

Phalaenopsis Harlequin Breeding – Past, Present and Future

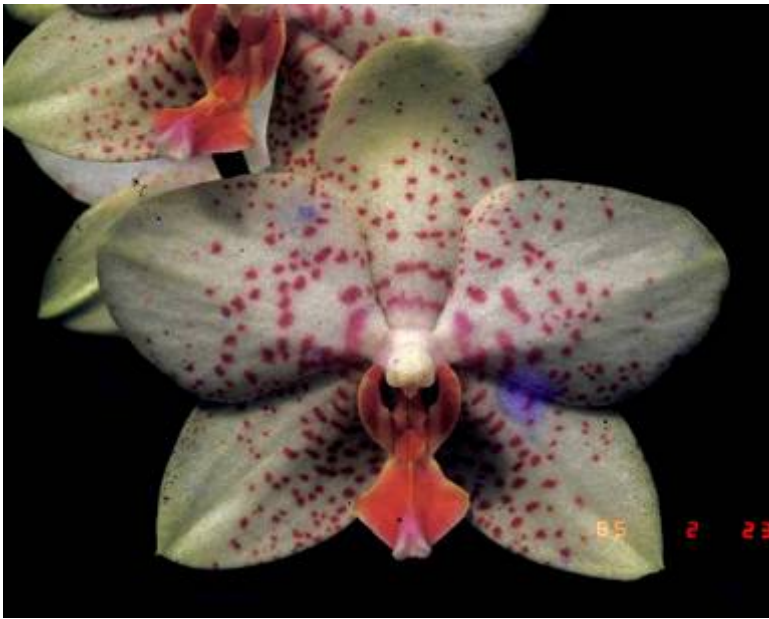


Mr. Lin, Yung-Yu
Brother Orchid Nursery Co., Ltd.



In 1983, I registered the cross of *Phal.* Misty Green and *Phal.* Liu Tuen- Shen as *Phal.* Golden Peoker. This clone 'Brother' is the best one among the seedlings.

The parents of *Phal.* Golden Peoker 'Brother'

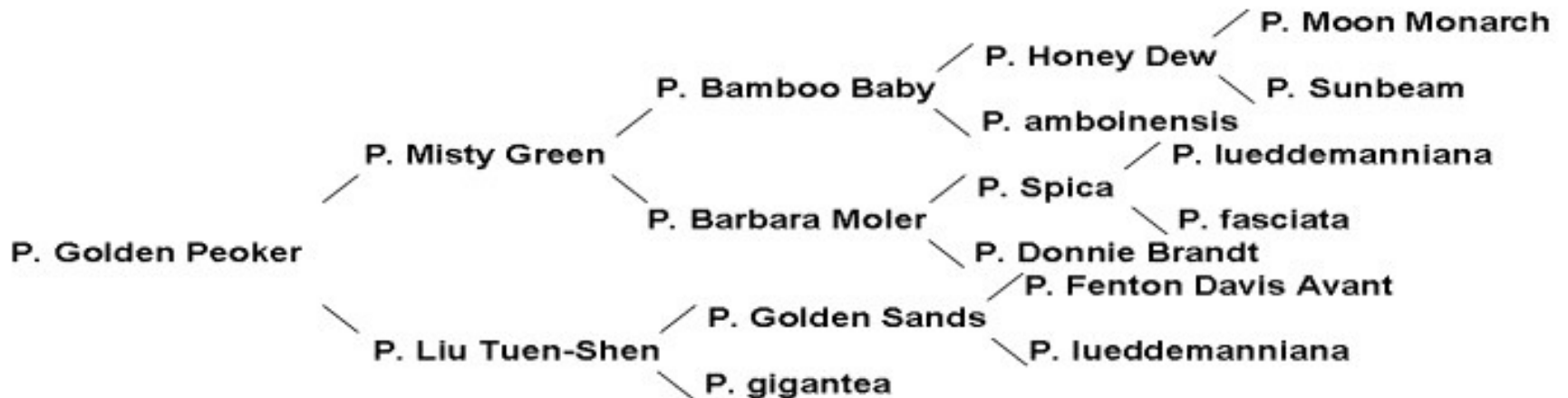


Phal. Misty Green 'Brother'



Phal. Liu Tuen-Shen 'Brother'

The pedigree of *Phal.* Golden Peoker



The species contributed to *Phal.* Golden Peoker:

Phal. gigantea

Phal. fasciata

Phal. lueddemanniana

Phal. amboinensis

Phal. amabilis

Phal. schilleriana

Phal. sanderiana

Phal. stuartiana

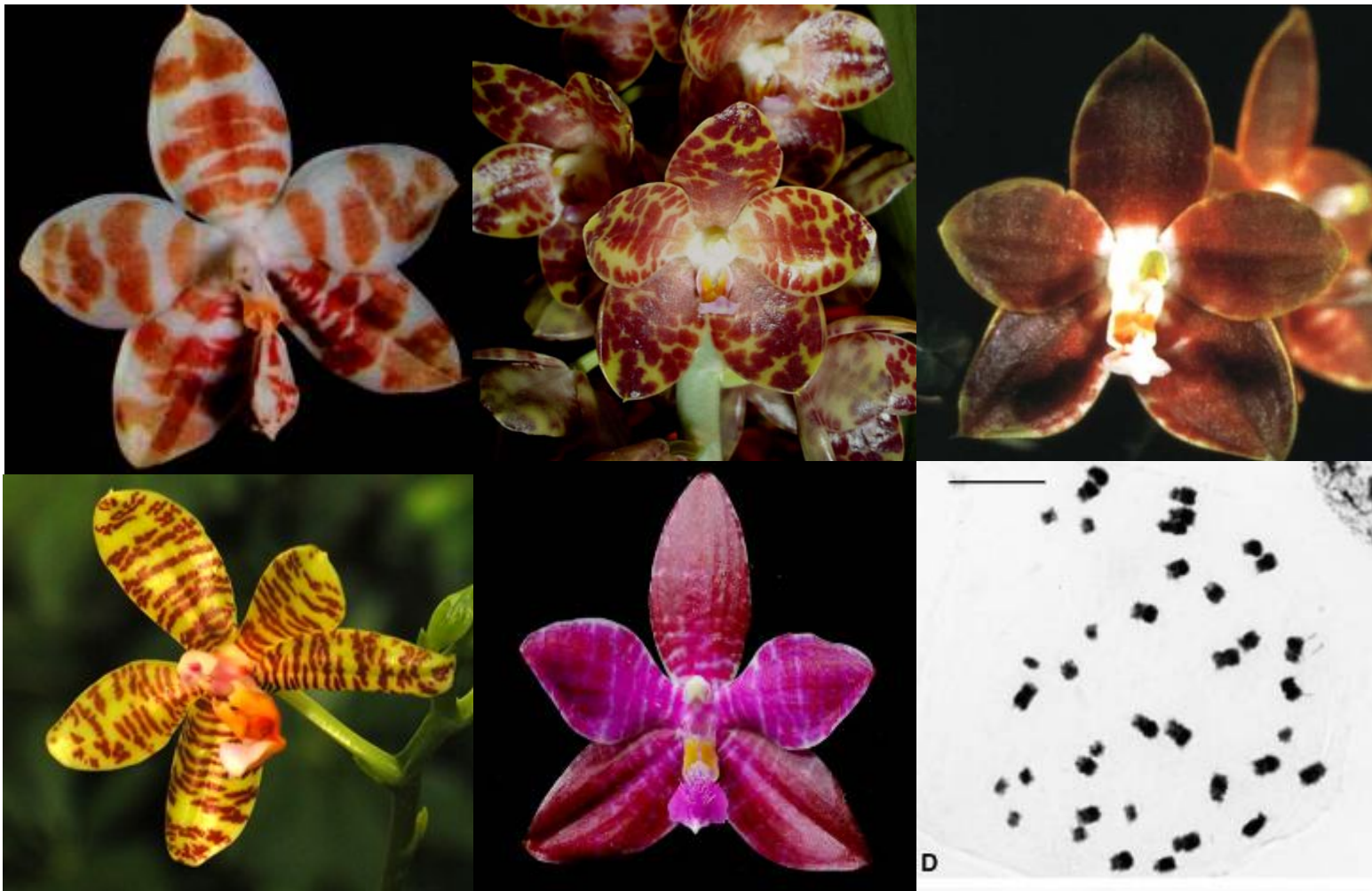
Phal. equestris



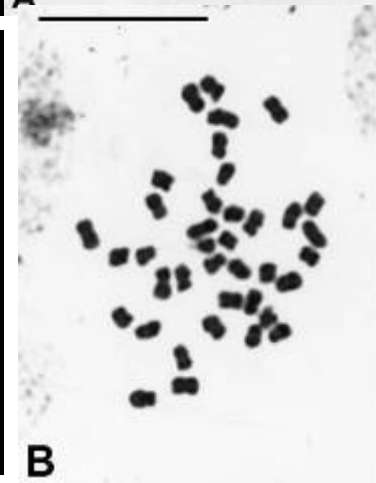
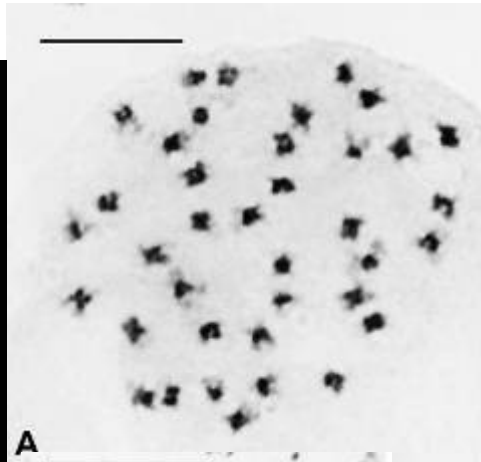
About 300 plants of the clone 'Brother' was first propagated in vitro via PLB system. One mutated clone was bloomed by Ever-Spring Nursery, and was named 'ES', received JC/AOS.



