# THE MONTHLY BULLETIN OF THE KU-RING-GAI ORCHID SOCIETY INC.

(Established in 1947)
A.B.N. 92 531 295 125
19th May 2025 - Volume 66 No. 5
Annual Membership : **$15 single, $18 family**


***Patrons - Pauline and Trevor Onslow***




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## Next Meeting : Mon 19th May 2025

**Venue** : ***The West Lindfield Community Hall, corner of Bradfield Rd and Moore Avenue, West Lindfield.***

**COVID and even common old influenza** remain a problem. **Please, if you are feeling unwell - do not attend.**

**YOU MUST SIGN IN on the ATTENDANCE SHEETS** at the **front hall on arrival**. – Insurance requires it. **Please do it.**

***The hall is open from 6.30pm*** to set up the hall (please help), benching can begin from 7 pm but no benching until all the class cards and dividers are in place. Give the set up team time to get everything organized.

**Culture Class – Dave Floyd** is back as culture advisor this month and his topic will be **"Awkward Keikis".** Dave will explore those many situations where you aren't quite sure which way to go.

**Guest Speaker -** This month, after the supper break, we have a special treat for members. Our speaker will be renowned orchid grower and breeder Nette Meggetto. Nette is in town for the Orchids Out West show and has kindly agreed to do a talk for us on Sarcochilus. This is an opportunity you shouldn't miss.

**The society sales table** will also be open as usual with pots, sticks and fertiliser etc and hopefully also some spare divisions of members plants. Please respect the ***"Sales Table Open / Sales Table Closed" signs*** and give our sales table managers time to set up and get themselves ready before you start grabbing stock and offering money**.**

**The Supper Break – Supper is not self-serve.** Volunteers are assigned to serve the food for hygenic reasons. To convince members of the small thing we ask of you in volunteering as a helper, the 'volunteer' instuction sheet has been send out with this newsletter. The helpers do **not** have to supply anything. Supplies are all organised in advance.

**May volunteers are – Julie Iyengar and Stephanie Bashford**

**Supper Food – We do ask *all members* to bring in a contribution of edibles for the supper table. *Just a small plate to add to the spread.*** If you are a cook, show off your skills with something special but if you are like me, shop bought stuff is perfectly acceptable. ***And Remember – Please bring your own mug or cup with you.***

**Best of the Evening Species – Bulbophyllum rothschilianum** grown by **Ian Tanner**

I just love the group of Bulbophylums that flower with a circular (umbellate) arrangement of flowers like this one. *[An umbel refers to flowers radiating from a single point like the ribs of an umbrella]*

The species rothschildianum is from NE India, Yunnan China, and Myanmar. I don't have specifics on habitat but it is believed that it at least occurs in locations over 2000 M which would make these cool growers.

**Eliz. Anne Buckleberry**

**Bulb. longissimum**

Bulb rothschildianum is a popular orchid but is often confused with its daughter hybrid Bulb Elizabeth Anne which looks quite similar. The other parent of Elizabeth Ann is the species Bulb longissimum which provides a good general basis for separation. The much longer segments of longissimum are reflected visibly in Elizabeth Anne and as you can see from the pictures here, Elizabeth's flowers are detectably longer and narrower than rothschildianum. But please don't take that to mean all cultivars of each look exactly like these individuals. There are always variations.

Congratulations Ian. Your orchid was growing and flowering really well - 6 multiflowered heads no less. Wow.

**Society News** (if anyone has a news item, please phone Jim on 9476 3383, or email at jimbrydie@aussiebroadband.com.au)
**Jim's view** – I can't report much from last meeting because I was busy out front doing the culture class and the guest speaker spot. I can assure you it was not driven by a desire to hog the limelight. It was just that other speakers were not available on a meeting night that happened to coincide with Easter Monday.

Anyway, from what I saw on the sideline Dennys was as polished as usual as chairman and had the meeting ticking over beautifully and members enjoying themselves.

This coming month we have been lucky enough to get Nette Meggetto as a volunteer. I am really looking forward to this one. Nette is a very knowledgeable and experienced speaker so we are very lucky to have her.

The benching of flowers was excellent again last month and I hope we can expect the same again. During the supper break, make sure you take the opportunity to wander about and see and the amazing orchid flowers we see every month. Plenty are big and flashy ones but there are also the little cuties you don't see unless you really go looking. The amazing diversity of the orchid family is one of the aspects about it that has always attracted me.

