

6 Literaturverzeichnis

- Altenbach SB, Kuo CC, Staraci LC, Pearson KW, Wainwright C, Georgescu A, Townsend J. Accumulation of a Brazil nut albumin in seeds of transgenic canola results in enhanced levels of seed protein methionine. *Plant Mol Biol* 18, 235-245 (1992)
- Altenbach SB, Pearson KW, Meecker G, Staraci LC, Sun SSM. Enhancement of the methionine content of seed proteins by the expression of a chimeric gene encoding a methionine-rich protein in transgenic plants. *Plant Mol Biol* 13, 513-522 (1989)
- An G, Ebert PR, Mitra A, Ha SB. Binary vectors. In: *Plant Molecular Biology Manual*, A3:1-9 (Gelvin SB, Schilperoort RA, Verma DP eds), Kluwer Academic Publishers, Dordrecht (1988)
- Anderson JW, Fitzgerald MA. Physiological and metabolic origin of sulphur for the synthesis of seed storage proteins. *J Plant Physiol* 158, 447-456 (2001)
- Anderson JW. Sulfur metabolism in plants. In: *The Biochemistry of Plants*, Vol 16 (Miflin BJ, Lea PJ eds), Academic Press, San Diego, pp 328-382 (1990)
- Aragão FJL, Barros LMG, Brasileiro ACM, Ribeiro SG, Smith FD, Sanford JC, Faria JC, Rech EL. Inheritance of foreign genes in transgenic bean (*Phaseolus vulgaris*) co-transformed via particle bombardment. *Theor Appl Genet* 93, 142-150 (1996)
- Aragão FJL, Barros LMG, de Sousa MV, de Sa MFG, Almeida ERP, Gander ES, Rech EL. Expression of a methionine-rich storage albumin from the brazil nut (*Bertholletia excelsa* H.B.K., Lecythidaceae) in transgenic bean plants (*Phaseolus vulgaris* L., Fabaceae). *Genet Molec Biol* 22, 445-449 (1999)
- Aragão FJL, Sarokin L, Vianna GR, Rech EL. Selection of transgenic meristematic cells utilizing a herbicidal molecule results in the recovery of fertile transgenic soybean [*Glycine max* (L.) Merril] plants at a high frequency. *Theor Appl Genet* 101, 1-6 (2000)
- Aragão FJL, Vianna GR, Albino MMC, Rech EL. Transgenic dry bean tolerant to the herbicide glufosinate ammonium. *Crop Science* 42, 1298-1302 (2002)
- Arndt F, Rusch R, Stillfried HV, Hanisch B, Martin WC. Sn-49537 - a new cotton defoliant. *Plant Physiol* 57, 99 (1976)
- Bartlem D, Lambein I, Okamoto T, Itaya A, Uda Y, Kijima F, Tamaki Y, Nambara E, Naito S. Mutation in the threonine synthase gene results in an over-accumulation of soluble methionine in *Arabidopsis*. *Plant Physiol* 123, 101-110 (2000)
- Barwale UB, Widholm JM. Somaclonal variation in plants regenerated from cultures of soybean. *Plant Cell Rep* 6, 365-368 (1987)
- Barwale UB, Widholm JM. Soybean: Plant regeneration and somaclonal variation. In: *Biotechnology in Agriculture and Forestry, Legumes and Oilseed Crops*, Vol 10 (Bajaj YPS ed.), Berlin, Germany, pp 114-133 (1990)
- Bassüner R, Bäumlein H, Huth A, Jung R, Wobus U, Rapoport TA, Saalbach G, Müntz K. Abundant embryonic mRNA in field bean (*Vicia faba* L.) codes for a new class of seed proteins: cDNA cloning and characterization of the primary translation product. *Plant Mol Biol* 11, 321-334 (1988)
- Baulcombe DC, English JJ. Ectopic pairing of homologous DNA and post-transcriptional gene silencing in transgenic plants. *Curr Opin Biotechnol* 7, 173-180 (1996)

- Bäumlein H, Boerjan W, Nagy I, Bassüner R, Van Montagu M, Inzé D, Wobus U. A novel seed protein gene from *Vicia faba* is developmentally regulated in transgenic tobacco and *Arabidopsis* plants. Mol Gen Genet 225, 459-467 (1991)
- Bean SJ, Gooding PS, Mullineaux PM and Davies DR. A simple system for pea transformation. Plant Cell Rep 16, 513-519 (1997)
- Becker D, Brettschneider R, Lötz H. Fertile transgenic wheat from microprojectile bombardment of scutellar tissue. Plant Journal 5, 299-307 (1994)
- Becker, H. Pflanzenzüchtung, Verlag Eugen Ulmer, Stuttgart (1993)
- Bellucci M, Alpini A, Arcioni S. Expression of maize gamma-zein and beta-zein genes in transgenic *Nicotiana tabacum* and *Lotus corniculatus*. Plant Cell Tiss Org Cult 62, 141-151 (2000)
- Bellucci M, Alpini A, Arcioni S. Zein accumulation in forage species (*Lotus corniculatus* and *Medicago sativa*) and co-expression of the gamma-zein: KDEL and beta-zein:KDEL polypeptides in tobacco leaf. Plant Cell Rep 20, 848-856 (2002)
- Bellucci M, Alpini A, Paolocci F, Damiani F, Arcioni S. Transcription of a maize cDNA in *Lotus corniculatus* is regulated by T-DNA methylation and transgene copy number. Theor Appl Genet 98, 257-264 (1999)
- Bernardi G. The human genome - organization and evolutionary history [review]. Ann Rev Genetics 29, 445-476 (1995)
- Bevan MW. Binary *Agrobacterium tumefaciens* vectors for plant transformation. Nucl Acids Res 12, 8711-8721 (1984)
- Bieri V, Schmid J, Keller ER. Shoot tip culture in *Vicia faba* L. In: Efficiency in Plant breeding (Eds Lange W, Zeven AC and Hogendoorn NF) Proceedings of the 10th Congress of the European Association for Research on Plant Breeding, EUCARPIA, Wageningen/The Netherlands, pp 295 (1984)
- Binding H, Nehls R. Regeneration of isolated protoplasts of *Vicia faba* L. Z Pflanzenphysiol 88, 327-332 (1978)
- Birch N. Field evaluation of resistance to black bean aphid, *Aphis fabae*, in close relatives of the faba bean, *Vicia faba*. Annals of Appl Biol 106, 561-569 (1985)
- Bliss FA. Genetic Alteration of Legume Seed Proteins. Hort Science 25, 1517-1520 (1990)
- Bond DA, Fyfe IL, Toybeen-Clark G. Male sterility in field beans (*Vicia faba* L.) IV. Use of cytoplasmatic male sterility in the production of F1-hybrids and their performance in trials. J Agric Sci 66, 369-377 (1966)
- Bond DA, Lawes D, Poulsen MH. Broadbean (Faba bean). Hybridization of crop plants. WR Fehr and HH Hadley, 203-213. Madison: American Soc Agronom- Crop Science Soc America (1976)
- Bond DA. Recent developments in breeding field beans (*Vicia faba* L.). Plant Breeding 99, 1-26 (1987)
- Böttinger P, Steinmetz A, Schieder O, Pickardt T. *Agrobacterium*-mediated transformation of *Vicia faba*. Mol Breeding 8, 243-254 (2001)
- Böttinger P. Untersuchungen zur *Agrobacterium*-vermittelten Transformation von Meristemen bei *Vicia faba* L., Diplomarbeit FU Berlin (1993)