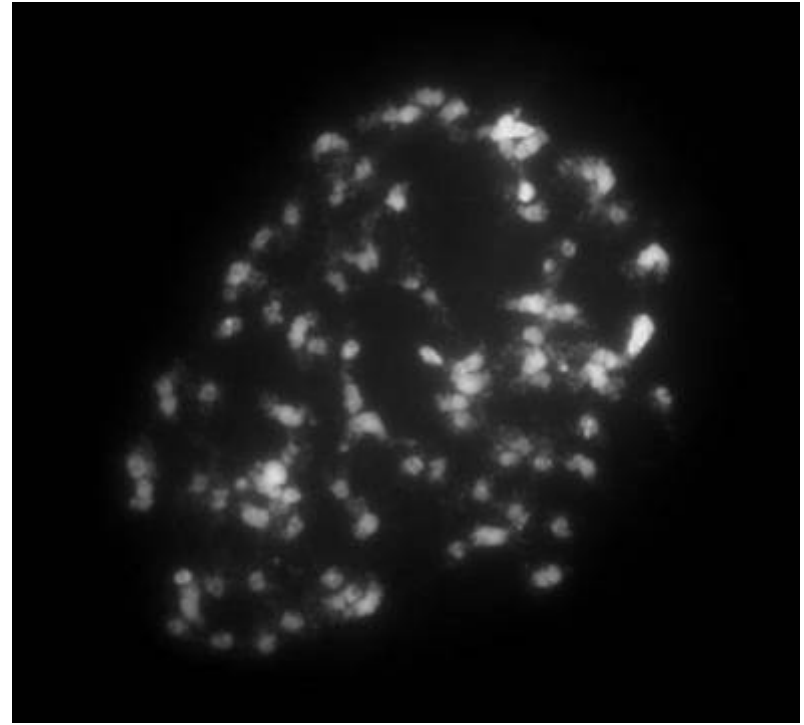
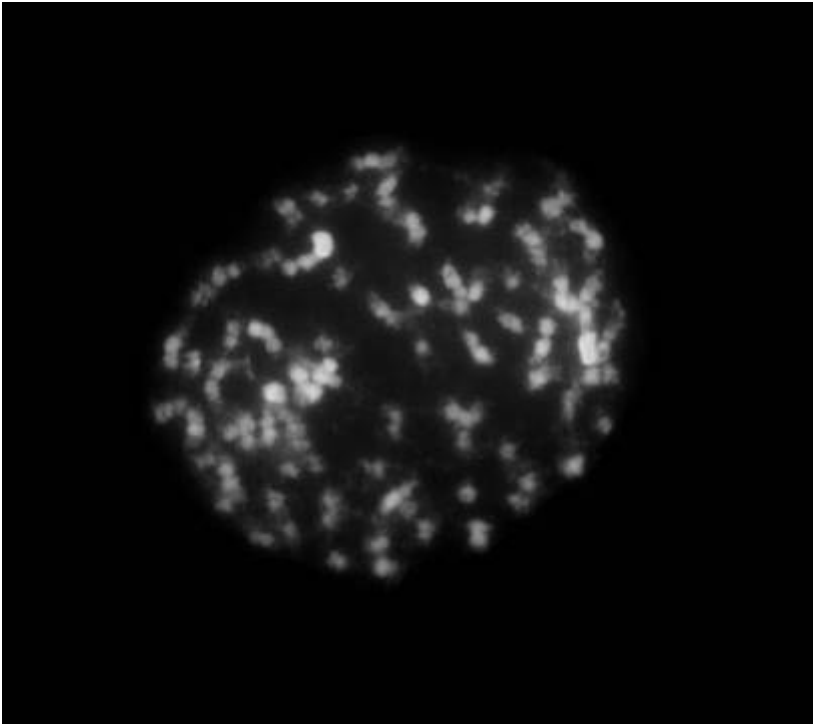
The clone 'ES' was further mericlone. Among the 1000 plants, 30% plants had 'ES' phenotype flowers, 40% plants had 'Brother' phenotype flowers, and 30% plants mutated and displayed asymmetrical spots and blotches with dark maroon color. The further mutated clone was named 'BL'.



