**Botanical Differences Between Paphiopedilum and Phragmepedium**

***Paphiopedilum:***

*Paphiopedilum* species naturally occur among humus layers as [terrestrials](https://en.wikipedia.org/wiki/Terrestrial_plant) on the forest floor, while a few are true [epiphytes](https://en.wikipedia.org/wiki/Epiphyte) and some are [lithophytes](https://en.wikipedia.org/wiki/Lithophyte). These [sympodial](https://en.wikipedia.org/wiki/Sympodial) orchids lack [pseudobulbs](https://en.wikipedia.org/wiki/Pseudobulb). Instead, they grow robust [shoots](https://en.wikipedia.org/wiki/Shoot), each with several [leaves](https://en.wikipedia.org/wiki/Leaf); some are [hemicryptophytes](https://en.wikipedia.org/wiki/Hemicryptophyte). The leaves can be short and rounded or long and narrow, and typically have a mottled pattern. When older shoots die, newer ones take over. Each new shoot only blooms once when it is fully grown, producing a [raceme](https://en.wikipedia.org/wiki/Raceme) between the fleshy, succulent leaves. The roots are thick and fleshy. Potted plants form a tight lump of roots that, when untangled, can be up to 1 m long.

Orchids of this genus are notoriously difficult to propagate by tissue culture; as of 2016, commercial cultivation is almost exclusively seed-based. This means every plant is unique.

Members of this genus have unusual [stomata](https://en.wikipedia.org/wiki/Stoma_(botany)). Whereas most [land plants'](https://en.wikipedia.org/wiki/Embryophyte) stomata have [guard cells](https://en.wikipedia.org/wiki/Guard_cells) with [chloroplasts](https://en.wikipedia.org/wiki/Chloroplast) in their [cytoplasm](https://en.wikipedia.org/wiki/Cytoplasm) (including those of closely related [*Phragmipedium*](https://en.wikipedia.org/wiki/Phragmipedium) slipper orchids), *Paphiopedilum* stomata do not. This difference results in simpler, but weaker control of stomatal function. For example, most plants close their stomata in response to either blue or red light, but *Paphiopedilum* guard cells only respond to blue light. The fact that they lack chloroplasts has made them valuable to researchers investigating stomatal function. For example, it enabled the discovery of intracellular events that precede stomatal closure.

***Phragmipedium:***

Most *Phragmipedium* species are either [terrestrial](https://en.wikipedia.org/wiki/Terrestrial_plant), [epiphytic](https://en.wikipedia.org/wiki/Epiphyte) or [lithophytic](https://en.wikipedia.org/wiki/Lithophyte) in habit. They show a unique shield-like staminode, long, moustache-like petals and a 3-locular ovary. The large pouch-like [lip](https://en.wikipedia.org/wiki/Labellum_(botany)) is curved inwards at the margins. The acute leaves attain a length of about 80 cm. The stem lacks pseudobulbs and grows about 80 cm high, showing 2 to 3 flowers.

Most often floral characteristics are used to separate Phragmipedium from Paphiopedilum. The terminal inflorescence is often branched in Phragmipedium and unbranched in Paphiopedilum. As the flowers develop, the sepals in Paphiopedilum overlap, in Phragmipedium the sepals are fused shut at the edge. All Phragmipediums have an infolded lip and a claw face. The claw face is the area of the labellum (pouch) that forms the tube between the opening of the pouch and the escape hatch at the back close to the stigma and pollinia. All species of Phragmipediums can have multiple flowering inflorescences, and can either open all of the flowers at once or open them sequentially over a period of time, depending on the species. The single most important characteristic which separates these two genera is the ovary. In Phragmipedium, the ovary is trilocular (three-chambered) and has well defined walls between each chamber. In Paphiopedilum, the ovary is unilocular (one chamber), therefore has no ovary walls. The placement (placentation) of the ovules is also different between the two genera. In Phragmipedium it is axial, arising from the central core, where Paphiopedilum has parietal placentation, forming on the outside wall.

**PAPHS PHRAGS**

Waxier flowers Soft flowers, dainty & delicate

Needs to dry out Likes to be wet (great for an over-waterer)

Phal light Bright light and some shade

Slow grow Spike and grow quickly

SE Asia Central & S America

Short, rounded, thicker leaves Long sword-shaped thin leaves

Mottled leaved Solid green leaves

Smaller plants Large plants

Margin sharp – no in-folded rim Margins broad and in-folded

Usually single flower Multifloral

Short stem Tall inflorescence

Short dorsal long dorsal, long twisting petals

Flower structure Flower structure

Cultural differences (i.e. grow in house) Cultural differences (i.e. don’t like roots exposed)

**References:**

Wikipedia - <https://en.wikipedia.org/wiki/Paphiopedilum>

Phragmipedium, the Broken Slippers By Kenneth Girard 1996, revised and updated by I. Ostrander 20

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Barbara McNamee Page 2 of 2 5/11/19