Thank you to the extra supper volunteers who have now put their hand up. We haven't completely filled the roster but we are getting there and at least we have supper helpers steady for coming months. We are also grateful to one of our committee members, Julie Iyengar, who has now volunteered to take over management of the supper volunteer system. Thank you Julie, with you providing a coordinating function it will be much smoother.

Have you ever heard of sniffer dogs being used to find orchids? Dennys came across this article on the ABC news site that is just amazing. (link - https://www.abc.net.au/news/2025-04-29/scent-detection-dogs-sniff-out-wyong-sun-orchid/105210696 ) The article mentions a unique native orchid species but doesn't give its name. This next link tells you a bit more about the orchid itself (link - https://threatenedspecies.bionet.nsw.gov.au/profile?id=20099 ).

You can never believe the news you may come across.

**Some Coming events in the next few months of 2025**
15-17th May – (shop hrs) - Bankstown OS show, Lidcombe Shopping Centre, Lvl 1, 92 Parramatta Rd, Lidcombe
23-25th May - 9 - 4 fri/sat, 9 -2 sun, Orchids Out West, Philip Charley Pavillion, Hawkesbury Showground
12-14th June – (shop hrs) - NSOS show, St Ives Village Shopping Centre
20-22nd June – Manly W. OS Winter Show, Super Centre, Belrose
28-29th June – 9-4 Sat, 9-3 Sun, - Mingara Annual Fair, Mingara Recreation Club, Mingara Drive, Tumbi Umbi
10-12 July – Thur-Sat (shop hrs) - Eastwood OS, Eastwood shopping centre, Rowe St, Eastwood
31 July - 2 Aug – Cumberland OS show, Grove Square Shopping Centre, Baulkham Hills
1-3 Aug – (Fri-Sun) Manly W. OS 'Orchids by the Sea', Super Centre, Belrose
8-10th August – (9-4 Fri, 9-3 Sat) National Orchid Extravaganza, Arena Sports Club, 140 Rookwood Rd, Yagoona
15-17th August – (9-4 Fri,Sat, 9-3 Sun) St Ives Orchid Fair – St Ives Showground, Mona Vale Rd, St Ives

**More Society News**
**1. New members –** Welcome to our club to new members Ching-Yan Choi & Angela Choi who signed up last month. I hope you make many new friends among your fellow club members and enjoy the meetings. We try to help members learn more and at the same time make meetings a happy experience but it often takes a little while for new members find their way. If you need any assistance don't hesitate to ask your fellow members. We have all been there.

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**Best of the Evening Hybrid – Rlc. California Girl 'Orchid Library'** - grown by ***Trevor and Pauline Onslow***

I have given this one the cultivar name Orchid Library although I am not sure if Trevor put a cultivar name on the card. We have a few growers in our club with this orchid and it has featured a few times in recent years. The cultivar is very beautiful and distinctive but there are often slight variations in depth of colour. Perhaps as a result of growing conditions, perhaps just photo differences. Whatever the reasons, it is hard not to admire the flowers for their sheer beauty.

Only one cultivar of California Girl has ever been awarded and that was in 1993 to the cultivar "Sweet Angel" *(at the left)* although in my humble opinion Orchid Library is far superior. One of those small curiosities of the orchid world.

As Orchid Library was the subject of a BOE write up in only May last year, I won't do my usual exploration of its background.

Congratulations Trevor and Pauline. You have still got it!!

**Best of the evening Novice – Schombocattleya** (or Laelianthe) **Splendid Bow** grown by ***Stuart Ruthven***

This delightfully coloured orchid was labelled incorrectly on its benching card and was marked as Guarianthe bowringiana x Schomburgkia superbiens (registered as Laelianthe Ruthchen). We shouldn't be overly embarrassed by the odd dud label. We humans are prone to the occasional mistake and such things happen. I know that I have written a few in my time when I thought what I had benched was something else.

But anyway, after checking, Stuart confirmed his orchid is really a closely related cousin named G. bowringiana x Schomburgkia splendida, and the registered name for that cross is Laelianthe Splendid Bow. The genus name Laelianthe comes from a combination of Laelia and Guarianthe)

The species Guarianthe bowringiana is the common factor to both hybrids. It was a Cattleya until relatively recently but the huge DNA re-evaluation of the Laeliinae in 2003 determined that it was more correctly a member of a 4 species subgroup (Guarianthe) from Central America, the Carribbean, and top end of South America. The other 3 are patinii, skinneri, and aurantiaca.

