

## Orchid Research Newsletter No. 78

January 2022

### Editorial

It is often said that if alternative medicine worked it would just be called medicine. Having compiled the references for the Orchid Research Newsletter for more than five years now, I have come to realise the significant role orchids play in alternative medicine, especially in Traditional Chinese Medicine (TCM) and Ayurvedic medicine. Taxonomically, this mainly concerns the genera *Dendrobium*, *Gastrodia* and *Anoectochilus*, although various other genera, such as *Bletilla* and *Coelogyne*, are also used. Did you know that *Anoectochilus formosanus* “is also called ‘The King of Medicine’ or ‘The Tiger of Medicine’ because of its multiple pharmaceutical effects, including protection of liver, anti-inflammatory, treatment of chest and abdominal pains, diabetes, nephritis, fever, cardiovascular diseases, and cancer prevention” (Chung et al., 2017)? Even after sampling only a small number of papers on medicinal orchids, one cannot help thinking that there is no ailment or there is an orchid that can cure it. They contain alkaloids, polysaccharides, stilbenoids and various other compounds that are frequently described as being valuable, sometimes almost miraculous, medicinally active substances that can tackle anything from lung cancer to Tourette Syndrome. Let’s hope that at least some of these claims are correct.

A whole industry has sprung up around medicinal orchids. Until recently, all the source material was harvested from the wild and often unsustainably so. This has led to a shocking decline of wild populations of many *Dendrobium* and *Anoectochilus* species in and around the countries where such species are used in traditional medicine. In China, some of the species considered the most valuable in TCM, such as *Dendrobium officinale*, are now almost extinct in the wild. Fortunately, these species are being cultivated on a massive scale. Some users of TCM maintain that cultivated plants contain lower quantities of the desirable compounds than wild-harvested plants, which means that there is still demand for material taken from the wild. In addition, products from cultivation may be more expensive, which is also a reason that pressure on wild populations remains.

In parallel, another industry has arisen, and one whose products can increasingly be seen in the pages of this Newsletter: the production of papers on the (real or presumed) medicinal properties of orchid compounds. Whole journals are devoted to studies on TCM and Ayurvedic medicine, and references to many of these find their way into this Newsletter. I have neither the time nor the wish to read all papers that are listed here, nor the expertise to judge the scientific value of each. The remarks above are mainly intended as an introduction to a disclaimer: the fact that a paper is listed in the Orchid Research Newsletter should not be taken as any kind of endorsement of its content.

### Reference

Chung, H. H., Shi, S. K., Huang, B. and Chen, J. T. 2017. Enhanced agronomic traits and medicinal constituents of autotetraploids in *Anoectochilus formosanus* Hayata, a top-grade medicinal orchid. *Molecules* 22(11): art. 1907 (<https://doi.org/10.3390/molecules22111907>).

**André Schuiteman**  
[a.schuiteman@kew.org](mailto:a.schuiteman@kew.org)  
Kew

## Upcoming Conferences

We welcome any news about future orchid conferences for promotion here. Please send details to the editor as far in advance of the event as possible, remembering that the *Orchid Research Newsletter* is published only in January and July of each year.

## Jobs

We will be happy to announce job opportunities, provided they explicitly involve orchid research or conservation. Please send details to the editor.

## Funding Opportunities

We will be happy to announce funding opportunities, provided they explicitly involve orchid research or conservation. Please send details to the editor.

The **American Orchid Society** is soliciting grant proposals for orchid research. Deadline is 1 March of each year. For application instructions see <http://www.aos.org/about-us/orchid-research/application-guidelines.aspx>

## News from Correspondents

Please submit any news about recently completed research, future research plans and needs, change of address, upcoming or recent fieldwork, etc. to the editor. Graduate students are especially encouraged to share the subjects of their thesis or dissertation with the international community.

**Simon Verlynde** is a PhD candidate at the New York Botanical Garden and the Graduate Center of the City University of New York under the supervision of Dr. Gregory Plunkett and Dr. Tariq Stévant, where he works on the systematics and biogeography of angraecoid orchids, and more specifically *Angraecum*. His thesis research deals with the biogeographical and evolutionary history of Angraecinae at four taxonomic levels, namely subtribe, genus, section, and species. While the evolutionary history of the subtribe has been recently addressed by numerous authors, its biogeographical history has yet to be explored.

Taking advantage of a pre-existing, comprehensive molecular dataset of the subtribe, Simon will conduct phylogenetic analyses, estimate divergence times and colonization events, and complete biogeographical analyses to reconstruct ancestral distribution areas. Phylogenetic and biogeographical results will be compared to Madagascar's climatic and vegetation history as well as the biogeographical history of other Afro-Neotropical orchids, such as *Bulbophyllum* Thouars and *Polystachya* Hook. to see if dispersion patterns emerge.

Within Angraecinae, the possibility of making hypotheses on the evolutionary history of the genus *Angraecum* Bory is currently impaired by the lack of a robust phylogenetic classification. Phylogenetic analyses based on sets of one to six markers derived from Sanger sequencing have proven to be insufficient to produce such a classification. Simon will use the Angiosperms353 probe set, a high-throughput DNA sequencing method to access hundreds of low-copy nuclear genes on a broad sampling of *Angraecum* species (and associated genera) across all previously defined sections. The results will provide the basis for constructing a natural classification of *Angraecum*, to redefine its sectional limits, and explore the evolutionary history of the genus.

Recent descriptive work and preliminary molecular analyses of one of these sections, *A. sect. Pectinaria*, have shown that it is polyphyletic. Simon will investigate its delimitation, compare its species to other small Angraecinae species, and check whether or not two different groups of species can be recognized. In La Réunion, two species of *Angraecum*, presenting peloric flowers, have lost their nectar-filled spur. It is hypothesized that these species, lacking

pollinator attracting features, have also switched from outcrossing to autogamy, a consequence of island colonization.

By studying a Malagasy species with a peloric flower lacking a spur, Simon will investigate whether pelorization within the genus *Angraecum* is linked to a shift from outcrossing to autogamy. For this, he will carry out pollinator exclusion experiments to test the natural occurrence of autogamy and conduct cross and self-pollination experiments to compare fruit set and viable seed production in allogamy and autogamy.

Simon invites everyone with access to silica-dried or fresh material of East African *Angraecum* species and closely related genera (*Aeranthes*, *Jumellea*, etc.) to contact him in order to assemble a more comprehensive sampling. Simon can be contacted at sverlynde[at]nybg.org

## Obituaries

### Eduard Ferdinand (Ed) de Vogel (1942–2021)

In the last four years, the world has lost three of its greatest experts on Malesian<sup>1</sup> orchids: Peter O’Byrne (2018), Jeffrey Wood (2019) and now Ed de Vogel. Of the three, Ed was the only one who had a standard academic career in botany, as far as anything like that can be standard.

When Ed was eight years old, he suffered an accident of a type that is common in the Netherlands: he fell from his bicycle. As he lay in bed recuperating from the resulting concussion, his father presented him with an encyclopaedia about animals. This fascinated young Eddy so much that he soon became a natural history enthusiast, making trips to the beaches in the Dutch province of Zeeland to collect shells. He joined the NJN, the Netherlands youth society for nature study, and took a special interest in the Miocene mollusc faunas in the eastern part of the Netherlands. Sampling the fossil-bearing beds, a few meters under the surface, demanded special equipment such as bulldozers, drilling rigs and motor driven sieves to collect the shells. He greatly enjoyed this work and in later years participated sometimes in similar projects for fun. He regretted that, as a student, he had been unable to become assistant to Dr C.O. van Regteren Altena, at that time curator of the Mollusca collection at the Leiden Natural History Museum. If he had managed to do so, it is doubtful that we would have known about Ed today as a botanist.

Ed studied biology at Leiden University in the late 1960s. For his Master’s degree (or rather the Dutch equivalent thereof), Prof. C.G.G.J. van Steenis, the founder of the Flora Malesiana project, entrusted him with the task of writing a monograph of the orchid tribe (now subfamily) Apostasiaeae. This resulted in his first orchid paper, (De Vogel, 1969). As Ed remembered it, Van Steenis rewrote almost the entire manuscript but categorically refused to become co-author.

After graduating, Ed was offered a PhD project in Indonesia, to study seedlings of (mainly) forest trees. He lived for four years with his wife in Bogor, Java, collecting and sowing seeds and making observations on the seedlings. His first daughter was born in Indonesia. It took several years to write his PhD thesis and he received his doctorate in 1979. His thesis was soon published as a book, *Seedlings of Dicotyledons* (De Vogel, 1980).

Earlier, in 1975, he had joined the staff of what was then called the Rijksherbarium (‘State Herbarium’), now part of Naturalis Biodiversity Center at Leiden. During his time in Indonesia, Ed was bitten by the orchid bug, but it was only after finishing his PhD work that

---

<sup>1</sup> Malesia is the phytogeographical region covered by the territories of Malaysia, Indonesia, The Philippines, Singapore, Brunei, East Timor, and Papua New Guinea.

he had the chance to work more seriously on these plants. He was especially interested in the subtribe Coelogyninae, in which group he produced several revisions. These were published in the journal *Orchid Monographs*, which he founded and which lasted nine years before it fell victim to budget cuts.

The demise of *Orchid Monographs* encouraged him to start a new project, together with the first author, which he would consider his most enduring legacy to orchid taxonomy: a CD-ROM series in six volumes on orchids of New Guinea, using the Linnaeus II software developed by ETI in Amsterdam. Ed was always busy finding sponsors to keep the project going. That was not always easy, to use an understatement, but he was an excellent ambassador for his cause. Whenever he was in Asia, he took the time to travel around to Singapore and other places to meet potential supporters. He convinced the Cheng Kim Loke Foundation (through Lady McNeice) and the Australia and Pacific Science Foundation to invest considerable sums in the project. Later, John Tan Jiew Hoe sponsored some of his trips to New Guinea. Two volunteers, Piet Hartog and Rik Neiryneck, helped with the task of scanning and digitally cleaning manuscript drawings made by J.J. Smith, of which there are c. 6,700 in the Leiden archives. Using the same ETI software, an illustrated checklist of the orchids of the Philippines on CD-ROM was also produced, of which the lead author was Maribel Agoo, who spent about a year in Leiden for this purpose.

The CD-ROMs no longer work on modern computers but, fortunately, the content of the New Guinea series, except for the keys, is available on the website [www.orchidsnewguinea.com](http://www.orchidsnewguinea.com), set up by Wolfgang Bandisch. After his retirement, in 2004, Ed spent much of his time updating this website, adding new images and species until shortly before his death.

As a teacher, Ed was patient and helpful. He taught students, both in Indonesia and in Leiden, the basics of plant taxonomy, from properly collecting and labelling specimens, to writing taxonomic revisions. He in turn had learned these essential skills from Van Steenis, who had lived and worked for decades in Indonesia (then the Dutch East Indies) before the war, where the renowned orchid specialist J.J. Smith was for some years his director. Ed taught before molecular techniques became commonplace and when cladistics was seen by some as a questionable innovation. Although he did not engage in that kind of research himself, he had no doubt that the methods were sound and useful, and readily accepted the results of such studies. He had several students who did an ‘orchid project’ with him for their Master’s degree, and he also co-supervised a number of PhD students, two of whom produced a thesis on orchids: Jaap J. Vermeulen (1993) and Barbara Gravendeel (2000).

However, Ed’s main passion was undeniably fieldwork. He loved to travel to wild and remote places and made around 40 field trips, mainly in Indonesia (Sumatra, Java, Kalimantan, Sulawesi, Maluku and Indonesian New Guinea), but also in Sabah, Sarawak, Brunei, the Philippines, and especially Papua New Guinea, altogether spending around 14.5 years in Southeast Asia. The exact number of his field trips is somewhat difficult to establish, as some of his expeditions lasted months and included visits to different areas and islands. He collected around 10,000 herbarium specimens (often with duplicates); every flowering plant that he encountered in the forest was at risk of ending up as a *De Vogel* specimen, at least in part. Ed never shunned challenges in the field. He could spend hours just collecting representative material of one palm or rattan, which is hard and unpleasant work in a humid tropical forest, and he always wrote detailed labels. Ed’s fluency in Bahasa Indonesia enabled him to quickly establish friendly contact with local officials, colleagues, students, and villagers, and it usually only took him minutes to make people smile, because he loved telling anecdotes and cracking jokes.

In the field, Ed often showed a great disregard for comfort. Phil Cribb (pers. comm.) remembers that he regretted letting Ed take care of the food supplies when they went on a joint



expedition to the Apo Kayan in Kalimantan in 1991. It was not that there was not enough, but one huge bag of rice and one equally huge bag of dried fish did not exactly allow for a varied menu. Rice and fish three times a day soon became a struggle. Cribb lost so much weight on that trip that his wife hardly recognized the emaciated figure when he came home. Meanwhile, Ed thrived as usual. Others remember uncomfortable nights in small villages, sleeping on concrete floors, and camping for days on a cold and rainy mountain top with a few cream crackers with marmalade as the culinary highlight of the day (the marmalade applied to the cracker with a huge bush knife). Scenes like Ed wading through deep mud to obtain a sample of a palm characterize the man.

Sometimes he made films during his expeditions, and some of the footage, for example in various remote islands of the Moluccas and in Papua Province, will probably have some anthropological value because they show a way of life that no longer exists, or will soon cease to exist. During his last months, he oversaw the digitization of his expedition films.



Ed de Vogel photographing orchids in the Hortus botanicus, Leiden, with botanical artist Eline Hoogendijk.  
Photo Art Vogel

Between 1985 and 2008, Ed made several field trips, especially in Sarawak and Papua New Guinea, where he mainly focussed on collecting living orchids instead of gathering general herbarium material. Altogether, he collected close to 6,000 living orchids which were cultivated in the Hortus botanicus, Leiden, and in local collections in the countries of origin. Many new species came to light in this way (Schuiteman, 2010). When found in the wild, only a minority of the species are in flower—typically less than 20%—but most will flower at least once in cultivation. For several decades we, along with Ed, had our regular Hortus day once a week (usually on Wednesdays), when we would visit the living collections. These were expertly tended by the greenhouse manager Art Vogel and his team. We would first have lunch with the Hortus staff in Art's office (usually fried fish bought from a fishmonger nearby) and

spent the afternoon collecting, identifying, databasing and preserving the material. This was often exciting work, especially when something new and surprising flowered, such as the beautiful *Dryadorchis dasystele* Schuit. & de Vogel. One species turned out to flower at night, a fact that was discovered when Ed took a budding plant home to find out why the flowers were always withered when we saw them in the Hortus. This was *Bulbophyllum nocturnum* J.J.Verm., de Vogel, Schuit. & A.Vogel, collected by Ed on the island of New Britain in 2008. Altogether, Ed (co-)described 128 new orchid species (not counting new combinations), mainly originating from these collections. At least 15 plant species, including eight orchids, and one orchid genus, *Devogelia* Schuit., were named after him.

Ed was a short man, certainly for a Dutchman. Despite his stature, he had a special gait propelling him forwards with surprising speed, so that much taller and longer-legged people found it difficult to keep up with him. A large ginger beard (later turning grey, then white and becoming wispy) and a vest of an indeterminate greenish colour and with many pockets on each side, stuffed with hand lenses, pens and notebooks, completed his rather striking and relatively unchanging appearance. When people commented on his vest, he happily explained the advantages of wearing such a garment, and a staff member of ETI once asked him if he was married with it. Ed was, in fact, married twice, and left two daughters.

Early in 2020, when he believed he had recovered from throat cancer, he took the opportunity to travel once more to the Indonesian part of his beloved New Guinea. He was helping a foundation there, Yayasan Pendidikan Alam Papua, with setting up orchid, butterfly, zoological and anthropological gardens in Keerom Regency near Jayapura; he wrote how successful they had been in obtaining land and government permissions. When the Covid pandemic broke out and countries started to restrict travel, Ed barely managed to get on the last flight from Jayapura to Jakarta on 26 March. Sadly, the cancer returned late in 2020 and this time treatment proved ineffectual. His doctor told him he could not be cured. Ed—our mentor and friend—had always been a no-nonsense person and he spent his last months at home, calmly arranging his affairs. He died in his sleep on 28 July 2021, 78 years old<sup>2</sup>.

## References

De Vogel, E. F. 1969. Monograph of the tribe Apostasiae (Orchidaceae). *Blumea* 17: 313–350.

De Vogel, E. F. 1980. *Seedlings of Dicotyledons: Structure, Development, Types: Descriptions of 150 Woody Malesian Taxa*. Centre for Agricultural Publishing and Documentation, Wageningen.

Gravendeel, B. 2000. *Reorganising the orchid genus Coelogyne—a phylogenetic classification based on morphology and molecules*. PhD thesis, Universiteit Leiden.

Schuiteman, A. 2010. *76 Orchids Described from the Hortus botanicus Leiden*. Hortus botanicus, Leiden.

Vermeulen, J. J. 1993. *A taxonomic revision of Bulbophyllum sections Adelopetalum, Lepanthanthe, Macrouris, Pelma, Peltopus, and Uncifera (Orchidaceae)*. PhD thesis, Rijksuniversiteit Leiden.

**André Schuiteman and Jaap Vermeulen**

---

<sup>2</sup> Different versions of this obituary were published in *Malesian Orchid Journal* 25: 5–8 (2021) and in *Blumea* 66(3): x–xiv (2021), the latter with a full bibliography.

### Rudolf Jenny (1953–2021)

Rudolf Jenny was for many years a familiar face at orchid conferences, where he would lecture about his favourite orchids, the Stanhopeinae, or about his literature database Bibliorchidea. It was always a pleasure to have a chat with him because he was extremely knowledgeable and he seemed to be familiar with everybody in the world of orchid taxonomy and horticulture. I came to know him better after 2010, when I joined the Orchid Committee of the RHS, of which he was a member. We got along well and one day he asked me if he could perhaps accompany me on one of my field trips in Asia. He liked to see orchids growing in the wild and would be happy to assist with finding them. I did not hesitate to tell him that he would be welcome. We made two successful trips to Cambodia together, in 2016 and 2018, along with wonderful Cambodian counterparts. Rudolf was an excellent travel companion; he never complained when the going got rough or the food wasn't haute cuisine, and thanks to his sense of humour and our shared passion for nature and orchids there never was a dull moment. He was one of those lean and fit-looking characters who wouldn't look out of place sitting on a horse in a Western movie, scanning the prairie with eyes squinted. When he told me that among his hobbies was caving, I thought that that was just the kind of thing someone like Rudolf would enjoy. We were looking forward to making a third trip to Cambodia when, in August 2021, I received an email from his son Lorenz saying that Rudolf had suddenly and unexpectedly died of a brain haemorrhage. The month before, he had celebrated his 69<sup>th</sup> birthday. The shock still feels fresh, six months later.



Rudolf Jenny with Eang Hourt Khou and two rangers during a field trip in Cambodia, 2016. Photo André Schuiteman



Born in Bern, Switzerland, Rudolf had studied chemistry at the Technische Hochschule in Burgdorf from 1973 to 1976, and until 2008 owned and worked for a company that developed techniques to use ozone in industrial and environmental applications. The success in his professional life enabled him to build a fine collection of living orchids, which he gave up when his orchid-related travelling started to become so time consuming that he could no longer look after his plants properly. He also assembled a magnificent library of orchid books and journals. His combined love of books and orchids aroused in him the need for a database of publications on orchids that would help enthusiasts like him to find information on all kinds of subjects. He started indexing his own library to compile a publicly accessible database on orchid literature, which he called Bibliorchidea. This enormous labour of love, available at <https://orchilibra.com>, kept him busy until the end, as he continued databasing the content of all publications on orchids he could lay his hands on. He also liked to do research on the historical aspects of orchid studies, especially on the explorers and early collectors who first introduced species to science and horticulture. This has resulted in two books, *Of Men and Orchids* Parts 1 and 2, published in 2015 and 2016. A third volume is currently being edited.

Since the mid-1970s, Rudolf has published about 700 articles, mainly in the many journals issued by orchid societies all over the world. Although they treat a wide array of topics and taxa, a recurrent theme is the taxonomy of *Gongora*, *Stanhopea*, and related genera. In 1993, he published a monograph of *Gongora* but he told me that he was not happy with the result. At the time of his death, he was working with Günter Gerlach on a new book on this genus, which is scheduled to appear later this year. He was more satisfied with his books on *Stanhopea* (2010) and *Paphinia* (2018). The first in particular is a monumental work. He also contributed to a beautiful book by Ossenbach *et al.*, *Orchids in the life and work of Auguste R. Endrés* (2013). Rudolf left a wife and two sons. It was a privilege to have known him.

**André Schuiteman**



*Gongora ecornuta* Jenny. Photo Rudolf Jenny. [Swiss Orchid Foundation at the Herbarium Jany Renz and the Botanical Institute of the University of Basel](#)



## Review

**Djordjević, V.** (ed.) 2021. *Orchidaceae. Characteristics, Distribution and Taxonomy*. 327 pp. Nova Science Publishers, New York. ISBN 978-1-68507-189-9 and 978-1-68507-202-5(eBook). Price US\$230.

For some books it is easier to describe what they are not than what they are. This book, edited by the Serbian botanist Vladan Djordjević, is not a general introduction to the Orchidaceae in the way Dressler's *The Orchids* (1981) is. Its eight chapters are largely independent (except for Chapters 5 and 6) and most have different authors. In this respect, the book is more like the proceedings of a conference, but that too is not quite what it is. Probably the best way to describe it is as a set of review articles on selected topics. This means that a list of the chapters should give a good idea of the content:

1. *The fossil record of orchids in amber*. George Poinar, Jr.
2. *How the number of orchid populations quickly declined in the Czech Republic during the last 150 years? The case of less threatened species*. Zuzana Štípková and Pavel Kindlmann.
3. *Orchids of Serbia: Taxonomy, life forms, pollination systems, and phytogeographical analysis*. Vladan Djordjević, Marjan Niketić, and Vladimir Stevanović.
4. *Orchidaceae in the Republic of Mordovia (Russia): Distribution and conservation status*. Anatolij A. Khapugin, and Gennadiy G. Chugunov.
5. *Interrelationship between the orchid community and its phorophytes in Cabo San Antonio, Guanahacabibes Peninsula, Cuba*. Ernesto Mujica, Andreu Bonet, Elaine González, Alejandro Camejo, and Josep Raventós.
6. *Ecology and population structure of *Encyclia bocourtii* Pupulin & Mújica (Orchidaceae), an endemic species to Guanahacabibes National Park, Pinar del Río Province, Cuba*. Elaine González Hernández, Andreu Bonet, Ernesto Mújica Benítez, Alejandro Camejo, and Josep Raventós.
7. *Why is *Epipactis helleborine* (L.) Crantz so widespread?* Agnieszka Rewicz, Wojciech Adamowski, and Marta Kolanowska.
8. *Developments in orchid breeding through genetic engineering*. Ram Pal and Madhurima Das.

Most of the chapters are reports based on the authors' own research and as a result they reflect our current state of knowledge on these chosen topics very well. Chapters 5 and 6 both examine the relationships between epiphytes and phorophytes. In Chapter 5, the authors use an advanced statistical model which, to this reader, is not explained too clearly and which makes it hard to see which epiphytes inhabit which phorophytes or which phorophytes host which epiphytes—surely one of the first things one would like to know. A small but potentially confusing typo in this chapter is where the word 'sessile' is used instead of 'sterile'. In Chapter 7, Rewicz *et al.* examine the weed-like behaviour of *Epipactis helleborine* and suggest several factors that could explain its success. In the Abstract they state that "the broad-leaved helleborine was often intentionally planted in new locations" and claim that this factor seems "very important for its fast spread in North America". Strangely, this is only mentioned, without evidence, in the Abstract and not in the main text. Chapter 8 is more a literature review than an original contribution. Most orchid researchers will find something of interest in this book but at \$230 it is unfortunately grossly overpriced.

**André Schuiteman**

## Recent Orchid Nomenclature

New orchid names may be retrieved from the revamped IPNI website: <https://www.ipni.org/>. Click on “Advanced search”; after the search page appears, type in **Orchidaceae** under family name and select a date in “Recorded after”. This will pull up a list of all orchid names added to the IPNI database since that date. Also be sure to check the World Checklist of Selected Plant Families (<https://wmsp.science.kew.org/>) for accepted names and synonyms as well as for building your own checklists. Alternatively, the Plants of the World Online website (<https://powo.science.kew.org/>) provides similar information with added maps and illustrations.

## Recent Literature

If you are aware of any relevant and recent citations that should have been listed here or in the previous issues, please send them to the editor for publication in the next issue (July 2022). Book citations should include author(s), year of publication, title, publisher, and place of publication (in that order). Journal titles should be spelled out in full.

### Anatomy and morphology

Aprilianti, P., Handini, E., and Puspitaningtyas, D. M. 2021. A seed morphometry study of selected species of *Bulbophyllum* and *Dendrobium* (Orchidaceae) in relation to their dispersals. *Biodiversitas* 22(12): 5564–5571 (<https://doi.org/10.13057/biodiv/d221241>).

Artuso, S., Gamisch, A., Staedler, Y. M., Schönenberger, J., and Comes, H. P. 2021. Evidence for selectively constrained 3D flower shape evolution in a Late Miocene clade of Malagasy *Bulbophyllum* orchids. *New Phytologist* 232(2): 853–867 (<https://doi.org/10.1111/nph.17643>).

Averyanova, E. A. 2021. Definition of orchids (Orchidaceae) of the Sochi Black Sea region by micromorphological characteristics of seeds. *Ekosistemy* (23): 84–92 (<https://doi.org/10.37279/2414-4738-2020-23-84-92>).

Barberena, F. F. V. A. 2021. Mutation in focus: first record of a wild chimeric individual for the subtribe Laeliinae (Orchidaceae). *Acta Botanica Brasilica* 35(3): 491–494 (<https://doi.org/10.1590/0102-33062020abb0422>) [*Epidendrum*].

Bazzicalupo, M., Calevo, J., Adamo, M., Giovannini, A., Copetta, A., and Cornara, L. 2021. Seed micromorphology, in vitro germination, and early-stage seedling morphological traits of *Cattleya purpurata* (Lindl. & Paxton) Van den Berg. *Horticulturae* 7(11): art. 480 (<https://doi.org/10.3390/horticulturae7110480>).

Besi, E. E., Chie, L. S., and Go, R. 2021. Taxonomic and physioecological significance of the floral surface micromorphology of *Vanda helvola* and *Vanda dearei* (Orchidaceae). *Journal of Sustainability Science and Management* 16(5): 22–34 (<https://doi.org/10.46754/JSSM.2021.07.002>).

Blanco, G. D., Hanazaki, N., and Rodrigues, A. C. 2021. Anatomical study of Orchidaceae epiphytes species occurring in indigenous territory in the Parque Estadual da Serra do Tabuleiro (P.E.S.T.), Santa Catarina, Brazil. *Rodriguesia* 72: art. e02052019 (<https://doi.org/10.1590/2175-7860202172026>).