- Bradford MM. 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 (1976)
- Brettschneider R, Becker D, Lörz H. Efficient transformation of scutellar tissue of immature maize embryos. *Theor Appl Genet* 94, 737-748 (1997)
- Brinch-Pedersen H, Galili G, Knudsen S, Holm PB. Engineering of the aspartate family biosynthetic pathway in barley (*Hordeum* I) by transformation with heterologous genes encoding feed-back-insensitive aspartate kinase and dihydrodipicolinate synthase. *Plant Mol Biol* 32, 611-620 (1996)
- Bruening G. Plant gene silencing regularized. *Proc Natl Acad Sci USA* 95, 13349-13351 (1998)
- Busse G. *In vitro* cultivation of *Vicia faba* and induction of morphogenesis. *Biol Zentralbl* 105, 97-104 (1986)
- Bustos MM, Guiltinan MJ, Jordano J, Begum D, Kalkan FA, Hall TC. Regulation of beta glucuronidase expression in transgenic tobacco by an adenosine thymidine-rich cis-acting sequence found upstream of a french bean beta phaseolin gene. *Plant Cell* 1, 839-854 (1989)
- Cao X, Liu Q, Rowland LJ, Hammerschlag FA. Gus expression in blueberry (*Vaccinium* spp.): Factors influencing *Agrobacterium*-mediated gene transfer efficiency. *Plant Cell Rep* 18, 266-270 (1998)
- Capelle SC, Mok DWS, Kirchner SC, Mok M. Effects of thidiazuron on cytokinin autonomy and the metabolism of N6-(D2- isopentenyl)[8-14C]adenosine in callus tissues of *Phaseolus lunatus* L. *Plant Physiol* 73, 796-802 (1983)
- Caplin SM, Steward FC. Effect of coconut milk on the growth of explants from carrot root. *Science* 108, 655-657 (1948)
- Chakraborty S, Chakraborty N, Datta A. Increased nutritive value of transgenic potato by expressing a nonallergenic seed albumin gene from *Amaranthus hypochondriacus*. *Proc Natl Acad Sci USA* 97, 3724-3729 (2000)
- Chambers HF, Sande MA. In: Goodman & Gilman, *Pharmakologische Grundlagen der Arzneimitteltherapie* - Kapitel 46 (9. Auflage, Domoniak P, Harder S, Paul M, Unger T, eds) McGraw-Hill International (1998)
- Chandler VL, Vaucheret H. Gene activation and gene silencing. *Plant Physiol* 125, 145-148 (2001)
- Cheng M, Fry JE, Pang S, Zhou H, Hironaka CM, Duncan DR, Conner TW, Wan Y. Genetic transformation of wheat mediated by *Agrobacterium tumefaciens*. *Plant Physiol* 115, 971-980 (1997)
- Cheng M, Jarret RL, Li ZJ, Xing AQ, Demski JW. Production of fertile transgenic peanut (*Arachis hypogaea* L.) plants using *Agrobacterium tumefaciens*. *Plant Cell Rep* 15, 653-657 (1996)
- Cheyne V, Dale PJ. Shoot tip culture in forage legumes. *Plant Sci Lett* 19, 303-309 (1980)
- Chiang PK, Gordon RK, Tal J, Zeng GC, Doctor BP, Pardhasaradhi K, McCann PP. S-Adenosylmethionine and methylation. *The FASEB Journal* 10, 471-480 (1996)
- Chiba Y, Ishikawa M, Kijima F, Tyson RH, Kim J, Yamamoto A, Nambara E, Leustek T, Wallsgrave RM, Naito S. Evidence for autoregulation of cystathione γ -synthase mRNA stability in *Arabidopsis*. *Science* 286, 1371-1374 (1999)
- Chilton MD. *Agrobacterium* Gene Transfer - Progress on a poor man's vector for maize. *Proc Natl Acad Sci USA* 90, 3119-3120 (1993)

- Cho MJ, Choi HW, Buchanan BB, Lemaux PG. Inheritance of tissue-specific expression of barley hordein promoter-*uidA* fusions in transgenic barley plants. *Theor Appl Genet* 98, 1253-1262 (1999)
- Cho MJ, Jiang W, Lemaux PG. Transformation of recalcitrant barley cultivars through improvement of regenerability and decreased albinism. *Plant Sci* 138, 229-244 (1998)
- Choi HW, Lemaux PG, Cho MJ. High frequency of cytogenetic aberration in transgenic oat (*Avena sativa* L.) Plants. *Plant Sci* 156, 85-94 (2000)
- Choi HW, Lemaux PG, Cho MJ. Increased chromosomal variation in transgenic versus nontransgenic barley (*Hordeum vulgare* L.) plants. *Crop Science* 40, 524-533 (2000)
- Christiansen P, Gibson JM, Moore A, Pedersen C, Tabe L, Larkin PJ. Transgenic *Trifolium repens* with foliage accumulating the high sulphur protein, sunflower seed albumin. *Transgenic Res* 9, 103-113 (2000)
- Christou P, Ford T, Kofron M. Production of transgenic rice (*Oryza sativa* L.) plants from agronomically important indica and japonica varieties via electric discharge particle acceleration of exogenous DNA into immature zygotic embryos. *Bio/Technology* 9, 957-962 (1991)
- Christou P, McCabe D, Swain WF. Stable transformation of soybean callus by DNA-coated gold particles. *Plant Physiol* 87, 671-674 (1988)
- Christou P, McCabe DE, Martinell BJ, Swain WF. Soybean genetic engineering--Commercial production of transgenic plants. *Trends in Biotechnology* 8, 145-151 (1990)
- Christou P, Swain WF, Yang NS, McCabe DE. Inheritance and expression of foreign genes in transgenic soybean plants. *Proc Natl Acad Sci USA* 86, 7500-7504 (1989)
- Clemente TE, LaVallee BJ, Howe AR, Conner-Ward D, Rozman RJ, Hunter PE, Broyles DL, Kasten DS, Hinchee MA. Progeny analysis of glyphosate selected transgenic soybeans derived from *Agrobacterium*-mediated transformation. *Crop Science* 40, 797-803 (2000)
- Clough SJ, Bent AF. Floral dip: A simplified method for *Agrobacterium*-mediated transformation of *Arabidopsis thaliana*. *Plant Journal* 16, 735-743 (1998)
- Cogoni C, Macino G. Isolation of quelling-defective (qde) mutants impaired in posttranscriptional transgene-induced gene silencing in *Neurospora crassa*. *Proc Natl Acad Sci USA* 94, 10233-10238 (1997)
- Constantin MJ. Chromosome instability in cell and tissue cultures and regenerated plants. *Environ Experim Bot* 21, 359-368 (1981)
- Cubero J, Suso MJ. Primitive and modern forms of *Vicia faba*. *Kulturpflanze* 29, 137-145 (1981)
- Czihal A, Conrad B, Buchner P, Brevis R, Farouk AA, Manteuffel R, Adler K, Wobus U, Hofemeister J, Bäumlein H. Gene farming in plants: Expression of a heatstable *Bacillus amylase* in transgenic legume seeds. *J Plant Physiol* 155, 183-189 (1999)
- Dai SH, Zheng P, Marmey P, Zhang SP, Tian WZ, Chen SY, Beachy RN, Fauquet C. Comparative analysis of transgenic rice plants obtained by *Agrobacterium*-mediated transformation and particle bombardment. *Mol Breeding* 7, 25-33 (2001)
- Davies DR, Hamilton J, Mullineaux P. Transformation of peas. *Plant Cell Rep* 12, 180-183 (1993)
- De Block M. The cell biology of plant transformation - Current state, problems, prospects and the implications for the plant breeding. *Euphytica* 71, 1-14 (1993)

- De Bondt A, Eggermont K, Druart P, Devil M, Goderis I, Vanderleyden J, Broekaert WF. *Agrobacterium*-mediated transformation of apple (*Malus x domestica* Borkh): An assessment of factors affecting gene transfer efficiency during early transformation steps. *Plant Cell Rep* 13, 587-593 (1994)
- De Bondt A, Eggermont K, Penninckx I, Goderis I, Broekaert WF. *Agrobacterium*-mediated transformation of apple (*Malus x domestica* borkh.): An assessment of factors affecting regeneration of transgenic plants. *Plant Cell Rep* 15, 549-554 (1996)
- De Clercq A, Vandewiele M, Van Damme J, Guerche P, Van Montagu M, Vandekerckhove J, Krebbers E. Stable accumulation of modified 2S albumin seed storage proteins with higher methionine contents in transgenic plants. *Plant Physiol* 94, 970-979 (1990)
- De Clercq J, Zambre M, Van Montagu M, Dillen W, Angenon G. An optimized *Agrobacterium*-mediated transformation procedure for *Phaseolus acutifolius* a. Gray. *Plant Cell Rep* 21, 333-340 (2002)
- De Clercq J. Improvement of the methionine content of seeds through modification of the *Phaseolus vulgaris* seed protein arcelin-5a. PhD Thesis Univ Gent, Belgium (2002)
- Dehio C, Schell J. Identification of plant genetic loci involved in a posttranscriptional mechanism for meiotically reversible transgene silencing. *Proc Natl Acad Sci USA* 91, 5538-5542 (1994)
- Demidov D, Horstmann C, Meixner M, Pickardt T, Saalbach I, Galili G, Müntz K. Additive effects of the feed-back insensitive bacterial aspartatekinase and the Brazil nut 2S albumin on the methionine content of transgenic narbon bean (*Vicia narbonensis* L.). *Mol Breeding* 11, 187-201 (2003)
- Diaz C, Melchers L, Hooykaas P, Lugtenberg B, Kijne J. Root lectin as a determinant of host-plant specificity in the *Rhizobium*-legume symbiosis. *Nature* 338, 579-581 (1989)
- Dillen W. Genetic transformation of *Phaseolus*. PhD Thesis Univ Gent, Belgium (1997)
- Dillen W, de Clercq J, Goossens A, Van Montagu M, Angenon G. *Agrobacterium*-mediated transformation of *Phaseolus acutifolius* A Gray. *Theor Appl Genet* 94, 151-158 (1997)
- Dobie K, Mehtali M, McClenaghan M, Lathe R. Variegated gene expression in mice. *Trends Genet* 13, 127-130 (1997)
- Donaldson PA, Simmonds DH. Susceptibility to *Agrobacterium tumefaciens* and cotyledonary node transformation in short-season soybean. *Plant Cell Rep* 19, 478-484 (2000)
- Dronne S, Moja S, Jullien F, Berger F, Caillard JC. *Agrobacterium*-mediated transformation of lavandin (*Lavandula X intermedia* Emeric ex Loiseleur). *Transgenic Res* 8, 335-347 (1999)
- Duc G. Faba bean (*Vicia faba* L.). *Field Crops Res* 53, 99-109 (1997)
- Egnin M, Mora A, Prakash CS. Factors enhancing *Agrobacterium tumefaciens*-mediated gene transfer in peanut (*Arachis hypogaea* L.). *In vitro Cell Develop Biol Plant* 34, 310-318 (1998)
- Elmayan T, Vaucheret H. Expression of single copies of a strongly expressed 35S transgene can be silenced post-transcriptionally. *Plant Journal* 9, 787-797 (1996)
- Endemann M. Somatische Embryogenese von Eiche: Induktion und genetische Stabilität. Technische Universität Wien, Fakultät für Technische Naturwissenschaften und Informatik, Institut für Biochemische Technologie und Mikrobiologie, Dissertation (2001)

