

Subject Index

- abiotic stress 78
- Actinidia deliciosa* 3–17
- Adsuki bean 71–77
- adventitious buds 240
 - embryos 194
 - roots 8
 - shoots 381
- agarose 36, 85, 157, 174
- Agrobacterium rhizogenes* 20, 135, 171, 184, 248, 362, 378
- A. tumefaciens* 109, 136, 160, 164, 170, 184, 210, 228, 262, 281, 284, 302
- agropine 138
- alfalfa 60–70, 254
- almond 82
- amino acids 73
- anther culture 109
- anthocyanin 45
- antibiotics 285
- antibiotic resistance 354
- antimicrobial activity 135
- Antirrhinum majus* 142
- antisense RNA 260
- Armoracia* 135–146
- atrazine resistance 118
- aubergine 109
- autotrophic plants 81
- axillary buds 349
 - shoots 34
- Bacillus thuringiensis* 184, 377
- backfusion 44
- bacterial blight 331
- BAP 45, 63, 82, 87, 105, 110, 116, 157, 211, 279, 292, 339, 367
- bar gene 166, 352
- Beta maritima* 147
- B. vulgaris* 147–169
- binary vector 255
- biolistic method 291, 353
- bioreactor 140
- biotic stress 92
- birds-foot trefoil 248–258
- black spruce 318
- Brassicaceae 37
- Brassica napus* 170–182
- bud regeneration 88
- bud sport mutation 194
- callus formation 75
 - induction 8
- cancer prevention 3
- carbenicillin 201, 279
- casein hydrolysate 6, 82, 86, 125
- cassava 273–289
- CAT assay 251
 - expression 153, 318
 - gene 252
- cauliflower mosaic virus 152, 303, 318
- caulogenesis 88
- cell suspension 28
- cellulase 22, 26, 73
- cellulysin 99
- charcoal 110, 124
- cherry 81
- Chenopodiaceae 147
- chickpea 183–193
- chimeric genes 238, 279, 286, 296
- chloramphenicol 129
- Cicer arietinum* 183–193
- citrus 194–207
- Citrus aurantifolia* 196
- C. jambhiri* 195
- C. sinensis* 196
- coat protein ene 291
- coconut water 25, 101
- cocultivation 197, 284, 337
- colchicine 340
- Convolvulaceae 43, 113
- cold storage 82
- corn 302–314
- crown gall disease 160
 - – tumor 267
- cucumber 209–214
- Cucumis melo* 209–214
- C. sativus* 215–227
- cucumopine 138
- Cucurbitaceae 215
- culture environments 103
- culture of protoplasts 41, 50, 84, 114

- culture medium 6, 23, 89, 101, 179
 cybrids 172
 cytoplasmic male sterility 147
- 2,4-D 63, 74
 differentiation 8, 82
 direct embryogenesis 60
 direct gene transfer 318
 disease resistance 44
 DNA analysis 57
 – histogram 54
 – synthesis 92
 – transfer 128
 – uptake 35
 driselase 22, 26, 110
Duboisia 18–31
D. leichhardtii 18
D. myoporoides 18
- effect of enzymes 63
 – growth regulators 63
 – sugars 74
 eggplant 109–122
 electrofusion 26, 55
 electroporation 149
 electroporation 38, 109, 148, 159, 229, 237,
 291, 315, 342, 350
 ELISA 269, 341
 embryogenesis 52, 216
 enzymes 22, 47, 61, 65, 83, 100, 111
Erysiphe polygoni 331
Eustoma grandiflorum 142
- factors influencing yield 21, 47, 113
 fermentors 140
 field testing 223
 flow cytometry 37
 foreign gene expression 263
Fragaria species 32–42
Fragaria x ananassa 32–42
F. vesca 32–42
Fusarium oxysporum 331
 fusion of protoplasts 26, 54, 118
- gene expression 324
 – pool 98, 228
 – transfer 34, 38, 74, 109, 173, 229, 291,
 316, 350
 – vectors 380
 genetic analysis 212
 – diversity 98
 – engineering 170, 209, 228, 273, 291, 332,
 348
 – manipulation 3
 – transformation 38, 133–385
 – variability 148, 206
Glycine max 228–236
- gram 183
 Graminea 302
 GUS activity 13, 38, 306
 – analysis 201
 – assay 72
 – expression 153, 326, 353
 – gene 236, 262, 275
- hairy roots 136, 171, 249, 255, 267, 363, 380
 hemicellulase 45, 73
 herbicide resistance 118, 291
 heterokaryocytes 26, 56
 histochemical analysis 213
 hormone autotrophy 290
 horseradish 135–146
 hybrid seed 147
- IBA 6, 292
 immunocytochemistry 263
 induction of roots 8
 in vitro methods 98
Ipomoea batatas 43–59
I. littoralis 43
I. trifida 43
 isolation of protoplasts 40, 82, 99, 112, 173
 isozyme pattern 27
- kanamycin resistance 118, 163, 174, 212, 216,
 241, 251, 261, 357, 383
 kiwi 3–17
- Lactuca sativa* 237–247
 leaf transformation 381
 Leguminosae 71
 lettuce 237–247
Lotus corniculatus 248–258
 luciferase 152, 317
 – reporter gene 357
- macerases 99
 macerozyme 22
Manihot esculenta 273–289
 mannopine 138
 media 62, 73, 85, 180
Medicago sativa 60
 meicelase 149
 mercaptoethanol 50
 mesophyll protoplasts 72, 81, 156
 micrografting 94
 microinjection 109, 171, 260, 318, 333
 microprojectiles 229, 290, 352
 molecular analysis 295
 morning glory 142
 morphogenesis 161, 358
 muskmelon 209–214
- nematode resistance 118

