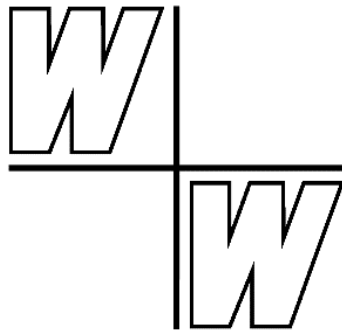


Data Collection on Intergeneric Hybrids
and Basic Types
ANGIOSPERMAE
Asteraceae
sunflower family = Korbblütler

Herfried Kutzelnigg
with the assistance of Benjamin Scholl
version 3 01.10.2026



Studiengemeinschaft Wort und Wissen
<https://www.wort-und-wissen.org/artikel/data-collection-basic-types/>

ANGIOSPERMAE: Asteraceae

16 subfamilies, 26 tribes, 1620 genera, 25.000 species

Summary:

117 intergeneric hybrids (incl. IST + IT), found in 1 family

5 preliminary basic types (average species number per basic type: $3977 / 5 = 795$ species.

Basic type level: 2 subtribes, 2 tribes, 1 subfamily.

Asteraceae subfam. Asteroideae tribe Anthemideae 115: 1800. **26 IG**

Asteraceae subfam. Asteroideae tribe Gnaphalieae 180: 200. **18 IG**

Asteraceae subfam. Asteroideae Madieae subtribe Madiinae 24: 160. **18 IG**

Asteraceae subfam. Asteroideae Perityleae subtribe Peritylinae 4: 17. **3 IG**

Asteraceae subfam. Cichorioideae 100: 1800. **10 IG**

Abbreviations:

° = taxa actually not accepted in the rank of a genus, e.g. *Cerasus*° (= *Prunus* p.p.)

“ ” = the name of the genus is accepted, but the species concerned have meanwhile been placed in a different genus

10: 50 etc. The numbers behind the names of families etc. refer to extant genera and species

IS = interspecific hybrid. **IG** = intergeneric hybrid. **IST** = intersubtribal hybrid.

IT = intertribal hybrid. **ISF** = intersubfamilial hybrid.

nat. hyb. = natural hybrid. **art. hyb.** = artificial hybrid.

HY = assumed intergeneric hybridogeneous origin of a taxon.

IK = Index Kewensis (now part of IPNI). **IPNI** = International Plant Names Index.

POWO = Plants of the World Online.

Colors within the crosses:

Red letters: intergeneric hybrids.

Violet letters: plurigeneric hybrids.

Gray letters: hybridity unconfirmed or erroneous.

Green letters: notes on the tribes, subfamilies etc. involved in the hybridization.

Yellow shaded: notes concerning basic types.

Asteraceae = Compositae (Asterales) 1620: 25.000. (117 IG incl. IST)

sunflower family = Korbblütler

AP website 2025: 16 subfamilies, 32 tribes. CGD 2025: 14 subfamilies):

Asteroideae 1135: 17200, Barnadesioideae 9: 92, Carduoideae 83: 2864, Cichorioideae 224: 4000, (Corymbioideae 1: 7), Famatioanthoideae 1: 1, Gochnatioideae 8: 85, Gymnarrhenioideae 2: 2, Hecastocleidoideae 1: 1, Mutisioideae 46: 637, Pertyoideae 5–6: 70, Stifftioideae 10: 35, (Tarchonanthoideae 2: 20), Vernonioideae 160: 1932, Wunderlichioideae 8: 48.

Asteroideae 1135: 17.200.

AP website 22 tribes.

According to Watson et al. (2020) tribes Anthemideae, Astereae, Calenduleae, Gnaphalieae, and Senecioneae form one of two enormous clades within subfamily Asteroideae.

Anthemideae 115: 1800. 24 IG (incl. 6 IST).

14 subtribes 115: 1800. CGD 267 genera. AP website 2025 without details. Subtribes and genera according to Oberprieler et al. 2022, from de.wikipedia 2025):

Anthemidinae 6 *Anthemis* 100, *Cota* 40, *Hippolytia* 16, *Tanacetum* 150 (incl. *Pyrethrum*), *Tripleurospermum* 60, ...

Athanasiniinae 6: 8

Artemisiinae 20 *Ajania* 29 (*Artemisiinae* 1 in the figure below), *Arctanthemum* 2, *Artemisia* 500, *Chrysanthemum* 39, *Crossostephium* 3, *Elachanthemum* 1, *Leucanthemella* 2, *Nipponanthemum* 1, *Opisthopappus* (accepted by Oberprieler et al. 2022), *Stilpnolepis* 1, ...

Cotulinae 10: 120 *Cotula* 50, ...

Glebionidinae 4: 30 *Argyranthemum* 24, *Glebionis* 2, *Heteranthemis* 2. *Ismelia* 1.

Handeliinae 10

Leucantheminae 8 *Leucanthemum* 33, *Rhodanthemum* 15, ...

Leucanthemopsidinae 4: 12

Matricariinae 5 *Achillea* 150 (50 IS), *Anacyclus* 12, *Matricaria*, ...

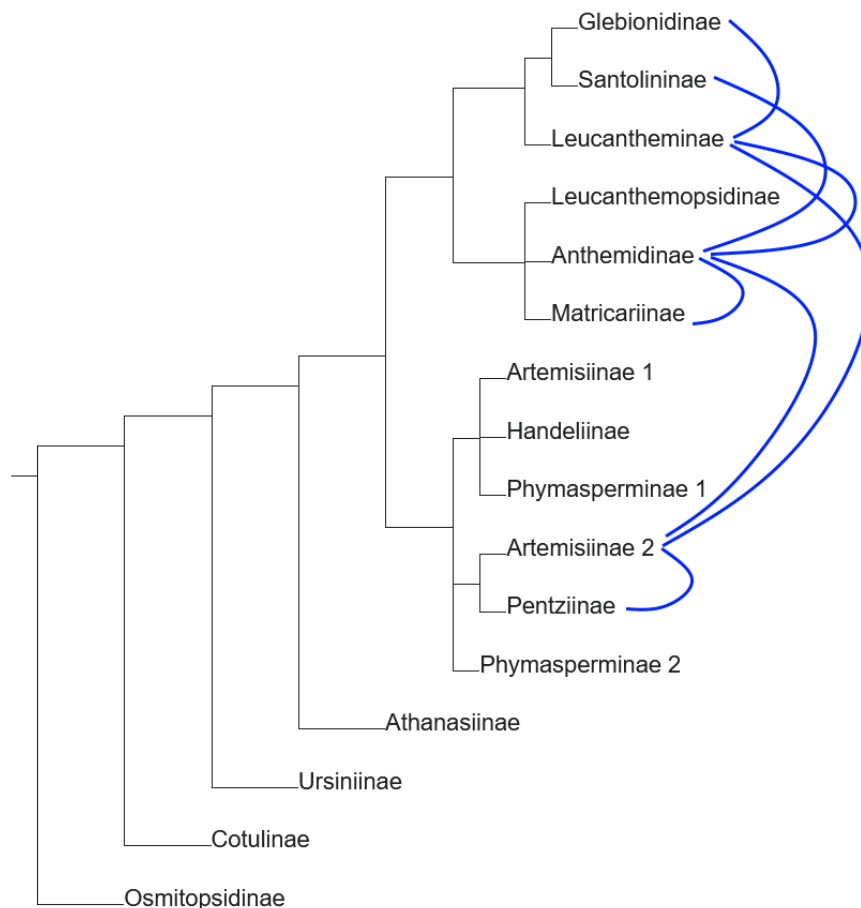
Osmitopsidinae 1: 9.

Pentziinae 8 *Pentzia* 23, ...

Santolininae 5 *Chamaemelum* 2, *Santolina* 10, ...

Ursiniinae 1: 39.

Probably **basic type Asteraceae Asteroideae tribe Anthemideae** (115: 1800) due to 7 intersubtribal hybrids, connecting 8 of the 16 subtribes. No connections by hybridization are currently known with the 4 very small basal subtribes (18: 250) of the Oberprieler et al. classification, see the figure below.



Asteroidae Anthemideae: hybrids in a simplified phylogeny after data of Oberprieler et al. 2022 (<https://refubium.fu-berlin.de/handle/fub188/35301>), from it.wikipedia 2025, CC BY 4.0.

Achillea × „*Chrysanthemum*“ (= *Anthemis*, *Tanacetum*) (→ × *Chrysanthemoachillea*° Prodan ex E. I. Nydr. 1964 in Savul. Fl. Reipubl. Popul. Roman. 9, 408) IK 1970 (2 nat. hyb.: *Achillea setacea* × „*Anthemis millefolia*“ (= „*Chrysanthemum millefoliatum* L.“, *Tanacetum millefolium* (L.) Tzvelev] → × *Chr. borzai*; *Achillea pannonica* × *Anthemis millefolia* → × *Chr. carmen-sylvae*), Knobloch 1972, Stace 1975, cf. McKenzie 2001, POWO 2025: unplaced. At least the first nothospecies is now part of *Achillea*.

Ajania (= *Chrysanthemum*) × *Chrysanthemum* (= *Dendranthema*°) **Artemisiinae** (art. hyb.)