- Enneking D, Delaere IM, Tate ME. Gamma-glutamyl-s-ethenylcysteine - a dipeptide from *Vicia narbonensis*. *Phytochemistry* 48, 643-645 (1998)
- Fagard M, Vaucheret H. (Trans)gene silencing in plants: How many mechanisms? [Review]. *Ann Rev Plant Physiol Plant Mol Biol* 51, 167-194 (2000)
- Fakhrai H, Fakhrai F and Evans PK. *In vitro* culture and plant regeneration in *Vicia faba* ssp. *equina* cultivar spring blaze. *J Exp Bot* 40, 813-818 (1989)
- Falco SC, Guida T, Locke M, Mauvais J, Sanders C, Ward RT, Webber P. Transgenic canola and soybean seeds with increased lysine. *BioTechnology* 13, 577-582 (1995)
- Fang YD, Akula C, Altpeter F. *Agrobacterium*-mediated barley (*Hordeum l.*) transformation using green fluorescent protein as a visual marker and sequence analysis of the T-DNA :: barley genomic DNA junctions. *J Plant Physiol* 159, 1131-1138 (2002)
- FAO (FAOSTAT, <http://apps.fao.org/page/collections?subset=agriculture>) (2002)
- FAO Production Yearbook Vol 45, Food and Agriculture Organization of the United Nations, Rome (1990)
- Feinberg AP, Vogelstein B. A technique for radiolabeling DNA restriction endonuclease fragments to high specific activity. *Anal Biochem* 132, 6-13 (1983)
- Feldman KA, Marks MD. *Agrobacterium*-mediated transformation of germinating seeds of *Arabidopsis thaliana*: A non-tissue culture approach. *Mol Gen Genet* 208, 1-9 (1987)
- Fennell SR, Powell W, Wright F, Ramsay G, Waugh R. Phylogenetic relationships between *Vicia faba* (fabaceae) and related species inferred from chloroplast trnl sequences. *Plant System Evol* 212, 247-259 (1998)
- Fiedler U, Filistein R, Wobus U, Bäumlein H. A complex ensemble of cis-regulatory elements controls the expression of a *Vicia faba* non-storage seed protein gene. *Plant Molecular Biology* 22, 669-679 (1993)
- Finnegan J, McElroy D. Transgene inactivation: Plants fight back!. *Bio/Technology* 12, 883-888 (1994)
- Fontana GS, Santini L, Caretto S, Frugis G, Mariotti D. Genetic Transformation in the grain legume *Cicer arietinum* L (Chickpea). *Plant Cell Rep* 12, 194-198 (1993)
- Fraley RT, Rogers S G, Horsch R B, Sanders P R, Flick J S, Adams S P, Bittner M L, Fink C L, Brand L A, Et Al. Expression of bacterial genes in plant cells. *Proc Natl Acad Sci USA* 80, 4803-4807 (1983)
- Frankard V, Ghislain M, Jacobs M. Two feedback-insensitive enzymes of the aspartate pathway in *Nicotiana sylvestris*. *Plant Physiol* 99, 1285-1293 (1992)
- Frauen M. Cultivation and breeding of field beans and peas in West Germany. *Schriftenreihe des Bundesministers für Ernährung Landwirtschaft und Forsten, Reihe Angewandte Wissenschaft* 367, 4-14 (1989)
- Fuchs J, Strehl S, Brandes A, Schweizer D, Schubert I. Molecular-cytogenetic charakterization of the *Vicia faba* genome – heterochromatin differentiation, replication patterns and sequence localization. *Chrom Res* 6, 219-230 (1998)
- Galili G, Höfgen R. Metabolic engineering of amino acids and storage proteins in plants. *Metabolic Engineering* 4, 3-11 (2002)

- Galili G. Regulation of lysine and threonine synthesis. *Plant Cell* 7, 899-906 (1995)
- Galili S, Guenoune D, Wninger S, Hana B, Schupper A, Ben-Dor B, Kapulnik Y. Enhanced levels of free and protein-bound threonine in transgenic alfalfa (*Medicago sativa* L.) expressing a bacterial feedback-insensitive aspartate kinase gene. *Transgenic Res* 9, 137-144 (2000)
- Galzy R, Hamoui M. Induction de l'organogénèse sur des cals de *Vicia faba* minor provenant d'apex. *Can J Bot* 59, 203-207 (1981)
- Gamborg OL, Miller R and Ojima K. Nutrient requirements of suspension cultures of soybean root cells. *Exp Cell Res* 50, 148-151 (1968)
- Gebhardt, D. Der Einfluß von Thidiazuron auf die Sproßregeneration aus Protokallussen von *Vicia faba* L. cv Mythos, Diplomarbeit FU Berlin (1995)
- Gill KS, Gill BS, Endo TR. A chromosome region-specific mapping strategy reveals gene-rich telomeric ends in wheat. *Chromosoma* 102, 374-381 (1993)
- Gill R, Saxena PK. Direct somatic embryogenesis and regeneration of plants from seedling explants of peanut (*Arachis hypogaea* L): Promotive role of thidiazuron. *Can J Bot* 70, 1186-1192 (1992)
- Gill R, Saxena PK. Somatic embryogenesis in *Nicotiana tabacum* L.: Induction by thidiazuron of direct embryo differentiation from cultured leaf discs. *Plant Cell Rep* 12, 154-159 (1993)
- Giovanelli J, Mudd SH, Datko AH. Sulfur amino-acids in plants. In: The biochemistry of plants: A comprehensive treatise, Vol. 5. Amino acids and derivatives (Miflin BJ ed) Academic Press, Inc./New York, USA; London, England. Illus., 453-506 (1980)
- Goossens A, Dillen W, De Clercq J, Van Montagu M, Angenon G. The arcelin-5 gene of *Phaseolus vulgaris* directs high seed-specific expression in transgenic *Phaseolus acutifolius* and *Arabidopsis* plants. *Plant Physiol* 120, 1095-1103 (1999)
- Gordon-Kamm WJ, Spencer TM, Mangano ML, Adams TR, Daines RJ, Start WG, O'Brien JV, Chambers SA, Adams WR Jr, Willets NG, Rice TB, Makey CJ, Krueger RW, Kausch AP, Lemieux PG. Transformation of maize cells and regeneration of fertile transgenic plants. *Plant Cell* 2, 603-618 (1990)
- Gould J, Devey M, Hasegawa O, Ulian EC, Peterson G, Smith RH. Transformation of *Zea mays* L. using *Agrobacterium tumefaciens* and the shoot apex. *Plant Physiol* 95, 426-434 (1991)
- Grant JE, Cooper PA, Gilpin BJ, Hoglund SJ, Reader JK, Pither-Joyce MD, Timmerman-Vhan GM. Kanamycin is effective for selecting transformed peas. *Plant Sci* 139, 159-164 (1998)
- Grant JE, Cooper PA, Mcara AE, Frew TJ. Transformation of peas (*Pisum sativum* L.) using immature cotyledons. *Plant Cell Rep* 15, 254-258 (1995)
- Griga M, Kubalakova M and Tejklova E. Somatic embryogenesis in *Vicia faba* L. *Plant Cell Tiss Org Cult* 9, 167-171 (1987)
- Grimsley N, Hohn T, Davies J W, Hohn B. *Agrobacterium* mediated delivery of infectious maize streak virus into maize plants. *Nature* 325, 177-179 (1987)
- Grossmann K. Induction of leaf abscission in cotton is a common effect of urea- and adenine-type cytokinins. *Plant Physiol* 95, 234-237 (1991)
- Guerche P, De Almeida ERP, Schwarzein MA, Gander E, Krebbers E, Pelletier G. Expression of the 2S albumin from *Berthollertia excelsa* in *Brassica napus*. *Mol Gen Genet* 221, 306-314 (1990)

