

FLOWERS

A major diagnostic feature of angiosperms is the flower. A **flower** is a modified reproductive shoot, basically a stem with an apical meristem that gives rise to leaf primordia. Unlike a typical vegetative shoot, the flower shoot is determinate, such that the apical meristem stops growing after the floral parts have formed. At least some of the leaf primordia of a flower are modified as reproductive sporophylls (leaves bearing sporangia). Flowers are unique, differing, e.g., from the cones of gymnosperms, in that the sporophylls develop either as stamens or carpels.

FLOWER PARTS

The basic parts of a flower, from the base to the apex, are as follows. The **pedicel** is the flower stalk. (If a pedicel is absent, the flower attachment is sessile). Flowers may be subtended by a **bract**, a modified, generally reduced leaf; a smaller or secondary bract, often borne on the side of a pedicel, is termed a **bracteole** or **bractlet** (also called a **prophyll** or **prophyllum**). Bracteoles, where present, are typically paired. [In some taxa, a series of bracts, known as the **epicalyx**, immediately subtends the calyx, as in *Hibiscus* and other members of the Malvaceae].

The **receptacle** is the tissue or region of a flower to which the other floral parts are attached. From the receptacle arises the basic floral parts. The **perianth** (also termed the **perigonium**) is the outermost, non-reproductive group of modified leaves of a flower. If the perianth is relatively undifferentiated, or if its components intergrade in form, the individual leaf-like parts are termed **tepals**.

In most flowers the perianth is differentiated into two groups. The **calyx** is the outermost series or whorl of modified leaves. Individual units of the calyx are **sepals**, which are typically green, leaf-like, and function to protect the young flower. The **corolla** is the innermost series or whorl of modified leaves in the

perianth. Individual units of the corolla are **petals**, which are typically colored (non green) and function as an attractant for pollination.

Some flowers have a **hypanthium** (floral tube), a cuplike or tubular structure, around or atop the ovary, bearing along its margin the sepals, petals, and stamens. Many flowers have a **nectary**, a specialized structure that secretes nectar. Nectaries may develop on the perianth parts, within the receptacle, on or within the androecium or gynoecium (below), or as a separate structure.

The **androecium** refers to all of the male organs of a flower, collectively all the stamens. A **stamen** is a microsporophyll, which characteristically bears two thecae (each theca comprising a pair of microsporangia). Stamens can be leaf like (laminar), but typically develop as a stalk like **filament**, bearing the pollen-bearing **anther**, the latter generally equivalent to two fused thecae.

The **gynoecium** refers to all of the female organs of a flower, collectively all the carpels. A **carpel** is the unit of the gynoecium, consisting of a modified megasporophyll that encloses one or more ovules. A **pistil** is that part of the gynoecium composed of an **ovary**, one or more **styles** (which may be absent), and one or more **stigmas**.

In some taxa, e.g. Aristolochiaceae and Orchidaceae, the androecium and gynoecium are fused into a common structure, known variously as a **column**, **gynandrium**, **gynostegium**, or **gynostemium**. A stalk that bears the androecium and gynoecium is an **androgynophore**, e.g., Passifloraceae.