Abd El-Twab et al. 1999, Abd El-Twab & Kondo 2007a (*A. remotipinna* × *D.*

lavandulifolia, *chanetii*), Deng et al. 2010 (*A. przwalskii* × *D. grandiflorum*)

Anthemis × *Chamomilla*° (= *Matricaria*) (→ × *Anthechamomilla*° Rauschert 1974 in Folia Geobot. Phytotax. 9, 258) IK 1981 → see *Anthemis* × *Matricaria*

Anthemis × *Cota* (= *Anthemis* p.p.) **Anthemidinae** (→ × *Cotanthemis* Smejkal) (nat. hyb.: *A. arvensis* × *C. tinctoria*, *A. cotula* × *C. tinctoria*, *A. austriaca* × *C. tinctoria*), cf. McKenzie 2001, POWO 2025

Anthemis cotula × „*Chrysanthemum maritimum agreste*“ (→ × *Anthechrysanthemum* Domin 1935 in Preslia 13–15, 233) IK 1938 → see *Anthemis* × *Tripleurospermum*

Anthemis × *Chamaemelum* **IST Anthemidinae** × **Santolininae** Mitsuoka & Ehrendorfer 1972 (art. hyb.)

Anthemis × *Matricaria* **IST** *Anthemidinae* × *Matricariinae* (→ × *Anthematricaria* Asch. 1892 = × *Anthechamomilla*°) (*A. cotula* × *M. chamomilla*) IK 1933, POWO 2025; see also *Anthemis* × *Tripleurospermum*

Anthemis arvensis, *cotula* × *Tripleurospermum inodorum*, *maritimum*, *perforatum* (= “*Matricaria*” *inodora* = “*Chrysanthemum*” *maritimum*) *Anthemidinae* (→ × *Anthepleurospermum* Rothm. 1963 in Exkursionsflora von Deutschland IV: 324; = × *Tripleurothemis*° C. A. Stace 1990 in *Watsonia* 18, 212 = × *Anthemimatricaria*° 1928 P. Fournier in *Fl. Compl. Plaine Franc.* 273; = × *Anthechrysanthemum*° Domin 1935 in *Preslia* 13–15, 233; see also *Anthemis* × *Matricaria*) Geisenheyner 1890, Knobloch 1972, IK 1991, Stace 1995, POWO 2025

Arctanthemum × *Chrysanthemum* (= *Dendranthema*°) *Artemisiinae* Boase et al. 1997

Argyranthemum frutescens × *Glebionis coronaria* *Glebionidinae* (→ × *Glebiantthemum* J. M. Watson & A. R. Flores) EC Ohtsuka & Inaba 2008, <http://www.freepatentsonline.com/20120192307.pdf>, POWO 2025

Argyranthemum × *Ismelia carinata* = *versicolor* *Glebionidinae* (→ × *Argyrimedia* J. M. H. Shaw 2018 (art. hyb.) <http://www.freepatentsonline.com/20120192307.pdf>, POWO 2025

Argyranthemum × *Rhodanthemum* Muto et al. 2020 **IST** *Glebionidinae* × *Leucantheminae* (*A. frutescens* × *R. gayanum*)

Artemisia sieversiana × *Chrysanthemum* (= *Dendranthema*°) *grandiflorum* *Artemisiinae* (somatic hybrid SO) Furuta et al. 2004 (electrofusion of mesophyll protoplasts), see also Deng et al. 2009, Zhu et al. 2014

Artemisia × *Chrysanthemum* (= *Dendranthema*°) *Artemisiinae* Deng et al. 2009 (EC, *A. vulgaris* × *C. morifolium*), Zhu et al. 2013 (*A. japonica* × *C. morifolium*), Zhu et al. 2014 (*A. vulgaris* × *C. morifolium*)

Artemisia × *Chrysanthemum* (= *Dendranthema*°) × *Crossostephium* *Artemisiinae* Deng et al. 2013 (trigeneric)

Boltonia × *Chrysanthemum* (= *Dendranthema*°) **IT** *Astereae* × *Anthemideae* (→ × *Chrysaboltonia* 1936/37 Arends in *Preis-Verzeichn.*: 6; et 1938 *Haupt-Verzeichn.*: 7; Heydenr. 1938 in *Gartenschönh.* 19: 55; cf. Sealy 1939 in *Bot. Mag. Lond.* 162 sub. t., 9566, in syn. *Chrysanthemum* × *rubellum*; = *Chrysanthemum chaneti*) IK 1947, Knobloch 1972, McKenzie 2001 → This taxon is now considered to belong to *Chrysanthemum zawadskii* = *rubellum* p.p., BCG 2025 (uncertain), POWO 2025

Boltonia × *Matricaria* **IT** *Astereae* × *Anthemideae* Willis 1985 → questionable

Cancrinia maximowiczii × *Chrysanthemum* **IT** *Handeliinae* × *Artemisiinae* Wu et al. 2015. unconfirmed

Chamomilla° (= *Matricaria*) × „*Matricaria*“ (= *Tripleurospermum*) (→ × *Matrichamomilla* Rauschert 1974 in *Folia Geobot. Phytotax.* 9, 258) IK 1981 → see *Matricaria* × *Tripleurospermum*

“*Chrysanthemum*” (= *Glebionis*) × *Ismelia*° (= “*Chrysanthemum*” p.p. = *Glebionis*) → see *Glebionis* × *Ismelia*

“*Chrysanthemum*” × *Matricaria* (→ × *Pseudomatricaria*° Domin 1935 in *Preslia* 13–15, 233; nomen invalid.) IK 1938, see *Matricaria recutita* × *Tripleurospermum perforatum*. POWO 2025 (accepted)

Chrysanthemum (= *Dendranthema*^o) × *Crossostephium* **Artemisiinae** (art. hyb.) Tang et al. 2009, 2010 (*Chr. crassum* × *Cr. chinense*)

Chrysanthemum morifolium × *Leucanthemum* (= *Mauranthemum*) *paludosum* **IST Artemisiinae × Leucantheminae** Wang et al. 2014

Chrysanthemum (= *Dendranthema*^o) *japonicum* × *Nipponanthemum nipponicum* **Artemisiinae** Abd El-Twab & Kondo 2006

Chrysanthemum (= *Dendranthema*^o) *indicum*, *lavandulifolium* × *Opisthopappus* (= *Chrysanthemum*) *taihangensis* **Artemisiinae** (art. hyb.) Yang 2010, Tang et al. 2012

Chrysanthemum (= *Dendranthema*^o) × *Rhodanthemum* **IST Artemisiinae × Leucantheminae** Odajima et al. 2004

Chrysanthemum (= *Dendranthema*^o) × *Tanacetum* **IST Artemisiinae × Anthemidinae** (art. hyb.) Abd El-Twab & Kondo 2007 b (*C. horaimontanum* × *T. vulgare*), Kondo et al. 1999 (*C. japonicum* × *T. vulgare*), Tang et al. 2011 (EC; *C. nankingense* × *T. vulgare*)

Cota ("Anthemis") *tinctoria* p.p.) × *Tripleurospermum* **Anthemidinae** (→ × *Tripleurocota* Starm. 2005 Carinthia II 195/115 (2): 523) (nat. hyb.; art. hyb.: *Cota tinctoria* × *T. inodorum* IPNI 2008, POWO 2025)

Elachanthemum (= *Stilpnolepis* = *Artemisia* p.p.) *intricatum* × *Opisthopappus taihangensis* **Artemisiinae** Zheng et al. 2013

Glebionis (= "Chrysanthemum" p.p.) × *Ismelia* (= *Glebionis* p.p.) **Glebionidinae** Chaudhuri et al. 1976 (art. hyb. *G. coronaria* × *I. carinata*)

Hippolytia × *Nipponanthemum* **IST Anthemidinae × Artemisiinae** Hong et al. 2015 (*H. kaschgarica* × *N. nipponicum*)

Leucanthemella × *Nipponanthemum* **Artemisiinae** (*L. linearis* × *N. nipponicum*) Ogura & Kondo 1998, Abd El-Twab 2001

Leucanthemum × *Pyrethrum*^o (= *Tanacetum* p.p.) **IST Leucantheminae × Anthemidinae** (→ × *Leucantanacetum* Rauschert 1972 publ. 1973 in Feddes Repert. 83, 656) (*L. vulgare* × *T. corymbosum* → × *L. rohlena*) = × *Leucopyrethrum*^o J. Dostál 1984 in Folia Mus. Rer. Nat. Bohem. Occid., Bot. 21, 13 IK 1981, IK 1987, POWO 2025

Matricaria × *Pentzia* **IST Matricariinae × Pentziinae** Mitsuoka & Ehrendorfer 1972 (art. hyb.)

Matricaria × *Tripleurospermum* **IST Matricariinae × Anthemidinae** (→ × *Pseudomatricaria*^o Domin 1935 in Preslia 13–15, 233; nomen invalid.; = × *Matrichamomilla*^o Rauschert 1973 Feddes Repert. 83: 655 <https://link.springer.com/article/10.1007/BF02853147>) (nat. hyb.: *M. recutita* = *chamomilla* × *T. inodorum* = „*Chrysanthemum maritimum agreste*"; art. hyb.: *M. recutita* × *T. tetragonospermum*) IK 1938, Knobloch 1972, cf. McKenzie 2001, POWO 2025 (unplaced), This hybrid is unconfirmed.