- Bona, C., Engels, M. E., Pieczak, F. S., and Smidt, E. C. 2020. Comparative vegetative anatomy of Neotropical Goodyerinae Klotzsch (Orchidaceae Juss.: Orchidoideae Lindl.). *Brazilian Journal of Botany* 34(3): 530–539 (<https://doi.org/10.1590/010233062020abb0032>).
- Chen, Y., Wang, X., Liang, L., and Ao, C. 2021. The formation of integuments, megasporogenesis and megagametogenesis in *Dendrobium catenatum*, with special discussions on embryo sac types and section techniques. *Botanica Serbica* 45(2): 177–184 (<https://doi.org/10.2298/BOTSERB2102177C>).
- Feng, J. Q., Zhang, F. P., Huang, J. L., Hu, H., and Zhang, S. B. 2021. Allometry between vegetative and reproductive traits in orchids. *Frontiers in Plant Science* 12: art. 728843 (<https://doi.org/10.3389/fpls.2021.728843>).
- Figuroa, C., Terrazas, T., Dávila, P., and Salazar, G. A. 2021. Gynostemium structure and development in subtribe Spiranthinae (Cranichideae, Orchidaceae). *Botanical Journal of the Linnean Society* 198(1): 26–40 (<https://doi.org/10.1093/botlinnean/boab038>).
- Hartati, S., Muliawati, E. S., and Syarifah, A. N. F. 2021. Characterization on the hybrid of *Dendrobium bigibbum* from Maluku and *Dendrobium lineale* from Papua, Indonesia. *IOP Conference Series Earth and Environmental Science* 724(1): art. 012011 (<https://doi.org/10.1088/1755-1315/724/1/012011>).
- Hartati, S., Samanhudi, Cahyono, O., and Hariyadi, A. N. 2021. Morphological characterization of natural orchids *Dendrobium* spp. *IOP Conference Series: Earth and Environmental Science* 905: art. 012139 (<https://doi.org/10.1088/1755-1315/905/1/012139>).
- Hegde, S. M. and Krishnaswamy, K. 2021. Measurement of stomatal density and stomatal index in some species of terrestrial orchids. *Annals of Agri Bio Research* 26(2): 173–177.
- Hegde, S. M. and Krishnaswamy, K. 2021. Anatomical adaptations in roots of four *Nervilia* species (Orchidaceae). *Annals of Biology* 37(2): 235–241.
- Idris, N. A., Aleamotu'a, M., McCurdy, D. W., and Collings, D. A. 2021. The orchid velamen: A model system for studying patterned secondary cell wall development? *Plants* 10(7): art. 1358 (<https://doi.org/10.3390/plants10071358>).
- Indan, H., David, D., Jawan, R., Marbawi, H., and Gansau, J. A. 2021. Development and characterization of flower and capsule in Borneo jewel orchid *Macodes limii* J.J. Wood and A.L. Lamb (Orchidaceae: Asparagales). *Journal of Asia-Pacific Biodiversity* 14(2): 236–241 (<https://doi.org/10.1016/j.japb.2021.03.001>).
- Mallikarjuna, B. P. and Pal, R. 2020. Characterization of *Coelogyne nitida* (Wall. ex D. Don) Lindl. (Orchidaceae) collections from South Sikkim, India. *Journal of the Orchid Society of India* 34: 113–116.
- Misra, S. 2020. Study on floral morphology of an orchid hybrid, *Cymbidium* Tej's Udai and its parents *Cymbidium aloifolium* (L.) Sw. and *C. bicolor* Lindl. *Journal of the Orchid Society of India* 34: 87–90.

- Pan, Z. L., Guo, W., Zhang, Y. J., Schreel, J. D. M., Gao, J. Y., Li, Y. P., and Yang, S. J. 2021. Leaf trichomes of *Dendrobium* species (epiphytic orchids) in relation to foliar water uptake, leaf surface wettability, and water balance. *Environmental and Experimental Botany* 190: art. 104568 (<https://doi.org/10.1016/j.envexpbot.2021.104568>).
- Pei, Y. Y., Huang, Z. J., Li, G., Ye, M. Q., Zhou, Q., and Ning, Y. Z. 2020. Cytology studies on embryo sac and embryo development of *Geodorum recurvum*. *Journal of Tropical and Subtropical Botany* 28(3): 248–254 (<https://doi.org/10.11926/jtsb.4137>).
- Rasmussen, H. N. and Rasmussen, F. N. 2021. Attachment mechanisms of epiphytic orchid seeds reconsidered. *Rheedea* 31(3): 133–140 (<https://doi.org/10.22244/rheede.2021.31.03.03>).
- Ravi, R. K., Sowmiya, S., Balachandar, M., and Muthukumar, T. 2021. Anatomical adaptations and mycorrhizal morphology of two threatened *Eulophia* (Orchidaceae) growing in southern Western Ghats, India. *Flora* 276: art. 151773 (<https://doi.org/10.1016/j.flora.2021.151773>).
- Rodrigues, A. C., Oliveira, F. M. C., Kedrovski, H. R., and Cruz, R. 2021. Within the roots of Pleurothallidinae (Orchidaceae): An evolutionary analysis. *Flora* 282: art. 151883 (<https://doi.org/10.1016/j.flora.2021.151883>).
- Roth-Nebelsick, A., Thiv, M., Malkowsky, Y., Schott, R., and Heyer, A. 2021. Structure and functional anatomy of the gas exchange apparatus of leafless orchids: Evidence for a control mechanism? *Botanical Journal of the Linnean Society* 197(2): 249–262 (<https://doi.org/10.1093/botlinnean/boab021>) [*Microcoelia*, *Dendrophylax*].
- Royer, C. A., Brito, A. L. V. T. D., Stützel, T., Smidt, E. C., and Nunes, E. L. P. 2021. Floral development of the *Ornithocephalus* clade (Oncidiinae, Orchidaceae): the origin of the tabula infrastigmatica, gynostemium appendices and labellar callus. *Botanical Journal of the Linnean Society* 195(4): 636–649 (<https://doi.org/10.1093/botlinnean/boaa089>).
- Santos, I. S. d., Alonso, A. A., and Silva, M. J. d. 2021. Anatomia comparada dos órgãos do sistema vegetativo de três espécies de *Encyclia* (Orchidaceae: Epidendroideae). *Iheringia Série Botânica* 76: art. e2021003 (<https://doi.org/10.21826/2446-82312021v76e2021003>).
- Şeker, Ş. S., Akbulut, M. K., and Şenel, G. 2021. Seed morphometry and ultrastructure studies on some Turkish orchids (Orchidaceae). *Microscopy Research and Technique* 84(10): 2409–2420 (<https://doi.org/10.1002/jemt.23796>).
- Stpiczyńska, M., Kamińska, M., and Davies, K. L. 2021. Nectar secretion in a dry habitat: structure of the nectary in two endangered Mexican species of *Barkeria* (Orchidaceae). *PeerJ* 9: art. e11874 (<https://doi.org/10.7717/peerj.11874>).
- Süngü Şeker, Ş., Akbulut, M. K., and Şenel, G. 2021. Seed morphometry and ultrastructure studies on some Turkish orchids (Orchidaceae). *Microscopy Research and Technique* 84(10): 2409–2420 (<https://doi.org/10.1002/jemt.23796>).
- Tay, J. Y. L., Zotz, G., Gorb, S. N., and Einzmann, H. J. R. 2021. Getting a grip on the adhesion mechanism of epiphytic orchids—Evidence from histology and cryo-scanning electron microscopy. *Frontiers in Forests and Global Change* 4: art. 764357 (<https://doi.org/10.3389/ffgc.2021.764357>).



Wang, Z., Zhang, H., Qin, S., You, L., Zhai, J., Zhou, Z., Chen, S., Cribb, P., Page, F., and Wu, S. 2021. Seed micromorphology of eleven species of *Pleione* (Orchidaceae). *Phytotaxa* 528(4): 229–239 (<https://doi.org/10.11646/phytotaxa.528.4.1>).

Zhang, W., Feng, J. Q., Kong, J. J., Sun, L., Fan, Z. X., Jiang, H., and Zhang, S. B. 2021. Vegetative anatomy and photosynthetic performance of the only known winter-green *Cypripedium* species: Implications for divergent and convergent evolution of slipper orchids. *Botanical Journal of the Linnean Society* 197(4): 527–540 (<https://doi.org/10.1093/botlinnean/boab033>) [*Cypripedium subtropicum*].

## Bioinformatics

Andono, P. N., Rachmawanto, E. H., Herman, N. S., and Kondo, K. 2021. Orchid types classification using supervised learning algorithm based on feature and color extraction. *Bulletin of Electrical Engineering and Informatics* 10(5): 2530–2538 (<https://doi.org/10.11591/eei.v10i5.3118>).

Apriyanti, D. H., Spreeuwiers, L. J., Lucas, P. J. F., and Veldhuis, R. N. J. 2021. Automated color detection in orchids using color labels and deep learning. *PLoS ONE* 16(10 October): art. e0259036 (<https://doi.org/10.1371/journal.pone.0259036>).

Chai, Q., Zeng, J., Lin, D., Li, X., Huang, J., and Wang, W. 2021. Improved 1D convolutional neural network adapted to near-infrared spectroscopy for rapid discrimination of *Anoectochilus roxburghii* and its counterfeits. *Journal of Pharmaceutical and Biomedical Analysis* 199: art. 114035 (<https://doi.org/10.1016/j.jpba.2021.114035>).

Chen, H., Tan, C., and Li, H. 2021. Discrimination between wild-grown and cultivated *Gastrodia elata* by near-infrared spectroscopy and chemometrics. *Vibrational Spectroscopy* 113: art. 103203 (<https://doi.org/10.1016/j.vibspec.2020.103203>).

Ding, Y.-G., Zhang, Q.-Z., and Wang, Y.-Z. 2021. A fast and effective way for authentication of *Dendrobium* species: 2DCOS combined with ResNet based on feature bands extracted by spectrum standard deviation. *Spectrochimica Acta Part A Molecular and Biomolecular Spectroscopy* 261: art. 120070 (<https://doi.org/10.1016/j.saa.2021.120070>).

Gourraud, A., Lebbe, R. V., Kerner, A., and Pignal, M. 2021. Architectural Pattern: Study of orchid architecture using tools to take quick measurements of virtual specimens. *Biodiversity Information Science and Standards* 5: art. e75752 (<https://doi.org/10.3897/biss.5.75752>).

Hsiao, Y. Y., Fu, C. H., Ho, S. Y., Li, C. I., Chen, Y. Y., Wu, W. L., Wang, J. S., Zhang, D. Y., Hu, W. Q., Yu, X., Sun, W. H., Zhou, Z., Liu, K. W., Huang, L., Lan, S. R., Chen, H. W., Wu, W. S., Liu, Z. J., and Tsai, W. C. 2021. OrchidBase 4.0: a database for orchid genomics and molecular biology. *BMC Plant Biology* 21: art. 371 (<https://doi.org/10.1186/s12870-021-03140-0>).

Lee, K. C., Wang, Y. H., Wei, W. C., Chiang, M. H., Dai, T. E., Pan, C. C., Chen, T. Y., Luo, S. K., Li, P. K., Chen, J. K., Liaw, S. K., Lin, C. F., Wu, C. C., and Chieh, J. J. 2021. An optical smartphone-based inspection platform for identification of diseased orchids. *Biosensors* 11(10): art. 363 (<https://doi.org/10.3390/bios11100363>).

Li, L. H., Chu, Y. S., Chu, J. Y., and Guo, S. H. 2019. A machine learning approach for detection plant disease: taking orchid as example. *Proceedings of the 3rd International Conference on Vision, Image and Signal Processing*: art. 43 (<https://doi.org/10.1145/3387168.3387238>).

Srichocksittikul, P. and Nimsuk, N. 2021. Design of deep learning architecture for classification of orchid diseases. *ECTI-CON 2021–2021 18th International Conference on Electrical Engineering/Electronics, Computer, Telecommunications and Information Technology: Smart Electrical System and Technology, Proceedings*: 904–907 (<https://doi.org/10.1109/ECTI-CON51831.2021.9454869>).

## Books

Barbhuiya, H. A., Verma, D., Dey, S., and Salunkhe, C. K. 2021. *An Illustrated Guide to the Orchids of Assam*. Balipara Foundation, Guwahati, Assam.

Braem, G. J. and Öhlund, S. L. 2021. *The Genus Paphiopedilum. A Treatise on the Conduplicate-Leafed Slipper Orchids of Asia*. Guido J. Braem, Lahnau.

Dalström, S., Gyeltshen, C., Gyeltshen, N., and Higgins, W. E. 2021. *A Century of New Orchid Records in Bhutan*. Second edition. The National Biodiversity Centre, Ministry of Agriculture and Forests, Royal Bhutan Government, Serbithang, Bhutan.

Delforge, P. 2021. *Orchidées de France, de Suisse et du Benelux*. 3rd rev. ed. Delachaux et Niestlé, Lonay [in French].

Deori, C., Sarma, S. K., and Hynniewta, T. M. 2020. *Dendrobium Orchids of Northeast India*. Purbayon Publication, Guwahati, Assam.

Dilena, L. 2021. *Orchidee in Friuli Venezia Giulia. Bioindicatrici Della Qualità Dell'Ambiente*. De Bastiani, Vittorio Veneto [in Italian].

Djordjević, V. (ed.) 2021. *Orchidaceae. Characteristics, Distribution and Taxonomy*. Nova Science Publishers, New York (see [review](#)).

Griebel, N. and Presser, H. 2021. *Orchideen Europas*. Kosmos Verlag, Stuttgart [in German].

Gruss, O. 2021. *Phragmipedium: Lateinamerikanische Frauenschuhe: Mexipedium, Selenipedium & sehr viele Phragmipedium-Hybriden*. Orchideenzauber-Verlag, Ruhmannsfelden [in German].

Hai, H. and Soh, S. B. (2019). *Healing Orchids*. World Scientific Publishing Company, Singapore.

Hennecke, M. (ed.). 2021. *Beiträge zur Gattung Ophrys*. Verlag Manfred Hennecke, Remshalden [in German].

Kreutz, K. 2021. *Orchideeën van de Benelux. Veldgids | Orchidées du Benelux. Guide de terrain | Orchideen des Benelux. Feldführer | Orchids of the Benelux. Fieldguide*. Kreutz Publishers, Sint Geertruid.

Kreutz, K., Shifman, A., Schot, R., and Talmon, Y. 2021. *Orchids of Israel*. Kreutz Publishers, Sint Geertruid.

Motes, M. R. (2021). *The Natural Genus Vanda*. Redland Press, Florida.

Nascimento, M. V. 2021. *Orquídeas Nativas de Florianópolis*. 2nd ed. Published by the author [Brazil, in Portuguese].

Parsons, R. and Gerritsen, M. 2021. *A Compendium of Miniature Orchid Species*. 2nd rev. & augmented ed. Redfern Natural History Productions, Poole, Dorset.

Rajkumari, D. 2020. *Elite RET Species of Dendrobium of North-East India*. Akansha Publishing House, Delhi.

Rao, W. H., Chen, J. B., Wang, M. N., and Pan, Y. Y. 2020. *Wild Orchids of Shenzhen*. China Forestry Publishing House, Beijing [in Chinese].

Siggesson, J. 2021. *Marvellous Malta. Where Wild Orchids Grow*. Marvellous Malta, Zurrieq, Malta.

Szlachetko, D. L., Grochoka, E., Baranow, P., Nowak, S., Mytnik, J., Oledryzyska, N., and Rutkowski, P. 2021. *Orchidaceae of West-Central Africa. Volume 3. Vandoideae (continued)*. Koeltz Botanical Books, Glashütten.

Youssef, S., Galalaey, A. M. K., Mahmood, A., Mahdi, H. S., and Véla, E. 2019. *Wild Orchids of the Kurdistan Region Areas: A Scientific Window on the Unexpected Nature of the North-Western Zagros*. Société Méditerranéenne d'Orchidologie, France [e-book].

## Conservation

Bell, T. J., Bowles, M. L., Zettler, L. W., Pollack, C. A., and Ibberson, J. E. 2021. Environmental and management effects on demographic processes in the U.S. threatened *Platanthera leucophaea* (Nutt.) Lindl. (Orchidaceae). *Plants* 10(7): art. 1308 (<https://doi.org/10.3390/plants10071308>).

Bullough, L. A., Nguyễn, N., Drury, R., and Hinsley, A. 2021. Orchid obscurity: Understanding domestic trade in wild-harvested orchids in Viet Nam. *Frontiers in Ecology and Evolution* 9: art. 631795 (<https://doi.org/10.3389/fevo.2021.631795>).

Cheng, J., Dang, P.-P., Zhao, Z., Yuan, L.-C., Zhou, Z.-H., Wolf, D., and Luo, Y.-B. 2019. An assessment of the Chinese medicinal *Dendrobium* industry: Supply, demand and sustainability. *Journal of Ethnopharmacology* 229: 81–88 (<https://doi.org/10.1016/j.jep.2018.09.001>).

Davis, L. R. 2021. The use of fire and slashing to manage permanent-swamp populations of *Thelymitra circumsepta* Fitzg. *The Orchadian* 20(3): 127–131.

Fama, N. M., Sinn, B. T., and Barrett, C. F. 2021. Integrating genetics, morphology, and fungal host specificity in conservation studies of a vulnerable, selfing, mycoheterotrophic orchid (*Corallorhiza bentleyi* Freudenst.). *Castanea* 86(1): 1–21 (<https://doi.org/10.2179/0008-7475.86.1.1>).

Galingging, R. Y., Liana, T., and Nuraini, L. 2021. The potential of Central Kalimantan's local orchid as material source for genetic improvement. *IOP Conference Series: Earth and Environmental Science* 913(1): art. 012081 (<https://doi.org/10.1088/1755-1315/913/1/012081>).

Hervouet, J.-M. and Misandeau, C. 2021. ADAFAM. Ambodiriana forest protection in Madagascar. *Orchids, the Bulletin of the American Orchid Society* 90(6): 446–452.

Kazantseva, M. and Artyomenko, S. 2021. Wild orchids of Tyumen and challenges, related to their preservation. *BIO Web of Conferences* 38: art. 00053 (<https://doi.org/10.1051/bioconf/20213800053>) [Russia].

Kumari, A. and Pathak, P. 2020. Medicinal orchids of Shimla Hills, Himachal Pradesh (northwestern Himalayas), threats, and conservation measures. *Journal of the Orchid Society of India* 34: 45–56.

Martin, R. and Ludinant, S. 2019. Incendie du massif de la Bastidonne-Mirabeau 24, 25 et 26 juillet 2017—Étude complémentaire 2019. *Bulletin de la Société Française d'Orchidophilie Rhône-Alpes* 40: 59–67.

Masters, S., Arias, T., and Flanagan, N. 2020. Orchid revolution in Colombia. *Orchid Review* 128(1332): 232–239.

Moktan, S., Mondal, S., Boral, D., and Rai, P. 2021. The fate of *Diplomeris hirsuta* (Lindl.) Lindl.: A vulnerable orchid in Darjeeling region of eastern Himalaya, India. *Ecology, Environment and Conservation* 27(3): 1174–1179.

Mostert, T. H. C. and Mostert, R. E. 2021. Habitat description of the rare orchid *Didymoplexis verrucosa* for more effective conservation. *Bothalia* 51(2): art. a2 (<https://doi.org/10.38201/btha.abc.v51.i2.2>).

Mújica, E. B., Herdman, A. R., Danaher, M. W., González, E. H., and Zettler, L. W. 2021. Projected status of the ghost orchid (*Dendrophylax lindenii*) in Florida during the next decade based on temporal dynamic studies spanning six years. *Plants* 10(8): art. 1579 (<https://doi.org/10.3390/plants10081579>).

Ordóñez-Blanco, J. C., González Roso, G., and Patiño, P. E. 2019. Tráfico ilegal y recuperación de orquídeas en Bogotá, Colombia. *Orquideología* 36(2): 111–126.

Pant, B. 2019. Esfuerzos para conservar las orquídeas medicinales de Nepal | Efforts to conserve medicinal orchids of Nepal. *Orquideología* 36(2): 194–204.

Perazza, G. and Decarli, M. 2020. Monitoring of *Cypripedium calceolus* (Orchidaceae) in the Adamello-Brenta Natural Park (Italy). *Nature Conservation Research* 5(1): 178–184 (<https://doi.org/10.24189/ncr.2020.045>).

Sarasan, V., Pankhurst, T., Yokoya, K., Sriskandarajah, S., and McDiarmid, F. 2021. Preventing extinction of the critically endangered *Dactylorhiza incarnata* subsp. *ochroleuca* in Britain using symbiotic seedlings for reintroduction. *Microorganisms* 9(7): art. 1421 (<https://doi.org/10.3390/microorganisms9071421>).



Seshadri, K. S., Ganesan, R., and Devy, S. M. 2021. Persistent effects of historical selective logging on a vascular epiphyte assemblage in the forest canopy of the Western Ghats, India. *Frontiers in Forests and Global Change* 4: art. 727422 (<https://doi.org/10.3389/ffgc.2021.727422>).

Shapoo, G. A., Kaloo, Z. A., Ganie, A. H., and Singh, S. 2020. Development of agro-techniques for ex situ conservation of *Dactylorhiza* Neck. ex Nevski (Orchidaceae) species growing in Kashmir Himalaya, India. *Journal of the Orchid Society of India* 34: 123–130.

Wang, X. J., Wu, Y. H., Ming, X. J., Wang, G., and Gao, J. Y. 2021. Isolating ecological-specific fungi and creating fungus-seed bags for epiphytic orchid conservation. *Global Ecology and Conservation* 28: art. e01714 (<https://doi.org/10.1016/j.gecco.2021.e01714>).

Wapstra, M., Spicer, K., Crook, A., and Dick, J. 2021. Restoration of montane grasslands benefits *Prasophyllum crebriflorum* D.L.Jones (crowded leek-orchid) in Northwest Tasmania. *The Orchadian* 20(3): 102–107.

Whigham, D., McCormick, M., Brooks, H., Josey, B., Floyd, R., and Applegate, J. 2021. *Isotria medeoloides*, a North American threatened orchid: Fungal abundance may be as important as light in species management. *Plants* 10(9): art. 1924 (<https://doi.org/10.3390/plants10091924>).

Zale, P. J. 2021. Native orchid conservation at Longwood Gardens. *Orchids, the Bulletin of the American Orchid Society* 90(7): 500–504.

Zandoná, L. 2019. Estrategias integradas para la conservación de las orquídeas en el Bosque Atlántico. *Orquideología* 36(2): 182–193 [Brazil].

Zhao, D. K., Selosse, M. A., Wu, L., Luo, Y., Shao, S. C., and Ruan, Y. L. 2021. Orchid reintroduction based on seed germination-promoting mycorrhizal fungi derived from protocorms or seedlings. *Frontiers in Plant Science* 12: art. 701152 (<https://doi.org/10.3389/fpls.2021.701152>).

### Cytogenetics and horticultural genetics

Choi, B., Gang, G. H., Kim, H., Byun, H., Kwak, M., So, S., Myeong, H. H., and Jang, T. S. 2021. Cytological study of *Cypripedium japonicum* Thunb. (Orchidaceae Juss.): An endangered species from Korea. *Plants* 10(10): art. 1978 (<https://doi.org/10.3390/plants10101978>).

Kondo, H., Kikuchi, S., Deguchi, A., and Miyoshi, K. 2021. New cytogenetic information of wild species and cultivars in the genus *Epidendrum* (Orchidaceae). *Cytologia* 86(1): 61–65 (<https://doi.org/10.1508/cytologia.86.61>).

Kurniawan, F. Y. and Semiarti, E. 2021. Floral morphology and chromosome characteristics of bamboo orchid from Menoreh Hills, Kulonprogo. *Journal of Agricultural Sciences—Sri Lanka* 16(3): 491–502 (<https://doi.org/10.4038/jas.v16i03.9474>) [*Arundina graminifolia*, Indonesia].

Taraška, V., Batoušek, P., Duchoslav, M., Temsch, E. M., Weiss-Schneeweiss, H., and Trávníček, B. 2021. Morphological variability, cytotype diversity, and cytogeography of populations traditionally called *Dactylorhiza fuchsii* in Central Europe. *Plant Systematics and Evolution* 307(4): art. 51 (<https://doi.org/10.1007/s00606-021-01770-3>).

Thomas, B., Rani, C. L., and George, R. M. 2020. Genetic variability studies in selected orchid genotypes *Journal of the Orchid Society of India* 34: 57–60.

## Ecology

Akbulut, M. K., Süngü Şeker, Ş., Everest, T., and Şenel, G. 2021. Suitable habitat modelling using GIS for orchids in the Black Sea Region (North of Turkey). *Environmental Monitoring and Assessment* 193(12): art. 853 (<https://doi.org/10.1007/s10661-021-09648-0>).

Chadaeva, V. A. and Kyarova, G. A. 2021. Population status and variation of the rare species *Dactylorhiza viridis* (L.) R. M. Bateman, Pridgeon & M. W. Chase (Orchidaceae) under anthropogenic load conditions in the meadow phytocenoses of the Central Caucasus. *Izvestiya of Saratov University New Series Series Chemistry Biology Ecology* 21(2): 220–227 (<https://doi.org/10.18500/1816-9775-2021-21-2-220-227>).

Chadaeva, V. A. and Kyarova, G. A. 2021. Variability of population and individual characters of *Gymnadenia conopsea* (L.) R. Br. (Orchidaceae, Liliopsida) under anthropogenic load conditions in meadow ecosystems of Central Caucasus. *Povolzhskiy Journal of Ecology* (4): 492–508 (<https://doi.org/10.35885/1684-7318-2020-4-492-508>).

Cozzolino, S., Scopece, G., Lussu, M., Cortis, P., and Schiestl, F. P. 2021. Do floral and ecogeographic isolation allow the co-occurrence of two ecotypes of *Anacamptis papilionacea* (Orchidaceae)? *Ecology and Evolution* 11(15): 9917–9931 (<https://doi.org/10.1002/ece3.7432>).

Delannoy, É. 2021. Le feu et les Orchidées d'Australie occidentale: amis ou ennemis? *l'Orchidophile* 52(229): 131–136.

Foremnik, K., Krawczyk, W., Surmacz, B., Malicki, M., Suchan, T., Gazda, A., and Pielech, R. 2021. Effects of forest stand structure on population of endangered orchid species *Cypripedium calceolus* L. *Journal for Nature Conservation* 64: art. 126089 (<https://doi.org/10.1016/j.jnc.2021.126089>).

Kirillova, I. A. and Kirillov, D. V. 2021. *Dactylorhiza incarnata* (L.) Soó (Orchidaceae, Liliopsida) on the northern border of its distribution area: Population structure and seed productivity. *Povolzhskiy Journal of Ecology* (3): 272–292 (<https://doi.org/10.35885/1684-7318-2021-3-272-292>).

Kolanowska, M. 2021. The future of a montane orchid species and the impact of climate change on the distribution of its pollinators and magnet species. *Global Ecology and Conservation* 32: art. e01939 (<https://doi.org/10.1016/j.gecco.2021.e01939>) [*Traunsteinera globosa*].

Kolanowska, M., Rewicz, A., and Nowak, S. 2021. Data on the present and future distribution of suitable niches of the black vanilla orchid (*Nigritella nigra* s.l., Orchidaceae) and its pollinators. *Data in Brief* 37: art. 107187 (<https://doi.org/10.1016/j.dib.2021.107187>).

Lal, R. and Pathak, P. 2020. Substratum analysis of some therapeutically significant and/or endangered orchids of Shimla Hills (Himachal Pradesh), northwestern Himalayas and their conservation. *Journal of the Orchid Society of India* 34: 101–111.

Lasota, J., Wanic, T., and Błońska, E. 2020. The influence of Technosol characteristics on the lady's-slipper orchid population (*Cypripedium calceolus* L.) in a forest area—The case study. *Soil Science Annual* 71(4): 352–358 (<https://doi.org/10.37501/soilsa/127165>).

Maleva, M. G., Filimonova, E. I., Lukina, N. V., Glazyrina, M. A., Sinenko, O. S., and Borisova, G. G. 2021. Reclamation of fly ash dump diminishes the metal accumulation and improves the photosynthetic function of orchid *Listera ovata*. *AIP Conference Proceedings* 2388: art. 020022 (<https://doi.org/10.1063/5.0068533>).

Morales-Linares, J., Flores-Palacios, A., Corona-López, A. M., and Toledo-Hernández, V. H. 2021. Diversity and interactions of the epiphyte community associated with ant-gardens are not influenced by elevational and environmental gradients. *Journal of Vegetation Science* 32(5): art. e13076 (<https://doi.org/10.1111/jvs.13076>).

Perazza, G. and Chini, R. 2020. Nuovo limite altitudinale per piante fiorite di *Cypripedium calceolus* in Europa. *GIROS Orchidee Spontanee d'Europa* 63(2): 529–536.

Pezzetta, A. 2020. Segnalazioni in Abruzzo di alcune Orchidaceae a quote altitudinali insolite. *GIROS Orchidee Spontanee d'Europa* 63(2): 261–264.

Pylypiv, Y. 2020. Structural features of the Orchidaceae populations. *Scientific Horizons* 23(10): 33–46 ([https://doi.org/10.48077/scihor.23\(10\).2020.33-46](https://doi.org/10.48077/scihor.23(10).2020.33-46)).

Sebastian, J., Kathiresan, D., and Kuriakose, G. 2021. Species diversity and abundance patterns of epiphytic orchids in Aralam Wildlife Sanctuary in Kerala, India. *Journal of Threatened Taxa* 13(8): 19060–19069 (<https://doi.org/10.11609/jott.4852.13.8.19060-19069>).

Song, Z., Fu, Y. H., Du, Y., and Huang, Z. 2021. Global warming increases latitudinal divergence in flowering dates of a perennial herb in humid regions across eastern Asia. *Agricultural and Forest Meteorology* 296: art. 108209 (<https://doi.org/10.1016/j.agrformet.2020.108209>) [*Spiranthes sinensis*].

Štípková, Z. and Kindlmann, P. 2021. Factors determining the distribution of orchids—A review with examples from the Czech Republic. *European Journal of Environmental Sciences* 11(1): 21–30 (<https://doi.org/10.14712/23361964.2021.3>).

