# flower\_structural\_sex\_type:

description: Structural and functional flower sex type. Trait that captures floral sex, distinguishing among three states, bisexual, incompletely unisexual, and unisexual, as defined by Schoenenberger et al. 2020 (AJB) for their character '100. Floral structural sex (D1)'. (See "sex\_type" for plant sex type)

type: character

label: Floral structural sex type

## values:

bisexual: Hermaphrodite; flowers with both male and female reproductive organs

incompletely\_unisexual: Male flowers with pistillode and/or female flowers with staminodes

unisexual: Flowers with either male or female reproductive organs

# flower\_ovary\_position:

description: The ovary is the part of the gynoecium where the ovules are produced. The ovary may be located on the receptacle and thus be positioned above the insertion level of the remaining floral organs (i.e., the ovary is superior and the flower is hypogynous). Alternatively, the ovary may be embedded in the receptacle and therefore be located below the insertion level of the remaining floral organs (i.e., the ovary is inferior and the flower is epigynous). Flowers with a hypanthium may either have a superior ovary (perigyny; e.g., many Rosaceae) or an inferior ovary (epiperigyny) (Simpson, 2010). It is also possible that the ovary is inferior to a certain degree only, such as half-inferior, if the receptacle is surrounding the ovary to its mid-level. (Definition derived from Schoenenberger et al. 2020 (AJB) for their character '102. Ovary position (D1)')

type: character

label: Floral ovary position

## values:

inferior: Flower with inferior ovary, where the ovary ia embedded in the receptacle and therefore located below the insertion level of the remaining floral organs

superior: Flower with superior ovary, where the ovary is positioned above the insertion level of the remaining floral organs

half\_inferior: Flower where the recepatacle is surrounded by the ovary to its mid-level

one\_quarter\_inferior: Flower where the recepatacle surrounds up to one quarter of the ovary

three\_quarters\_inferior: Flower where the recepatacle surrounds more than three quarters of the ovary

# flower\_perianth\_parts\_count:

description: The total number of perianth parts, including sepals, petals, or any form of tepal. A value of zero was scored when the perianth is absent. In flowers with perianth whorls fused along their complete length (e.g., Convolvulus), perianth parts are counted based on merism (e.g., if a calyx has 5 distinct sepals and the corolla is entirely fused, then the corolla is often interpreted to consist of five fused petals), anatomy (e.g., number of vascular traces), development (e.g., number of primordia), or comparison with closely related taxa. (Definition derived from Schoenenberger et al. 2020 (AJB) for their character '201. Number of perianth parts (C1)')

type: numeric

units: count

label: Count of all perianth parts

## values:

minimum: 0

maximum: 1000

# flower\_perianth\_fusion:

description: Fusion of perianth organs (congenital or postgenital) at anthesis, recorded on a continuous scale, from 0 (free parts) to 1 (parts fused along their entire length). Partial fusion was recorded using an approximate number between these two extremes (e.g., 0.1 corresponds to basal fusion, 0.5 to fusion along half of the length of perianth parts). In case of multiple whorls, this trait records within-whorl fusion. For example, if organs within each whorl are fused along their entire length, a trait value of 1 is recorded. In cases where organs of two whorls are fused into a common tubular structure, such as frequently observed in monocots (e.g., Polygonatum), the perianth is considered to be fused. If the two (or more) whorls differed in their extent of fusion, a range of trait values may be recorded. For example, if the calyx is only basally fused, up to 10% of its length, but the corolla is entirely fused, a range of 0.1 to 1 is recorded as the trait value for the species. (Definition derived from Schoenenberger et al. 2020 (AJB) for their character '204. Fusion of perianth (C1)')

type: numeric

units: n/n

label: Proportion of perianth that is fused together

## values:

minimum: 0

maximum: 1

# flower\_perianth\_symmetry:

description: Trait capturing the symmetry of the perianth. For species where the perianth is fused, this trait is applied to the perianth as a whole. In case of flowers with two or more perianth whorls, species are considered actinomorphic if all whorls are actinomorphic and as zygomorphic if one or more whorls are zygomorphic. Trait is not applicable when the perianth is missing. (Definition and trait values derived from Schoenenberger et al. 2020 (AJB) for their character '207. Symmetry of perianth (D1)')

type: character

label: Flower perianth symmetry

## values:

actinomorphic\_general: Perianth displaying radial symmetry

actinomorphic\_rotational: Perianth that can be equally divided into three or more identical sections that, when rotated around the center of the flower by some number of degrees, exactly match each other in orientation and shape.