Astereae 250: 3000. **17 IG (incl. IST)**

Part of supertribe Asterodae, together with Gnaphalieae.

Attempts for a subdivision of the tribe differ much. The taxonomy is not yet sufficiently resolved.

36 subtribes according to AP website 2025. They are listed e.g. de.wikipedia, e. g.:

Asterinae 13 *Aster* 180, *Callistephus* 1 *chinensis*, *Crinitaria* 13 (or included in *Galatella*),
Galatella 92 (5 IS) (incl. *Linosyris*°; en.wikipedia places *Galatella* in Bellidinae!),
Heteropappus 20, *Kalimeris* (sometimes included in *Aster*), *Tripolium* 1, ...
Bellidinae 2 *Bellis*, *Bellium* 5.
Boltoniinae 3 *Boltonia*, ...
Chrysopsidinae 7: 70 *Chrysopsis* 11, *Heterotheca* 25, ...
Conyzinae 8 *Conyza* 80 (now often included in *Erigeron*), *Erigeron* 350 (incl. *Trimorpha*°),
...
Hinterhuberinae 32 *Celmisia* 60, *Damnamenia* 1, *Olearia* 150 (incl. *Shawia*), *Pleurophyllum*
3, ...
Homochrominae 13 *Amellus* 13, *Chrysocoma* 20, *Felicia* 80, *Polyarrhena* 4, *Zyrphelis* 10, ...
Machaerantherinae 19 *Grindelia* 70, *Haplopappus* 70 (attention: many species once
included in *Haplopappus* are now regarded as belonging to 30 other genera!), *Isocoma*
16, *Machaeranthera* 2, *Rayjacksonia*, *Xanthisma*, *Xanthocephalum* 6, ...
Pentachaetinae 3 *Ericameria* 13 (subtribe uncertain), *Pentachaete* 6, *Rigiopappus* 1, *Tracyina*
1.
Solidagininae 27 *Bigelowia* 2, *Chrysoma* 1, *Chrysothamnus* 9, *Euthamia* 8, *Solidago* (incl.
Oligoneuron°), ...
Symphyotrichinae 6 *Almutaster* 1, *Doellingeria* 3 (or own subtribe!), *Leucosyris* 9, *Psilactis*
6, *Symphyotrichum* 92 (10 IS), ...

In **Asteraceae Asteroideae tribe Astereae** (250: 3000) the number of **14 IG + 3 IST** in relation to 250 genera and 36 subtribes is insufficient to resolve the question of basic type. On the other hand, many common features and the conflicting attempts to divide the tribe suggest that the tribe as a whole might be a basic type.

Almutaster (= *Aster* p. p.) *pauciflorus* × *Machaeranthera arida*, *parviflora* **IST**

Symphyotrichiinae × *Machaerantherinae* (2 art. hyb.: *A. pauciflorus* × *M. arida*,
parviflora) Stucky 1978, Nesom 1994

Aster ageratoides × *Kalimeris incisa* *Asterinae* (nat. hyb., fertile) Tara 1977, 1978, Nesom 1994, Li 2006

Aster amellus × *Erigeron* **IST** *Asterinae* × *Conyzinae* (→ × *Asterigeron*° Rydberg 1917 Fl. Rocky Mts, 891; = × *Asterigeron*° Tzvelev 1994 in Fl. Evropeiskoi Chasti SSSR 7: 185, nomen illeg. = × *Asterron* Olshanskyi 2022) (*A. amellus* × *E. acris*) IK 1996, POWO 2025.

"*Aster*" × *Erigeron* (→ × *Asterigeron*° *watsonii*) is no IG, but the species *Erigeron watsonii*
~~*Aster* × *Helianthus*~~ **IT** *Astereae* × *Heliantheae* → very questionable Christov &
Vassilevska-Ivanova 1999 (*Aster* ... × *H. annuus*)

"*Aster*" *ptarmicoides* (= *Solidago ptarmicoides* = *Oligoneuron album*) × *Solidago canadensis*
(IS) *Solidagininae* (→ × *Solidaster*° Wehrhahn 1932 in Bonstedt, Pareys

Blumengärtnerei II, 525 = × *Asterago*° Everett 1937 in Gard. Chron., Ser. III, 101, 6.

This famous hybrid, spontaneously arisen in culture in 1910, is now often placed as an interspecific hybrid *Solidago* × *lutea*, see also *Oligoneuron* × *Solidago*

Celmisia × *Olearia* (= *Shawia*) **(IS)** *Hinterhuberinae* (→ × *Celmearia* P. Heenan 1993 in Horticulture New Zealand 4, 2 = × *Shawmisia* Feng et al. 2024) Clarkson 1988, Heenan 1993, Nesom 1994, IK 1996, McKenzie 2001 (*C. gracilentia* × *O. arborescens*), Feng et al.

2024 (*O. arborescens* has been shifted to *Shawia*), POWO 2025. The problem is that some authors place *Olearia arborescens* in a separate genus *Shawia* (see Feng et al. 2025), which is not generally accepted.

“Chrysopsis berlandieri” (= *Heterotheca canescens*) × *Heterotheca (subaxillaris subsp.) latifolia*

IS *Chrysopsidinae* (art. hyb.) Harms 1965, Knobloch 1972

Conyza° × *Erigeron* (IS) *Conyzinae* (→ × *Conyzerigeron*° Rauschert 1972 publ. 25. April 1973 in Feddes Repert. 83, 656; = × *Conygeron*° Holub 1973 in Folia Geobot. Phytotax. 8, 156, 176) (nat. hyb.: *C. canadensis* × *E. acris*) Knobloch 1972, IK 1981, Stace 1995, POWO 2025 (*Erigeron* IS).

Conyza° × *Trimorpha*° (= *Erigeron* p.p.) → see *Conyza* × *Erigeron*

“Crinitaria” (= *“Aster p.p.”* = *Galatella p.p.*) × *Galatella*° (= *Aster p.p.*) IS *Asterinae* Nesom 1994 (*Galatella villosa* × *Galatella* = *Linosyris*° *angustissima*)

Damnamenia vernicosa (= *“Celmisia”*) × *Pleurophyllum* *Hinterhuberinae* (nat. hyb.) Given 1973

Doellingeria (= *Aster p.p.*) × *Oclemena* (= *Aster p.p.*) *Symphotrichinae* Gerdes 1998 (see Nesom 2001 a hybrid within *Oclemena* IS)

Ericameria albida (= *“Chrysothamnus”*) × *Ericameria nauseosus* IS *Pentachaetinae* Anderson 1970, Knobloch 1972

Ericameria albida (= *“Chrysothamnus”*) × *Ericameria discoidea* (= *“Haplopappus” macronema*) IS *Pentachaetinae* (→ *Ericameria* × *bolanderi*) (nat. hyb.) Anderson & Reveal 1966, Roberts & Urbatsch 2003, POWO 2025 (*Ericameria* IS)

Erigeron × *Trimorpha*° (= *Erigeron* p.p.) IS *Conyzinae* Cronquist 1947

“Euthamia” × *Oligoneuron*, see *Oligoneuron* × *Solidago*

Galatella (= *Aster p.p.*) × *Linosyris*°, see *Crinitaria* × *Galatella*

Grindelia × *“Haplopappus”* (= *Rayjacksonia*) *Machaeranthinae* (art. hyb.: *G. papposa* × *R. annua*) Nesom 1994

~~*Grindelia* × *Helianthus* IT~~ *Machaeranthinae* × *Heliantheae* → very questionable Christov & Vassilevska-Ivanova 1999 (*G. speciosa* × *H. annuus*)

“Haplopappus” (= *Rayjacksonia*) × *Isocoma* *Machaeranthinae* (art. hyb.: *R. aurea* × *I. veneta*) Jackson & Dimas 1981, Nesom 1994

“Haplopappus” (= *Rayjacksonia*) × *“Machaeranthera havardii”* (= *Xanthisma viscidium*) *Machaeranthinae* Turner & Sanderson 1971 (nat. hyb.), Jackson 1966 (art. hyb.: *R. annua* × *M. havardii*), Jackson 1985 (art. hyb.: *R. aurea* × *M. arenaria*), see Cody 1978, Nesom 1994

Heteropappus (= *Aster p.p.*) × *Kalimeris* (= *Aster p.p.*) *indica* *Asterinae* (→ × *Heterokalimeris*° Kitamura 1939 in Acta Phytotax. & Geobot., Kyoto 8, 195) IK 1947, Knobloch 1972, Tara 1973, Nesom 1994, Willis 1985, McKenzie 2001 (2 nat. hyb.: *H. arenarius* × *K. yomena*, *H. hispidus* × *K. incisa*; 2 art. hyb.)

