

## Index

- Abuta*, 155  
*Abutilon*, 241  
*Abutilon megapotamicum*, 241  
*Acaena*, 285  
 Acanthaceae, 42, 383, 391, 406  
*Acanthus*, 391  
*Accacia*, 278  
*Acer*, 5, 214  
*Acer griseum*, 212, 214  
*Acer saccharinum*, 214  
 Aceraceae, 212  
 Achariaceae, 246, 261  
*Achillea*, 410  
*Achlys*, 8, 36, 157  
*Aconitum*, 27, 51, 158, 160  
*Aconitum lycoctonum*, 158  
 Acoraceae, 56, 105  
 Acorales, 104  
*Acorus*, 55, 104, 105, 106, 421  
*Acorus calamus*, 105  
*Acridocarpus*, 250  
*Actaea*, 158, 160  
*Actinidia*, 23, 366  
*Actinidia deliciosa*, 367  
*Actinidia melandra*, 366  
 Actinidiaceae, 348, 349, 366, 367  
 actinomorphy. *See* floral symmetry:  
     polysymmetry
- Adansonia digitata*, 237  
*Adenia*, 258  
*Adenogramma*, 335  
*Adonis*, 158  
*Adoxa*, 18, 52, 399, 401  
*Adoxa moschatellina*, 401  
 Adoxaceae, 18, 396, 397, 399, 401  
*Aegiceras*, 360  
 Aegicerataceae, 363  
*Aegilitis*, 314  
*Aegle*, 216  
*Aegopodium podagraria*, 405  
*Aeonium*, 190  
*Aesculus*, 214  
 aestivation, 39, 46, 222  
     apert, 39, 192  
     imbricate, 39, 86, 130, 133, 150, 181, 190, 192, 193, 211, 216, 238, 245, 251, 252, 254, 263, 276, 278, 284, 293, 320, 322, 324, 344, 348, 355, 356, 361, 363, 364, 371, 380, 393, 396, 399, 403, 404, 407  
     cochleate, 39, 207, 216, 269, 360
- ascending, 39, 200, 271, 279, 304, 380  
 descending, 39, 260, 271, 279, 281, 393  
 contorted, 39, 40, 67, 190, 200, 209, 220, 222, 233, 234, 242, 245, 252, 254, 263, 269, 271, 272, 304, 305, 306, 308, 344, 363, 371, 374, 375, 379, 380, 425, 429  
 decussate, 39, 207  
 quincuncial, 39, 40, 158, 181, 188, 207, 219, 222, 243, 267, 293, 305, 309, 314, 325, 327, 329, 333, 346, 352, 360, 366, 379, 380  
 valvate, 39, 40, 86, 117, 118, 131, 133, 163, 176, 178, 179, 180, 190, 196, 202, 205, 206, 214, 219, 234, 241, 248, 261, 263, 270, 271, 278, 283, 284, 287, 288, 289, 293, 307, 331, 344, 346, 356, 371, 379, 380,

- 396, 399, 404, 406,  
 407, 410, 426, 429  
 induplicate, 269, 407  
 plicate, 331, 377, 429  
 variable, 40, 305, 346, 372,  
 375, 379, 383, 391  
*Aextoxicaceae*, 7, 30, 172,  
 175  
*Aextoxicon*, 30, 175, 176  
*Aextoxicon punctatum*, 175  
*Afzelia*, 30, 276, 279  
*Afzelia quanzensis*, 278  
*Agapanthaceae*, 127  
*Agapetes*, 368  
*Agave*, 55  
*Agdestidaceae*, 329  
*Agrimonia*, 30, 230, 256, 284,  
 285  
*Aizoaceae*, 314, 315, 317, 324,  
 326, 327, 340, 426  
*Aizooidae*, 327  
*Akania*, 218  
*Akaniaceae*, 218  
*Akebia*, 154  
*Albizia*, 278  
*Alchemilla*, 285, 287  
*Aldovanda*, 304  
*Alisma*, 105, 108  
*Alismataceae*, 24, 102, 104,  
 105, 108, 110, 420,  
 421  
*Alismatales*, 13, 102, 104,  
 111, 420, 422  
*Alliaceae*, 127  
*Allium*, 55, 129  
*Alnus*, 295  
*Aloe elgonica*, 126  
*Alopecurus*, 138  
*Alsineae*, 322  
*Alsinoideae*, 320  
*Alstroemeria*, 120  
*Alstroemeriaceae*, 120  
*Althaea*, 234  
*Althaea officinalis*, 237  
*Alzateaceae*, 202  
*Amaranthaceae*, 21, 52, 314,  
 317, 318, 322, 427  
*Amaranthus*, 322  
*Amaryllidaceae*, 51, 70, 124, 127  
*Ambavia*, 86  
*Amborella*, 14, 35, 75, 80, 418  
*Amborella trichopoda*, 74, 76  
*Amborellaceae*, 76  
*Amborellales*, 74  
*Amelanchier*, 287  
*Amentiferae*, 295  
*Amherstia*, 276, 279  
*Amorpha*, 57  
*Ampelocera*, 290  
*Amphipterygium*, 217  
*Amphorogynaceae*, 179  
*Anacampseros*, 335  
*Anacampserotaceae*, 337  
*Anacardiaceae*, 22, 212, 216  
*Anacardium*, 217  
*Anacardium occidentale*, 218  
*Anagallis*, 360, 363  
*Anagallis arvensis*, 363  
*ANA-grade*, 74, 418  
*Anarthriaceae*, 136  
*Anaxogorea*, 88  
*Ancistrocladaceae*, 303  
*androecium*, 4, 10, 35, 38, 46,  
 53, 56, 59, 80, 86, 92,  
 139, 142, 150, 202,  
 228, 313, 315, 317,  
 351, 353  
 common primordium, 13,  
 18, 45, 57, 101, 119,  
 181, 182, 188, 206,  
 207, 216, 233, 236,  
 248, 250, 256, 262,  
 270, 271, 278, 284,  
 285, 324, 326, 327,  
 344, 347, 359, 399,  
 404, 424, 426  
 complex primordium. *See*  
 androecium:  
 common  
 primordium  
 development, 46, 110  
 dicyclic, dicyclic, 14,  
 421  
 didynamy, didynamous,  
 383, 386, 391, 393  
 dimorphism, dimorphic,  
 32, 162, 278, 368  
 diplostemony,  
 diplostemonous, 11,  
 13, 14, 16, 72, 160,  
 176, 178, 187, 202,  
 205, 206, 209, 211,  
 216, 217, 218, 222,  
 223, 229, 230, 231,  
 233, 243, 245, 248,  
 250, 254, 262, 263,  
 267, 276, 278, 283,  
 284, 285, 289, 290,  
 303, 305, 306, 308,  
 315, 322, 331, 341,  
 344, 346, 348, 353,  
 354, 357, 359, 366,  
 421, 423, 424, 425,  
 427, 428  
 evolution, 10, 14, 229,  
 426  
 fascicle, 13, 46, 118, 120,  
 207, 238, 245, 251,  
 252, 254, 256, 265,  
 285, 347, 359, 365  
 haplostemony,  
 haplostemonous, 11,  
 14, 16, 185, 190, 192,  
 193, 196, 200, 205,  
 206, 211, 216, 217,  
 223, 231, 243, 245,  
 258, 259, 263, 267,  
 269, 271, 277, 278,  
 283, 291, 304, 306,  
 312, 341, 344, 347,  
 348, 351, 352, 355,  
 366, 370, 374, 379,  
 399, 402, 404,  
 406, 421, 424, 425,  
 429, 430

## 500 Index

- androecium (cont.)  
 complex, 233  
 heteromorphism,  
   heteromorphic, 374  
 isomery, isomerous, 262,  
   268, 372  
 monocycl, monocyclic,  
   14, 421  
 multiwhorled, 187, 284  
 obdiplostemony,  
   obdiplostemonous,  
     11, 12, 16, 135, 183,  
     184, 186, 187, 190,  
     193, 196, 199, 200,  
     202, 205, 209, 211,  
     216, 217, 234, 236,  
     238, 248, 250, 254,  
     263, 267, 269, 270,  
     271, 272, 306, 322,  
     344, 346, 357, 366,  
     368, 425, 426, 428  
   obhaplostemony,  
     obhaplostemonous,  
       11, 12, 14, 54, 71,  
       176, 193, 196, 202,  
       206, 209, 231, 238,  
       252, 262, 263, 267,  
       268, 283, 287, 288,  
       312, 317, 348, 357,  
       358, 359, 361, 368,  
       396, 424, 425, 428  
     complex, 207, 366  
 octomery, octomerous,  
   218, 219  
 polycycl, polycyclic, 14,  
   102, 421  
 primary primordium. *See*  
   androecium:  
     common  
     primordium  
 reduction, 115, 121, 124,  
   131, 133, 142, 147,  
   217, 226, 245, 249,  
   250, 277, 279, 356,  
   368  
 ring primordium, 14, 152,  
   165, 181, 182, 183,  
   225, 233, 237, 248,  
   252, 256, 262, 278,  
   281, 285, 327, 335,  
   337, 339, 340, 344,  
   348, 354, 356, 365,  
   424, 427  
 secondary primordium,  
   57, 237  
 spiral, 14, 285, 419  
 tetradynamy,  
   tetradynamous, 228  
 three-whorled, 122, 326, 333  
 two-whorled, 14, 105, 110,  
   120, 123, 133, 134,  
   139, 157, 172, 238,  
   248, 263, 267, 275,  
   276, 281, 315, 352,  
   353, 421  
 variable, 148, 181, 225,  
   234, 238, 284, 285,  
   333, 335, 342, 381,  
   404  
 whorled, 97  
 androgynophore, 26, 88, 214,  
   216, 226, 237, 238,  
   241, 245, 258, 425  
 androphore, 26, 118, 263,  
   304  
*Androsace*, 361  
*Anemone*, 158  
*Anemone nemerosa*, 160  
*Anemopsis*, 101  
 angiosperms, 3, 5, 8, 11, 12,  
   13, 14, 15, 18, 21, 27,  
   31, 34, 36, 44, 57, 59,  
   69, 71, 84, 99, 106,  
   117, 124, 158, 172,  
   184, 237, 278, 284,  
   315, 341, 348, 415,  
   418, 426, 428, 432  
 angiospermy, 4  
*Anigozanthos*, 133  
*Anigozanthos flavidus*, 132  
*Anisadenia*, 267, 268  
 Anisophylleaceae, 67, 290  
*Annickia*, 86  
*Annona*, 86  
*Annona montana*, 88  
 Annonaceae, 9, 13, 14, 20, 35,  
   37, 39, 57, 82, 86,  
   110, 419, 420, 455  
*Anomochloa*, 140  
 anther, 10, 33, 45, 53, 61, 82,  
   83, 85, 95, 101, 115,  
   120, 125, 133, 145,  
   146, 162, 164, 165,  
   170, 174, 201, 209,  
   375, 408, 409  
 abortion, 53, 308  
 attachment  
   basifixed, 181, 186, 271  
 dehiscence, 248  
   latrorse, 351  
   longitudinal, 157  
   poricidal, 210, 256, 271,  
     363, 368, 374  
   valvate, 89, 92, 93, 94,  
     157, 167, 187  
 fusion, 10, 351, 406, 407,  
   410  
 half, 236  
 organization  
   disporangiate, 92, 120,  
     241  
   dithecal, 152, 237, 291  
   monosporangiate, 187  
   monotheical, 117, 142,  
     147, 152, 222, 236,  
     238, 291, 295, 399,  
     416  
 orientation, 91, 222  
   extrorse, 10, 82, 88, 90,  
     99, 108, 113, 114,  
     117, 118, 120, 154,

- 195, 245, 293, 304,  
 306, 308, 312, 320,  
 357, 360, 368, 399,  
 408, 416  
 introrse, 10, 195, 248,  
 258, 277, 306, 312  
 inverted, 366, 368  
 latrorse, 10, 88, 293  
 versatile, 258  
 reduction, 12, 61,  
 77, 217  
 shape  
   convoluted, 291  
   U-shaped, 368  
 anther-stigma complex. *See*  
   gynostegium  
 anthocarp, 331  
 anthophore, 26, 320  
*Anthoxanthum*, 138, 139  
*Anthoxanthum odoratum*, 137  
*Anthriscus*, 406  
*Antirrhinum*, 58, 59, 60, 388  
 apetaly, apetalous flower,  
   168, 185, 187, 207,  
   238, 263, 268, 269,  
   277, 283, 284, 289,  
   297, 301, 308, 312,  
   314, 319, 320, 322,  
   335, 354, 396, 425,  
   426  
   primary, 7  
   secondary, 7  
*Aphanes arvensis*, 285  
*Aphanocalyx*, 279  
 Apiaceae, 9, 36, 52, 401, 402,  
   404, 405, 406, 429,  
   430  
 Apiales, 401, 429, 430, 431  
*Aploulea*, 134  
 Apocynaceae, 40, 42, 51, 371,  
   374, 375  
*Apodostigma*, 243  
 Aponogetonaceae, 104, 114  
*Apostasia*, 124  
*Apostasioideae*, 124  
*Aptenia*, 327  
*Apuleia*, 276  
 Aquifoliaceae, 395, 396  
 Aquifoliales, 393, 395, 430  
*Aquilegia*, 5, 12, 27, 50, 51,  
   157, 158, 160  
*Arabidopsis*, 58, 99  
 Araceae, 104, 105, 165  
*Aragoa*, 387  
*Aralia elata*, 404  
 Araliaceae, 23, 38, 54, 119,  
   401, 402, 403, 404,  
   406, 429, 430  
*Archaeofructus*, 72  
*Ardisiandra*, 71, 363  
 Arecaceae, 129, 130, 421,  
   422  
 Arecales, 129  
*Arenaria tmolea*, 320  
*Arillastrum*, 207, 209  
*Aristolochia*, 16, 96, 97, 99  
   subgenus *Pararistolochia*, 97  
 Aristolochiaceae, 13, 84, 96,  
   101, 115, 419  
*Aristolelia*, 271  
*Aristolelia fruticosa*, 271  
*Armeria*, 313  
*Artabotrys*, 39  
*Artabotrys hexapetalus*, 86  
*Aruncus*, 285  
*Asarum*, 97, 99  
   subgenus *Heterotropa*, 97  
*Asarum caudatum*, 96, 97  
*Asarum europaeum*, 97  
 Asclepiadaceae, 374, 375  
*Asclepias*, 375, 377  
*Askidiosperma*, 136  
 Asparagaceae, 70, 421  
 Asparagales, 71, 124, 126,  
   127  
 Asphodelaceae, 126  
*Asphodelus*, 126  
*Aspicarpa*, 250  
 Asteraceae, 5, 9, 10, 41, 52,  
   59, 398, 406, 410,  
   412, 429, 430  
 Asterales, 406, 430, 431  
 asterids, 26, 34, 52, 60, 72, 73,  
   172, 181, 302, 341,  
   348, 359, 396, 424,  
   428, 429  
 Asteroideae, 410  
 Asteropeiaceae, 319, 365  
*Astrantia*, 406  
*Atherosperma*, 93, 94  
 Atherospermataceae, 89, 93  
*Atriplex*, 322, 323  
*Aulax*, 163  
 Aurantioideae, 216  
*Austrobaileya*, 12  
 Austrobaileyaceae, 9, 80, 419  
 Austrobaileyales, 80, 418,  
   419  
*Averrhoa*, 272  
*Averrhoa carambola*, 271  
*Avicennia*, 391  
 Avicenniaceae, 391  
*Azara microphylla*, 262  
*Azara serrata*, 261  
*Azima*, 224  
  
*Backea*, 209  
 Balanophoraceae, 179  
*Balbisia*, 201  
*Baldellia*, 108  
 Balsaminaceae, 10, 46, 348,  
   349, 351, 428  
 Balsaminoid clade, 348, 349  
*Barbacenia*, 120  
*Barberetta*, 133  
 Barbeyaceae, 288  
*Barnadesia*, 410  
*Barneoudia*, 158  
*Barringtonia*, 354  
*Barteria*, 258  
 basal angiosperms, 7, 8, 11,  
   18, 19, 20, 24, 35, 36,

## 502 Index

- 39, 40, 58, 59, 70, 72,  
 74, 77, 80, 89, 97, 99,  
 101, 102, 148, 165,  
 310, 416, 418, 420,  
 421, 422, 424
- basal asterids, 341, 428
- basal caryophyllid grade, 314,  
 315, 317, 319, 426
- basal eudicots. *See* early  
 diverging eudicots
- basalmost angiosperms, 74
- Bataceae, 31, 218, 219, 223
- Batis*, 223
- Batoid* clade, 218, 219, 223
- Bauera*, 193
- Baueraceae, 269
- Bauhinia*, 57, 276, 279
- Bauhinia divaricata*, 279
- Bauhinia galpinii*, 279
- Bauhinia malabarica*, 279
- Bauplan, 4, 31, 36, 45, 58, 59,  
 102, 110, 124, 142,  
 163, 170, 176, 228,  
 254, 274, 310, 312,  
 366, 375, 383, 415,  
 416, 427, 432
- pentacyclic, 102, 140, 175,  
 272, 317, 320
- Begonia*, 293
- Begonia albo-picta*, 292
- Begonia ampla*, 293
- Begonia argenteomarginata*, 293
- Begonia bogneri*, 293
- Begonia ferruginea*, 293
- Begonia galinata*, 293
- Begonia heracleifolia*, 293
- Begonia incana*, 293
- Begonia mannii*, 293
- Begonia pleiopetala*, 293
- Begoniaceae, 53, 291, 292
- Berberidaceae, 8, 9, 152, 155,  
 156, 157
- Berberidopsidaceae, 30, 37,  
 172
- Berberidopsidales, 172, 302,  
 423, 424
- Berberidopsis*, 22, 173, 174,  
 175, 176, 420
- Berberidopsis beckleri*, 173
- Berberidopsis corallina*, 173
- Berberis*, 52, 157
- Bersama*, 47, 199, 201
- Besseyia*, 388, 427
- Betula*, 295
- Betulaceae, 53, 293, 295, 297
- Bignoniaceae, 383, 391, 429,  
 430
- bilateral symmetry. *See* floral  
 symmetry:  
 monosymmetry
- Bixaceae, 14, 230
- Blackstonia*, 374
- Blumenbachia*, 347
- Blutaparon vermiculare*, 322
- Bocagea*, 86, 88
- Bocconia*, 152
- Boenninghausenia*, 216
- Boenninghausenia albiflora*, 214
- Boerhaavia*, 331
- Bombacaceae, 234, 241
- Bombacoideae, 236
- Bonellia macrocarpa*, 360
- Bonnetiaceae, 252, 364
- Boraginaceae, 51, 70, 379,  
 380, 429
- Boraginales, 370, 379, 430
- Boraginoideae, 380
- Boscia*, 225
- Bougainvillea*, 317, 331
- Bougainvillea spectabilis*, 330
- Bourreria*, 380
- Brachychiton*, 241
- bract, 4, 7, 8, 27, 30, 31, 44,  
 53, 55, 61, 74, 77, 80,  
 82, 83, 84, 97, 104,  
 105, 108, 111, 123,  
 125, 126, 127, 134,  
 135, 136, 138, 140,  
 144, 147, 152, 158,  
 163, 168, 169, 180,  
 219, 222, 224, 229,  
 230, 234, 248, 250,  
 275, 276, 279, 295,  
 297, 299, 300, 305,  
 322, 351, 356, 363,  
 365, 368, 372, 377,  
 379, 386, 396, 419
- abortion, 287
- absence of, 4, 77, 78, 104,  
 105, 107, 113, 115,  
 122, 133, 144, 202,  
 227
- arrangement  
 decussate, 81, 115, 307,  
 398, 419
- caducous, 162, 216
- cupule, 93, 295, 297, 298
- fusion, 138, 169, 178, 265,  
 331
- glume, 138, 140, 142
- inflorescence, 29, 127, 136,  
 201, 238, 265  
 spathe, 97, 107
- involucre, 100, 158, 165,  
 179, 230, 331, 335,  
 337, 410, 428, 430
- lemma, 59, 138, 140
- loss, 29, 55, 104, 404
- orientation  
 abaxial, 78  
 transversal, 82
- palea, 59, 138, 139, 140, 410
- petaloid, 29, 30, 100, 145,  
 146, 187, 193, 202,  
 265, 266, 331, 372,  
 391, 406
- reduction, 104
- shape  
 circular, 84  
 hooded, 82  
 leaf-like, 355  
 saccate, 308