Timsina, B., Kindlmann, P., Münzbergová, Z., and Rokaya, M. B. 2021. Six-year demographic study of the terrestrial orchid, *Crepidium acuminatum*: Implications for conservation. *Frontiers in Ecology and Evolution* 9: art. 676993 (<https://doi.org/10.3389/fevo.2021.676993>).

Wu, Y., Duan, X. Y., Liu, G. L., Xiang, Y., Shu, B., and Li, Q. J. 2021. Vegetation context modifies selection on flowering start and plant height in an orchid perennial herb. *Journal of Plant Ecology* 14(5): 934–944 (<https://doi.org/10.1093/jpe/rtab048>) [*Spiranthes sinensis*].

### **Ethnobotany/(Ethno)pharmacology**

Ahmed, A. M. A. and Rahman, M. A. 2021. Wild epiphytic Bangladeshi orchids *Cymbidium aloifolium* (L.) Sw. and *Papilionanthe teres* (Roxb.) Lindl. potentially modulate the immune functions in Swiss albino mice. *Journal of Advanced Veterinary and Animal Research* 8(3): 479–488 (<https://doi.org/10.5455/javar.2021.h537>).

Ahmed, A. M. A., Rahman, M. A., Hossen, M. A., Reza, A. S. M. A., Islam, M. S., Rashid, M. M., Rafi, M. K. J., Siddiqui, M. T. A., Al-Noman, A., and Uddin, M. N. 2021. Epiphytic *Acampe ochracea* orchid relieves paracetamol-induced hepatotoxicity by inhibiting oxidative stress and upregulating antioxidant genes in in vivo and virtual screening. *Biomedicine and Pharmacotherapy* 143: art. 112215 (<https://doi.org/10.1016/j.biopha.2021.112215>).

Bai, J. Q., Guo, Q. X., Zhang, J., Huang, J., Xu, W., Gong, L., Su, H., Luo, Y. B., Li, J. H., Qiu, X. H., and Huang, Z. H. 2021. Metabolic profile of dendrobine in rats determined by ultra-high-performance liquid chromatography/quadrupole time-of-flight mass spectrometry. *Combinatorial Chemistry & High Throughput Screening* 24(9): 1364–1376 (<https://doi.org/10.2174/1386207323666201023115744>) [*Dendrobium nobile*].

Bai, Y., Mo, K., Wang, G., Chen, W., Zhang, W., Guo, Y., and Sun, Z. 2021. Intervention of gastrodin in type 2 diabetes mellitus and its mechanism. *Frontiers in Pharmacology* 12: art. 710722 (<https://doi.org/10.3389/fphar.2021.710722>) [*Gastrodia*].

Balkrishna, A., Juyal, R., Devi, R., Kumar, J., Prakash, A., Pathak, P., Arya, V. P., and Kumar, A. A. 2020. Ethnomedicinal status and pharmacological profile of some important orchids of Uttarakhand (northwestern Himalayas), India. *Journal of the Orchid Society of India* 34: 137–147.

Barragán-Zarate, G. S., Alexander-Aguilera, A., Lagunez-Rivera, L., Solano, R., and Soto-Rodríguez, I. 2021. Bioactive compounds from *Prosthechea karwinskii* decrease obesity, insulin resistance, pro-inflammatory status, and cardiovascular risk in Wistar rats with metabolic syndrome. *Journal of Ethnopharmacology* 279: (<https://doi.org/10.1016/j.jep.2021.114376>).

Basak, M., Gogoi, P., Ansari, S. H., Dey, B. K., Sen, S., and Laskar, M. A. 2021. Evaluation of anti-oxidant and anti-pyretic activity of leaf of *Dendrobium chrysanthum*. *Journal of Pharmaceutical Research International*: 389–394 (<https://doi.org/10.9734/jpri/2021/v33i43a32502>).

Bhinija, K., Huehne, P. S., Prawat, H., Ruchirawat, S., Saimanee, B., Mongkolsuk, S., and Satayavivad, J. 2021. The rhizome of *Bulbophyllum* orchid is the rich source of cytotoxic bioactive compounds, the potential anticancer agents. *South African Journal of Botany* 141: 367–372 (<https://doi.org/10.1016/j.sajb.2021.05.013>).

Buyun, L., Tkachenko, H., Kurhaluk, N., Gyrenko, O., Kovalska, L., and Góralczyk, A. 2021. Evaluation of antibacterial activity of the ethanolic extracts derived from leaves of *Coelogyne brachyptera* Rchb. f. (Orchidaceae). *Agrobiodiversity for Improving Nutrition, Health and Life Quality* 5(1): 37–46 (<https://doi.org/10.15414/ainhlq.2021.0005>).

Cao, X., Yang, L., Dai, H. F., Wei, Y. M., Huang, S. Z., Wang, H., Cai, C. H., Wang, L., Mei, W. L., and Chen, H. Q. 2021. One new lignan and one new fluorenone from *Dendrobium nobile* Lindl. *Phytochemistry Letters* 44: 164–168 (<https://doi.org/10.1016/j.phytol.2021.06.022>).

Chen, H., Chen, B., Li, B., Luo, X., Wu, H., Zhang, C., Liu, J., Jiang, J., and Zhao, B. 2021. Gastrodin promotes the survival of random-pattern skin flaps via autophagy flux stimulation. *Oxidative Medicine and Cellular Longevity* 2021: art. 6611668 (<https://doi.org/10.1155/2021/6611668>) [*Gastrodia*].



Chen, H., Zeng, J., Wang, B., Cheng, Z., Xu, J., Gao, W., and Chen, K. 2021. Structural characterization and antioxidant activities of *Bletilla striata* polysaccharide extracted by different methods. *Carbohydrate Polymers* 266: art. 118149 (<https://doi.org/10.1016/j.carbpol.2021.118149>).

Chen, W., Lu, J., Zhang, J., Wu, J., Yu, L., Qin, L., and Zhu, B. 2021. Traditional uses, phytochemistry, pharmacology, and quality control of *Dendrobium officinale* Kimura et.[sic] Migo. *Frontiers in Pharmacology* 12: art. 726528 (<https://doi.org/10.3389/fphar.2021.726528>).

Chen, W.-H., Wu, J.-J., Li, X.-F., Lu, J.-M., Wu, W., Sun, Y.-Q., Zhu, B., and Qin, L.-P. 2021. Isolation, structural properties, bioactivities of polysaccharides from *Dendrobium officinale* Kimura et.[sic] Migo: A review. *International Journal of Biological Macromolecules* 184: 1000–1013 (<https://doi.org/10.1016/j.ijbiomac.2021.06.156>).

Chen, Y., Zheng, Y. F., Lin, X. H., Zhang, J. P., Lin, F., and Shi, H. 2021. *Dendrobium* mixture attenuates renal damage in rats with diabetic nephropathy by inhibiting the PI3K/Akt/mTOR pathway. *Molecular Medicine Reports* 24(2): art. 590 (<https://doi.org/10.3892/mmr.2021.12229>).

Chung, D. C., Long Le, T., Ho, N. Q. C., Nguyen, T. T., Do, D. G., Do, D. T., Nguyen, T. P. M., Nguyen, T. P. T., and Hoang, N. S. 2021. Evaluation of in vitro cytotoxicity and in vivo potential toxicity of the extract from in vitro cultivated *Anoectochilus roxburghii* Lindl. *Journal of Toxicology and Environmental Health Part A* 84(24): 987–1003 (<https://doi.org/10.1080/15287394.2021.1963363>).

Dai, S., Zhang, W., Dou, Y., Liu, H., Chen, X., Shi, J., and Dou, H. 2021. Towards a better understanding of the relationships between the structure and antitumor activity of *Gastrodia elata* polysaccharides by asymmetrical flow field-flow fractionation. *Food Research International* 149: art. 110673 (<https://doi.org/10.1016/j.foodres.2021.110673>).

Dang, X., Zhao, P., Liu, Y., Qin, L., and Jiao, H. 2021. *Gastrodia elata* powder capsule enhances anti-epileptic effect of carbamazepine by decreasing P-gp expression. *Tropical Journal of Pharmaceutical Research* 18(9): 1859–1865 (<https://doi.org/10.4314/tjpr.v18i9.11>).

Deng, W. Ding, Z. B. Wang, Y. Y. Zou, B. H. Zheng, J. H. Tan, Y. H. Yang, Q. Ke, M. H. Chen, Y. Wang, S., and Li, X. J. 2021. Dendrobine attenuates osteoclast differentiation through modulating ROS/NFATc1/ MMP9 pathway and prevents inflammatory bone destruction. *Phytomedicine*: art. 153838 (<https://doi.org/10.1016/j.phymed.2021.153838>) [*Dendrobium*].

Ding, X.-Q., Zou, Y.-Q., Liu, J., Wang, X.-C., Hu, Y., Liu, X., and Zhang, C.-F. 2021. Dendrocrepidamine, a novel octahydroindolizine alkaloid from the roots of *Dendrobium crepidatum*. *Journal of Asian Natural Products Research* 23(11): 1–8 (<https://doi.org/10.1080/10286020.2021.1935891>).

Ding, Y.-L., Lin, L.-Y., Chen, D.-Q., Xu, H., and Wang, Z.-T. 2021. Content determination of six flavonoids in *Dendrobium officinale* stems from different producing areas, cultivation and processing methods by QAMS combined with dual-wavelength method. *China Journal of Chinese Materia Medica* 46(14): 3605–3613 (<https://doi.org/10.19540/j.cnki.cjcmm.20210526.301>).

Dong, Z., Bian, L., Wang, Y. L., and Sun, L. M. 2021. Gastrodin protects against high glucose-induced cardiomyocyte toxicity via GSK-3 $\beta$ -mediated nuclear translocation of Nrf2. *Human & Experimental Toxicology* 40(9): 1584–1597 (<https://doi.org/10.1177/09603271211002885>) [*Gastrodia*].

Dou, R. G., Liu, X., Kan, X. L., Shen, X. S., Mao, J., Shen, H. T., Wu, J. X., Chen, H. L., Xu, W. T., Li, S. S., Wu, T. T., and Hong, Y. F. 2021. *Dendrobium officinale* polysaccharide-induced neuron-like cells from bone marrow mesenchymal stem cells improve neuronal function a rat stroke model. *Tissue and Cell* 73: art. 101649 (<https://doi.org/10.1016/j.tice.2021.101649>).

Fan, W.-W., Yang, D., Cheng, Z.-Q., Xu, F.-Q., Dong, F.-W., Wei, X.-Y., and Hu, J.-M. 2021. Ten picrotoxane-type sesquiterpenoids from the stems of *Dendrobium wardianum* Warner. *Phytochemistry* 190: art. 112858 (<https://doi.org/10.1016/j.phytochem.2021.112858>).

Fan, Y., Jiang, T., Chun, Z., Wang, G., Yang, K., Tan, X., Zhao, J., Pu, S., and Luo, A. 2021. Zinc affects the physiology and medicinal components of *Dendrobium nobile* Lindl. *Plant Physiology and Biochemistry* 162: 656–666 (<https://doi.org/10.1016/j.plaphy.2021.03.040>).

Fang, Y.-S., Yang, M.-H., Wang, J.-P., Fu, H., Cai, L., and Ding, Z.-T. 2021. Four new phenanthrene derivatives from *Bulbophyllum retusiusculum*. *Fitoterapia* 152: art. 104910 (<https://doi.org/10.1016/j.fitote.2021.104910>).

Ferreira, N. P., Lucca, D. L., Diniz, B. V., Negri, M. F. N., Milaneze-Gutierrez, M. A., de Oliveira, S. M., and Pomini, A. M. 2021. Chemical, chemophenetic, and anticancer studies of *Cattleya tigrina*. *Biochemical Systematics and Ecology* 97: (<https://doi.org/10.1016/j.bse.2021.104303>).

Fu, X., Chen, S., Wang, X., Shen, Y., Zeng, R., Wu, Q., Lu, Y., Shi, J., and Zhou, S. 2021. *Dendrobium nobile* Lindl. alkaloids alleviate Mn-induced neurotoxicity via PINK1/Parkin-mediated mitophagy in PC12 cells. *Biochemistry and Biophysics Reports* 26: art. 100877 (<https://doi.org/10.1016/j.bbrep.2020.100877>).

Gao, H., Ding, L., Liu, R., Zheng, X., Xia, X., Wang, F., Qi, J., Tong, W., and Qiu, Y. 2021. Characterization of *Anoectochilus roxburghii* polysaccharide and its therapeutic effect on type 2 diabetic mice. *International Journal of Biological Macromolecules* 179: 259–269 (<https://doi.org/10.1016/j.ijbiomac.2021.02.217>).

Gladies E., S. and Devi B. S., C. 2021. Bioactivity of endemic orchids of Western Ghats; *Pholidota pallid[sic, pallida]* Lindl[sic] and *Arundina graminifolia* (D. Don) Hochr. *Plant archives* 21(1): 1214–1220 (<https://doi.org/10.51470/plantarchives.2021.v21.no1.161>).

Gong, X., Cheng, J., Zhang, K., Wang, Y., Li, S., and Luo, Y. 2022. Transcriptome sequencing reveals *Gastrodia elata* Blume could increase the cell viability of eNPCs under hypoxic condition by improving DNA damage repair ability. *Journal of Ethnopharmacology* 282: art. 114646 (<https://doi.org/10.1016/j.jep.2021.114646>).

Gu, F. L., Huang, R. S., He, X. M., Chen, N. F., Han, B. X., and Deng, H. 2021. *Dendrobium huoshanense* polysaccharides prevent inflammatory response of ulcerative colitis rat through inhibiting the NF- $\kappa$ B signaling pathway. *Chemistry & Biodiversity* 18(7): art. e2100130 (<https://doi.org/10.1002/cbdv.202100130>).

Han, J. C., Dong, J., Zhang, R., Zhang, X. F., Chen, M. H., Fan, X. C., Li, M. R., Li, J. J., Zhu, J. Y., Shang, J., and Yue, Y. Y. 2021. *Dendrobium catenatum* Lindl. water extracts attenuate atherosclerosis. *Mediators of Inflammation* 2021: art. 9951946 (<https://doi.org/10.1155/2021/9951946>).

Hao, J. w., Zhu, A. l., Chen, N. D., Liu, X. q., Li, Q., Xu, H. m., Yang, W. H., Qin, C. f., and Wu, J. D. 2021. Simultaneous analysis of 20 free amino acids by a single marker combined with an HPLC fingerprint evaluation of *Dendrobium huoshanense*. *Journal of Food Science* 86(11): 4828–4839 (<https://doi.org/10.1111/1750-3841.15931>).

Hao, J.-W., Liu, X.-Q., Zang, Y.-J., Chen, N.-D., Zhu, A.-L., Li, L.-F., and Shi, M.-Z. 2021. Simultaneous determination of 16 important biologically active phytohormones in *Dendrobium huoshanense* by pressurized capillary electrochromatography. *Journal of Chromatography B* 1171: art. 122612 (<https://doi.org/10.1016/j.jchromb.2021.122612>).

Hsu, W.-H., Huang, N.-K., Shiao, Y.-J., Lu, C.-K., Chao, Y.-M., Huang, Y.-J., Yeh, C.-H., and Lin, Y.-L. 2021. Gastrodiae rhizoma attenuates brain aging via promoting neurogenesis and neurodifferentiation. *Phytomedicine* 87: art. 153576 (<https://doi.org/10.1016/j.phymed.2021.153576>).

Hu, L., Liang, Z., Wang, Y., Wei, G., and Huang, Y. C. 2021. Identification of C-glycosyl flavones and O-glycosyl flavones in five *Dendrobium* species by high-performance liquid chromatography coupled with electrospray ionization multi-stage tandem MS. *Rapid Communications in Mass Spectrometry*: art. e9158 (<https://doi.org/10.1002/rcm.9158>).

Huang, J. H., Liu, C. X., Duan, S. N., Lin, J., Luo, Y. Y., Tao, S. C., Xing, S. P., Zhang, X. F., Du, H. Y., Wang, H., Huang, C. L., and Wei, G. 2021. Gigantol inhibits proliferation and enhances DDP-induced apoptosis in breast-cancer cells by downregulating the PI3K/Akt/mTOR signaling pathway. *Life Sciences* 274: art. 119354 (<https://doi.org/10.1016/j.lfs.2021.119354>) [*Dendrobium*].

Huang, S. M., Shieh, C. J., Wu, Y. L., Pan, Y. Z., and Yu, C. Y. 2021. Antioxidant activity of *Spiranthes sinensis* and its protective effect against UVB-induced skin fibroblast damage. *Processes* 9(9): art. 1564 (<https://doi.org/10.3390/pr9091564>).

Huang, X., Cui, S. W., and Phillips, G. O. 2021. Chapter 19— Dendronan. In: Phillips, G. O. & Williams, P. A. (eds.), *Handbook of Hydrocolloids*, Third Edition. Woodhead Publishing. 579–596 (<https://doi.org/10.1016/b978-0-12-820104-6.00020-6>) [*Dendrobium officinale*].

Huang, Y., Zhou, Z. Y., Gong, Z. P., Li, Y. T., Chen, S. Y., Pan, J., Wang, Y. L., Wang, A. M., Lan, Y. Y., Liu, T., and Zheng, L. 2021. Cocktail method: Effect of the *Bletilla striata* extracts on cytochrome P450 activity in rat. *Natural Product Communications* 16(9): art. 1934578x2110324 (<https://doi.org/10.1177/1934578x211032463>).

Huang, Y. J., Choong, L. X. C., Panyod, S., Lin, Y. E., Huang, H. S., Lu, K. H., Wu, W. K., and Sheen, L. Y. 2021. *Gastrodia elata* Blume water extract modulates neurotransmitters and alters the gut microbiota in a mild social defeat stress-induced depression mouse model. *Phytotherapy Research* 35(9): 5133–5142 (<https://doi.org/10.1002/ptr.7091>).

Huo, J. Y., Lei, M., Zhou, Y., Zhong, X. C., Liu, Y. M., Hou, J. J., Long, H. L., Zhang, Z. J., Tian, M. H., Xie, C., and Wu, W. Y. 2021. Structural characterization of two novel polysaccharides from *Gastrodia elata* and their effects on *Akkermansia muciniphila*. *International Journal of Biological Macromolecules* 186: 501–509 (<https://doi.org/10.1016/j.ijbiomac.2021.06.157>).

Huo, J. Y., Lei, M., Li, F. F., Hou, J. J., Zhang, Z. J., Long, H. L., Zhong, X. C., Liu, Y. M., Xie, C., and Wu, W. Y. 2021. Structural characterization of a polysaccharide from *Gastrodia elata* and its bioactivity on gut microbiota. *Molecules* 26(15): art. 4443 (<https://doi.org/10.3390/molecules26154443>).

Jeon, Y.-D., Lee, J.-H., Park, M.-R., Lim, J.-Y., Kang, S.-H., Kim, D.-K., and Lee, Y.-M. 2021. *Gastrodia elata* Blume and *Zanthoxylum schinifolium* Siebold & Zucc[sic] mixed extract suppress platelet aggregation and thrombosis. *Medicina* 57(10): art. 1128 (<https://doi.org/10.3390/medicina57101128>).

Jiang, S., Wang, M., Jiang, L., Xie, Q., Yuan, H., Yang, Y., Zafar, S., Liu, Y., Jian, Y., Li, B., and Wang, W. 2021. The medicinal uses of the genus *Bletilla* in traditional Chinese medicine: A phytochemical and pharmacological review. *Journal of Ethnopharmacology* 280: art. 114263 (<https://doi.org/10.1016/j.jep.2021.114263>).

Jiao, C., Deng, M., Ma, Y., and Hu, G. 2021. Effect and repair mechanism of nano Ag sponge dressing combined with gelatin-*Bletilla striata* gum/*Salvia miltiorrhiza* on refractory orthopedic wounds. *BioMed Research International* 2021: art. 8872235 (<https://doi.org/10.1155/2021/8872235>).

Karinchai, J., Budluang, P., Temviriyankul, P., Ting, P., Nuchuchua, O., Wongnoppavich, A., Imsumran, A., and Pitchakarn, P. 2021. Bioassay-guided study of the anti-inflammatory effect of *Anoectochilus burmannicus* ethanolic extract in RAW 264.7 cells. *Journal of Ethnopharmacology* 280: art. 114452 (<https://doi.org/10.1016/j.jep.2021.114452>).

Kim, Y.-R., Han, A.-R., Kim, J.-B., and Jung, C.-H. 2021. Dendrobine inhibits  $\gamma$ -irradiation-induced cancer cell migration, invasion and metastasis in non-small cell lung cancer cells. *Biomedicines* 9(8): art. 954 (<https://doi.org/10.3390/biomedicines9080954>) [*Dendrobium*].

Lalrosangpuii and Lalrokimi. 2021. A review on the phytochemical properties of five selected genera of orchids. *Science Vision* 21(2): 50–58 (<https://doi.org/10.33493/scivis.21.02.04>) [*Acampe*, *Aerides*, *Bulbophyllum*, *Liparis*, *Vanda*].

Lei, S. S., Zhang, N. Y., Zhou, F. C., He, X., Wang, H. Y., Li, L. Z., Zheng, X., Dong, Y. J., Luo, R., Li, B., Jin, H. Y., Yu, Q. X., Lv, G. Y., and Chen, S. H. 2021. *Dendrobium officinale* regulates fatty acid metabolism to ameliorate liver lipid accumulation in NAFLD mice. *Evidence-based Complementary and Alternative Medicine* 2021: art. 6689727 (<https://doi.org/10.1155/2021/6689727>).

Lei, W., Luo, J., Wu, K., Chen, Q., Hao, L., Zhou, X., Wang, X., Liu, C., and Zhou, H. 2021. *Dendrobium candidum* extract on the bioactive and fermentation properties of *Lactobacillus rhamnosus* GG in fermented milk. *Food Bioscience* 41: art. 100987 (<https://doi.org/10.1016/j.fbio.2021.100987>).

Li, D.-D., Zheng, C.-Q., Zhang, F., and Shi, J.-S. 2022. Potential neuroprotection by *Dendrobium nobile* Lindl[sic] alkaloid in Alzheimer's disease models. *Neural Regeneration Research* 17(5): 972–977 (<https://doi.org/10.4103/1673-5374.324824>).

Li, Y., Cao, Z., Jia, L., Huang, Y., Shi, M., and Li, Q. 2021. Regulation of *Dendrobium* polysaccharides on proliferation and oxidative stress of human umbilical vein endothelial cells in the high glucose environment. *Journal of Diabetes Research* 2021: art. 6685055 (<https://doi.org/10.1155/2021/6685055>).

Li, Y., Cao, Z., Li, Q., Wang, C., and Zhou, Z. 2021. Effects of *Dendrobium* polysaccharides on the functions of human skin fibroblasts and expression of matrix metalloproteinase-2 under high-glucose conditions. *International Journal of Endocrinology* 2021: art. 1092975 (<https://doi.org/10.1155/2021/1092975>).

Li, Y., Ma, Z., Yang, X., Gao, Y., Ren, Y., Li, Q., Qu, Y., Chen, G., and Zeng, R. 2021. Investigation into the physical properties, antioxidant and antibacterial activity of *Bletilla striata* polysaccharide/chitosan membranes. *International Journal of Biological Macromolecules* 182: 311–320 (<https://doi.org/10.1016/j.ijbiomac.2021.04.037>).

Li, Z.-Q., Zhou, H.-Q., Ouyang, Z., Dai, J., Yue, Q., Wei, Y., and Han, B.-X. 2021. Comparison of active ingredients and protective effects of *Dendrobium huoshanense* of different growth years on acute liver injury. *China Journal of Chinese Materia Medica* 46(2): 298–305 (<https://doi.org/10.19540/j.cnki.cjcmm.20201023.102>).

Liang, Y., Du, R., Chen, R., Chu, P. H., Ip, M. S. M., Zhang, K. Y. B., and Mak, J. C. W. 2021. Therapeutic potential and mechanism of *Dendrobium officinale* polysaccharides on cigarette smoke-induced airway inflammation in rat. *Biomedicine & Pharmacotherapy* 143: art. 112101 (<https://doi.org/10.1016/j.biopha.2021.112101>).

Lin, B., Chen, R., Wang, Q., Li, Z., Yang, S., and Feng, Y. 2021. Transcriptomic and metabolomic profiling reveals the protective effect of *Acanthopanax senticosus* (Rupr. & Maxim.) Harms combined with *Gastrodia elata* Blume on cerebral ischemia-reperfusion injury. *Frontiers in Pharmacology* 12: art. 619076 (<https://doi.org/10.3389/fphar.2021.619076>).

Lin, Y.-E., Lin, C.-H., Ho, E.-P., Ke, Y.-C., Petridi, S., Elliott, C. J. H., Sheen, L.-Y., and Chien, C.-T. 2021. Glial Nrf2 signaling mediates the neuroprotection exerted by *Gastrodia elata* Blume in Lrrk2-G2019S Parkinson's disease. *eLife* 10: art. e73753 (<https://doi.org/10.7554/elife.73753>).

Liu, B., Li, Q.-M., Shang, Z.-Z., Zha, X.-Q., Pan, L.-H., and Luo, J.-P. 2021. Anti-gastric cancer activity of cultivated *Dendrobium huoshanense* stem polysaccharide in tumor-bearing mice: Effects of molecular weight and O-acetyl group. *International Journal of Biological Macromolecules* 192: 590–599 (<https://doi.org/10.1016/j.ijbiomac.2021.10.016>).



Liu, F. Y., Wen, J., Hou, J., Zhang, S. Q., Sun, C. B., Zhou, L. C., Yin, W., Pang, W. L., Wang, C., Ying, Y., Han, S. S., Yan, J. Y., Li, C. X., Yuan, J. L., Xing, H. J., and Yang, Z. S. 2021. *Gastrodia* remodels intestinal microflora to suppress inflammation in mice with early atherosclerosis. *International Immunopharmacology* 96: art. 107758 (<https://doi.org/10.1016/j.intimp.2021.107758>).

Liu, H. F., Liang, J. X., Zhong, Y. M., Xiao, G. S., Efferth, T., Georgiev, M. I., Vargas De La Cruz, C., Bajpai, V. K., Caprioli, G., Liu, J. L., Lin, J. T., Wu, H., Peng, L. X., Li, Y. J., Ma, L. K., Xiao, J. B., and Wang, Q. 2021. *Dendrobium officinale* polysaccharide alleviates intestinal inflammation by promoting small extracellular vesicle packaging of miR-433-3p. *Journal of Agricultural and Food Chemistry* 69(45): 13510–13523 (<https://doi.org/10.1021/acs.jafc.1c05134>).

Liu, J.-J., Liu, Z.-P., Zhang, X.-F., and Si, J.-P. 2021. Effects of various processing methods on the metabolic profile and antioxidant activity of *Dendrobium catenatum* Lindley leaves. *Metabolites* 11(6): art. 351 (<https://doi.org/10.3390/metabo11060351>).

Liu, J.-N., Wang, F.-Z., Liu, J.-M., Jia, N., Sun, Y.-F., Wang, H., Sun, J., and Fan, B. 2021. Identification of active components of *Dendrobium* inhibit growth of gastric cancer cells based on component-activity relationship. *China Journal of Chinese Materia Medica* 46(10): 2565–2570 (<https://doi.org/10.19540/j.cnki.cjcm.20201111.202>).

Liu, X., Wang, X., Peng, Y., and Wang, X. 2021. Effects of Tianma (Rhizoma Gastrodiae) and Gouteng (Ramulus Uncariae Rhynchophyllae cum Uncis) on cytochrome P450 enzyme activities in rats. *Journal of Traditional Chinese Medicine* 41(2): 284–292.

Liu, X. Q., Yang, H., Zhao, J. Y., Meng, C., Ning, X., Li, C., Zhang, D., Chen, L. M., Yan, Y., Guo, Z. Y., Wang, Z. M., and Yi, H. 2021. Determination of  $\beta$ -nicotinamide mononucleotide and nicotinamide adenine dinucleotide in *Dendrobium officinale* and congeneric species by UPLC-MS/MS. *China Journal of Chinese Materia Medica* 46(16): 4034–4039 (<https://doi.org/10.19540/j.cnki.cjcm.20210507.303>).

Liu, Y., Pi, T., Yang, X., and Shi, J. 2021. Protective effects and mechanisms of *Dendrobium nobile* Lindl. alkaloids on PC12 cell damage induced by A $\beta$ 25-35. *Behavioural Neurology* 2021: art. 9990375 (<https://doi.org/10.1155/2021/9990375>).