actinomorphic\_strictly\_polysymmetric: Polysymmetry, with three or more planes of bilateral symmetry

actinomorphic\_spiral: Perianth lacking a distinct plane of symmetry because their perianth parts are spirally arranged.

asymmetric: Perianth lacking any planes of symmetry

disymmetric: Preianth with two orthogonal planes of bilateral symmetry

zygomorphic: Monosymmetric, with a single plane of bilateral symmetry

# flower\_perianth\_phyllotaxy:

description: Perianth phyllotaxis at anthesis. Perianth parts may be organised in one or more whorls or along a continuous spiral, usually with wide divergence angles more or less equal to 137.5 degrees (Endress, 1987a, 2011; Endress and Doyle, 2007; Kuhlemeier, 2007). Less frequently, perianth phyllotaxis may be irregular (Zhao et al., 2012). Perianth phyllotaxis at anthesis may differ from phyllotaxis of perianth part primordia at their inception and it is not uncommon that spirally initiated perianths become whorled later through development (Erbar and Leins, 1994; Schoenenberger and Grenhagen, 2005; Endress, 2010, 2011; Zhang and Schönenberger, 2014; Loefstrand et al., 2016). (Definition and trait values derived from Schoenenberger et al. 2020 (AJB) for their character '230. Perianth phyllotaxy (D1)', with more information of differentiating between trait values in this manuscript.)

type: character

label: Perianth phyllotaxis at anthesis

## values:

irregular: Perianth parts lacking any symmetrical organisation.

spiral: Perianth parts organised along a continuous spiral, usually with wide divergence angles more or less equal to 137.5 degrees, the Fibonacci 'golden angle'

whorled: Perianth parts organised in one or more whorls

# flower\_perianth\_whorls\_count:

description: The number of perianth whorls as a continuous trait (with integer values of 1 and above). Not applicable when perianth phyllotaxis is spiral or irregular or when the perianth is absent. (Definition derived from Schoenenberger et al. 2020 (AJB) for their character '231. Number of perianth whorls (C1)')

type: numeric

units: count

label: The number of perianth whorls

## values:

minimum: 0

maximum: 15

# flower\_perianth\_merism:

description: The number of perianth parts in each whorl, recorded as a continuous trait (with integer values of 1 and above). Not applicable when perianth phyllotaxis is spiral or irregular or when the perianth is absent. (Definition derived from Schoenenberger et al. 2020 (AJB) for their character '232. Perianth merism (C1)')

type: numeric

units: count

label: The number of perianth parts in each whorl

## values:

minimum: 0

maximum: 15

# flower\_perianth\_differentiation:

description: The ways in which perianth organs may look different from each other in a given flower. Typically, outer perianth parts are sepaloid and protect the other floral organs during floral development, while inner organs are often petaloid and play a role in pollinator attraction (Endress, 1994). However, it is also possible that all parts are either sepaloid or petaloid but remain differentiated in shape, size, and/or texture. In case of spiral perianths, differentiation may be continuous (i.e., gradual), whereby two successively initiated organs are very similar or only slightly different, while the outermost and innermost organs at both ends of the spiral are very different from each other (e.g., Chimonanthus). In the special case of perianths consisting of a single whorl, they are scored as undifferentiated. This perianth differentiation trait may be seen as both functional (the parting vs. sharing of functions among perianth parts) and developmental (the expression of a genetic program for different forms of perianth parts vs. a single program for a single type of perianth part morphology). Within-whorl differentiation, whereby organs of the same whorl take different forms, is common in zygomorphic flowers (e.g., Balsaminaceae, Fabaceae, Orchidaceae) but is not taken into account with this trait. This trait is not applicable when the perianth is absent. (Definition and trait values derived from Schoenenberger et al. 2020 (AJB) for their character '234. Perianth differentiation (D1)')

type: character

label: Degree of perianth differentiation

## values:

undifferentiated: All tepals alike; includes a single undifferentiated whorl

marked\_differentiation\_outer\_sepaloid\_inner\_petaloid: A typical flower with calyx and corolla

marked\_differentiation\_among\_petaloid\_tepals:

marked\_differentiation\_among\_sepaloid\_tepals:

marked\_differentiation:

continuous\_differentiation\_outer\_epaloid\_inner\_petaloid:

continuous\_differentiation\_among\_petaloid\_tepals:

continuous\_differentiation\_among\_sepaloid\_tepals:

weak\_differentiation:

very\_weak\_differentiation:

