URTICACEAE
PHYLOGENY POSTER

URTICACEAE
NETTLE FAMILY

herbs, shrubs, trees, some lianas
monoecious or dioecious (rar. polygamous)
laticifers (throughout), latex usu. not milky
cystoliths punctiform to linear
lvs blades with boxy venation,
white below or otherwise variegated
stipules +
infl cymose, branched; ♀ infl often capitate
flw small, P (2-)4,5(-6)
G1; anthers often explosive
fr achene, often explosively ejected
by inflexed staminodes
worldwide (mainly tropical)

54 genera
~2600 species

URTICEAE

stinging hairs +
cystoliths punctiform

♀ flw: P lobes ± fused

herbs annual/perennial; mono- or dioecious
lvs opposite; stipules interpetiolar, lateral, free or connate, often persistent
infl unisex. or androgynous, axillary
♂ flw: P deeply 4-lobed, rudimentary ovary cuplike, A4; ♀ flw: P deeply 4-lobed
achene enclosed by P (enlarged, persistent)
subcosmopolitan (mostly N and S temp.)

URTICA 68

trees (occ. very large) or shrubs; dioecious; lvs alternate, simple,
petiolate, ± coriaceous, venation pinnate; stipules intrapetiolar, connate, coriaceous
infl unisex., axillary, solitary, pedunculate, bracteate
♂ flw: T4(5), A4(5); ♀ flw: P 4-lobed, connate at base, subequal
achene often large, verrucose
S/SE Asia, AUS, Pacific Is.

DENDROCNIDE 42

herbs annual/perennial (some to 2 m); mono- or dioecious; stinging hairs long
lvs alternate, margins coarsely serrate or lobed; stipules intrapetiolar, connate, caducous
infl axillary, solitary
♂ flw: P 4-5-lobed, A4-5; ♀ flw: P tubular, (2-)3-toothed
achene often large, verrucose
Africa to trop./warm temp. E Asia

GIRARDINIA* 2

shrubs or herbs; mono- or dioecious
lvs alternate; stipules intrapetiolar, ± connate; bulbils (axillary) in some
infl unisex., axillary, solitary, pedunculate, bracteate (minute)
♂ flw: P 4-5-lobed, A4-5; ♀ flw: P 4-lobed
achene enclosed in P (± unchanged), pedicels winged in fr
pan(sub)tropical

LAPORTEA* ~30

shrubs, climbers or small trees; mostly dioecious
lvs alternate, margins entire to ± lobed; stipules intrapetiolar, free or ± connate
infl unisex.; bracts small or –
♂ flw: P 4-5-lobed, A4-5; ♀ flw: P 4-lobed
achene either enclosed by P (fleshy, enlarged) or berry-like and stipitate
trop. Africa, Madagascar, trop. America, Hawaii

URERA* 43

shrubs or trees (small); mostly dioecious
lvs alternate, often large, dentate; stipules 2-lobed
infl racemes/spikes, axillary or at leafless nodes, solitary or subfasciculate
♂ flw: P usu. 4-5-lobed, A4-5; ♀ flw: P usu. –
achene compressed, margins often thickened
trop. America

MYRIOCARPA 14

ELATOSTEMATEAE

stinging hairs –
cystoliths linear
stipules intrapetiolar, connate

herbs annual/perennial (stems often succulent) or subshrubs; mono- or dioecious
lvs usu. opposite, equal or unequal in pairs
infl axillary, solitary or paired; bracts usu. small
♂ flw: P 4-5-lobed, A(2-)4-5; ♀ flw: P 2-5-lobed; staminodes scale-like, minute or inconspicuous
achene compressed, partly enclosed by P
worldwide, (sub)trop. and temp. (except AUS, New Zealand)