The species of Sections Amboinenses and Zebrinae have the large to medium chromosomes and small chromosomes in their karyotypes.

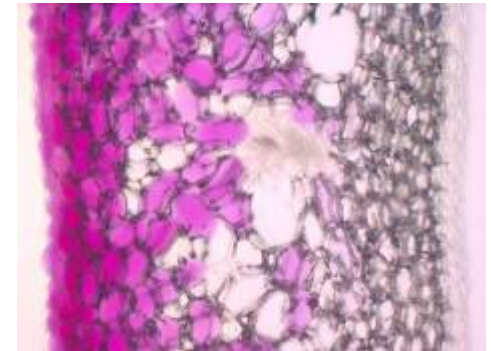
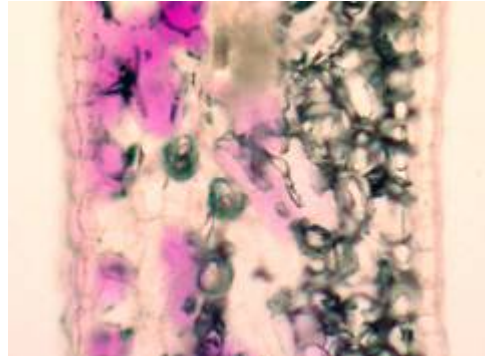
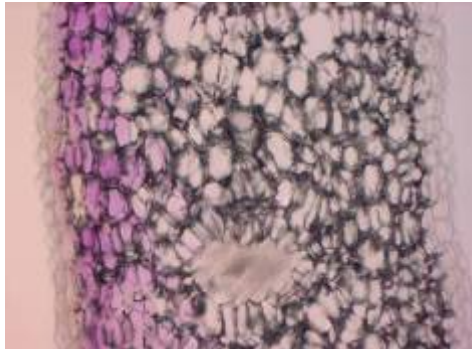


The species of Sections Phalaenopsis and Stauroglottis have small chromosomes in their karyotypes, whereas *Doritis pulcherrima* has the large chromosomes. Bar = 10 μ m



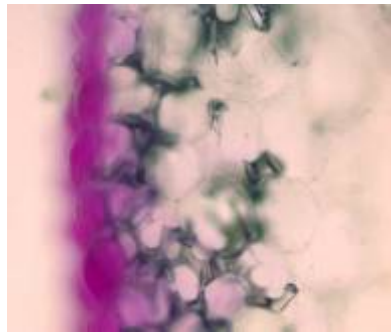
The karyomorphological study of 'Brother' (left) and 'BL' (right) indicated the chromosome count of both clones are about $2n = 78$, containing large, medium and small chromosomes. It seems that no chromosome variation occurred in 'BL'.

Flower tepal histological observation of the clones- 'Brother', 'ES' and 'BL'



The color occurs
only in the mesophyll

epidermis to mesophyll





In petunia, the transposon insertion may cause the flower color mutation. In this case, the same mechanism may also happen in *Phal.* Golden Peoker.