# flower\_fertile\_stamens\_count:

description: Count of fertile stamens in bisexual or male flowers; does not score female flowers. (Definition derived from Schoenenberger et al. 2020 (AJB) for their character '301. Number of fertile stamens (C1)')

type: numeric

units: count

label: Count of fertile stamens in bisexual or male flowers

## values:

minimum: 0

maximum: 10000

# flower\_filament:

description: Trait that considers the absence or presence of the filament, and in the latter case, the shape of the filament. Shape is considered in terms of length and width and is defined in relation to anther length/width. The width of the filament may thus either be broad as in laminar (e.g., Eupomatiaceae) or bulky stamens (e.g., Chloranthaceae), or narrow (filamentous) as found in many core eudicots groups (e.g., Rosaceae). This trait is considered inapplicable when filaments were entirely fused with each other or to the perianth. (Definition and trait values derived from Schoenenberger et al. 2020 (AJB) for their character '305. Filament (D1)')

type: character

label: Flower filament presence and shape

## values:

absent: No filaments present

present\_general: Filaments present, with no specific defining characteristics

long\_and\_narrow: Long and narrow shape; also called filiform, slender

short\_and\_narrow: Short and narrow shape; subsessile anthers

long\_and\_wide: Long and wide laminar shape

short\_and\_wide: Short and wide laminar shape

long\_and\_very\_wide: Long and very wide shape; for instance, the petal-like (outer) stamens of Nymphaea

petaloid: Long and wide and colorful, eg Canna

fused\_into\_synandrium: Structure formed when stamens fused together

fused\_into\_fascicle\_stalks: Special case where the stamens are fused into the stalk of a fascicle of flowers

long\_and\_narrow\_divided\_in\_two: Long and narrow shape that is divide in twp; eg Adoxa

short\_general: Filament is short relative to the anther

# flower\_filament\_fusion:

description: Fusion of stamen (and staminode) filaments among each other at anthesis (congenitally or postgenitally) is recorded on a continuous scale, from 0 (free filaments) to 1 (filaments fused along their entire length). Partial fusion is recorded using an approximate number between these two extremes (e.g., 0.1 corresponds to basal fusion, 0.5 to fusion along half of the length of filaments). (Definition derived from Schoenenberger et al. 2020 (AJB) for their character '306. Fusion of filaments (C1)')

type: numeric

units: n/n

label: Proportional fusion of stamen (and staminode) filaments among each other

## values:

minimum: 0

maximum: 1

# flower\_filament\_fusion\_to\_inner\_perianth:

description: The fusion of filaments with the innermost perianth organs at anthesis on a continuous scale, from 0 (filaments completely free from perianth) to 1 (filaments fused along their entire length with the perianth; the “entire length” of the filament is defined as the distance between the floral base and the joint between filament and anther). Partial fusion is recorded using an approximate number between these two extremes (e.g., 0.1 corresponds to basal fusion, 0.5 to fusion along half of the length of perianth parts). If two (or more) stamen whorls (including staminodial whorls) differ in their extent of filament fusion with the perianth, this trait is recorded as a range of values. For example, if the filaments of an outermost stamen whorl are fused, up to 90% of their length, but an inner whorl only up to 50%, the trait is assigned a range of 0.5 to 0.9. The rationale for this is to provide a general trait that allows comparison of fusion among all angiosperms. (Definition derived from Schoenenberger et al. 2020 (AJB) for their character '308. Fusion of filaments to inner perianth series (C1)')

type: numeric

units: n/n

label: Proportion fusion of filaments with the innermost perianth organs

## values:

minimum: 0

maximum: 1

# flower\_anther\_orientation:

description: Orientation of anther at anthesis. Anthers of angiosperms are rather uniform in their basic structure. They normally have four microsporangia (pollen sacs) that are arranged pair-wise in two thecae. The two microsporangia of a theca usually release their pollen grains through a common opening (stomium). Often, it is difficult to establish anther orientation clearly in a flower as this is a gradual feature with many intermediate stages. (Definition and trait values derived from Schoenenberger et al. 2020 (AJB) for their character '311. Anther orientation (D1)')

type: character

label: Orientation of anther

## values:

apical: When thecae are positioned in a transverse position at the tip of the connective and thus dehisce upward in the flower (e.g., Sinofranchetia, Endress and Hufford, 1989).