Liu, Y. C., Lee, W. T., Liang, C. C., Lo, T. S., Hsieh, W. C., and Lin, Y. H. 2021. Author's reply: Beneficial effect of *Bletilla striata* extract solution on zymosan-induced interstitial cystitis in rat. *Neurourology and Urodynamics* 40(8): 2059–2060 (<https://doi.org/10.1002/nau.24783>).

Liu, Z., Huang, L., Sun, L., Nie, H., Liang, Y., Huang, J., Wu, F., and Hu, X. 2021. Ecust004 suppresses breast cancer cell growth, invasion, and migration via EMT regulation. *Drug Design Development and Therapy* 15: 3451–3461 (<https://doi.org/10.2147/dddt.s309132>) [*Dendrobium chrysotoxum*].

Longchar, T. B. and Deb, C. R. 2021. Comparative analysis of nutraceutical potential phytochemicals and antioxidant activities in different parts of wild and in vitro regenerated plantlets of *Dendrobium heterocarpum* Wall. ex Lindl.: A medicinal orchid. *Journal of Pharmacognosy and Phytochemistry* 10(4): 331–336 (<https://doi.org/10.22271/phyto.2021.v10.i4d.14169>).

Lü, X.-F., Zhou, X.-H., Wang, Y., and Wu, Y.-N. 2021. Component analysis of *Dendrobium phalaenopsis* anthocyanin extract and its antioxidant activity and irritation in vitro. *Journal of Tropical and Subtropical Botany* 29(4): 374–381 (<https://doi.org/10.11926/jtsb.4327>).

Ma, Z.-H., Ma, J., Lyu, J.-Y., He, J., Jia, D.-W.-N., Yang, X., Qu, Y., and Zeng, R. 2021. Progress in application of *Bletilla striata* polysaccharide in novel drug delivery systems and biomaterials. *China Journal of Chinese Materia Medica* 46(18): 4666–4673 (<https://doi.org/10.19540/j.cnki.cjcmm.20210528.604>).

Mahnashi, M. H., Alyami, B. A., Alqahtani, Y. S., Jan, M. S., Rashid, U., Sadiq, A., and Alqarni, A. O. 2021. Phytochemical profiling of bioactive compounds, anti-inflammatory and analgesic potentials of *Habenaria digitata* Lindl.: Molecular docking based synergistic effect of the identified compounds. *Journal of Ethnopharmacology* 273: art. 113976 (<https://doi.org/10.1016/j.jep.2021.113976>).

Malik, A., Bisht, K., Kumar, P., Sinha, S., Tomar, S., and Pant, K. 2021. In-silico studies for unraveling medicinal properties of sanjeevani. *Materials Today Proceedings* 46: 11230–11234 (<https://doi.org/10.1016/j.matpr.2021.02.515>) [*Dendrobium plicatile*].

Monika, K., Sarla, S., and Versha, P. 2021. Isolation and identification of an antioxidant constituent from *Satyrium nepalense* (Himalayan orchid). *Research Journal of Chemistry and Environment* 25(4): 201–205.

Morikawa, T., Manse, Y., Luo, F., Fukui, H., Inoue, Y., Kaieda, T., Ninomiya, K., Muraoka, O., and Yoshikawa, M. 2021. Indole glycosides from *Calanthe discolor* with proliferative activity on human hair follicle dermal papilla cells. *Chemical and Pharmaceutical Bulletin* 69(5): 464–471 (<https://doi.org/10.1248/cpb.c21-00006>).

Mou, Z., Zhao, Y., Ye, F., Shi, Y., Kennelly, E. J., Chen, S., and Zhao, D. 2021. Identification, biological activities and biosynthetic pathway of *Dendrobium* alkaloids. *Frontiers in Pharmacology* 12: art. 605994 (<https://doi.org/10.3389/fphar.2021.605994>).

Nam, B., Jang, H. J., Han, A. R., Kim, Y. R., Jin, C. H., Jung, C. H., Kang, K. B., Kim, S. H., Hong, M. J., Kim, J. B., and Ryu, H. W. 2021. Chemical and biological profiles of *Dendrobium* in two different species, their hybrid, and gamma-irradiated mutant lines of the hybrid based on LC-QToF MS and cytotoxicity analysis. *Plants* 10(7): art. 1376 (<https://doi.org/10.3390/plants10071376>).

Nanjala, C., Ren, J., Mutie, F. M., Waswa, E. N., Mutinda, E. S., Odago, W. O., Mutungi, M. M., and Hu, G.-W. 2021. Ethnobotany, phytochemistry, pharmacology, and conservation of the genus *Calanthe* R. Br. (Orchidaceae). *Journal of Ethnopharmacology*: art. 114822 (<https://doi.org/10.1016/j.jep.2021.114822>).

Nuerxiati, R., Mutailipu, P., Abuduwaili, A., Dou, J., Aisa, H. A., and Yili, A. 2021. Effects of different chemical modifications on the structure and biological activities of polysaccharides from *Orchis chusua* D. Don. *Journal of Food Science* 86(6): 2434–2444 (<https://doi.org/10.1111/1750-3841.15734>).

Pothongsrisit, S., Arunrungvichian, K., Hayakawa, Y., Sritularak, B., Mangmool, S., and Pongrakhananon, V. 2021. Erianthridin suppresses non-small-cell lung cancer cell metastasis through inhibition of Akt/mTOR/p70S6K signaling pathway. *Scientific Reports* 11(1): art. 6618 (<https://doi.org/10.1038/s41598-021-85675-8>) [*Dendrobium formosum*].

Prasad, G., Seal, T., Mao, A. A., Vijayan, D., and Lokho, A. 2021. Assessment of clonal fidelity and phytomedicinal potential in micropropagated plants of *Bulbophyllum odoratissimum*—An endangered medicinal orchid of Indo Burma megabiodiversity hotspot. *South African Journal of Botany* 141: 487–497 (<https://doi.org/10.1016/j.sajb.2021.05.015>).

Pujari, I., Sengupta, R., and Babu, V. S. 2021. Docking and ADMET studies for investigating the anticancer potency of moscatilin on APC10/DOC1 and PKM2 against five clinical drugs. *Journal of Genetic Engineering and Biotechnology* 19(1): art. 161 (<https://doi.org/10.1186/s43141-021-00256-6>) [*Dendrobium*].

Pujari, I., Thomas, A., Rai, P. S., Satyamoorthy, K., and Babu, V. S. 2021. In vitro bioproduction and enhancement of moscatilin from a threatened tropical epiphytic orchid, *Dendrobium ovatum* (Willd.) Kraenzl. *3 Biotech* 11(12): art. 507 (<https://doi.org/10.1007/s13205-021-03059-1>).

Qi, J.-x., Zhou, D., Jiang, W.-r., Chen, G., Li, W., and Li, N. 2021. Dihydrophenanthrenes from medicinal plants of Orchidaceae: A Review. *Chinese Herbal Medicines* 13(4): 480–493 (<https://doi.org/10.1016/j.chmed.2021.10.004>).

Qian, X., Zhu, J. Y., Yuan, Q. J., Jia, Q., Jin, H., Han, J., Sarsaiya, S., Jin, L. L., Chen, J. S., and Guo, L. P. 2021. Illumina sequencing reveals conserved and novel microRNAs of *Dendrobium nobile* protocorm involved in synthesizing dendrobine, a potential nanodrug. *Journal of Biomedical Nanotechnology* 17(3): 416–425 (<https://doi.org/10.1166/jbn.2021.3036>).

Qin, W., Zhao, X., Tai, J., Qin, G., and Yu, S. 2021. Combination of *Dendrobium* mixture and metformin curbs the development and progression of diabetic cardiomyopathy by targeting the lncRNA NEAT1. *Clinics* 76: art. e2669 (<https://doi.org/10.6061/clinics/2021/e2669>).

Qu, J., Tan, S. Y., Xie, X. Y., Wu, W. Q., Zhu, H. H., Li, H., Liao, X. B., Wang, J. J., Zhou, Z. A., Huang, S., and Lu, Q. 2021. *Dendrobium officinale* polysaccharide attenuates insulin resistance and abnormal lipid metabolism in obese mice. *Frontiers in Pharmacology* 12: art. 659626 (<https://doi.org/10.3389/fphar.2021.659626>).

Ren, F. C., Liu, L., Lv, Y. F., Bai, X., Kang, Q. J., Hu, X. J., Zhuang, H. D., Yang, L., Hu, J. M., and Zhou, J. 2021. Antibacterial prenylated p-Hydroxybenzoic acid derivatives from *Oberonia myosurus* and identification of putative prenyltransferases. *Journal of Natural Products* 84(2): 417–426 (<https://doi.org/10.1021/acs.jnatprod.0c01101>).

Saleh-E-in, M. M., Bhattacharyya, P., and Van Staden, J. 2021. Chemical composition and cytotoxic activity of the essential oil and oleoresins of in vitro micropropagated *Ansellia africana* Lindl[sic]: A vulnerable medicinal orchid of Africa. *Molecules* 26(15): art. 4556 (<https://doi.org/10.3390/molecules26154556>).

San, H. T., Chatsumpun, N., Juengwatanatrakul, T., Pornputtapong, N., Likhitwitayawuid, K., and Sritularak, B. 2021. Four novel phenanthrene derivatives with  $\alpha$ -glucosidase inhibitory activity from *Gastrochilus bellinus*. *Molecules* 26(2): art. 418 (<https://doi.org/10.3390/molecules26020418>).

Shang, Z.-Z., Qin, D.-Y., Li, Q.-M., Zha, X.-Q., Pan, L.-H., Peng, D.-Y., and Luo, J.-P. 2021. *Dendrobium huoshanense* stem polysaccharide ameliorates rheumatoid arthritis in mice via inhibition of inflammatory signaling pathways. *Carbohydrate Polymers* 258: art. 117657 (<https://doi.org/10.1016/j.carbpol.2021.117657>).

Shang, Z.-Z., Xu, T.-T., Wang, C.-Q., Li, Q.-M., Zha, X.-Q., Pan, L.-H., and Luo, J.-P. 2021. Bioactivity-guided investigation for isolation and immunoregulatory potential of polysaccharides from *Dendrobium chrysotoxum* stems. *Process Biochemistry* 104: 124–131 (<https://doi.org/10.1016/j.procbio.2021.03.014>).

Shao, S., Xu, C. B., Chen, C. J., Shi, G. N., Guo, Q. L., Zhou, Y., Wei, Y. Z., Wu, L., Shi, J. G., and Zhang, T. T. 2021. Divanillyl sulfone suppresses NLRP3 inflammasome activation via inducing mitophagy to ameliorate chronic neuropathic pain in mice. *Journal of Neuroinflammation* 18(1): art. 142 (<https://doi.org/10.1186/s12974-021-02178-z>) [*Gastrodia*].

Sharma, A. and Pathak, P. 2020. The budding potential of orchids in the cosmeceutical sector: role of orchids in skincare and health. *Journal of the Orchid Society of India* 34: 79–85.

Su, W., Zeng, L., and Chen, W. 2021. Moscatilin suppresses the breast cancer both in vitro and in vivo by inhibiting HDAC3. *Dose-Response* 19(1): art. 15593258211001251 (<https://doi.org/10.1177/15593258211001251>) [*Dendrobium moschatum*].

Sui, J., Tang, C., Ke, C.-Q., and Ye, Y. 2021. Dimeric 9,10-dihydrophenanthrene derivatives from *Bletilla striata* and their atropisomeric nature. *Fitoterapia* 152: art. 104919 (<https://doi.org/10.1016/j.fitote.2021.104919>).

Sukhikh, S., Noskova, S., Ivanova, S., Skrypnik, L., Pungin, A., Ulrikh, E., Chupakhin, E., and Babich, O. 2021. Study of the properties of in vitro *Dactylorhiza maculata* (L.) Soó (Family Orchidaceae) extracts. *Plants* 10(7): art. 1330 (<https://doi.org/10.3390/plants10071330>).

Sun, J., Liu, J., Liu, Y., Chen, R., Li, Y., Cen, S., Chen, X., Guo, S., and Dai, J. 2021. Degratiols A–D, four new bibenzyl derivatives from *Dendrobium gratiosissimum*[sic, *gratiosissimum*]. *Fitoterapia* 152: art. 104926 (<https://doi.org/10.1016/j.fitote.2021.104926>).

Sun, Y., Geng, J., and Wang, D. 2021. Cardioprotective effects of Ginsenoside compound-Mc1 and *Dendrobium nobile* Lindl[sic] against myocardial infarction in an aged rat model: Involvement of TLR4/NF- $\kappa$ B signaling pathway. *European Journal of Inflammation* 19: 1–9 (<https://doi.org/10.1177/20587392211000577>).

Suwanprakorn, N., Chanvorachote, P., Tongyen, T., Sritularak, B., and Suvanprakorn, P. 2021. Scoparone induces expression of pluripotency transcription factors SOX2 and NANOG in dermal papilla cells. *In Vivo* 35(5): 2589–2597 (<https://doi.org/10.21873/invivo.12541>) [*Dendrobium densiflorum*].

Swe, H. N., Sritularak, B., Rojnuckarin, P., and Luechapudiporn, R. 2021. Inhibitory mechanisms of lusianthridin on human platelet aggregation. *International Journal of Molecular Sciences* 22(13): art. 6846 (<https://doi.org/10.3390/ijms22136846>) [*Dendrobium venustum*].

Sympli, H. D., Sen, S., Susngi, B., and Borah, V. V. 2021. Quantitative phytochemical analysis reveals significant antibiofilm activity in *Pleione maculata*, an endangered medicinal orchid. *Journal of Pure and Applied Microbiology* 15(3): 1573–1590 (<https://doi.org/10.22207/JPAM.15.3.51>).

Tao, J., Yang, P., Xie, L., Pu, Y., Guo, J., Jiao, J., Sun, L., and Lu, D. 2021. Gastrodin induces lysosomal biogenesis and autophagy to prevent the formation of foam cells via AMPK-FoxO1-TFEB signalling axis. *Journal of Cellular and Molecular Medicine* 25(12): 5769–5781 (<https://doi.org/10.1111/jcmm.16600>) [*Gastrodia*].

Tao, S. C., Huang, C. L., Tan, Z. H., Duan, S. N., Zhang, X. F., Ren, Z. Y., Zhou, C. H., Huang, J. H., Liu, C. Xing, and Wei, G. Effect of the polysaccharides derived from *Dendrobium officinale* stems on human HT-29 colorectal cancer cells and a zebrafish model. *Food Bioscience* 41: 100995 (<https://doi.org/10.1016/j.fbio.2021.100995>).

Taweecheep, P., Khine, H. E. E., Hlosrichok, A., Ecoy, G. A. U., Sritularak, B., Prompetchara, E., Chanvorachote, P., and Chaotham, C. 2021. Stemness-suppressive effect of bibenzyl from *Dendrobium ellipsophyllum* in human lung cancer stem-like cells. *Evidence-based Complementary and Alternative Medicine* 2021: art. 5516655 (<https://doi.org/10.1155/2021/5516655>).

Thant, S. W., Morales, N. P., Buranasudja, V., Sritularak, B., and Luechapudiporn, R. 2021. Protective effect of lusianthridin on hemin-induced low-density lipoprotein oxidation. *Pharmaceuticals* 14(6): art. 567 (<https://doi.org/10.3390/ph14060567>) [*Dendrobium venustum*].

Ting, H. C., Yang, H. I., Harn, H. J., Chiu, I. M., Su, H. L., Li, X., Chen, M. F., Ho, T. J., Liu, C. A., Tsai, Y. J., Chiou, T. W., Lin, S. Z., and Chang, C. Y. 2021. Coactivation of GSK3 $\beta$  and IGF-1 attenuates amyotrophic lateral sclerosis nerve fiber cytopathies in SOD1 mutant patient-derived motor neurons. *Cells* 10(10): art. 2773 (<https://doi.org/10.3390/cells10102773>) [*Gastrodia elata*].

Wan, J., Gong, X., Wang, F., Wen, C., Wei, Y., Han, B., and Ouyang, Z. 2021. Comparative analysis of chemical constituents by HPLC–ESI–MSn and antioxidant activities of *Dendrobium huoshanense* and *Dendrobium officinale*. *Biomedical Chromatography*: art. e5250 (<https://doi.org/10.1002/bmc.5250>).

Wang, D.-L., Yang, X.-Q., Shi, W.-Z., Cen, R.-H., Yang, Y.-B., and Ding, Z.-T. 2021. The selective anti-fungal metabolites from *Irpex lacteus* and applications in the chemical interaction of *Gastrodia elata*, *Armillaria* sp., and endophytes. *Fitoterapia* 155: art. 105035 (<https://doi.org/10.1016/j.fitote.2021.105035>).



Wang, J.-T., Li, H.-Y., Rao, R., Yue, J.-Y., Wang, G.-K., and Yu, Y. 2021. ( $\pm$ )-Stagonosporopsin A, stagonosporopsin B and stagonosporopsin C, antibacterial metabolites produced by endophytic fungus *Stagonosporopsis oculihominis*. *Phytochemistry Letters* 45: 157–160 (<https://doi.org/10.1016/j.phytol.2021.08.017>) [*Dendrobium huoshanense*].

Wang, L. X., Li, C. Y., Hu, C., Gong, P. S., and Zhao, S. H. 2021. Purification and structural characterization of *Dendrobium officinale* polysaccharides and its activities. *Chemistry & Biodiversity* 18(5): art. e2001023 (<https://doi.org/10.1002/cbdv.202001023>).

Wang, T., Chen, H., Xia, S., Chen, X., Sun, H., and Xu, Z. 2021. Ameliorative effect of parishin C against cerebral ischemia-induced brain tissue injury by reducing oxidative stress and inflammatory responses in rat model. *Neuropsychiatric Disease and Treatment* 17: 1811–1823 (<https://doi.org/10.2147/ndt.s309065>) [*Gastrodia elata*].

Wang, Y., Chu, F. H., Lin, J., Li, Y., Johnson, N., Zhang, J. L., Gai, C., Su, Z. Q., Cheng, H. J., Wang, L. H., and Ding, X. 2021. Erianin, the main active ingredient of *Dendrobium chrysotoxum* Lindl[sic], inhibits precancerous lesions of gastric cancer (PLGC) through suppression of the HRAS-PI3K-AKT signaling pathway as revealed by network pharmacology and in vitro experimental verification. *Journal of Ethnopharmacology* 279: art. 114399 (<https://doi.org/10.1016/j.jep.2021.114399>).

Wang, Y., Zhao, L., and Li, A.-Y. 2021. Gastrodin—A potential drug used for the treatment of Tourette Syndrome. *Journal of Pharmacological Sciences* 145(3): 289–295 (<https://doi.org/10.1016/j.jphs.2021.01.005>) [*Gastrodia elata*].

Wang, Y. H. 2021. Traditional uses, chemical constituents, pharmacological activities, and toxicological effects of *Dendrobium* leaves: A review. *Journal of Ethnopharmacology* 270: art. 113851 (<https://doi.org/10.1016/j.jep.2021.113851>).

Wang, Y. W., Liao, X., Zhou, C. J., Hu, L., Wei, G., Huang, Y. C., Lei, Z. X., Ren, Z. Y., Liu, Z. X., and Liu, Z. H. 2021. Identification of C-glycosyl flavones and quality assessment in *Dendrobium nobile*. *Rapid Communications in Mass Spectrometry* 35(6): art. e9012 (<https://doi.org/10.1002/rcm.9012>).

Warinhomhoun, S., Muangnoi, C., Buranasudja, V., Mekboonsonglarp, W., Rojsitthisak, P., Likhitwitayawuid, K., and Sritularak, B. 2021. Antioxidant activities and protective effects of dendropachol, a new bisbibenzyl compound from *Dendrobium pachyglossum*, on hydrogen peroxide-induced oxidative stress in HaCaT keratinocytes. *Antioxidants* 10(2): art. 252 (<https://doi.org/10.3390/antiox10020252>).

Wen, Y., Xiao, H., Liu, Y., Yang, Y., Wang, Y., Xu, S., Huang, S., Hou, S., and Liang, J. 2021. Polysaccharides from *Dendrobium officinale* ameliorate colitis-induced lung injury via inhibiting inflammation and oxidative stress. *Chemico-Biological Interactions* 347: art. 109615 (<https://doi.org/10.1016/j.cbi.2021.109615>).

Wu, T., Li, S., Huang, Y., He, Z., Zheng, Y., Stalin, A., Shao, Q., and Lin, D. 2021. Structure and pharmacological activities of polysaccharides from *Anoectochilus roxburghii* (Wall.) Lindl. *Journal of Functional Foods* 87: art. 104815 (<https://doi.org/10.1016/j.jff.2021.104815>).

Xiang, Y., Chen, X. Y., Wang, W. G., Zhai, L. J., Sun, X. N., Feng, J., Duan, T., Zhang, M. M., Pan, T., Yan, L. L., Jin, T., Gao, Q., Wen, C. Y., Ma, W. R., Liu, W. C., Wang, D. Q., Wu, Q. B., Xie, T., and Sui, X. B. 2021. Natural product erianin inhibits bladder cancer cell growth by inducing ferroptosis via NRF2 inactivation. *Frontiers in Pharmacology* 12: art. 775506 (<https://doi.org/10.3389/fphar.2021.775506>) [*Dendrobium chrysotoxum*].

Xiao, H., Jiang, Q., Qiu, H., Wu, K., Ma, X., Yang, J., and Cheng, O. 2021. Gastrodin promotes hippocampal neurogenesis via PDE9-cGMP-PKG pathway in mice following cerebral ischemia. *Neurochemistry International* 150: art. 105171 (<https://doi.org/10.1016/j.neuint.2021.105171>) [*Gastrodia elata*].

Xie, H., Chen, Y., Wu, W., Feng, X., and Du, K. 2021. *Gastrodia elata* Blume polysaccharides attenuate vincristine-evoked neuropathic pain through the inhibition of neuroinflammation. *Mediators of Inflammation* 2021: art. 9965081 (<https://doi.org/10.1155/2021/9965081>).

Xiong, T.-W., Liu, B., Wu, Q., Xu, Y.-Y., Liu, P., Wang, Y., Liu, J., and Shi, J.-S. 2021. Beneficial effects of *Dendrobium nobile* Lindl. alkaloids (DNLA) on anxiety and depression induced by chronic unpredictable stress in rats. *Brain Research* 1771: art. 147647 (<https://doi.org/10.1016/j.brainres.2021.147647>).

Yang, C.-S., Chiu, S.-C., Liu, P.-Y., Wu, S.-N., Lai, M.-C., and Huang, C.-W. 2021. Gastrodin alleviates seizure severity and neuronal excitotoxicities in the rat lithium-pilocarpine model of temporal lobe epilepsy via enhancing GABAergic transmission. *Journal of Ethnopharmacology* 269: art. 113751 (<https://doi.org/10.1016/j.jep.2020.113751>) [*Gastrodia elata*].

Yang, J., Zhang, Y., Li, W. H., Guo, B. F., Peng, Q. L., Yao, W. Y., Gong, D. H., and Ding, W. J. 2021. Assessment of the anti-rheumatoid arthritis activity of *Gastrodia elata* (tian-ma) and Radix aconitic lateralis preparata (fu-zi) via network pharmacology and untargeted metabolomics analyses. *International Journal of Rheumatic Diseases* 24(3): 380–390 (<https://doi.org/10.1111/1756-185x.14063>).

Yang, L., Lin, I. H., Ting, C.-T., and Tsai, T.-H. 2021. Modulation of the transport of valproic acid through the blood-brain barrier in rats by the *Gastrodia elata* extracts. *Journal of Ethnopharmacology* 278: art. 114276 (<https://doi.org/10.1016/j.jep.2021.114276>).

Ye, G., Li, J., Zhang, J., Liu, H., Ye, Q., and Wang, Z. 2021. Structural characterization and antitumor activity of a polysaccharide from *Dendrobium wardianum*. *Carbohydrate Polymers* 269: art. 118253 (<https://doi.org/10.1016/j.carbpol.2021.118253>).

Yu, C. L., Weng, M. S., Chen, W. C., Chien, K. T., Chi, C. W., Chung, C. H., Huang, C. W., Wang, P. C., Chen, C. C., Tsai, A. C., Liu, S. C., and Wang, S. W. 2021. Moscatilin inhibits metastatic behavior of human hepatocellular carcinoma cells: A crucial role of uPA suppression via Akt/NF- $\kappa$ B-dependent pathway. *International Journal of Molecular Sciences* 22(6): art. 2930 (<https://doi.org/10.3390/ijms22062930>) [*Dendrobium loddigesii*].

Zeng, X. and Shen, H. 2021. Comments on the article “Beneficial effect of *Bletilla striata* extract solution on zymosan-induced interstitial cystitis in rat”: Whether the specific part of *Bletilla striata* which be used for bioactive extraction should be elaborated. *Neurourology and Urodynamics* 40(8): 2061–2062 (<https://doi.org/10.1002/nau.24784>).

Zhang, H. Q., Xie, X. F., Li, G. M., Chen, J. R., Li, M. T., Xu, X., Xiong, Q. Y., Chen, G. R., Yin, Y. P., Peng, F., Chen, Y., and Peng, C. 2021. Erianin inhibits human lung cancer cell growth via PI3K/Akt/mTOR pathway in vitro and in vivo. *Phytotherapy Research* 35(8): 4511–4525 (<https://doi.org/10.1002/ptr.7154>) [*Dendrobium chrysotoxum*].

Zhang, K., Zhou, X., Wang, J., Zhou, Y., Qi, W., Chen, H., Nie, S., and Xie, M. 2021. *Dendrobium officinale* polysaccharide triggers mitochondrial disorder to induce colon cancer cell death via ROS-AMPK-autophagy pathway. *Carbohydrate Polymers* 264: art. 118018 (<https://doi.org/10.1016/j.carbpol.2021.118018>).

Zhang, X., Bi, C., Shi, H., and Li, X. 2021. Structural studies of a mannoglucan from *Cremastra appendiculata* (Orchidaceae) by chemical and enzymatic methods. *Carbohydrate Polymers* 272: art. 118524 (<https://doi.org/10.1016/j.carbpol.2021.118524>).

Zhang, X., Chen, W., Du, Y., Su, P., Qiu, Y., Ning, J., and Liu, M. 2021. Phytochemistry and pharmacological activities of *Arundina graminifolia* (D. Don) Hochr. and other common Orchidaceae medicinal plants. *Journal of Ethnopharmacology* 276: art. 114143 (<https://doi.org/10.1016/j.jep.2021.114143>).

Zhang, X., Hu, L., Xu, S., Ye, C., and Chen, A. 2021. Erianin: A direct NLRP3 inhibitor with remarkable anti-inflammatory activity. *Frontiers in Immunology* 12: art. 739953 (<https://doi.org/10.3389/fimmu.2021.739953>) [*Dendrobium chrysotoxum*].

Zhang, X., Wang, M., Zhang, C., Liu, Z., and Zhou, S. 2021. Clinical study of *Dendrobium nobile* Lindl[*sic*] intervention on patients with metabolic syndrome. *Medicine* 100(12): art. e24574 (<https://doi.org/10.1097/md.00000000000024574>).

Zhang, Y., Zhou, J. X., Liu, J. J., Li, S. J., Zhou, S. Y., Zhang, C. C., Wang, Y., Shi, J. S., Liu, J., and Wu, Q. 2021. RNA-Seq analysis of the protection by *Dendrobium nobile* alkaloids against carbon tetrachloride hepatotoxicity in mice. *Biomedicine & Pharmacotherapy* 137: art. 111307 (<https://doi.org/10.1016/j.biopha.2021.111307>).

Zhang, Z., Yang, B., Zhao, J., Xie, A., Feng, L., and Wan, Y. 2021. Purification, structure and conformation characterization of a novel glucogalactan from *Anoectochilus roxburghii*. *International Journal of Biological Macromolecules* 178: 547–557 (<https://doi.org/10.1016/j.ijbiomac.2021.02.172>).

Zhao, W., Li, J., Zhong, C., Zhang, X., and Bao, Y. 2021. Green synthesis of gold nanoparticles from *Dendrobium officinale* and its anticancer effect on liver cancer. *Drug Delivery* 28(1): 985–994 (<https://doi.org/10.1080/10717544.2021.1921079>).

Zhao, Y., Huang, H. X., Tang, S. Y., and Sun, Y. Z. 2021. RNA-seq analysis reveals *Dendrobium officinale* polysaccharides inhibit precancerous lesions of gastric cancer through PER3 and AQP4. *Evidence-based Complementary and Alternative Medicine* 2021: art. 3036504 (<https://doi.org/10.1155/2021/3036504>).

