

引用文献

- Ando, T., N. Saito, F. Tatsuzawa, T. Kakefuda, K. Yamakage, E. Ohtani, M. Koshi-ishi, Y. Matsusake, H. Kokubun, H. Watanabe, T. Tsukamoto, Y. Ueda, G. Hashimoto, E. Marchesi, K. Asakura, R. Hara and H. Seki 1999. Floral anthocyanins in wild taxa of *Petunia* (Solanaceae). *Biochem. Syst. Ecol.* 27: 623-650.
- Asen, A., R. N. Stewart, K. H. Norris and D. R. Massie 1970. A stable blue non-metallic co-pigment complex of delphinin and C-glycosylflavones in Prof. Blaauw Iris. *Phytochemistry* 9: 619-627.
- Bradford, M. M. 1976. A rapid and sensitive method for the quantitation of microgram quantities of protein utilizing the principle of protein-dye binding. *Anal. Biochem.* 72: 248-254.
- Brugliera, F., T. A. Holton, T. W. Stevenson, E. Farcy, C. Lu and E. C. Cornish 1994. Isolation and characterization of a cDNA clone corresponding to the *Rt* locus of *Petunia hybrida*. *Plant J.* 5: 81-92.
- Callebaut, A., N. Terahara and M. Decleire 1996. Anthocyanin acyltransferases in cell cultures of *Ajuga reptans*. *Plant Sci.* 118: 109-118.
- Douglas, G. 1959. Diversity among irises. In: L. F. Randolph (Ed.), *Garden Irises*, The Cayuga Press, NY, pp. 1-10.
- Fedoroff, N. V., D. B. Furtek and O. E. Nelson Jr. 1984. Cloning of the *bronze* locus in maize by a simple and generalizable procedure using the

transposable controlling element *Activator (Ac)*. Proc. Natl. Acad. Sci. USA 81: 3825-3829.

Folch, J., M. Lees and G.H. Sloane-Stanley 1957. A simple method for the isolation and purification of total lipids from animal tissues. J. Biol. Chem. 226: 497–509.

Ford, C. M., P. K. Boss and P. B. Hoj 1998. Cloning and characterization of *Vitis vinifera* UDP-glucose: Flavonoid 3-*O*-glucosyltransferase, a homologue of the enzyme encoded by the maize *Bronze-1* locus that may primarily serve to glucosylate anthocyanidins *in vivo*. J. Biol. Chem. 273: 9224-9233.

Fujiwara, H., Y. Tanaka, K. Yonekura-Sakakibara, M. Fukuchi-Mizutani, M. Nakao, Y. Fukui, M. Yamaguchi, T. Ashikari, T. Kusumi 1998. cDNA cloning, gene expression, and subcellular localization of anthocyanin 5-aromatic acyltransferase from *Gentiana triflora*. Plant J. 16: 421–431.

Fukuchi-Mizutani, M., H. Okuhara, Y. Fukui, M. Nakao, Y. Katsumoto, K. Yonekura-Sakakibara, T. Kusumi, T. Hase and Y. Tanaka 2003. Biochemical and molecular characterization of a novel UDP-glucose: anthocyanin 3'-*O*-glucosyltransferase, a key enzyme for blue anthocyanin biosynthesis, from gentian. Plant Physiol. 132: 1652-1663.

Furtek, D., J. W. Schiefelbein, F. Jonston and O. E. Nelson, Jr. 1988. Sequence comparisons of three wild-type *Bronze-1* alleles from *Zea mays*. Plant Mol. Biol. 11: 473-481.