Isocoma (= *“Haplopappus”*) × *Xanthocephalum* *Machaeranthinae* Hartman & Lane 1991 (nat. hyb. Mexico: *I. veneta* × *X. humile*), Nesom 1994

Machaeranthera × *Leucosyris* (= *“Psilactis”*, *Machaeranthera p.p.*) *Machaeranthinae* (*M. tanacetifolia*, *tagetina* × *Leucosyris* (*“Psilactis”*) *coulteri*) Jackson 1962, Knobloch 1972, Jackson 1979

Machaeranthera × *Symphiotrichum* (= *Aster* p.p.) **IST** *Machaeranthinae* ×

Symphiotrichinae (art. hyb.: *M. riparia* × *S. tenuifolium*) Nesom 1994

Oligoneuron (= *Solidago* p.p.) × *Solidago* (**IS**) *Solidagininae* see “*Aster*” × *Solidago*

Please note, that another 4 nat. hyb. of *Solidago* subgen. *Oligoneuron* are known (see WOPO 2025 sub *Oligoneuron*) which are intergeneric if one accepts *Oligoneuron* as a separate genus. IK 1938, IK 1947, Knobloch 1972, Willis 1985, Xiang & Sengh 1994, Schilling et al. 2008, POWO 2025

Polyarrhena × *Zyrphelis* *Homochrominae* (art. hyb.) Nesom 1994

Rigiopappus × *Tracyina* *Pentachaetinae* (art. hyb.: *R. leptocladus* × *T. rostrata*) Ornduff & Bohm 1975, Nesom 1994

Calenduleae 10: 120. **1 IG**

Dimorphotheca 19, *Osteospermum* 45, *Tripteris*, ...

Dimorphotheca × *Osteospermum* <http://www.freepatentsonline.com/y2011/0247105.html>

Coreopsideae 30: 370. **1 IG** (part of supertribe Helianthodae)

Often no subdivision, 3 subtribes in es. wikipedia.

Anacis (accepted by POWO 2025), *Bidens* 249, *Coreopsis* 75, *Cosmos*, *Dahlia* 4, ...

~~*Cosmos* × *Dahlia*~~ *Coreopsidinae*: According to Shaw 2015 in *Phytoneuron* 53: this putative hybrid very probably belongs to *Dahlia*.

Anacis × *Coreopsis* *Coreopsidinae* (→ × *Coreacis* H. N. Sun & Z. H. Feng 2024 *Phytotaxa*) POWO 2025

Eupatorieae 185: 2000. **3 IG** (incl. **2 IST**)

part of supertribe Helianthodae.

20 subtribes.

Ageratum, *Eupatorium* 42 (formerly 1200, now divided in many genera) (**4 IS**),

Hartwrightia 1, *Koanophyllon* 120, *Liatris* 41, *Litrisa* 1 *carnosa*, *Pseudokyrsteniopsis* 1, *Stevia* 200, ...

Carterothamnus° *anomalochaeta* (= *Hofmeisteria* p.p.) × *Hofmeisteria fasciculata* **IS**

Hofmeisteriinae Powell 1985 (art. hyb.)

Carphephorus × *Trilisa* **HY** *Liatrinae* Schilling 2011 (molecular data suggest that both *Litrisa carnosa* as well as *Hartwrightia floridana* are of hybrid origin)

Chromolaena × *Koanophyllon* **IST HY** *Praxelinae* × *Critoniinae* (→ *Osmiopsis*) Ribeiro et al. 2025 (nat. hyb. Hispaniola, supposed already since 1975)

Koanophyllon × *Pseudokyrsteniopsis* (= *Eupatorium* p.p.) **IST** *Critoniinae* × *Alomiinae* Powell 1985 (art. hyb., *K. solidaginifolium* × *P. perpetiolata*)

Gnaphalieae 180: 2000. **18 IG**

part of supertribe Asterodae, together with *Astereae*.

Attempts to subdivide the tribe are very contradictory. For details see Smitsen et al. 2020.

Anaphalis 110, *Anaphalioides* 7, *Antennaria*, *Argyrotegium* 4, *Cassinia* 20, *Euchiton* 17, *Ewartia* 4, *Ewartiothamnus* 1, *Filago* 12-46, *Gamochaeta* 50, *Gnaphalium* 150, *Helichrysum* 600, *Leontopodium* 60, *Leucogenes* 2, *Logfia* 3-12, *Lucilia* 8, *Micropus* 5, *Ozothamnus* 50, *Phagnalon* 40, *Pseudognaphalium* 60, *Psilocarphus* 5, *Psychrophyton* 10, *Raoulia* 26, *Relhania* 13, *Stoebe* 25, *Stylocline* 7, *Vellereophyton* 7, *Xerochrysum* 6, ...

Possibly **basic type Asteroideae tribe Gnaphalieae** (180: 200), due to 18 cases of intergeneric hybridization, many of them wide hybrids.

Anaphalioides bellidioides × *Euchiton* McKenzie 2001 (art. hyb.: *A. bellidioides* × *Euchiton*, Fig. 6.1, 7.1)

Anaphalioides bellidioides × "*Ewartia*" (= *Ewartiothamnus*) *sinclairii* (→ × *Antiothamnus* Feng et al. 2024) McKenzie 2001, McKenzie et al. 2004, 2008, 2015, Feng et al. 2024

Anaphalioides bellidioides × *Helichrysum lanceolatum* (→ × *Anrysum* Feng et al. 2024) (nat. hyb., New Zealand) Allan 1962, Jordan 1995, Breitwieser & Ward 2003, Feng et al. 2024

Anaphalioides × *Leucogenes* (nat. hyb.) Falvey 1996, McKenzie 2001

Anaphalioides × *Raoulia* Falvey 1996 (nat. hyb.), McKenzie 2001 (art. hyb.: *A. bellidioides* × *R. monroi*, *tenuicaulis*; photo p. 300)

Argyrotegium mackayi × *Leucogenes leontopodium* Smitsen et al. 2015 (nat. hyb. New Zealand, wide cross)

~~*Cassinia aculeata* × *Ozothamnus obcordatus*~~ **Cassiniinae** (Orchard 2009 The suggested hybridization is discussed, and dismissed:

<https://www.researchgate.net/publication/248898194>

Euchiton × *Ewartia* McKenzie 2001 (art. hyb.: *Eu. audax* × *Ew. planchonii*, *sinclarii*; Fig. 6.1)

Euchiton × *Gamochaeta* McKenzie 2001 (art. hyb.: *E. audax* × *G. spicata*)

Euchiton × *Helichrysum* McKenzie 2001 p. 300 (art. hyb.: *E. cf. involucratus* × *H. intermedium*; photo)

Euchiton × *Leucogenes* Drury 1972 (nat. hyb., art. hyb.), McKenzie 2001 (art. hyb.; Fig. 6.1)

Euchiton × *Raoulia* McKenzie 2001 p. 300 (art. hyb.: *E. limosus* × *R. tenuicaulis*)

Filago × *Gnaphalium* Stace 1975 (nat. hyb. in France: „very doubtful”, *F. gallica* × *G. uliginosum*)

Filago × "*Logfia*" (= *Filago* p.p.) **IS** (→ × *Filfia* J. Holub 1998 in Preslia 70, 104 = → × *Giflifa*° Chrtěk & Holub 1963 in Preslia 35, 12) (nat. hyb.: *F. vulgaris* = *germanica* × *L. arvensis* → *Filago mixta* Holuby), IPNI 2007 (*Filago* × *mixta*). Please note that the genus *Logfia* exists, but that *Logfia arvensis* is an obsolete synonym of *Filago arvensis*, and that the authors Holub and Holuby are not identical.

Gifola° (= *Filago* p.p.) × *Oglifa*° (= *Filago* p.p.) **IS** (nat. hyb.: *Filago vulgaris* = *germanica* × *F. arvensis*) IK 1970. This hybrid is identical with the former hybrid.

Gnaphalium × *Helichrysum* Cockayne & Allan 1934 (*G. trinerve* × *H. bellidioides*), Allan 1961, Allan 1962 (*G. cf. traversii* × *L. leontopodium*: hybridism probable, but unconfirmed), Molloy 1995

Helichrysum × *Leucogenes* Molloy 1995, McKenzie 2001 (art. hyb.; Fig. 6.1)

Helichrysum × *Raoulia* Brockie 1956 (*H. dimorphum* × *Raoulia* div. spec.), Allan 1961
Leucogenes × *Psychrophyton* McKenzie 2001 (art. hyb; fig. 7.1)
Leucogenes × *Raoulia* (→ × *Leucoraoulia* Cockayne & Allen 1928 in Cockayne Veg. New Zealand: 284) (*L. grandiceps, rubra* × *R. goyeni, bryoides, eximia*) Cockayne & Allan 1934, Allan 1962, Knobloch 1972, Molloy 1995, McKenzie 2001 (6 nat. hyb.), Breitwieser & Ward 2003, McKenzie et al. 2015, Feng et al. 2024
Psychrophyton × *Raoulia* McKenzie 2001 (art. hyb; fig. 7.1)

Helenieae 14 (supertribe Helianthodae)

Heliantheae (excl. Coreopsideae, Helenieae, Madieae, Millerieae, Perityleae) 190: 2500. **9 IG** (incl. **2 IST** (Helianthinae – Verbesininae, Helianthinae – Zinniinae) (supertribe Helianthodae.

12 subtribes, e. g.:

Ambrosiinae 7 *Ambrosia* (incl. *Franseria*), ...

Ecliptinae 50 *Lipochaete* 20, *Melanthera* 3 (excl. species now placed in *Lipochaete* and *Wollastonia*), *Sphagneticola*, *Wedelia*, *Wollastonia* 8, ...