The progenies of *Phal.* Golden Peoker 'Brother'



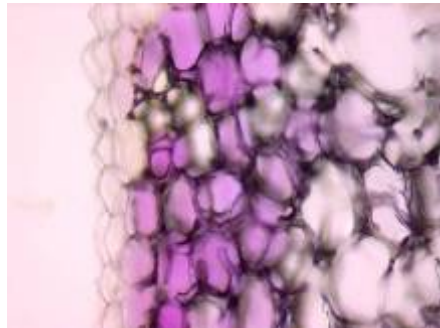
Phal. Brother Peacock =
Phal. Paifang's Queen 'B' x
Phal. Golden Peoker 'B'



Phal. Brother Delight =
Phal. Brother Peacock x
Phal. Chiayi Spots



Phal. Super Stupid =
Phal. Brother Peacock x
Phal. Brother Fancy



Flower tepal histological observation
of *Phal.* Super Stupid.
It's the same as the clone 'Brother'

Flower tepal histological observation of *Phal.* Golden Peoker 'BL' progenies.



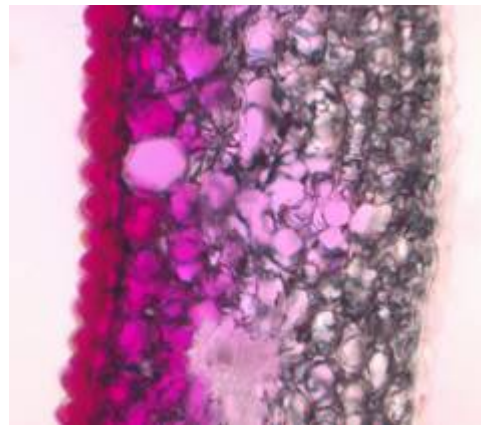
Phal. Golden Peoker x
Phal. Kuntrarti Rarashati



Phal. Golden Peoker x
Doritis pulcherrima



Phal. Sunrise Red Peoker x
Phal. Brother Sara Gold



In my breeding experience, there are some species contributed to the color aggregation of spots, such as

Phal. amboinensis (common type)

Phal. equestris (Iloco type)

Phal. violacea (*bellina*)

Phal. venosa.

The effect of *Phal. amboinensis* on color aggregation



Phal. Carnival

x



Phal. amboinensis



Phal. Carnival Queen

The effect of *Phal. equestris* on color aggregation



Phal. Super Stupid x



Phal. equestris



Phal. Brother Pico Mary



Phal. Brother Yew x



Phal. Cassandra



Phal. Brother Sandra



Phal. Brother Glamour x



Phal. Carmela's Pixie



Phal. Brother Liata

The effects of *Phal. violacea* and *Phal. venosa* on color aggregation



Phal. violacea
(*Phal. bellina*)

x



Phal. gigantea

=



Phal. Mok Choi Yew



Phal. venosa

x



Phal. Brother Stripes

=



Phal. Sunrise Red Peoker =
Phal. Golden Peoker x *Phal.* Kuntrarti Rarashati



Phal. Golden Peoker 'BL'

x →



Phal. Sunrise Red Peoker



Phal. Kuntrarti Rarashati, this clone may be tetraploidy

Different clones of *Phal.* Sunrise Red Peoker



102 *Phal.* Sunrise Red Peoker x *Phal.* Taipei Gold 'GS'



Different clones of *Phal.* (Sunrise Red Peoker x Taipei Gold 'GS')



The hybrids of *Phal.* Golden Peoker 'BL' with species



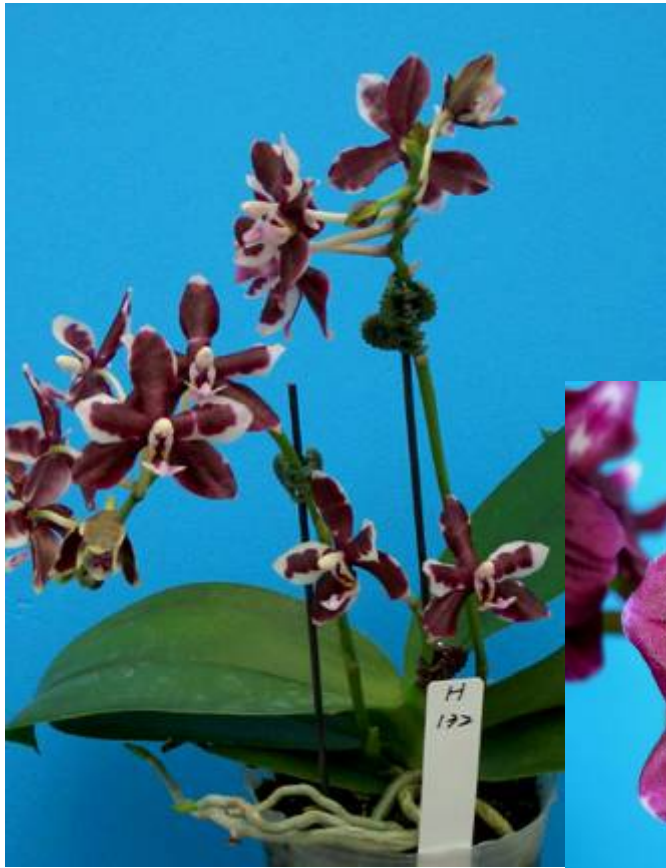
Phal. Golden Peoker 'BL' x
Phal. celebensis