- Gulati A, Schryer P, McHughen A. Production of fertile transgenic lentil (*Lens culinaris* medik) plants using particle bombardment. *In vitro Cell Develop Biol Plant* 38, 316-324 (2002)
- Guo GQ, Maiwald F, Lorenzen P, Steinbiss HH. Factors influencing T-DNA transfer into wheat and barley cells by *Agrobacterium tumefaciens*. *Cereal Res Com* 26, 15-22 (1998)
- Hamilton AJ, Baulcombe DC. A species of small antisense RNA in posttranscriptional gene silencing in plants. *Science* 286, 950-952 (1999)
- Hanafy, MS. Development of an efficient transformation system to field bean (*Vicia faba*), Dissertation Univ Hannover (2002)
- Hanahan D. Studies on transformation of *E. coli* with plasmids. *J Mol Biol* 166, 557-580 (1983)
- Hanelt P, Rudolph A, Hammer K, Jank H, Müntz K, Scholz F. Eiweißuntersuchungen am Getreide- und Leguminosen- Sortiment Gatersleben. *Kulturpflanze* 26, 183-212 (1978)
- Hegi G. *Vicia faba* L., Feldbohne, Pferdebohne, Puffbohne. In: *Illustr. Flora von Mitteleuropa*. 2. Aufl., Bd. IV/3. Verlag Paul Parey, Berlin, pp 1556-1562 (1964)
- Henikoff S. Position-Effect Variegation after 60 Years. *Trends Genet* 6, 422-426 (1990)
- Hennig, S. Die Methoden der Zell- und Gewebekultur höherer Pflanzen, Wissenschaftliche Hausarbeit für das Staatsexamen Biologie, FU Berlin (1998)
- Herrera-Estrella L, Depicker A, Van Montagu M, Shell J. Expression of chimeric genes transferred into plant cells using a Ti-plasmid derived vector. *Nature* 303, 209-213 (1983)
- Herrera-Estrella L, Simpson J. Foreign gene expression in plants. In: (Shaw CH ed) *Practical Approach Series: Plant Molecular Biology/A Practical Approach*. Irl Press Ltd. Oxford, England, UK; Washington, D.C., USA. Illus., pp.131-160 (1988)
- Hiei Y, Ohta S, Komari T, Kumashiro T. Efficient transformation of rice (*Oryza sativa* L.) mediated by *Agrobacterium* and sequence analysis of the boundaries of the T-DNA. *Plant Journal* 6, 271-282 (1994)
- Hinchee MAW, Connor-Ward DV, Newell CA, McDonnell RE, Sato SJ, Gasser CS, Fischhoff DA, Re DB, Fraley RT, Horsch RB. Production of transgenic soybean plants using *Agrobacterium* mediated DNA transfer. *BioTechnology* 6, 915-922 (1988)
- Hobbs SL, Kpoda P, DeLong CMO. The effect of T-DNA copy number, position and methylation on reporter gene expression in tobacco transformants. *Plant Mol Biol* 15, 851-864 (1990)
- Hoffman LM, Donaldson DD, Bookland R, Rashka K, Herman EM: Synthesis and protein body deposition of a maize 15-Kd zein in transgenic tobacco seeds. *EMBO J* 6: 3213-3221 (1987)
- Hoffman LM, Donaldson DD, Herman EM. A modified storage protein is synthesized processed and degraded in the seeds of transgenic plants. *Plant Mol Biol* 11, 717-730 (1988)
- Hohn B, Koukolikova-Nicola Z, Bakkeren G, Grimsley N. *Agrobacterium* mediated gene transfer to monocots and dicots. *Genome* 31, 987-993 (1989)
- Hood EE Gelvin SB Melchers S Hoekema A New *Agrobacterium* helper plasmids for gene transfer to plants. *Transgenic Res* 2, 208-218 (1993)
- Hood EE, Helmer GL, Fraley RT, Chilton MD. The hypervirulence of *Agrobacterium-tumefaciens* A281 is encoded in a region of pTiBo542 outside of T-DNA. *J Bacteriol* 168, 1291-1301 (1986)

- Horlemann C, Schwkendiek A, Hohnle M, Weber G. Regeneration and *Agrobacterium*-mediated transformation of hop (*Humulus lupulus* L.). *Plant Cell Rep* 22, 210-217 (2003)
- Horsch RB, Fraley RT, Rogers SG, Sanders PR, Lloyd A, Hoffmann N. Inheritance of functional foreign genes in plants. *Science* 223, 496-498 (1984)
- Horsch RB, Fry JE, Hoffmann NL, Eichholtz D, Rogers SG, Fraley RT. A simple and general method for transferring genes into plants. *Science* 227, 1229-1231 (1985).
- Huber, R. Biologische N-Fixierung der Ackerbohne und deren Auswirkungen auf den N-Haushalt des Bodens im Rahmen getreidebetonter Fruchtfolge. Dissertation ETH Zürich (1988)
- Huetteman CA, Preece JE. Thidiazuron: A potent cytokinin for woody plant tissue culture. *Plant Cell Tiss Org Cult* 33, 105-119 (1993)
- Hutchinson MJ, Murch SJ, Saxena PK. Morphoregulatory role of thidiazuron: Evidence of the involvement of endogenous auxin in thidiazuron-induced somatic embryogenesis of geranium (*Pelargonium x hortorum* bailey). *J Plant Physiol* 149, 573-579 (1996)
- Imsande J. Selection of soybean mutants with increased concentrations of seed methionine and cysteine. *Crop Science* 41, 510-515 (2001)
- Jaaska V. Isozyme diversity and phylogenetic affinities in *Vicia* subgenus *Vicia* (Fabaceae). *Genetic Resources & Crop Evol* 44, 557-574 (1997)
- Jefferson RA. Assaying chimeric genes in plants: The GUS gen fusions system. *Plant Mol Biol Reporter* 5, 387-405 (1987)
- Jelaska S, Pevalek B, Papes D, Devide Z. Developmental aspects of long-term callus culture of *Vicia faba* L. *Protoplasma* 105, 285-292 (1981)
- Jelenić S, Mitrikeski PT, Papeš D, Jelaska S. *Agrobacterium*-mediated transformation of broad bean *Vicia faba* L. *Food technol biotechnol* 38, 167-172 (2000)
- Jeroch H, Flachowsky G, Weißbach F. *Futtermittelkunde*. Gustav Fischer Verlag, Jena (1993),
- Joersbo M, Brunstedt J, Marcussen J, Okkels FT. Transformation of the endospermous legume guar (*Cyamopsis tetragonoloba* L.) and analysis of transgene transmission. *Mol Breeding* 5, 521-529 (1999)
- Jorgensen R, Cluster P, Que Q, English J, Napoli C. Chalcone synthase cosuppression phenotypes in *Petunia* flowers: Comparison of sense vs. antisense constructs and single copy vs. complex T-DNA sequences. *Plant Mol Biol* 31, 957-973 (1996)
- Jorgensen R. Silencing of plant genes by homologous transgenes. *Agbiotech News and Info* 4, 265-273 (1992)
- Jorgensen RA, Atkinson RG, Forster RLS, Lucas WJ. An RNA-based information superhighway in plants. *Science* 279, 1486-1487 (2004)
- Kaneda Y, Tabei Y, Nishimura S, Harada K, Akihama T, Kitamura K. Combination of thidiazuron and basal media with low salt concentrations increases the frequency of shoot organogenesis in soybeans [*Glycine max* (L.) Merr.]. *Plant Cell Rep* 17, 8-12 (1997)
- Kao KN, Michayluk MR. Nutritional requirements for growth of *Vicia hajastana* cells and protoplasts at a very low population density in liquid media. *Planta* 126, 105-110 (1975)

- Karchi H, Shaul O, Galili G. Seed specific expression of a bacterial desensitized aspartate kinase increases the production of seed threonine and methionine in transgenic tobacco. *Plant Journal* 3, 721-727 (1993)
- Karp A. On the current understanding of somaclonal variation. In: *Oxford Surveys Of Plant Molecular And Cell Biology*, Vol 7 (Miflin BJ ed) Oxford University Press, Oxford, England, UK; New York, USA, pp 1-58 (1991)
- Karpen GH. Position-effect variegation and the new biology of heterochromatin. *Curr Opin Genet Dev* 4, 281-291 (1994)
- Kelly JD, Hefle SL. 2S methionine-rich protein (SSA) from sunflower seed is an IgE-binding protein. *Allergy*. 55, 556-559 (2000)
- Klein T, Wolf E, Wu R, Sanford JC. High-velocity microprojectiles for delivering nucleic acids into living cells. *Nature* 327, 70-73 (1987)
- Kohli A, Leech M, Vain P, Laurie DA, Christou P. Transgene organization in rice engineered through direct DNA transfer supports a two-phase integration mechanism mediated by the establishment of integration hot spots. *Proc Natl Acad Sci USA* 95, 7203-7208 (1998)
- Kohno-Murase J, Murase M, Ichikawa H, Imamura J. Improvement in the quality of seed storage protein by transformation of *Brassica napus* with an antisense gene for cruciferin. *Theor Appl Genet* 91, 627-631 (1995)
- Koncz C, Martini N, Mayerhofer R, Koncz-Kalman Z, Koerber H, Redei G P, Schell J. High-frequency T-DNA-mediated gene tagging in plants. *Proc Natl Acad Sci USA*. 86, 8467-8471 (1989)
- Körber-Grohne U. Dicke Bohne, Ackerbohne (*Vicia faba* L.). In: *Nutzpflanzen in Deutschland - Kulturgeschichte und Biologie*. Verlag Konrad Theiss, Stuttgart, pp 117-130 (1987)
- Kortt AA, Caldwell JB, Lilley GG, Higgins TJV. Amino acid and cDNA sequences of a methionine-rich 2S protein from sunflower seed (*Helianthus annuus* L.). *Eur J Biochem* 195, 329-334 (1991)
- Kramer A. Untersuchungen zum biotechnologisch unterstützten Gentransfer bei der Ackerbohne (*Vicia faba* L.). Dissertation Georg August-Universität Göttingen (2002)
- Krishnamurthy KV, Suhasini K, Sagare AP, Meixner M, de Kathen A, Pickardt T, Schieder O. *Agrobacterium* mediated transformation of chickpea (*Cicer arietinum* L.) embryo axes. *Plant Cell Rep* 19, 235-240 (2000)
- Laemmli U. Cleavage of structural proteins during the assembly of the head of bacteriophage T4. *Nature* 227, 680-685 (1970)
- Lai J, Messing J. Increasing maize seed methionine by mRNA stability *Plant Journal* 30, 395-402 (2002)
- Larkin PJ, Scowcroft WR. Somaclonal variation - a novel source of variability from cell cultures for plant improvement. *Theor Appl Genet* 60, 197-214 (1981)
- Lazaridou TB, Roupakias DG. Intraspecific variation in mean endosperm cell cycle time in *Vicia faba* L. and interspecific hybridisation with *Vicia narbonensis* L. *Plant Breeding* 110, 9-15 (1993)
- Lazzeri PA, Hildebrand DF, Sunega J, Williams EG, Collins GB. Soybean somatic embryogenesis interactions between sucrose and auxin. *Plant Cell Rep* 7, 517-520 (1988)
- Lea PJ, Miflin BJ. Transport and metabolism of asparagine and other nitrogen compounds within the plant. In: *The biochemistry of plants* (BJ Miflin ed) Vol 5: amino acids and derivatives. Academic Press, New York, pp 569-60 (1980)

