

## Genetics, Breeding & a little Latin

From time to time the orchids we buy disappoint us by producing flowers very different from what we expected. Aside from the occasional mis-shapen flower, in most cases the surprise can be traced to basic genetics.

First a brief lecture on Latin. In Latin, adjectives must match the genus. Thus:

- if the genus ends in UM, then the white mutation is called 'album'.
- If the genus ends in A, then the white mutation is called 'alba'.

Now on to the orchid flowers. My first example goes back to a plant I purchased at Parkside Orchids about 25 years ago. The label read:

### Ascofinetia Cherry Blossom

(Neo. falcata x Asctm. ampullaceum alba)

In accordance with the rules for Latin, it should have read 'album' (for *Asco-centrum*). However, despite having two white parents, this plant produced pink flowers!



This is not as odd as it might seem, since the alba mutation of colored orchids is always recessive, so it must be paired with another alba in order to produce white flowers.

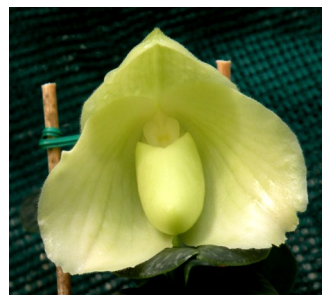
In this case, the other parent (now *Vanda falcata*) is a naturally white flower, but **NOT** a recessive alba, so its genes override the recessive alba, which brings us back to standard colored flowers (pink).

To produce a V. Cherry Blossom with white flowers, we would first have to identify a white alba mutation in a species with naturally white flowers. It can be done, but it will take years of test breeding to confirm whether any candidate is actually a recessive white mutation.

This issue is well understood in *Cattleya* breeding, where the early hybridizers could not understand why it was so difficult to produce white flowers, nor why breeding white to pink only resulted in more pinks. But, there are still some twists to this story:

In *Guarianthe bowringiana*, there are two separate mutations producing alba. But, the two are not compatible (they occurred on two different genes).

The same situation has arisen in *Paphiopedilum*. The album mutations in *Paph. niveum* and *Paph. bellatulum* are found on two different genes. Thus, if you breed *niveum* fma. album and *bellatulum* fma. album, you end up with ***Paph. Psyche*** with color.



X



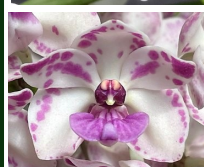
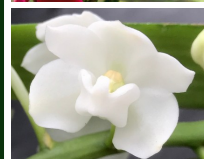
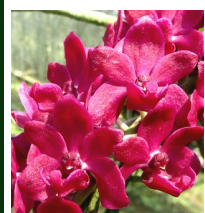
And, I have just (April 2025) experienced this issue again. I ordered some *Paph. Little Trouble* (= *barbigerum* x *charlesworthii*) from Hawaii. Upon unpacking, I discovered that the cross was made with the album forms of these two species. However, this is another case of the album mutation residing on different genes, so the plants are blooming with colored flowers, though with somewhat muted colors (not much red on the dorsal).



While the concept of recessive color forms is fairly well understood by now, there are still some breeders, who remain ignorant of the concept.

I have seen this repeatedly in *Rhynchostylis gigantea*, which exists in many different color forms. The standard (tipo) flower looks like the inflorescence to the left:

I am not sure about the red form (originally called Sagarik's variety), but



both the alba, coerulea (blue) and Cartoon (with bold spots on a white flower) color forms are

recessive. I suspect that this also applies to most of the newer color forms (orange, peach, yellow & green) - otherwise we would have seen these long ago.

Yet, I have seen (Cartoon x alba) and (red x alba) offered for sale. Either of these will simply result in tipo flowers, so they serve no purpose - unless they are a stepping stone in a line breeding program (looking to improve on some specific feature of the plants

or flowers in the next generation).

I have just fallen into this trap (again). I ordered a variety of plants from one of the Hawaii production nurseries, and only when unpacking the shipment did I notice that I had ordered some seedlings of a 'useless' combination.



**V. sanderiana**



**V. luzonica**

This is a beautiful primary hybrid (see next column). However, the plants I received are *V. sanderiana alba* x *V. luzonica*. They will produce colored flowers, but since the alba forms usually are smaller flowered, these plants will likely have smaller flowers also.



**Vanda Manila**

While there are some very good *V. sanderiana* fma. *alba* available now, the flowers are still smaller than a good tipo, so the off-spring will likely reflect this.



**V. sanderiana, fma. alba**

With this piece, I am hoping to make you aware that not all breeders are 'all knowing'. When you read a price list, or a plant label, and see that some non-standard color form has been used in the breeding of the plant, stop, think, and ask questions.

The alba/album & coerulea color forms are always recessive, and in some genera, possibly not compatible between two species.