- Gong, Z., M. Yamazaki, M. Sugiyama, Y. Tanaka and K. Saito 1997. Cloning and molecular analysis of structural genes involved in anthocyanin biosynthesis and expressed in a forma-specific manner in *Perilla frutescens*. *Plant Mol. Biol.* 35: 915-927.
- Goto, T., and T. Kondo 1991. Structure and molecular stacking of anyhocyanins – Flower color variation. *Angewandte Chemie International Edition in English* 30: 17-33.
- 林 孝三 1940a. ハナショウブの花色素について(予報). *植雑* 54: 24-28.
- Hayashi, K. 1940b. Isolation of ensatin, an acylated anthocyanin from the flowers of Japanese iris. *Proc. Imp. Acad. Tokyo* 16: 478-481.
- Hayashi, K. 1941. Studien über Anthocyane. IV. Über Ensatin, ein neues Anthocyanin der Blüten von japanischen Schwertlilien. *Acta Phytochem.* 12: 65-82.
- 林 孝三・大谷俊二・佐藤克二・津山 尚・石倉成行 1978. 花色構成物質による日本産 *Iris* の類縁と系統. (財)進化生物学研究所研究報告 1: 1-16.
- 林 孝三・岩科 司・川崎 勝・大谷俊二 1984. ヒメシヤガ *Iris gracilipes* の花のフラボノイド成分. (財)進化生物学研究所研究報告 2: 75-83.
- Heller, W. and G. Forkmann 1994. Biosynthesis of flavonoids. In: J. B. Harborne (Ed.), *The Flavonoids*, Chapman and Hall, London, pp. 499-535.
- Hirovani, M., R. Kuroda, H. Suzuki and T. Yoshikawa 2000. Cloning and expression of UDP-glucose: flavonoid 7-O-glucosyltransferase from hairy root cultures of *Scutellaria baicalensis*. *Planta* 210: 1006-1013.

- Holton, T. A. and E. C. Cornish 1995. Genetics and biochemistry of anthocyanin biosynthesis. *Plant Cell* 7: 1071-1083.
- Ino, I. and M. Yamaguchi 1993a. Acetyl-coenzyme A: anthocyanidin 3-glucoside acetyltransferase from flowers of *Zinnia elegans*. *Phytochemistry* 33: 1415-1417.
- Ino, I., H. Nishiyama and M. Yamaguchi 1993b. Malonylation of anthocyanins by extracts of flower buds in *Dendranthema morifolium* cultivars. *Phytochemistry* 32: 1425-1426.
- Ishikura, N. and E. Yamamoto 1978. Anthocyanins in the flower of Japanese garden iris belonging to 'Higo' line. *Kumamoto J. Sci. Biol.* 14: 9-15.
- Ishikura, N. and K. Sugahara 1979. A survey of anthocyanin in fruits of some angiosperms, II. *Bot. Mag. Tokyo* 92: 157-161.
- 岩科 司・大谷俊二 1998. アヤメ属植物のフラボノイド: その構造, 分布, 機能(総説). *筑波実験植物園研究報告* 17: 147-183.
- Iwashina, T., K. Kamenosono and T. Yabuya 1996. Isolation and identification of flavonoid and related compounds as co-pigments from the flowers of *Iris ensata*. *J. Jpn. Bot.* 78: 281-287.
- Jeknic, Z., S. P. Lee, J. Davis, R. C. Ernst and T. H. H. Chen 1999. Genetic transformation of *Iris germanica* mediated by *Agrobacterium tumefaciens*. *J. Amer. Soc. Hort. Sci.* 124: 575-580.
- Jones, P. and T. Vogt 2001. Glycosyltransferases in secondary plant metabolism: tranquilizers and stimulant controllers. *Planta* 213: 164-174.