Zhou, Y., Li, M., Lv, T., Huang, M., Cheng, B., Zhang, Y., and Zhu, J. 2021. Gastrodin inhibits virus infection by promoting the production of Type I interferon. *Frontiers in Pharmacology* 11: art. 608707 (<https://doi.org/10.3389/fphar.2020.608707>) [*Gastrodia elata*].

Zhu, A. L., Hao, J. W., Liu, L., Wang, Q., Chen, N. D., Wang, G. L., Liu, X. Q., Li, Q., Xu, H. M., and Yang, W. H. 2021. Simultaneous quantification of 11 phenolic compounds and consistency evaluation in four *Dendrobium* species used as ingredients of the Traditional Chinese Medicine Shihu. *Frontiers in Nutrition* 8: art. 771078 (<https://doi.org/10.3389/fnut.2021.771078>).

Zhu, H. D., Wu, X. D., Huo, J. Y., Hou, J. J., Long, H. L., Zhang, Z. J., Wang, B., Tian, M. H., Chen, K. X., Guo, D. A., Lei, M., and Wu, W. Y. 2021. A five-dimensional data collection strategy for multicomponent discovery and characterization in Traditional Chinese Medicine: *Gastrodia[sic, Gastrodiae]* Rhizoma as a case study. *Journal of Chromatography A* 1653: art. 462405 (<https://doi.org/10.1016/j.chroma.2021.462405>).

Zhu, Y., Liu, M. Q., Cao, C., Qu, S. C., Zheng, J. N., Zhu, Z. Q., Chen, Z. C., Wang, Z. K., Zhu, Z. H., Huang, F., and Duan, J. 2021. *Dendrobium officinale* flos increases neurotrophic factor expression in the hippocampus of chronic unpredictable mild stress-exposed mice and in astrocyte primary culture and potentiates NGF-induced neuronal differentiation in PC12 cells. *Phytotherapy Research* 35(5): 2665–2677 (<https://doi.org/10.1002/ptr.7013>).

## History

Beddoe, C. and Gregory, T. 2021. The Measures brothers, south London orchid growers and collectors. *Orchid Review* 129(1333): 42–47.

Jenny, R. 2019. El género *Plectrophora* y Henrik Charles Focke | The genus *Plectrophora* and Henrik Charles Focke. *Orquideología* 36(1): 4–18.

Jenny, R. 2019. *Broughtonia negrilensis* y Arthur Broughton | *Broughtonia negrilensis* and Arthur Broughton. *Orquideología* 36(2): 102–110.

Jenny, R. 2020. Georg August Eduard Hübner, viajero, fotógrafo y coleccionista de orquídeas | Georg August Eduard Hübner, traveler, photographer and orchid collector. *Orquideología* 37(1): 43–58.

Jenny, R. 2020. Romain Jean Baptiste Houlet y el género *Houletia* | Romain Jean Baptiste Houlet and the genus *Houletia*. *Orquideología* 37(2): 177–194.

Jenny, R. 2021. *Gomesa cornigera*, *Dryadella zebrina* y Otto Porsch | *Gomesa cornigera*, *Dryadella zebrina* and Otto Porsch *Orquideología* 38(1): 56–70.

Jenny, R. 2021. *Trias oblonga* and Andrew Thomas Gage. *Orchids, the Bulletin of the American Orchid Society* 90(3): 198–201.

Jenny, R. 2021. *Stanhopea tricornis* and Eugene Langlassé. *Orchids, the Bulletin of the American Orchid Society* 90(7): 532–536.

Jenny, R. 2021. Carl Friedrich Schmidt. Botanist and artist. *Orchids, the Bulletin of the American Orchid Society* 90(9): 690–692.

Jenny, R. 2021. Emeric Streatfield Berkeley und seine *Aerides*. *OrchideenJournal* 28(1): 22–24.

Jenny, R. 2021. *Saccolabiopsis armitii* and William Edington de Margrat Armit. *Orchid Review* 129(1334): 56–58.

Jenny, R. 2021. *Pomatocalpa marsupiale* and Sijfert Hendrik Koorders. *Orchid Review* 129(1336): 42–44.

Jenny, R. 2021. *Vandopsis kupperiana* und Walter Kupper. *Die Orchidee* 72(3): 184–191.

Jenny-Keller, V., Jenny, L., Jenny, C., Hammer, C., and Lückel, E. 2021. In memoriam. Rudolf Jenny (1953–2021). *Lankesteriana* 21(3): I–VII.

Ossenbach, C. and Jenny, R. 2021. Rudolf Schlechter's South-American orchids VI. Schlechter's "network": Bolivia, Paraguay, Chile, Argentina, and Uruguay. *Lankesteriana* 21(3): 363–419 (<https://doi.org/10.15517/lankesteriana.v21i3.49550>).

Schuiteman, A. and Vermeulen, J. J. 2021. In memoriam Dr Eduard Ferdinand (Ed) de Vogel (1942–2021). *Blumea* 66(3): x–xiv (<https://doi.org/10.3767/blumea.2021.66.03.03>).

Shaw, J. 2021. Inventing the inventory. *Orchid Review* 129(1333): 52–59 [Sander's List].

### **Horticultural science**

Arthagama, I. D. M., Dana, I. M., and Wiguna, P. P. K. 2021. Effect of various types of growing media and application of liquid organic fertilizer on the growth of *Dendrobium* orchids. *International Journal of Biosciences and Biotechnology* 8(2): 54–61 (<https://doi.org/10.24843/ijbb.2021.v08.i02.p07>).

Fu, Y., Wang, Q., Zhang, L., Ling, S., Jia, H., and Wu, Y. 2021. Dissipation, occurrence, and risk assessment of 12 pesticides in *Dendrobium officinale* Kimura et Migo. *Ecotoxicology and Environmental Safety* 222: art. 112487 (<https://doi.org/10.1016/j.ecoenv.2021.112487>).

Hoshino, R. T., Alves, G. A. C., Bertonecelli, D. J., Zeffa, D. M., Stulzer, G. C. G., Takahashi, L. S. A., and Faria, R. T. 2021. Bokashi, simple superphosphate, and fertigation for the growth and nutrition of hybrid *Cattleya* (Orchidaceae). *Semina: Ciências Agrárias* 42(5): 2703–2716 (<https://doi.org/10.5433/1679-0359.2021v42n5p2703>).

Jeong, J. H. and Oh, W. 2021. Drought and darkness during long-term simulated shipping delay post-shipping flowering of *Phalaenopsis* Sogo Yukidian 'V3'. *Horticulturae* 7(11): art. 483 (<https://doi.org/10.3390/horticulturae7110483>).

Kim, H. K. and Lee, A. K. 2021. Comparative analysis of the quality of domestically distributed cut *Phalaenopsis* flowers based on the season and place of origin. *Horticulturae* 7(10): art. 382 (<https://doi.org/10.3390/horticulturae7100382>).

Lianawati, I. A. M., Astiti, N. P. A., and Suriani, N. L. 2021. Penggunaan jenis media dan perlakuan pupuk untuk pertumbuhan anggrek *Dendrobium*. *SIMBIOSIS* 9(1): 1–11 (<https://doi.org/10.24843/jsimbiosis.2021.v09.i01.p01>) [in Indonesian].



Liu, B., Tang, L., Gao, B., Jeong, B. R., Deng, S., and Wei, H. 2021. Effects on growth and metabolism of difference between day and night temperatures (DIF) and supplementation with rare earth elements (REE) in micropropagated *Dendrobium aphyllum* (Roxb.) C. E. Fischer. *Horticulturae* 7(11): art. 425 (<https://doi.org/10.3390/horticulturae7110425>).

Netto, L. A., Villa, F., da Silva, D. F., da Silva, L. S., da Silva, G. M., and da Silva, E. C. 2020. Mineral and organic fertilizer combined with doses of *Azospirillum brasilense* in an orchid hybrid. *Comunicata Scientiae* 12: art. e3406 (<https://doi.org/10.14295/cs.v12.3406>).

Poonsri, W. 2021. Effects of active and passive modified atmosphere packaging on biochemical properties of cut *Dendrobium* orchid flowers. *Heliyon* 7(6): art. e07197 (<https://doi.org/10.1016/j.heliyon.2021.e07197>).

Prakash, A. and Pathak, P. 2020. Effects of different concentrations of NPK on vegetative growth parameters of a floriculturally important epiphytic orchid, *Dendrobium chrysanthum* Wall. ex Lindl. *Journal of the Orchid Society of India* 34: 117–121.

Tejeda-Sartorius, O., Fernández-Pavía, Y. L., Peralta-Sánchez, M. G., and Trejo-Téllez, L. I. 2021. Fertilization methods and substrate particle size differentially affect growth and macronutrient status of *Laelia anceps* subsp. *anceps*. *Notulae Botanicae Horti Agrobotanici Cluj-Napoca* 49(2): 1–15 (<https://doi.org/10.15835/nbha49212211>).

Thammasiri, K. 2020. Commercial aspects of orchid cultivation in Thailand. *Journal of the Orchid Society of India* 34: 27–34.

Varfolomeeva, N. I., Kazakova, V. V., Dinkova, V. S., and Yu Manilova, O. 2021. The influence of bioregulating adaptogens on the growth processes, development and decorative qualities of an orchid. *IOP Conference Series: Earth and Environmental Science* 845(1): art. 012068 (<https://doi.org/10.1088/1755-1315/845/1/012068>) [*Dendrobium*].

Videnov, K., Stoykova, V., Vasilev, M., Zlatev, Z., Georgieva-Nikolova, M., and Yordanova, P. 2021. Improvement of the irrigation system for orchids. *CompSysTech '21: International Conference on Computer Systems and Technologies '21*: 151–155 (<https://doi.org/10.1145/3472410.3472436>).

Wongjunta, M., Wongs-Aree, C., Salim, S., Meir, S., Philosoph-Hadas, S., and Buanong, M. 2021. Involvement of ethylene in physiological processes determining the vase life of various hybrids of *Mokara* orchid cut flowers. *Agronomy* 11(1): art. 160 (<https://doi.org/10.3390/agronomy11010160>).

### **(Micro)propagation/seed germination/cryopreservation**

Anuprabha and Pathak, P. 2020. Micropropagation of *Coelogyne fimbriata* Lindl. using pseudobulb explants. *Journal of the Orchid Society of India* 34: 131–136.

Arcidiacono, M., Catalano, C., Motisi, A., Sajeva, M., Carimi, F., and Carra, A. 2021. Influence of culture conditions on in vitro asymbiotic germination of *Anacamptis longicornu* and *Ophrys panormitana* (Orchidaceae). *Plants* 10(11): art. 2543 (<https://doi.org/10.3390/plants10112543>).

Bhowmik, T. K. and Rahman, M. M. 2020. In vitro seed germination and micropropagation of *Dendrobium chrysotoxum* Lindl. (golden bow): a highly fragrant orchid species of Bangladesh. *Journal of the Orchid Society of India* 34: 69–77.

Boldaji, H. N., Dylami, S. D., Aliniaiefard, S., and Norouzi, M. 2021. Efficient method for direct embryogenesis in *Phalaenopsis* orchid. *International Journal of Horticultural Science and Technology* 8(1): 37–50 (<https://doi.org/10.22059/ijhst.2020.296696.339>).

Das, M. C., Devi, S. D., Kumaria, S., and Reed, B. M. 2021. Looking for a way forward for the cryopreservation of orchid diversity. *Cryobiology* 102: 1–14 (<https://doi.org/10.1016/j.cryobiol.2021.05.004>).

De Freitas, K. G., Sorgato, J. C., Soares, J. S., and Ribeiro, L. M. 2021. In vitro growth of *Cattleya nobilior* Rchb. f.: Culture media, sealing systems and irradiance. *Pesquisa Agropecuaria Tropical* 51: art. e67131 (<https://doi.org/10.1590/1983-40632021v5167131>).

de Oliveira, J., de Moraes, M. C., Custódio, C. C., and Machado-Neto, N. B. 2021. Efficient in vitro plantlet development and acclimatization of *Cattleya elongata* Barb. Rodr., a Brazilian endemic and neglected species. *South African Journal of Botany* 141: 77–82 (<https://doi.org/10.1016/j.sajb.2021.03.025>).

de Oliveira, S. L. A., Silva, K. L. F., de Oliveira, R. J., de Souza, M. J., de Oliveira, J. R. G., and de Melo Ferreira, W. 2021. In vitro germination, initial development and acclimatization of *Cattleya nobilior* Rchb. f. (Orchidaceae): an approach to curb the eventual endangerment of this exuberant, near-threatened Cerrado species. *Diversitas Journal* 6(2): 2167–2191 (<https://doi.org/10.17648/diversitas-journal-v6i2-1592>).

Dhuha Mustika, N. and Semiarti, E. 2021. In vitro culture of *Dendrobium lineale* Rolfe orchid for plant breeding and propagation. *IOP Conference Series: Earth and Environmental Science* 913(1): art. 012066 (<https://doi.org/10.1088/1755-1315/913/1/012066>).

Gantait, S. S., Datta, K., and Thokchom, R. 2020. In vitro plant regeneration through protocorm formation in orchid *Calanthe odora*. *Indian Journal of Agricultural Sciences* 90(5): 1036–1039.

Ghahremani, R., Daylami, S. D., Mirmasoumi, M., Askari, N., and Vahdati, K. 2021. Refining a protocol for somatic embryogenesis and plant regeneration of *Phalaenopsis amabilis* cv. Jinan from mature tissues. *Turkish Journal of Agriculture and Forestry* 45(3): 356–364 (<https://doi.org/10.3906/tar-2004-107>).

Karina, S. R. S., Eduardo, V. C., René, G. H., and Humberto, C. V. J. 2021. Mixture of vegetable extracts and silver nanoparticles as disinfectant agents in the in vitro propagation of *Dendrobium nobile* Lindl. *Propagation of Ornamental Plants* 21(2): 58–64.

Kumar, A., Chauhan, S., Rattan, S., Warghat, A. R., Kumar, D., and Bhargava, B. 2022. In vitro propagation and phyto-chemical assessment of *Cymbidium aloifolium* (L.) Sw.: An orchid of pharma-horticultural importance. *South African Journal of Botany* 144: 261–269 (<https://doi.org/10.1016/j.sajb.2021.06.030>).

- Latunra, A. I., Tuwo, M., and Rezky, N. (2021). In vitro propagation of *Vanda tricolor* Lindl. var. *suavis* protocorm on media containing liquid organic fertilizer as a substitute for MS media. *IOP Conference Series: Earth and Environmental Science* 886: art. 012006 (<https://doi.org/10.1088/1755-1315/886/1/012006>).
- Lawrie, M. D., Layina, Z., Ningtias, D. R., Alifianto, F. N., Indrianto, A., Purwantoro, A., and Semiarti, E. 2021. In vitro germination and flowering of *Dendrobium capra* J.J. Smith, an endemic orchid of Java. *HAYATI Journal of Biosciences* 28(2): 172–180 (<https://doi.org/10.4308/hjb.28.2.172>).
- Li, N., Yang, L., Chen, P., and Li, L. 2021. Induction of protocorm-like bodies and establishment of plant regeneration system in *Dendrobium pulchellum*. *Zhiwu Shengli Xuebao/Plant Physiology Journal* 57(12): 2387–2392 (<https://doi.org/10.13592/j.cnki.ppj.2021.0221>).
- Luan, V. Q., Tung, H. T., Hien, V. T., Khai, H. D., Cuong, D. M., Huong, T. T., Vinh, B. V. T., Tu, V. T., and Nhut, D. T. 2021. Effect of factors on growth and development of *Dendrobium officinale* Kimura et Migo cultured in vitro and ex vitro. *Vietnam Journal of Biotechnology* 19(2): 321–335 (<https://doi.org/10.15625/1811-4989/14543>).
- Nabieva, A. Y. 2021. Asymbiotic seed germination and in vitro seedling development of *Orchis militaris*, an endangered orchid in Siberia. *Journal of Genetic Engineering and Biotechnology* 19(1): art. 122 (<https://doi.org/10.1186/s43141-021-00223-1>).
- Obsuwan, K., Deesubin, P., Tongam, A., and Juneenat, O. 2020. Influence of paclobutrazol on growth of *Dendrobium* 'Sonia Jo Daeng' under salt stress condition in tissue culture. *Science, Engineering and Health Studies* 15: art. 170016.
- Pallandre, J.-M. 2020. El cultivo in vitro de orquídeas. *Orquideología* 37(2): 195–204.
- Pereira, S. T. S., Vendrame, W. A., Lopes Pivetta, K. F., Sorgato, J. C., and de Faria, R. T. 2021. Efficiency of cryoprotectors for cryopreservation of two orchid species from Americas. *Rodriguesia* 72: art. e00352020 (<https://doi.org/10.1590/2175-7860202172123>).
- Poniewozik, M., Szot, P., and Parzymies, M. 2021. Tissue culture multiplication of *Paphiopedilum insigne* depending on the medium type, growth regulators and natural supplements. *Acta Scientiarum Polonorum, Hortorum Cultus* 20(4): 125–134 (<https://doi.org/10.24326/ASPHC.2021.4.11>).
- Puspitaningtyas, D. M. and Handini, E. 2021. Seed germination evaluation of *Phalaenopsis amabilis* in various media for long-term conservation. *Biodiversitas* 22(11): 5231–5238 (<https://doi.org/10.13057/biodiv/d221162>).
- Sasamori, M. H., Júnior, D. E., and Droste, A. 2021. Optimal conditions for in vitro culture of *Cattleya cernua*, a small orchid native of Atlantic Forest and Cerrado. *Rodriguesia* 72: art. e01982019 (<https://doi.org/10.1590/2175-7860202172059>).
- Sembi, J. K., Pathak, P., and Verma, J. 2020. Regeneration competence of leaf explants in *Cymbidium eburneum* Lindl. (Orchidaceae). *Journal of the Orchid Society of India* 34: 17–21.

Soares, J. S., Sorgato, J. C., Ribeiro, L. M., and Ramos, J. M. C. 2021. Teste de viabilidade de sementes de orquídeas nativas do Cerrado Brasileiro | Seed viability test of orchids native to the Brazilian savanna. *Pesquisa Agropecuaria Tropical* 51: art. e67069 (<https://doi.org/10.1590/1983-40632021v51e67069>).

Suwannarach, N., Kumla, J., Rachanarin, C., and Srimuang, K. O. 2021. In vitro symbiotic seed germination of *Epipactis flava* (Orchidaceae) promoted by endophytic fungus, *Tulasnella puhinrongklaensis*. *Chiang Mai Journal of Science* 48(3): 787–792.

Thakur, B. and Pathak, P. 2020. In vitro propagation of *Herminium lanceum* (Thunb. ex Sw.) Vuijk (Orchidaceae), through asymbiotic seed germination: a therapeutically important and endangered orchid from northwestern Himalayas. *Journal of the Orchid Society of India* 34: 61–67.

Thammasiria, K. 2021. Development of cryopreservation of endangered Thai orchid species. *Acta Horticulturae* 1324: 11–18 (<https://doi.org/10.17660/ActaHortic.2021.1324.2>).

Tuwo, M., Latunra, A. I., and Ana, E. T. 2021. Micropropagation of *Vanda tricolor* Lindl. var. *suavis* with various concentrations of organic growth supplements. *IOP Conference Series: Earth and Environmental Science* 886: art. 012004 (<https://doi.org/10.1088/1755-1315/886/1/012004>).

Warpur, A., Chrystomo, L. Y., and Suharno, S. 2021. Pertumbuhan dan perkembangan Protocorn[sic] like bodies (PLB) anggrek Papua *Dendrobium discolor* dengan perlakuan auksin dan sitokinin. *Jurnal Biologi Papua* 13(1): 28–35 (<https://doi.org/10.31957/jbp.1299>).

Yao, L., Huang, J., and Zhang, S. 2021. An improved protocol for asymbiotic seed germination and seedling development of *Paphiopedilum tigrinum*. *Horticulturae* 7(9): art. 298 (<https://doi.org/10.3390/horticulturae7090298>).

Zettler, L. W. and Dvorak, C. J. 2021. *Tulasnella calospora* (UAMH 9824) retains its effectiveness at facilitating orchid symbiotic germination in vitro after two decades of subculturing. *Botanical Studies* 62(1): art. 14 (<https://doi.org/10.1186/s40529-021-00321-w>).

## Molecular biology

Adejobi, O. I., Guan, J., Yang, L., Hu, J.-M., Yu, A., Muraguri, S., and Liu, A. 2021. Transcriptomic analyses shed light on critical genes associated with bibenzyl biosynthesis in *Dendrobium officinale*. *Plants* 10(4): art. 633 (<https://doi.org/10.3390/plants10040633>).

Ahmad, S., Lu, C., Gao, J., Ren, R., Wei, Y., Wu, J., Jin, J., Zheng, C., Zhu, G., and Yang, F. 2021. Genetic insights into the regulatory pathways for continuous flowering in a unique orchid *Arundina graminifolia*. *BMC Plant Biology* 21(1): art. 587 (<https://doi.org/10.1186/s12870-021-03350-6>).

Ahmad, S., Lu, C., Wei, Y., Gao, J., Jin, J., Zheng, C., Zhu, G., and Yang, F. 2021. Stage specificity, the dynamic regulators and the unique orchid *Arundina graminifolia*. *International Journal of Molecular Sciences* 22(20): art. 10935 (<https://doi.org/10.3390/ijms222010935>).

Ahmad, S., Lu, C., Wei, Y., Gao, J., Jin, J., Zheng, C., Zhu, G., and Yang, F. 2022. The de novo transcriptome identifies important zinc finger signatures associated with flowering in the orchid *Arundina graminifolia*. *Scientia Horticulturae* 291: art. 110572 (<https://doi.org/10.1016/j.scienta.2021.110572>).

Ai, Y., Li, Z., Sun, W. H., Chen, J., Zhang, D., Ma, L., Zhang, Q. H., Chen, M. K., Zheng, Q. D., Liu, J. F., Jiang, Y. T., Li, B. J., Liu, X., Xu, X. Y., Yu, X., Zheng, Y., Liao, X. Y., Zhou, Z., Wang, J. Y., Wang, Z. W., Xie, T. X., Ma, S. H., Zhou, J., Ke, Y. J., Zhou, Y. Z., Lu, H. C., Liu, K. W., Yang, F. X., Zhu, G. F., Huang, L., Peng, D. H., Chen, S. P., Lan, S., Van de Peer, Y., and Liu, Z. J. 2021. The *Cymbidium* genome reveals the evolution of unique morphological traits. *Horticulture Research* 8(1): art. 255 (<https://doi.org/10.1038/s41438-021-00683-z>).

Bersweden, L., Viruel, J., Schatz, B., Harland, J., Gargiulo, R., Cowan, R. S., Calevo, J., Juan, A., Clarkson, J. J., Leitch, A. R., and Fay, M. F. 2021. Microsatellites and petal morphology reveal new patterns of admixture in *Orchis* hybrid zones. *American Journal of Botany* 108(8): 1388–1404 (<https://doi.org/10.1002/ajb2.1710>).

Bertrand, J. A. M., Gibert, A., Llauro, C., and Panaud, O. 2021. Whole plastid genome-based phylogenomics supports an inner placement of the *O. insectifera* group rather than a basal position in the rapidly diversifying *Ophrys* genus (Orchidaceae). *Botany Letters* 168(3): 452–457 (<https://doi.org/10.1080/23818107.2021.1893216>).

Bhinija, K., Huehne, P. S., Mongkolsuk, S., Sitthimonchai, S., and Satayavivad, J. 2022. A short-chain dehydrogenase/reductase (SDR) detection for the isoflavone reductase gene in *Bulbophyllum* and other orchids. *South African Journal of Botany* 144: 295–304 (<https://doi.org/10.1016/j.sajb.2021.08.034>).

Brandrud, M. K., Baar, J., Lorenzo, M. T., Athanasiadis, A., Bateman, R. M., Chase, M. W., Hedrén, M., and Paun, O. 2020. Phylogenomic relationships of diploids and the origins of allotetraploids in *Dactylorhiza* (Orchidaceae). *Systematic Biology* 69(1): 91–109 (<https://doi.org/10.1093/sysbio/syz035>).

Buddhachat, K., Sriparoj, N., Punjansing, T., Kongbangkerd, A., Inthima, P., Tanming, W., and Kosavitikul, P. 2022. Species discrimination and hybrid detection in terrestrial orchids using Bar-HRM: A case of the *Calanthe* group. *Plant Gene* 29: art. 100349 (<https://doi.org/10.1016/j.plgene.2021.100349>).

Chen, Y., Hu, B., Zhang, F., Luo, X., and Xie, J. 2021. Cytological observation and transcriptome comparative analysis of self-pollination and cross-pollination in *Dendrobium officinale*. *Genes* 12(3): art. 432 (<https://doi.org/10.3390/genes12030432>).

Chen, Y. Y., Hsiao, Y. Y., Li, C., Yeh, C. M., Mitsuda, N., Yang, H. X., Chiu, C. C., Chang, S. B., Liu, Z. J., and Tsai, W. C. 2021. The ancestral duplicated DL/CRC orthologs, PeDL1 and PeDL2, function in orchid reproductive organ innovation. *Journal of Experimental Botany* 72(15): 5442–5461 (<https://doi.org/10.1093/jxb/erab195>).



- Cheng, L., Xu, Y., Li, Z., Zhao, Y., He, F., and Wang, Y. 2021. Characterization of the complete chloroplast genome of the Chinese endangered species *Cymbidium iridioides* D. Don. *Mitochondrial DNA Part B: Resources* 6(9): 2665–2666 (<https://doi.org/10.1080/23802359.2021.1964398>).
- Chi, M.-W., Liu, D.-K., Zhou, C.-Y., Li, M.-H., and Lan, S.-R. 2021. The complete plastid genome of *Thrixspermum centipeda* (Orchidaceae, Aeridinae). *Mitochondrial DNA Part B: Resources* 6(3): 1245–1246 (<https://doi.org/10.1080/23802359.2021.1906171>).
- Chumová, Z., Závěská, E., Hloušková, P., Ponert, J., Schmidt, P. A., Čertner, M., Mandáková, T., and Trávníček, P. 2021. Repeat proliferation and partial endoreplication jointly shape the patterns of genome size evolution in orchids. *The Plant Journal* 107(2): 511–524 (<https://doi.org/10.1111/tpj.15306>).
- Dwiati, M. and Susanto, A. H. 2021. Intergeneric hybridization between *Phalaenopsis* 2166 and *Vanda* 'Saint Valentine': Characterization of parents using *ndhE* cpDNA partial sequence. *Journal of Tropical Biodiversity and Biotechnology* 6(3): art. Jtbb65658 (<https://doi.org/10.22146/JTBB.65658>).
- Fan, Z. F., Yu, D. Y., and Ma, C. L. 2021. The complete chloroplast genome sequence of *Phalaenopsis wilsonii* Rolfe, a vulnerable wild moth orchid species (Orchidaceae). *Mitochondrial DNA Part B: Resources* 6(10): 2903–2905 (<https://doi.org/10.1080/23802359.2021.1923420>).
- Fang, L., Kong, X., Wen, Y., Li, J., Yin, Y., Li, L., Ma, G., Wu, K., and Zeng, S. 2021. Characterization of embryo and protocorm development of *Paphiopedilum spicerianum*. *Plant Physiology and Biochemistry* 167: 1024–1034 (<https://doi.org/10.1016/j.plaphy.2021.09.001>).
- Gargiulo, R., Kull, T., and Fay, M. F. 2021. Effective double-digest RAD sequencing and genotyping despite large genome size. *Molecular Ecology Resources* 21(4): 1037–1055 [*Cypripedium calceolus*] (<https://doi.org/10.1111/1755-0998.13314>).
- Górniak, M., Jakubská-Busse, A., and Zietara, M. S. 2021. Genetic history of the remnant population of the rare orchid *Cypripedium calceolus* based on plastid and nuclear rDNA. *Genes* 12(6): art. 940 (<https://doi.org/10.3390/genes12060940>).
- Górniak, M., Szlachetko, D. L., Olędryńska, N., Naczek, A. M., Mieszkowska, A., Boss, L., and Zietara, M. S. 2021. Species phylogeny versus gene trees: A case study of an incongruent data matrix based on *Paphiopedilum* Pfitz. (Orchidaceae). *International Journal of Molecular Sciences* 22(21): art. 11393 (<https://doi.org/10.3390/ijms222111393>).
- Guo, B., Zeng, S., Yin, Y., Li, L., Ma, G., Wu, K., and Fang, L. 2021. Characterization of phytohormone and transcriptome profiles during protocorm-like bodies development of *Paphiopedilum*. *BMC Genomics* 22(1): art. 806 (<https://doi.org/10.1186/s12864-021-08087-y>).
- Guo, Y.-Y., Yang, J.-X., Li, H.-K., and Zhao, H.-S. 2021. Chloroplast genomes of two species of *Cypripedium*: Expanded genome size and proliferation of AT-biased repeat sequences. *Frontiers in Plant Science* 12: art. 609729 (<https://doi.org/10.3389/fpls.2021.609729>).