PILEA ~600

herbs annual/perennial or shrublets
lvs alternate, distichous, 3-veined or pinnate; nanophylls + or –
♀ infl: capitate, receptacle discoid, bracteoles along margin
♂ flw: P 4-5-lobed, A4-5; ♀ flw: P 3-5-lobed, short, reduced or –; staminodes 3-5
achene slightly compressed
(sub)trop. Asia, Australasia, Africa

ELATOSTEMA ~570

mono- or dioecious

shrub(lets); some epiphytic
lvs alternate, ± fleshy; nanophylls distinct
♂ flw dense on small receptacle; ♀ flw capitate on fleshy subglobose receptacle, involucre –
♂ flw: P 4-5-lobed, A4-5; ♀ flw: P very small, cyathiform, or 3-4-lobed
achene ± covered by P (fleshy), or exserted from small P
trop. Asia, Australasia, Africa

PROCRIS ~20

herbs annual/perennial, often spreading; indumentum often of hooked hairs; monoecious
lvs alternate, entire; stipules –
flw bi- or unisex., cymose or clustered, axillary
P of bisex. and ♂ flw: deeply 3-4-lobed, A3-4; P of ♀ flw tubular at base with shorter lobes
achene enclosed by P (persistent, dry)
subcosmopolitan (except N America)

PARIETARIA 24

slender herbs or small subshrubs; indumentum often rigid; monoecious
lvs alternate, dentate, dense indumentum below; stipules lateral, free
flw crowded within tubular-companulate involucre with woolly hairs
♂ flw many (peripheral infl); P terminal lobe inflexed, A1; ♀ flw 1-5 (mid infl), P –
achene enclosed by involucre, ovate, compressed
Canary Is., Cape Verde Is., S Spain, N and S Africa, India

FORSSKAOLEA 7

shrubs or trees; evergreen; dioecious
lvs alternate, arachnoid tomentum below; stipules free, lateral, intrapetiolar
infl unisex., axillary; receptacle of ♀ clusters fleshy, cupular
♂ flw 3-4-merous, P connate at base; ♀ flw surrounded by ± fleshy base, P tubular
achene drupaceous, straight, adnate to P (persistent, thinly fleshy)
(sub)trop. E Asia, New Guinea

OREOCNIDE 16

BOEHMERIEAE

cystoliths punctiform

shrub(let)s; mostly monoecious
lvs alternate, crenate or serrate, 3-5-nerved, often rugose; stipules free
flw densely clustered in the axils; bracts broad, imbricate
♂ flw: P campanulate, A4(3,5); ♀ flw: P –
achene compressed
trop. America

PHENAX 28

herbs or (sub)shrubs; di- or monoecious
lvs mostly alternate, entire; stipules free, often persistent
glomerules axillary (rar. at nodes along rachis of spikes); bracts small; ♂ flw: P 4-5-lobed/-partite, A4-5(3)
♀ flw: P tubular, often beaked, contstricted, apex 2-4-toothed
achene enclosed by P (marcescent, accrescent)
pantropical

POUZOLZIA* 52

trees or shrubs; evergreen; di- or rar. monoecious
lvs alternate, crenate-serrate; stipules connate, bifid
flw unisex., glomerules sessile, axillary
♂ flw: P 4-5-lobed/valvate, A4-5; ♀ flw: P tube 4-5-dentate
achene closely enclosed by P (slightly enlarged)
Madagascar, Indonesia, Malaysia, Taiwan, N AUS, Polynesia

PIPTURUS 30

shrubs or small trees; mono- or dioecious
lvs alternate, serrulate, often abaxially white/silvery; stipules connate, bifid
flw unisex., dense capitate clusters, axillary
♂ flw: P usu. 4-lobed, A4(3,5); ♀ flw: P mouth contracted
achene ± drupaceous, closely enclosed by P (enlarged, fleshy)
(sub)trop. E Asia, E AUS, N Africa

DEBREGEASIA 9

perennial herbs, (sub)shrubs, or small trees; mono- or dioecious
lvs alternate or opposite, dentate; stipules usu. free, deciduous
infl usu. spikelike or panicle-like; ♂ flw: P 4-5-lobed/-partite, A4-5
♀ flw: P tubular, compressed, apex 2-4-toothed
achene enclosed by marcescent P (not fleshy)
(sub)trop. (rar. temp.)