Enceliinae 5 *Encelia*, *Geraea*, ...

Engelmanniinae 9

Helianthinae 22 *Helianthus*, *Tithonia*, *Viguiera*, ...

Rudbeckiinae 2

Verbesininae 4 *Verbesina*, ...

Zinniinae 7 *Echinacea*, *Sanvitalia*, *Zinnia*, ...

Ambrosia artemisiifolia × *Franseria*^o (= *Ambrosia*) *acanthicarpa* Ambrosiinae Payne 1964

Bidens tripartita × *Helianthus annuus* Coreopsideae × Helianthinae Christov & Vassilevska-Ivanova 1999 → very questionable

Carduus acanthoides × *Helianthus annuus* Cardueae × Heliantheae Hristova-Cherbadzhi (2020) → Not symmetric hybrids, obviously a transfer of genes could be observed.

Complaya^o *trilobata* × *Lipochaete* ("*Melanthera*") *remyi* → *Lipochaete* × *Sphagneticola*

Echinacea × *Helianthus* **IST** Zinniinae × Helianthinae Vassilevska-Ivanova & Naidenova 2005, Vassilevska-Ivanova et al. 2013/2014, 2015 (*E. purpurea* × *H. annuus*)

Echinacea purpurea × *Rudbeckia hirta* **IST** Zinniinae × Rudbeckiinae (→ "× *Echibeckia*") This cultivar ('Summerina Orange') has a patent number and is listed by the Missouri Botanical Garden (2024):

<https://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?taxonid=441833&isprofile=0&cv=5>, but according to the following URL it is thought to be a form of *Rudbeckia hirta*: <https://www.greenhousegrower.com/crops/intergeneric-crosses-are-a-new-perennial-trend/> POWO 2025 (accepts × *Echinabeckia* 2019 M. H. J. van der Meer Cact. Phantast. (7)-1: 1)

Encelia farinosa, frutescens × *Geraea canescens* Enceliinae (nat. hyb.) Kyhos 1967, Knobloch 1972, Clark 1998 (*Geraea canescens* is annual, *Encelia* is a shrub!)

Gaillardia speciosa × *Helianthus annuus* **IST** **Gaillardiiinae** × **Helianthinae** → very questionable Stace, Christov & Vassilevska-Ivanova 1999 (art. hyb.)

~~*Helianthus annuus* × *Matricaria recutita* = *chamomilla*~~ **IT** **Heliantheae** × **Anthemideae** Christov & Vassilevska-Ivanova 1999 (art. hyb.) → very questionable

~~*Helianthus annuus* × *Onopordum acanthium*~~ **ISF** **Heliantheae** × **Cardueae** Georgieva-Todorova 1971, Christov & Vassilevska-Ivanova 1999 (art. hyb.) → very questionable

~~*Helianthus annuus* × *Silphium perfoliatum*~~ **IST** **Helianthinae** × **Engelmanniinae** Christov & Vassilevska-Ivanova 1999 (art. hyb.) → very questionable

~~*Helianthus annuus* × *Telekia speciosa*~~ **IT** **Heliantheae** × **Inuleae** Christov & Vassilevska-Ivanova 1999 (art. hyb.) → very questionable

Helianthus annuus × *Tithonia rotundifolia* **Helianthinae** Heiser et al. 1969, Christov & Vassilevska-Ivanova 1999, Vassilevska-Ivanova et al. 1999 (art. hyb.), Gomez-Martinez et al. 2010

Helianthus annuus × *Verbesina helianthoides, alata* **IST** **Helianthinae** × **Verbesininae** Vassilevska-Ivanova et al. 1996, Christov & Vassilevska-Ivanova 1999, Vassilevska-Ivanova & Tcekova 2002, Vassilevska-Ivanova 2005

Helianthus niveus, debilis × *Viguiera* (= *Helianthus*) *porteri* **Helianthinae** Heiser 1963, Heiser et al. 1969, Knobloch 1972 (art. hyb.: 4 nothospecies)

Lipochaete lobata × *Lipochaete* ("Melanthera", "Wollastonia") *integrifolia* **IS** **Ecliptinae** Carr 1997

Lipochaete integrifolia × *Sphagneticola* (= *Complaya*) *trifoliata* **Ecliptinae** Carr 1997

Lipochaete × *Wollastonia* ("Wedelia") *biflora* **Ecliptinae** Rabakonandrianina & Carr 1981 (several art. hyb.)

Lipochaete ("Melanthera") *micrantha* × *Wollastonia* (= "Melanthera") *biflora* **Ecliptinae** Carr 1997

Tragoceros° (*Zinnia* p.p.) × *Zinnia* (sect. *Mendezia*) **IS** **Zinniinae** (art. hyb.) Olorode & Torres 1970

Inuleae 68 (supertribe Helianthodae.

Madiieae 36: 235. **18 IG** (all in Madiinae)(supertribe Helianthodae)

5 subtribes (after en.wikipedia):

Arniciinae 1: 32 *Arnica* 32.

Baeriinae 8: 36 *Amblyopappus*, *Baeriopsis*, *Constancea*, *Eriophyllum*, *Lasthenia*, *Monolopia*, *Pseudobahia*, *Syntrichopappus*.

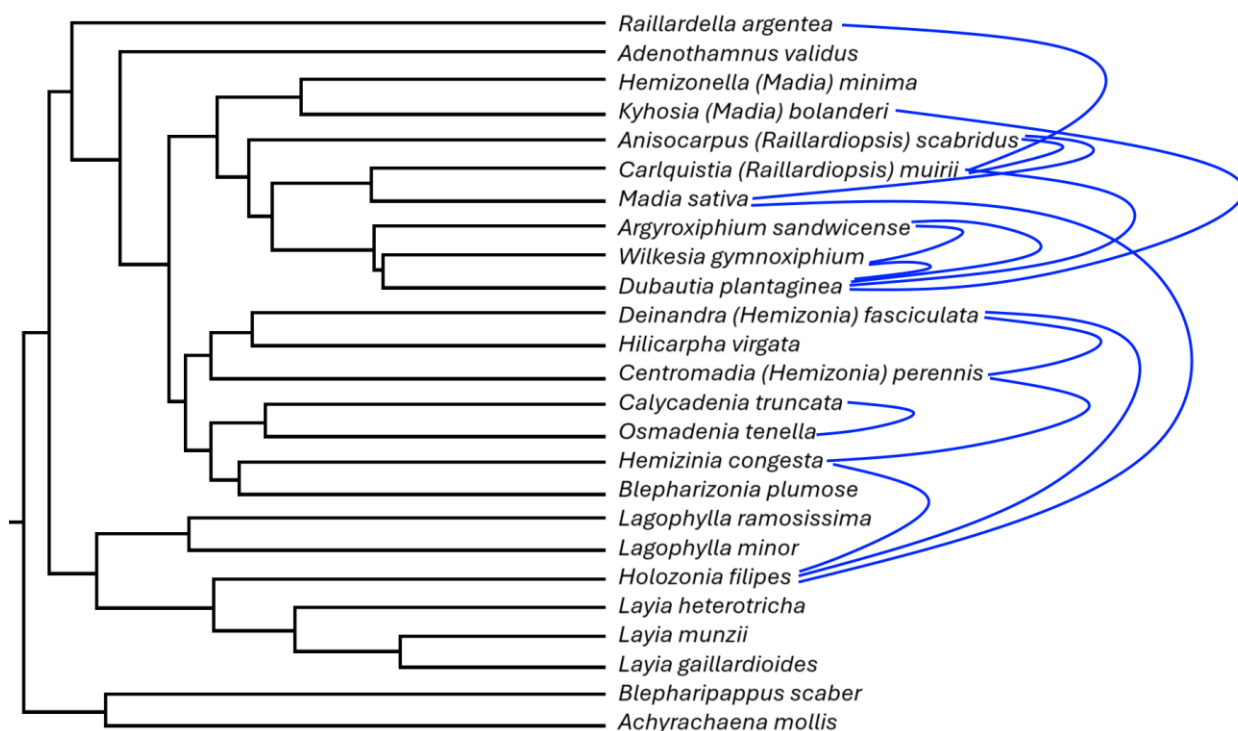
Hulseinae 2: 8 *Eatonella*. *Hulsea*.

Madiinae 24: 160 *Achyrrachaena*, *Adenothamnus*, *Anisocarpus*, *Argyroxiphium*, *Blepharipappus*, *Blepharizonia*, *Calycadenia* (**12 IS**), *Carlquistia* 1 *muirii* (= *Raillardiopsis muirii*), *Centromadia*, *Deinandra*, *Dubautia* 39, *Harmonia*, *Hemizonella*, *Hemizonia*, *Holocarpa*, *Holozonia*, *Jensia*, *Kyhosia* 1 *bolanderi* (= *Madia bolanderi*), *Lagophylla*, *Layia*, *Madia* 10, *Osmadenia*, *Raillardella*, *Wilkesia*.

Venegasiinae 1: 1 *Venegasia*.