Hartati, S., Samanhudi, and Cahyono, O. (2021). The appearance of DNA bands pattern based on the result of primary selection of RAPD orchid *Phaius* spp. *IOP Conference Series: Earth and Environmental Science* 905: art. 012147 (<https://doi.org/10.1088/1755-1315/905/1/012147>).

He, L. F., Qiang, S. J., and Zhang, Y. H. 2021. The complete chloroplast genome of *Pleione maculata*, an orchid with important ornamental value and medicinal value. *Mitochondrial DNA Part B: Resources* 6(8): 2263–2265 (<https://doi.org/10.1080/23802359.2021.1948366>).

He, Z.-X., Li, T.-Z., Zheng, X.-L., Gu, Y.-F., Zhang, R., and Chen, J.-B. 2021. The complete chloroplast genome sequence of *Thrixspermum amplexicaule* (Orchidaceae, Aeridinae). *Mitochondrial DNA Part B: Resources* 6(10): 3036–3037 (<https://doi.org/10.1080/23802359.2021.1959459>).

Ho, V. T., Tran, T. K. P., Vu, T. T. T., and Widiarsih, S. 2021. Comparison of matK and rbcL DNA barcodes for genetic classification of jewel orchid accessions in Vietnam. *Journal of Genetic Engineering and Biotechnology* 19(1): art. 93 (<https://doi.org/10.1186/s43141-021-00188-1>).

Hon, Y. K., Yong, C. S. Y., Abdullah, J. O., and Go, R. 2021. Development of species-specific SCAR markers for identification and authentication of three rare Peninsular Malaysian endemic *Coelogyne* (Orchidaceae) orchids. *F1000Research* 9: 1–14 (<https://doi.org/10.12688/F1000RESEARCH.26170.2>).

Huang, H., Kuo, Y. W., Chuang, Y. C., Yang, Y. P., Huang, L. M., Jeng, M. F., Chen, W. H., and Chen, H. H. 2021. Terpene synthase-b and terpene synthase-e/f genes produce monoterpenes for *Phalaenopsis bellina* floral scent. *Frontiers in Plant Science* 12: art. 700958 (<https://doi.org/10.3389/fpls.2021.700958>).

Huang, H., Wang, H., Tong, Y., and Wang, Y.-H. 2021. Identification and characterization of HD-Zip genes reveals their roles in stresses responses and facultative crassulacean acid metabolism in *Dendrobium catenatum*. *Scientia Horticulturae* 285: art. 110058 (<https://doi.org/10.1016/j.scienta.2021.110058>).

Huang, L. M., Huang, H., Chuang, Y. C., Chen, W. H., Wang, C. N., and Chen, H. H. 2021. Evolution of terpene synthases in Orchidaceae. *International Journal of Molecular Sciences* 22(13): art. 6947 (<https://doi.org/10.3390/ijms22136947>).

Huang, W. C., Liu, Z. J., Jiang, K., Luo, Y. B., Jin, X. H., Zhang, Z., Xu, R. H., Muchuku, J. K., Musungwa, S. S., Yukawa, T., Wang, W., Zeng, X. H., Zhang, H. M., Cai, Y. M., Hu, C., and Lan, S. R. 2022. Phylogenetic analysis and character evolution of tribe Arethuseae (Orchidaceae) reveal a new genus *Mengzia*. *Molecular Phylogenetics and Evolution* 167: art. 107362 (<https://doi.org/10.1016/j.ympev.2021.107362>).

Jałalski, M., Minasiwicz, J., Caius, J., May, M., Selosse, M. A., and Delannoy, E. 2021. The genomic impact of mycoheterotrophy in orchids. *Frontiers in Plant Science* 12: art. 632033 (<https://doi.org/10.3389/fpls.2021.632033>) [*Epipogium*, *Neottia*].

Jia, N., Wang, J. J., Wang, Y. J., Ye, W., Liu, J. M., Jiang, J. L., Sun, J., Yan, P. P., Wang, P. Y., Wang, F. Z., and Fan, B. 2021. The light-induced WD40-repeat transcription factor DcTTG1 regulates anthocyanin biosynthesis in *Dendrobium candidum*. *Frontiers in Plant Science* 12: art. 633333 (<https://doi.org/10.3389/fpls.2021.633333>).

Jia, N., Wang, J. J., Liu, J. M., Jiang, J. L., Sun, J., Yan, P. P., Sun, Y. F., Wan, P. Yu, Ye, W., and Fan, B. 2021. DcTT8, a bHLH transcription factor, regulates anthocyanin biosynthesis in *Dendrobium candidum*. *Plant Physiology and Biochemistry* 162: 603–612 (<https://doi.org/10.1016/j.plaphy.2021.03.006>).

Jiang, M., Zhu, Y., Wu, Q., and Zhang, H. 2021. Complete chloroplast genome of a rare and endangered plant species *Phalaenopsis zhejiangensis*: genomic features and phylogenetic relationship within Orchidaceae. *Mitochondrial DNA Part B: Resources* 6(10): 2872–2879 (<https://doi.org/10.1080/23802359.2021.1972049>).

Kanchan, M., Ramkumar, T. R., Himani, and Sembi, J. K. 2021. Genome-wide characterization and expression profiling of the Phospholipase C (PLC) gene family in three orchids of economic importance. *Journal of Genetic Engineering and Biotechnology* 19(1): art. 124 (<https://doi.org/10.1186/s43141-021-00217-z>) [*Apostasia shenzhenica*, *Dendrobium catenatum*, *Phalaenopsis equestris*].

Kao, H., Zhao, Y., Yang, M., Sun, Y., and Cheng, J. 2021. The complete chloroplast genome sequences of an endangered orchid species *Paphiopedilum parishii* (Orchidaceae). *Mitochondrial DNA Part B: Resources* 6(9): 2521–2522 (<https://doi.org/10.1080/23802359.2021.1959437>).

Li, H., Ye, W., Wang, Y., Chen, X., Fang, Y., and Sun, G. 2021. RNA sequencing-based exploration of the effects of far-red light on lncRNAs involved in the shade-avoidance response of *D. officinale*. *PeerJ* 9: art. e10769 (<https://doi.org/10.7717/peerj.10769>) [*Dendrobium*].

Li, N., Dong, Y., Lv, M., Qian, L., Sun, X., Liu, L., Cai, Y., and Fan, H. 2021. Combined analysis of volatile terpenoid metabolism and transcriptome reveals transcription factors related to terpene synthase in two cultivars of *Dendrobium officinale* flowers. *Frontiers in Genetics* 12: art. 661296 (<https://doi.org/10.3389/fgene.2021.661296>).

Li, X. L., Fan, J. Z., Luo, S. M., Yin, L., Liao, H. Y., Cui, X. Q., He, J. Z., Zeng, Y. H., Qu, J. J., and Bu, Z. Y. 2021. Comparative transcriptome analysis identified important genes and regulatory pathways for flower color variation in *Paphiopedilum hirsutissimum*. *BMC Plant Biology* 21(1): art. 495 (<https://doi.org/10.1186/s12870-021-03256-3>).

Li, Y., Zhang, B., Wang, Y., Gong, X., and Yu, H. 2021. DOTFL1 affects the floral transition in orchid *Dendrobium Chao Praya Smile*. *Plant Physiology* 186(4): 2021–2036 (<https://doi.org/10.1093/plphys/kiab200>).

Lin, J.-B., Wang, W.-Y., Zou, H., and Dai, Y.-M. 2020. Cloning and expression analysis of DoSMT2 gene in *Dendrobium officinale*. *Journal of Tropical and Subtropical Botany* 28(6): 591–598 (<https://doi.org/10.11926/jtsb.4234>).

Ling, Q., Cheng, L., Li, Z., Zhao, Y., and Wang, Y. 2021. Characterization of the complete chloroplast genome of a Chinese Endangered species *Cymbidium mastersii*. *Mitochondrial DNA Part B: Resources* 6(3): 708–709 (<https://doi.org/10.1080/23802359.2020.1851152>).

- Liu, C. Q., Kang, N., Liu, X., Chen, Y., Tao, J., Zhang, Y., Zhang, Y. Y., Li, Y. L., Tang, G. D., and Li, Y. L. 2021. Complete plastid genome sequence of *Oberonioides microtatantha* (Schltr.) Szlach. (Orchidaceae), an endemic herb in China. *Mitochondrial DNA Part B: Resources* 6(2): 703–704 (<https://doi.org/10.1080/23802359.2020.1851150>).
- Liu, C., Xi, H., Chen, X., Zhao, Y., Yao, J., Si, J., and Zhang, L. 2021. Genome-wide identification and expression pattern of alkaline/neutral invertase gene family in *Dendrobium catenatum*. *Biotechnology & Biotechnological Equipment* 35(1): 527–537 (<https://doi.org/10.1080/13102818.2021.1901610>).
- Liu, F., Xiao, X., An, M., and Li, Z. 2021. The complete chloroplast genome of *Dendrobium comatum* (Orchidaceae). *Mitochondrial DNA Part B: Resources* 6(11): 3229–3230 (<https://doi.org/10.1080/23802359.2021.1990152>).
- Lucibelli, F., Valoroso, M. C., Theißen, G., Nolden, S., Mondragon-palomino, M., and Aceto, S. 2021. Extending the toolkit for beauty: Differential co-expression of DROOPING LEAF-like and class B MADS-box genes during *Phalaenopsis* flower development. *International Journal of Molecular Sciences* 22(13): art. 7025 (<https://doi.org/10.3390/ijms22137025>).
- Ma, X., Tang, K., Tang, Z., Dong, A., Meng, Y., and Wang, P. 2021. Organ-specific, integrated omics data-based study on the metabolic pathways of the medicinal plant *Bletilla striata* (Orchidaceae). *BMC Plant Biology* 21(1): art. 504 (<https://doi.org/10.1186/s12870-021-03288-9>).
- Mauad, A. V. S. R., Vieira, L. D. N., De Baura, V. A., Balsanelli, E., De Souza, E. M., Chase, M. W., and De Camargo Smidt, E. 2021. Plastid phylogenomics of Pleurothallidinae (Orchidaceae): Conservative plastomes, new variable markers, and comparative analyses of plastid, nuclear, and mitochondrial data. *PLoS ONE* 16: art. e0256126 (<https://doi.org/10.1371/journal.pone.0256126>).
- Mi, Z.-Y., Zhao, Q., Lu, C., Zhang, Q., Li, L., Liu, S., Wang, S.-Q., Wang, Z.-Z., and Niu, J.-F. 2021. Genome-wide analysis and the expression pattern of the MADS-Box gene family in *Bletilla striata*. *Plants* 10(10): art. 2184 (<https://doi.org/10.3390/plants10102184>).
- Niu, Z. T., Zhu, F., Fan, Y. J., Li, C., Zhang, B. H., Zhu, S. Y., Hou, Z. Y., Wang, M. T., Yang, J. P., Xue, Q. Y., Liu, W., and Ding, X. Y. 2021. The chromosome-level reference genome assembly for *Dendrobium officinale* and its utility of functional genomics research and molecular breeding study. *Acta Pharmaceutica Sinica B* 11(7): 2080–2092 (<https://doi.org/10.1016/j.apsb.2021.01.019>).
- Peakall, R., Wong, D. C. J., Phillips, R. D., Ruibal, M., Eyles, R., Rodriguez-Delgado, C., and Linde, C. C. 2021. A multitiered sequence capture strategy spanning broad evolutionary scales: Application for phylogenetic and phylogeographic studies of orchids. *Molecular Ecology Resources* 21(4): 1118–1140 (<https://doi.org/10.1111/1755-0998.13327>).
- Pérez-Escobar, O. A., Dodsworth, S., Bogarín, D., Bellot, S., Balbuena, J. A., Schley, R. J., Kikuchi, I. A., Morris, S. K., Epitawalage, N., Cowan, R., Maurin, O., Zuntini, A., Arias, T., Serna-Sánchez, A., Gravendeel, B., Jimenez, M. F. T., Nargar, K., Chomicki, G., Chase, M. W., Leitch, I. J., Forest, F., and Baker, W. J. 2021. Hundreds of nuclear and plastid loci yield novel insights into orchid relationships. *American Journal of Botany* 108(7): 1–15 (<https://doi.org/10.1002/ajb2.1702>).

- Pham, D. T. K. 2021. Genetic relationship analysis of *Dendrobium anosmum* Lindl. var. *semialba* based on the chloroplast matK and rbcL genes. *The Journal of Agriculture and Development* 20(03): 41–49 (<https://doi.org/10.52997/jad.6.03.2021>).
- Ramírez-Ramírez, J. A., Madrigal, Y., Alzate, J. F., and Pabón-Mora, N. 2021. Evolution and expression of the MADS-box flowering transition genes AGAMOUS-like 24/SHORT VEGETATIVE PHASE with emphasis in selected Neotropical orchids. *Cells & Development*: art. 203755 (<https://doi.org/10.1016/j.cdev.2021.203755>).
- Raskoti, B. B. and Ale, R. 2021. DNA barcoding of medicinal orchids in Asia. *Scientific Reports* 11(1): art. 23651 (<https://doi.org/10.1038/s41598-021-03025-0>).
- Ren, L. Y., Zhao, H., Liu, X. L., Zong, T. K., Qiao, M., Liu, S. Y., and Liu, X. Y. 2021. Transcriptome reveals roles of lignin-modifying enzymes and abscisic acid in the symbiosis of *Mycena* and *Gastrodia elata*. *International Journal of Molecular Sciences* 22(12): art. 6557 (<https://doi.org/10.3390/ijms22126557>).
- Shan, T., Yin, M., Wu, J., Yu, H., Liu, M., Xu, R., Wang, J., Peng, H., Zha, L., and Gui, S. 2021. Comparative transcriptome analysis of tubers, stems, and flowers of *Gastrodia elata* Blume reveals potential genes involved in the biosynthesis of phenolics. *Fitoterapia* 153: art. 104988 (<https://doi.org/10.1016/j.fitote.2021.104988>).
- Singh, N. and Kumaria, S. 2021. Molecular docking study of CHS gene from a medicinally important orchid, *Coelogyne ovalis* Lindl. *Current Science* 121(10): 1323–1327 (<https://doi.org/10.18520/cs/v121/i10/1323-1327>).
- Song, C., Li, G., Dai, J., and Deng, H. 2021. Genome-wide analysis of PEBP genes in *Dendrobium huoshanense*: Unveiling the antagonistic functions of FT/TFL1 in flowering time. *Frontiers in Genetics* 12: art. 687689 (<https://doi.org/10.3389/fgene.2021.687689>).
- Tang, H., Tang, L., Shao, S., Peng, Y., Li, L., and Luo, Y. 2021. Chloroplast genomic diversity in *Bulbophyllum* section *Macrocaulia* (Orchidaceae, Epidendroideae, Malaxideae): Insights into species divergence and adaptive evolution. *Plant Diversity* 43(5): 350–361 (<https://doi.org/10.1016/j.pld.2021.01.003>).
- Teng, Y., Yang, L., and Zhang, Y. 2021. The complete chloroplast genome of *Eria lasiopetala* (Willd.) Ormerod. *Mitochondrial DNA Part B: Resources* 6(12): 3388–3390 (<https://doi.org/10.1080/23802359.2021.1996293>).
- Tsutsumi, C., Maeda, A., Abe, A., Yamashita, Y., Yukawa, T., and Kakishima, S. 2021. Genetic diversification of *Oberonia* (Orchidaceae) in Japan, with implications for the species taxonomy. *Botany* 47(3): 131–141 ([https://doi.org/10.50826/bnmnsbot.47.3\\_131](https://doi.org/10.50826/bnmnsbot.47.3_131)).
- Tu, X. D., Liu, D. K., Xu, S. W., Zhou, C. Y., Gao, X. Y., Zeng, M. Y., Zhang, S., Chen, J. L., Ma, L., Zhou, Z., Huang, M. Z., Chen, S. P., Liu, Z. J., Lan, S. R., and Li, M. H. 2021. Plastid phylogenomics improves resolution of phylogenetic relationship in the *Cheirostylis* and *Goodyera* clades of Goodyerinae (Orchidoideae, Orchidaceae). *Molecular Phylogenetics and Evolution* 164: art. 107269 (<https://doi.org/10.1016/j.ympev.2021.107269>).



- Unruh, S. A., Mckain, M. R., Lee, Y.-I., Yukawa, T., McCormick, M. K., Shefferson, R. P., Smithson, A., Leebens-Mack, J. H., and Pires, J. C. 2018. Phylotranscriptomic analysis and genome evolution of the Cypripedioideae (Orchidaceae). *American Journal of Botany* 105(4): 631–640 (<https://doi.org/10.1002/ajb2.1047>).
- Wang, C., Tian, M., and Zhang, Y. 2021. Characterization of microRNAs involved in asymbiotic germination of *Bletilla striata* (Orchidaceae) seeds. *Plant Physiology and Biochemistry* 167: 163–173 (<https://doi.org/10.1016/j.plaphy.2021.07.032>).
- Wang, M., Yang, J., Xue, Q., Liu, W., Niu, Z., and Ding, X. 2021. The complete chloroplast genome sequence of *Oxystophyllum changjiangense* (Orchidaceae). *Mitochondrial DNA Part B: Resources* 6(9): 2638–2639 (<https://doi.org/10.1080/23802359.2021.1962766>).
- Wang, Q. Q., Zhu, M. J., Yu, X., Bi, Y. Y., Zhou, Z., Chen, M. K., Chen, J., Zhang, D., Ai, Y., Liu, Z. J., and Lan, S. 2021. Genome-wide identification and expression analysis of terpene synthase genes in *Cymbidium faberi*. *Frontiers in Plant Science* 12: art. 751853 (<https://doi.org/10.3389/fpls.2021.751853>).
- Wang, Y., Chen, Y., Wei, Q., Wan, H., and Sun, C. 2021. Phylogenetic relationships of sucrose transporters (SUTs) in plants and genome-wide characterization of SUT genes in Orchidaceae reveal roles in floral organ development. *PeerJ* 9: art. e11961 (<https://doi.org/10.7717/peerj.11961>).
- Wang, Y. and Liu, A. 2021. Genomic characterization and expression analysis of the SnRK family genes in *Dendrobium officinale* Kimura et Migo (Orchidaceae). *Plants* 10(3): art. 479 (<https://doi.org/10.3390/plants10030479>).
- Wang, Z. J., Jiang, W. M., Liu, Y. Y., Meng, X. X., Su, X. L., Cao, M. Y., Wu, L. P., Yu, N. J., Xing, S. H., and Peng, D. Y. 2021. Putative genes in alkaloid biosynthesis identified in *Dendrobium officinale* by correlating the contents of major bioactive metabolites with genes expression between Protocorm-like bodies and leaves. *BMC Genomics* 22(1): art. 579 (<https://doi.org/10.1186/s12864-021-07887-6>).
- Wettewa, E. and Wallace, L. E. 2021. Molecular phylogeny and ancestral biogeographic reconstruction of *Platanthera* subgenus *Limnorchis* (Orchidaceae) using target capture methods. *Molecular Phylogenetics and Evolution* 157: art. 107070 (<https://doi.org/10.1016/j.ympev.2021.107070>).
- Wirajagat, G. C., Febryanti, N. L. P. K., Puspitasari, F., Sundari, D., Gutierrez-Marcos, J., and Semiarti, E. 2021. Detection of AtRKD4 protein during induction of somatic embryogenesis in *Dendrobium lineale* Rolfe transgenic orchids carrying 35S::GR::AtRKD4. *Journal of Tropical Biodiversity and Biotechnology* 6(2): art. jtbb61783 (<https://doi.org/10.22146/JTBB.61783>).
- Wu, H.-Y., Chan, K.-T., But, G. W.-C., and Shaw, P.-C. 2021. Assessing the reliability of medicinal *Dendrobium* sequences in GenBank for botanical species identification. *Scientific Reports* 11(1): art. 3439 (<https://doi.org/10.1038/s41598-021-82385-z>).
- Xi, H. X., Liu, J. J., Li, Q., Chen, X. L., Liu, C., Zhao, Y. X., Yao, J. B., Chen, D. H., Si, J. P., Liu, C. Hong, and Zhang, L. 2021. Genome-wide identification of Cellulose-like synthase D gene family in *Dendrobium catenatum*. *Biotechnology & Biotechnological Equipment* 35(1): 1163–1176 (<https://doi.org/10.1080/13102818.2021.1941252>).

Xia, K., Liu, D. K., and Wang, J. Y. 2021. The complete chloroplast genome sequence of *Phalaenopsis wilsonii* (Orchidaceae). *Mitochondrial DNA Part B: Resources* 6(11): 3303–3305 (<https://doi.org/10.1080/23802359.2021.1994889>).

Yang, F. X., Gao, J., Wei, Y. L., Ren, R., Zhang, G. Q., Lu, C. Q., Jin, J. P., Ai, Y., Wang, Y. Q., Chen, L. J., Ahmad, S., Zhang, D. Y., Sun, W. H., Tsai, W. C., Liu, Z. J., and Zhu, G. F. 2021. The genome of *Cymbidium sinense* revealed the evolution of orchid traits. *Plant Biotechnology Journal* 19(12): 2501–2516 (<https://doi.org/10.1111/pbi.13676>).

Yang, L., Wu, Q., Yang, M., Zhang, D., Dong, S., and Cheng, J. 2021. The complete chloroplast genome sequence of the endemic and rare orchid *Nothodoritis zhejiangensis* (Orchidaceae) in China. *Mitochondrial DNA Part B: Resources* 6(10): 2931–2932 (<https://doi.org/10.1080/23802359.2021.1972867>).

Yi, Y., Liu, L., Zhou, W., Peng, D., Han, R., and Yu, N. 2021. Characterization of GMPP from *Dendrobium huoshanense* yielding GDP-D-mannose. *Open Life Sciences* 16(1): 102–107 (<https://doi.org/10.1515/biol-2021-0015>).

Yuan, Y., Jin, X. H., Liu, J., Zhao, X., Zhou, J. H., Wang, X., Wang, D., Lai, C. J. S., Xu, W., Huang, J. W., Zha, L. P., Liu, D. H., Ma, X., Wang, L., Zhou, M. Y., Jiang, Z., Meng, H. B., Peng, H. S., Liang, Y. T., Li, R. Q., Jiang, C., Zhao, Y. Y., Nan, T. G., Jin, Y., Zhan, Z. L., Yang, J., Jiang, W. K., and Huang, L. Q. 2018. The *Gastrodia elata* genome provides insights into plant adaptation to heterotrophy. *Nature Communications* 9: art. 1615 (<https://doi.org/10.1038/s41467-018-03423-5>).

Zeng, D.-Q., Zhang, M.-Z., He, C.-M., Wang, H.-B., Yu, Z.-M., Si, C., Zhao, C.-H., Li, D.-M., and Duan, J. 2021. Identification and analysis of WOX transcription factor in *Dendrobium officinale*. *Journal of Tropical and Subtropical Botany* 29(3): 301–310 (<https://doi.org/10.11926/jtsb.4294>).

Zhan, X., Qian, Y., and Mao, B. 2021. Identification and expression profiling of nonphosphorus glycerolipid synthase genes in response to abiotic stresses in *Dendrobium catenatum*. *Plants* 10(6): art. 1204 (<https://doi.org/10.3390/plants10061204>).

Zhang, C., Chen, J., Huang, W., Song, X., and Niu, J. 2021. Transcriptomics and metabolomics reveal purine and phenylpropanoid metabolism response to drought stress in *Dendrobium sinense*, an endemic orchid species in Hainan Island. *Frontiers in Genetics* 12: art. 692702 (<https://doi.org/10.3389/fgene.2021.692702>).

Zhang, F.-P., Yin, Z.-L., and He, H.-P. 2021. Characterization of the complete chloroplast genome of *Dendrobium christyanum* and its phylogenetic analysis. *Mitochondrial DNA Part B: Resources* 6(9): 2605–2606 (<https://doi.org/10.1080/23802359.2021.1961629>).

Zhang, G. Q., Chen, G. Z., Chen, L. J., Zhai, J. W., Huang, J., Wu, X. Y., Li, M. H., Peng, D. H., Rao, W. H., Liu, Z. J., and Lan, S. R. 2021. Phylogenetic incongruence in *Cymbidium* orchids. *Plant Diversity* 43: 452–461 (<https://doi.org/10.1016/j.pld.2021.08.002>).

Zhang, L., Li, C., Yang, D., Wang, Y., Yang, Y., and Sun, X. 2021. Genome-wide analysis of the TCP transcription factor genes in *Dendrobium catenatum* Lindl. *International Journal of Molecular Sciences* 22(19): art. 10269 (<https://doi.org/10.3390/ijms221910269>).

Zhang, M., Yu, Z., Zeng, D., Si, C., Zhao, C., Wang, H., Li, C., He, C., and Duan, J. 2021. Transcriptome and metabolome reveal salt-stress responses of leaf tissues from *Dendrobium officinale*. *Biomolecules* 11(5): art. 736 (<https://doi.org/10.3390/biom11050736>).

Zhang, S., Zeng, M. Y., Gao, X. Y., Li, M. H., and Chen, S. P. 2021. The complete plastome of *Bulbophyllum pingnanense* (Orchidaceae: Dendrobiinae). *Mitochondrial DNA Part B: Resources* 6(11): 3193–3195 (<https://doi.org/10.1080/23802359.2021.1989331>).

Zhang, T., Cui, Z., Li, Y., Kang, Y., Song, X., Wang, J., and Zhou, Y. 2021. Genome-wide identification and expression analysis of MYB transcription factor superfamily in *Dendrobium catenatum*. *Frontiers in Genetics* 12: art. 714696 (<https://doi.org/10.3389/fgene.2021.714696>).

Zhang, W., Zhang, G., Zeng, P., Zhang, Y., Hu, H., Liu, Z., and Cai, J. 2021. Genome sequence of *Apostasia ramifera* provides insights into the adaptive evolution in orchids. *BMC Genomics* 22(1): art. 536 (<https://doi.org/10.1186/s12864-021-07852-3>).

Zhang, Y., Zhang, G. Q., Zhang, D., Liu, X. D., Xu, X. Y., Sun, W. H., Yu, X., Zhu, X., Wang, Z. W., Zhao, X., Zhong, W. Y., Chen, H., Yin, W. L., Huang, T., Niu, S. C., and Liu, Z. J. 2021. Chromosome-scale assembly of the *Dendrobium chrysotoxum* genome enhances the understanding of orchid evolution. *Horticulture Research* 8(1): art. 183 (<https://doi.org/10.1038/s41438-021-00621-z>).

Zhao, C.-H., Yu, Z.-M., He, C.-M., Wang, H.-B., Si, C., Zhang, M.-Z., and Duan, J. 2020. Comparison of several total RNA extraction methods from flowers of *Dendrobium officinale*. *Journal of Tropical and Subtropical Botany* 28(5): 479–486 (<https://doi.org/10.11926/jtsb.4202>).

Zheng, K., Cai, Y., Chen, W., Gao, Y., Jin, J., Wang, H., Feng, S., and Lu, J. 2021. Development, identification, and application of a germplasm specific SCAR marker for *Dendrobium officinale* Kimura et Migo. *Frontiers in Plant Science* 12: art. 669458 (<https://doi.org/10.3389/fpls.2021.669458>).

Zheng, Q., Wang, Y., Ou, Y., Ke, Y., Yao, Y., Wang, M., Chen, J., and Ai, Y. 2021. Research advances of genes responsible for flower colors in Orchidaceae. *Acta Horticulturae Sinica* 48(10): 2057–2072 (<https://doi.org/10.16420/j.issn.0513-353x.2021-0444>).

Zhou, Z., Ying, Z., Wu, Z., Yang, Y., Fu, S., Xu, W., Yao, L., Zeng, A., Huang, J., Lan, S., Wang, X., and Liu, Z. 2021. Anthocyanin genes involved in the flower coloration mechanisms of *Cymbidium kanran*. *Frontiers in Plant Science* 12: art. 737815 (<https://doi.org/10.3389/fpls.2021.737815>).