Phal. Golden Peoker 'BL' x
Phal. equestris



Phal. Golden Peoker 'BL' x
Phal. gigantea



*Phal. Golden Peoker 'BL' x
Phal. mannii*



*Phal. Golden Peoker 'BL' x
Doritis pulcherrima*



*Phal. Golden Peoker 'BL' x
Phal. violacea*

The crosses of *Phal.* Golden Peoker 'BL'
with multiple flower types



Phal. Golden Peoker 'BL' x
Phal. Brother Trekkie



Phal. Golden Peoker 'BL' x
Phal. Kuntrarti Rarashati



Phal. Golden Peoker 'BL' x
Phal. Timothy Christopher

Phal. Golden Peoker 'BL' x
Dtps. Inferno

The F1 of *Phal.* Golden Peoker 'ES' –
Phal. Ever-spring King



Phal. Golden Peoker 'ES'



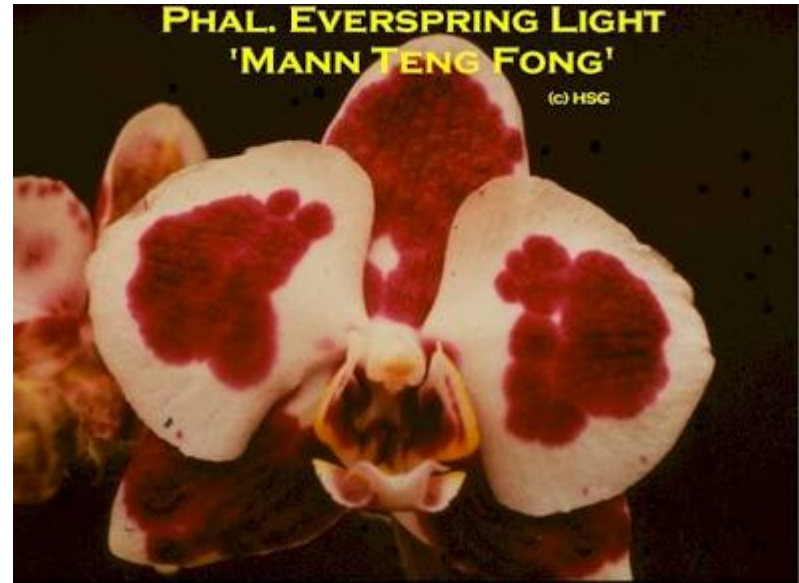
Phal. Chih Shang's Stripes



Phal. Ever-spring King 'King'

About 1/300 of the seedlings has the harlequin pattern.

The F1 of *Phal.* Golden Peoker 'ES' –
Phal. Ever-spring Light



About 1/300 has the harlequin pattern.

The F1 of *Phal.* Golden Peoker 'ES' or 'BL' –
Dtps. Ever-spring Prince



IF use 'ES' as the parent, about 1/300 has the harlequin pattern.
IF use 'BL' , the ratio is about 1/3.

