

RETO NYFFELER. 2002. Phylogenetic relationships in the cactus family (Cactaceae) based on evidence from *trnK/matK* and *trnL-trnF* sequences. *American Journal of Botany* 89(2): 312-326.

Taxa sampled for the molecular systematic study of the relationships in the cactus family (Cactaceae). Species classification follows Hunt (1999). Suprageneric classification is given according to Barthlott and Hunt (1993). GenBank accession numbers are for (1) the *trnK* (including *matK*) intron, and if sequenced, (2) the *trnL-trnF* intergenic spacer and (3) the *trnL* intron. Abbreviations for the voucher information are: B = Botanical Garden Berlin, HUH = Harvard University Herbaria library, MG = Mesa Garden, Belen, NM, Z = Botanical Garden Zürich, ZSS = Sukkulenten-Sammlung Zürich. A dash indicates that information is not available or that there is no sequence for this particular taxon.

| Taxon | GenBank accession number <i>trnK/matK</i> | GenBank accession number <i>trnL-trnF</i> spacer | GenBank accession number <i>trnL</i> intron | Voucher | Source | Collector |
|---|--|---|--|----------------|-----------|---------------------------|
| PORTULACACEAE | | | | | | |
| <i>Grahamia bracteata</i> Gill. | AY015273 | - | - | ZSS 941326 | Argentina | Leuenberger & Eggli 4184 |
| <i>Talinum paniculatum</i> (Jacquin) Gaertn. | AY015274 | - | - | ZSS 931952 | Mexico | Martinez & Eggli 203 |
| CACTACEAE | | | | | | |
| PERESKIOIDEAE | | | | | | |
| <i>Pereskia guamacho</i> F. A. C. Weber | AY015275 | - | - | B 13066 | hort. B | - |
| <i>Pereskia stenantha</i> F. Ritter | AY015276 | - | - | ZSS 86 4200 | Brazil | Horst & Uebelmann 759 |
| <i>Pereskia zinnii</i> DC. | AY015277 | - | - | ZSS 842526 | Cuba | - |
| <i>Maihuenia patagonica</i> (Phil.) Britton & Rose | AY015281 | - | - | B 030-30-88-10 | Argentina | Leuenberger & Arroyo 3850 |
| <i>Maihuenia poeppigii</i> (Pfeiff.) K.Schum. | AY015282 | - | - | B 048-15-93-10 | Chile | Leuenberger & Arroyo 4180 |
| OPUNTIOIDEAE | | | | | | |
| <i>Opuntia quimilo</i> K.Schum. | AY015279 | - | - | B 159-94-86-10 | Argentina | Leuenberger 3558 |
| <i>Opuntia vestita</i> Salm-Dyck [= <i>Austrocylandropuntia vestita</i> (Salm-Dyck) Backeb.] | AY015278 | - | - | ZSS 851173 | Bolivia | Swoboda 124 |
| <i>Pereskopsis diguetii</i> (F.A.C.Weber) Britton & Rose | AY015280 | - | - | ZSS 942160 | Mexico | Lomeli et al. s.n. |
| CACTOIDEAE | | | | | | |
| BROWNINGIEAE | | | | | | |
| <i>Armatocereus godingianus</i> (Britton & Rose) Backeb. | AY015296 | AY015346 | AY015387 | ZSS 901109 | Ecuador | Supthut 89103 |
| <i>Browningia chlorocarpa</i> (Kunth) W. T. Marshall [= <i>Gymnanthocereus chlorocarpus</i> (Kunth) Backeb.] | AY015316 | - | - | ZSS 904048a | Peru | Ritter 290 |