BOEHMERIA* ~50

shrubs or small trees; often dioecious
infl axillary; glomerules solitary or in dichotomous cymes
♂ flw: P 4-5-lobed, valvate, A4-5
♀ flw: P conspicuous, small, cupular, 4/5-lobed or -toothed
achene ± compressed, ± fleshy
trop. Asia, Pacific Is.

LEUCOSYKE 33

PLANT PHYLOGENY POSTERS ON RESEARCHGATE

lvs alternate, abaxially tomentose-white
stipules connate, intrapetiolar, caducous

shrubs; mono- or dioecious, lvs usu. discolorous, abaxially white
♂ flw: P 5-lobed, valvate, A5
♀ flw: P inconspicuous, minute or –
achene epicarp ± fleshy
(sub)trop. Asia, Pacific Is.

MAOUTIA 10

trees or hemiepiphytes (aerial roots); lvs simple; few ant-associated
infl cymosely branched, capitate clusters of flw on ultimate branchlets, in ♀ infl occ. reduced to a single head
♂ flw with 3, ± connate T, A1(2), free or entirely connate; ♀ flw: P tubular
achene small
Neotropics (mainly S America)

COUSSAPOA ~55

CECROPIEAE

dioecious
lvs spiralled
stipules amplexicaul

trees, shrubs or lianas; not ant-associated
lvs simple or palmate
♂ infl repeatedly branched; flw sessile, T4(-3), A4(-3)
♀ infl capitate; P tubular, 2-3-lobed, stigmas lingulate, ovule basal
achene large, adnate to P (enlarged, fleshy)
trop. Africa

MYRIANTHUS 7

trees
often with stilt roots
trop. America

lvs lamina entire or palmately incised; few ant-associated
infl repeatedly branched, ♂ infls occ. subumbellate
♂ flw often pedicellate, P 4(-3)-lobed to 4(-3)-parted, A4(-3), straight
♀ flw usu. pedicellate, P tubular, entire to 4(-3)-lobed/-dentate
achene large, free from P (enlarged, fleshy); seed large

POUROUMA ~43

internodes hollow; mostly ant-associated
lvs large, peltate, incisions and venation radial; petiole with trichilia (mostly)
infl pedunculate, digitate clusters of spikes covered by caducous spathe
P of ♂ and ♀ flw tubular, A2
achene with P ± enlarged, ± fleshy (greenish)

CECROPIA ~70

stinging hairs
absent
♀ flw: P lobes connate

cystoliths absent

lvs compound, stipulate, serrate, never(?) two-ranked and rarely opposite
flw hypanthium; K valvate, P free, often clawed, usu. A∞
nectary on hypanthium or at the base of A, carpels often free
fr aggregate of achenes/drupelet, pome fleshy, hypanthium/receptacle also involved, follicles common
cyanogenesis

ROSACEAE

mucilage cells +
infl cymose
hypanthium +, nectariferous
K valvate, C clawed
stigma dry
ovule 1/carpel, epitropous
micropyle endostomal

fr indehiscent,
K and/or hypanthium persistent
endosperm reduced/lacking
9 fam, ~260 genera, ~8000 spp.

dioecious; lvs opposite, margins entire, stipules –
infl fasciculate, bracts and bracteoles –
hypanthium –, P +, uniseriate
nectary –; G1-2(-3), ± separate
fr nutlet, P accrescent, wing-like
seed coat undistinguished

BARBEYACEAE

A = and opposite C/alternate with
P capsule septicidal
ovule basal; cotyledons large

lvs spiral, stipules subulate, persistent; flw single, terminal, 5-8-merous
epicalyx of 4-8 lobes (in middle of pedicel); K basally connate, C contorted
nectaries on base of C, or on subbasal appendages
anthers extrorse, long, opening from apex; G(8), deeply longitudinally ridged, opposite K
fr beaked, segments opening from the base, woolly inside, columella +,
K deciduous above the "hypanthium"; seeds laterally flattened