- bracteole, 4, 30, 35, 55, 61,  
 77, 93, 104, 108,  
 110, 120, 158, 162,  
 171, 175, 176, 180,  
 207, 222, 248, 250,  
 275, 277, 279, 288,  
 295, 299, 300, 308,  
 313, 322, 351, 355,  
 356, 365, 372, 377,  
 386, 391, 403, 404,  
 419
- abortion, 275, 287
- absence of, 4, 201, 207,  
 275, 278, 299, 302,  
 304, 305, 308, 320,  
 349, 351, 360, 368
- arrangement  
 decussate, 30, 93, 175
- caducous, 216, 292
- fusion, 178
- involucre, 179, 230
- loss, 30, 55, 152, 192, 322,  
 374
- orientation  
 abaxial, 84  
 adaxial, 29, 123, 146, 421  
 lateral, 167, 256  
 transversal, 30, 55, 61,  
 252, 306, 421
- petaloid, 145, 278
- reduction, 333, 368, 370
- shape  
 circular, 142
- bract-flower distinction, 4,  
 29, 419, 423
- bract-flower fusion, 295
- bract-flower primordium,  
 410
- bract-perianth distinction, 6,  
 9, 30, 81, 105, 162,  
 167, 169, 187, 189,  
 252, 338
- Brasenia*, 77
- Brasenia schreberi*, 77
- Brassicaceae, 22, 31, 36, 57, 67,  
 71, 153, 219, 225,  
 227, 228, 363, 451
- Brassicales, 31, 32, 71, 218,  
 218, 219, 228
- Bretschneidera*, 218
- Brexia*, 52, 245
- Brexia madagascariensis*, 243
- Brexiaceae, 243
- Bromeliaceae, 136
- Broussaissia*, 344
- Browallia*, 379
- Bruguiera*, 248
- Bruguiera cylindrica*, 247
- Brunelliaceae, 269
- Bruniales, 73, 395, 430
- Brunoniaceae, 430
- Buddleja*, 391
- Buddleja davidii*, 388
- Buddlejaceae, 388
- Bulbine*, 127
- Burmanniaceae, 115
- Burseraceae, 11, 212, 218
- Butomaceae, 21, 102, 110,  
 113, 420
- Butomus*, 110
- Butomus umbellatus*, 110
- Buxaceae, 6, 167, 168, 171,  
 419, 422, 423
- Buxales, 148, 168, 170
- Buxus*, 53, 168
- Buxus sempervirens*, 168
- Byttneria*, 18, 238
- Byttnerioideae, 10, 236, 237
- Cabomba*, 16, 77, 78, 419, 420
- Cabombaceae, 77, 420
- Cactaceae, 31, 318, 335, 337,  
 338, 340, 427
- Cadia*, 281
- Cadia purpurea*, 59
- Caesalpinia*, 275, 277
- Caesalpinioideae, 274, 276,  
 277
- Cajophora*, 346, 347
- Cajophora hibiscifolia*, 346
- Calandrinia*, 335
- Calceolaria*, 385
- Calceolariaceae, 380, 384,  
 385
- Caldcluvia paniculata*, 269
- Caldesia*, 108
- Caldesia parnassifolia*, 108
- Calla*, 108
- Calliandra*, 277, 278
- Calliandra haematocephala*, 277
- Calligonum*, 310, 313
- Callisia*, 135
- Callisia navicularis*, 135
- Callisia warscewicziana*, 134
- Callistemon*, 28, 207
- Callistemon citrinus*, 61, 207
- Callitrichaceae, 32, 386
- Callitriche*, 388
- Calochortus*, 120
- Calotropis*, 377
- Caltha*, 160
- Calycanthaceae, 9, 82, 88, 89,  
 419, 420
- Calycanthus*, 12, 89, 91
- Calyceraceae, 406, 410, 412,  
 430
- calyculus, 111, 176, 178, 179,  
 180, 181
- calyptra, calyptrate, 7, 41, 82,  
 150, 175, 196, 207,  
 209, 279, 344, 368,  
 404, 417
- Calyptranthes*, 207
- Calyptrix*, 209
- calyx. *See* sepal
- Camellia*, 14, 365
- Campanula*, 408
- Campanulaceae, 43, 406,  
 407, 430
- campanulids, 341, 370,  
 393, 416, 427, 428,  
 429, 430

## 504 Index

- Campanuloideae, 408  
*Campylospermum*, 254  
*Cananga*, 20  
*Canarina*, 408  
 Canellaceae, 84, 420  
 Canellales, 73  
*Canna*, 146  
*Canna edulis*, 146, 147  
*Canna indica*, 147  
 Cannabaceae, 283  
 Cannaceae, 33, 142,  
     146, 147  
 Canotiaceae, 243  
*Canscora*, 374  
*Caperonia*, 263  
 capitate. *See* inflorescence:  
     capitulum, capitula  
*Capnoides*, 152  
 Capparaceae, 26, 33, 46, 56, 71,  
     219, 225, 227, 228,  
     278  
*Capparis*, 225, 229  
*Capparis cynophallophora*, 225  
*Capparis spinosa*, 225  
 Caprifoliaceae, 9, 27, 30, 33,  
     34, 70, 391, 396,  
     397, 398, 430  
 Caprifolieae, 397  
*Cardiandra*, 344  
 Cardiopteridaceae, 370, 395,  
     396  
 Cardiopteridales, 370  
*Cardiospermum*, 214  
*Carex*, 142  
*Carex brasiliensis*, 140, 142  
*Carica*, 53  
*Carica papaya*, 220  
 Caricaceae, 10, 53, 218, 219,  
     220, 427  
*Cariniana micrantha*, 354  
 carnivorous clade, 301, 303  
 carpel, 3, 35  
     abortion, 133, 216  
     absence of, 131  
     development  
         centrifugal, 118  
     fusion, 19, 40, 97, 113, 125  
     increase, 6, 20, 23, 31, 36,  
         38, 54, 59, 80, 88, 95,  
         96, 97, 105, 108,  
         110, 131, 149, 152,  
         154, 165, 167, 182,  
         183, 206, 210, 216,  
         217, 225, 230, 237,  
         242, 254, 256, 287,  
         318, 368, 370, 372,  
         404, 419, 424, 428,  
         429, 430  
     loss, 23, 141, 265  
     reduction, 19, 23, 32, 137,  
         142, 160, 183, 218,  
         249, 273, 287, 290,  
         294, 312, 319, 386,  
         406, 409, 423  
     shape  
         ascidiate, 18, 21, 75, 78,  
             80, 154, 157, 165  
         plicate, 18, 21, 81, 154,  
             155, 167  
     carpellode. *See* pistillode  
*Carpenteria*, 344  
*Carpinus*, 295  
*Carpinus betulus*, 295  
*Carya*, 299, 300  
 Caryophyllaceae, 21, 26, 36,  
     51, 56, 141, 150,  
     308, 314, 315, 316,  
     317, 320, 323, 326,  
     427  
 Caryophyllales, 16, 19, 27,  
     181, 301, 308, 312,  
     314, 315, 320, 335,  
     424, 426, 427  
     basal, 181  
 Caryophylleae, 320  
 caryophyllids, 40, 172, 181,  
     301, 302, 312, 424,  
     426, 427  
 Caryophylloideae, 320  
*Caryota*, 131  
 Caryotoid palms, 131  
*Casearia*, 262  
*Casearia bracteifera*, 262  
*Cassia*, 277  
*Cassytha*, 91  
*Castanea*, 6, 297  
*Castanea sativa*, 297  
 Casuarinaceae, 53  
*Cathedra*, 178  
*Ceanothus*, 287  
*Ceanothus dentatus*, 287  
*Cecrocarpus*, 284  
*Ceiba pentandra*, 236  
 Celastraceae, 27, 52, 193,  
     243, 426  
 Celastrales, 241, 243  
*Celosia*, 323  
*Centranthus*, 34, 398, 399  
 Centrolepidaceae, 136  
 Centrospermae, 301  
 Cephalotaceae, 269  
*Ceratiola*, 368  
*Ceratonia*, 276, 277  
 Ceratophyllaceae, 72, 74,  
     102  
*Ceratophyllum*, 74  
*Ceratostigma minus*, 313  
 Cercidiphyllaceae, 53,  
     185  
*Cercidiphyllum*, 28, 36  
 Cercidoideae, 274, 279  
*Cercis*, 276, 279  
*Ceriops*, 248  
 Cervantiesiaceae, 179  
*Cespedesia*, 256  
*Cestrum*, 377  
*Cestrum parqui*, 377  
*Chaetonychia cymosa*, 320  
*Chamaelaucium*, 209  
*Chamaenerion*, 32, 205  
*Chamaenerion angustifolium*,  
     204

- character 370, 415, 416, 425, 348, 359, 370, 374,  
 embryological, 161, 301, 427, 428, 432  
 349, 355  
 convergence, 67, 68, 84, 412, 416, 425  
 evo-devo evidence, 54, 60  
 floral anatomy, 9, 88, 124, 114  
 146, 193, 212, 243, 268, 288, 291, 310, 359, 366, 391, 415  
 fossil evidence, 69, 71, 92, 218  
 161, 170, 172, 295, 416, 424  
 micromorphological, 161, 167, 175, 427  
 molecular, 68, 69, 71, 96, 131, 218, 230, 234, 261, 262, 268, 274, 301, 303, 344, 348  
 morphological, 68, 70, 71, 72, 96, 100, 124, 127, 165, 172, 186, 193, 199, 201, 218, 219, 225, 242, 243, 245, 246, 262, 275, 290, 310, 314, 315, 335, 344, 348, 349, 358, 359, 380, 415, 417, 422, 425, 428  
 non-molecular, 425  
 phytochemical, 218, 227, 301  
 character evolution  
 ancestral, 3, 8, 13, 34, 35, 47, 57, 68, 75, 77, 79, 84, 99, 101, 102, 105, 148, 150, 158, 181, 182, 187, 228, 254, 284, 285, 290, 292, 295, 297, 310, 312, 315, 316, 317, 351, 354, 356, 398, 420, 421, 426, 427  
 apomorphic tendency, 96, 176, 219, 228, 243, 302, 341, 348, 368, 370, 415, 416, 425, 427, 428, 432  
 convergence, 67, 68, 84, 102, 168, 218, 230, 236, 274, 378, 415, 416, 426, 427, 430  
 derived, 5, 7, 8, 19, 28, 30, 33, 37, 51, 53, 57, 72, 75, 77, 78, 84, 86, 89, 93, 96, 99, 104, 122, 124, 138, 140, 148, 149, 152, 157, 163, 174, 176, 181, 183, 187, 189, 190, 233, 234, 245, 262, 279, 283, 284, 285, 291, 295, 297, 301, 314, 329, 334, 338, 348, 349, 360, 366, 375, 381, 383, 385, 387, 391, 392, 398, 401, 402, 404, 421, 422, 423, 424, 426, 429  
 homology, homologous, 4, 7, 8, 9, 10, 59, 61, 118, 155, 167, 168, 170, 176, 195, 245, 284, 314, 335, 416, 421  
 homoplasy, homoplastic, 13, 14, 24, 27, 30, 142, 363, 415, 417  
 parallelism, 59, 209, 245, 312, 415, 416  
 plesiomorphy, plesiomorphic, 99, 102, 105, 110, 186, 187, 228, 260, 273, 279, 283, 285, 348, 351, 402  
 synapomorphy, synapomorphic, 120, 176, 212, 234, 243, 248, 283, 335, 348, 359, 370, 374, 375, 377, 380, 397, 412, 416, 425  
 floral, 114  
 morphological, 71, 218  
 syndrome, 212  
*Chelyocarpus*, 130  
 Chenopodiaceae, 322  
 Chenopodioideae, 322  
*Chenopodium*, 323  
*Chimonanthus*, 91, 420  
*Chionanthus*, 383  
*Chiranthodendron*, 234  
*Chironia*, 374  
 Chloranthaceae, 32, 72, 74, 102  
 Chloranthales, 73, 74  
 Chrysobalanaceae, 19, 51, 246, 248  
*Chrysobalanus*, 249  
*Chrysobalanus icaco*, 248  
*Chrysosplenium*, 193  
 Cichorioideae, 410  
*Circaea*, 205  
*Cissampelos*, 155  
 Cistaceae, 14, 230, 232, 306  
*Cistanthe*, 337  
*Cistus*, 233  
*Cistus creticus*, 233  
*Cistus ladanifer*, 233  
*Cistus salviifolius*, 232, 233  
*Citrus*, 23, 216  
*Clarkia*, 205  
 classification. *See* phylogeny  
*Clavija*, 360  
*Claytonia*, 335, 337  
*Claytonia perfoliata*, 335  
*Clematis*, 158, 160  
*Clematoclethra*, 366  
 Cleomaceae, 31, 71, 219, 225, 227, 228, 424  
*Cleome*, 226, 228, 229  
*Cleome isomeris*, 226  
 Cleomoideae, 71, 225



## 506 Index

- Clermontia*, 408  
*Clerodendrum*, 393  
*Clerodendrum petasites*, 393  
 Clethraceae, 366  
*Cleyera*, 355, 356  
*Cleyera japonica*, 355  
*Clidemia*, 210  
*Cliffortia*, 284, 285  
*Clusia*, 252  
*Clusia gundlachii*, 252  
*Clusia rosea*, 252  
 Clusiaceae, 10, 36, 70, 251, 252  
 Clusioid clade, 246, 251, 254, 364  
*Clutia*, 265  
 Cneoraceae, 214  
*Cneorum*, 216  
*Cnidocolus*, 263  
*Cobaea*, 351  
*Coccoloba*, 308, 312  
*Cocculus*, 155  
*Cocculus laurifolius*, 154  
*Cochliostema*, 134, 135  
*Codiaeum*, 263  
*Codon*, 379, 380, 429  
 Codonaceae, 379  
 Codoneae, 380  
*Cola*, 241  
 Coldeniaceae, 379  
 colleter, 295, 371  
*Colletia*, 287  
*Colobanthus*, 322  
*Colpoon*, 180  
*Colubrina*, 287  
 columella. *See* floral apex  
*Comandra*, 180  
 Comandraceae, 179  
 Combretaceae, 202  
*Combretum*, 203  
 COM-clade, 241, 243, 425  
 Commelinaceae, 32, 131  
 Commelinales, 131  
 commelinids, 23  
 compitum, 19, 420  
     external, 20, 80, 329  
*Conchocarpus*, 216  
 Connaraceae, 269, 272  
 connective, 10, 88, 99, 115, 237  
     appendage, 210  
     extension, 115, 123, 147, 174, 259, 260, 377  
     gland, 192, 210  
     shape  
         hooded, 115, 126  
*Conostegia*, 209, 210  
 Contortae, 67, 375, 429  
 Convallariaceae, 421  
 Convolvulaceae, 30, 377  
*Coprosma*, 372  
*Corbichonia*, 324, 327, 333  
*Corbichonia decumbens*, 324  
*Cordia*, 379  
 Cordiaceae, 379  
 core Brassicales, 218, 225  
 core Caryophyllales, 301  
 core eudicots, 54, 148, 172, 419, 422  
 core Malvales, 234  
*Coriaria*, 7  
 Coriariaceae, 11, 290  
 Coridaceae, 363  
*Coris*, 30, 71, 363  
 Cornaceae, 29  
 Cornales, 172, 341, 348, 428  
*Cornus*, 30  
 Corolla. *See* petal  
 corona, 45, 50, 51, 119, 124, 129, 246, 252, 256, 258, 354, 374, 375, 425  
     staminodial, 51  
*Correa*, 41, 216  
 Corrigioleae, 320  
 Corsiaceae, 120  
*Corydalis*, 31, 51  
*Corydalis lutea*, 150  
*Corylopsis*, 187  
*Corylus*, 295  
 Corynocarpaceae, 290  
 Costaceae, 142, 144  
*Costus curvibracteatus*, 144, 145  
*Coula*, 178  
*Coula edulis*, 178  
 Coulaceae, 177  
*Crassula*, 190  
 Crassulaceae, 38, 39, 184, 190, 427  
*Crataegus*, 284, 285, 287  
*Crinodendron*, 271  
*Crinodendron patagua*, 271  
*Crinum*, 129  
*Crocantemum*, 234  
 Crossosomatales, 211  
*Crossostylis*, 248  
*Croton*, 263  
*Croton alabamensis*, 263  
*Croton celtidifolius*, 265  
*Croton michauxii*, 265  
*Croton sarcopetalus*, 265  
 Crotonae, 265  
 Crotonoideae, 263  
*Crudia*, 279  
 cryptic apomorphy. *See*  
     character evolution:  
         apomorphic  
         tendency  
 Ctenolophaceae, 266  
*Cucurbita*, 291  
*Cucurbita palmata*, 291  
 Cucurbitaceae, 25, 27, 243, 291, 334, 427  
 Cucurbitales, 67, 241, 290, 424, 425  
*Cunonia capensis*, 271  
 Cunoniaceae, 9, 16, 27, 193, 269, 270, 271, 290  
 Cunoniales, 172  
*Cuphea*, 48, 205  
*Cuphea ignea*, 205

- Cuphea micropetala*, 205  
*Cyclamen*, 363  
 Cyclanthaceae, 117, 421  
*Cyclanthera*, 291  
 Cymodoceaceae, 29, 104  
 cymose inflorescence. *See*  
     inflorescence:cyme,  
     cymose  
 Cyperaceae, 21, 136, 140, 141  
*Cyphia*, 408  
 Cyphiaceae, 407  
 Cypridioideae, 125  
 Cyrillaceae, 366  
  
*Dactyladenia*, 250  
*Dactylaena*, 226, 229  
*Dalechampsia*, 265  
*Damasonium*, 108, 110  
*Daphnandra*, 93  
*Daphne*, 231  
*Daphne bholua*, 230  
 Daphniphyllaceae, 185  
*Dasymaschalon*, 86  
 Datisceae, 291, 293  
*Davidia*, 28  
*Davidsonia*, 270  
 Davidsoniaceae, 269  
*Davilla*, 181  
*Decaisnea*, 153  
*Decodon*, 206  
*Decumaria*, 344  
 dédoublement, 16, 18, 157,  
     203, 228, 258, 279,  
     285, 312, 331, 357  
     congenital, 110  
 Degeneriaceae, 82  
*Deherainia*, 360  
*Deinranthe*, 344  
*Deinbollia*, 214  
 Delphineae, 160  
*Delphinium*, 51, 158, 160, 161  
 Detarioideae, 274, 276, 278  
*Deutzia*, 344, 347  
 Dialioideae, 274, 276  
  