extrorse: When the stomium of the thecae face the floral periphery

introrse: When the stomium of the thecae face the floral centre

latrorse: When pollen is released toward the side (i.e., toward neighbouring anthers)

# flower\_anther\_attachment:

description: Anther attachment refers to the area of insertion of the filament on the anther connective (i.e. the tissue connecting the two thecae of an anther). (Definition and trait values derived from Schoenenberger et al. 2020 (AJB) for their character '312. Anther attachment (D1)')

type: character

label: Anther attachment to the area of insertion of the filament on the anther connective

## values:

basifixed: Filament attached to the base of the connective. Laminar stamens are classified as basifixed

dorsifixed: Filament attached to the dorsal side of the anther

dorsifixed\_at\_base: Filament attached to the dorsal side of the anther, at the base\*\*

ventrifixed: Filament attached to the ventral side of the anther

# flower\_anther\_dehiscence:

description: Anther dehiscence refers to the type of opening of the anther when releasing its pollen through the stomia. (Definition and trait values derived from Schoenenberger et al. 2020 (AJB) for their character '313. Anther dehiscence (D1)')

type: character

label: Anther dehiscence

## values:

longitudinal slit: Anther with longitudinal slits that extend along the entire length of each theca

poricidal: Anther where dehiscence of longitudinal slits is incomplete, with pollen exiting via a small pore

H\_valvate: Anther with two valves on longitudinal hinges, opening horizontally as sallon doors; when the stomium bifurcates at its distal and/or proximal end and thus a valve is formed

flap\_valvate: Anther with one or more flap-like valves on horizontal hinges, opening vertically

transverse\_slit: Anther with horizontal slit

short\_basal\_slits: Anther where dehiscence of longitudinal slits is incomplete and only occurs over a short extent at the base of the theca

short\_central\_slits: Anther where dehiscence of longitudinal slits is incomplete and only occurs over a short extent at the center of the theca

short\_apical\_slits: Anther where dehiscence of longitudinal slits is incomplete and only occurs over a short extent at the apical end of the theca

T\_valvate: Anter with T-shaped stomium; reduced transverse slit at base

common\_stomium\_confluent\_thecae: (uncertain)

# flower\_anther\_connective\_extension:

description: Apical (distal) connective extensions (also called “distal connective protrusions”, e.g., Hufford and Endress, 1989) are sterile anther structures that distally extend beyond the level of the thecae (i.e., the two lateral pairs of pollen sacs of a tetrasporangiate anther). This trait records both absence or presence of anther connective extensions and also the shape of these extensions in terms of length in relation to the length of the thecae. (Definition and trait values derived from Schoenenberger et al. 2020 (AJB) for their character '314. Connective extension (apical) (D1)')

type: character

label:

## values:

absent: Apical connective extensions are lacking

short\_extension: Connective extension less than a third of the length of anther

long\_extension: Connective extension more than a third but less than length of anther; eg Idiospermum australiense

very\_long\_extension: Connective extension more than length of anther; eg Galbulimima belgraveana

present\_general: Apical connective extensions are present, but no information on their length relative to the anthers

# flower\_androecium\_structural\_phyllotaxy:

description: Structural phyllotaxy of the androecium, considering both fertile stamens and staminodes. In cases of stamen fascicles, it is the phyllotaxis of fascicles, not individual stamens that are recorded. This character is not applicable when there is a single structural stamen (i.e., one stamen, no staminodes; e.g., Chloranthus, Chloranthaceae). (Definition and trait values derived from Schoenenberger et al. 2020 (AJB) for their character '330. Androecium structural phyllotaxy (D1)')

type: character

label: Structural phyllotaxy of the androecium

## values:

whorled: Stamens and staminodes arranged in whorls

spiral: Stamens and staminodes have a spiral arrangement

irregular: Stamens and staminodes have an irregular arrangement

# flower\_androecium\_structural\_whorls\_count:

description: The number of whorl, considering both fertile stamens and staminodes. In cases of stamen fascicles, the count of whorls of fascicles is recorded. This character is not applicable for spiral or irregular stamen arrangements, or when there is a single structural stamen (i.e., one stamen, no staminodes; e.g., Chloranthus, Chloranthaceae). (Definition derived from Schoenenberger et al. 2020 (AJB) for their character '331. Number of androecium structural whorls (C1)')