| <i>Browningia hertlingiana</i> (Backeb.) Buxb. [= <i>Azureocereus hertlingianus</i> (Backeb.) Backeb.] | AY015315 | AY015362 | AY015403 | ZSS 19869 | Peru | Knize 334 |
| <i>Calymmanthium substerile</i> F. Ritter | AY015291 | - | - | ZSS 893442 | hort. ZSS | - |
| <i>Castellanosia caineana</i> Cárdenas [= <i>Browningia caineana</i> (Cárdenas) D. R. Hunt] | AY015298 | AY015348 | AY015389 | B 31606 | Bolivia | Ritter 843 |
| <i>Neoraimondia arequipensis</i> (Meyen) Backeb. [as <i>N. aticensis</i> Rauh & Backeb.] | AY015299 | AY015349 | AY015390 | ZSS 19861 | Peru | Ostolaza 94966 |
| <i>Stetsonia coryne</i> (Förster) Britton & Rose | AY015320 | AY015366 | AY015407 | ZSS 941689 | Argentina | Leuenberger & Eggli 4361 |
| CACTEAE | | | | | | |
| <i>Astrophytum myriostigma</i> Lem. | AY015288 | - | - | ZSS 19865 | Mexico | Brack 264 |
| <i>Aztekium ritteri</i> (Böd.) Böd. | AY015290 | - | - | ZSS 862607 | Mexico | Anderson 1684 |
| <i>Echinocactus platyacanthus</i> Link & Otto | AY015287 | - | - | ZSS 921686 | hort. ZSS | - |
| <i>Mammillaria haageana</i> Pfeiff. | AY015289 | - | - | ZSS 941125 | hort. ZSS | - |
| CEREAE | | | | | | |
| <i>Cereus alacriportanus</i> Pfeiff. | AY015313 | AY015360 | AY015401 | ZSS 941313 | Brazil | Eggli et al. 2493 |
| <i>Colecephalocereus fluminensis</i> (Miquel) Backeb. | AY015318 | AY015364 | AY015405 | ZSS 881544 | Brazil | Supthut 8893 |
| <i>Micranthocereus albicephalus</i> (Buining & Brederoo) F. Ritter | AY015314 | AY015361 | AY015402 | ZSS 911583 | Brazil | Taylor et al. 1490a |
| ECHINOCEREAE | | | | | | |
| <i>Acanthocereus tetragonus</i> (L.) Hummelink [as <i>A. pentagonus</i> (L.) Britton & Rose] | AY015295 | AY015345 | AY015386 | ZSS 892219 | Mexico | Escalante s.n. |

| | | | | | | |
|--|----------|----------|----------|----------------|-----------|--------------------------|
| <i>Echinocereus pentalophus</i> (DC.) Lem. | AY015307 | AY015355 | AY015396 | ZSS 912367 | Mexico | Donikyan 91/109 |
| <i>Harrisia pomanensis</i> (F. A. C. Weber) Britton & Rose | AY015324 | AY015370 | AY015411 | ZSS 18994 | Argentina | Leuenberger & Eggli 4710 |
| <i>Leptocereus leonii</i> Britton & Rose | AY015297 | AY015347 | AY015388 | ZSS 931856 | Cuba | Areces s.n. |
| HYLOCEREAE | | | | | | |
| <i>Disocactus amazonicus</i> (K. Schum.) D. R. Hunt [as <i>Wittia amazonica</i> K. Schum.] | AY015312 | AY015359 | AY015400 | ZSS 874339 | Venezuela | Supthut 8750 |
| <i>Hylocereus peruvianus</i> Backeb. | AY015310 | - | - | ZSS 912367 | Peru | Rauh 35393 |
| <i>Selenicereus boeckmannii</i> (Otto) Britton & Rose | AY015311 | AY015358 | AY015399 | ZSS 891255 | Cuba | Rauh 70036 |
| NOTOCACTEAE | | | | | | |