Probably basic type Asteraceae Asteroideae Madieae subtribe Madiinae (24: 160): all clades (with the exception of a basal clade with *Achyrachaena* and *Blepharipappus*) are connected by **18 IG**, see the figure below. – Intensive studies of the radiation in the Hawaiian silversword alliance (*Argyroxiphium*, *Dubautia*, *Wilkesia*), deeply nested within the tribe, were presented by Crompton (2021, 2022, 2023).

- Anisocarpus scabridus* × *Carlquistia muirii* **Madiinae** Carr 2003 (art. hyb.)
Anisocarpus × *Madia* **Madiinae** Carr 2003 (art. hyb.)
Argyroxiphium div. spec. × *Dubautia* div. spec. **Madiinae** (→ × *Argyrautia* Sherff 1944 in Amer. J. Bot. 31, 159) IK 1950, Knobloch 1972, Willis 1985, Carr 1995 (nat. hyb., fully fertile), Carr 2003, POWO 2025
Argyroxiphium div. spec. × *Wilkesia* div. spec. **Madiinae** Carr 1985 (art. hyb.), McKenzie 2001 (5 nat. hyb.), Carr 2003
Calycadenia mollis, *villosa* × *Osmadenia tenella* **Madiinae** Carr 2003 (art. hyb.)
Carlquistia muirii × *Dubautia laevigata* **Madiinae** Carr 2003 (*C. muirii* = *Raillardiodopsis*° *m.* × *D. laevigata*; art. hyb.)
Carlquistia × *Kyhosia* **Madiinae** Carr 2003 (*C. muirii* = *Raillardiodopsis*° *m.* × *K. bolanderi* = “*Madia bolanderi*”; art. hyb.)
Carlquistia („*Raillardiodopsis*”) × *Kyhosia* × *Dubautia* („*Madia*”) **Madiinae** Carr et al. 1996 (art. hyb., trigeneric, *C. muirii* × *K. bolanderi* × *D. scabra*)
Carlquistia muirii × *Raillardella prinlei* **Madiinae** Kyhos et al. 1990 Carr 2003 (art. hyb.)
Centromadia × *Deinandra* **Madiinae** Carr 2003 (nat. hyb.)
Centromadia × *Hemizonia* **Madiinae** Carr 2003 (art. hyb.)
Deinandra × *Holozonia* **Madiinae** Carr 2003 (art. hyb.)
Dubautia × *Kyhosia* **Madiinae** Carr 2003 ([*D. knudsenii* × *laxa*) × *K. bolanderi*; art. hyb.)
Dubautia × *Madia* **Madiinae** Baldwin et al. 1991, Carr et al. 1996, Carr 2003
Dubautia × *Raillardia*° (= *Dubautia* p.p.) **IS Madiinae** (→ × *Railliautia* Sherff 1935 in Bull. Bishop Mus., Honolulu, No. 135, p. 136, in obs. = *Dubautia* sect. *Raillardia*) IK 1938, Knobloch 1972, Willis 1985, Carr 2003, POWO 2025 (→ *Dubautia* IS)
Dubautia laevigata × *Raillardiodopsis*° *muirii* **Madiinae** (art. hyb.) Carr et al. 1996, Carr 2003
→ *Carlquistia* × *Dubautia*
Dubautia × *Wilkesia* div. spec. **Madiinae** Carr 1985 (art. hyb.), Carr 2003
Harmonia × *Madia* **Madiinae** Carr 2003 (art. hyb.)
Harmonia × *Jensia* **Madiinae** Carr 2003 (art. hyb.)
Hemizonia arida × *Holozonia filipes* **Madiinae** Clausen et al. 1937 (art. hyb.)
Layia × *Madia* **Madiinae** (art. hyb. + nat. hyb.) Clausen et al. 1937, Kyhos et al. 1990, Carr 2003
Madia × *Raillardiodopsis*° (= *Carlquistia*) **Madiinae** Baldwin et al. 1991, Carr 2003 → see *Carlquistia* × *Madia*
Raillardella × *Raillardiodopsis*° *muirii* → see *Carlquistia* × *Raillardella*



Asteraceae Asteroideae Madieae subtribe Madiinae: hybridization (selection) in the phylogeny according to Baldwin (2003) <https://www.researchgate.net/publication/313631867>.

Millerieae 33 (supertribe Helianthodae)

8 subtribes (from en.wikipedia 2025), e.g.

Espeletiinae 4: 200 *Espeletia* 159 (19 IS), ...

Galinsoginae 12: 87.

Espeletia spec. × *Libanothamnus*^o *neriifolius* (= *Espeletia*) *neriifolia* **IS** Espeletiinae (→ *Espeletiopsis*^o (= *Espeletia*) *meridensis*) Diazgranados 2012 (this taxon is possibly of hybridogeneous origin, „however, more material is needed to confirm this hypothesis.”)

Carramboa^o (= *Espeletia*) *badilloi* × *Ruilopezia*^o (= *Espeletia*) *marcescens* **IS** Espeletiinae (→ *Espeletiopsis* (= *Espeletia*) *tachirensis*) Diazgranados 2012 (the author confirms the supposed hybridogeneous origin of this taxon)

Galinsoga quadriradiata × *Sabazia sarmentosa* Galinsoginae Canne 1977 (putative nat. hyb. Mexico, cited after Warwick & Sweet 1983)

Neurolaeneae 8

part of supertribe Helianthodae.

Perityleae 7: 24. **3 IG** (all in Peritylinae)

3 subtribes (after en.wikipedia):

Galeaninae 2: 6,

Lycapsinae 1: 1,

Peritylinae 4: 17 *Amauria* 4 (partly included in *Perityle*), *Eutetras* 2, *Pericome* 2, *Perityle* 9.

All 4 genera of **Asteroideae Perityleae subtribe Peritylinae** (4: 17) are connected by hybridization and thus belong to the same basic type.

Amauria × *Perityle* **Peritylinae** Powell 1972

Eutetras × *Perityle* **Peritylinae** Powell 1972

Pappothrix° (= *Perityle* p.p.) × *Perityle* **IS Peritylinae** see Powell 1985

Pericome × *Perityle* **Peritylinae** Powell 1972

Polymnnieae 1: 8

part of supertribe Helianthodae.

Senecioneae 150: 3500. **5 IG**

en.wikipedia genera according to GCD 2022, no subtribes!

Doronicum is sometimes separated as its own tribe.

Pelser et al. (cited in en.wikipedia 2025 for *Senecio*) write: “As of 2007, many genera and the whole tribe were in need of revision. Many species currently placed in the genus need to be transferred to other or new genera, and others have been retransferred to *Senecio*. In its new delimitation the genus is still not monophyletic”.

Baculellum 1 *articulatum* (in 2017 separated from *Curio*), *Cineraria* 20, *Culcitium* 17, *Curio* 20 (formerly part of *Senecio*), *Jacobaea* 45, *Kleinia* 40, *Ligularia* 140, *Othonna* 120, *Parasenecio* 70, *Petasites*, *Senecio* 1500 (excl. *Curio*), *Tussilago* 1, ...

The dominant genus of **Asteroideae tribe Senecioneae** is *Senecio*, one of the largest genera of plants at all, and its near allies, exhibiting an extremely wide range of life forms and morphological differences. All these species seem to belong to the same basic type with about 2000 species or more, but further research is needed.

IS: POWO (2025): *Cineraria* 0 IS, *Culcitium* 0 IS, *Curio* 0 IS, *Jacobaea* 7 IS, *Kleinia* 0 IS, *Senecio* 18 IS, ...

Baculellum articulatum × *Curio* (→ × *Bacurio* Gideon F. Sm. & Figueiredo) (first publ. 2017, the monotypic *B. articulatum* was formerly placed in *Cacalia*, *Curio*, *Kleinia*, *Senecio*) (*B. art.* × *Curio rowleyanus* → × *Bacurio delphinatifolius* = × *Senecurio* (Gideon F. Sm. & Figueiredo) J. M. H. Shaw 2022 = *Kleinia* × *peregrina* 1988) POWO 2025

Cacalia° × *Senecillis*° → see *Ligularia* × *Parasenecio*

Cineraria (= *Senecio* p.p.) × *Jacobaea* (= *Senecio* p.p.) (→ × *Jacoraria*° P. V. Heath in *Calyx* 6 (2): 55) IK 1999, POWO 2025 (unplaced → *Jacobaea* × *albescens*)

Cremanthodium × *Ligularia* (*L. nelumbifolia* × *C. stenoglossum*) (nat. hyb.) Ning et al. 2019, Hu et al. 2021

Culcitium (= *Senecio* p.p.) × *Lasiocephalus*° (= *Senecio* p.p.) (Andes; putative) Rejzková et al. 2009, Duskova et al. 2010

Curio × *Senecio* (→ × *Senecurio* Gideon F. Sm. & Figueiredo 2020 *Phytotaxa* 464, 185

<https://doi.org/10.11646/phytotaxa.464.2.6> “As comprehensively argued by Ozerova

et al. (2017), commonly cultivated South African material widely known as *Senecio kleiniiformis* Suessenguth represents an intergeneric hybrid derived from a species of *Curio* Heath (1997: 136) and *Senecio tropaeolifolius*”), POWO 2025

Jacobaea (= *Senecio* p.p.) × *Senecio* (→ × *Jaconecio*° P. V. Heath in *Calyx* 6 (2): 55) IK 1999, Calvo et al. 2013 („One of the two *J. kirghisica* specimens that were sequenced contains ITS copies that are most closely related to those of sect. *Crociseris* as well as copies that nest among ITS accessions of *Jacobaea*. This suggests intergeneric hybridization between *Senecio* and *Jacobaea*”), POWO 2025 (unplaced → *Senecio cambrensis*)

Ligularia × *Japonicalia* (→ × *Ligonicalia* Feng et al. 2024)

Ligularia × *Parasenecio* (→ × *Parasenaria* J. M. H. Shaw 2008 *Hanburyana* 3: 15 = × *Liguparasenecio* H. Ohashi & K. Ohashi 2008 *J. Jap. Bot.* 83 (2): 113) (nat. hyb.: *L. fischeri* × *P. delphiniifolia*) McKenzie 2001, IPNI 2011, POWO 2025

Tageteae 28: 216 supertribe Helianthodae

no subtribes (2025).