F1 *Phal.* Ever-spring Fairy = *Phal.* Golden Peoker 'BL' x
Phal. Taisuco Kochdian



F1 *Phal.* Haur Jin Diamond =
Phal. Golden Peoker x *Phal.* Ching-Her Buddha



Phal. Golden Peoker 'BL'



Phal. Ching-Her Buddha



Phal. Haur Jin Diamond

F1 *Phal.* I-Hsin Canary =
Phal. Golden Peoker 'BL' x *Phal.* I-Hsin Gold Coin





F1 *Phal.* Sogo Pearl =
Phal. Golden Peoker 'BL' x
Phal. Sogo Manager



F1 *Phal.* Nobby's Shaowy =
Phal. Golden Peoker 'BL' x *Phal.* Nobby's
Fox

F1 *Dtps.* I-Hsin Black Jack =
Phal. Golden Peoker x *Dtps.* Leopard Prince



Phal. Golden Peoker 'BL'



Dtps. Leopard Prince

Dtps. I-Hsin Black Jack

F1 *Dtps.* Chain Xen Diamond =
Phal. Golden Peoker 'BL' x *Dtps.* Judy Valentine



The F2 generation of *Phal.* Golden Peoker 'ES'

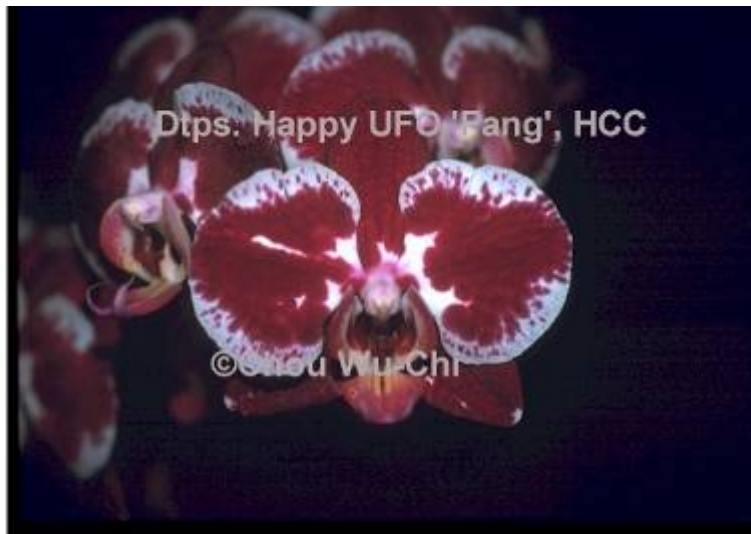
Dtps. Ching Hua Spring =
Dtps. Minho Princess x
Phal. Ever-spring Light



Phal. Yu-Pin Pearl =
Phal. Ever-spring King x
Phal. Musashino



F2 *Dtps.* Happy UFO =
Dtps. King Shaing's Rose x *Phal.* Ever-spring King



F2 *Dtps.* Brother Love Rosa =
Phal. Ever-spring King x *Dtps.* Sinica Knight



F2 *Dtps.* Yu-Pin Red Angel =
Phal. Ever-spring King x *Dtps.* Taisuco Pixie



The F2 generation of *Phal.* Golden Peoker 'BL'

Phal. Haur Jin Princess =

Phal. Haur Jin Diamond x *Phal.* Dou-dii Golden Princess



Phal. Haur Jin Diamond



Phal. Dou-dii Golden Princess



Phal. Haur Jin Princess

F2 *Phal.* Shin-Yi Diamond =
Phal. Haur Jin Diamond x *Phal.* Ching-Her Buddha



Phal. Haur Jin Diamond



Phal. Ching-Her Buddha



Phal. Shin-Yi Diamond

F2 *Phal.* Diamond Beauty =
Phal. Haur Jin Diamond x *Phal.* Chingruey's Beauty



Phal. Haur Jin Diamond



Phal. Chingruey's Beauty

Phal. Diamond Beauty



F2 *Phal.* Tai-I Yellow Bird =
Phal. Haur Jin Diamond x *Phal.* Salu Peoker '#2'



Phal. Haur Jin Diamond



Phal. Tai-I Yellow Bird



Phal. Salu Peoker '#2'

F2 *Dtps.* Yu-Pin Natsume =
Dtps. Autumn Sun x *Phal.* Haur Jin Diamond



Phal. Golden Peoker 'BL'



Dtps. Autumn Sun



Dtps. Yu-Pin Natsume



F 2 *Phal.* Haur Jin Diamond x *Phal.* Black Rose



F2 *Phal.* (I-Hsin Canary x Sunrise Delight)



The F3 generation of *Phal.* Golden Peoker 'ES'