- Nicotiana benthamiana* 290–301
N. clevelandii 290–301
 nitrogen fixation 248
 nopoline assay 129
 Northern blot 178, 295
 nucellar embryos 194
- octopine plasmids 170
 opine 189
 organogenesis 8, 52, 87, 109, 112, 160, 205,
 332, 349, 362
- particle bombardment 277
 – gun 333
 pasture legumes 361
 PCR analysis 201
 pea 331–347
 PEG 26, 115, 128, 195, 318, 350
 periclinal chimera 381
 peroxidases 141
 petunia 302–314
Phaseolis angularis 71–77
 phenolic browning 84
 phenosafranin accumulation 150
 phenotypic variability 52
 photoregeneration 142
 phytohormone 6, 74, 136
Picea species 315–330
Pisum sativum 331–347
 plant regeneration 29, 36, 177, 217
 plasmid DNA 128
 plating density 84
 – efficiency 56, 67, 74, 85, 104, 111, 157
 plum 78
 polymerase chain reaction 211
Polymixa betae 147
 powdery mildew 331
 proembryos 63
 protoclonal trees 90
 protocolonies 25
 protoplast culture 22, 29, 35, 41, 73, 84, 101,
 114, 125
 – density 158
 – fusion 26, 54, 90, 118
 – isolation 5, 20, 29, 34, 40, 82, 99, 112,
 125, 149, 173
 – transformation 342
 prune 78
Prunus species 78–96
P. amygdalus 79
P. armeniaca 79
P. avium 79
P. cerasifera 82
P. spinosa 82
Pseudomonas syringae 331
- regeneration 142, 362, 378
 regeneration of plants from protoplasts
 1–31
 regeneration medium 111
 reporter gene 152, 350, 368
 rhizogenesis 81
 rhizogenic callus 49
Rhizobium 97, 249
 Ri plasmids 138, 267
 rhozyme 83, 99
 root nodules 248
 root tuber 43
 Rosaceae 78
- secondary embryogenesis 283, 285
 shoot apex culture 302
 – – differentiation 25
 – – regeneration 292
 Sitka spruce 316
Solanum melongena 109–122
 Solanaceae 18, 52, 109
 somaclonal variation 3, 34, 44, 60, 166
 somatic embryos 68, 112, 160, 230, 284, 342,
 349, 380
 somatic embryo transformation 284, 382
 – – hybridization 40, 44, 90, 118
 somatic variants 376
 sorghum 123–131
 Southern hybridization 128, 158, 178, 190,
 204, 211, 221, 244, 253, 263, 279
 stable transformation 157
 stone fruits 78–96
 strawberry 32–42
 stress tolerance 92, 331
Stylosanthes species 361–374
 sugar 73, 138
 sugarbeet 147–169
 sugarcane 348–360
 suspension culture 124
 sweet potato 43–59
- thidiazuron 36, 41
 thionins 370
 tissue culture 332, 349
 TMV 264
 tomato 259–272
 transformation 133–385
 – efficiency 335
 – frequency 159
 transformation of embryos 284, 382
 – of leaf 381
 – of microspores 171
 – of protoplasts 172
 transgenic plants 249, 293
 – regenerants 143
 – shoots 379
 transient expression 77, 152, 319, 351
 tumorigenesis 170

variability in plants 11
vector plasmids 197
vegetative multiplication 44
Verticillium 109
Verticillium resistance 118
Vigna aconitifolia 71
vir genes 203

virus resistance 209, 213, 263, 340
Vitis species 375–385
Western blot analysis 281
White spruce 315
zeatin 5, 51, 56, 71, 73, 110, 116