DIRACHMACEAE

flw small, K connate (longitudinal median ridge)
C cucullate, enfolding A, usu. clawed; A4-5, opposite C
filaments adnate to base of C
fr with raised annular rim at base
[= deciduous hypanthium]
seeds often laterally flattened (arillate)

RHAMNACEAE

thorny, deciduous shrubs; roots with N-fixing *Frankia*
hairs lepidote/stellate, scaly indumentum
lvs margins entire, stipules –
P uniseriate, ± petal-like
A2×P, borne in throat of tube; pollen 3-nucleate, G1
hypanthium accrescent, fleshy, closely enveloping fr

ELAEAGNACEAE

styles branched
ovules apotropous

lvs two-ranked, strongly serrate, asymmetric base
sec. veins pinnate, proceed to apex of teeth
stipules +
flw small, some perfect
T4-9, G2, A4-9
fr samara or nutlet, seeds flat

ULMACEAE

hairs unicellular and
multicellular-glandular
lvs lamina with sec. veins
proceeding straight to
nonglandular teeth and
higher-order veins
convergent on those teeth
[urticoid]
stipules cauline

hairs unicellular
(usu. micropapillate)
sec. veins palmate,
stipules cauline-intrapetiolar
flw imperfect
stigmas:
single vascular bundle
fr not or barely flattened
embryo curved

lvs two-ranked, serrate,
ascending veins not proceeding straight into teeth
stipules ± intrapetiolar
prominent prophyllar buds
fr rounded achene/drupe

CANNABACEAE

flw small (<7 mm across),
usu. protogynous
P +, uniseriate,
sepal-like, imbricate
A equal and opposite P
pollen porate; nectary –
G(2), only abaxial one fertile
stigmas sessile, separate,
spreading, receptive area
extending down adaxial surface
and ± confluent
ovule 1, apical, pendulous
fr a drupe
endosperm scanty
polyembryony common

lvs blades with boxy venation,
white below or otherwise variegated
stipules +
infl cymose, branched; ♀ infl often capitate
flw small, G1; anthers often explosive
fr achene

URTICACEAE

dioecious
latex system +
lamina with pinnate sec. veins

plants mostly woody; laticifers, latex milky
lvs spiral, with boxy, fine venation
stipules also ensheathing stem
infl congested; flw 4-merous, ♂ flw with peltate bracts
fr an achene (or drupe) with
infl axis and P later accrescent, fleshy

P valvate (imbricate)
♂ flw: A incurved in bud
(explosively straightening)
pollen 2- or 5-porate
pistillode +
seed coat undistinguished

MORACEAE

ROSALES

COLE TCH, WU ZY (2022) URTICACEAE PHYLOGENY POSTER

- family of 54 genera with ca. 2600 species currently recognized
- this poster presenting 23 of the most prominent and most speciose genera
- hypothetical tree grossly based on Wu et al. 2018
- characters from Friis (1993) FGVP II and FOC (Chen et al. 2003)
- branch lengths deliberate, not expressing actual time scale
- numbers of species (in gray) from POWO and Treiber et al. 2016
- the characters listed do not necessarily apply to all members of the respective clade

***Notes**

Boehmeria, *Laportea*, and *Pouzolzia* polyphyletic
Girardinia position uncertain
Obetia and *Poikilospermum* nested in *Urera*
Pellionia nested in *Elatostemma*
Pourouma and *Musanga* in tribe Cecropieae, position uncertain

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Abbreviations

+ present, – absent, ∞ many, occ. occasionally, usu. usually
A androecium/stamens, G gynoecium/carpels, P perianth, T tepals, flw flower(s), fr fruit, infl inflorescence, lvs leaves

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