- Lechner L. Die Pferdebohne (*Vicia faba* L.). In: Kappert & Rudolf - Handbuch der Pflanzenzüchtung. 2. Aufl., Bd. 4. Verlag Paul Parey, Berlin, pp 54-73 (1959)
- Lee M, Phillips RL. The chromosomal basis of somaclonal variation. In (Briggs WR, Jones RL, Walbot V eds) Ann Rev Plant Physiol Plant Mol Biol 39, 413-438 (1988)
- Li H, Wylie SJ, Jones MGK. Transgenic yellow lupin (*Lupinus luteus*). Plant Cell Rep 19, 634-637 (2000)
- Lin JJ, Assadgarci N, Kuo J. Plant hormone effect of antibiotics on the transformation efficiency of plant tissues by *Agrobacterium tumefaciens* cells. Plant Sci 109, 171-177 (1995)
- Livingstone DM, Birch RG. Efficient transformation and regeneration of diverse cultivars of peanut (*Arachis hypogaea* L.) by particle bombardment into embryogenic callus produced from mature seeds. Mol Breeding 5, 43-51 (1999)
- Lührs R, Lötz H. Somatic embryogenesis cell and protoplast culture of *Hordeum vulgare* L. In: Genetic Manipulation In Plant Breeding/Barley (Horn W et al. eds) International Symposium, Berlin/Germany, Walter De Gruyter/Berlin/Germany, New York/New York/USA, pp 483-486 (1986)
- Macnicol PK. Synthesis and interconversion of amino acids in developing cotyledons of pea (*Pisum sativum* L.). Plant Physiol 60, 344-348 (1977)
- Mahmoodzadeh S. Veränderung der Samenspeicherprotein Zusammensetzung in *Vicia narbonensis* mittels gentechnischer Methoden. Dissertation FU Berlin (2001)
- Maimann S, Wagner C, Kreft O, Zeh M, Willmitzer L, Höfgen R, Hesse H. Transgenic potato plants reveal the indispensable role of cystathionine beta-lyase in plant growth and development. Plant Journal 23, 747-758 (2000)
- Malik KA, Saxena PK. Regeneration in *Phaseolus vulgaris* L. High- frequency induction of direct shoot formation in intact seedlings by N-6-benzylaminopurine and thidiazuron. Planta 186, 384-389 (1992)
- Martin C, Carré M, Duc G. Note sur les cultures de tissus de féverole (*Vicia faba* L.). Bouturage, culture de cals, culture de méristèmes. Ann Amelior Plant 29, 277-287 (1979)
- Matthews BF. Lysine, threonine and methionine biosynthesis. In: Plant Amino Acids: Biochemistry and Biotechnology (Singh BK ed.), Marcel Dekker, NY, pp 205-225 (1999)
- Matzke AJM, Matzke MA. Position effects and epigenetic silencing of plant transgenes. Current Opinion in Plant Biology 1, 142-148 (1998)
- Matzke AJM, Neuhuber F, Park YD, Ambros PF, Matzke MA. Homology-dependent gene silencing in transgenic plants: Epistatic silencing loci contain multiple copies of methylated transgenes. Mol Gen Genet 244, 219-229 (1994)
- Matzke M, Primig M, Trnovsky J, Matzke A. Reversible methylation and inactivation of marker genes in sequentially transformed tobacco cells. EMBO J 8, 643-652 (1989)
- Matzke MA, Matzke AJM, Pruss GJ, Vance VB. RNA-based silencing strategies in plants [review]. Curr Opin Genet Develop 11, 221-227 (2001)
- Matzke MA, Matzke AJM. Genomic imprinting in plants: Parental effects and trans-inactivation phenomena. Annu Rev Plant Physiol 44, 53-76 (1993)
- Maxted N, Callimassia MA, Bennett MD. Cytotaxonomic studies of eastern mediterranean *Vicia* L. (Leguminosae). Plant Systematics and Evolution 177, 221-234 (1991)

- Maxted N. A phenotypic investigation of *Vicia* L. subgenus *Vicia* (*Leguminosae*, *Vicieae*). Bot J Linn Soc 111, 155-182 (1993)
- McCabe D, Swain W, Martinell B, Christou P. Stable transformation of soybean (*Glycine max*) by particle acceleration. Biotechnology 6, 923-926 (1988)
- Meng L, Bregitzer P, Zhang SB, Lemieux PG. Methylation of the exon/intron region in the ubi1 promoter complex correlates with transgene silencing in barley. Plant Mol Biol 53, 327-340 (2003)
- Meurer CA, Dinkins RD, Collins GB. Factors affecting soybean cotyledonary node transformation. Plant Cell Rep 18, 180-186 (1998)
- Meyer P, Heidmann I, Niedenhof I. Differences in DNA-methylation are associated with a paramutation phenomenon in transgenic *Petunia*. Plant Journal 4, 89-100 (1993)
- Meyer P, Saedler H. Homology-dependent gene silencing in plants [review]. Ann Rev Plant Physiology & Plant Mol Biol 47, 23-48 (1996)
- Mingeot-Leclercq MP, Glupczynski Y, Tulkens PM. Aminoglycosides: Activity and resistance [review]. Antimicrobial Agents & Chemotherapy. 43, 727-737 (1999)
- Mitchell JP, Gildow FE. The initiation and maintenance of *Vicia faba* tissue cultures. Physiol Plant 34, 250-253 (1975)
- Mithila J, Hall JC, Victor JMR, Saxena PK. Thidiazuron induces shoot organogenesis at low concentrations and somatic embryogenesis at high concentrations on leaf and petiole explants of african violet (*Saintpaulia ionantha* wendl.). Plant Cell Rep 21, 408-414 (2003)
- Mok MC, Mok DWS, Armstrong DJ, Shudo K, Isogai Y and Okamoto T. Cytokinin activity of N-phenyl-N'-1,2,3-thiadiazol-5-ylurea (thidiazuron). Phytochemistry 21, 1509-1511 (1982)
- Molvig L, Tabe LM, Eggum BO, Moore AE, Craig S, Spencer D, Higgins TJV. Enhanced methionine levels and increased nutritive value of seeds of transgenic lupins (*Lupinus angustifolius* L.) expressing a sunflower seed albumin gene. Proc Natl Acad Sci USA 94, 8393-8398 (1997)
- Müller A, Iser M, Hess D. Stable transformation of sunflower (*Helianthus annuus* L.) using a non-meristematic regeneration protocol and green fluorescent protein as a vital marker. Transgenic Res 10, 435-444 (2001)
- Müntz K, Christov V, Jung R, Saalbach G, Saalbach I, Waddell D, Pickardt T, Schieder O. Genetic engineering of high methionine proteins in grain legumes. In: (Cram WJ, DeKok LJ, Stulen I, Brunold C, Rennenberg H, eds) Sulphur metabolism in higher plants, Backhuys Publishers, Leiden/The Netherlands, pp 71-86 (1997)
- Müntz K, Christov V, Saalbach G, Saalbach I, Waddell D, Pickardt T, Schieder O, Wuestenhagen T. Genetic engineering for high methionine grain legumes. Nahrung 42, 125-127 (1998)
- Müntz K, Horstmann C, Schlesier B. Seed proteins and their genetics in *Vicia faba* L. Biol Zentralbl 105, 107-120 (1986)
- Müntz K, Horstmann C, Scholz G. Proteins and protein synthesis in seeds of *Vicia faba*. Kulturpflanze 20, 277-326 (1972)
- Murashige T, Skoog F. A revised medium for rapid growth and bioassays with tobacco tissue cultures. Physiol Plant 15, 473-497 (1962)