### **Mycorrhiza and endophytes**

Alves, M. F., Pinheiro, F., Nunes, C. E. P., Prosdocimi, F., Sarzi, D. S., Furtado, C., and Mayer, J. L. S. 2021. Reproductive development and genetic structure of the mycoheterotrophic orchid *Pogoniopsis schenckii* Cogn. *BMC Plant Biology* 21(1): art. 332 (<https://doi.org/10.1186/s12870-021-03118-y>).

An, Y.-Y., Zeng, X.-Y., Geng, K., Hyde, K. D., and Wang, Y. 2021. One new species and one new record of *Zasmidium* in China. *Biodiversity Data Journal* 9: art. e59001 (<https://doi.org/10.3897/bdj.9.e59001>) [*Cremastra*].

Calevo, J., Bazzicalupo, M., Adamo, M., Robustelli della Cuna, F. S., Voyron, S., Girlanda, M., Duffy, K. J., Giovannini, A., and Cornara, L. 2021. Floral trait and mycorrhizal similarity between an endangered orchid and its natural hybrid. *Diversity* 13(11): art. 550 (<https://doi.org/10.3390/d13110550>) [*Orchis patens*].

Chua, R. W. and Ting, A. S. Y. 2021. Fungal endophytes from Orchidaceae: Diversity and applications. In: Yadav, A. N. (ed.), *Recent Trends in Mycological Research. Fungal Biology*, pp. 391–426. Springer, Cham.: ([https://doi.org/10.1007/978-3-030-68260-6\\_14](https://doi.org/10.1007/978-3-030-68260-6_14)).

Freestone, M. W., Swarts, N. D., Reiter, N., Tomlinson, S., Sussmilch, F. C., Wright, M. M., Holmes, G. D., Phillips, R. D., and Linde, C. C. 2021. Continental-scale distribution and diversity of *Ceratobasidium* orchid mycorrhizal fungi in Australia. *Annals of Botany* 128(3): 329–343 (<https://doi.org/10.1093/aob/mcab067>).

Gao, Y., Peng, S., Hang, Y., Xie, G., Ji, N., and Zhang, M. 2022. Mycorrhizal fungus *Coprinellus disseminatus* influences seed germination of the terrestrial orchid *Cremastra appendiculata* (D. Don) Makino. *Scientia Horticulturae* 293: art. 110724 (<https://doi.org/10.1016/j.scienta.2021.110724>).

Henao-Mejía, L. M., Toro, D. R., Túpac Otero, J., and Alomia, M. S. J. 2020. Hongos presentes en raíces de *Oncidium* spp. Lindl. y sus relaciones ecológicas. *Orquideología* 37(2): 142–154.

Jakubska-Busse, A., Kędziora, A., Cieniuch, G., Korzeniowska-Kowal, A., and Bugla-Płoskońska, G. 2021. Proteomics-based identification of orchid-associated bacteria colonizing the *Epipactis albensis*, *E. helleborine* and *E. purpurata* (Orchidaceae, Neottieae). *Saudi Journal of Biological Sciences* 28(7): 4029–4038 (<https://doi.org/10.1016/j.sjbs.2021.04.002>).

Jayashankar, M. and Darsha, S. 2021. Endophytic fungal diversity of *Aerides crispa*, an epiphytic orchid. *South Asian Journal of Experimental Biology* 11(4): 482–491 ([https://doi.org/10.38150/sajeb.11\(4\).p482-491](https://doi.org/10.38150/sajeb.11(4).p482-491)).

Johnson, L. J. A. N., González-Chávez, M. D. C. A., Carrillo-González, R., Porrás-Alfaro, A., and Mueller, G. M. 2021. *Vanilla* aerial and terrestrial roots host rich communities of orchid mycorrhizal and ectomycorrhizal fungi. *Plants People Planet* 3(5): 541–552 (<https://doi.org/10.1002/ppp3.10171>).

Kaur, J. and Sharma, J. 2021. Orchid root associated bacteria: Linchpins or accessories? *Frontiers in Plant Science* 12: art. 661966 (<https://doi.org/10.3389/fpls.2021.661966>).

Lespiaucq, A. V., Jacquemyn, H., Rasmussen, H. N., and Méndez, M. 2021. Temporal turnover in mycorrhizal interactions: a proof of concept with orchids. *New Phytologist* 230(5): 1690–1699 (<https://doi.org/10.1111/nph.17291>).

Li, T., Le Gao, J., Huang, J. H., Gu, L., Zou, J., and Wu, X. J. 2021. *Phlebiopsis xuefengensis* sp. nov. from *Gastrodia elata* (Orchidaceae) in Hunan Province, Southern China. *South African Journal of Botany* 142: 299–304 (<https://doi.org/10.1016/j.sajb.2021.06.034>).

Li, Y., Kang, Z., Zhang, X., Sun, P., Jiang, X., and Han, Z. 2021. The mycorrhizal fungi of *Cymbidium* promote the growth of *Dendrobium officinale* by increasing environmental stress tolerance. *PeerJ* 9: art. e12555 (<https://doi.org/10.7717/peerj.12555>).

- López, Q. K., Castro, C. A., Curillo, D. L., Chica, E. J., Portilla, J. V., and Peña, D. F. 2021. Viability and infectivity of *Ceratobasidium* sp. encapsulated in alginate beads under different storage conditions. *Lankesteriana* 21(3): 333–340 (<https://doi.org/10.15517/lank.v21i3.49398>).
- Ma, X. Y., Kang, J. C., Hyde, K. D., Doilom, M., and Chomnunti, P. 2021. *Pezicula endophytica* sp. nov., endophytic in *Dendrobium* in Thailand. *Mycotaxon* 136(3): 563–577 (<https://doi.org/10.5248/136.563>).
- MacK, J., Assabgui, R. A., and Seifert, K. A. 2021. Taxonomy and phylogeny of the basidiomycetous hyphomycete genus *Hormomyces*. *Fungal Systematics and Evolution* 7: 177–196 (<https://doi.org/10.3114/fuse.2021.07.09>).
- Oktalira, F. T., May, T. W., Dearnaley, J. D. W., and Linde, C. C. 2021. Seven new *Serendipita* species associated with Australian terrestrial orchids. *Mycologia* 113(5): 968–987 (<https://doi.org/10.1080/00275514.2021.1919848>).
- Oktavia, G. A. E., Nurfadilah, S., Yulia, N. D., and Hendriyani, E. 2021. Root morphology, anatomy, and mycorrhiza of *Peristylus goodyeroides* (D. Don) Lindl. (Orchidaceae) in different life stages: ecological significance and implication for conservation. *Annual Research & Review in Biology* 36(10): 142–154 (<https://doi.org/10.9734/ARRB/2021/v36i1030443>).
- Petrolli, R., Vieira, C. A., Jakalski, M., Bocayuva, M. F., Vallé, C., Da Silva Cruz, E., Selosse, M. A., Martos, F., and Kasuya, M. C. M. 2021. A fine-scale spatial analysis of fungal communities on tropical tree bark unveils the epiphytic rhizosphere in orchids. *New Phytologist* 231(5): 2002–2014 (<https://doi.org/10.1111/nph.17459>).
- Qin, J., Feng, J. Q., Zhang, W., and Zhang, S. B. 2021. Mycorrhizal fungal partners remain constant during a root lifecycle of *Pleione bulbocodioides* (Orchidaceae). *Journal of Fungi* 7(11): art. 994 (<https://doi.org/10.3390/jof7110994>).
- Rammitsu, K., Kajita, T., Imai, R., and Ogura-Tsujita, Y. 2021. Strong primer bias for Tulasnellaceae fungi in metabarcoding: Specific primers improve the characterization of the mycorrhizal communities of epiphytic orchids. *Mycoscience* 62(6): 356–363 (<https://doi.org/10.47371/mycosci.2021.06.005>).
- Shah, S., Chand, K., Rekadwad, B., Shouche, Y. S., Sharma, J., and Pant, B. 2021. A prospectus of plant growth promoting endophytic bacterium from orchid (*Vanda cristata*). *BMC Biotechnology* 21(1): art. 16 (<https://doi.org/10.1186/s12896-021-00676-9>).
- Shan, T., Zhou, L., Li, B., Chen, X., Guo, S., Wang, A., Tian, L., and Liu, J. 2021. The plant growth-promoting fungus MF23 (*Mycena* sp.) increases production of *Dendrobium officinale* (Orchidaceae) by affecting nitrogen uptake and NH<sub>4</sub><sup>+</sup> assimilation. *Frontiers in Plant Science* 12: art. 693561 (<https://doi.org/10.3389/fpls.2021.693561>).
- Shevtsov, S., Murik, O., Zer, H., Weinsteina, O., Kerena, N., Fragman-Sapir, O., and Ostersetzer-Biran, O. 2019. The complete plastid genome sequence and the photosynthetic activity of the putative mycoheterotrophic orchid *Limodorum abortivum*. *Israel Journal of Plant Sciences* 66(1–2): 69–88 (<https://doi.org/10.1163/22238980-00001075>).



Suetsugu, K., Haraguchi, T. F., Okada, H., and Tayasu, I. 2021. *Stigmatodactylus sikokianus* (Orchidaceae) mainly acquires carbon from decaying litter through association with a specific clade of Serendipitaceae. *New Phytologist* 231(5): 1670–1675 (<https://doi.org/10.1111/nph.17523>).

Sutthinon, P., Rungwattana, K., Suwanphakdee, C., Himaman, W., and Lueangjaroenkit, P. 2021. Endophytic fungi from root of three lady's slipper orchids (*Paphiopedilum* spp.) in southern Thailand. *Chiang Mai Journal of Science* 48(3): 853–866.

Tsulsiyah, B., Farida, T., Sutra, C. L., and Semiarti, E. 2021. Important role of mycorrhiza for seed germination and growth of *Dendrobium* orchids. *Journal of Tropical Biodiversity and Biotechnology* 6(2): art. jtbb60805 (<https://doi.org/10.22146/JTBB.60805>).

Tuczapski, P. 2021. Do *Lepanthes* use fungal friends to live in harmony? *Orchids, the Bulletin of the American Orchid Society* 90(9): 686–689.

Umata, H., Gale, S. W., and Yamada, M. 2021. Do compounds involved in plant resistance to fungal attack facilitate germination in the fully mycoheterotrophic orchid *Cyrtosia septentrionalis*? *Symbiosis* 85(1): 47–56 (<https://doi.org/10.1007/s13199-021-00788-y>).

Wang, W.-Y., Zou, H., Dai, Y.-M., and Lin, J.-B. 2020. Effect of *Epulorhiza* sp. on root morphology of *Dendrobium officinale* and their symbiotic relationship. *Journal of Tropical and Subtropical Botany* 28(2): 124–130 (<https://doi.org/10.11926/jtsb.4093>).

Yang, Q., Xu, L., Xia, W., Liang, L., Bai, X., Li, L., Xu, L., and Liu, L. 2021. Mycorrhizal compatibility and germination-promoting activity of *Tulasnella* species in two species of orchid (*Cymbidium mannii* and *Epidendrum radicans*). *Horticulturae* 7(11): art. 472 (<https://doi.org/10.3390/horticulturae7110472>).

## Pathology

Bharathimeena, T. 2016. First report of *Lema* sp nr *pectoralis* Baly, 1865 (Coleoptera: Chrysomelidae) on the green bay orchid *Eulophia andamanensis* Rchb.f (Orchidaceae: Epidendroideae). *Entomon* 41(2): 157–158.

Bhaskar, H., Mallik, B., and Srinivasa, N. 2013. Report of orchid mite, *Tenuipalpus pacificus* Baker (Prostigmata: Tenuipalpidae) from Kerala, India. *Entomon* 38(2): 111–114.

de Oliveira Domingues, S. C., Scatola, L. F., Moreira, E. S., Schmitt, J. P. M., Furini, T., and de Matos, D. L. 2021. Ocorrências de fitopatógenos associadas em orquídeas na região da Amazônia Meridional. *Diversitas Journal* 6(1): 163–171 (<https://doi.org/10.17648/diversitas-journal-v6i1-1202>).

Izzati, F. N., Mahfut, M., Ernawiati, E., and Wahyuningsih, S. 2021. Variation of resistance response of orchids induced by *Rhizoctonia* against the infection of Odontoglossum ringspot virus (ORSV) based on percentage of disease development. *Journal of Sustainability Science and Technology* 1(1): 23–34 (<https://doi.org/10.23960/josst.v1i1.3>).

Jeong, D. S., Hong, K. H., and Park, K. I. 2021. Detection of Cymbidium mosaic virus and Odontoglossum ringspot virus in *Phalaenopsis* in Korea. *Horticultural Science and Technology* 39(4): 514–520 (<https://doi.org/10.7235/HORT.20210046>).

- Kuo, S. Y., Hu, C. C., Huang, Y. W., Lee, C. W., Luo, M. J., Tu, C. W., Lee, S. C., Lin, N. S., and Hsu, Y. H. 2021. Argonaute 5 family proteins play crucial roles in the defence against Cymbidium mosaic virus and Odontoglossum ringspot virus in *Phalaenopsis aphrodite* subsp. *formosana*. *Molecular Plant Pathology* 22(6): 627–643 (<https://doi.org/10.1111/mpp.13049>).
- Lee, S. C., Pai, H., Huang, Y. W., He, M. H., Song, Y. L., Kuo, S. Y., Chang, W. C., Hsu, Y. H., and Lin, N. S. 2021. Exploring the multifunctional roles of Odontoglossum ringspot virus P126 in facilitating Cymbidium mosaic virus cell-to-cell movement during mixed infection. *Viruses* 13(8): art. 1552 (<https://doi.org/10.3390/v13081552>).
- Li, C., Shen, Q., Cai, X., Lai, D., Wu, L., Han, Z., Zhao, T., Chen, D., and Si, J. 2021. JA signal-mediated immunity of *Dendrobium catenatum* to necrotrophic Southern Blight pathogen. *BMC Plant Biology* 21(1): art. 360 (<https://doi.org/10.1186/s12870-021-03134-y>).
- Li, S., Wu, Z. G., Zhou, Y., Dong, Z. F., Fei, X., Zhou, C. Y., and Li, S. F. 2022. Changes in metabolism modulate induced by viroid infection in the orchid *Dendrobium officinale*. *Virus Research* 308: art. 198626 (<https://doi.org/10.1016/j.virusres.2021.198626>).
- Li, S., Yang, Y., Xing, F., Che, H. Y., Cao, X. R., Zhang, Z. X., Khoo, Y. W., Zhou, C. Y., and Li, S. F. 2021. A rapid sap-direct reverse transcription-polymerase chain reaction method for detection of Dendrobium viroid in *Dendrobium* plants. *Letters in Applied Microbiology* 73(1): 26–30 (<https://doi.org/10.1111/lam.13470>).
- Sangma, R. H. C., Dahal, D., and Singh, D. R. 2015. Parasitisation of soft brown scale, *Coccus hesperidum* Howard by an aphelinid wasp, *Coccophagus ceroplastae* (Howard) infesting orchids from Sikkim, India. *Entomon* 40(4): 249–252.
- Silva, A. L., Salcedo-Sarmiento, S., Mansur, P. S. C., and Barreto, R. W. 2021. *Colletotrichum karstii* causes anthracnose on the orchid *Cattleya walkeriana* in Brazil. *Australasian Plant Disease Notes* 16(1): art. 18 (<https://doi.org/10.1007/s13314-021-00431-1>).
- T-Thienprasert, N. P., T-Thienprasert, J., Ruangtong, J., Jaithon, T., Srifah Huehne, P., and Piasai, O. 2021. Large scale synthesis of green synthesized zinc oxide nanoparticles from banana peel extracts and their inhibitory effects against *Colletotrichum* sp., isolate kufc 021, causal agent of anthracnose on *Dendrobium* orchid. *Journal of Nanomaterials* 2021: art. 5625199 (<https://doi.org/10.1155/2021/5625199>).
- Villegas V., F. 2019. *Rhizoctonia* spp. (aff *R. solani*) como reconocer, prevenir y controlar esta enfermedad en nuestros cultivos. *Orquideología* 36(2): 163–166.
- Xiao, C. and Li, R. 2021. Detection and control of *Fusarium oxysporum* from soft rot in *Dendrobium officinale* by loop-mediated isothermal amplification assays. *Biology* 10(11): art. 1136 (<https://doi.org/10.3390/biology10111136>).
- Yang, Y., Cao, Z., Tang, J., Song, Y., Shentu, X., and Yu, X. 2021. First report of root rot on *Dendrobium officinale* caused by *Fusarium incarnatum-equiseti* species complex in Zhejiang Province, China. *Plant Disease* 105(8): art. 2253 (<https://doi.org/10.1094/pdis-01-21-0054-pdn>).

Zhao, W. C., Sun, C. X., Wei, L. L., Chen, W. C., Wang, B. R., Li, F. J., Wei, M. D., Lou, T. C., Zhang, P. C., Zheng, H. H., Chen, C. J., and Xiang, Z. X. 2021. Detection and fitness of dicarboximide-resistant isolates of *Alternaria alternata* from *Dendrobium officinale*, a chinese indigenous medicinal herb. *Plant Disease* 105(8): 2222–2230 (<https://doi.org/10.1094/pdis-06-20-1246-re>).

Zhou, H., Yang, S., Wang, S., Yao, K., Ye, X., and Gao, Q. 2021. First report of *Rhizoctonia solani* AG-2-2 IIIB causing foliar blight on *Bletilla striata* in China. *Plant Disease* 105(9): art. 2716 (<https://doi.org/10.1094/pdis-02-21-0270-pdn>).

### Physiology/Phytochemistry

Brzosko, E. and Mirski, P. 2021. Floral nectar chemistry in orchids: A short review and meta-analysis. *Plants* 10(11): art. 2315 (<https://doi.org/10.3390/plants10112315>).

Bu, X.-P., Jiu, F.-F., Wang, F.-T., Chen, C.-Z., and Yang, F.-S. 2020. Response to drought stress simulated by PEG of *Phalaenopsis pulcherrima*. *Journal of Tropical and Subtropical Botany* 28(1): 53–61 (<https://doi.org/10.11926/jtsb.4062>).

Çelik, S. Y. 2021. Identification of protease enzyme in salep orchid tubers, and investigation of the usability of the enzyme in casein and gluten hydrolysis. *International Food Research Journal* 28(4): 672–681.

Chen, Y., Tan, C. S., Ng, C. H., Yam, M. F., Wu, S., and Sun, Z. 2021. Development of a HPTLC method with iterative calibration approach for quantitative evaluation of kinsenoside content in different types of *Anoectochilus roxburghii*. *Microchemical Journal* 165: art. 106076 (<https://doi.org/10.1016/j.microc.2021.106076>).

Chen, Y., Yao, L., Pan, W., Guo, B., Lin, S., and Wei, Y. 2021. An integrated analysis of metabolomic and transcriptomic profiles reveals flavonoid metabolic differences between *Anoectochilus roxburghii* and *Anoectochilus formosanus*. *Process Biochemistry* 100: 188–198 (<https://doi.org/10.1016/j.procbio.2020.07.004>).

Dai, J. 2021. Highly efficient N-doped carbon quantum dots for detection of Hg<sup>2+</sup> and Cd<sup>2+</sup> ions in *Dendrobium huoshanense*. *International Journal of Electrochemical Science*: articleid:210716 (<https://doi.org/10.20964/2021.07.22>).

de Vasconcelos, F., Andrade, E. H., Teixeira, L. O., and Maia, J. G. 2022. Volatile constituents of floral scents from *Encyclia cordigera* (Kunth) Dressler and *E. randii* (Barb. Rodr.) Porto & Brade (Orchidaceae). *Journal of the Brazilian Chemical Society* 33(1): 96–101 (<https://doi.org/10.21577/0103-5053.20210127>).

Diantina, S., McGill, C., Millner, J., Nadarajan, J., Pritchard, H. W., Colville, L., and McCormick, A. C. 2022. Seed viability and fatty acid profiles of five orchid species before and after ageing. *Plant Biology* 24: 168–175 (<https://doi.org/10.1111/plb.13345>).

Feng, J. Q., Huang, W., Wang, J. H., and Zhang, S. B. 2021. Different strategies for photosynthetic regulation under fluctuating light in two sympatric *Paphiopedilum* species. *Cells* 10(6): art. 1451 (<https://doi.org/10.3390/cells10061451>).

Gamisch, A., Winter, K., Fischer, G. A., and Comes, H. P. 2021. Evolution of crassulacean acid metabolism (CAM) as an escape from ecological niche conservatism in Malagasy *Bulbophyllum* (Orchidaceae). *New Phytologist* 231(3): 1236–1248 (<https://doi.org/10.1111/nph.17437>).

Huang, W., Sun, H., Tan, S.-L., and Zhang, S.-B. 2021. The water-water cycle is not a major alternative sink in fluctuating light at chilling temperature. *Plant Science* 305: art. 110828 (<https://doi.org/10.1016/j.plantsci.2021.110828>) [*Dendrobium officinale*].

Kobayashi, K., Suetsugu, K., and Wada, H. 2021. The leafless orchid *Cymbidium macrorhizon* performs photosynthesis in the pericarp during the fruiting season. *Plant and Cell Physiology* 62(3): 472–481 (<https://doi.org/10.1093/pcp/pcab006>).

Kurniawan, F. Y. and Amelia, D. E. 2021. Chlorophyll and carotenoid level comparisons of pigeon orchid (*Dendrobium crumenatum*) in water and light stress treatment. *Indonesian Journal of Science and Education* 5(1): 44–48 (<https://doi.org/10.31002/ijose.v5i1.2868>).

Lee, H. B., Lee, J. H., Jeong, S. J., An, S. K., Kang, B. C., and Kim, K. S. 2021. Intermittent high temperature reduces leaf sugar content and inhibits inflorescence initiation in *Phalaenopsis* hybrid. *Environmental and Experimental Botany* 189: art. 104562 (<https://doi.org/10.1016/j.envexpbot.2021.104562>).

Long, W.-J., Wu, H.-L., Wang, T., Dong, M.-Y., Chen, L.-Z., and Yu, R.-Q. 2021. Fast identification of the geographical origin of *Gastrodia elata* using excitation-emission matrix fluorescence and chemometric methods. *Spectrochimica Acta Part A Molecular and Biomolecular Spectroscopy* 258: art. 119798 (<https://doi.org/10.1016/j.saa.2021.119798>).

Nordin, M. K., Saaid, M. F., Tahir, N. M., Yassin, A. I. M., and Megat Ali, M. S. A. 2021. Non-linear behavior of root and stem diameter changes in monopodial orchid. *Bulletin of Electrical Engineering and Informatics* 10(6): 3452–3459 (<https://doi.org/10.11591/eei.v10i6.3191>) [*Ascocenda*].

Robustelli Della Cuna, F. S., Calevo, J., Bazzicalupo, M., Sottani, C., Grignani, E., and Preda, S. 2021. Chemical composition of essential oil from flowers of five fragrant *Dendrobium* (Orchidaceae). *Plants* 10(8): art. 1718 (<https://doi.org/10.3390/plants10081718>).

Wang, Y., Dai, J., Wei, P., Cai, Y., and Han, B. 2021. Biological activity test of *Dendrobium huoshanense* and its application in the detection of environmental pollutant phenols. *Science of Advanced Materials* 13(7): 1205–1214 (<https://doi.org/10.1166/sam.2021.4012>).

Xu, X., Huang, L., Wu, Y., Yang, L., and Huang, L. 2021. Synergic cloud-point extraction using [C4mim][PF6] and Triton X-114 as extractant combined with HPLC for the determination of rutin and narcissoside in *Anoectochilus roxburghii* (Wall.) Lindl. and its compound oral liquid. *Journal of Chromatography B* 1168: art. 122589 (<https://doi.org/10.1016/j.jchromb.2021.122589>).

Zampirolo, J. B., Pinheiro, C. L., dos Santos, V. F., Braga, P. C. S., Martins, J. P. R., Silva, D. M., and Falqueto, A. R. 2021. Analyses of OJIP transients in leaves of two epiphytic orchids under drought stress. *Ornamental Horticulture* 27(4): 556–565 (<https://doi.org/10.1590/2447-536X.V27I4.2334>) [*Cattleya warneri*, *Miltonia spectabilis*].

Zhan, W., Yang, X., Lu, G., Deng, Y., and Yang, L. 2022. A rapid quality grade discrimination method for *Gastrodia elata* powder using ATR-FTIR and chemometrics. *Spectrochimica Acta Part A Molecular and Biomolecular Spectroscopy* 264: art. 120189 (<https://doi.org/10.1016/j.saa.2021.120189>).

Zhang, W., Zhang, S. B., and Fan, Z. X. 2022. Quantifying the nitrogen allocation and resorption for an orchid pseudobulb in relation to nitrogen supply. *Scientia Horticulturae* 291: art. 110580 (<https://doi.org/10.1016/j.scienta.2021.110580>).

Zhang, W., Zhang, Y., Wang, J., Duan, W., and Liu, F. 2021. Combined ultrahigh pressure extraction and high-speed counter-current chromatography for separation and purification of three glycoside compounds from *Dendrobium officinale* protocorm. *Molecules* 26(13): art. 3934 (<https://doi.org/10.3390/molecules26133934>).

Zhang, Y., He, H., Chen, Z., Huang, Y., Xiang, G., Li, P., Yang, X., Lu, G., and Xiao, G. 2021. Merging reagent modulation and remote anchimeric assistance for glycosylation: highly stereoselective synthesis of  $\alpha$ -glycans up to a 30-mer. *Angewandte Chemie International Edition* 60(22): 12597–12606 (<https://doi.org/10.1002/anie.202103826>) [*Dendrobium huoshanense*].

Zhong, K. and Yang, T. 2021. Study on HPLC fingerprint of *Dendrobium nobile* Lindl. flower based on chemometrics. *IOP Conference Series Earth and Environmental Science* 651(3): art. 032027 (<https://doi.org/10.1088/1755-1315/651/3/032027>).

Zhou, Y.-J., Wang, J.-H., Xu, H., Chou, G.-X., and Wang, Z.-T. 2021. Bibenzyls from *Dendrobium officinale*. *China Journal of Chinese Materia Medica* 46(15): 3853–3858 (<https://doi.org/10.19540/j.cnki.cjcm.20210517.203>).

### **Pollination, population genetics, and seed dispersal**

Albuquerque, N. S. L., Milet-Pinheiro, P., Cruz, D. D., Navarro, D. M. A. F., and Machado, I. C. 2021. Pollination of the strongly scented *Sarcoglottis acaulis* (Orchidaceae) by male orchid bees: nectar as resource instead of perfume. *Plant Biology* 23(5): 719–727 (<https://doi.org/10.1111/plb.13297>).

Berry, E. J. and Cleavitt, N. L. 2021. Population dynamics and comparative demographics in sympatric populations of the round-leaved orchids *Platanthera macrophylla* and *P. orbiculata*. *Population Ecology* 63(4): 274–289 (<https://doi.org/10.1002/1438-390x.12092>).

Brzosko, E., Bajguz, A., Burzyńska, J., and Chmur, M. 2021. Nectar chemistry or flower morphology—What is more important for the reproductive success of generalist orchid *Epipactis palustris* in natural and anthropogenic populations? *International Journal of Molecular Sciences* 22(22): art. 12164 (<https://doi.org/10.3390/ijms222212164>).

Byers, K. J. R. P. 2021. Pollination: Orchids attract unusual pollinators by means of novel chemical compounds. *Current Biology* 31(9): R433–R435 (<https://doi.org/10.1016/j.cub.2021.02.058>).

Cardoso, J. C. F., Johnson, S. D., Maciel, A. A., and Oliveira, P. E. 2021. Florivory can facilitate rain-assisted autogamy in a deceptive tropical orchid. *Science of Nature* 108(5): art. 39 (<https://doi.org/10.1007/s00114-021-01752-y>) [*Cyrtopodium hatschbachii*].



Castro, J. B., Machado, G., and Singer, R. B. 2022. Müllerian mimicry between oil-producing orchids and Malpighiaceae? An old hypothesis finally tested. *Science of Nature* 109(1): art. 3 (<https://doi.org/10.1007/s00114-021-01771-9>) [*Gomesa flexuosa*].

Cohen, C., Liltved, W. R., Colville, J. F., Shuttleworth, A., Weissflog, J., Svatoš, A., Bytebier, B., and Johnson, S. D. 2021. Sexual deception of a beetle pollinator through floral mimicry. *Current Biology* 31(9): 1962–1969.e1966 (<https://doi.org/10.1016/j.cub.2021.03.037>) [*Disa forficaria*].

Davis, L. 2020. Lifespan, flowering record and reproductive success of *Caladenia behrii* Schltdl. in Belair National Park, South Australia. *The Orchadian* 20(2): 14–19.