*Dialium*, 276  
 Dialypetalanthaceae, 372  
*Dialypetalanthus*, 370, 372  
*Dianthus*, 320  
 Diapensiaceae, 348  
*Diascia*, 27, 50, 388, 391  
*Diascia vigilis*, 388  
 Dichapetalaceae, 248, 268  
 dichasial cymes. *See*  
     inflorescence:cyme,  
     cymose:dichasium  
*Dichroa*, 344  
*Dichroa febrifuga*, 344  
 dicots, 420  
*Dictamnus*, 216  
*Didesmandra*, 183  
 Didymelaceae, 168  
*Didymeles*, 169  
 Diervillaceae, 396  
 Diervilleae, 397  
*Digitalis*, 388  
*Dillenia*, 14, 182, 183  
 Dilleniaceae, 14, 51, 172,  
     181, 189, 254  
 Dilleniales, 181, 302, 423,  
     424  
 Dilleniidae, 181  
*Dimorphandra*, 278  
*Dionaea*, 304  
 Dioncophyllaceae, 303, 427  
*Dionysia*, 363  
*Dioscorea*, 55, 115  
 Dioscoreaceae, 115, 123  
 Dioscoreales, 115  
*Dioscoreophyllum*, 155  
*Diospyros*, 359, 366  
*Diospyros lotus*, 358  
 Dipentodontaceae, 7  
*Diplarrhena*, 127  
*Diplopanax*, 404  
 Dipsacaceae, 396  
 Dipsacales, 396, 429, 430,  
     431  
 Dipsaceae, 398, 399  
  
*Dipsacacis*, 399  
 Dipterocarpaceae, 230  
 Dirachmaceae, 30, 38, 283,  
     288  
*Disanthus*, 187  
*Dissochaeta*, 210  
*Distylium*, 187  
*Dobera*, 224  
*Dodecatheon*, 363  
*Donatia*, 409  
*Donatia fascicularis*, 408  
 Donatiaceae, 408  
*Douglasia*, 361  
*Dovea*, 136  
*Dovyalis*, 262  
*Dovyalis caffra*, 262  
*Drapetes*, 232  
*Drosera*, 304  
*Drosera capensis*, 304  
 Droseraceae, 301, 303  
 Drosophyllaceae, 303  
*Dryadodaphne*, 93  
*Duparquetia*, 276, 277  
 Duparquetioideae, 274  
*Durandea*, 267  
*Durio*, 416  
  
 early diverging eudicots, 7,  
     36, 72, 148, 163,  
     167, 419, 422  
 Ebenaceae, 348, 349, 358  
 Ebenales, 347  
*Ecdeiocolea*, 139, 140  
 Ecdeiocoleaceae, 139, 140  
*Echinodorus*, 108, 110  
*Echinops*, 410  
*Echinopsis formosa*, 337  
*Echium*, 380  
*Echium hierrense*, 379  
 Ehretiaceae, 379  
*Eichhornia*, 133  
*Eichhornia crassipes*, 133, 134  
 Elaeagnaceae, 283, 288, 289  
*Elaeagnus*, 288

## 508 Index

- Elaeagnus umbellata*, 288  
 Elaeocarpaceae, 10, 16, 183,  
     230, 269, 271  
 elaiophore, 27, 250, 363, 385,  
     388, 391  
*Elegia cuspidata*, 136  
*Elliotia*, 368  
*Embelia*, 363  
 Emblingiaceae, 219, 225  
*Emex*, 308  
 Empetraceae, 368  
*Empetrum*, 368  
 enantiostyly, 33, 133, 276  
*Endiandra*, 91  
*Engelhardtia*, 300  
*Enkianthus*, 370  
*Ensete*, 144  
 Epacridaceae, 368  
*Ephedra*, 27  
*Ephippiandra*, 94, 95  
*Ephippiandra myrtoidea*, 94  
 epicalyx, 7, 30, 40, 205, 230,  
     234, 241, 256, 284,  
     320, 363, 398, 423,  
     426  
     bristle, 30  
     origin, 30  
 Epidendroideae, 125  
 epigynous. *See* ovary:  
     position:inferior  
*Epimedium*, 157  
*Epimedium x versicolor*, 155  
*Ercilla*, 329  
*Ercilla volubilis*, 327  
*Eremopanax*, 404  
*Erica*, 5  
 Ericaceae, 5, 12, 348, 349,  
     366, 368  
 Ericales, 71, 172, 341, 347,  
     354, 365, 366, 415,  
     428  
 Ericoid clade, 348, 366  
 Eriocaulaceae, 136  
*Erodium*, 199  
*Erodium leucanthemum*, 196  
*Erythraea*, 374  
*Erythrochiton*, 216  
 Erythroxylaceae, 248  
 Escalloniales, 73, 395, 430  
 Escallonioideae, 193  
*Eschscholzia*, 150  
*Eschscholzia californica*, 150  
*Euadenia*, 225, 229  
*Euadenia eminens*, 225  
 euanthium, 3  
 euasterids, 341, 343, 348,  
     396, 424, 428  
*Eucalyptus*, 41, 207, 209  
*Eucnide*, 346, 347  
*Eucryphia*, 270, 271  
 Eucryphiaceae, 269  
 eudicots, 27, 70, 74, 102  
*Euphorbia*, 6, 27, 29, 265  
*Euphorbia mellifera*, 263  
 Euphorbiaceae, 6, 22, 26, 53,  
     70, 172, 246, 262,  
     263, 265, 266, 268,  
     424  
 Euphorbioid clade, 246, 262  
 Euphorbioideae, 263, 265  
 Euphroniaceae, 248  
 Eupomatiaceae, 12, 82, 419  
*Euptelea*, 8, 28  
 Eupteleaceae, 149  
*Eurya*, 356  
*Eusideroxylon*, 91  
*Evandra*, 141  
 Exaceae, 374  
*Exacum*, 48, 374  
*Exacum affine*, 374  
*Exbucklandia*, 187  
 Fabales, 241, 273  
 Fabidae. *See* fabids  
 fabids, 184, 241  
 Faboideae, 274  
 Fagaceae, 6, 38, 293, 297,  
     298  
 Fagales, 5, 241, 293, 295, 298,  
     425  
*Fagopyrum*, 310, 312  
*Fagus*, 297, 298  
*Fallopia*, 310  
*Fallopia japonica*, 308  
*Fenerivia*, 86, 88  
 fenestration, 41  
 ferns, 27  
 filament, 5, 10, 51, 84, 115,  
     117, 119, 155, 162,  
     174, 180, 195, 260,  
     277, 278, 289, 323,  
     427  
     absence of, 85  
     appendage, 351  
     base, 129, 199, 292, 408  
     branching, 295, 347, 399  
     nectariferous, 89, 95  
     orientation, 209  
     excurved, 162  
     incurved, 162, 202, 209,  
     210, 290, 354, 404,  
     406  
     straight, 209, 269, 290  
 texture  
     hairy, 127, 352, 363  
     moniliform, 135  
     papillose, 214  
     tube, 84, 360, 408, 409,  
     427  
 filament-style tube, 408,  
     410  
*Filipendula*, 285  
 Flacourtiaceae, 67, 70, 172,  
     246, 261  
 Flagellariaceae, 140  
 floral apex, 20, 21, 34, 54, 57,  
     79, 84, 89, 110, 114,  
     131, 141, 318  
     expansion, 14, 23, 38, 86,  
     97, 119, 277, 319,  
     323, 327, 329, 368  
     reduction, 38

- residual, 24, 74, 77, 81,  
 167, 186, 212, 256,  
 266, 339
- shape  
 concave, 428, 430
- floral axis, 3, 4, 24, 55, 180,  
 267, 276, 395
- floral construction  
 brush-flower, 271, 278
- chasmogamy,  
 chasmogamous  
 flower, 52
- cleistogamy,  
 cleistogamous  
 flower, 52, 117, 234
- flag-flower, 33
- keel-flower, 274, 281
- lip-flower, 33
- pollen flower, 100, 135,  
 181, 188, 271, 293,  
 385
- floral development, 26, 31,  
 32, 45, 53, 54, 56, 57,  
 58, 79, 114, 135,  
 146, 183, 222, 241,  
 258, 290, 313, 354,  
 363, 366, 383, 403,  
 406, 409, 416
- early, 110, 133, 276
- evidence of, 10, 22, 25, 41,  
 44, 47, 50, 85, 109,  
 113, 145, 163, 173,  
 209, 224, 258, 291,  
 312, 315, 415
- flower meristem, 28
- inflorescence meristem,  
 28, 58
- intercalary growth, 24, 25,  
 41, 42, 427
- mechanical forces, 6, 34,  
 38, 54, 58
- mechanical pressure, 6, 8,  
 12, 30, 54, 55, 97,  
 139, 214, 274, 276,  
 279, 308, 312, 316,  
 335, 381, 426, 427,  
 432
- organ shift, 6, 11, 16, 18,  
 26, 27, 28, 30, 54, 55,  
 56, 97, 110, 115,  
 122, 141, 193, 199,  
 201, 254, 312, 315,  
 316, 317, 333, 355,  
 357, 395, 398, 415,  
 421, 426, 432
- spatial constraints, 11, 13,  
 31, 33, 36, 38, 60, 68,  
 219, 427
- floral diagram, 13, 39, 44,  
 45, 46, 47, 52, 53,  
 55, 58, 60, 64, 69,  
 72, 89, 96, 99, 100,  
 115, 136, 142, 143,  
 154, 189, 196, 205,  
 222, 225, 227, 258,  
 273, 274, 310, 315,  
 325, 331, 341, 348,  
 349, 350, 363, 370,  
 377, 379, 401,  
 415, 423, 425, 429,  
 432
- floral evolution, 5, 6, 35, 71,  
 161, 170, 172, 174,  
 228, 360, 380, 418,  
 424, 427
- trends, 418, 432
- floral formula, xi, 47, 97,  
 102, 140, 153, 163,  
 275, 283, 310,  
 381, 420, 423, 426,  
 429
- floral ontogeny. *See* floral  
 development
- floral symmetry, 8, 31, 36, 39,  
 58
- asymmetry, 33, 59, 142,  
 202, 276, 281, 397,  
 398
- change, 6, 31, 59
- disymmetry, 31, 36, 100,  
 133, 150, 152, 214,  
 218, 219, 223, 225,  
 227, 229
- monosymmetry, 31, 32,  
 33, 34, 47, 54, 55,  
 59, 61, 68, 72, 96,  
 97, 99, 100, 103,  
 106, 114, 120, 124,  
 126, 129, 133, 135,  
 139, 140, 142, 152,  
 155, 160, 164, 179,  
 183, 197, 201, 202,  
 205, 214, 216, 218,  
 222, 225, 227, 228,  
 229, 238, 249, 254,  
 259, 267, 274, 276,  
 277, 293, 333, 338,  
 349, 350, 351, 353,  
 354, 364, 368, 370,  
 372, 374, 379, 380,  
 383,  
 387, 388, 391, 395,  
 396, 397, 406, 408,  
 410, 419, 422, 425,  
 427, 428, 429,  
 430
- early, 31, 383
- late, 31
- median, 31, 127, 148,  
 152, 183, 196, 216,  
 219, 225, 281, 351,  
 370, 374, 381, 386,  
 398, 408, 430
- oblique, 31, 131, 133,  
 134, 212, 214, 216,  
 218, 219, 222, 246,  
 248, 250, 258, 370,  
 377, 380,  
 408, 409, 425,  
 430
- transversal, 31, 131, 148,  
 152, 183

## 510 Index

- floral symmetry (cont.)  
 polysymmetry, 31, 32, 34,  
 60, 102, 120, 124,  
 129, 133, 135, 164,  
 181, 193, 197, 201,  
 212, 214, 217, 222,  
 225, 232, 243, 248,  
 259, 267, 277, 338,  
 354, 370, 372, 377,  
 381, 383, 388, 391,  
 393, 398, 399, 406,  
 410, 429, 430  
 secondary, 12, 59, 381,  
 383, 386, 387, 399,  
 430
- flower  
 abortion, 397  
 common primordium, 118  
 cyclic. *See* flower:whorled  
 hemicyclic, 418, 419  
 heteromorphism,  
 heteromorphic, 52,  
 53  
 initiation sequence  
 chaotic, 89, 154  
 spiral, 36, 160, 174  
 unidirectional, 32, 39,  
 96, 100, 106, 225,  
 276, 277, 281, 388,  
 398  
 whorled, 79, 419  
 isomery, isomeric, 197,  
 217, 281, 317, 325  
 ligulate, 410  
 orientation, 33, 44,  
 45, 46, 48, 55, 107,  
 115, 183, 276, 277,  
 278, 408  
 inverted, 55, 115, 281,  
 374, 399  
 oblique, 135, 163  
 origin, 59  
 reduction, 27, 29, 114, 141,  
 142, 170, 217, 261,  
 266, 283, 297, 312,  
 323, 329  
 spiral, 34, 35, 37, 39, 40,  
 59, 75, 77, 80, 89, 90,  
 94, 155, 158, 160,  
 165, 168, 173, 175,  
 176, 348, 418, 419,  
 423  
 whorled, 34, 35, 36, 75, 82,  
 158, 165, 418, 423
- flower shape  
 papilionoid, 222
- flower-inflorescence  
 distinction, 28, 105
- food-bodies, 12, 91, 420
- fossil flower, xi, 71, 72, 271,  
 348, 423
- Fothergilla*, 187
- Fouquieriaceae, 348, 351,  
 352, 353
- Fragaria*, 285, 287
- Francoa*, 51, 193, 199, 201
- Francoa sonchifolia*, 199
- Francoaceae, 51, 193, 196,  
 199, 201
- Frankenia*, 305
- Frankenia boissieri*, 308
- Frankenia laevis*, 306
- Frankenia persica*, 308
- Frankeniaceae, 301, 305, 306
- Fraxinus*, 5, 384
- Fremontodendron*, 234, 236
- Friesodielsia*, 88
- fruit, 20, 26, 93, 164, 209,  
 300, 309, 322, 331,  
 377  
 baccate, 360  
 capsular, 117, 127, 268,  
 360, 370, 383, 392  
 dehiscence, 359  
 dispersal, 7, 9  
 drupaceous, 342, 399  
 follicular, 160, 287  
 formation, 228  
 indehiscent, 139, 383  
 pyxidium, 41, 337  
 schizocarpous, 406  
 type, 285  
 valve, 360
- Fuchsia*, 205
- Fumaria*, 152
- Fumariaceae, 150
- Fumarioideae, 31, 150, 152
- fusion, 6, 40, 44, 432  
 congenital, 9, 19, 24,  
 40, 41, 102, 120,  
 205, 243, 346, 350,  
 369, 424  
 postgenital, 10, 19, 27, 40,  
 41, 42, 102, 105,  
 125, 153, 161, 164,  
 196, 211, 212, 214,  
 216, 269, 295, 346,  
 351, 377, 403, 404,  
 420, 421, 422
- Gaertnera*, 372
- Gagnepainia*, 57, 146
- Galanthus*, 127
- Galenia*, 327
- Galipea*, 216
- Galipea riedeliana*, 214
- Galipineae, 216
- Galium*, 372
- Galopina*, 372
- Galphimia*, 250
- Galphimia glauca*, 250
- Garcinia*, 252
- Garcinia spicata*, 251
- Garryales, 73, 370
- Gaudichaudia*, 250
- Gaylussacia*, 370
- Geissos, 9, 16, 270
- Gelsemiaceae, 371
- genes, genetic, 4, 59, 415,  
 416, 433  
 boundaries, 189, 350  
 control, 54, 58

- Cycloidea*-like, 34  
 evidence, 3, 58, 70, 104,  
 118, 184, 241  
 expression, 32, 58, 59, 99,  
 129, 150, 228, 351,  
 421  
 influence, 8, 56  
 mutation, 60, 68, 118, 381  
 pathways, 428  
 petal identity, 58, 59, 60,  
 149, 158, 281, 283,  
 416, 426  
 shift, 7, 28, 284, 339, 421,  
 432
- Gentianaceae, 11, 48, 51,  
 371, 374, 375
- Gentianales, 40, 42, 370, 371,  
 372, 375, 429, 430
- Geonoma*, 131
- Geonomeae, 131
- Geophila*, 372
- Georgeantha*, 140
- Geraniaceae, 11, 12, 16, 27,  
 33, 67, 196, 266, 272
- Geraniales, 196, 424, 425
- Geranium*, 197
- Gesneriaceae, 60, 380, 381,  
 383, 385, 386, 429,  
 430
- Gethyllis*, 128
- Gethyum*, 129
- Geum*, 284
- Gillbea*, 27
- Gillenia*, 283
- Gilliesia*, 124, 129
- Ginoria*, 16
- Gladiolus*, 32, 127
- Gladiolus communis*, 127
- Glaux*, 360
- Gleditsia*, 276
- Glinus*, 333
- Glinus lotoides*, 333
- Globba*, 146
- Globulariaceae, 386
- Gluta*, 218
- Gnetales, 27
- Gnidia*, 231
- Goethea*, 241
- Gomortegaceae, 89
- Goodeniaceae, 43, 406, 407,  
 412, 430
- Gratiola*, 388
- Grevilloideae, 163
- Grewioideae, 236
- Grevia*, 51, 199, 201
- Gronovioideae, 346, 347
- Grossulariaceae, 24, 185,  
 191, 192, 193
- Guiera*, 202, 204
- Guiera senegalensis*, 202
- Gunnera*, 170
- subgenus *Panke*, 170
- Gunnera manicata*, 170
- Gunneraceae, 167, 170, 422,  
 423
- Gunnerales, 148, 170
- Gustavia*, 354
- Gymnadenia*, 125
- Gymnospermium*, 157
- gymnosperms, 4, 27, 69
- Gymnostachys*, 108
- Gymnotheca*, 100, 101, 106
- Gymnotheca chinensis*, 99
- gynoecium, 4, 18, 38, 202,  
 222, 233
- absence of, 304
- apocarpous, apocarpous, 18,  
 19, 21, 86, 88, 89,  
 102, 105, 110, 113,  
 131, 160, 174, 183,  
 188, 189, 190, 212,  
 256, 273, 287, 421,  
 422
- secondary, 19, 186,  
 237, 241, 329, 377,  
 423
- choricarpous. *See*  
 gynoecium:
- apocarpous,  
 apocarpous
- coenocarpus. *See*  
 gynoecium:
- apocarpous,  
 apocarpous
- common primordium, 23
- isomery, isomerous, 22,  
 56, 172, 176, 183,  
 196, 199, 205, 206,  
 209, 210, 212, 216,  
 237, 248, 269, 271,  
 272, 285, 293, 304,  
 306, 327, 335, 349,  
 368, 369, 370, 404,  
 408, 426, 430
- monocarpellate, 19, 88, 93,  
 95, 101, 108, 152,  
 155, 164, 175, 285,  
 289, 329, 331, 333,  
 404, 420, 424
- multiwhorled, 113
- reduction, 23, 101, 155,  
 249
- ring primordium, 19, 359,  
 360
- syncarpy, syncarpous, 18,  
 19, 21, 40, 41, 68, 80,  
 86, 88, 96, 97, 101,  
 105, 106, 131, 148,  
 160, 183, 186, 212,  
 214, 287, 322, 329,  
 349, 358, 420, 421,  
 423, 424
- eusyncarpous, 20
- parasyncarpous, 20, 22,  
 174, 422
- pseudosyncarpous, 88
- two-whorled, 105, 110,  
 114
- unicarpellate. *See*  
 gynoecium:
- monocarpellate
- gynophore, 26, 86,  
 164, 216, 218, 222,  
 224, 225, 274, 277,  
 329, 425