Bowringiana has always been a very popular species. It usually has heads of 5 to 20 flowers but can have many more. The flowers are well shaped which are around 6-7 cm across. The colour is generally rose-purple but can be darker, and there is a darker purple ring around the end of the tubular lip.

Although the other parent in both cases mentioned are Schomburgkias, they are quite different. The parent listed on the card was Schomb. superbiens which is commonly grown around Sydney and is one of the more hardy members of the group. What is more, superbiens is something of a giant. The pseudobulbs can be up to 45cm tall, topped by 2 or 3 thick, leathery, rigid, 30 cm leaves. The spike is something like Laelia anceps but much heavier and carrying more flowers, each 12 to 15 cm across (big).


Unfortunately I could only find two very different looking pictures (at right) purporting to be the hybrid between the above mentioned (=Lnt. Ruthchen). The characteristics of each flower makes it a distinct possibility but one flower is white with a blue lip which means it would have to have been made by very carefully selected cultivars of each species parent. There are alba varies of each species, and there are pictures of a virtually blue form of superbiens so I have to assume the white and blue one is possible, but still, I have to admit some suspicion. The pink Ruthchen looks a more likely outcome with bowringiana giving it smaller better filled flowers and an almost enclosed column. But most importantly, neither looks anything like our BOE.

On checking, Stuart confirmed that the schomburgkia parent of the ***actual BOE benched*** plant, was Schomburgkia ***splendida***. Quite different to superbiens. The colour of splendida flowers can vary, with the flower parts being anything from red/purple to burgundy/purple.

Flowers are about 8 cm across and there are between 10-15 flowers at the end of up to a 1m long stem.

When crossed with Guar. Bowringiana one might expect just the kind of pink/purple flowers we see in Stuarts orchid. I have only seen a few examples but all others fall quite a way short of the quality of Stuart's which I suspect may be the cultivar Susanne which was awarded an AD in 1985. – A Lovely one Stuart – well done.

**The "Schomburgkias" -** I thought it was a curious coincidence that both crosses discussed above involve a "Schomburgkia" or at least what used to be a Schomburgkia, and it occurred to me that many wouldn't know much about this curious but rather beautiful group of the Laeliinae (the Cattleya family group). So - I thought it would be a good idea to offer a broad introduction to this curious little group of Cattleya relatives.

In book 3 (circa 1993) of Charles Wither's excellent series of books "The Cattleyas and their Relatives", he tells us that there are 22 species in this complex group but many regarded the group as 2 different genera. About 12 were still generally regarded as Schomburgkia and perhaps 10 as a sister genus Myrmecophila "the ant lovers" (abbrev Mcp). Both are closely related to the older genus Laelia, and all have 8 pollinia.

More recently, following that huge DNA based re-evaluation of the Laeliinae, Myrmecophila has been retained as a genus, but the rest of the group that had been Schomburgkia have now all been merged with Laelia, **and the genus Schomburgkia is no more. However,** I am not sure if enough time has passed for all argument to cease so perhaps it is still a tad early to rush into changing all labels just yet.

I think the best way to start looking at the old Schomburgkia group is to first look at the obvious physical differences between the Myrmecophila and the rest.

***In Leon Wiard's book "An Introduction to the Orchids of Mexico",*** which by the way is a book looking at the wonderful overall scope of the native orchids of Mexico, and does not focus on any particular genus, he provides a nice overview of the group. ***"The genus (of Schomburgkia) ranges from the West Indies and Mexico through Central America and into the north of South America. Species in this group … possess two distinct types of pseudobulb.***

***One type is much like the pseudobulb of a Cattleya but is definitely stalked at the base. Species with this type of pseudobulb have flowers that form a cluster at the apex of a sometimes-long flower stalk.*** (JB : with the abolishment of the genus Schomburgkia, this group are now given the genus name Laelia )

***The second type of pseudobulb is heavy at the base, hollow, and often the home of ants (which provide additional interest to the collection of such plants). Species with pseudobulbs of the second type are known as Myrmecophiles, meaning "ant loving". Their flower stalks continue to grow during flowering, which may last a long time, with buds and flowers developing as old ones fade.*** (JB : these now formally given the genus name Myrmecophila)