- Jonsson, L.M.V., M.E.G. Aarsman, J. van Diepen, P. de Vlaming, N. Smit and A.W. Schram 1984. Properties and genetic control of anthocyanin 5-*O*-glucosyltransferase in flowers of *Petunia hybrida*. *Planta* 160: 341-347.
- Kamsteeg, J., J. van Brederode and G. van Nigtevecht 1978. Identification, properties and genetic control of UDP-glucose: cyanidin-3-rhamnosyl-(1→6)-glucoside-5-*O*-glucosyltransferase isolated from petals of the red campion (*Silene dioica*). *Biochem. Genet.* 16: 1059-1071.
- Kamsteeg, J., J. van Brederode, C.H. Hommels and G. van Nigtevecht 1980. Identification, properties and genetic control of hydroxylcinnamoyl-coenzyme A: anthocyanidin 3-rhamnosyl (1→6) glucoside, 4"-hydroxycinnamoyltransferase isolated from petals of *Silene dioica*. *Biochem. Physiol. Pflanz.* 175: 403-411.
- 勝元幸久・田中良和 2005. 青いバラへの長い歩み. *化学と生物* 43: 122-126.
- Kobayashi, S., M. Ishimaru, C. K. Ding, H. Yakushiji and N. Goto 2001. Comparison of UDP-glucose: flavonoid 3-*O*-glucosyltransferase (UFGT) gene sequences between white grapes (*Vitis vinifera*) and their sports with red skin. *Plant Sci.* 160: 543-550.
- Kroon, J., E. Souer, A. de Graaff, Y. Xue, J. Mol and R. Koes 1994. Cloning and structural analysis of the anthocyanin pigmentation locus *Rt* of *Petunia hybrida*: characterization of insertion sequences in two mutant alleles. *Plant J.* 5: 69-80.

- Lawrence, G. H. M. and L. F. Randolph 1959. The classification of iris. In: L. F. Randolph (Ed.), Garden Irises, The Cayuga Press, NY, pp. 133-160.
- Martin, C., A. Prescott, S. Mackay, J. Bartlett and E. Vrijlandt, 1991. Control of anthocyanin biosynthesis in flowers of *Antirrhinum majus*. Plant J. 1: 37-49.
- Mato, M., Y. Ozeki, Y. Itoh, D. Higeta, K. Yoshitama, S. Teramoto, R. Aida, N. Ishikura and M. Shibata 1998. Isolation and characterization of a cDNA clone of UDP-galactose: flavonoid 3-*O*-galactosyltransferase (UF3GaT) expressed in *Vigna mungo* seedlings. Plant Cell Physiol. 39: 1145-1155.
- Meyer, P., I. Heidmann, G. Forkmann and H. Saedler 1987. A new petunia flower color generated by transformation of a mutant with a maize gene. Nature 330: 677-678.
- Miller, K. D., V. Guyon, J. N. S. Evans and W. A. Shuttleworth 1999. Purification, cloning, and heterologous expression of a catalytically efficient flavonol 3-*O*-galactosyltransferase expressed in the male gametophyte of *Petunia hybrida*. J. Biol. Chem. 274: 34011-34019.
- Ogata, J., S. Teramoto and K. Yoshitama 1998. Isolation and characterization UDP-glucose: cyanidin 3-*O*-glucosyltransferase from the flower buds of *Senecio x hybridus*. J. Plant. Res. 111: 213-216.
- Ogata, J., T. Sakamoto, M. Yamaguchi, S. Kawanobu and K. Yoshitama 2001. Isolation and characterization of anthocyanin 5-*O*-glucosyltransferase from flowers of *Dahlia variabilis*. J. Plant Physiol. 158: 709-714.

- Ralston, E. J., J. J. English and H. K. Dooner 1988. Sequence of three *bronze* alleles of maize and correlation with the genetic fine structure. *Genetics* 119: 185-197.
- Saleh, N. A. M., H. Fritsch, P. Witkop and H. Grisebach 1976a. UDP-glucose: cyanidin 3-*O*-glucosyltransferase from cell cultures of *Haplopappus gracilis*. *Planta* 133: 41-45.
- Saleh, N. A. M., J. E. Poulton and H. Grisebach 1976b. UDP-glucose: cyanidin 3-*O*-glucosyltransferase from red cabbage seedlings. *Phytochemistry* 15: 1865-1868.
- Springob, K., J. Nakajima, M. Yamazaki and K. Saito 2003. Recent advances in the biosynthesis and accumulation of anthocyanins. *Nat. Prod. Rep.* 20: 288-303.
- Suzuki, H., T. Nakayama, K. Yonekura-Sakakibara, Y. Fukui, N. Nakamura, M. Nakao, Y. Tanaka, M. Yamaguchi, T. Kusumi, T. Nishino 2001. Malonyl CoA: anthocyanin 5-*O*-glucoside-6'''-*O*-malonyltransferase from scarlet sage (*Salvia splendens*) flowers: enzyme purification, gene cloning, expression, and characterization. *J. Biol. Chem.* 276: 49013-49019.
- Suzuki, H., T. Nakayama, K. Yonekura-Sakakibara, Y. Fukui, N. Nakamura, M. Yamaguchi, Y. Tanaka, T. Kusumi, and T. Nishino 2002. cDNA cloning, heterologous expressions, and functional characterization of malonyl-coenzyme A: anthocyanidin 3-*O*-glucoside-6''-*O*-malonyltransferase from dahlia flowers. *Plant Physiol.* 130: 2142-2151.