## 512 Index

- gynostegium, 40, 377  
 gynostemium, 40, 97, 99,  
     124, 125, 408  
*Gynostylis*, 232  
*Gyrinopsis*, 232  
*Gyrocarpus*, 93  
 Gyrostemonaceae, 219  
  
*Haematoxylum*, 275, 276  
*Haemodora*, 133  
 Haemodoraceae, 34, 43, 124,  
     131, 132, 133  
 hair. *See* trichome  
*Halenia*, 374  
 half-anther. *See* anther:  
     organization:  
     monothecal  
*Halophila*, 113  
 Haloragaceae, 170,  
     184, 189  
*Haloragis*, 190  
*Haloragis erecta*, 189  
 Hamamelidaceae, 185, 186,  
     187, 295  
 Hamamelidae, 161, 184  
*Hamamelis*, 186, 187  
*Hamamelis japonica*, 186  
*Hamamelis virginiana*, 187  
*Hamelia*, 372  
 Haptanthaceae, 168  
*Harungana*, 254  
*Havetiopsis*, 252  
 head. *See* inflorescence:  
     capitulum  
*Hebe*, 388  
*Hebe cheesemanii*, 386  
*Hebepetalum*, 267  
 Hectorellaceae, 335  
*Hedera*, 404  
*Hedera helix*, 404  
*Heisteria*, 176, 178  
*Heisteria parviflora*, 177  
*Heisteria pentandra*, 178  
 Heliconiaceae, 142  
 Heliotropiaceae, 379  
*Helleborus*, 12, 160  
*Helwingia*, 395  
 Helwingiaceae, 395  
 Hemerocallidaceae, 126  
*Hemigraphis*, 392  
*Hepatica*, 158, 160  
*Hermannia*, 238  
 hermaphrodite flower. *See*  
     sex distribution:  
     bisexual  
*Hernandia*, 93  
*Hernandia nymphaeifolia*, 92,  
     93  
 Hernandiaceae, 92, 419  
*Heteranthera*, 134  
 heteranthy, 14, 32, 131, 134,  
     135, 182, 183, 277  
 heterochrony, 53, 56, 57,  
     262, 315  
*Heteropyxis*, 209  
 heterotopy, 142, 351  
*Heuchera richardsonii*, 193  
*Hibbertia*, 14, 54, 181, 182,  
     183  
     subgenus *Adrastea*, 183  
*Hibbertia cuneiformis*, 181, 183  
*Hibbertia empetrifolia*, 183  
*Hibbertia grossulariifolia*, 183  
*Hibbertia hypericoides*, 183  
*Hibbertia salicifolia*, 183  
*Hibbertia stellaris*, 182  
*Hibbertia* subgenus *Adrastea*,  
     183  
*Hibiscus*, 234, 237, 241  
*Hieracium*, 410  
*Hillebrandia sandwicensis*, 293  
*Hillieria*, 333  
 Himantandraceae, 82  
 Hippocastanaceae, 212  
 Hippocrateaceae, 243  
 Hippocrateoideae, 243  
*Hippophae*, 289  
 Hippuridaceae, 386  
*Hippuris*, 388  
*Hiptage*, 250  
*Hirtella*, 250  
*Hodgsoniola*, 127  
*Holboellia*, 153  
*Holboellia angustifolia*, 153  
*Hololachna*, 305  
*Holoptelea*, 290  
*Homalium*, 262  
*Homalium abdessammadii*, 262  
 homeosis, 53, 88, 108, 118,  
     122, 131, 152, 160,  
     263, 281, 284, 285,  
     408  
 homeotic transformation. *See*  
     homeosis  
*Hoplostigma*, 379, 429  
 Hoplostigmataceae, 379  
*Horsfieldia*, 84  
*Hortonia*, 94  
*Houttuynia*, 100, 101  
*Huerteia*, 212  
 Huerteales, 73, 212  
*Hugonia*, 267  
 Hugonioideae, 266  
*Huidobria*, 347  
 Humiriaceae, 256, 266  
 Hydatellaceae, 72, 77, 418  
 hydathode, 27, 171  
 Hydnoraceae, 96, 99  
*Hydrangea*, 344  
 Hydrangeaceae, 18, 29, 52,  
     342, 344, 346, 347,  
     401  
 Hydrangeoideae, 193, 344  
*Hydrocera*, 349, 351  
*Hydrocharis*, 113  
*Hydrocharis morsus-ranae*, 111  
 Hydrocharitaceae, 111, 113,  
     420, 422  
 Hydrocharitoideae, 111  
*Hydrocotyle*, 404  
 Hydroleaceae, 377  
 Hydrophyllaceae, 379

- Hydrophyllae, 380  
*Hydrothryx*, 133, 134  
*Hymanthera*, 260  
*Hymenandra*, 363  
*Hymenocallis*, 51, 129  
 hypanthium, 10, 24, 25, 26,  
 40, 41, 42, 48, 50, 51,  
 77, 79, 82, 86, 89, 90,  
 95, 96, 101, 103,  
 115, 120, 124, 133,  
 180, 184, 186, 187,  
 189, 192, 193, 201,  
 205, 206, 209, 211,  
 218, 219, 222, 225,  
 231, 241, 243, 245,  
 248, 258, 262, 263,  
 269, 276, 283, 285,  
 287, 289, 292, 310,  
 320, 331, 339, 343,  
 347, 360, 416, 420,  
 425, 426  
 absence of, 120  
 cup-shaped, 24, 63, 77, 95,  
 202, 207, 248, 250,  
 284, 343, 429  
 growth, 14, 115, 190, 195,  
 201, 207, 209, 284,  
 285, 291, 327, 338,  
 419, 421, 424, 425  
 loss, 283  
 petaloid, 95, 185, 192, 193,  
 287  
 tube, 25, 41, 127, 129, 142,  
 202, 205, 209, 224,  
 230, 339, 429  
 urceolate, 95  
*Hypocoum*, 18, 152, 153  
 Hypericaceae, 254  
*Hypericum*, 14, 54, 243, 254  
*Hypericum aegypticum*, 254  
*Hypericum androsaemum*, 254  
*Hypericum olympicum*, 254  
*Hypericum perforatum*, 254  
 hyperstigma, 89, 96  
*Hypertelis*, 325, 333  
*Hypodiscus aristatus*, 136  
 hypogynous. *See* ovary:  
     position:superior  
 Hypoxidaceae, 126  
*Hypseocharis*, 199  
 Hypseocharitaceae, 196  
*Hypserpa*, 155  
*Iberis*, 227  
*Iberis amara*, 227  
 Icacinales, 73, 370  
 Idiospermaceae, 89  
*Idiospermum*, 420  
*Ilex*, 396  
*Ilex aquifolium*, 396  
*Illicium*, 20, 81  
*Illicium simmonsii*, 81  
*Impatiens*, 7, 27, 349  
*Impatiens platypetala*, 349  
 inflorescence, 3, 4, 5, 6, 22,  
 27, 28, 29, 31, 34, 45,  
 52, 108, 114, 115,  
 138, 142, 154, 155,  
 157, 163, 170, 193,  
 234, 281, 290, 340,  
 351, 421, 428  
 botryoid, 28, 94, 283  
 capitulum, 29, 52, 202,  
 277, 322, 398, 410,  
 430  
 catkin, 165, 262, 295, 297,  
 299  
 cincinnus, 115, 133,  
 134, 142, 144, 304,  
 335  
 cyme, cymose, 28, 77, 86,  
 157, 181, 190, 212,  
 216, 263, 265, 279,  
 283, 290, 292, 304,  
 305, 322, 344, 346,  
 359, 360, 361, 365,  
 366, 372, 377, 383,  
 385, 396, 401  
 cyathium, 27, 29  
 dichasium, 94,  
 158, 178, 180, 190,  
 205, 220, 222, 234,  
 248, 295, 297, 306,  
 308, 320, 331, 335,  
 384, 385, 397  
 monochasium, 93,  
 111, 133, 158, 230,  
 265, 308, 313, 320,  
 335, 385  
 scorpioid, 110, 134, 379  
 unipartite. *See*  
     inflorescence:cyme,  
     cymose:  
     monochasium  
     verticillate, 393  
 determinate, 28  
 fascicle, 356, 396  
 flower triplet, 93, 130, 178,  
 186, 299, 331  
 indeterminate, 28  
 paired flower, 123, 144,  
 147, 163, 186, 295,  
 304, 372, 386  
 panicle, paniculate, 29,  
 162, 216, 403  
 peduncle, 238  
 raceme, racemose, 28, 29,  
 86, 100, 117, 118,  
 125, 126, 133, 145,  
 157, 158, 192, 201,  
 202, 212, 224, 227,  
 228, 250, 274, 275,  
 279, 283, 287, 291,  
 304, 305, 329, 333,  
 338, 346, 360, 363,  
 368, 408, 410  
 spike, spicate, 96, 104,  
 106, 113, 126, 127,  
 165, 168, 202,  
 299, 322  
 spikelet, 100, 136, 138,  
 139, 140, 141, 142



## 514 Index

- inflorescence (cont.)  
   solitary flower, 27, 77, 86,  
     119, 123, 128,  
     130, 157, 162,  
     165, 181, 187, 190,  
     232, 256, 260, 290,  
     291, 299, 320, 331,  
     338, 344, 356, 363,  
     365, 366  
   spadix, 107  
   thyrses, 29, 385, 397  
   umbel, umbellate, 29, 52,  
     110, 127, 196, 228,  
     230, 344, 404, 406,  
     416, 430  
   variable, 291  
 inflorescence axis, 28, 31, 44,  
   61, 82, 107, 139,  
   140, 142, 163, 229,  
   256, 260  
 inflorescence gland, 401  
 Iridaceae, 32, 55, 124, 127  
 Iridoideae, 127  
*Iris*, 127  
*Isolona*, 86, 88, 420  
 Isonandreae, 357  
 Iteaceae, 185, 193  
 Ixonanthaceae, 262, 266  
  
*Jacquinia*, 360  
*Jasminum*, 383  
*Jatropha*, 53, 263  
*Jatropha aconitifolia*, 263  
*Jatropha integerrima*, 263  
 Joinvilleaceae, 140  
*Jovellana violacea*, 384  
 Juglandaceae, 293, 299  
*Juglans*, 300  
*Juglans regia*, 299, 300  
 Juncaceae, 140  
 Juncaginaceae, 55, 104, 113  
  
*Kadsura*, 81  
*Kalanchoe*, 190  
*Kalanchoe fedtschenkoi*, 190  
*Kandelia*, 248  
*Kewa*, 7, 325, 326, 333  
*Kewa bowkeriana*, 326  
*Kewa salsoloides*, 317, 325  
 Kewaceae, 325, 426  
*Kibara*, 95  
*Kingsboroughia alba*, 161  
*Kirengeshoma*, 18, 344, 356  
*Kirengeshoma palmata*, 344  
 Kirkiaceae, 212  
*Kitaibelia*, 23, 237  
*Kleinhovia*, 238  
*Knautia*, 399  
*Knema*, 82  
*Kniphofia*, 127  
*Koerberlinia*, 218, 219, 223  
 Koerberliniaceae, 218, 223  
*Koelreuteria*, 214, 219  
*Koenigia*, 313  
*Koenigia islandica*, 312  
 Krameriaceae, 241  
  
 labellum, 33, 57, 125, 142,  
   146, 147  
   abaxial, 125, 142, 145, 146  
   adaxial, 124  
*Labichea*, 276  
*Labourdonnaisia*, 358  
*Lacandonia*, 117, 119  
*Lacandonia schismatica*, 117  
 Lacandoniaceae, 117, 118  
*Laccopetalum*, 24, 160  
 Lactoridaceae, 96, 99  
*Lafoensia*, 205  
*Lagerstroemia*, 206  
 Lamiaceae, 19, 22, 380, 393  
 Lamiales, 12, 32, 33, 34, 216,  
   370, 380, 381, 383,  
   388, 398, 399, 406,  
   427, 428, 429, 430  
 lamiids, 51, 341, 370, 427,  
   429, 430  
*Lamprocapnos*, 152  
 Lardizabalaceae, 148, 153,  
   154, 155  
 Lauraceae, 89, 91, 93, 419  
 Laurales, 82, 88, 418, 419,  
   420  
*Laurelia*, 93, 94  
*Laurelia novae-zelandiae*, 93  
*Laurus*, 92  
*Lechea*, 234  
 Lecythidaceae, 31, 32, 51,  
   348, 349, 353, 354,  
   358  
 Lecythidoideae, 354  
*Leea*, 195  
*Leea guineensis*, 195  
 Leeaceae, 195  
 Leguminosae, 30, 32, 33, 34,  
   39, 46, 55, 57, 60, 70,  
   241, 273, 274, 275,  
   277, 278, 378  
   Caesalpinioid, 33  
*Lennoa*, 380  
 Lennoaceae, 379  
*Leonia*, 260  
*Leonia triandra*, 259  
*Lepidium*, 57, 228  
 Lepidobotryaceae, 243  
*Lepidobotrys*, 243  
*Leptopus chinensis*, 268  
*Leptospermum*, 209  
*Lepuropetalon*, 193  
*Lethedon*, 232  
*Leucadendron*, 5, 163  
*Leuenbergeria*, 338, 340  
*Levenhookia*, 409  
*Lewisia*, 335, 339  
*Lewisia columbiana*, 335  
*Lewisia rediviva*, 337  
*Lewisiopsis*, 337  
*Leycesteria*, 397, 399  
*Ligularia*, 410  
*Ligularia dentata*, 410  
 ligule, 50  
*Lilaea*, 114

- Lilaeeaceae, 113  
 Liliales, 120  
*Lilium*, 55  
 Limeaceae, 317  
*Limeum*, 316, 333  
*Limnobiium*, 113  
*Limnocharis*, 105, 110, 422  
 Limnocharitaceae, 108  
 Linaceae, 22, 262, 266, 267,  
     268, 272  
*Linanthus*, 352  
*Linaria*, 27  
*Lindera*, 91  
*Linnaea*, 397  
 Linnaeaceae, 396  
 Linnaeae, 397, 398  
 Linoideae, 266  
*Linum*, 267  
*Linum lewisii*, 267  
*Linum monogynum*, 266,  
     267  
*Linum perenne*, 268  
 lip. *See* labellum  
*Liriodendron*, 85  
*Liriodendron tulipifera*, 85  
*Lisianthus*, 374  
*Lissocarpa*, 359  
 Lissocarpaceae, 358  
*Lithocarpus*, 297  
*Lithophragma*, 193  
*Litsea*, 91  
*Loasa*, 347  
 Loasaceae, 12, 27, 342,  
     346  
 Loasoideae, 343, 347  
*Lobelia*, 408  
*Lobelia tupa*, 407  
 Lobeliaceae, 407  
 Lobelioideae, 43, 406, 408,  
     410  
 locule, 21, 22, 131, 144, 169,  
     224, 267, 272, 300,  
     380, 393, 396, 404,  
     408, 431  
     reduction, 134, 137, 145,  
     237, 290, 374, 401,  
     409, 430  
 lodicule, 59, 136, 139, 140  
 Loganiaceae, 371  
*Lomatia*, 163  
*Lomatia tinctoria*, 163  
*Lomelosia*, 398  
*Lonicera*, 48, 397, 398, 399  
*Lonicera giraldii*, 396  
*Lopezia*, 27, 205  
 Lophiocarpaceae, 314, 315,  
     324, 333  
*Lophiocarpus*, 324  
*Lophostemon*, 207  
 Loranthaceae, 176, 178, 180,  
     312  
*Loranthus*, 179  
*Loropetalum*, 187  
 Lowiaceae, 142, 144  
*Ludwigia*, 205  
*Lumnizera*, 203  
*Luronium*, 108  
*Luronium natans*, 108  
*Lyallia*, 337  
*Lycania*, 248  
*Lychnis*, 26  
*Lycianthes*, 377  
*Lysiana*, 179  
*Lysimachia*, 360, 363  
 Lysimachiaceae, 363  
*Lysoloma*, 278  
 Lythraceae, 16, 24, 30, 38,  
     205  
*Lythrum*, 205  
*Macarthuria*, 54, 316, 333  
 Macarthuriaceae, 314, 316,  
     317  
*Macleania stricta*, 368  
*Macleaya*, 5, 108, 152  
*Macleaya microcarpa*, 150  
*Maddenia*, 284  
*Madhuca*, 356, 358  
*Maesa*, 360  
 Maesaceae, 71, 359  
 Maesoideae, 360  
*Magnolia demudata*, 85  
*Magnolia paenetaulauma*, 84  
*Magnolia stellata*, 85, 86  
 Magnoliaceae, 7, 24, 35, 82,  
     84, 419  
 Magnoliales, 16, 82, 86, 89,  
     418, 419  
 Magnoliidae, 74, 161  
 magnoliids, 19, 102  
*Magodendron*, 358  
*Mahonia*, 157  
*Maidenia*, 113  
*Maingaya*, 187  
*Malesherbia*, 258  
 Malesherbiaceae, 256, 258  
 Maloideae, 287  
*Malope*, 23, 237  
*Maloutchia*, 82, 84  
 Malpighiales, 426  
*Malpighia*, 250  
 Malpighiaceae, 27, 31, 246,  
     250  
 Malpighiales, 71, 218, 241,  
     245, 364, 424, 425  
*Malva*, 30  
 Malvaceae, 7, 10, 12, 14, 16,  
     18, 23, 30, 40, 56, 70,  
     183, 230, 234, 236,  
     237, 238, 241, 315,  
     344, 346, 347, 380,  
     416, 425, 426  
 Malvales, 40, 230, 233, 271,  
     306, 424  
*Malvatheca* clade, 236, 241  
 Malvidae. *See* malvids  
 malvids, 184, 196, 242, 425  
 Malvoideae, 230, 236, 237,  
     241, 416  
 Malvoideae-Malopeae, 237  
 Malvoideae-Ureneae, 237  
*Mangifera*, 217