- Murch SJ, Krishnaraj S, Saxena PK. Thidiazuron-induced morphogenesis of regal geranium (*Pelargonium domesticum*) - a potential stress response. *Physiol Plant* 101, 183-191 (1997)
- Murch SJ, Victor JMR, Krishnaraj S, Saxena PK. The role of proline in thidiazuron-induced somatic embryogenesis of peanut. *In vitro Cellular & Developmental Biology-Plant.* 35, 102-105 (1999)
- Murdock LL, Huesing JE, Nielsen SS, Pratt RC, Shade RE. Biological effects of plant lectins on the cowpea weevil. *Phytochemistry* 29, 85-89 (1990)
- Murthy BNS, Murch SJ, Saxena PK. Thidiazuron: A potent regulator of *in vitro* plant morphogenesis. *In vitro Cellular & Dev Biol Plant* 34, 267-275 (1998)
- Murthy BNS, Murch SJ, Saxena PK. Thidiazuron-induced somatic embryogenesis in intact seedlings of peanut (*Arachis hypogaea*): Endogenous growth regulator levels and significance of cotyledons. *Physiol Plant* 94, 268-276 (1995)
- Murthy BNS, Victor J, Singh RP, Fletcher RA, Saxena PK. *In vitro* regeneration of chickpea (*Cicer arietinum* L.) - Stimulation of direct organogenesis and somatic embryogenesis by thidiazuron. *Plant Growth Regulation* 19, 233-240 (1996)
- Nadolska-Orczyk A, Orczyk W. Study of the factors influencing *Agrobacterium*-mediated transformation of pea (*Pisum sativum* L.). *Mol Breeding* 6, 185-194 (2000)
- Napoli C, Lemieux C, Jorgensen R. Introduction of a chimeric chalcone synthase gene into petunia results in reversible co-suppression of homologous genes in Trans. *Plant Cell* 2, 279-289 (1990)
- Negrutiu I, Shillito R, Potrykus I, Biasini G, Salamini F. Hybrid genes in the analysis of transformation conditions i. Setting up a simple method for direct gene transfer in plant protoplasts. *Plant Mol Biol* 8, 363-374 (1987)
- Neumann, KH. Pflanzliche Zell- und Gewebekulturen, Verlag Eugen Ulmer, Stuttgart (1995)
- Niu X, Li X, Veronese P, Bressan RA, Weller SC, Hasegawa PM. Factors affecting *Agrobacterium tumefaciens*-mediated transformation of peppermint. *Plant Cell Rep* 19, 304-310 (2000)
- Nordlee JA, Taylor SL, Townsend JA, Thomas LA, Bush RK. Identification of a brazil-nut allergen in transgenic soybeans. *New Engl J Med* 334, 688-692 (1996)
- Olhoft PM, Flagel LE, Donovan CM, Somers DA. Efficient soybean transformation using hygromycin B selection in the cotyledonary-node method. *Planta* 216, 723-735 (2003)
- Osborne TB. The vegetable proteins. Monographs in Biochemistry, Longmans, Breen & Co, London (1924)
- Otten L, De Greve H, Hernalsteens J P, Van Montagu M, Schieder O, Straub J, Schell J. Mendelian transmission of genes introduced into plants by the Ti plasmids of *Agrobacterium-tumefaciens*. *Mol Gen Genet* 183, 209-213 (1981)
- Overbeek van J, Conklin ME, Blakeslee A. Cultivation *in vitro* of small *Datura* embryos. *Am. J. Bot.* 29, 472-477 (1942)
- Overbeek van J. Survey of mechanisms of herbicide action. In: Physiology and biochemistry of herbicides, Aududs LJ (ed.), Academic Press New York, pp 387-400 (1964)

- Ozias-Akins P, Schnall JA, Anderson WF, Singsit C, Clemente TE, Adang MJ, Weissinger AK. Regeneration of transgenic peanut plants from stably transformed embryogenic callus. *Plant Sci* 93, 185-194 (1993)
- Padgett SR, Kolacz KH, Delannay X, Re DB, La Vallee BJ, Tinious CN, Rhodes WK, Otero YI, Barry GF, Eichholtz DA, Peschke VM, Nida DL, Taylor NB, Kishore GM. Development, identification, and characterization of a glyphosate-tolerant soybean line. *Crop Science* 35, 1451-1461 (1995)
- Palauqui JC, Elmayan T, Pollien JM, Vaucheret H. Systemic acquired silencing - transgene-specific post-transcriptional silencing is transmitted by grafting from silenced stocks to non-silenced scions. *EMBO Journal* 16, 4738-4745 (1997)
- Park YD, Papp I, Moscone EA, Iglesias VA, Vaucheret H, Matzke AJM, Matzke MA. Gene silencing mediated by promoter homology occurs at the level of transcription and results in meiotically heritable alterations in methylation and gene activity. *Plant Journal* 9, 183-194 (1996)
- Parrot W, Williams E, Hildebrand D, Collins GB. Effect of genotype on somatic embryogenesis from immature cotyledons of soybean. *Plant Cell Tiss Org Cult* 16, 15-21 (1989)
- Parrott WA, Ali JN, Adang MJ, Bailey MA, Boerma HR, Stewart CN Jr. Recovery and evaluation of soybean plants transgenic for a *Bacillus thuringiensis* var. kurstaki insecticidal gene. In *Vitro Cell Dev Biol* 30P, 144-149 (1994)
- Parrott WA, Bailey MA, Durham RE, Mathews HV. Tissue culture and regeneration in legumes. In: *Biotechnology and crop improvement in Asia*, (Moss JP ed.), Patancheru, India, pp 115-148 (1992)
- Paszkowski J, Baur M, Bogucki A, Potrykus I. Gene targeting in plants. *EMBO J* 7, 4021-4026 (1988)
- Paszkowski J, Shillito R D, Saul M, Mandak V, Hohn T, Hohn B, Potrykus I. Direct gene transfer to plants. *EMBO J* 3, 2717-2722 (1984)
- Pawlowski WP, Somers DA. Transgenic DNA integrated into the oat genome is frequently interspersed by host DNA. *Proc Natl Acad Sci USA* 95, 12106-12110 (1998)
- Peach C, Velten J. Transgene expression variability (position effect) of CAT and GUS reporter genes driven by linked divergent T-DNA promoters. *Plant Mol Biol* 17, 49-60 (1991)
- Pedersen C, Zimny J, Becker D. Localization of introduced genes on the chromosomes of transgenic barley, wheat and *triticale* by fluorescence *in situ* hybridization. *Theor Appl Genet* 94, 749-757 (1997)
- Philip R, Darnowski DW, Maughan PJ, Vodkin LO. Processing and localization of bovine beta-casein expressed in transgenic soybean seeds under control of a soybean lectin expression cassette. *Plant Sci* 161, 323-335 (2001)
- Pickardt T, Meixner M, Schade V and Schieder O. Transformation of *Vicia narbonensis* via *Agrobacterium tumefaciens*-mediated gene transfer. *Plant Cell Rep* 9, 535-538 (1991)
- Pickardt T, Saalbach I, Waddell D, Meixner M, Müntz K and Schieder O. Seed specific expression of the 2S albumin gene from Brazil nut (*Bertholletia excelsa*) in transgenic *Vicia narbonensis*. *Mol Breeding* 1, 295-301 (1995)
- Pigeaire A, Abernethy D, Smith PM, Simpson K, Fletcher N, Lu CY, Atkins CA, Cornish E. Transformation of a grain legume (*Lupinus angustifolius* L.) via *Agrobacterium tumefaciens*-mediated gene transfer to shoot apices. *Mol Breeding* 3, 341-349 (1997)

- Popelka JC, Altpeter F. *Agrobacterium tumefaciens*-mediated genetic transformation of rye (*Secale cereale* L.) Mol Breeding 11, 203-211 (2003)
- Potokina E, Tomooka N, Vaughan DA, Alexandrova T Xu RQ Phylogeny of *Vicia* subgenus *Vicia* (Fabaceae) based on analysis of RAPDFs and RFLP or PCR-amplified chloroplast genes. Genetic Resources & Crop Evolution 46, 149-161 (1999)
- Potrykus I, Saul MW, Petruska J, Paszkowski J, Shillito RD. Direct gene transfer to cells of a graminaceous monocot. Mol Gen Genet 199, 183-188 (1985)
- Powers JR, Whittacker JR. Purification and some physical and chemical of red kidney bean (*Phaseolus vulgaris*) α -amylase-inhibitor. J. Food Biochem. 1, 217-238 (1977)
- Pröls F, Meyer P. The methylation patterns of chromosomal integration regions influence gene activity of transferred DNA in *Petunia hybrida*. Plant Journal 2, 465-475 (1992)
- Puonti-Kaerlas J, Eriksson T, Engstrom P. Production of transgenic pea *Pisum sativum* L. plants by *Agrobacterium-tumefaciens*-mediated gene transfer. Theor Appl Genet 80, 246-252 (1990)
- Puszta A, Clarke EMW, King TP, Stewart JC. Nutritional evaluation of kidney beans *Phaseolus vulgaris*: chemical composition, lectin content and nutritional value of selected cultivars. J the Science of Food & Agriculture. 30, 843-848 (1979)
- Raina A, Datta A. Molecular cloning of a gene encoding a seed-specific protein with nutritionally balanced amino acid composition from *Amaranthus*. Proc Natl Acad Sci USA 89, 11774-11778 (1992)
- Ramsay G, Kumar A. Transformation of *Vicia faba* cotyledon and stem tissues by *Agrobacterium rhizogenes* - Infectivity and cytological studies. J Exp Bot 41, 841-847 (1990)
- Ramsay G, Pickersgill B. Interspecific hybridisation between *Vicia faba* and other species of *Vicia*: Approaches to delaying embryo abortion. Biol Zentralbl 105, 171-179 (1986)
- Ravanel S, Gakiere B, Job D, Douce R. Cystathionine gamma-synthase from *Arabidopsis thaliana*: Purification and biochemical characterization of the recombinant enzyme overexpressed in *Escherichia coli*. Biochem J 331, 639-648 (1998)
- Reddy SMS, Dinkins, RD, Collins GB. Gene silencing in transgenic soybean plants transformed via particle bombardment. Plant Cell Rep 21, 676-683 (2003)
- Röper W. Callus formation from protoplasts derived from cell suspension cultures of *Vicia faba* L. Z Pflanzenphysiol 101, 75-78 (1981)
- Röper W. Growth and cytology of callus and cell suspension cultures of *Vicia faba* L. Z. Pflanzenphysiol 93, 245-257 (1979)
- Saalbach G, Christov V, Jung R, Saalbach I, Manteuffel R, Kunze G, Brambarov K, Müntz K. Stable expression of vicilin from *Vicia faba* with eight additional single methionine residues but failure of accumulation of legumin with an attached peptide segment in tobacco seeds. Mol Breeding 1, 245-258 (1995)
- Saalbach I, Pickardt T, Machemehl F, Saalbach G, Schieder O and Müntz K. A chimeric gene encoding the methionine-rich 2S albumin of Brazil nut (*Bertholletia excelsa* H.B.K.) is stably expressed and inherited in transgenic grain legumes. Mol Gen Genet 242, 226-236 (1994)
- Saalbach I, Waddell D, Pickardt T, Schieder O and Müntz K. Stable expression of the sulphur-rich 2s albumin gene in transgenic *Vicia narbonensis* increases the methionine content of seeds. J Plant Physiol 145, 674-681 (1995)