| <i>Austrocactus bertinii</i> (Herincq) Britton & Rose | AY015300 | AY015350 | AY015391 | ZSS 961153 | Argentina | Nyffeler & Eggli 352 |
| <i>Blossfeldia liliputana</i> Werderm. | AY015283 | - | - | ZSS 862051 | Argentina | Supthut 86107 |
| <i>Blossfeldia liliputana</i> Werderm. | AY015284 | - | - | ZSS 952518 | Bolivia | Jucker 443 |
| <i>Copiapoa bridgesii</i> (Pfeiff.) Backeb. | AY015293 | - | - | ZSS 19863 | Chile | Knize 1399 |
| <i>Copiapoa laui</i> Diers & Esteves Pereira | AY015294 | - | - | ZSS 19866 | hort. MG | - |
| <i>Copiapoa solaris</i> (F. Ritter) F. Ritter | AY015292 | - | - | ZSS 18110 | Chile | Eggli & Leuenberger 2848 |
| <i>Corryocactus brevistylus</i> (K. Schum.) Britton & Rose | AY015302 | AY015352 | AY015393 | B 122-23-97-10 | Chile | Eggli 2748a |
| <i>Corryocactus tenuiculus</i> (Backeb.) Buxb. | AY015303 | AY015353 | AY015394 | ZSS 19926 | hort. Z | - |
| <i>Eriosyce aurata</i> (Pfeiff.) Backeb. | AY015336 | AY015381 | AY015422 | ZSS 19925 | hort. Z | - |
| <i>Eriosyce islayensis</i> (Förster) Katt. [as <i>Islaya krazinziana</i> F. Ritter] | AY015337 | AY015382 | AY015423 | ZSS 19867 | Peru | Ostolaza 94945 |
| <i>Eriosyce napina</i> (Phil.) Katt. [= <i>Thelocephala napina</i> (Philippi) Y. Ito] | AY015339 | AY015384 | AY015425 | ZSS 952193 | Chile | Ritter 249 |
| <i>Eriosyce subgibbosa</i> (Haw.) Katt. [= <i>Neoporteria subgibbosa</i> (Haw.) Britton & Rose] | AY015338 | AY015383 | AY015424 | ZSS 19871 | hort. MG | - |
| <i>Eulychnia iquiquensis</i> (K. Schum.) Britton & Rose | AY015301 | AY015351 | AY015392 | ZSS 18409 | Chile | Eggli 2887 |
| <i>Frailea gracillima</i> (Lem.) Britton & Rose | AY015285 | - | - | ZSS 19927 | Brazil | Hofacker 382 |
| <i>Frailea phaeodisca</i> (Speg.) Speg. | AY015286 | - | - | ZSS 893932 | Brazil | Hofacker 25 |
| <i>Neowerdermannia vorwerkii</i> (Fric) Backeb. | AY015340 | AY015385 | AY015426 | ZSS 18843 | Argentina | Leuenberger & Eggli 4549 |
| <i>Parodia alacriportana</i> Backeb. & Voll [as <i>Brasiliparodia buenekeri</i> (Buining) F. Ritter] | AY015331 | AY015376 | AY015417 | ZSS 19923 | hort. Z | - |
| <i>Parodia haselbergii</i> (Rümppler) F. H. Brandt [= <i>Brasilicactus haselbergii</i> (Rümppler) Backeb.] | AY015330 | AY015375 | AY015416 | ZSS 19924 | hort. Z | - |
| <i>Parodia magnifica</i> (F. Ritter) F. H. Brandt [= <i>Eriocactus magnificus</i> F. Ritter] | AY015332 | AY015377 | AY015418 | ZSS 19873 | hort. MG | - |
| <i>Parodia maassii</i> (Heese) A. Berger | AY015333 | AY015378 | AY015419 | ZSS 861982 | Argentina | Supthut 8670 |
| <i>Parodia microsperma</i> (F. A. C. Weber) Speg. | AY015334 | AY015379 | AY015420 | ZSS 19868 | hort. MG | - |