## 516 Index

- Manihot*, 263  
*Manihot esculenta*, 263  
*Manilkara*, 38, 39, 312, 356  
*Manilkara zapota*, 356  
 Marantaceae, 33, 142, 146,  
     147  
*Maranthes*, 250  
*Marcgravia*, 351  
 Marcgraviaceae, 29, 348, 349,  
     351, 368  
*Mastixiodendron*, 372  
 Matisieae, 236  
*Matudea*, 187  
*Meconella*, 150  
*Medinilla magnifica*, 209  
 Medusagynaceae, 254  
*Medusagyne*, 20, 256, 270  
*Megacarpaea*, 228  
*Melaleuca*, 207  
*Melampyrum*, 30  
 Melanthiaceae, 120, 121, 422  
 Melastomataceae, 27, 209,  
     210  
 Meliaceae, 10, 212  
 Melianthaceae, 47,  
     57, 199  
*Melianthus*, 47, 57,  
     196, 201  
*Melianthus major*, 199  
*Meliosma*, 161, 162  
*Meliosma alba*, 161  
*Meliosma dillenifolia*, 161  
 Meliosmaceae, 161  
*Memecylon*, 27  
*Mendoncia*, 391  
 Menispermaceae, 32, 148,  
     153, 155, 157, 162,  
     291, 416  
*Mentzelia*, 346, 347  
 Menyanthaceae, 407, 412  
*Mercurialis*, 263  
 merism, 8, 23, 31, 36, 39, 52,  
     58, 157, 205, 243,  
     268, 297, 429, 432  
 change, 6, 38, 39, 79, 313,  
     359, 398, 420  
 dimery, dimerous flower,  
     13, 36, 38, 39, 79, 80,  
     89, 92, 93, 94, 104,  
     108, 114, 117, 130,  
     136, 138, 141, 148,  
     150, 155, 157, 158,  
     160, 163, 165, 168,  
     170, 171, 190, 227,  
     228, 268, 289,  
     292, 293, 310, 313,  
     333, 419, 420,  
     422, 423  
     origin, 36  
 heptamery, heptamerous  
     flower, 93, 178,  
     363  
 hexamery, hexamerous  
     flower, 38, 39, 60,  
     101, 178, 202, 205,  
     248, 261, 268, 288,  
     292, 293, 294, 297,  
     309, 310, 312, 313,  
     346, 351, 356, 374,  
     408  
 increase, 23, 32, 38, 39,  
     184, 190, 205, 210,  
     214, 219, 356, 377,  
     379  
     anisomerous, 38, 39,  
     232, 248, 356, 388  
     isomerous, 38, 190, 356  
 indefinite, 36, 148  
 octomery, octomerous  
     flower, 261, 346,  
     356, 359, 379  
 pentamery, pentamerous  
     flower, 11, 16, 32,  
     36, 38, 39, 40, 52, 55,  
     72, 79, 84, 117, 122,  
     148, 157, 158, 160,  
     161, 163, 170, 172,  
     178, 180, 181, 184,  
     187, 190, 192, 196,  
     197, 200, 201, 202,  
     207, 209, 211, 216,  
     218, 219, 228, 245,  
     254, 263, 268, 272,  
     276, 284, 288, 292,  
     293, 297, 301, 310,  
     312, 314, 316, 327,  
     329, 331, 333, 335,  
     337, 346, 351, 356,  
     360, 363, 365, 374,  
     377, 379, 381, 385,  
     398, 406, 408, 420,  
     422, 423, 425, 426  
     origin, 36  
 reduction, 32  
 tetramery, tetramerous  
     flower, 11, 34, 36,  
     37, 38, 39, 52, 55, 60,  
     79, 80, 86, 93, 122,  
     130, 131, 163, 178,  
     180, 184, 187, 190,  
     192, 196, 200, 201,  
     202, 205, 207, 209,  
     211, 216, 218, 219,  
     223, 225, 227, 228,  
     230, 248, 263, 268,  
     270, 271, 284, 285,  
     288, 290, 292, 293,  
     304, 309, 310, 312,  
     313, 314, 317, 327,  
     329, 331, 333, 335,  
     346, 351, 356, 359,  
     360, 374, 381, 383,  
     385, 391, 396, 398,  
     399, 421, 425, 429,  
     430  
     origin, 55  
 trimery, trimerous flower,  
     8, 13, 32, 36, 37, 38,  
     39, 52, 77, 79, 82, 84,  
     86, 89, 93, 96, 99,  
     102, 104, 105, 108,  
     117, 119, 128, 130,

- 131, 136, 138, 140,  
 148, 150, 153, 154,  
 155, 157, 160, 163,  
 178, 180, 190, 216,  
 234, 245, 263, 268,  
 276, 284, 297, 310,  
 312, 313, 316, 368,  
 419, 420, 421  
 origin, 36  
 variable, 47, 79, 89, 93,  
 102, 117, 120, 122,  
 148, 154, 181, 205,  
 248, 261, 263, 290,  
 292, 344, 353, 372,  
 383, 404, 408  
 merosity. *See* merism  
*Meryta*, 404  
 Mesembryanthemoideae,  
 327  
*Mesembryanthemum*, 327  
*Mesembryanthemum*  
*nodiflorum*, 326  
*Mespilus*, 287  
 Metteniusales, 73, 370  
 Mezzetiopsis, 86, 88  
*Michauxia*, 408  
*Michelia champaca*, 85  
*Michelia figo*, 84  
*Michelia montana*, 86  
*Micromyrtus*, 209  
*Microtea*, 329  
 Microteaceae, 314, 319  
 mimic, mimicry, 29, 100,  
 158, 222, 236, 258,  
 293  
*Mimosa*, 278  
 mimosoid clade, 277  
 Mimosoideae, 274, 275, 276  
 mimosoids, 275, 276, 277, 278  
*Mimusops*, 357  
*Mirabilis*, 7, 331  
 Misodendraceae, 176, 178  
*Mitchella*, 372  
*Mitella*, 193  
*Mitrasacmopsis*, 372  
*Mohavea*, 60  
 Molluginaceae, 301, 317, 325  
*Mollugo*, 54, 243, 333  
*Mollugo cerviana*, 333  
*Mollugo nudicaulis*, 333  
*Mollugo verticillata*, 333  
 monadelphous,  
 monadelphous, 331,  
*See* stamen:fusion  
*Monanthes*, 190  
*Monanthesotaxis*, 39, 86  
*Monanthesotaxis whytei*, 86  
 Monimiaceae, 20, 37, 39, 89,  
 93, 94, 96, 209, 419  
*Monococcus echinophorus*, 333  
 monocots, 7, 8, 9, 14, 20, 23,  
 26, 27, 30, 36, 55, 56,  
 58, 70, 73, 74, 102,  
 105, 115, 129, 310,  
 420, 421  
 basal, 11, 102, 419  
*Monodora*, 88, 420  
 monomerous. *See*  
 gynoecium:  
 monocarpellate  
*Monopetalanthus*, 279  
 monopodial. *See*  
 inflorescence:  
 raceme, racemose  
 monotelic. *See* inflorescence:  
 cyme, cymose  
 Monotropaceae, 368  
*Monsonia*, 197, 199  
*Montia*, 337  
*Montia fontana*, 337  
 Montiaceae, 165, 317, 335,  
 337  
 Montiniaceae, 377, 427  
 Montinioideae, 193  
*Monttea*, 388  
*Mora*, 278  
 Moraceae, 283  
*Morina*, 398  
 Morinaceae, 396  
 Morineae, 398  
*Moringa*, 50  
*Moringa concanensis*, 222  
*Moringa oleifera*, 222  
 Moringaceae, 31, 218, 222  
 Moringoid clade, 218, 220  
 multistaminate androecium.  
*See* polyandry  
*Muraltia*, 274  
*Musa*, 144  
*Musa campestris*, 143, 144  
 Musaceae, 142, 143, 144  
*Mussaenda*, 30, 372  
 mustard oils, 218  
*Mutisia*, 388  
 mycoheterotropy,  
 mycoheterotropic,  
 117  
*Myconia*, 210  
 Myoporaceae, 388  
*Myosurus*, 24  
*Myrcia*, 207  
*Myricaria*, 306  
*Myriophyllum*, 190  
*Myristica*, 84  
*Myristica fragrans*, 82  
 Myristicaceae, 82, 304, 416  
 Myrothamnaceae, 7, 170  
 Myrsinaceae, 71, 359  
*Myrsine*, 363  
 Myrsinoideae, 22, 359, 360,  
 363  
 Myrtaceae, 25, 27, 28, 41, 201,  
 202, 207, 209, 278,  
 284, 285, 417, 424,  
 426  
 Myrtales, 201, 424  
 Namaceae, 379  
*Nandina*, 157  
 Nanodeaceae, 179  
*Napoleonaea*, 41, 51, 354  
*Napoleonaea vogelii*, 353

## 518 Index

- Narcissus*, 51, 129  
 Nartheciaceae, 115  
*Narthecium*, 115  
*Nasa*, 347  
 nectar, 27, 50, 51, 77, 80, 81,  
   86, 120, 127, 131,  
   157, 160, 176, 188,  
   199, 201, 210, 281,  
   293, 354, 419, 420  
 nectar container, 6, 12, 27,  
   258, 274, 347, 375,  
   380, 392, 408  
 nectar disc, 26, 27, 163, 174,  
   176, 180, 192, 196,  
   202, 211, 212, 214,  
   216, 218, 232, 243,  
   245, 252, 268, 269,  
   271, 274, 277, 288,  
   292, 310, 342, 344,  
   349, 352, 354, 358,  
   359, 366, 368, 370,  
   374, 377, 380, 386,  
   388, 391, 393, 395,  
   401, 407, 420, 424,  
   429  
   absence of, 195  
 nectar gland, 27, 51, 52, 88,  
   89, 91, 94, 95, 100,  
   145, 146, 165, 175,  
   187, 210, 224, 225,  
   245, 248, 250, 260,  
   262, 265, 268, 269,  
   289, 370, 374, 386,  
   424, 425, 429  
 nectar guide, 6  
 nectar spur, 27, 51, 350,  
   374  
 nectariole, 78, 420  
 nectary, 4, 12, 26, 27, 42, 45,  
   51, 52, 53, 63, 77, 80,  
   93, 113, 152, 165,  
   168, 175, 209, 212,  
   214, 245, 260, 271,  
   276, 314, 354, 363,  
   368, 379, 408, 424,  
   425  
 abaxial, 207  
 absence of, 82, 91, 106,  
   108, 114, 115, 120,  
   123, 124, 133, 135,  
   136, 157, 165, 169,  
   181, 196, 201, 210,  
   212, 222, 234, 250,  
   254, 281, 293, 304,  
   320, 323, 333, 347,  
   349, 358, 366, 368,  
   391, 401  
 adaxial, 199, 201, 226, 409  
 alternisepalous, 265  
 antepetalous, 272, 370  
 antesepalous, 262, 273  
 bract, 29  
 epigynous, 202, 205, 342,  
   344, 346, 347, 372,  
   405, 406, 407, 408,  
   428, 429  
 extrastaminal, 174, 196,  
   199, 212, 214, 224,  
   243, 265, 266, 267,  
   268, 272, 292, 424,  
   425  
 gynoecial, 27, 168, 190,  
   349, 360, 361, 363,  
   384, 395, 396, 402,  
   403, 424, 429, 431  
 hypanthial, 27, 193, 202,  
   206, 207, 222, 250,  
   283, 287, 289, 292,  
   310, 424, 427  
 interstaminal, 164, 180,  
   196, 199, 271  
 intrastaminal, 188, 196,  
   211, 212, 216, 218,  
   243, 248, 269, 271,  
   277, 287, 292, 301,  
   306, 313, 322, 323,  
   327, 329, 331, 335,  
   340, 344, 354, 366,  
   368, 395, 424, 426,  
   429  
 loss, 102, 134, 142, 158,  
   188, 195  
 origin of, 27  
 perigonal, 104, 110, 115,  
   120, 123, 127  
 receptacular, 162, 199,  
   201, 228, 252, 262,  
   425  
 scale. *See* nectar gland  
 septal, 26, 27, 102, 104,  
   115, 117, 120, 123,  
   124, 126, 127, 129,  
   131, 133, 136, 142,  
   144, 145, 147, 168,  
   421  
 staminodial, 224  
 stylar, 27, 113  
 tepal. *See* perigonal  
 trichome, 26, 27, 123, 218,  
   234, 237, 241, 292,  
   349, 360, 363, 396,  
   397, 399, 401, 431  
*Nelsonia*, 391  
*Nelumbo*, 165  
*Nelumbo nucifera*, 165  
 Nelumbonaceae, 36, 161,  
   165, 423  
*Nemacladus*, 408  
 Nemaclouideae, 408  
 Nepenthaceae, 301, 303, 416  
*Nepenthes*, 84, 238, 304  
*Nepenthes alata*, 303  
*Nepenthes hirsuta*, 303  
*Neptunia*, 278  
*Nerium*, 377  
*Nerium oleander*, 374  
*Neurada*, 30, 230, 256  
*Neurada procumbens*, 230  
 Neuradaceae, 230  
*Neviusia*, 284  
*Nicotiana*, 379  
*Nieuwiedia*, 124

- Nigella*, 52, 158  
*Nitraria*, 18  
 Nitrariaceae, 18  
 nitrogen-fixing clade, 241, 425  
 non homologous. *See*  
   character evolution:  
     homoplasy,  
     homoplastic  
 Nothofagaceae, 295, 298  
*Notobuxus*, 168  
*Nuphar*, 78, 80  
*Nuytsia*, 178  
 Nyctaginaceae, 7, 314, 317, 319, 329, 330, 331  
*Nyctanthes*, 383  
*Nymphaea*, 7, 20, 79, 80  
*Nymphaea alba*, 78  
 Nymphaeaceae, 21, 37, 39, 77, 78, 79, 80, 165, 419  
 Nymphaeales, 74, 77, 110, 418  
*Nypa*, 131  
 obturator, 22, 152, 214, 262, 268, 313, 404  
*Ochlandra*, 139  
*Ochna atropurpurea*, 256  
*Ochna multiflora*, 254, 256  
 Ochnaceae, 254, 270, 424  
*Ochroma*, 236  
*Odontonema strictum*, 391  
 Oftiaceae, 388  
 oil-secreting gland. *See*  
   elaiophore  
 Olacaceae, 176, 177, 178  
*Olax*, 178  
 Oleaceae, 5, 380, 381, 383, 385  
*Oligarrhena*, 368  
 Oliniaceae, 202  
*Omphalocarpum*, 348, 358  
 Onagraceae, 24, 27, 32, 204, 205  
*Oncidium altissimum*, 124  
*Ondinea*, 80  
*Ophiocaryon*, 161, 162  
 Opiliaceae, 176, 178  
 Orchidaceae, 22, 32, 40, 46, 57, 114, 124, 125, 126, 422  
 Orchidoideae, 125  
 organ  
   abortion, 53, 57, 63  
   loss, 53, 63  
 Orobanchaceae, 30, 51, 387, 429  
 Orontioideae, 108  
*Orontium*, 108  
*Orophea*, 86  
*Oroxylum*, 383  
*Orphium*, 374  
*Oryza*, 58  
*Oryza sativa*, 137, 139  
*Osmanthus delavayi*, 383  
 osmophore, 12, 107, 117  
*Osyris*, 180  
*Ottelia*, 113  
*Ouratea*, 254  
 ovary, 3, 63  
   abortion, 356  
   bicarpellate, 135, 141, 142, 152, 162, 168, 186, 187, 195, 202, 206, 214, 214, 223, 225, 228, 232, 256, 265, 268, 269, 270, 271, 283, 287, 290, 310, 323, 337, 341, 370, 375, 377, 379, 381, 383, 384, 386, 388, 391, 393, 402, 404, 406, 408, 410, 424, 429, 430  
   bilocular, 135, 224  
   multilocular, 21, 388  
   orientation, 56, 399  
     diagonal, 165  
   inverted, 260, 306, 308, 310  
   median, 56, 92, 270, 300, 429, 430  
   oblique, 56, 224, 325, 333, 377  
   transversal, 56, 92, 152, 214, 248, 300, 310  
   variable, 127, 164, 186, 214  
 pentacarpellate, 178, 182, 202, 204, 233, 241, 245, 256, 260, 267, 273, 317, 337, 349, 351, 365, 368, 370, 379, 399, 402, 406, 408, 424  
 pluricarpellate, 23, 89, 270, 402  
 position  
   half-inferior, 24, 47, 63, 89, 167, 171, 180, 184, 187, 192, 200, 202, 206, 212, 243, 248, 262, 270, 287, 327, 339, 340, 341, 353, 360, 366, 386, 426, 428  
   inferior, 24, 26, 41, 42, 47, 63, 89, 93, 97, 101, 111, 113, 115, 117, 120, 123, 124, 126, 127, 129, 142, 144, 145, 146, 147, 171, 176, 180, 187, 190, 192, 193, 202, 205, 207, 209, 212, 248, 270, 287, 288, 289, 291, 293, 300, 327, 339, 340, 353, 368, 370, 372, 386, 394, 396, 397, 399, 402, 404, 406, 410, 416, 421, 424, 426, 428, 429, 430

## 520 Index

- ovary (cont.)  
 superior, 24, 26, 42, 120,  
 121, 123, 124, 129,  
 162, 176, 180, 187,  
 193, 196, 199, 202,  
 205, 206, 209, 212,  
 212, 216, 218, 222,  
 232, 237, 245, 251,  
 252, 254, 258, 259,  
 261, 262, 269, 270,  
 272, 277, 287, 300,  
 305, 310, 314, 331,  
 340, 341, 356, 368,  
 370, 375, 377, 380,  
 381, 383, 384, 386,  
 391, 393, 404, 416,  
 424, 425, 429  
 secondary, 133, 372,  
 403, 404  
 tetracarpellate, 101, 310,  
 399  
 tricarpetate, 54, 101, 123,  
 127, 131, 133, 134,  
 135, 139, 141, 142,  
 168, 176, 178, 180,  
 182, 195, 214, 219,  
 233, 241, 243, 245,  
 249, 250, 258, 260,  
 265, 267, 268, 269,  
 271, 287, 291, 304,  
 306, 308, 310, 323,  
 334, 337, 349, 352,  
 365, 368, 399, 406,  
 408, 422, 424, 425,  
 430  
 trilocular, 135  
 unilocular, 20, 21, 88, 126,  
 179, 212, 232, 237,  
 283, 291, 323, 374,  
 388, 404  
 zone  
 plicate, 212  
 symplicate, 18, 21,  
 50, 193, 212,  
 404  
 synascidiate, 18, 22, 50,  
 193, 196, 212  
 ovule, 3, 4, 18, 21, 22, 63, 179,  
 304  
 abortion, 23, 53, 90, 155,  
 187, 190, 230, 287,  
 308, 396, 399, 401,  
 404, 406, 431  
 development, 26  
 centrifugal, 323  
 endosperm, 283, 341  
 funiculus, 22, 63, 214, 313,  
 392  
 absence of, 180  
 integuments, 178, 181  
 ategmic, 176, 179  
 bitegmic, 176, 428  
 unitegmic, 176, 341,  
 370, 428  
 micropyle, 22  
 nucellar beak, 262, 268  
 number, 22, 50, 78, 86, 90,  
 97, 101, 113, 121,  
 124, 126, 127, 145,  
 147, 157, 164, 167,  
 174, 183, 188, 192,  
 200, 201, 202, 204,  
 205, 209, 212, 212,  
 222, 237, 251, 256,  
 272, 285, 291, 293,  
 304, 322, 326, 337,  
 344, 346, 352, 359,  
 360, 363, 368, 370,  
 373, 377, 379, 380,  
 383, 384, 386, 391,  
 395, 399, 403, 408  
 increase, 6, 119, 152, 323  
 pair, 22, 63, 108, 117,  
 123, 129, 162, 168,  
 175, 187, 195, 196,  
 199, 209, 212, 214,  
 216, 224, 230, 234,  
 237, 238, 245, 248,  
 250, 252, 268, 269,  
 287, 294, 306, 320,  
 340, 359, 379, 380,  
 384, 393, 399, 426  
 single, 22, 23, 63, 89,  
 93, 110, 114, 117,  
 123, 130, 131, 136,  
 139, 142, 152, 160,  
 164, 165, 171, 190,  
 199, 201, 212, 214,  
 216, 219, 224, 232,  
 237, 245, 250, 262,  
 265, 269, 274, 283,  
 287, 290, 294, 295,  
 308, 310, 320, 322,  
 323, 325, 329, 331,  
 340, 351, 358, 370,  
 373, 379, 395, 396,  
 399, 404, 406, 410,  
 425, 427, 429, 430  
 orientation, 50, 63  
 antitropous, 22, 218,  
 232, 248, 262, 265,  
 267, 268  
 apotropous, 283, 396  
 syntropous, 22, 218  
 perisperm, 301  
 reduction, 5, 53, 129, 136,  
 145, 183, 204, 237,  
 272, 294, 340, 351,  
 360, 399, 402, 422,  
 429  
 shape  
 anatropous, 22, 63, 82,  
 92, 94, 110, 113,  
 141, 165, 246, 289,  
 313, 314  
 atropous, 22  
 campylotropous, 22,  
 181, 218, 225, 301,  
 425  
 orthotropous, 22, 63, 77,  
 96, 106, 113, 137,  
 164, 300, 310  
 Oxalidaceae, 22, 67, 271  
 Oxalidales, 241, 268, 424  
*Oxalis*, 41