Leon then finishes with this vital comment : ***"The culture (of all) is similar to that of Cattleya and Laelia except that Schomburgkias require more intense light as well as growing temperatures like those common to their native habitats."*** – <u>If ever you could say you heard an insightful comment, then this is it</u>

As you can see in the two pictures below (both of Schomburgkia tibicinis) that 'bright light' can sometimes mean growing in full blazing sun. But although that is not always the case, they ***do always need very bright light***. The first picture here is from an AOS magazine article and shows a massive old specimen high in a tree in Belize. The second is from Facebook showing a big sprawling plant growing in a backyard garden. The owner said "whatever the plant was originally growing in is long gone and it is now growing over old dead pseudobulbs".

But the other point to note is that ALL of the group come from lowland, very tropical areas and most are not cold tolerant. Some species are a little more hardy, but you need to research what you attempt to grow. If you need heat to grow your selected Schomburgkia or Myrmecophila through the winter, give it as much light as possible and move it out to even brighter areas when the weather warms up. In insufficient light they might grow but they just won't flower. Some of these have spectacularly beautiful flowers but pick your target and your location. Now – Let's look at some bulbs – first the Myrmecophilas **(abbreviated to Mcp)**

**Mcp. thomsoniana**

**Mcp. humboldtii**

**Mcp. tibicinis**

**Mcp. christinae**

You should note the distinct vertical ridges along the bulbs, and the plumb, almost continuous diameter right along the pseudobulb. These bulbs are always hollow in the central area and there is an opening at the base of each bulb that allows ants to colonise the space.

**In comparison, here are the pseudobulbs of some of the 'Non Myrmecophyle' Schomburgkias**


**Sshomb superbiens**


**Schomb lueddemannia**


**Schomb crispa**


**Schomb lionsii**

**Some of the ant loving Myrmecophila flowers**

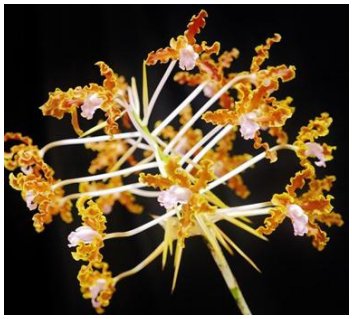

**Mcp christinae**


**mcp tibicinis**


**mcp brysiana**

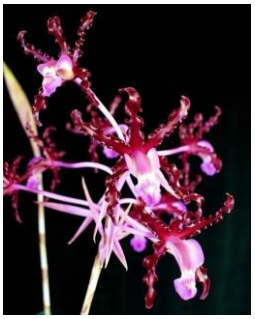

**Mcp thomsoniana**

**And also some Schomburgkia (or Laelias of the Schomburgkia group)**


**Laelia marginata**


**Laelia lyonsii**


**Laelia undulata**


**L. splendida**


**L. superbiens**

So, a wonderfully interesting and very exotic group of orchids and well worth exploring. In general most have a long spike (like their close relative Laelia anceps) and have a multi flowered head of flowers at the end of the spike but the spike is not always as long in each species. The plant at the eft is Myrmecophila tibicinis which is perhaps average but some are shorter.

Nearly all have strongly crinkle edged petals and sepals. The most commonly seen of the group is the giant superbiens that we often see at our meetings and which is now officially a Laelia. Lina benched a nice one just last meeting. These have large flowers and can be grown in a bright garden area in a lot of Sydney.

But as the showiest and warm growers and often dedicated sun lovers, most are perhaps not 'beginners' orchids.

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**Curious -** Tell a man there are 300 billion stars in the universe and he'll believe you. Tell him a bench has wet paint on it and he'll have to touch to be sure.

## Some Essentials of Botany and Plants - by Jim Brydie with help from Wikipedia & the internet

While writing last month's article on apical dominance, I could see that the subject was leading to a need for more information on the physiology of plants. I don't want to turn members into botanists, but I hope that this introductory article may at least help growers better understand how plants actually function.

**A comparison of Animals versus Plants ??** – It hardly needs to be said that plants and animals are quite different, but despite that, there are some surprising analogies to be drawn between their internal systems.

***ANIMALS*** – are mobile. They don't have roots to get water and minerals, or leaves to photosynthesise to gain energy. Instead, animals carry a sort of equivalent of those things within them. Animals have a mouth to take in food or water and a stomach and other internal organs to process that food and water to gain their necessary minerals and energy.