Dtps. Chain Xen Pearl =

Dtps. Ching Hua Spring X *Dtps.* Nobby's Pink Lady



102 *Phal.* Sunrise Red Peoker x *Phal.* Taipei Gold



104 *Phal.* Sunrise Red Peoker x *Phal.* Sogo Lisa



252 *Phal.* Sunrise Red Peoker x *Phal.* Brother Stage



Phal. Sunrise Red Peoker x *Phal.* violacea



Phal. Sunrise Red Peoker x *Phal.* Salu Peoker '#1'



Phal. Sunrise Red Peoker



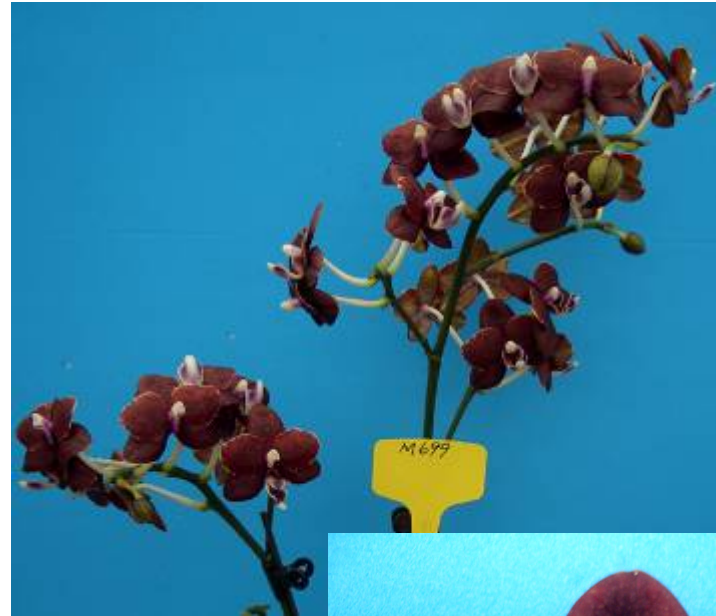
Phal. Salu Peoker '#1'



Phal. Sunrise Red Peoker x *Phal.* Brother Sara Gold



Phal. Sunrise Red Peoker



Phal. Brother Sara Gold



F3 *Dtps.* Ching Hua Magic =
Dtps. Ching Hua Spring X *Dtps.* Hsingying City



F3 *Phal.* Diamond Beauty x *Phal.* Sogo Yukidian



F3 *Phal.* I-Hsin Sun Flower x *Phal.* Tai-I Yellow Bird



F3 *Dtps.* Yu-Pin Burbundy =
Dtps. Yu-Pin Red Angel x *Dtps.* Little Gem Stripe



This hybrid has received the AQ/AOS in 2007



F4 *Dtps.* Yu-Pin Lady =
Dtps. Chain Xen Pearl x *Dtps.* Yu-Pin Lover



F4 Dtps. Chain Xen Mammon =
Dtps. Chain Xen Pearl x *Dtps. Mount Beauty*



F4 *Dtps.* Ching Hua Magic x *Phal.* Taisuco Kochdian



F4 *Dtps.* Chain Xen Pearl x 'Large Pink Flower'



F4 *Dtps.* Chain Xen Pearl x *Phal.* Sogo Yukidian



F4 *Dtps.* Chain Xen Pearl x *Phal.* Haur Jin Princess



F4 *Dtps.* Chain Xen Pearl x *Phal.* Elice de Valec



F4 *Phal.* (Sunrise Red Peoker x Sogo Lisa)
x *Phal.* Sogo Pride



Phal. Sunrise Red Peoker



Phal. Sogo Pride



F5 *Dtps.* Yu-Pin Lady's Progenies



Dtps. Yu-Pin Lady x
Phal. Sogo Yukidian



Dtps. Yu-Pin Lady x
Phal. Sogo Yukidian



Dtps. Yu-Pin Lady x *Phal.* Brother Success

The flower size of F4 progenies has increased above 10 cm, and the flower type and arrangement are almost the same as the standard white flowers.



Phal. Yu-Pin Lady

x



= ??

This mutated clone is called '**Red Cat**'

Recently, There are some mutations of pink standard type. IF these pink mutation clones cross with the *Phal.* Yu-Pin Lady (F4), what will happen ?

In the future, more and more materials will contribute to the harlequin type breeding.....



x multiple flower type = ??

Phal. Sunrise Red Peoker x *Phal.* Taipei Gold



x 'Red Cat' = ??

Phal. Sunrise Red Peoker x *Phal.* Sogo Lisa

Thank you for your attention