Flaveria 21, *Haploesthes* 3, *Pectis* 90, *Sartwellia* 3, *Tagetes* 50, ...

Flaveria × *Haploesthes* Powell 1978

Flaveria × *Sartwellia* Powell 1978

Haploesthes × *Sartwellia* Powell 1978

Tagetes erecta × *Zinnia elegans* IT **Tageteae** × **Heliantheae** **Zinniinae**

<https://patents.justia.com/patent/20180343817> (2017)

Carduoideae 81: 2600.

AP website 2025: no subdivision; but 4 tribes in en.wikipedia 2025:

Cardueae 72, Dicomeae 7: 120, Oldenburgieae 1: 4, Tarchonantheae 3: 17.

Cynareae (= Cardueae) 72: 2500. 4 IG

Attempts to subdivide the tribe differ much. For practical reasons we use the classical subdivision in 5 tribes:

Cardopatiinae 2 *Cardopatium*, *Cousiniopsis*.

Carduinae (incl. Onopordinae) 29 *Arctium*, *Carduus* 100, *Cirsium* 500 (incl. *Lophiolepis* or *Lophiolepis* separated), *Cousinia*, *Cynara*, *Galactites*, *Notobasis*, *Onopordum*, *Xeranthemum*, ...

Carlininae 5 *Atractylis* 22, *Carlina* 28, ...

Centaureinae 30 *Carthamus* 20, *Centaurea* 300 (formerly 700; incl. *Acosta*°, *Calcitrapa*°, *Cnicus*°, *Colymbada*°, *Cyanus*°, *Jacea*°), *Psephellus* 90 (incl. *Aethiopappus*°; formerly part of *Centaurea*), *Serratula* 2, ...

Echinopinae 1: *Echinops* 120, ...

- Acosta*[°] (= *Centaurea* p.p.) × *Calcitrapa*[°] (= *Centaurea* p.p.) **IS Centaureinae** (→ × *Acostitrapa*[°] Rauschert 1972 publ. 1973 in Feddes Repert. 83, 655) (3 nat. hyb.) IK 1981, POWO 2025 (= *Centaurea* IS, 3 nothospecies)
- Acosta*[°] (= *Centaurea* p.p.) × *Colymbada*[°] (= *Centaurea* p.p.) **IS Centaureinae** (→ × *Colymbacosta*[°] Rauschert 1972 publ. 1973 in Feddes Repert. 83, 656) (nat. hyb.: *A. stoebe* × *C. scabiosa*) IK 1981
- Acosta*[°] *diffusa* (= *Centaurea* p.p.) × *Jacea*[°] (= *Centaurea* p.p.) *margarita-alba* **IS Centaureinae** (→ × *Jaceacosta*[°] Rauschert 1972 publ. 1973 in Feddes Repert. 83, 655) (5 nat. hyb.) IK 1981, Czerepanov 1995 (nat. hyb. in Eastern Europe), cf. McKenzie 2001. POWO 2025 (= *Centaurea* IS, 5 nothospecies)
- Calcitrapa*[°] (= *Centaurea* p.p.) × *Colymbada*[°] (= *Centaurea* p.p.) **IS Centaureinae** (→ × *Calcitrymbada*[°] Smejkal (nat. hyb.: *Ca. solstitialis* × *Co. scabiosa*) McKenzie 2001
- Calcitrapa*[°] (= *Centaurea* p.p.) × *Jacea*[°] (= *Centaurea* p.p.) **IS Centaureinae** (→ × *Jaceitrapa*[°] Rauschert 1972 publ. 1973 in Feddes Repert. 83, 656 (nat. hyb. *C. solstitialis* × *J. pratensis*, *C. stellata* × *J. pseudophrygia*, *C. iberica* × *J. salicifolia*) IK 1981, Czerepanov 1995 (nat. hyb. in Caucasus), McKenzie 2001
- Carduus* × *Cirsium* **Carduinae** (→ × *Cirsiocarduus* 1928 P. Fournier in Fl. Compl. Plaine Franc. 277 = × *Carduocirsium*[°] Sennen 1931 in Le Monde des Plantes 32, 19, in obs.; confer × *Carduocirsium borderei* (Rouy) 1940 P. Fournier in Quatre Fl. France, 1004: *Carduus borderi*) IK 1933, IK 1938, IK 1950, Knobloch 1972, Willis 1985, McKenzie 2001 (ca. 10 nat. hyb.) <http://www2.dijon.inra.fr/flore-france/car.htm>, POWO 2025
- Carduus* × *Galactites* **Carduinae** (→ × *Carduogalactites* 1940 P. Fournier Quatre Fl. France, 1001) (*C. pycnocephalus* × *G. elegans* = *tomentosus*) IK 1950, Knobloch 1972, <http://www2.dijon.inra.fr/flore-france/car.htm>. POWO 2025
- Carduus* × *Lophiolepis* (= *Carduus*) **IS Carduinae** (→ × *Lophioluus* Feng et al. 2024 (*C. uncinatus* × *L. turkestanica*))
- Carduus acanthoides* × *Helianthus annuus* IT **Cardueae × Heliantheae** → very questionable Christov & Vassilevska-Ivanova 1999
- Carthamus tinctorius* × *Helianthus* IT **Cardueae × Heliantheae** Morozow 1947 very questionable
- Centaurea* × *Psephellus* (= *Aethiopappus*[°]) **Centaureinae** (→ × *Centaureopappus*[°] Heydt; cf. × *Centaureopappus*[°] *hybridus* 1932 hort. ex Möllers, Deutsch. Gärtner-Zeit. 47, 166) IK 1938, Knobloch 1972, POWO 2025 (unplaced)
- Centaurea* × *Serratula* **Centaureinae** (→ × *Centausererratula* Arènes 1952 in Notul. Syst. (Paris) 14, 188) (nat. hyb.: *C. pygmaea* × *S. cerinthefolia* → *Serratula* × *mouterdei*) IK 1959, Knobloch 1972, Dittrich 1981, Willis 1985
- Cirsium vulgare* × *Lophiolepis* (= *Cirsium* p.p.) **IS HY Carduinae** (→ × *Lophiocirsium* Del Guacchio, Bureš, Iamónico & P. Caputo 2022) Bureš et al. 2024 (*Cirsium vulgare* is of intergeneric origin *Cirsium* × *Lophiolepis*), POWO 2025 (→ *Cirsium* IS)
- Colymbada*[°] (= *Centaurea* p.p.) × *Jacea*[°] (= *Centaurea* p.p.) **IS Centaureinae** (→ × *Colyceae*[°] J. Fernandez Casas & Susanna 1982 in Fontqueria 2: 21) (nat. hyb.) IK 1991, POWO 2025

Cichorioideae 100: 1800

Only 1 tribe (AP website 2025)

Cichorieae 100: 1800. **10 IG** (incl. **4 IST** (Crepidinae – Lactucinae, Hyoseridinae – Hypochaeridinae))

11 subtribes:

Chondrillinae 3 *Chondrilla* 30, *Phitosia*, *Willemetia* 2.

Cichoriinae 6: *Arnoseris* 1, *Cichorium* 6, *Tolpis* 20, ...

Crepidinae 22: *Crepidiastrum* 18, *Crepis* 200, *Faberia* 7, *Ixeris* 15, *Lapsana* 1, *Mojiangia* 1, *Taraxacum* 700 + apomictic species, *Youngia* 30, ...

Hieraciinae 5 *Andryala*, *Hieracium* 500 + apomictic species, *Pilosella* 110 + apomictic species (often included in *Hieracium*), ...

Hyoseridinae 5 *Reichardia*, *Sonchus* (incl. *Lactucosonchus*^o), ...

Hypochaeridinae 8 *Hypochaeris* 60, *Leontodon* 40 (incl. *Hedypnois*^o), *Picris*, *Prenanthes*, *Scorzoneroides* 26, *Urospermum* 2, ...

Lactucinae 3–4 *Cicerbita* 20 (some species included in *Lactuca* by some authors), *Lactuca* 60, *Mycelis*, *Notoseris*, ...

Microseridinae 22 *Microseris* 14, *Uropappus* 1, ...

Scolyminae 4 *Scolymus* 3, ...

Scorzonerinae 14 *Podospermum* 17, *Scorzonera* 120, ...

Warioniinae.

