

## PERIANTH ARRANGEMENT/CYCLY/MEROSITY

A fundamental aspect of perianth structure is **perianth arrangement**, the position of perianth parts relative to one another. In some taxa, such as some magnolias and water lilies, the perianth parts have a **spiral** arrangement, i.e., spirally arranged with only one perianth part per node, not in distinct whorls.

Typically, flowers with a spiral perianth arrangement have parts that are either undifferentiated (similar to one another) or that grade from an outer, sepal-like form to an inner petal-like form. In either case, the term **tepals** is used to describe undifferentiated or intergrading perianth parts. In most flowering plants the perianth parts have a **whorled** arrangement, in which the parts appear to arise from the same nodal region. (Note that, developmentally, the perianth parts may actually initiate as primordia at slightly different times and positions; however, at maturity, this is usually undetectable.)

**Cyclus** refers to the number of whorls (cycles, series) of parts. Thus, **perianth cyclus** is the number of whorls of perianth parts. The most common type of perianth cyclus is **biseriate** (also called dicyclic), in which there are two discrete whorls, an outer (= lower) and inner (= upper). A less common condition in flowering plants is a **uniseriate** perianth cyclus, with perianth parts in a single whorl. Uniseriate perianths may arise by loss or reduction of one of the whorls of an ancestrally biseriate perianth.

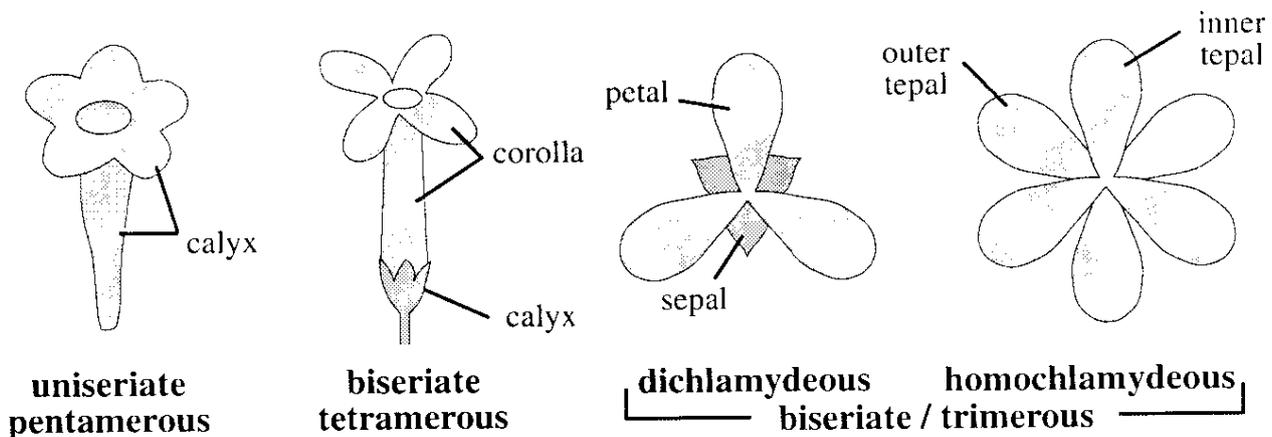
If it is known that the calyx was evolutionarily lost, what remains should be called a corolla; if the corolla was lost, what remains should be termed a calyx. If this directionality is not known, a uniseriate perianth is usually termed a calyx by tradition (although it may simply be called a perianth). Perianths may also rarely be **triseriate** (or tricyclic) = three-whorled, **tetraseriate** (or tetracyclic) = four-whorled, etc. The term **multiseriate** may be used to mean composed of three or more whorls. Other cyclus terms evaluate the similarity of the whorls of parts to one another. **Dichlamydeous** describes a perianth composed of a distinct outer calyx and inner corolla; in most cases, a dichlamydeous perianth is also biseriate,

but it may be multiseriate (i.e., the calyx or corolla containing more than one whorl). **Homochlamydeous** refers to a perianth composed of similar parts, each part a tepal. Most monocots have a homochlamydeous perianth, whereas most eudicots have a dichlamydeous one.

