Inflorescences - Floral Displays

The vast majority of flowering plants possess flowers in clusters called an inflorescence.

These clusters facilitate pollination via a prominent visual display and more efficient pollen uptake and deposition than with single flowers widely spaced.

The shift from widely spaced single flowers to an inflorescence required condensation of shoots and the loss of the intervening leaves.

The simplest inflorescence type would thus be indeterminate with the oldest flowers at the base and the younger flowers progressively closer to the apical meristem of the shoot.

A raceme

One modification of the basic raceme is to make it compound

The panicle is essentially a series of attached racemes with the oldest racemes at the base and the youngest at the apex of the inflorescence.

Panicle

(Zigadenus or white camass)
A second modification of the basic raceme is to lose its pedicels.

Raceme

Pedicel loss

Spike

The spike is usually associated with congested reduced flowers and often, but not always, with wind pollination.

Spike

(Plantago or plantain)

(Verbena or vervain)

A third modification of the basic raceme is to lose its internodes.

Raceme

Internode loss

Umbel

The umbel characterizes specific families (carrot and ginseng families for example).

These families typically show a compound umbel - smaller umbellets on a larger umbel.

Umbel

(Cicuta or water hemlock)

(Zizia or golden alexander)
A fourth modification of the basic raceme is for the stem axis to form a head.

The **head or capitulum** characterizes specific families - most notably the Compositae or Asteraceae. Not surprisingly, this family is closely related to families possessing umbels. (Helianthus or sunflower)

Besides these indeterminate inflorescences based on the raceme, there is a series of inflorescence types based on **determinate** shoots (shoot can not grow up indefinitely). The simplest is the **dichasium**.

The **dichasium** inflorescence is terminated (i.e., determinate) by the oldest flower and flanked by two lateral younger flowers. (Clematis or virgin’s-bower)
One modification of the basic dichasium is to make it compound.

Dichasium → Cyme

The cyme characterizes specific families - most notably the Caryophyllaceae - the pink or carnation family.

Cyme (Silene or campion)

A second modification of the basic dichasium is to reduce it.

Dichasium → Monochasium

or the Gentianaceae - the gentian family.

Cyme (Lisianthus)
The monochasium is most often seen in compound form as a scirpoide inflorescence. The Boraginaceae (Virginia bluebell family) is characterized by this distinctive inflorescence.

Another specialized inflorescence is the catkin or ament

- Unisexial cluster of small flowers
- Aepetalous (without petals)
- Hard bracts around the flowers
- Wind pollinated
- Falls as a unit

[Male catkin]  [Female catkin]

(Populus or cottonwood)

(Male catkin)  [Female catkin]

(Quercus or white oak)

A final specialized inflorescence is the spadix

- Thickened, fleshy spike
- Associated with spathe bract
- Frequently flowers unisexual
- Best developed in the aroid family (Araceae)

(Symplocarpus or skunk cabbage)  (Arisaema or Jack-in-the-pulpit)