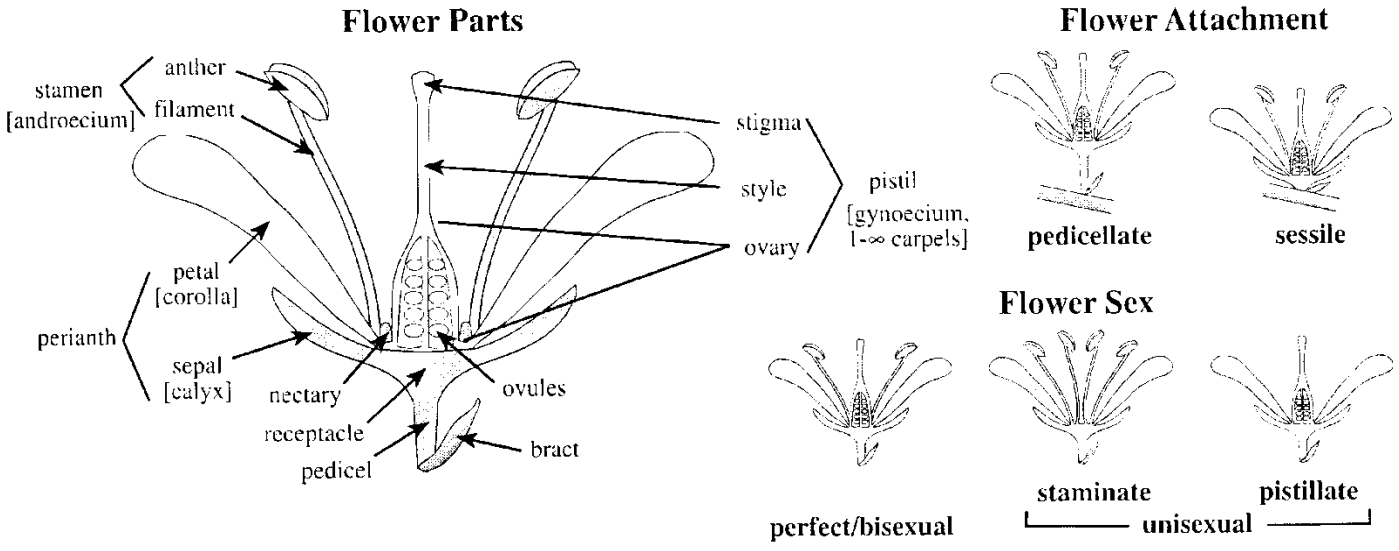
FLOWER SEX AND PLANT SEX

Flower sex refers to the presence or absence of male and female parts within a flower. Most flowers are **perfect** or **bisexual**, having both stamens and carpels. Bisexual flower sex is likely the ancestral condition in angiosperms. Many angiosperm taxa have **imperfect** or **unisexual** flower sex. In this case, flowers are either **pistillate**/**female**, in which only carpels develop, or **staminate**/**male**, in which only stamens develop.

Plant sex refers to the presence and distribution of perfect or imperfect flowers on individuals of a species. A **hermaphroditic** plant is one with only bisexual flowers. A **monoecious** (*mono*, one + *oikos*, house) plant is one with only unisexual flowers, both staminate and pistillate on the same individual plant; e.g., *Quercus* spp., oaks. A **dioecious** (*di*, two + *oikos*, house) plant is one with unisexual flowers, but with staminate and pistillate on separate individual plants (i.e., having separate male and female individuals; e.g., *Salix* spp., willows). Plant sex can vary within individuals of a species, and there may also be a combination of perfect and imperfect flowers in different individuals.

Polygamous is a general term for a plant with both bisexual and unisexual flowers. **Andromonoecious** refers to a plant with both staminate and perfect flowers on the same individual, and **gynomonoecious** is a plant with both



pistillate and perfect flowers on the same individual. **Trimonoecious** refers to a plant with pistillate, staminate, and perfect flowers on the same individual. **Androdioecious** refers to a plant with male flowers on some individuals and perfect flowers on other individuals. **Gynodioecious** refers to a plant with female flowers on some individuals and perfect flowers on other individuals. **Trioecious** refers to a plant with pistillate, staminate, and perfect flowers on different individuals.

FLOWER ATTACHMENT

Flower attachment is **pedicellate**, having a pedicel; **sessile**, lacking a pedicel; or **subsessile**, having a short, rudimentary pedicel. The terms **bracteate**, with bracts, and **ebracteate**, lacking bracts, may also be used with respect to flower attachment.

FLOWER CYCLY

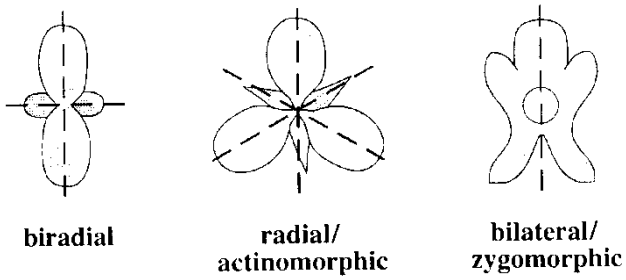
Flower cycly refers to the number of cycles (series or whorls) or floral parts. The two basic terms used are **complete**, for a flower having all four major series of parts (sepals, petals, stamens, and carpels) and **incomplete**, for a flower lacking one or more of the four major whorls of parts (e.g., any unisexual flower, or a bisexual flower lacking a corolla).

FLOWER SYMMETRY

Flower symmetry is an assessment of the presence and number of mirror-image planes of symmetry. **Actinomorphic** or **radial** symmetry (also called **regular**) is that in which there are three or more planes of symmetry, such that there is a repeating structural morphology when rotated less than 360° about an axis. **Biradial symmetry** means having two (and only two) planes of symmetry.

Zygomorphic or **bilateral** symmetry (also called **irregular**) is that in which there is only one plane of symmetry. An **asymmetric** flower lacks any

plane of symmetry, usually the result of twisting of parts. Flower symmetry can sometimes be subtle and can even vary within a flower; if so, it should be separately described for calyx, corolla, androecium, and gynoecium to avoid confusion. Actinomorphic flower symmetry is likely the ancestral condition in angiosperms and is found in a large number of groups. Zygomorphy has evolved repeatedly in many groups, typically as a means of more efficiently transferring pollen to an animal (usually insect) pollinator.



Flower symmetry types