Animals (or at least mammals) use blood in a vascular system comprised of arteries and veins, and a heart to pump the blood around their vascular system. This transport system moves water, minerals, oxygen, and other chemical messengers throughout their body to where it is needed. Insects have a similar but different system.

***PLANTS*** – are not mobile. At the most simple level, they absorb water and minerals through their roots, they use leaves to absorb air and sunlight and the process of photosynthesis to generate sugars which equate to energy.

But how do these separate 'top of the plant (leaves)' and 'bottom of the plant (roots)' parts work together?

Well, all plants also have a vascular system. Not a heart pumping blood through veins and arteries as in animals, but an alternate system based on two separate vascular systems. One called ***phloem*** *and the other* ***xylem***.

***Xylem*** transports water and minerals upward, from the roots to the leaves and all other parts of the plant. It is important to note that this system ONLY WORKS ONE WAY. The flow is always upward, and as there is no 'heart', the flow is driven by a combination of 3 main three mechanisms.

(a) Primarily through the pull of water from the top of the plant in the leaves through transpiration (evaporation). As the leaves breath and photosynthesise they lose water to the atmosphere which reduces water pressure within the leaf, acting as a pull pressure within the xylem.

(b) Water throughout the plant (sourced from the xylem) is in contact throughout the plant with the water inside more complex cells and other structures within the plant. Each of these other cells or 'containers' also contain water but with various levels of concentrations of dissolved solids (salts).

Where two bodies of water containing different concentrations of dissolved solids are in contact with one another, the water with little dissolved minerals will always flow into the water with higher soluble concentration and as the non-xylem cells always have much higher concentration of dissolved minerals than the water in the xylem and the roots this acts as a pull pressure drawing the lower concentration water from the roots upward throughout the plant.

(c) At a much lesser level there is also a third system and that is capillary pressure within the xylem driven by the narrowness of the xylem tubes in the roots.

[By explanation - Capillary action occurs because of intermolecular forces between a liquid and its surrounding solid surfaces. If the diameter of the tube is sufficiently small, then the combination of surface tension (caused by molecular cohesion within the liquid) and adhesive forces between the liquid and container wall, act to propel the liquid].

It all sounds rather complicated but I assure you, the net effect is to draw water constantly upwards from the roots.

The second plant vascular system is the ***"Phloem".*** This separate vascular system transports the sugars created by photosynthesis, and other manufactured substances right throughout the plant, both up and down.

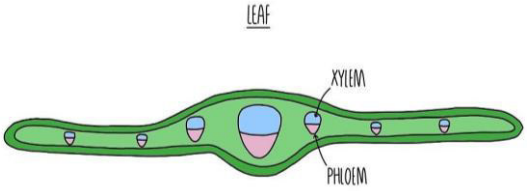
Whereas transport in the Xylem is via directly connected tube cells (like the water pipes in your house) the transport system in Phloem is more complex. Phloem cells are not just pipes – they operate in pairs of a sieve cell and a companion cell. I will not try to explain the whole process but fluid transport in the phloem system is under constant 'managed' pressure that allows the plant to drive the phloem sap in any direction - upward, downward, or horizontally, depending on need.

The system obviously drives sugar or starch rich sap from production sites – leaves ('sources') to areas with no ability to generate them ('sinks') but it is not just a simple dilution flow system. The plant manipulates sieve and companion cells and reservoir cells to create a pressurised system throughout the plant. As sugar or starch is drawn from the sap by root, stem or leaf cells, the remaining relatively pure water left in the phloem at that point may leave by osmosis and/or be drawn back into nearby xylem vessels by the suction of transpiration-pull.

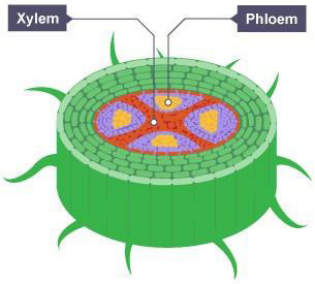
***Summing it up – water is 'sucked' up from the roots by the leaves etc, but food rich sap is 'pushed' to everywhere by a system controlled by the plant itself and can also be drawn back and redirected as required.***

**The nature of Phloem and xylem –** both these systems **exist in all parts of the plant** including leaves, roots, and stem, but they take different physical and structural form in various places. For example, in the woody trunk of a tree

the xylem is on the inside of the layer of live cambium tissue that surrounds the woody inner part. Dead xylem cells create the next layer of wood. The phloem is on the outer side of the cambium layer and dead phloem cells form the new bark. (Note : *Cambium is a group of actively dividing cells that forms the secondary growth of plants*)




In leaves, and roots, Xylem and Phloem are located closely in vascular bundles. Refer to these two cross section diagrams. (leaf on the left, stem on the right)




So, for plants with a woody trunk, like trees, if you ringbark it, you will cut both its vascular systems between roots and leaves and the plant will almost certainly die with no water going up and no sugars going down.