- Suzuki, H., S. Sawada, K. Watanabe, S. Nagae, M. Yamaguchi, T. Nakayama and T. Nishino 2004. Identification and characterization of a novel anthocyanin malonyltransferase from scarlet sage (*Salvia splendens*) flowers: an enzyme that is phylogenetically separated from other anthocyanin acyltransferases. *Plant J.* 38: 994-1003.
- 竹中 悠 2004. *Iris* 属植物におけるアグロバクテリウム法を用いた形質転換体の作出に関する基礎的研究. 宮崎大学修士論文.
- Tanaka, Y., Y. Fukui, M. Fukuchi-Mizutani, T. A. Holton, E. Higgins and T. Kusumi 1995. Molecular cloning and characterization of *Rosa hybrida* dihydroflavonol 4-reductase gene. *Plant Cell Physiol.* 36: 1023-1031.
- Tanaka, Y., K. Yonekura, M. Fukuchi-Mizutani, Y. Fukui, H. Fujiwara, T. Ashikari and T. Kusumi 1996. Molecular and biochemical characterization of three anthocyanin synthetic enzymes from *Gentiana triflora*. *Plant Cell Physiol.* 37: 711-716.
- Tanaka, Y., S. Tsuda and T. Kusumi 1998. Metabolic engineering to modify flower color. *Plant Cell Physiol.* 39 (1998) 1119-1126.
- 田中良和・勝元幸久 2002. 花の色のバイオテクノロジー. 蛋白質核酸酵素 47: 225-230.
- Tanaka, Y. and F. Brugliera 2006. Flower color. In: C. Ainsworth (Ed.), *Flowering and its manipulation, Annual Plant Reviews, Vol. 20, Blackwell Publishing, pp. 201-239.*

- Teusch, M., G. Forkmann and W. Seyffert 1986. Genetic control of UDP-glucose: anthocyanin 5-*O*-glucosyltransferase from flowers of *Matthiola incana* R. Br. *Planta* 168: 586-591.
- Teusch, M., G. Forkmann and W. Seyffert 1987. Genetic control of hydroxycinnamoyl-coenzyme A: anthocyanidin 3-glucoside hydroxycinnamoyltransferase from petals of *Matthiola incana*. *Phytochemistry* 26: 991-994.
- Wang, Y., Z. Jeknic, R. C. Ernst and T. H. H. Chen 1999. Efficient plant regeneration from suspension cultured cells of tall bearded iris. *HortScience* 34: 730-735.
- Wiering, H. and P. de Vlaming 1984. Inheritance and biochemistry of pigments. In: K. C. Sink (Ed.), *Petunia*, Springer-Verlag, Berlin, pp. 49-76.
- Wise, R. P., W. Rohde and F. Salamini 1990. Nucleotide sequence of the Bronze-1 homologous gene from *Hordeum vulgare*. *Plant Mol. Biol.* 14: 277-279.
- 藪谷 勤・横田耕二・足立泰二・長友 大 1983. 高速液体クロマトグラフィーによるハナショウブのアントシアニン分析. *宮崎大農報* 30: 7-13.
- Yabuya, T. 1987. High-performance liquid chromatographic analysis of anthocyanins in induced amphidiploids of *Iris laevigata* Fisch. × *I. ensata* Thunb. *Euphytica* 36: 381-387.

