast epidermal cells.

Photographed by Daiki Fujiwara (Osaka Pref. Univ.). (PENTAX Optio WG-1)