- Saccone S, De Sario A, Della Valle G, Bernardi G. The highest gene concentrations in the human genome are in telomeric bands of metaphase chromosomes. Proc Natl Acad Sci USA 89, 4913-4917 (1992)
- Saito K, Yamazaki M, Kaneko H, Murakoshi I, Fukuda Y, Van Montague M. Tissue-specific and stress-enhancing expression of the TR promotor for mannopine synthase in transgenic medicinal plants. Planta 184, 40-46 (1991)
- Sambrook J, Fritsch EF, Maniatis T. In: Molecular Cloning: A Laboratory Manual (2nd ed.), Cold Spring Harbor Laboratory Press, New York (1989)
- Sato S, Newell C, Kolacz K, Tredo L, Finer J, Hinchee M. Stable transformation via particle bombardement in two different soybean regeneration systems. Plant Cell Rep 12, 408-413 (1993)
- Schiemann J, Eisenreich G. Transformation of field bean *Vicia-faba* L. cells expression of a chimeric gene in cultured hairy roots and root-derived callus. Biochem Physiol Pflanzen 185, 135-140 (1989)
- Schroeder HE, Schotz AH, Wardley-Richardson T, Spencer D, Higgins TJV. Transformation and regeneration of 2 cultivars of pea (*Pisum sativum* L.). Plant Physiol 101, 751-757 (1993)
- Schroeder HE. Quantitative studies on the cotyledonary proteins in the genus *Pisum*. J Sci Food Agric 33, 623-633 (1982)
- Schultze-Motel J. The archaeological remains of the broad bean *Vicia faba* and the evolution of the species. Kulturpflanze 19, 321-358 (1972)
- Schulze S, Grunewaldt J, Schmidt H. Zur *in vitro* Regeneration von *Vicia faba* L. Z Pflanzenzüchtung 94, 244-250 (1985)
- Schwarzacher T, Heslop-Harrison P. Practical *in situ* hybridization. Published by BIOS (Oxford), January (2000)
- Selva E, Stouffs M, Briquet M. *In vitro* propagation of *Vicia faba* L. by micro-cutting and multiple shoot induction. Plant Cell Tiss Org Cult 18, 167-179 (1989)
- Sen P, Chian CA, Burow MD, Lee WS, Murai N. Apical and lateral shoot apex-specific expression is conferred by a promoter of the seed storage protein beta- phaseolin gene. Transgenic Res 2, 21-28 (1993)
- Shantz EM, Steward FC, Smith MS, Wain RL. Investigations on the growths and metabolism of plant cells IV. The synergistic action of coconut milk and some synthetic growth-regulating compounds. Annals of Botany 19, 49-58 (1955)
- Sharma KK, Anjaiah V. An efficient method for the production of transgenic plants of peanut (*Arachis hypogaea* L.) through *Agrobacterium tumefaciens*-mediated genetic transformation. Plant Sci 159, 7-19 (2000)
- Shaul O, Galili G. Concerted regulation of lysine and threonine synthesis in tobacco plants expressing bacterial feedback-insensitive aspartate kinase and dihydروdipicolinate synthase. Plant Mol Biol 23, 759-768 (1993).
- Shaul O, Galili G. Threonine overproduction in transgenic tobacco plants expressing a mutant desensitized aspartate kinase of *Escherichia coli*. Plant Physiol 100, 1157-1163 (1992)
- Shaw CH, Carter GH, Watson MD, Shaw CH. A functional map of the nopaline synthase promoter Nucl Acids Res 12, 7831-7846 (1984)

- Shetty K, Asano Y, Oosawa K. Stimulation of *in vitro* shoot organogenesis in *Glycine max merrill*. By allantoin and amides. *Plant Sci* 81, 245-251 (1992)
- Shewry P R, Faulks A J, Miflin B J. Effect of high lysine mutations on the protein fractions of barley grain. *Biochemical Genetics* 18, 133-152 (1980)
- Simon C, Stille W. Antibiotikatherapie in Klinik und Praxis, 10. Auflage, Schattauer, Stuttgart/New York (2002)
- Smith RH, Hood EE. *Agrobacterium tumefaciens* transformation of monocotyledons. *Crop Scienceence* 35, 301-309 (1995)
- Snowdon RJ, Böttinger P, Pickardt T, Köhler W, Friedt W. Physical localisation of transgenes on *Vicia faba* chromosomes. *Chromosome Res* 9, 607-610 (2001)
- Snowdon RJ, Friedt W, Köhler A, Köhler W. Molecular cytogenetic localization and characterization of 5S and 25S rDNA loci for chromosome identification in oilseed rape (*Brassica napus L.*). *Annals of Botany* 86, 201-204 (2000)
- Somers D, Samac DA, Olhoft PM. Recent advances in legume transformation. *Plant Physiol* 131, 892-899 (2003)
- Springer NM, Napoli CA, Selinger DA, Pandey R, Cone KC, Chandler VL, Kaeppeler HF, Kaeppeler SM. Comparative analysis of set domain proteins in maize and *Arabidopsis* reveals multiple duplications preceding the divergence of monocots and dicots. *Plant Physiol* 132, 907-925 (2003)
- Stachel SE, Messens E, van Montagu M, Zambryski P. Identification of the signal molecules produced by wounded plant cells that activate T-DNA transfer in *Agrobacterium tumefaciens*. *Nature* 318, 624-629 (1985)
- Stam M, Mol JNM, Kooter JM. The silence of genes in transgenic plants [review]. *Annals of Botany*. 79, 3-12 (1997)
- Steward FC, Mapes MO, Kent AE, Holsten RD: Growth and development of cultured plant cells. Biochemical and morphogenic studies with cells yield new evidence on their metabolism and totipotency. *Science* 143, 20-27 (1964)
- Steward FC, Shantz EM: The chemical induction of growth in plant tissue cultures. In: Chemistry and Mode of Action of Plant Growth Substances, (Wain RL, Wightman F eds.), Butterworth Scientific Publications, London, pp 165-186 (1956)
- Sul IW, Korban SS. A highly efficient method for isolating genomic DNA from plant tissues. *Plant Tissue Culture Biotechnol* 2, 113-119 (1996)
- Sun SSM, Altenbach SB, Leung FW. Properties, biosynthesis and processing of a sulphur-rich protein in Brazil nut (*Bertholletia excelsa* H.B.K.). *Eur J Biochem* 162, 477-483 (1987)
- Tabe L, Hagan N, Higgins TJV. Plasticity of seed protein composition in response to nitrogen and sulfur availability [review]. *Current Opin Plant Biol* 5, 212-217 (2002)
- Tabe L, Higgins TJV. Engineering plant protein composition for improved nutrition. *Trends in Plant Science* 3, 282-286 (1998)
- Tabe LM, Wardley-Richardson T, Ceriotti A, Aryan A, Mcnabb W, Moore A, Higgins TJV. A biotechnological approach to improving the nutritive value of alfalfa. *J Animal Science*. 73, 2752-2759 (1995)