- Oxybaphus*, 331  
*Oxygonum*, 312  
*Oxyria*, 313  
  
*Pachira*, 236  
*Pachynema*, 51  
*Pachyphragma macrophyllum*,  
     227  
*Pachysandra*, 169  
*Paederia*, 41, 372  
*Paonia delavayi*, 187  
*Paonia officinalis*, 189  
*Paonia veitchii*, 188  
Paeoniaceae, 10, 36, 175, 186,  
     187, 188  
*Palandra*, 130, 131  
*Palaquium*, 356, 357  
*Palaquium amboinense*, 356  
*Palisota*, 134  
*Panax*, 404  
*Pancreatium*, 51  
Pandaceae, 262  
Pandanales, 103, 117, 420  
*Panicum*, 139  
*Papaver*, 21, 52, 152  
Papaveraceae, 5, 7, 13, 14, 18,  
     21, 31, 35, 52, 67, 88,  
     108, 148, 150, 152,  
     165, 227, 284, 363,  
     419  
Papaveroideae, 152  
Papilionoideae, 55, 274, 275,  
     279  
pappus, 59, 410, 430  
paracorolla. *See* corona  
Paracryphiales, 73, 395  
*Parathesis*, 363  
Parietal clade, 246, 256  
Parietales, 67  
*Paris*, 122, 420  
*Paris polyphylla*, 121  
*Paris tetraphylla*, 122  
*Parnassia*, 27, 193, 243, 245  
Parnassiaceae, 243  
Paronychieae, 320  
Paronychioideae, 320  
*Parrotia*, 187  
*Parrotiopsis*, 187  
*Parthenocissus*, 196  
*Passiflora*, 51, 256  
*Passiflora coriacea*, 258  
*Passiflora lobata*, 258  
*Passiflora vitifolia*, 256, 258  
Passifloraceae, 21, 26, 30, 51,  
     256, 258, 259  
*Patrinia*, 398  
*Patrinia pentandra*, 398  
*Pavonia*, 24, 237  
*Payena*, 356  
*Payena leerii*, 356  
pedicel, 30, 162, 360  
     absence of, 277  
     constriction, 265  
     curvature, 126, 374  
     torsion, 46, 250, 409  
*Peganum*, 18  
*Pelargonium*, 33, 50, 51, 196,  
     197, 199  
*Pelargonium abrotanifolium*,  
     196  
Penaeeaceae, 202  
*Penstemon*, 388, 390, 430  
*Penstemon fruticosus*, 386  
*Pentaclethra*, 278  
*Pentadiplandra*, 219, 228  
Pentadiplandraceae, 219, 228  
Pentapetalae, 7, 8, 10, 14, 15,  
     16, 20, 21, 23, 26, 35,  
     36, 55, 56, 58, 59, 70,  
     102, 148, 161, 170,  
     172, 174, 176, 184,  
     189, 252, 301, 315,  
     326, 408, 410, 421,  
     422, 423, 424, 426  
*Pentaphylax*, 355  
Pentaphyllaceae, 10, 36, 348,  
     355, 367  
*Pentastemona*, 117, 420  
Penthoreaceae, 184  
*Peperomia*, 100, 101  
*Pera*, 266  
Peraceae, 262  
*Pereskia*, 338, 340  
*Pereskia aculeata*, 340  
perianth, 4, 6, 16, 24, 29, 30,  
     35, 36, 38, 39, 59, 61,  
     74, 84, 86, 97, 104,  
     105, 108, 113, 124,  
     127, 139, 141, 145,  
     146, 154, 165, 202,  
     234, 281, 308, 337,  
     339, 354, 404,  
     417  
     absence of, 53, 72, 82, 96,  
     100, 101, 111, 141,  
     149, 168, 169, 266,  
     295, 299, 384, 422  
     appendage, 51, 117, 120  
     bipartite. *See* perianth:  
         differentiated  
     biseriate. *See* perianth:  
         differentiated  
     bristle, 136, 141  
     development, 46, 54, 99,  
     265, 295  
     differentiated, 4, 6, 7, 8, 30,  
     39, 50, 61, 77, 77, 80,  
     85, 108, 110, 111,  
     115, 120, 122, 124,  
     134, 136, 144, 150,  
     157, 158, 160, 169,  
     172, 176, 309, 325,  
     331, 419, 421, 422,  
     423, 425  
     dimorphism, dimorphic,  
     142  
     evolution, 426  
     fusion, 144  
     heteromorphy,  
         heteromorphic,  
         310



## 522 Index

- perianth (cont.)  
 homology, homologous,  
   59, 422  
 incomplete, 114  
 increase, 35, 189, 276, 339,  
   383  
 initiation sequence, 39,  
   75  
   spiral, 252, 331  
 loss, 8, 36, 47, 53, 96, 101,  
   136, 157, 167, 170,  
   185, 223  
 origin, 8, 97, 157, 164, 170,  
   176, 262, 299, 314  
 petaloid, 5, 6, 9, 158, 314,  
   426  
 reduction, 5, 8, 9, 20, 53,  
   59, 72, 95, 96, 111,  
   113, 114, 117, 131,  
   136, 139, 155, 187,  
   262, 265, 283, 294,  
   299, 384, 419  
 sepaloid, 6, 99  
 shape  
   bilabiate, 164  
 spiral, 9, 36, 158, 175, 181,  
   186, 308, 337, 338,  
   344  
 tube, 51, 82, 97, 331  
 undifferentiated, 4, 6, 7, 8,  
   9, 37, 59, 77, 80, 91,  
   93, 96, 99, 105, 110,  
   115, 117, 120, 122,  
   133, 136, 144, 155,  
   158, 160, 164, 168,  
   170, 173, 174, 300,  
   337, 423  
 variable, 423  
 whorled, 82, 148, 158, 160,  
   419  
 perigone. *See* tepals  
 perigynous. *See* ovary:  
   position:half-  
   inferior  
*Periploca*, 375  
*Periploca graeca*, 374  
*Perovskia*, 393  
*Persea americana*, 91  
*Persicaria*, 309, 310, 312  
*Persicaria lapathifolia*, 308  
*Persicaria virginiana*, 312  
 petal, 4, 6, 9, 36, 39, 40, 61,  
   326  
   abortion, 47, 97, 279, 281  
   absence of, 80, 86, 97, 190,  
     192, 196, 199, 202,  
     205, 211, 217, 225,  
     228, 234, 248, 258,  
     263, 265, 268, 270,  
     285, 287, 290, 292,  
     294, 314, 322, 333,  
     363, 368, 422  
   appendage, 9, 50, 51, 148,  
     160, 214, 214, 246,  
     305, 308, 321, 372,  
     380  
   caducous, 108, 181, 207  
   delayed growth, 8, 9, 10,  
     36, 54, 56, 78, 110,  
     122, 150, 186, 193,  
     199, 344, 352, 360  
   development, 341  
   elaborations, 6, 10, 152,  
     271, 276, 425  
   fusion, 33, 34, 41, 60, 155,  
     190, 196, 216, 252,  
     354, 357, 368, 385,  
     388, 396, 399, 403,  
     410, 429, 430  
   heteromorphy,  
     heteromorphic,  
       162, 260  
   increase, 80, 86, 88, 165,  
     404  
   initiation sequence  
     quincuncial, 355, 366  
     spiral, 10, 36, 165, 183,  
       187, 207, 211, 348,  
       352, 355, 365  
   unidirectional, 183  
   whorled, 278  
 loss, 5, 7, 10, 16, 24, 36, 38,  
   99, 122, 158, 164,  
   170, 181, 184, 187,  
   193, 201, 202, 205,  
   214, 230, 234, 263,  
   271, 276, 303, 314,  
   315, 317, 344, 388,  
   425, 426, 427  
 orientation, 33, 55, 391,  
   393, 395, 408, 410  
   diagonal, 55, 228  
 origin, 8, 10, 149, 284, 285,  
   426  
   andropetal, 10, 122  
   bracteopetal, 10  
 paired, 157, 178, 222, 228,  
   230, 274, 350, 368  
 persistent, 110  
 rapid growth, 10, 344  
 reduction, 10, 24, 53, 86,  
   97, 122, 135, 170,  
   184, 185, 186, 187,  
   190, 202, 205, 214,  
   219, 230, 263, 276,  
   278, 293  
 ring primordium, 341, 343,  
   360, 412, 428  
 sepaloid, 207  
 shape  
   bilabiate, 33, 47, 55, 380,  
     386, 388, 391, 393,  
     399, 429  
   bilobed, 8, 9, 10, 162,  
     230, 321, 385, 407  
   clawed, 9, 205, 219, 223,  
     225, 226, 228, 250,  
     260, 267, 276, 283,  
     284, 321, 406,  
     425  
   coiled, 187  
   crested, 350  
   crumpled, 150, 181, 205,  
     233  
   fringed, 425

- hooded, 10, 146, 238,  
 248, 287  
 reflexed, 223, 363  
 sheathlike, 155  
 trilobed, 9, 152, 269,  
 271, 357, 358, 388  
 staminodial, 10, 61, 99,  
 149, 150, 158, 187,  
 231, 283, 284, 293,  
 423  
 tube, 10, 41, 42, 86, 277,  
 278, 349, 360, 361,  
 365, 366, 368, 372,  
 374, 377, 379, 391,  
 396, 428, 429, 430  
 absence of, 425  
 loss, 377  
 whorled, 9  
*Petaladenium*, 281  
 petaloid, 314, 315, 320, 335,  
 337, 338  
 petaloidy, 60, 61, 150, 309,  
 314, 325, 339, 351,  
 426  
 absence of, 61  
*Petalonyx*, 346  
*Petalostylis*, 277  
*Petiveria*, 333  
*Petiveria alliacea*, 331  
 Petiveriaceae, 317, 319, 326,  
 329, 331, 332, 333,  
 426  
 Petrosaviales, 73, 102  
*Petunia*, 379  
*Peumus*, 94  
 Phaseoleae, 276, 281  
 pherophyll. *See* bract  
*Philadelphus*, 344  
*Philbornea*, 268  
*Philodendron*, 107  
*Phlebocarya*, 133  
*Phlox*, 352  
*Photinia*, 283  
*Phthirusa*, 178  
*Phthirusa pyrifolia*, 178  
 Phylidraceae, 131  
 Phyllanthaceae, 262, 268  
*Phyllanthus checkiangensis*, 268  
*Phyllonoma*, 395  
 Phyllonomaceae, 395  
 phyllotaxis, 5, 8, 13, 34, 35,  
 36, 46, 54, 58, 158,  
 419, 432  
 chaotic, 89, 265  
 decussate, 7, 77, 90, 92,  
 168, 252  
 distichous, 97, 138, 171  
 divergence angle, 34  
 Fibonacci series, 34, 90  
 irregular, 419  
 orthostichies, 34  
 parastichies, 34, 80, 88,  
 107, 421  
 perianth, 365  
 plastochron, 7, 34, 35,  
 169  
 spiral, 7, 8, 30, 35, 36, 77,  
 79, 85, 88, 89, 93,  
 168, 418, 419  
 variable, 89  
 whorled, 35, 36, 39, 40, 77,  
 79, 80, 85, 88, 89, 90,  
 418, 419  
 phylogeny, xii, 4, 8, 11, 23,  
 35, 55, 99, 102, 241,  
 297, 312, 320, 348,  
 398, 432, 433  
 molecular, 67, 68, 70, 74,  
 96, 105, 161, 170,  
 174, 193, 201, 301,  
 312, 333, 337, 393,  
 397  
 monophyletic group, 71,  
 176  
 morphological, 74  
 paraphyletic group, 70, 71,  
 176, 178, 274, 329,  
 333, 335, 397, 401  
 parsimony, parsimonious,  
 219, 348, 416  
 polyphyletic group, 93,  
 234, 380  
 premolecular, 67, 70, 165,  
 230, 238, 261, 266,  
 324, 347  
 relationships, 67, 68, 69,  
 70, 71, 74, 96, 102,  
 181, 184, 278, 302,  
 316, 348, 370, 380,  
 391, 406, 425  
 tree, 68, 69, 136, 172, 184,  
 196, 370, 393, 415,  
 416, 418  
*Physalis*, 7, 379  
 Physenaceae, 314, 319  
 Phytelephantoid palms,  
 131  
*Phytolacca*, 318  
*Phytolacca acinosa*, 329  
*Phytolacca americana*, 329  
*Phytolacca dioica*, 329  
*Phytolacca dodecandra*, 327,  
 329  
*Phytolacca esculenta*, 329  
 Phytolaccaceae, 16, 30, 301,  
 316, 317, 318, 324,  
 326, 327, 328, 329,  
 331  
 Phytolaccoid clade, 314, 315,  
 327  
 Picodendraceae, 262, 268  
 Picramniales, 73  
*Pimelea*, 230, 232  
*Piper*, 28, 101  
 Piperaceae, 96, 100, 101  
 Piperales, 96, 99, 419, 420  
*Pisonia*, 331  
*Pistacia*, 217  
 pistillode, 110, 131, 137,  
 238, 252, 268, 290,  
 359  
 absence of, 111

## 524 Index

- pistillode (cont.)  
 nectariferous, 53, 113, 131,  
 168, 222  
 Pittosporaceae, 402, 403  
*Pittosporum*, 41  
*Pittosporum tobira*, 402, 403  
 placenta, placentation  
 apical, 21, 92, 93, 106, 123,  
 131, 164, 165, 171,  
 187, 190, 204, 209,  
 219, 232, 250, 271,  
 274, 283, 290, 320,  
 346, 359, 372, 394,  
 395, 396, 399, 404,  
 406, 408, 428, 429,  
 430  
 axile, 20, 21, 50, 121, 123,  
 124, 125, 133, 134,  
 144, 146, 147, 168,  
 178, 193, 196, 200,  
 202, 205, 206, 209,  
 210, 212, 216, 245,  
 248, 252, 254, 256,  
 265, 269, 272, 317,  
 326, 327, 335, 337,  
 340, 344, 356, 365,  
 368, 370, 372, 374,  
 377, 379, 380, 383,  
 384, 406, 422, 425,  
 429, 431  
 basal, 21, 23, 82, 94, 108,  
 110, 114, 117, 133,  
 141, 142, 164, 183,  
 195, 201, 209, 218,  
 224, 283, 287, 289,  
 300, 301, 302, 304,  
 308, 310, 313, 314,  
 317, 322, 323, 325,  
 329, 331, 358, 363,  
 372, 373, 380, 395,  
 406, 410, 427, 429,  
 431  
 fee-central, 21, 22, 71, 176,  
 179, 301, 317, 322,  
 349, 359, 360, 363,  
 427  
 laminar-diffuse, 21, 78, 80,  
 86, 110, 154, 339  
 marginal, 18, 21, 81, 113,  
 157, 164, 167, 175,  
 190, 421, 422  
 parietal, 20, 21, 50, 67, 88,  
 101, 113, 123, 126,  
 134, 146, 152, 174,  
 192, 193, 209, 218,  
 222, 224, 225, 228,  
 245, 254, 256, 258,  
 261, 262, 290, 291,  
 293, 302, 304, 305,  
 306, 308, 317, 327,  
 337, 346, 374, 386,  
 403, 420, 422, 429  
 intruding, 115, 234, 291,  
 304, 344, 377  
 protruding-diffuse, 152,  
 157, 205, 210, 348,  
 370, 373  
*Placospermum*, 164  
 Plagiopteraceae, 243  
*Plagiopteron*, 243, 426  
*Plagiospermum*, 284  
 Plantaginaceae, 43, 51, 380,  
 383, 386, 387, 388,  
 390, 391, 427, 429  
*Plantago*, 60, 388, 391  
 Platanaceae, 161, 164, 422,  
 423  
*Platanus*, 164  
*Platycarya*, 299, 300  
*Platycrater*, 344, 347  
*Platystemon*, 150  
*Platytheca*, 271  
*Pleiogynium*, 217  
*Plerandra*, 404  
*Plethiandra*, 210  
*Pleuropetalum*, 318, 322, 323  
*Pleurostachys*, 141  
*Pleurostyliia*, 245  
*Plinthus*, 327  
*Plowmanianthus*, 134  
*Plowmanianthus perforans*, 134  
 Plumbaginaceae, 301, 312,  
 313, 323, 363, 427  
*Plumbago*, 313  
 Poaceae, 47, 59, 136, 137,  
 138, 139, 422, 429,  
 439  
 Poales, 5, 103, 136, 421  
*Podophyllum*, 157  
*Podophyllum peltatum*, 155,  
 157  
 Podostemaceae, 251  
*Polanisia*, 226, 229  
 Polemoniaceae, 5, 348, 349,  
 351  
 Polemoniales, 347  
 Polemonioid clade, 348, 351  
*Polemonium acutiflorum*, 351  
*Polemonium coeruleum*, 351  
 pollen, 5, 138, 165, 170, 210  
 dimorphism, dimorphic,  
 135  
 dispersal, 6, 19, 22, 88, 135,  
 146, 248, 281, 341,  
 351, 406, 409, 410  
 increase, 6, 15  
 monosulcate, 70  
 tricolpate, 70  
 pollen sac, 3, 10, 51, 53, 80,  
 82, 89, 92, 120, 125,  
 146, 152, 162, 164,  
 271, 377  
 reduction, 99  
 pollination, 5, 9  
 animal, 5, 68, 349  
 bee, 181, 281  
 beetle, 86  
 bird, 201, 205, 293  
 buzz-, 126, 256, 347, 363,  
 374, 379, 386  
 deceit, 126, 135,  
 169, 222