type: numeric

units: count

label: Count of androecium structural whorls

## values:

minimum: 0

maximum: 100

# flower\_androecium\_structural\_merism:

description: The number of stamens or stamen bundles (fascicles) in one whorl, considering both fertile stamens and staminodes. This character is not applicable for spiral or irregular stamen arrangements, nor when there is a single structural stamen (i.e., one stamen, no staminodes; e.g., Chloranthus, Chloranthaceae). (Definition derived from Schoenenberger et al. 2020 (AJB) for their character '332. Androecium structural merism (C1)')

type: numeric

units: count

label: The number of androecium parts in each whorl

## values:

minimum: 0

maximum: 100

# flower\_gynoecium\_phyllotaxy:

description: Structural phyllotaxy of the gynoecium. This trait is not applicable to unicarpellate flowers. (Definition and trait values derived from Schoenenberger et al. 2020 (AJB)for their character '400. Gynoecium phyllotaxy (D1)')

type: character

label: Structural phyllotaxy of the gynoecium

## values:

one\_whorl: Flowers with a single whorl of carpels

two\_or\_more\_whorls: Flowers with two or more whorls of carpels

spiral: Flowers with carpels in a spiral arrangement

# flower\_structural\_carpels\_count:

description: Number of fertile or sterile carpels in bisexual or female flowers, recorded as a continuous character (with integer values of 1 and above). Includes the number of co-occurring carpellodes (sterile carpels) because this number is often more easily obtained from the literature than the actual number of fertile carpels. However, the number of carpellodes in male flowers is ignored for this character. In multicarpellate, unilocular gynoecia with complete carpel fusion up to the stigma (e.g., Primula), it may be difficult to assess the number of carpels unequivocally. In such cases, the number of carpels is scored only if it is well established based on anatomical or developmental investigations. Similarly, in gynoecia where one or more carpels are reduced (e.g., in the pseudomonomerous gynoecia of some Arecaceae, Stauffer et al., 2002), the total number of structural carpels is only scored when unequivocally determined in the literature. (Definition derived from Schoenenberger et al. 2020 (AJB) for their character '401. Number of structural carpels (C1)')

type: numeric

units: count

label: Count of structural carpels in bisexual or female flowers.

## values:

minimum: 0

maximum: 10000

# flower\_ovary\_fusion:

description: Degree of ovary fusion expressed as a fraction of the total length of the ovary (from the floral base to the apex of the ovary). Fusion of styles and stigmas is not taken into account for this trait. Not applicable when there is a single carpel. (Definition derived from Schoenenberger et al. 2020 (AJB) for their character '403. Fusion of ovaries (C1)')

type: numeric

units: n/n

label: Degree of ovary fusion

## values:

minimum: 0

maximum: 1

# flower\_style\_differentiation:

description: Presence or absence of a style, and, when present, the shape of the style in terms of length and width in relation to ovary length and width. This trait does not distinguish between fused or free styles. (Definition and trait values derived from Schoenenberger et al. 2020 (AJB) for their character '404. Style differentiation (D1)')

type: character

label: Presence or absence and, when present, shape of a style

## values:

absent: Stigma sessile

present\_length\_and\_shape\_unknown: Style present, but shape unknown

present\_short\_and\_thick: Style present, and short and thick

present\_short\_and\_narrow: Style present, and short and narrow, including short filiform styles

present\_long\_and\_wide: Style present, and long and wide

present\_long\_and\_narrow: Style present, and long and narrow, including long filiform styles

present\_petaloid: Style present and petaloid

continuous: When the style is a apical extension of carpel with decurrent stigma

# flower\_style\_fusion:

description: The degree of fusion of styles at anthesis, recorded on a continuous scale, from 0 (free styles) to 1 (styles fused along their entire length, but excluding the stigmatic region). Partial fusion is recorded using an approximate number between these two extremes (e.g., 0.1 corresponds to basal fusion, 0.5 to fusion along half of the total length of the styles). This character is not applicable in unicarpellate flowers. (Definition derived from Schoenenberger et al. 2020 (AJB) for their character '406. Fusion of styles (C1)')

type: numeric

units: n/n

label: Degree of style fusion

## values:

minimum: 0

maximum: 1

# flower\_ovules\_per\_functional\_carpel\_count:

description: Number of ovules per carpel recorded as a continuous character (with integer values of 1 and above). Reduced (sterile) carpels are not taken into account here. (Definition derived from Schoenenberger et al. 2020 (AJB) for their character '411. Number of ovules per functional carpel (C1)')