- Taha RM, Francis D. The relationship between polyploidy and organogenetic potential in embryo and root-derived tissue cultures of *Vicia faba* L. *Plant Cell Tiss Org Cult* 22, 229-236 (1990)
- Tegeder M, Gebhardt D, Schieder O, Pickardt T. Thidiazuron-induced plant regeneration from protoplasts of *Vicia faba* cv. Mythos. *Plant Cell Rep* 15, 164-169 (1995)
- Ten Hoopen R, Robbins TP, Fransz PF, Montijn BM, Oud O, Gerats AGM, Nanninga N. Localization of T-DNA insertions in *Petunia* by fluorescence *in situ* hybridization: Physical evidence for suppression of recombination. *Plant Cell* 8, 823-830 (1996)
- Tewari-Singh N, Sen J, Kiesecker H, Reddy VS, Jacobsen HJ, Guha-Mukherjee S. Use of a herbicide or lysine plus threonine for non-antibiotic selection of transgenic chickpea. *Plant Cell Rep* 22, 576-583 (2004)
- Thomas JC, Katterman FR. Cytokinin activity induced by thidiazuron. *Plant Physiol* 81, 681-683 (1986)
- Tingay S, McElroy D, Kalla R, Fieg S, Wang M, Thornton S, Brettell R. *Agrobacterium tumefaciens*-mediated barley transformation. *Plant Journal* 11, 1369-1376 (1997)
- Townsend JA, Thomas LA. Factors which influence the *Agrobacterium*-mediated transformation of soybean. Keystone Symposium on Molecular and Cellular Biology, J Cell Biochem/Suppl. 18A, Abstract X1-014 (1994)
- Trieu AT, Burleigh SH, Kardailsky IV, Maldonado-Mendoza IE, Versaw WK, Blaylock LA, Shin HS, Chiou TJ, Katagi H, Dewbre GR, Weigel D, Harrison MJ. Transformation of *Medicago truncatula* via infiltration of seedlings or flowering plants with *Agrobacterium*. *Plant Journal* 22, 531-541 (2000)
- Uzé M, Potrykus I, Sautter C. Single-stranded DNA in the genetic transformation of wheat (*Triticum aestivum* L.): Transformation frequency and integration pattern. *Theor Appl Genet* 99, 487-495 (1999)
- Van Blokland R, Van der Geest N, Mol JNM, Kooter JM. Transgene-mediated suppression of chalcone synthase expression in *Petunia hybrida* results from an increase in RNA turnover. *Plant Journal* 6, 861-877 (1994)
- Van der Krol AR, Mur LA, Beld M, Mol JNM, Stuitje AR. Flavonoid genes in *Petunia*: Addition of a limited number of gene copies may lead to a suppression of gene expression. *Plant Cell* 2, 291-299 (1990)
- Van Larebeke N, Genetello C, Hernalsteens JP, De Picker A, Zaenen I, Messens E, Van Montagu M, Schell J. Transfer of Ti plasmids between *Agrobacterium-tumefaciens* strains by mobilization with the conjugative plasmid rp-4. *Mol Gen Genet* 152, 119-124 (1977)
- Van Lijsebettens M, DenBoer B, Hernalsteens JP, Van Montagu M. Insertional mutagenesis in *Arabidopsis thaliana*. *Plant Sci* 80, 27-38 (1991)
- Van Roekel JSC, Damm B, Melchers LS, Hoekema A. Factors influencing transformation frequency of tomato (*Lycopersicon esculentum*). *Plant Cell Rep* 12, 644-647 (1993)
- Vancanneyt G, Schmidt R, O'connor-Sanchez A, Willmitzer L, Rocha-Sosa M. Construction of an intron-containing marker gene splicing of the intron in transgenic plants and its use in monitoring early events in *Agrobacterium* mediated plant transformation. *Mol Gen Genet* 220, 245-250 (1990)
- Vaucheret H, Beclin C, Elmayan T, Feuerbach F, Godon C, Morel JB, Mourrain P, Palauqui JC, Vernhettes S. Transgene-induced gene silencing in plants. *Plant Journal* 16, 651-659 (1998)

- Vaucheret H, Fagard M. Transcriptional gene silencing in plants: Targets, inducers and regulators [review]. *Trends in Genetics* 17, 29-35 (2001)
- Velten J, Schell J. Selection-expression plasmid vectors for use in genetic transformation of higher plants. *Nucl Acids Res* 13, 6981-6998 (1985)
- Viss WJ, Pittrak J, Humann J, Cook M, Driver J, Ream W. Crown-gall-resistant transgenic apple trees that silence *Agrobacterium tumefaciens* oncogenes. *Mol Breeding* 12, 283-295 (2003)
- Visser C, Quershi JA, Gill R, Saxena PK. Morphoregulatory role of thidiazuron substitution of auxin and cytokinin requirement for the induction of somatic embryogenesis in geranium hypocotyl cultures. *Plant Physiol* 99, 1704-1707 (1992)
- Voinnet O. RNA silencing as a plant immune system against viruses [review]. *Trends in Genetics* 17, 449-459 (2001)
- Voinnet O. RNA silencing: Small RNAs as ubiquitous regulators of gene expression [review]. *Current Opinion in Plant Biology* 5, 444-451 (2002)
- Von Kittlitz E. Fababohne (*Vicia faba* L.). In: Fischbeck, Plarre, Schuster - Lehrbuch der Züchtung landwirtschaftl. Kulturpflanzen 2. Aufl., Bd. 2. 196-204. Verlag Paul Parey/Berlin (1985)
- Walbot V. Sources and consequences of phenotypic and genotypic plasticity in flowering plants. *Trends in Plant Sci* 1, 27-32 (1996)
- Wan Y, Lemieux PG. Generation of large numbers of independently transformed fertile barley plants. *Plant Physiol* 104, 37-38 (1994)
- Wang A, Fan H, Singsit C Ozias-Akins, P. Transformation of peanut with a soybean *vspB* promoter-*uidA* chimeric gene. Optimization of a transformation system and analysis of GUS expression in primary transgenic tissues and plants. *Physiol Plant* 102, 38-48 (1998)
- Wang J, Lewis ME, Whallon JH, Sink KC. Chromosomal mapping of T-DNA inserts in transgenic *Petunia* by *in situ* hybridization. *Transgenic Res* 4, 241-246 (1995)
- Wang ZY, Ye XD, Nagel J, Potrykus I Spangenberg G. Expression of a sulphur-rich sunflower albumin gene in transgenic tall fescue (*Festuca arundinacea* Schreb.) plants. *Plant Cell Rep* 20, 213-219 (2000)
- Wassenegger M, Pelissier T. A model for RNA-mediated gene silencing in higher plants. *Plant Mol Biol* 37, 349-362 (1998)
- Waterhouse PM, Graham HW, Wang MB. Virus resistance and gene silencing in plants can be induced by simultaneous expression of sense and antisense RNA. *Proc Natl Acad Sci USA*. 95, 13959-13964 (1998)
- Waterhouse PM, Smith NA, Wang MB. Virus resistance and gene silencing: Killing the messenger [review]. *Trends in Plant Sci* 4, 452-457 (1999)
- Waterhouse PM, Wang MB, Lough T. Gene silencing as an adaptive defence against viruses [review]. *Nature* 411, 834-842 (2001)
- Wehrmann A, Vanvliet A, Opsomer C, Botterman J, Schulz A. The similarities of *bar* and *pat* gene products make them equally applicable for plant engineers. *Nature Biotechnol.* 14, 1274-1278 (1996)
- Welander M, Welander NT, Brackman AS. Regulation of *in vitro* shoot multiplication in *Syringa*, *Alnus* and *Malus* by different carbon sources. *J Horticultural Science*. 64, 361-366 (1989)

- White J, Chang S-YP, Bibb MJ, Bibb MJ. A cassette containing the *bar* gene of *Streptomyces hygroscopicus*: A selectable marker for plant transformation. *Nucl Acids Res* 18, 1062 (1990)
- White PH. Potentially unlimited growth of excised tomato root tips in a liquid medium. *Plant Physiol* 9, 585-600 (1934)
- Wu CT, Morris JR. Transvection and other homology effects [review]. *Curr Opin Genet Develop* 9, 237-246 (1999)
- Wu JG, Li Z, Liu Y, Liu HL, Fu TD. Cytogenetics and morphology of the pentaploid hybrid between *Brassica napus* and *Orychophragmus violaceus* and its progeny. *Plant Breeding* 116, 251-257 (1997)
- Yan B, Reddy MSS, Collins GB, Dinkins RD. *Agrobacterium tumefaciens* - mediated transformation of soybean [*Glycine max* (L.) Merrill.] Using immature zygotic cotyledon explants. *Plant Cell Rep* 19, 1090-1097 (2000)
- Yang H, Singsit C, Wang A, Gonsalves D, Ozias-Akins P. Transgenic peanut plants containing a nucleocapsid protein gene of tomato spotted wilt virus show divergent levels of gene expression. *Plant Cell Rep* 17, 693-699 (1998)
- Yu H, Kumar PP. Post-transcriptional gene silencing in plants by RNA [review]. *Plant Cell Rep* 22, 167-174 (2003)
- Yu X, Reed BM. Improved shoot multiplication of mature hazelnut (*Corylus avellana* L.) *In vitro* using glucose as a carbon source. *Plant Cell Rep* 12, 256-259 (1993)
- Zambre MA, De Clercq J, Vranova E, Van Montagu M, Angenon G, Dillen W. Plant regeneration from embryo-derived callus in *Phaseolus vulgaris* L. (common bean) and *P. acutifolius* A. Gray (tepary bean). *Plant Cell Rep* 17, 626-630 (1998)
- Zambryski P, Holsters M, Kruger K, Depicker A, Schell J, Montagu M V, Goodman H M. Tumor DNA structure in plant cells transformed by *Agrobacterium-tumefaciens*. *Science* 209, 1385-1391 (1980)
- Zeh M, Casazza AP, Kreft O, Roessner U, Bieberich K, Willmitzer L, Hoefgen R, Hesse H. Antisense inhibition of threonine synthase leads to high methionine content in transgenic potato plants. *Plant Physiol* 127, 792-802 (2001)
- Zhang S, Warkentin D, Sun B, Zhong H, Sticklen M. Variation in the inheritance of expression among subclones for unselected (*uidA*) and selected (*bar*) transgenes in maize (*Zea mays* L.). *Theor Appl Genet* 92, 752-761 (1996)
- Zimny J, Becker D, Brettschneider R, Lörz H. Fertile, transgenic triticale (x *Triticosecale* Wittmack). *Mol Breeding* 1, 155-164 (1995)
- Zohary D, Hopf M. Domestication of plants in the old world. Clarendon/Oxford (1988)