**Merosity** refers to the number of parts per whorl or cycle. Thus, **perianth merosity** is the number of parts per whorl of the perianth. General terms for perianth merosity are **isomerous**, having the same number of members in different whorls (e.g., five sepals and five petals) and **anisomerous**, having a different number of members in different whorls (e.g., two sepals and five petals). Merosity may be described separately for each whorl of the perianth, e.g., **calyx merosity** and **corolla merosity**. It is assessed for numbers of discrete petals, sepals, and tepals, or, if perianth fusion occurs, for numbers of calyx, corolla, or perianth lobes.

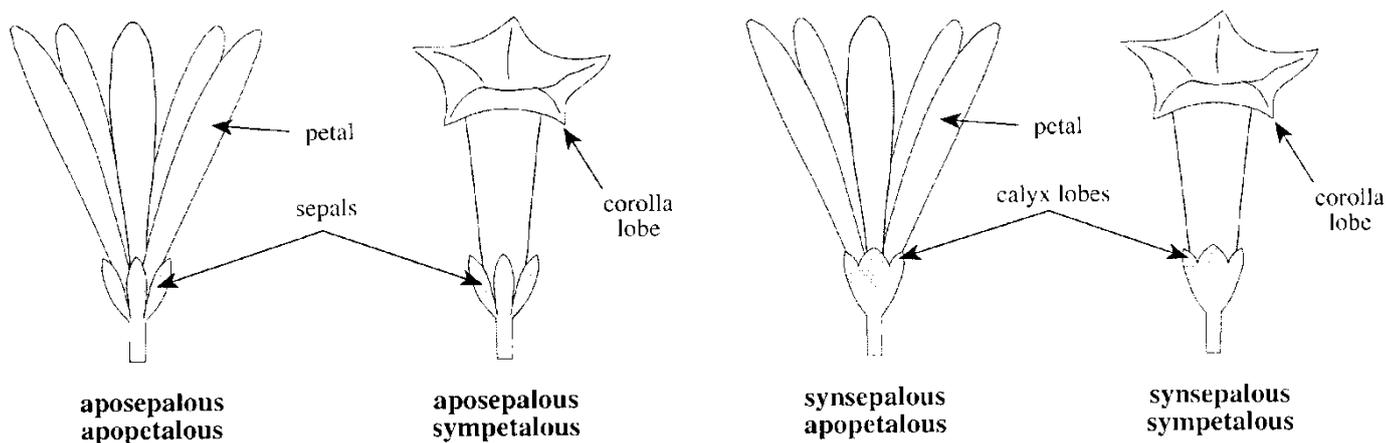
Perianth, calyx, or corolla merosity is usually designated as a simple number, although terms such as **bimerous** (a whorl with two members), **trimerous** (a whorl with three members), **tetramerous** (a whorl with four members), **pentamerous** (a whorl with five members), etc., can be used. Terms for absence of parts include **achlamydeous**, lacking a perianth altogether, **apetalous**, having no petals or corolla, and **asepalous**, having no sepals or calyx.

### PERIANTH FUSION



The term **perianth fusion** deals with the apparent fusion of perianth parts to one another. (This character may be treated separately as calyx or corolla fusion.) If sepals, petals, or tepals are discrete and unfused, the respective terms **aposepalous**, **apopetalous**, and **apotepalous** may be used. If sepals, petals, or tepals appear to be fused (even slightly at the base), the respective terms **synsepalous**, **sympetalous**, and **syntepalous** are used. The fusion of perianth parts does not usually occur as a separate event, e.g., petals fusing together after they are individually formed. The fusion is apparent, and typically results by the growth of a common floral primordium at the base of the calyx, corolla, or perianth.

Perianth fusion results in the development of a tube like or cup like structure (the region of fusion) in the calyx, corolla, or perianth. If little fusion occurs, the tube-like region occurs only at the base and gives rise to calyx, corolla, or perianth lobes.



Perianth fusion