In soft stemmed non woody plants – such as annuals, and even orchids, each have their own idiosyncrasies in the way their vascular systems are bundled but ***every plant*** still uses Xylem and Phloem to transport water and sugars and uses the same essential mechanisms.

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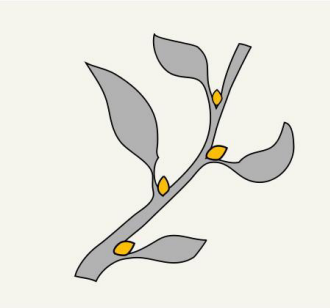
***About Hormones and Buds that aren't really 'buds'*** (perhaps better described as 'potential buds').
First, let's do the easy bit and talk about the buds that are buds but aren't yet visible buds that is, the "Axillary buds".

The official definition of an axillary bud is "the embryonic shoot located in the axil (the angle) between a leaf and a stem, forming the potential for lateral branches or flowers"



BUT – that doesn't tell all of the story and there are other axilliary buds.

To explain, it is probably best to envision a new seedling beginning to grow and develop. As the growing tip extends, the stem below it first grows leaves along its sides. The growing tip at the end of a shoot (or root) is called an "apical meristem" which is a region of undifferentiated cells at the tips of all roots and shoots, and which are responsible for primary growth. Meristematic shoots enable plant elongation and the development of new organs like leaves, stems, and flowers.

As the apical meristem grows and forms leaves, a region of meristematic cells (from the apical meristem) is left behind at the node between the stem and the leaf. These axillary buds, or potential buds, are usually dormant and often not readily visible. Their development into a visible bud which could differentiate into flowers or leaves or stem, is inhibited by hormones (auxin IIA) produced by the active apical meristem. And when a lateral bud is allowed to develop, other hormones tell it what kind of cells it is required to make (shoot, leaf, flower, root)

Although the definition specifically says an axilliary bud is the one at the angle between leaf and stem, it surely follows that there is also an axillary bud at the angle of stem and stem, which is essentially the same place because that's where the stem branch came from.

The essence of all this is that there are buds (potential growth points) even where you didn't expect, but the plant manages all aspects of growth and metabolic development via hormones. Pretty much the same way human bodies do.

## A Discussion about Hormones

The word hormone is derived from Greek, meaning '*set in motion'* and what a perfect definition that is. Hormones affect gene expression, cellular division, and growth.

***In humans*** **-** our body uses hormones as a messenger system to control a whole range of bodily functions. A network of glands and organs (hypothalamus, pituitary, pineal, thyroid, parathyroid, adrenal, and pancreas, and others) control functions such as metabolism, growth, development, reproduction, and response to stress and more.

***In Plants*** **-** hormones are used in much the same way, but although the principles are the same, hormone use in plants is a little less complex. I don't know when we discovered the intricacies of hormones and their paths in humans but I do know that the first plant hormone was only first discovered in the 1930's. Since then a dozen or more different plant hormones have been discovered. Many of which work closely in conjunction with one another.

Even within plants, hormone systems and their expression are quite complex and although these days many plant hormones are available to growers as a tool to aid in specific parts of plant culture, it is a mistake for growers to think a single hormone can be applied for a single simple purpose. If you are tempted to apply plant hormones in your growing processes, please do your research in advance and be aware of the complex interrelationships between the different hormones, environmental changes, the parts of the plant detecting change, and the hormones the plant normally uses to control its own seasonal growth and reproductive cycles.

**Among the many plant hormones – a handful are of primary importance and deserve greater understanding** by horticulturists, despite the information being of limited value to an average grower in general orchid culture.

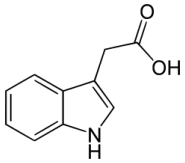
It is provided here as an introduction and perhaps as a caution in our use of man-made synthetic plant hormones.