Possibly **basic type Asteraceae subfam. Cichorioideae** (100: 1800): Only one uniform tribe exists, 2 intersubtribal hybrids connect 5 of the 11 subtribes, see the figure below.

Andryala × *Pilosella* **Hieraciinae** **HY** Fehrer et al. 2007 (molecular data suggest “two intergeneric hybridization events between ancestral lineages that resulted in cytoplasmic transfer from *Hieracium*/*Chionoracium* to *Pilosella*, and from the introgressed *Pilosella* lineage to *Andryala*)

Crepidiastrum platyphyllum × *Lactuca squarrosa* **IST** **Crepidinae** × **Lactucinae** Ono 1955, Knobloch 1972, Ohashi & Ohashi 2007

Crepidiastrum platyphyllum × *Paraixeris*^o *denticulata* (= *Crepidiastrum denticulatum*) **IS** **Crepidinae** (→ ×*Crepidiastrixeris*^o Kitamura 1937 Acta Phytotax. Geobot. 6: 235) (3 nat. hyb.) Knobloch 1972, McKenzie 2001, Saito et al. 2006, Ohashi & Ohashi 2007, POWO 2025 (→ *Crepidiastrum* **IS**)

Crepidiastrum × *Youngia* **Crepidinae** Knobloch 1972, Ohashi & Ohashi 2007

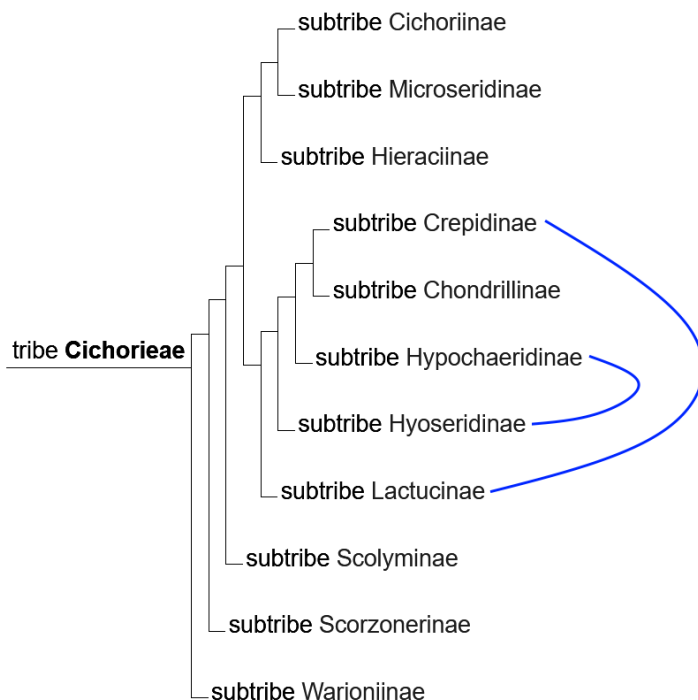
~~*Crepis* × *Hieracium*~~ **IT** **Crepidinae** × **Hieraciinae** (→ × *Crepihieracium* 1928 P. Fournier Fl. Compl. Plaine Franc. 316) *C. praemorsa* × *H. murorum* → *Crepis garnieri*) **IK** 1933, Knobloch 1972, McKenzie 2001, POWO 2025 (the validity of this hybrid is uncertain)

Crepis capillaris × *Taraxacum platycarpum* **Crepidinae** Sinoto & Ono 1934, Knobloch 1972, McKenzie 2001 („of doubtful authenticity”)

Faberia → see *Mojiangia*

Hieracium × *Pilosella* **Hieraciinae** hybridogeneous origin **HY** Fehrer et al. 2007

- Ixeris* × *Youngia* **Crepidinae** (→ × *Ixyoungia* Kitamura 1942 in Acta Phytotax. & Geobot., Kyoto 11: 131) (2 nat. hyb.) IK 1950, Knobloch 1972, Willis 1985, POWO 2025
- Lactuca squarrosa* × *Paraixeris*^o *denticulata* (= *Crepidiastrum*) **IST Lactucinae × Crepidinae** (nat. hyb., art. hyb.) Ono 1943, Ono & Sakai 1952, Knobloch 1972
- Lactucosonchus*^o *webbii* (= *Sonchus* p.p.) × *Sonchus radicans* **IS Hyoseridinae** Kim 2007
- Lapsana* × *Youngia* **Crepidinae** (→ × *Lapsyoungia* Hiyama 1953 in Journ. Jap. Bot. 28: 218) (nat. hyb.: *L. humilis* × *Y. japonica*) IK 1959, Knobloch 1972, POWO 2025
- Leontodon* × *Scorzoneroides* (= *Leontodon* p.p.) **Hypochaeridinae** (→ × *Leontoroides* Dostál 1982 Seznam cévnatých rostlin kvetený ceskoslovenské: 286; = × *Leontoroides* B. Bock 2012 Bull. Soc. Bot. Centre-Ouest 42: 274) (3 nat. hyb.: *L. hispidus* × *S. autumnalis*; *L. hispidus* × *S. pyrenaica*, *L. incanus* × *S. autumnalis*) IPNI 2013, POWO 2025
- Microseris* div. spec. × *Uropappus lindleyi* **Microseridinae** Chambers 1955, Wallace & Jansen 1995 (refer to the assumed hybridogeneous nature of the genus *Stebbinsoseris*^o Wallace & Jansen 1995 HY)
- Mojangia* **Crepidinae** This is a rare monotypic taxon described by Yin et al. 2021. The authors suppose that this taxon is a successor of the maternal ancestor of *Faberia* which is thought to be a hybridogeneous taxon **HY IST Crepidinae × Lactucinae**
- Picris* × *Sonchus* **IST Hypochaeridinae × Hyoseridinae** (nat. hyb.: *P. hieracioides* × *Sonchus* spec.) Ono & Sakai 1954
- "*Prenanthes*" (= *Sonchus* p.p.) × *Sventenia*^o (= *Sonchus* p.p.) **IS Hyoseridinae** (→ × *Prenanthenia* Sventenius 1960 Addit. Fl. Canar. 1, 89) (nat. hyb.: *P. pendula* × *S. bupleuroides*) IK 1966, POWO 2025 (→ *Sonchus* × *rupicola* IS)
- Sventenia*^o (= *Sonchus* p.p. × *Taeckholmia*^o (= *Sonchus* p.p.) **IS Hyoseridinae** (→ × *Sonchustenia*^o Sventenius 1960 Addit. Fl. Canar. 1, 87) IK 1966, POWO 2025 (→ *Sonchus* × *ericii*)



Cichorioideae Cichorieae: intersubtribal hybrids in a simplified phylogeny of Kilian et al. in Funk et al. 2016 https://www.bgbm.org/sites/default/files/documents/Cichorieae_Chapter24.pdf, from en.wikipedia 2025, CC BY 4.0

Pertyoideae 5: 105. 1 IG

no subdivision

Ainsliaea 54 (incl. *Diaspananthus*), *Catamixis* 1, *Macroclinidium* 7, *Myriphnois* 1. *Pertya* 32.

Macroclinidium × *Pertya* (→ × *Macropertya* Honda 1937 in Bot. & Zool. 5: 152, cf. Hara 1952, Enum. Spermat. Jap., Pt. 2, 231) IK 1959, Knobloch 1972, Freire 2012 (2 nat. hyb., e.g. *M. robustum* × *P. scandens*), POWO 2025 (→ *Pertya* IS)

Vernonioideae 160: 1932. 3 IG

7 tribes (AP website 2025, some of them formerly part of Cichorioideae), tribes and subtribes according to Susanna et al. 2020, from en.wikipedia 2025):

Arctotideae, Eremothameae 2: 3, Gorterieae 1: 8, Liabeae 18: 165, Moquinieae, Platycarphaeae, Vernonieae (21 subtribes) 140: 1300.

Arctotis × *Venidium*^o (= *Arctotis* p.p.) **IS** **Arctotideae Arctotidinae** (→ × *Venidioarctotis* hort.) (*A. venusta* × *V. fastuosum* = *wyleyi* → *Arctotis* × *hybrida*) Warren 1929, Knobloch 1972, <http://aggie-horticulture.tamu.edu/syllabi/608/Lists/second%20ed/Arctotisvenusta.pdf> (*A. stoechadifolia* × *V. weylei*) cf. McKenzie 2001, POWO 2025 (→ *Arctotis* IS)

Eremanthus × *Piptolepis* **Vernonieae Lychnophorinae** Loeuille 2011 (*E. erythropappus* × *P. ericoides*), Loeuille et al. 2015

Eremanthus × *Paralychnophora* (= *Eremanthus* p.p.) **Vernonieae Lychnophorinae** Loeuille 2011 (*E. spec.* × *P. reflexoauriculata*), Loeuille et al. 2015

Paranephelium × *Pseudonoseris* **Liabeae Paranepheliinae** hybridogeneous origin **HY** Soejima et al. 2008 („*Pseudonoseris szyszyłowiczii* exhibited intraspecific divergence supporting intergeneric hybridization between *Pseudonoseris* and *Paranephelium* ... The nuclear ribosomal ITS region and the chloroplast trnL-trnF (trnLF) intergenic region were sequenced.”)

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