type: numeric

units: count

label: Count of ovules per functional carpel

## values:

minimum: 0

maximum: 100000

# flower\_ovule\_placentation:

description: The different types of placentation in apocarpous/unicarpellate and in syncarpous gynoecia. In apocarpous and unicarpellate gynoecia, placentation is often described as marginal as the ovules are usually attached along the ventral slit (i.e., the zone where the carpel margins become postgenitally closed during carpel development). In syncarpous gynoecia there are three main types of placentation (e.g., Endress, 1994), 1) axile placentation refers to ovaries where the ovules are placed in the angle between carpel flanks in the center of the ovary; 2) in ovaries with parietal placentation the ovules attach to the ovary wall where two carpels meet; 3) in ovaries with free-central placentation the ovules are attached to a central column that emerges from the base of the ovary and protrudes into the non-septate ovary. It is not unusual that syncarpous gynoecia show a transition from proximally axile to a distally parietal placentation (e.g., Polemoniaceae, Schönenberger, 2009). Basal and apical placentation may occur both in apocarpous/unicarpellate and in syncarpous gynoecia. Usually there is one longitudinal series of ovules attached to each carpel margin. However, both in apocarpous/unicarpellate and in syncarpous gynoecia there may be more than one series of ovules at the flanks of a carpel. These latter cases are referred to as laminar (or laminar-diffuse) placentation (e.g., in some Nymphaeaceae). A placenta that is protruding from its surroundings and has more than two series of ovules (either axile or parietal) is called protruding-diffuse. (Definition and trait values derived from Schoenenberger et al. 2020 (AJB) for their character '412. Placentation (D1)')

type: character

label: Ovule placentation

## values:

axile: Ovules are placed in the angle between carpel flanks in the center of the ovary; in syncarpous gynoecia

apical: Ovules attach at the top of the ovary; pendulous; in syncarpous gynoecia and apocarpous and unicarpellate gynoecia

basal: Ovules attach at the base of the ovary; in syncarpous gynoecia and apocarpous and unicarpellate gynoecia

parietal: Ovules attach to the ovary wall where two carpels meet; in syncarpous gynoecia

marginal: Ovules attach along the ventral slit; in apocarpous and unicarpellate gynoecia

free\_central: Ovules are attached to a central column that emerges from the base of the ovary and protrudes into the non-septate ovary; in syncarpous gynoecia

laminar: When there is more than one series of ovules at the flanks of a carpel; in syncarpous gynoecia and apocarpous and unicarpellate gynoecia

# flower\_pollen\_apertures\_count:

description: A pollen aperture is a structurally delimited region of the pollen grain wall through which the pollen tube emerges during pollen germination and which plays a role in harmomegathy (Halbritter et al., 2018). Here we report the number of apertures per pollen grain as a continuous character. A value of zero is scored when pollen is inaperturate (i.e. when there is no distinct aperture). Aperturate pollen is scored with integer values of 1 and above. (Definition derived from Schoenenberger et al. 2020 (AJB) for their character '5000. Number of apertures (C1)')

type: numeric

units: count

label: Count of pollen grain aperatures

## values:

minimum: 0

maximum: 100

# flower\_pollen\_aperature\_shape:

description: Pollen grains are often described according to the shape, structure, and position of their apertures. This trait describes the main shape of the many described aperture types. Aperture terminology is partly determined by the position of the aperture on the pollen grain (either at the pole or at the equator) and pollen grain polarity, in turn, is determined by the spatial orientation of the microspore in the meiotic tetrad.(Definition and trait values derived from Schoenenberger et al. 2020 (AJB) for their character '5002. Aperture shape (D1)')

type: character

label: Shape of pollen aperature

## values:

absent: (uncertain)

colporus: Pollen aperature shape the combines the groove of colpate and the pore of porate apertures

colpus: Pollen aperature shape is elongate and grooved and may be positioned globally or equatorially

pore: Pollen aperature shape is round and pore-like and may be positioned globally or equatorially

ring\_like: (uncertain)

spiraperturate: Pollen grain with one or more spiral apertures

sulcus: Pollen aperature shape is elongate and grooved and positioned at the pole

syncolpus: Pollen grain with two or more simple (or compound) colpi the ends of which join at the pole

ulcus: Pollen aperature shape is round and pore-like and positioned at the pole