- Yabuya, T. 1991. High-performance liquid chromatographic analysis of anthocyanins in Japanese garden iris and its wild forms. *Euphytica* 52: 215-219
- Yabuya, T., M. Nakamura and A. Yamasaki 1994a. *p*-Coumaroyl glycosides of Japanese garden iris, *Iris ensata* Thunb.. *Euphytica* 74: 47-50.
- Yabuya, T., M. Nakamura and T. Iwashina 1994b. Flower color variations due to copigments in Japanese garden iris, *Iris ensata* Thunb.. Proc. of IPBA, Rogla, 1994: 239-250.
- Yabuya, T., M. Nakamura, T. Iwashina, M. Yamaguchi and T. Takehara 1997. Anthocyanin-flavone copigmentation in bluish purple flowers of Japanese garden iris (*Iris ensata* Thunb.). *Euphytica* 98: 163–167.
- Yabuya, T., M. Saito, T. Iwashina and M. Yamaguchi 2000. Stability of flower colors due to anthocyanin-flavone copigmentation in Japanese garden iris (*Iris ensata* Thunb.). *Euphytica* 115:1-5.
- Yabuya, T., M. Yamaguchi, Y. Fukui, K. Katoh, T. Imayama and I. Ino 2001. Characterization of anthocyanin *p*-coumaroyltransferase in flowers of *Iris ensata*. *Plant Sci.* 160: 499-503.
- Yabuya, T., M. Yamaguchi, T. Imayama, K. Katoh and I. Ino 2002. Anthocyanin 5-*O*-glucosyltransferase in flowers of *Iris ensata*. *Plant Sci.* 162: 779-784.
- 藪谷 勤 2004. ハナショウブにおける花色育種. 植物色素研究法. 植物色素研究会編, 大阪公立大学共同出版会, 堺, pp. 183-189.

- Yabuya, T., N. Yoshihara, K. Inoue and H. Shimizu 2006. Advances in breeding of Japanese garden iris. In: Jaime A. Teixeira da Silva (Ed.). Floriculture, ornamental and plant biotechnology. Global Science Books. UK. Vol. I, pp. 556-563.
- Yamaguchi, M., S. Kawanobu, T. Maki and I. Ino 1996. Cyanidin 3-malonylglucoside and malonyl-coenzyme A: anthocyanidin malonyltransferase in *Lactuca sativa* leaves. *Phytochemistry* 42: 661-663.
- Yamaguchi, M., N. Oshida, M. Nakayama, M. Koshioka, Y. Yamaguchi and I. Ino 1999. Anthocyanidin 3-glucoside malonyltransferase from *Dahlia variabilis*. *Phytochemistry* 52: 15-18.
- Yamazaki, M., Z. Gong, M. Fukuchi-Mizutani, Y. Fukui, Y. Tanaka, T. Kusumi and K. Saito 1999. Molecular cloning and biochemical characterization of a novel anthocyanin 5-O-glucosyltransferase by mRNA differential display for plant forms regarding anthocyanin. *J. Biol. Chem.* 274: 7405-7411.
- Yamazaki, M., E. Yamagishi, Z. Gong, M. Fucuchi-Mizutani, Y. Fukui, Y. Tanaka, T. Kusumi, M. Yamaguchi and K. Saito 2002. Two flavonoid glucosyltransferase from *Petunia hybrida*: molecular cloning, biochemical properties and developmentally regulated expression. *Plant Mol. Biol.* 48: 401-411.
- Yoshida, K., T. Kondo, K. Kameda and T. Goto 1990. Structure of anthocyanins isolated from purple leaves of *Perilla ocimoides* L. var.

crispa Benth and their isomerization by irradiation of light. Agric. Biol. Chem. 54: 1745–1751.