- gnath, 115  
 hawkmoth, 205  
 insect, 5, 6, 27, 77, 100,  
   131, 136, 138, 168,  
   294, 295, 301, 308,  
   319  
 pollinator, 15, 33, 52, 201,  
   354  
   access, 31, 33, 42, 161,  
   392  
   attraction, 5, 7, 9, 26, 27,  
   391  
   interaction, 5, 6, 33, 52,  
   60, 68, 75, 126, 351,  
   354, 375, 421, 432  
 self, 420  
 syndrome, 5, 6, 10, 33, 42,  
   50, 68, 111, 131,  
   142, 146, 162, 170,  
   183, 186, 196, 209,  
   278, 281, 285, 300,  
   351, 354, 358, 371,  
   372, 374, 378, 386,  
   391, 409, 416, 426,  
   428  
   reversal, 5  
 water, 5, 68, 111, 114  
 wind, 5, 27, 53, 68, 72, 77,  
   100, 103, 114, 131,  
   136, 138, 149, 152,  
   158, 168, 170, 185,  
   186, 196, 214, 217,  
   248, 283, 285, 294,  
   295, 300, 308, 319,  
   320, 323, 371, 372,  
   374, 384, 421, 425,  
   426  
 pollinium, 125, 377  
 polyandry, 13, 23, 31, 84, 88,  
   131, 155, 165, 174,  
   181, 182, 189, 210,  
   225, 233, 243, 254,  
   256, 261, 276, 277,  
   283, 300, 306, 347,  
   355, 365, 366, 420,  
   421  
 complex, 13, 14, 57, 181,  
   281, 315, 344, 347,  
   353, 354, 422, 424,  
   425  
 cyclic, 284  
 primary, 13, 14, 16  
 secondary. *See* polyandry:  
   complex  
   spiral, 13, 285  
   whorled, 13  
*Polygala*, 7, 57, 274  
*Polygala x dalmaisiana*, 273  
 Polygalaceae, 57, 273, 274  
 Polygonaceae, 16, 27, 38,  
   179, 297, 301, 304,  
   308, 310, 312, 313,  
   314, 316, 317, 427  
 Polygonales, 71, 301, 303,  
   316, 427  
*Polygonella*, 312  
 Polygonoid clade, 308  
*Polygonum*, 309, 310, 312  
*Polygonum molliaeforme*, 313  
*Polyscias*, 404  
 polytelic, 28  
*Pomaderris*, 287  
 Pontederiaceae, 131, 133,  
   422  
*Popowia*, 88  
*Populus*, 261, 262  
*Portulaca*, 335, 337  
*Portulaca grandiflora*, 337  
*Portulaca kuriensis*, 337  
 Portulacaceae, 301, 318, 335,  
   337  
 Portulacineae, 315, 335, 338,  
   340  
 Portulacineae clade, 314, 335  
 Posidoniaceae, 104  
*Potamogeton*, 28, 55  
 Potamogetonaceae, 55, 104,  
   114, 165  
*Potentilla*, 30, 284, 285  
*Potentilla fruticosa*, 283  
*Poteranthera*, 210  
*Poterium*, 5  
*Poupartia*, 218  
*Pouteria*, 357  
*Praravinia*, 372  
 Primulaceae, 11, 12, 19,  
   21, 22, 42, 70, 349,  
   359, 361, 363,  
   428  
 Primulales, 347, 359  
 Primuloid clade, 70, 348, 349,  
   356, 360  
 Primuloideae, 360, 361, 363  
 prophyll. *See* bracteole  
*Proserpinaca*, 190  
*Protea*, 163  
 Proteaceae, 5, 161, 163, 164,  
   179, 368, 422  
 Proteales, 67, 148, 161, 165,  
   416, 422  
 Prunoideae, 287  
*Prunus*, 7, 284, 287  
 pseudanthium,  
   pseudanthial, 3, 28,  
   29, 32, 104, 107,  
   117, 118, 136, 141,  
   163, 186, 187, 265,  
   266, 341, 372, 395,  
   410, 428  
 pseudocorolla. *See* corona  
 pseudodiplostemony, 316  
 pseudoflower. *See*  
   pseudanthium,  
   pseudanthial  
 pseudofruit, 89  
 pseudomonometry, 19, 23,  
   108, 131, 133, 134,  
   136, 137, 139, 171,  
   217, 224, 232, 245,  
   249, 283, 290, 300,  
   370, 373, 380, 391,  
   395, 396, 397, 399,

## 526 Index

- 401, 404, 406, 420,  
 422, 424, 429, 430  
 pseudonectary, 27, 408  
 pseudoperianth, 95  
 pseudostaminode, 51, 195,  
 245, 262, 323  
 pseudostigma. *See*  
 hyperstigma  
*Pseuduvaria*, 88  
*Psiloxylon*, 209  
*Psittacanthus*, 179  
*Psychotria poeppigiana*, 372  
*Pteridophyllum*, 153  
*Pterocarya*, 299  
*Pterocephalus*, 398  
*Pterostegia*, 310  
 Pterostemonaceae, 185, 193  
*Ptychosperma*, 130  
*Ptychosperma mooreanum*, 130  
*Pulsatilla*, 160  
*Punica*, 24, 206  
 Punicaceae, 205  
 Putranjivaceae, 218, 262  
*Pygeum*, 284  
*Pyrola*, 368  
 Pyrolaceae, 368  
*Pyrrorrhiza*, 133  
  
*Quercus*, 297  
 Quiinaceae, 254  
 Quillajaceae, 273  
*Quinchamalium*, 7, 179  
  
 Rafflesiaceae, 262  
*Ramonda*, 60, 386  
*Ranalisma*, 108, 421  
 Ranunculaceae, 5, 7, 12, 24,  
 39, 51, 52, 148, 157,  
 158, 160, 161, 188,  
 419, 423  
 Ranunculales, 74, 148, 149,  
 150, 155, 160, 416,  
 420, 422, 423  
*Ranunculus*, 12, 158, 160  
  
*Ranunculus auricomus*, 160  
*Ranunculus chilensis*, 160  
*Ranunculus ficaria*, 158, 160  
 Rapateaceae, 136  
 raphide clade, 315, 324  
*Ravenia*, 216  
*Reaumuria*, 14, 305, 306, 308  
*Reaumuria vermiculata*, 305  
 receptacle, 4, 20, 24, 26, 80,  
 88, 183, 230, 287,  
 290  
 emergence, 4, 26, 51, 113,  
 176, 187, 188, 196,  
 231, 245, 256, 265,  
 266  
 growth, 14, 24, 25, 26, 86,  
 223, 270, 317, 326,  
 335, 340  
 invagination, 24, 42, 429  
 origin, 51, 84, 252, 258,  
 262, 409  
 shape  
 concave, 404, 412  
 conical, 24, 84, 88, 160,  
 293, 299, 419  
 flattened, 165  
*Reinwardtia*, 267  
 replum, 228  
 Resedaceae, 219, 225  
 Restionaceae, 23, 53, 57, 136,  
 139, 421  
 resupination, resupinate, 46,  
 55, 61, 125, 142,  
 152, 201, 350, 378,  
 391, 408  
 Rhabdodendraceae, 181, 314,  
 319, 320  
 Rhamnaceae, 52, 283, 287  
*Rheum*, 312  
*Rheum webbiana*, 308  
*Rhizophora*, 248  
 Rhizophoraceae, 38, 247,  
 248, 271  
*Rhodochiton*, 7  
  
*Rhododendron*, 368, 370  
*Rhododendron semibarbatum*,  
 368  
*Rhododendron tolmachevii*,  
 368  
*Rhodoieia*, 187  
 Rhoadales, 67, 363  
*Rhoiptelea*, 300  
 Rhoipteleaceae, 299  
*Rhus*, 217  
 Rhynchoalycaceae, 202  
*Rhynchotheca*, 196, 201  
*Ribes alpinum*, 192  
*Ribes malvaceum*, 192  
*Ribes sanguineum*, 192  
*Ribes speciosum*, 191, 192  
*Richea*, 368  
*Ricinus*, 28, 29, 265  
 ring wall. *See* androecium:  
 ring primordium  
*Rinorea*, 260  
*Ritchiea*, 225  
*Rivina*, 333  
 Rivinoideae, 329  
*Rochelia*, 380  
*Rodgersia*, 9, 193  
*Rodgersia aesculifolia*, 193  
*Romneya*, 150, 152  
*Rondeletia laniflora*, 372  
 Roridulaceae, 366  
*Rosa*, 285  
 Rosaceae, 5, 11, 19, 24, 30,  
 40, 56, 105, 209,  
 230, 283, 284, 285,  
 289, 426  
 Rosales, 67, 241, 283, 424  
*Roscoea*, 146  
*Roscoea cautleoides*, 145  
*Roscoea purpurea*, 146  
*Roscoea scillifolia*, 146  
 Rosidae, 161  
 rosids, 11, 12, 24, 40, 72, 73,  
 184, 201, 212, 245,  
 248, 273, 291, 293,

- 297, 348, 420, 424,  
 425, 426, 428
- Rosoideae, 287
- Rubiaceae, 5, 10, 30, 42, 43,  
 370, 371, 372, 429
- Rubus*, 285, 287
- Rumex*, 308, 309, 312
- Rumiceae, 312
- Ruschoideae, 327
- Ruta*, 52
- Rutaceae, 12, 24, 42, 56, 212,  
 214, 216, 427
- Sabia*, 161, 162
- Sabia limoniacea*, 161
- Sabiaceae, 161, 423
- Sagittaria*, 108, 110
- Sagittaria cuneata*, 110
- Sagittaria latifolia*, 108
- Sagittaria montevidensis*, 110
- Salacia viridiflora*, 243
- Salicaceae, 67, 246, 261
- Salicoid clade, 262
- Salicornia*, 322, 323
- Salix*, 261, 262
- Salpiglossis*, 377
- Salvadora persica*, 223
- Salvadoraceae, 218, 223
- Salvia*, 146, 393
- Sambucus*, 399, 401
- Sambucus ebulus*, 399
- Sambucus javanica*, 401
- Samolaceae, 359
- Samolus*, 71, 360
- Sanchezia*, 391
- Sanguinaria canadensis*, 152
- Sanguisorba*, 283, 285, 287
- Sanguisorba tenuifolia*, 283
- Sanguisorbinae, 284, 285
- Santalaceae, 7, 9, 176, 179,  
 180
- Santalales, 40, 172, 176, 178,  
 180, 424
- Santalum*, 180
- Sapindaceae, 5, 22, 31, 53,  
 212, 212, 214, 218,  
 451
- Sapindales, 41, 212, 424
- Sapotaceae, 9, 38, 39, 312,  
 348, 349, 356, 358,  
 360, 428, 476
- Saraca*, 57, 277, 279
- Sarcobataceae, 329
- Sarcocaulon*, 16
- Sarcococca*, 169
- Sargentodoxa*, 154
- Sargentodoxaceae, 153
- Sarracenia*, 30
- Sarraceniaceae, 30, 348, 354,  
 366, 368
- Sarraceniales, 347
- Saruma*, 96, 97, 99, 115
- Saruma henryi*, 97
- Saurauia*, 366
- Saurauia serrata*, 366
- Saururaceae, 96, 99, 106
- Saururus*, 101, 106
- Sauvagesia*, 254, 256
- Sauvagesia erecta*, 254
- Saxifraga*, 193
- Saxifraga fortunei*, 193
- Saxifragaceae, 9, 11, 184,  
 185, 193, 344
- Saxifragales, 172, 184, 185,  
 186, 187, 189
- Scabiosa*, 399
- Schefflera*, 20, 404, 429
- Schefflera subintegra*, 404
- Schefflera* aff. *elliptica*, 403
- Scheuchzeriaceae, 114
- Schinopsis*, 217
- Schisandra*, 81
- Schisandraceae, 20, 80, 419
- Schismocarpus*, 346, 347
- Schizanthus*, 379
- Schizanthus hookeri*, 377
- Schlumbergera*, 338
- Schoepfia*, 178
- Schoepfiaceae, 178
- Schotia*, 279
- Sciadotenia*, 155
- Sciaphila*, 117
- Scleranthus annuus*, 322
- Scleranthus brockei*, 322
- Scleranthus perennis*, 322
- Sclerochiton*, 391, 406
- Scolopus*, 120
- Scrophularia*, 390
- Scrophularia canina*, 391
- Scrophularia scorodonia*, 391
- Scrophulariaceae, 27, 32, 60,  
 70, 380, 386, 387,  
 388, 391, 429
- Scyphostegiaceae, 261
- Scytopetalaceae, 353, 354
- secondary pollen  
 presentation, 146,  
 152, 162, 164, 274,  
 351, 406, 410
- secondary polyandry. See  
 polyandry:complex
- Seemannaralia*, 404
- Seguiera*, 333
- Selaginaceae, 388
- Selenicereus*, 338
- Sempervivum*, 39, 190
- Sempervivum x fauconnetii*, 190
- Senna*, 34, 276, 277
- sepal, 4, 6, 61  
 absence of, 295, 299, 398  
 accrescent, 9, 176, 178,  
 322, 359, 370  
 appendage, 9  
 arrangement  
 decussate, 162, 327  
 bristle, 9, 398, 416  
 caducous, 9, 150  
 delayed growth, 337, 406  
 fusion, 155, 178, 216, 271,  
 322, 359, 380, 386,  
 391, 393, 399  
 initiation sequence

## 528 Index

- sepal (cont.)  
 decussate, 335  
 quincuncial, 201, 207,  
 232, 314, 335, 426  
 spiral, 5, 9, 40, 278, 348  
 unidirectional, 278  
 whorled, 38, 39, 278  
 loss, 7, 9, 146, 349, 388,  
 395, 401, 406, 416,  
 430  
 orientation, 30, 55  
 diagonal, 333  
 persistent, 9, 122, 171, 181,  
 187, 190, 196, 322,  
 377, 429  
 petaloid, 7, 24, 153, 258,  
 262, 274, 287, 292,  
 308, 322, 325, 329,  
 351  
 reduction, 9, 176, 178, 196,  
 295, 372, 395, 401,  
 406, 416  
 shape  
 crested, 9, 258, 314, 320  
 hooded, 201, 314, 327,  
 333  
 keeled, 374  
 tube, 41, 145, 234, 277,  
 278, 293, 307  
 sepaloid, 335, 338  
 septum, 19, 21, 190, 222, 256  
 absence of, 180, 256  
 apical, 21, 22, 372  
 basal, 21, 22, 212, 409  
 disintegration, 317, 322,  
 337  
 false, 22, 169, 195, 224,  
 227, 228, 250, 267,  
 268, 287, 291, 327,  
 359, 370, 380, 388,  
 393  
 incomplete, 404  
 reduction, 21, 337, 349,  
 427, 430
- Sericolea*, 183  
*Serjania*, 214  
*Serjania glabrata*, 212  
*Sesuvium*, 327  
 Setchellanthaceae, 219  
 sex distribution  
 bisexual, 53, 80, 81, 84, 86,  
 89, 93, 94, 108, 130,  
 133, 141, 154, 163,  
 178, 180, 190, 192,  
 202, 216, 256, 279,  
 290, 322, 344, 356,  
 372, 406, 410  
 andromonoecious, 256  
 dichogamy, 68, 406  
 dicliny, 68  
 dimorphism, dimorphic,  
 53, 131, 136, 154,  
 155, 219, 220, 223,  
 252, 262, 263, 291,  
 359, 372  
 gender abortion, 53, 212,  
 217  
 herkogamy, 68  
 heterostyly, 53, 272, 360  
 pistillate flower, 57, 77, 81,  
 82, 93, 95, 96, 111,  
 113, 117, 118, 123,  
 131, 137, 154, 155,  
 168, 169, 175, 190,  
 192, 217, 222, 252,  
 263, 265, 290, 292,  
 293, 295, 297, 300,  
 304, 320, 333, 356,  
 359, 410  
 pistillate inflorescence,  
 136, 144, 168, 290,  
 297  
 proterandry,  
 proterandrous, 243,  
 351, 406  
 proterogyny,  
 proterogynous, 80,  
 82, 419
- staminate flower, 77, 81,  
 82, 84, 93, 94, 95,  
 113, 117, 118, 123,  
 131, 137, 139, 154,  
 155, 168, 169, 175,  
 217, 222, 238, 252,  
 263, 265, 291, 292,  
 293, 295, 297, 299,  
 300, 304, 320, 333,  
 356, 359  
 staminate inflorescence,  
 136, 144, 168, 220,  
 295, 297, 320  
 sterile flower, 29, 297, 344,  
 401, 410  
 unisexual, 4, 5, 53, 75, 77,  
 81, 82, 86, 89, 92, 93,  
 108, 111, 114, 117,  
 130, 136, 139, 141,  
 142, 148, 153, 155,  
 168, 170, 171, 178,  
 180, 187, 190, 192,  
 219, 223, 252, 258,  
 261, 262, 263, 268,  
 277, 283, 288, 290,  
 291, 299, 308, 322,  
 323, 329, 356, 359,  
 371, 384, 395, 406,  
 416, 419  
 dioecious, 84, 88, 94,  
 123, 136, 155, 163,  
 170, 216, 279, 292,  
 294, 304, 333, 344,  
 360, 396  
 functional, 212, 216,  
 238, 243  
 monoecious, 94, 107
- Seychellaria*, 117  
*Shepherdia*, 283, 289  
*Shiekia*, 133  
*Sibthorpia*, 60, 388  
*Sideroxylon*, 357  
*Sideroxylon inerme*, 356  
*Silene*, 26, 320