*(All of the following is extracted from Wikipedia via various related subject articles)*

## Various Auxins

On the molecular level, all auxins are compounds with an aromatic ring and a carboxylic acid group. The most important member of the auxin family is indole-3-acetic acid (IAA), which generates the majority of auxin effects in intact plants, and is the most potent native auxin (a native Auxin is just one that is produced naturally in plants). As a native auxin, its equilibrium is controlled in many ways in plants, from synthesis, its use in association with other hormones, to degradation of its molecules, always according to the requirements of the situation. Auxin can act in a heat sensitive manner in many situations, which will in turn effect a plant's physical characteristics.

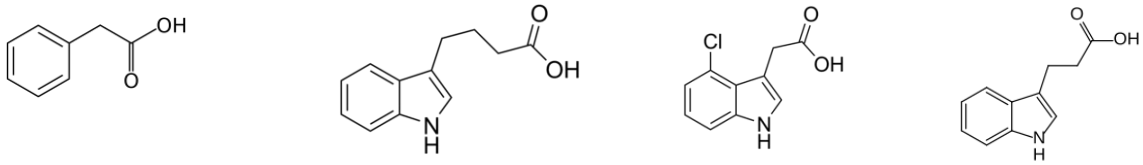
**5 Native auxins - Indole-3-acetic acid** (abbreviated to IAA) is the most abundant and the basic auxin natively occurring and functioning in plants. It generates the majority of auxin effects in intact plants, and is the most potent native auxin. (molecular diagram at the right)




There are four more endogenously synthesized auxins in plants.

The 4 other native auxins are : -

4-Chloroindole-3-acetic acid (4-CI-IAA) || 2-phenylacetic acid (PAA) || Indole-3-butyric acid (IBA) || Indole-3- propionic acid (IPA)




[Note : Man has also created a large number of synthetic Auxins for specific purposes in horticulture - Some synthetic auxins, such as 2,4-D and (2,4,5-T), are sold as herbicides. Broad-leaf plants, such as dandelions, are much more susceptible to auxins than narrow-leaf plants (monocots) such as grasses and cereal crops, making these synthetic auxins valuable as herbicides.]

## Other native plant hormones

**Cytokinins** - Cytokinins are a group of chemicals that influence cell division and shoot formation. They also help delay senescence (age death) of tissues, are responsible for mediating auxin transport throughout the plant, and affect stem internodal length and leaf growth. They were called kinins in the past when they were first isolated from yeast cells. Cytokinins and auxins often work together, and the ratios of these two groups of plant hormones affect most major growth periods during a plant's lifetime. Cytokinins counter the apical dominance induced by auxins; in conjunction with ethylene, they promote abscission (death and drop) of leaves, flower parts, and fruits.

**Gibberellins** - Gibberellins (GAs) include a large range of chemicals that are produced naturally within plants and by fungi. They were first discovered when Japanese researchers noticed a chemical produced by a fungus called *Gibberella fujikuroi* that produced abnormal growth in rice plants. It was later discovered that GAs are also produced by the plants themselves and control multiple aspects of development across the life cycle. The synthesis of GA is strongly upregulated in seeds at germination and its presence is required for germination to occur. In seedlings and adults, GAs strongly promotes cell elongation. GAs also promotes the transition between vegetative and reproductive growth and are also required for pollen function during fertilization.

Gibberellins break the dormancy (inactive stage) in seeds and buds and help in increasing the height of the plant. It helps in the growth of the stem.

**Strigolactones** - Strigolactones (SLs) were originally discovered through studies of the germination of the parasitic weed *Striga lutea*. It was found that the germination of *Striga* species was stimulated by the presence of a compound exuded by the roots of its host plant. It was later shown that SLs that are exuded into the soil also promote the growth of symbiotic arbuscular mycorrhizal (AM) fungi. More recently, another role of SLs was identified in the inhibition of shoot branching. It has since been also shown that SLs play important roles in leaf senescence, phosphate starvation response, salt tolerance, and light signalling.

**Abscisic acid** - Abscisic acid (also called ABA) is one of the most important plant growth inhibitors. The name refers to the fact that it is found in high concentrations in newly abscised (or freshly fallen) leaves.