| <i>Parodia ottonis</i> (Lehm.) N. P. Taylor [= <i>Notocactus ottonis</i> (Lehm.) Backeb.] | AY015335 | AY015380 | AY015421 | ZSS 941287 | Brazil | Eggli et al. 2425a |
| <i>Uebelmannia pectinifera</i> Buining | AY015319 | AY015365 | AY015406 | ZSS 874114 | Brazil | Hort & Uebelmann 550 |
| PACHYCEREAE | | | | | | |
| <i>Escontria chiotilla</i> (K. Schum.) Rose | AY015308 | AY015356 | AY015397 | ZSS 19864 | hort. MG | - |
| <i>Pachycereus schottii</i> (Engelm.) D. R. Hunt [= <i>Lophocereus schottii</i> (Engelm.) Britton & Rose] | AY015309 | AY015357 | AY015398 | ZSS 19859 | hort. MG | - |
| RHIPSALIDEAE | | | | | | |
| <i>Hattiora salicornioides</i> (Haw.) Britton & Rose | AY015341 | - | - | B 13608 | hort. B | - |
| <i>Lepismium cruciforme</i> (Vellozo) Miquel | AY015344 | - | - | ZSS 892192 | Brazil | Horst & Uebelmann 1101 |
| <i>Pfeiffera ianthothele</i> (Monv.) F. A. C. Weber | AY015304 | AY015354 | AY015395 | ZSS 941687 | Argentina | Leuenberger & Eggli 4344 |
| <i>Pfeiffera miyagawae</i> Barthlott & Rauh | AY015305 | - | - | ZSS 913046 | Bolivia | Miyagawa s.n. |
| <i>Pfeiffera monacantha</i> (Griseb.) P. V. Heath [= <i>Acanthorhopsis monacantha</i> (Griseb.) Britton & Rose] | AY015306 | - | - | ZSS 923017 | Bolivia | Rausch 617 |
| <i>Rhipsalis floccosa</i> Pfeiff. | AY015342 | - | - | ZSS 18976 | Argentina | Leuenberger & Eggli 4643 |
| <i>Schlumbergera truncata</i> (Haw.) Moran | AY015343 | - | - | ZSS 19857 | hort. HUH | - |
| TRICHOCEREAE | | | | | | |

| | | | | | | |
|--|----------|----------|----------|------------|-----------|--------------|
| <i>Echinopsis chiloensis</i> (Colla) Friedrich & G. D. Rowley [= <i>Trichocereus chiloensis</i> (Colla) Britton & Rose] | AY015322 | AY015368 | AY015409 | ZSS 19874 | Chile | KG17-87 |
| <i>Echinopsis glaucina</i> Friedrich & G. D. Rowley [= <i>Acanthocalycium glaucum</i> F. Ritter] | AY015325 | AY015371 | AY015412 | ZSS 862032 | Argentina | Supthut 8696 |
| <i>Echinopsis pentlandii</i> (Hook.) A. Dietrich [= <i>Lobivia pentlandii</i> (Hook.) Britton & Rose] | AY015323 | AY015369 | AY015410 | ZSS 19858 | hort. MG | - |
| <i>Gymnocalycium denudatum</i> (Link & Otto) Mittler | AY015317 | AY015363 | AY015404 | ZSS 19870 | hort. MG | - |
| <i>Haageocereus pseudomelanostele</i> (Werderm. & Backeb.) Backeb. | AY015329 | AY015374 | AY015415 | ZSS 19862 | hort. MG | - |
| <i>Matucana intertexta</i> F. Ritter | AY015327 | - | - | ZSS 751672 | Peru | Knize 1153 |
| <i>Oreocereus celsianus</i> (Salm-Dyck) Riccob. | AY015328 | AY015373 | AY015414 | ZSS 19872 | hort. MG | - |
| <i>Rauhocereus riosaniensis</i> Backeb. | AY015326 | AY015372 | AY015413 | ZSS 19860 | hort. MG | - |
| <i>Samaipaticereus corroanus</i> Cárdenas | AY015321 | AY015367 | AY015408 | ZSS 903741 | hort. ZSS | - |