- Silvaea*, 91  
 Simaroubaceae, 212  
*Simmondsia*, 320  
*Simmondsia chinensis*, 319  
 Simmondsiaceae, 314, 319,  
     320  
*Sinadoxa*, 399  
*Sindora*, 279  
*Sinocalycanthus*, 91  
*Sinofranchetia*, 154  
*Siparuna*, 20  
 Siparunaceae, 89, 93, 95, 96,  
     209  
*Sisyrinchium striatum*, 127  
 Sladeniaceae, 355  
*Sloanea*, 271  
*Smeathmannia*, 258  
 Smilacaceae, 123  
*Smilax*, 123  
*Smilax aspera*, 123  
 Solanaceae, 7, 56, 352,  
     377  
 Solanales, 370, 377, 379, 427,  
     429, 430  
*Solanum*, 377, 379  
*Soldanella*, 359, 361  
*Soldanella villosa*, 361  
 Sonneratiaceae, 205  
*Sorindeia*, 218  
*Spathiphyllum*, 108  
*Spathiphyllum patinii*, 107  
*Spermacoce*, 372  
 Sphenocleaceae, 377  
*Spinacia*, 322  
*Spiraea*, 287  
*Spiraea salicifolia*, 283  
*Spondias*, 217  
*Spondias pleiogyna*, 217  
 sporangium  
     megasporangium, 3  
     microsporangium, 94  
 sporophyll  
     megasporophyll, 3, 18  
     microsporphyll, 3  
     spur, 5, 27, 45, 50, 51, 68,  
         126, 148, 152, 157,  
         160, 161, 199, 219,  
         260, 386, 391, 399,  
         423  
     inverted, 51  
*Stackhousia*, 245  
 Stackhousiaceae, 243  
 stamen, 24, 61  
     abortion, 60, 216  
     absence of, 276, 333  
     development, 347  
     doubling. *See* stamen:  
         paired  
     fusion, 52, 84, 142, 154,  
         224, 259, 267, 269,  
         272, 281, 291  
     paired, 291, 334  
     increase, 5, 6, 11, 13, 14,  
         16, 18, 26, 31, 35,  
         36, 54, 56, 57, 59,  
         80, 84, 96, 97, 105,  
         109, 110, 120, 128,  
         139, 140, 146, 149,  
         157, 165, 182, 187,  
         189, 199, 202, 203,  
         205, 214, 216, 225,  
         228, 229, 230, 233,  
         237, 242, 248, 254,  
         256, 258, 269, 270,  
         278, 284, 300, 304,  
         308, 310, 317, 322,  
         326, 344, 348, 357,  
         366, 404, 415, 419,  
         426, 428, 429,  
         430  
     centrifugal, 13, 14, 110,  
         131, 181, 183, 186,  
         188, 206, 225, 233,  
         236, 237, 238, 252,  
         261, 262, 270, 271,  
         278, 306, 315, 317,  
         324, 327, 329, 331,  
         335, 337, 339, 343,  
         347, 354, 365, 366,  
         424, 426, 427  
     centripetal, 13, 131, 206,  
         207, 261, 263, 278,  
         293, 343, 347, 356,  
         359, 366, 424, 426  
     lateral, 13, 207, 210, 226,  
         270, 348, 366, 367,  
         404  
     initiation sequence, 85  
     centrifugal, 135, 183,  
         315, 317, 326, 329,  
         333  
     chaotic, 429  
     inverted, 12, 315, 316,  
         322, 329  
     spiral, 167, 219, 252,  
         331, 348  
     unidirectional, 101  
     whorled, 16  
 loss, 34, 117, 124, 127, 136,  
     141, 144, 153, 170,  
     206, 228, 274, 277,  
     308, 317, 366, 368,  
     381, 383, 423, 428,  
     429  
 orientation, 12, 32  
 origin, 3  
 paired, 13, 16, 35, 78, 85,  
     88, 89, 97, 99, 101,  
     102, 105, 108, 110,  
     113, 142, 150, 160,  
     178, 206, 209, 228,  
     241, 248, 271, 284,  
     285, 304, 310, 312,  
     327, 329, 348, 354,  
     358, 398, 399, 420,  
     426  
     antepetalous, 250, 269,  
         356, 359  
     antesepalous, 300, 366  
 petaloid, 80, 145, 147  
 position  
     abaxial, 133



## 530 Index

- stamen (cont.)  
 adaxial, 33, 34, 125, 383  
 antepetalous, 180  
 antesepalous, 108  
 outer, 88  
 parapetalous, 284  
 reduction, 12, 14, 33, 91,  
 120, 127, 129, 133,  
 134, 139, 142, 146,  
 155, 160, 203, 229,  
 243, 250, 254, 265,  
 276, 278, 279, 316,  
 379, 383, 398, 424,  
 427, 429, 430  
 tepaloid, 91  
 triplet, 18, 84, 120, 152,  
 178, 199, 209, 236,  
 238, 262, 297, 327,  
 344, 356  
 tube, 10, 41, 196, 224, 237,  
 241, 248, 260, 267,  
 274, 276, 301, 305,  
 306, 313, 314, 322,  
 323, 335, 365, 375,  
 429  
 unpaired, 13, 16, 35, 110,  
 150, 285
- stamen-petal primordium,  
 10, 54, 56, 109, 110,  
 122, 146, 157, 170,  
 180, 196, 199, 207,  
 287, 313, 326, 359,  
 360, 363
- stamen-petal tube, 10, 25, 26,  
 41, 42, 47, 50, 67,  
 179, 190, 216, 222,  
 313, 327, 341, 349,  
 351, 352, 358, 359,  
 366, 370, 386, 392,  
 396, 399, 416, 424,  
 428, 429, 430  
 absence of, 402  
 loss, 388  
 reduction, 395
- stamen-sepal primordium,  
 337
- stamen-stigma tube, 409
- stamen-tepal tube, 127
- staminal column. *See*  
 synandrium
- staminode, 4, 8, 12, 13, 26,  
 27, 50, 51, 52, 53, 57,  
 61, 77, 80, 90, 99,  
 110, 111, 113, 117,  
 120, 124, 131, 133,  
 134, 145, 146, 155,  
 160, 162, 163, 165,  
 178, 183, 192, 199,  
 216, 217, 238, 245,  
 248, 250, 252, 265,  
 276, 277, 279, 290,  
 291, 297, 308, 329,  
 333, 347, 354, 357,  
 359, 360, 361, 368,  
 379, 380, 410, 419,  
 424, 428, 430
- abortion, 146
- absence of, 81, 86,  
 113, 131, 137,  
 238, 262, 265,  
 327, 360, 363, 387,  
 391, 429
- delayed growth, 347
- development  
 centrifugal, 324, 327
- elaborations, 6
- fusion, 113, 131, 267
- loss, 146, 222, 238
- nectar leaf, 148, 150, 153,  
 154, 155, 157, 158,  
 160, 161
- nectariferous, 187, 254,  
 272, 352
- origin, 51, 93, 129, 146,  
 187, 188, 195, 245,  
 254, 256, 258, 265,  
 266, 277, 287, 315,  
 352, 370
- paired, 113, 354, 398
- persistent, 94
- petaloid, 5, 142, 144, 146,  
 147, 205, 256, 314,  
 315, 317, 324, 327,  
 359
- position, 425  
 abaxial, 183, 199, 225,  
 388  
 adaxial, 12, 144, 164,  
 201, 226, 383, 386,  
 388, 390, 393, 430  
 antepetalous, 162, 190,  
 196, 203, 205, 210,  
 216, 217, 243, 245,  
 254, 267, 271, 278,  
 320, 322  
 antesepalous, 203, 222,  
 236, 238, 241, 252,  
 278, 347, 348, 357,  
 359, 361  
 inner, 80, 82, 88, 89, 90,  
 91, 92, 94, 97, 113,  
 127, 134, 147, 160,  
 277, 347, 419  
 outer, 57, 82, 88, 89, 124,  
 134, 147, 188, 209,  
 327, 347
- reduction, 383, 430
- secretory, 89, 92, 160
- shape, 135, 162, 347  
 filamentous, 123, 199,  
 267  
 hooded, 347  
 thread-like, 354
- Staphisagria*, 161
- Staphyllea pinnata*, 211
- Stawellia*, 127
- Stegnosperma*, 314
- Stegnospermaceae, 314, 319
- Stemonaceae, 117, 420, 421
- Stemonuraceae, 370, 395,  
 396
- Stemotria triandra*, 385

- Stenomeris*, 115  
*Stephanandra*, 284, 285  
*Stephania*, 155  
*Sterculia*, 241  
*Sterculia coccinea*, 238  
*Sterculia foetida*, 238  
 Sterculiaceae, 234  
 Sterculioideae, 234, 236, 237, 238  
*Steriphoma*, 228  
*Stewartia*, 14, 365, 366  
*Stewartia pseudocamellia*, 364  
 stigma, 18  
   position  
     adaxial, 125, 127, 168  
     apical, 19  
     carinal, 19, 63, 111, 137, 192, 193, 218, 249, 265, 269, 287, 290, 293, 300, 304, 306, 310, 322, 335, 356, 358, 366, 368, 379, 384, 396, 399, 421  
     commissural, 19, 63, 125, 243, 300, 306, 322, 351, 369, 397, 399  
   shape  
     bilobed, 248, 262, 265, 268, 274, 325, 391, 410  
     branched, 222  
     capitate, 397  
     club, 164  
     contorted, 293  
     crestlike, 333  
     dish, 277  
     globular, 310  
     multilobed, 50, 155, 174  
     plumose, 300  
     slit, 80, 94, 108  
     trilobed, 134, 248  
     umbrella-like, 115, 340  
*Stigmaphyllon*, 250  
*Stigmatanthus*, 216  
 stigmatic head, 41, 212  
 stigmatic lobe, 120, 125, 252, 256, 265, 313, 346, 356, 368  
*Stimpsonia*, 363  
 stipule, 3, 9, 30, 50, 120, 231, 234, 284  
   glandular, 224  
   interpetiolar, 371  
 Strasburgeriaceae, 211  
 Stratiotes, 113  
 Strelitziaceae, 142, 144  
*Strephonema*, 202  
*Streptocarpus*, 386  
*Streptocarpus rexii*, 385  
*Streptochoeta*, 139, 140  
*Streptothamnus*, 173, 174  
 Strobilantheae, 392  
 Strobilanthinae, 391  
*Strombosia*, 176, 178  
*Strongylodon*, 281  
*Strongylodon macrobotrys*, 279  
*Struthanthus*, 178  
*Struthiola*, 232  
 stylar lobe, 344  
 style, 5, 18  
   absence of, 106, 108, 114, 123, 225, 252, 304, 333, 335, 351, 395  
   apical. *See* style:position:  
     terminal  
   asymmetric, 274  
   bifid. *See* stigma:shape:  
     bilobed  
   fusion, 19, 254  
   orientation, 32, 33  
     oblique, 133, 276, 380  
   petaloid, 147  
   position  
     gynobasic, 19, 117, 129, 249, 250, 256, 287, 380, 393  
     terminal, 19, 127, 135, 209, 256, 277, 356, 358, 368, 379, 393, 397, 407  
     twisted, 291  
     umbrella-like, 335, 354  
 Styliaceae, 406, 407, 408  
*Stylidium*, 408, 409  
*Stylidium adnatum*, 409  
*Stylidium graminifolium*, 408, 409  
*Styloceras*, 168, 169  
 stylode, 19, 117, 123, 186, 190, 216, 301, 324, 326, 344  
 stylopodium, 405, 406  
 Styphelioideae, 370  
 Styracaceae, 348  
 Styracoid clade, 348  
 Superasteridae, 70, 423, 427  
 Superrosidae, 70, 181, 184, 196, 423, 425  
 Surianaceae, 273  
*Swartzia*, 281  
*Swartzia aureosericea*, 279  
*Symbolanthus*, 374  
*Symmeria*, 310  
 symmetry  
   bilateral. *See* floral  
     symmetry:  
       monosymmetry  
       monosymmetric, 32  
 Sympetaleae, 67, 428  
 sympetaly, 10, 40, 42, 68, 71, 86, 185, 341, 346, 348, 359, 371, 425, 427  
   early, 26, 42, 342, 368, 370, 372, 394, 396, 402, 403, 406, 412, 416, 427, 428, 430  
   late, 42, 352, 370, 377, 383, 416, 429  
   loss of, 42

## 532 Index

- sympetaly (cont.)  
   pseudo-, 41  
*Symphonia*, 252  
*Symphonia globulifera*, 252  
*Symphorema*, 393  
*Symphoricarpos*, 399  
*Symphyonema*, 164  
 Symplocaceae, 348  
 sympodial. *See* inflorescence:  
   cyme, cymose  
 synandrium, 82, 154, 155,  
   268, 291, 304, 416  
*Synaphea*, 164  
 synorganisation, 6, 32, 33,  
   35, 36, 59, 99, 418  
 synsepaly. *See* sepal:fusion  
 syntepaly. *See* tepal:fusion  
*Synthyris*, 388  
*Syzygium*, 207  
*Syzygium australe*, 207  
  
*Tacca*, 115  
*Tacca palmatifida*, 115  
 Taccaceae, 115  
*Takhtajania*, 420  
 Talinaceae, 337  
 Tamaricaceae, 14, 301, 305,  
   306, 308, 427  
 Tamaricoid clade, 305  
*Tamarindus*, 279  
*Tamarix*, 306  
*Tambourissa*, 20, 95, 96  
*Tapiscia*, 212  
*Telipogon*, 125  
 tepal, 4, 7, 8, 113, 150, 180,  
   419, 422  
   absence of, 105, 108, 167  
   arrangement  
     decussate, 95  
   fusion, 117, 123, 126, 138,  
     139  
   increase, 335  
   initiation sequence, 90  
   loss, 106, 117, 141  
   orientation, 124, 133  
   persistent, 174  
   petaloid, 9, 86, 104, 119,  
     158, 160  
   position  
     abaxial, 104, 105  
     reversed, 104  
   reduction, 108, 129, 167  
   sepaloid, 86, 104, 108  
   shape  
     crested, 120  
     spotted, 120, 124  
     spiral, 95, 338  
*Terminalia*, 202  
*Terminalia tetrandra*, 203  
*Ternstroemia*, 356  
 Ternstroemiaceae, 355  
 Ternstroemieae, 355  
 Ternstroemioideae, 365  
*Testulea*, 254  
*Tetilla*, 199, 201  
*Tetracentron*, 165,  
   167, 171  
*Tetracentron sinense*, 165  
*Tetracera*, 181  
 Tetrachondraceae, 381  
*Tetradoxa*, 399  
*Tetragonia*, 327  
 Tetramelaceae, 291  
*Tetrameranthus*, 86  
 Tetrameristaceae, 348, 349,  
   365  
*Tetraplesandra*, 404  
*Tetraplesandra gymnocarpa*,  
   404  
*Tetratheca*, 16, 271  
*Teucrium*, 393  
*Thalictrum*, 5, 158, 160  
 Theaceae, 14, 36, 348, 349,  
   355, 364, 428  
 Theales, 347, 364  
 Theligonaceae, 372  
*Theligonum*, 5, 8, 36, 370, 372,  
   373  
 Themidaceae, 124  
*Theobroma*, 16, 238  
*Theobroma cacao*, 237  
 Theophrastaceae, 12, 71, 359  
 Theophrastoideae, 360  
 Thesiaceae, 179  
*Thesium*, 180  
*Thesium ebracteatum*, 180  
*Thesium strictum*, 179  
 Thismiaceae, 115  
*Thottea*, 84, 97  
*Thottea tomentosa*, 99  
*Thryptomene*, 209  
*Thunbergia*, 391  
 Thurniaceae, 140  
 Thymelaeaceae, 230  
 thyrsoïd. *See* inflorescence:  
   thyrses  
*Tiarella*, 193  
*Tilia*, 238  
*Tilia tomentosa*, 238  
*Tilia x europaea*, 238  
 Tiliaceae, 234  
*Tofieldia*, 55, 111  
 Tofieldiaceae, 102, 104, 105,  
   420  
*Tolmiea*, 193  
*Tonteleia*, 243, 245  
 torus. *See* receptacle  
*Touretia*, 383  
*Touroulia*, 256  
*Toussaintia*, 88  
 Tovariaceae, 219  
*Toxicodendron*, 217  
*Toxicodendron vernicifluum*,  
   216  
*Tradescantia*, 135  
 Tremandraceae, 271  
 trichome, 91, 115, 144, 201,  
   237, 260, 277, 403  
   peltate, 289  
   stigmatic, 108  
 Trichopodaceae, 115  
*Trichopus*, 115

- Trichostigma*, 333  
*Trichostigma peruvianum*, 331  
*Tricyrtis*, 120  
*Tricyrtis puberula*, 120  
*Trientalis europaea*, 363  
*Triglochin*, 28, 55  
*Triglochin maritima*, 113  
 Trigoniaceae, 248  
*Trillium*, 122  
*Trillium apetalon*, 122  
 Trimeniaceae, 80  
*Triostemum*, 399  
*Tripetaleia*, 368  
*Triplaris*, 308, 309  
*Triplostegia*, 398  
 Triplostegiaceae, 396  
*Tripogandra*, 134, 135  
*Tripterococcus*, 245  
*Trithuria*, 77  
*Triumfetta*, 183  
 Triuridaceae, 117, 118, 416, 421  
*Triuris*, 117  
*Triuris brevistylis*, 118  
*Triuris hexophthalma*, 117  
 Trochodendraceae, 165, 168, 422  
 Trochodendrales, 148, 165, 170  
*Trochodendron*, 36, 165  
 Tropaeolaceae, 24, 218, 219  
*Tropaeolum*, 27, 32, 46, 50, 51, 219  
*Tropaeolum majus*, 219  
*Tropaeolum pentaphyllum*, 219  
*Tropaeolum umbellatum*, 219  
 Tropaloid clade, 218  
*Tulbaghia fragrans*, 127  
*Tulipa*, 7  
*Tupidanthus*, 23, 54, 404  
 Turneraceae, 256  
*Tyleria*, 256  
 Typhaceae, 136  
 Ulmaceae, 283, 289, 290  
*Umbellularia*, 91  
*Urena*, 24, 237  
 Urticaceae, 283  
 Urticales, 23, 283, 290  
 Vacciniaceae, 368  
*Vaccinium*, 368  
*Vahlia*, 193  
 Vahliaceae, 193  
 Vahliales, 73  
*Valeriana*, 398, 398, 399  
*Valeriana repens*, 397  
 Valerianaceae, 396  
 Valerianeae, 397  
*Vallea*, 271  
*Vallisneria*, 113  
*Vancouveria*, 157  
 vasculature, 8, 10, 45, 82, 137, 188, 245, 269, 290, 350, 361, 385, 391, 407  
     abortion, 352  
     flower, 18  
     petal, 88, 407  
     stamen, 236  
     trunk bundle, 13, 236  
*Vellozia*, 120  
*Vellozia jolyi*, 120  
 Velloziaceae, 117, 422  
*Veratrum*, 123  
*Verbascum*, 383, 388  
*Verbena*, 383  
 Verbenaceae, 380, 393  
*Veronica*, 388  
 Veroniceae, 388  
 Viburnaceae, 399  
*Viburnum*, 397, 399  
*Viburnum grandiflorum*, 399  
*Viburnum opulus*, 401  
*Vicia*, 281  
*Victoria*, 79, 80  
*Vigna*, 276  
*Viola*, 27, 51, 260  
*Viola tricolor*, 258  
 Violaceae, 11, 258, 259, 260  
 Violales, 67  
 Viscaceae, 176, 179, 180  
*Vismia*, 254  
*Visnea*, 356  
 Vitaceae, 11, 22, 41, 42, 184, 195, 196  
 Vitales, 195  
*Vitis*, 41, 196  
 Vivianiaceae, 199, 201  
 Vochysiaceae, 33, 201, 202  
*Wachendorfia*, 33, 133  
*Waltheria*, 237  
*Weigelia*, 399  
 Wellstediaceae, 379  
*Welwitschia*, 27  
*Westringia*, 393  
*Westringia fruticosa*, 393  
*Wiesneria*, 108  
*Wiesneria triandra*, 108  
*Wilkiea*, 95  
 Winteraceae, 39, 89, 419, 420  
*Wissadula*, 241  
*Woonyoungia*, 84  
*Xanthium*, 5, 410  
*Xanthorhiza*, 160  
 Xanthorrhoeaceae, 126  
*Xerophyta splendens*, 119  
*Xerosicyos pubescens*, 291  
*Xiphidium*, 133  
*Xiphidium coeruleum*, 132  
*Xylopia*, 86, 88  
*Xymalos*, 95  
 Xyridaceae, 136  
 Zannichelliaceae, 29  
*Zea*, 138

## 534 Index

*Zea mays*, 139

*Zelkova serrata*, 289, 290

Zingiberaceae, 12, 57, 142,  
145, 146, 147

Zingiberales, 5,

142, 143

*Zippelia*, 101

Zosteraceae, 104

zygomorphy. *See* floral  
symmetry:

monosymmetry

Zygophyllaceae, 73, 241