In general, it acts as an inhibitory chemical compound that affects bud growth, and seed and bud dormancy. It mediates changes within the apical meristem, causing bud dormancy. It plays a role in leaf and seed dormancy by inhibiting growth, but as it is dissipated from seeds or buds, growth begins. In other plants, as ABA levels decrease, growth then commences as gibberellin levels increase. Without ABA, buds and seeds would start to grow during warm periods in winter and would be killed when/if it freezes again. ABA dissipates slowly so there is a delay in physiological pathways that provides some protection from premature growth, especially in seeds.

ABA exists in all parts of the plant. In plants under water stress, ABA plays a role in closing the stomata. Soon after plants are water-stressed and the roots are deficient in water, a signal moves up to the leaves, causing the formation of ABA precursors there, which then move to the roots. The roots then release ABA, which is translocated to the foliage through the vascular system and modulates potassium and sodium uptake within the guard cells, which then lose turgidity, closing the stomata.

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## And Finally - Which Hormones are in That Man-made Product?

Commercial plant hormone related products can't be ignored so I provide the following hopefully useful info as a sample selection:

1. Keiki Paste – is used to promote baby plants (keikis) along the stems of plants, and is based on cytokinins.
2. Rooting Powder or Cuttings Powder – is used to promote the development of callus tissue on the freshly cut end of cuttings. There are a variety of these products available commercially and their content varies but they frequently contain the Auxin – Indole Butyric Acid (IBA), and sometimes the Auxin - Naphthalene acetic acid (NAA). They also often contain Cytokinin hormones and various vitamins such as B1.

[*For example "Auxinone" describes itself as : - ".. a biostimulant containing a blend of Auxins that promote growth in plants. Auxinone incorporates 2 of the most common Auxins found in plants - Indole Acetic Acid (IAA) to encourage cell development and Naphthalene Acetic Acid (NAA) for improved root growth. Auxinone also incorporates Thiamine (commonly known as Vitamin B1) to further enhance root development.*]

3. Amigo 120 ME- Plant Growth Regulator - Active Ingredient: Trinexapac ethyl 120g/L – is used predominantly on turf. - Inhibits vertical shoot growth, promotes lateral stem and root mass.
4. Dr Google may tell you of others. Do your research.

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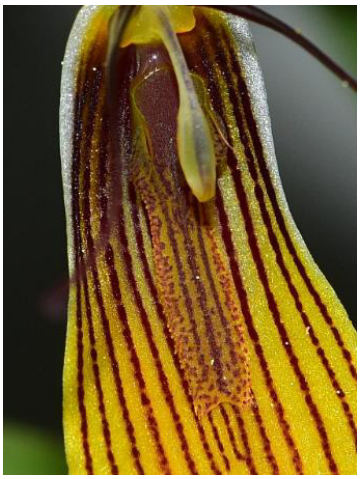
## Delightful benchings from April –

I have always admired Restrepia orchids. They are from the Americas in the Pleurothallid alliance which makes them close relatives of the more popular Masdevalllias.

This one of Dora's is **Restrepia brachypus** and is nearly always this rich orange with red stripes. But can you look straight at the picture on the left and tell me which flower parts are which? Where are the petals, which part is the lip?



Well, the petals are the wispy bits waving out the sides, the column is the little teardrop on a stick dongle pointing downward in the middle, and the lip is the darker orange, long, narrow rectangle in the middle. It is more visible in the expanded picture at the right.

So what is the rest? Well the part poking up the top is the dorsal sepal, and the biggest part, the broad orange and red striped blade, is a fusion of the two lateral sepals. Now be honest, did you know before I told you? - All Restrepias follow the same structure.

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**Vanda Pakchong**
A lovely colour but a surprise. It looks Substantially like the species Vanda coerulea with its nearly 90 twisted petals.

**Catasetum pileatum**
beautiful species from S. America

**Cattletonia Little Susie**
Just look at that fabulous sheen on the flower parts. Little Susie is beautiful hybrid between bowringiana and 5 other species. Has about 10 flrs, 10cm across. Lovely.

**Cattleya (formerly Sophronitis) cernua**

**Oncidium Dancing Lady**

**Coelogyne Jannine Banks**
A popular and hardy Coelogyne. Hybrid Between Asian mooreana and Aussie flaccida

**Cattlianthe Porcia 'Cannizaro'**
similar to Little Susie in that it features bowringiana but as I recall a bit taller. A spectacular orchid

**Den. Hot Lips 'Lesley'**
A petaloid type where the lip is petal shaped. Based on Den bigibbum.

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## Humour to End the Day