Détrez, É. 2020. *Ophrys speculum* en Isère, suivi sur quelques jours. *Bulletin de la Société Française d'Orchidophilie Rhône-Alpes* 42: 38–42.

Gaponenko, M. B., Blum, O. B., and Kashevarov, G. P. 2021. Genetic polymorphism and variability of the *Anacamptis morio* s.l. (Orchidaceae Juss.) population in Ukraine. *Cytology and Genetics* 55(4): 299–308 (<https://doi.org/10.3103/S0095452721040046>).

Garcia, J. E., Hannah, L., Shrestha, M., Burd, M., and Dyer, A. G. 2021. Fly pollination drives convergence of flower coloration. *New Phytologist* 233(1): 52–61 (<https://doi.org/10.1111/nph.17696>).

García-Gila, J. and Blasco-Aróstegui, J. 2021. First report on the pollination of *Neotinea maculata* (Orchidaceae) by minor worker ants of the *Temnothorax exilis* group (Hymenoptera: Formicidae). *Mediterranean Botany* 42: art. e71171 (<https://doi.org/10.5209/MBOT.71171>).

Gerlach, G. and Busche, M. 2021. *Polycynis grandiflora* y sus polinizadores en Costa Rica | *Polycynis grandiflora* and its pollinators in Costa Rica *Orquideología* 38(1): 49–55.

Gerlach, G. and Martel, C. 2020. Notas breves de polinización sobre orquídeas neotropicales, *Crossoglossa liparidoides* (Malaxidinae) y *Telipogon selbyanus* (Oncidiinae) | Brief notes of pollination on neotropical orchids *Crossoglossa liparidoides* (Malaxidinae) and *Telipogon selbyanus* (Oncidiinae). *Orquideología* 37(2): 155–176.

Gunasekara, S. and Chase, M. 2021. Colour variation in Sri Lankan *Vanda tessellata*. *Orchid Review* 129(1336): 26–27.

Harder, L. D., Richards, S. A., Ågren, J., and Johnson, S. D. 2021. Mechanisms of male-male interference during dispersal of orchid pollen. *The American Naturalist* 197(2): 250–265 (<https://doi.org/10.1086/712378>) [*Anacamptis morio*].

Hayashi, T., Bohman, B., Scaffidi, A., Peakall, R., and Flematti, G. R. 2021. An unusual tricosatriene is crucial for male fungus gnat attraction and exploitation by sexually deceptive *Pterostylis* orchids. *Current Biology* 31(9): 1954–1961.e1957 (<https://doi.org/10.1016/j.cub.2021.01.095>).

Hegde, S. M. and Krishnaswamy, K. 2021. Studies on the phenology of some terrestrial orchids of Western Ghats, India. *Plant Science Today* 8(3): 662–668 (<https://doi.org/10.14719/PST.2021.8.3.1233>).

Hu, X., Lan, S., Song, X., Yang, F., Zhang, Z., Peng, D., and Ren, M. 2021. Genetic divergence between two sympatric ecotypes of *Phalaenopsis pulcherrima* on Hainan Island. *Diversity* 13(9): art. 446 (<https://doi.org/10.3390/d13090446>).

Kirillova, I. A. and Kirillov, D. V. 2021. Population dynamics, reproductive success, and seasonal development of *Cypripedium calceolus* under different growing conditions as a response to weather factors. *Contemporary Problems of Ecology* 14(5): 472–482 (<https://doi.org/10.1134/S1995425521050061>).

Kolanowska, M., Michalska, E., and Konowalik, K. 2021. The impact of global warming on the niches and pollinator availability of sexually deceptive orchid with a single pollen vector. *Science of the Total Environment* 795: art. 148850 (<https://doi.org/10.1016/j.scitotenv.2021.148850>) [*Leporella fimbriata*].

Li, Y., Qi, S., Song, X., Zhang, C., Ren, M., and Yu, X. 2021. Clonal growth characteristic of epiphytic orchid *Dendrobium sinense*. *Plant Gene and Trait* 12(3): 1–8 (<https://doi.org/10.5376/pgt.2021.12.0003>).

Liu, N., Xiao, H., Xinghui, C., Chi, Y., Luo, H., Xiong, D., and Yang, B. 2020. Daily nectar secretion dynamics and their effects on floral visitation in *Goodyera foliosa*, a nectar rewarding orchid. *Journal of Tropical and Subtropical Botany* 28(3): 265–270 (<https://doi.org/10.11926/jtsb.4125>).

Lumare, F., Medagli, P., and Anelli, S. 2020. Variabilità dei caratteri fiorali in una popolazione di *Ophrys candica*. *GIROS Orchidee Spontanee d'Europa* 63(2): 265–283.

Lunau, K., Scaccabarozzi, D., Willing, L., and Dixon, K. 2021. A bee's eye view of remarkable floral colour patterns in the south-west Australian biodiversity hotspot revealed by false colour photography. *Annals of Botany* 128(7): 821–824 (<https://doi.org/10.1093/aob/mcab088>) [*Diuris*, *Thelymitra*].

Ma, X., Tang, M., Bi, Y., and Yang, J. 2021. Genetic diversity and population structure analysis of wild *Cymbidium tortisepalum* based on chloroplast DNA in Yunnan Province of China. *Journal of the American Society for Horticultural Science* 146(6): 424–434 (<https://doi.org/10.21273/JASHS05046-21>).

Margońska, H. B., Kozieradzka-Kiszkurno, M., Brzezicka, E., Haliński, Ł. P., Davies, K. L., and Lipińska, M. M. 2021. *Crepidium* sect. *Crepidium* (Orchidaceae, Malaxidinae)—Chemical and morphological study of flower structures in the context of pollination processes. *Plants* 10(11): art. 2373 (<https://doi.org/10.3390/plants10112373>).

Miranda-Molina, Y. M., González, E. J., Márquez-Guzmán, J., Meave, J. A., and Pérez-García, E. A. 2020. Pollination success in three tropical dry forest orchid species from Mexico: insights from floral display, visitation rates, and flower micromorphology. *Botanical Sciences* 1(1): 771–790 (<https://doi.org/10.17129/BOTSCI.2785>) [*Barkeria whartoniana*, *Clowesia dodsoniana*, *Cyrtopodium macrobulbon*].

Nabieva, A., Zaytseva, Y., and Shakarishili, N. 2021. Genome size variability of the population of *Gymnadenia conopsea* (Orchidaceae) in the Novosibirsk Region (Russia). *BIO Web of Conferences* 38: art. 00084 (<https://doi.org/10.1051/bioconf/20213800084>).

- Ospina M., A. 2019. Proyecto “Rasgos asociados a la polinización de algunos géneros de la subtribu Pleurothallidinae Lindl. (Orchidaceae), en un bosque montano del norte de los Andes”. *Orquideología* 36(2): 127–144.
- Pan, F.-G., Ye, Q.-L., Li, Y.-F., Zhong, Z.-M., Chen, H.-F., and Yi, Q.-F. 2020. Population structure and quantitative dynamics of rare and endangered plant *Paphiopedilum purpuratum*. *Journal of Tropical and Subtropical Botany* 28(4): 375–384 (<https://doi.org/10.11926/jtsb.4180>).
- Pegoraro, L., De Vos, J. M., Cozzolino, S., and Scopece, G. 2019. Shift in flowering time allows diploid and autotetraploid *Anacamptis pyramidalis* (Orchidaceae) to coexist by reducing competition for pollinators. *Botanical Journal of the Linnean Society* 191(2): 274–284 (<https://doi.org/10.1093/botlinnean/boz043/jeb.12930>).
- Phillips, R. D., Bohman, B., and Peakall, R. 2021. Pollination by nectar-foraging pompilid wasps: a new specialized pollination strategy for the Australian flora. *Plant Biology* 23(5): 702–710 (<https://doi.org/10.1111/plb.13286>) [*Caladenia drummondii*].
- Prakash, A. and Pathak, P. 2020. Ant facilitated pollination of *Herminium lanceum* (Thunb. ex Sw.) Vuijk (Orchidaceae)—an endangered terrestrial orchid of northwestern Himalayas *Journal of the Orchid Society of India* 34: 11–15.
- Ramírez Martínez, A., Mondragón Chaparro, D. M., and Rivera García, R. 2021. Vascular epiphytes: the ugly duckling of phenological studies. *Acta Biológica Colombiana* 26(2): 247–261 (<https://doi.org/10.15446/abc.v26n2.83473>).
- Renner, M. A. M. 2020. Fool me once: Do *Plectorrhiza tridentata* (Lindl.) Dockrill flowers deceive then reward their pollinators? *The Orchadian* 20(1): 14–21.
- Rentsch, J. D., Hardee, L. J., McFadden, M., and Bauer, V. W. 2020. *Neottia bifolia* (Raf.) Baumbach (Orchidaceae) on the campus of Francis Marion University—Application of population genetic markers and life history observations. *Orchids, the Bulletin of the American Orchid Society* 89(11): 902–907.
- Reyes, H. C., Draper, D., and Marques, I. 2021. Pollination in the rainforest: Scarce visitors and low effective pollinators limit the fruiting success of tropical orchids. *Insects* 12(10): art. 856 (<https://doi.org/10.3390/insects12100856>) [Andes].
- Scopece, G., Criscuolo, N., and Cozzolino, S. 2021. In nomen omen: the effect of flower distance on female reproductive success of the lax-flowered orchid *Anacamptis laxiflora* (Orchidaceae). *Chinese Journal of Plant Ecology* 14(3): 451–464 (<https://doi.org/10.1093/jpe/rtab002>).
- Tan, K. H., Wee, S. L., Nishida, R., and Shelly, T. E. 2021. Attraction of feral *Bactrocera dorsalis* males (Diptera: Tephritidae) to natural versus commercial sources of methyl eugenol. *Journal of Asia-Pacific Entomology* 24(4): 1095–1100 (<https://doi.org/10.1016/j.aspen.2021.10.008>) [*Bulbophyllum cheiri*].

Terentieva, E. I., Degtjareva, G. V., Efimov, S. V., and Varlygina, T. I. 2021. Preliminary results of studying the genetic diversity of *Malaxis monophyllos* (Orchidaceae) in the Amur region. *Проблемы ботаники Южной Сибири и Монголии (Problems of Botany of Southern Siberia and Mongolia)* 20(1): 429–432 (<https://doi.org/10.14258/pbssm.2021085>).

Van der Voort, G. E., Saunders, M. E., and Janes, J. K. 2021. Pan trapping in habitats supporting *Platanthera* (Orchidaceae) shows little difference in insect family-level diversity. *The Canadian Entomologist* 153(5): 566–578 (<https://doi.org/10.4039/tce.2021.17>).

Xiao, H., Luo, H., Liu, N., Turner, C., Chen, X., Ding, H., Liang, Y., Tan, S., Tang, J., Xiong, D., and Yang, B. 2021. High fruit setting rate without male participation: A case study of obligate apomixis in *Rhomboda tokioi* (Orchidaceae). *Flora: Morphology, Distribution, Functional Ecology of Plants* 283: art. 151920 (<https://doi.org/10.1016/j.flora.2021.151920>).

Zhang, X., Jia, Y., Liu, Y., Chen, D., Luo, Y., and Niu, S. 2021. Challenges and perspectives in the study of self-incompatibility in orchids. *International Journal of Molecular Sciences* 22: art. 12901 (<https://doi.org/10.3390/ijms222312901>).

## Systematics and distribution

### AFRICA (excluding NORTH AFRICA, including the southern part of the ARABIAN PENINSULA)

Azandi, L., Droissart, V., Sonké, B., Simo-Droissart, M., and Stévant, T. 2018. The genus *Cyrtorchis* in Central Africa with a focus on its two sections. *Orchids, the Bulletin of the American Orchid Society* 87(1): 48–55.

Azandi, L. N., Droissart, V., Sonké, B., Simo-Droissart, M., D'hajjère, T., Farminhão, J. N. M., Kaymak, S. V., Esra, and Stévant, T. 2021. A near comprehensive phylogenetic framework gives new insights toward a natural classification of the African genus *Cyrtorchis* (Angraecinae, Orchidaceae). *Taxon* 70(4): 720–746 (<https://doi.org/10.1002/tax.12511>).

Azandi, L. N., Stévant, T., Sonké, B., D'hajjère, T., Simo-Droissart, M., and Droissart, V. 2021. Taxonomic description and pollination ecology of *Cyrtorchis okuensis* (Orchidaceae, Angraecinae), a new species endemic to the Cameroon Volcanic Line. *Plant Ecology and Evolution* 154(3): 483–496 (<https://doi.org/10.5091/plecevo.2021.1823>).

D'Hajjère, T., Farminhão, J. N. M., Stévant, T., and Fischer, E. 2021. Novelties among East African angraecoids (Orchidaceae, Angraecinae). *Nordic Journal of Botany* 39(7): art. e03184 (<https://doi.org/10.1111/njb.03184>).

Hermans, J., Rajaovelona, L., and Cribb, P. 2021. *Angraecum inflatum*, a new species in Angraecinae (Orchidaceae) from Madagascar. *Kew Bulletin* 76: 513–517 (<https://doi.org/10.1007/s12225-021-09960-5>).

Hermans, J., Rajaovelona, L., and Cribb, P. 2021. *Bulbophyllum lanterna*, a new species in Dendrobiinae (Orchidaceae) from Madagascar. *Kew Bulletin* 76: 519–522 (<https://doi.org/10.1007/s12225-021-09961-4>).

Hermans, J., Sieder, A., Rajaovelona, L., and Andriantiana, J. 2021. *Angraecum idae*. A new orchid from Madagascar. *Orchids, the Bulletin of the American Orchid Society* 90(4): 312–315.

Porembski, S., Ramandimbisoa, B., Rabarimanarivo, M. N., and Andriambololonera, S. 2021. Vielfalt der Orchideen auf Inselbergen in Madagaskar. *Die Orchidee* 72(3): 174–180.

Rajaovelona, L. R., Sexton, L., and Rakotonasolo, F. 2021. Orchid exploration. Eight threatened orchids of the Itremo Massif Protected Area, Central High Plateau of Madagascar. *Orchids, the Bulletin of the American Orchid Society* 90(5): 372–378.

Wightman, N. and Bytebier, B. 2021. *Ancistrorhynchus* (Orchidaceae), a new generic record for the Flora of Zambia. *Phytotaxa* 528(1): 59–61 (<https://doi.org/10.11646/phytotaxa.528.1.6>).

## AMERICA

Ackerman, J. D. and González-Orellana, N. 2021. Explosive range expansion of *Eulophia graminea* (Orchidaceae) in Puerto Rico and the West Indies. *Lankesteriana* 21(3): 307–312 (<https://doi.org/10.15517/lank.v21i3.48871>).

Alomía, Y. A., Sambin, A., Otero, J. T., and Stevenson, P. R. 2021. A new species of *Dichaea* (Orchidaceae: Zygopetalinae) from the Andes of Colombia. *Phytotaxa* 521(1): 39–47 (<https://doi.org/10.11646/phytotaxa.521.1.4>).

Archila Morales, F. and Chiron, G. R. 2021. *Specklinia centenaria* (Orchidaceae, Pleurothallidinae), a new species from Guatemala. *Richardiana, nouv. sér.* 5: 303–309.

Baquero, L. E., Galindo-Tarazona, R., Haelterman, D., and Zuluaga, A. 2021. A new *Lepanthes* (Pleurothallidinae) from southwestern Colombia. *Lankesteriana* 21(3): 341–349 (<https://doi.org/10.15517/lank.v21i3.49410>).

Barberena, F. F. V. A. 2021. Taxonomic notes on *Catasetum rosealbum* (Orchidaceae: Epidendroideae): reaffirming *Catasetum ciliatum* as a synonym. *Phytotaxa* 529(1): 171–173 (<https://doi.org/10.11646/phytotaxa.529.1.13>).

Barberena, F. F. V. A., Sousa, T. D. S., and Roque, N. 2021. Orchidaceae in a fragment of restinga on the north coast of Bahia, Brazil. *Rodriguesia* 72: art. e00852020 (<https://doi.org/10.1590/2175-7860202172078>).

Batista, J. A. N., Meyer, P. B., Cruz-Lustre, G., and Toscano De Brito, A. L. V. 2021. A remarkable new species of the *Habenaria nuda* complex (Orchidaceae) from the Espinhaço Range of eastern Brazil. *Systematic Botany* 46(3): 790–798 (<https://doi.org/10.1600/036364421X16312067913561>).

Bogarín, D. and Pupulin, F. 2021. The orchid flora of Barra Honda National Park, Nicoya, Guanacaste, Costa Rica. *Harvard Papers in Botany* 26(1): 7–99 (<https://doi.org/10.3100/hpib.v26iss1.2021.n3>).



Bowles, M. L., Freudenstein, J. V., and Jacobson, J. H. 2021. *Corallorhiza maculata* (Orchidaceae) new to Alaska and its distributional relationship to *Corallorhiza mertensiana*. *Madroño* 68(2): 75–86 (<https://doi.org/10.3120/0024-9637-68.2.75>).

Cerna, M. F., Moreno, M. M., Fuertes, B. G., Iza, M. L., Medina, G. E., and Recalde, C. G. 2021. Phylogeography of the neotropical epiphytic orchid, genus *Dracula*. *Anais da Academia Brasileira de Ciências* 93(3): art. e20200297 (<https://doi.org/10.1590/0001-3765202120200297>).

Chiron, G. and Marçal, S. 2021. Une organisation infragénérique de *Coryanthes* (Orchidaceae). *Richardiana, nouv. sér.* 5: 163–188.

Chiron, G. R., Sambin, A., and Krahl, A. H. 2021. Taxonomic notes on *Vanilla odorata*, *Vanilla fimbriata* and related species (Orchidaceae). *Richardiana, nouv. sér.* 5: 76–115.

Collantes, B., Incahuaman Atausinchi, F., Valer, J. C., Paucar, E. C., and Martel, C. 2021. *Masdevallia bastantei* (Orchidaceae), a new species from Machupicchu, Peru. *Systematic Botany* 46(3): 732–738 (<https://doi.org/10.1600/036364421X16312067913453>).

da Silva Gomes, G., Coelho Ferreira, A. W., Costa da Silva, M. J., Mendes da Conceição, G., and Pessoa, E. M. 2021. Taxonomic study of *Epidendrum* (Laeliinae-Orchidaceae) in the state of Maranhão, northeastern Brazil. *Rodriguesia* 72: art. e01492020 (<https://doi.org/10.1590/2175-7860202172111>).

da Silva Inácio, J. L., de Oliveira, C. S. B., de Albuquerque Barbosa, J. V., Galvão, A. L. B., and de Medeiros Furtado, D. C. 2021. Ocorrência de *Catasetum macrocarpum* Rich. ex Kunth (Família Orquidaceae) no município de Igaci (AL). *Diversitas Journal* 6(2): 2237–2246 (<https://doi.org/10.17648/diversitas-journal-v6i2-1461>).

Dalström, S. 2021. Neukombinationen bei *Cyrtochilum* (Orchidaceae: Oncidiinae) | New combinations in *Cyrtochilum* (Orchidaceae: Oncidiinae) *OrchideenJournal* 28(1): 32–39.

Damián, A., Mitideri, N., and Edquen, J. D. 2021. Taxonomic and nomenclatural notes on *Fernandezia* (Orchidaceae, Oncidiinae) from Peru. *Annales Botanici Fennici* 58(4–6): 245–251.

Damián, A., Mitidieri, N., Bonilla, M., and Huayllani, J. T. 2021. A new species, lectotypification and new records in *Catasetum* (Orchidaceae: Catasetinae) from Peruvian Amazon. *Botany Letters* 168(2): 1–9 (<https://doi.org/10.1080/23818107.2020.1871404>).

De Castro Cantuária, P., Passos Krahl, D. R., Krahl, A. H., Chiron, G., Silva, J. B. F., and Da Silva, J. B. F. 2021. *Catasetum* × *sheyllae* (Orchidaceae: Catasetinae), a new natural hybrid from Brazilian Amazon. *Phytotaxa* 527(4): 257–265 (<https://doi.org/10.11646/phytotaxa.527.4.3>).

De Jesús Sangabriel Flores, J., Alanís Méndez, J. L., Ortiz Domínguez, M., and Ordóñez-Blanco, J. C. 2019. Diversidad de orquídeas en tres unidades de Paisaje del Ejido El Remolino. Papantla, Veracruz, México. *Orquideología* 36(1): 19–34.

de Oliveira, M. S., Ferreira, A. W. C., de Oliveira, H. C., and Pessoa, E. 2021. Orchids of the central region of eastern Maranhão, Brazil. *Rodriguesia* 72: art. e02582019 (<https://doi.org/10.1590/2175-7860202172057>).

Díaz-Morales, M. and Pupulin, F. 2021. The New Refugium Botanicum—*Phragmipedium longifolium*. *Orchids, the Bulletin of the American Orchid Society* 90(8): 586–589.

Doucette, A., Restrepo, D., and Meyers, T. 2019. Notas sobre el redescubrimiento de *Restrepiella doucetteana* y esfuerzos para su conservación ex situ | Notes on the rediscovery of *Restrepiella doucetteana* and efforts for ex-situ conservation. *Orquideología* 36(2): 145–162.

Ellestad, P., Forest, F., Serpe, M., Novak, S. J., and Buerki, S. 2021. Harnessing large-scale biodiversity data to infer the current distribution of *Vanilla planifolia* (Orchidaceae). *Botanical Journal of the Linnean Society* 196(3): 407–422 (<https://doi.org/10.1093/botlinnean/boab005>).

Engels, M. E., Silva, C. A., and Koch, A. K. 2021. The entity of the enigmatic Hoehne's *Sobralia cataractarum* (Orchidaceae) clarified. *Phytotaxa* 525(3): 247–250 (<https://doi.org/10.11646/phytotaxa.525.3.8>).

Fernández, M., Bogarín, D., and Pupulin, F. 2021. A new *Muscarella* (Orchidaceae: Pleurothallidinae) from Tapantí National Park, Costa Rica. *Webbia* 76(1): 65–70 (<https://doi.org/10.36253/jopt-10029>).

Gerlach, G. 2020. Notas sobre el género *Acineta* en los Andes (Colombia, Venezuela, Ecuador y Perú) y una lista incluyendo sus especies | Notes on the genus *Acineta* in the Andes (Colombia, Venezuela, Ecuador and Peru) and a list including its species *Orquideología* 37(1): 59–95.

Gerlach, G. 2021. Reisen in Pará (Brasilien). *OrchideenJournal* 28(2): 73–84.

Gutiérrez Morales, N., Toscano De Brito, A. L. V., Silvério Righetto Mauad, A. V., and De Camargo Smidt, E. 2021. Molecular phylogeny and biogeography of *Pabstiella* (Pleurothallidinae: Orchidaceae) highlight the importance of the Atlantic Rainforest for speciation in the genus. *Botanical Journal of the Linnean Society* 195(4): 568–587 (<https://doi.org/10.1093/botlinnean/boaa092>).

Hágsater, E. and Santiago-(eds.), E. 2021. The genus *Epidendrum* Part 14—Species new & old in *Epidendrum*. *Icones Orchidacearum* 18(2) [published on the internet: [https://herbarioamo.org/index\\_archivos/Fascicle18\\_2.pdf](https://herbarioamo.org/index_archivos/Fascicle18_2.pdf)].

Iturralde, G. A., Sánchez, E., Martel, C., and Baquero R., L. E. 2021. A new species of *Telipogon* (Orchidaceae: Oncidiinae) from the eastern Andes of Ecuador. *Phytotaxa* 513(4): 295–300 (<https://doi.org/10.11646/phytotaxa.513.4.3>).

Jiménez, M. M., Horna, L. O., and Vélez-Abarca, L. 2021. A new species of *Pleurothallis* (Orchidaceae: Pleurothallidinae) from Zamora in the Province of Zamora Chinchipe, Ecuador. *Phytotaxa* 518(1): 61–68 (<https://doi.org/10.11646/phytotaxa.518.1.11>).

Karremans, A. P. 2021. With great biodiversity comes great responsibility: the underestimated diversity of *Epidendrum* (Orchidaceae). *Harvard Papers in Botany* 26(2): 299–369 (<https://doi.org/10.3100/hpib.v26iss2.2021.n1>).

- Karremans, A. 2021. The New Refugium Botanicum—*Vanilla costaricensis*. *Orchids, the Bulletin of the American Orchid Society* 90(10): 748–750.
- Kolanowska, M., Baranow, P., Nowak, S., and Fuentes, A. F. 2021. Materials to the revision of the genus *Cranichis* (Orchidaceae) in Bolivia. *PhytoKeys* 186: 11–41 (<https://doi.org/10.3897/phytokeys.186.71499>).
- Kolanowska, M. and Szlachetko, D. L. 2021. A new species of *Takulumena* (Orchidaceae) with glabrous petals from Colombia. *Phyton, Annales Rei Botanicae, Horn* 61: 21–24 (<https://doi.org/10.12905/0380.phyton60-2021-0021>).
- Krahl, A. H., Cavalcanti, D. R. T., and Chiron, G. 2021. First record of *Plectrophora schmidtii* (Orchidaceae, Oncidiinae) for northern Brazil. *Richardiana, nouv. sér.* 5: 158–162.
- Krahl, A. H., Chiron, G., de Castro Cantuária, P., and Fernandes da Silva, J. B. 2021. A new species of *Catasetum* (Orchidaceae, Catasetinae) for the Brazilian Amazon. *Richardiana, nouv. sér.* 5: 283–294.
- Krahl, A. H., Cordeiro, J. M. P., and Hágsater, E. 2021. *Epidendrum dayseae*, a new species of Orchidaceae (Laeliinae) from northern Brazil. *Phytotaxa* 530(1): 95–102 (<https://doi.org/10.11646/phytotaxa.530.1.8>).
- Krahl, A. H., Passos Krahl, D. R., de Castro Cantuária, P., and da Silva, J. B. F. 2021. *Catasetum saracataquerense* (Orchidaceae, Catasetinae), a new species from Brazilian Amazon. *Richardiana, nouv. sér.* 5: 206–216.
- Ladeira Lau, B., Nogueira Batista, J. A., Massensini Junior, A., Whitten, W. M., and Leite Borba, E. 2021. Unravelling the *Habenaria repens* (Orchidaceae) complex in Brazil: a biosystematic and molecular phylogenetic approach. *Botanical Journal of the Linnean Society* 196(1): 229–248 (<https://doi.org/10.1093/botlinnean/boab022>).
- Lau, B. L., Batista, J. A. N., Massensini, A., Whitten, W. M., and Borba, E. L. 2021. Unravelling the *Habenaria repens* (Orchidaceae) complex in Brazil: a biosystematic and molecular phylogenetic approach. *Botanical Journal of the Linnean Society* 197(2): 229–248 (<https://doi.org/10.1093/botlinnean/boab022>).
- León-Peralta, C. E., Valdez-Partida, J., and Pérez-García, E. A. 2021. *Barkeria uruapani* (Laeliinae, Epidendroideae, Orchidaceae), a new species from western Mexico. *Phytotaxa* 513(4): 282–294 (<https://doi.org/10.11646/phytotaxa.513.4.2>).
- Martel, C., Egoavil, L., Ocupa, L., Tello, J. A., Patrón, F. R., Laura, C., León, M., and Collantes, B. 2021. An homage to Peru's bicentenary: *Maxillaria bicentenaria* (Orchidaceae), a new species previously misidentified as *M. pyhalae*. *Phytotaxa* 518(2): 87–99 (<https://doi.org/10.11646/phytotaxa.518.2.1>).
- Medina, H., Portilla, J., and Portilla, I. 2019. New Ecuadorian orchid, part 2—A new species of *Sobralia* (Orchidaceae: Sobraliinae) from Southeast Ecuador. *Orchids, the Bulletin of the American Orchid Society* 88(9): 708–711.

Meneguzzo, T. E. C. 2021. Proposal to conserve the name *Warczewiczella marginata* against *Zygopetalum fragrans* (Orchidaceae). *Taxon* 70(6): 1368–1369 (<https://doi.org/10.1002/tax.12630>).

Morales, F. L. A., Lipińska, M. M., and Szlachetko, D. L. 2021. *Masdevallia* × *urbanae* (Orchidaceae)—A new, natural hybrid between *M. floribunda* and *M. tuerckheimii* from Guatemala. *Diversity* 13(3): art. 108 (<https://doi.org/10.3390/d13030108>).

Morales, N. G., Toscano De Brito, A. L. V., and De Camargo Smidt, E. C. 2021. *Pabstiella hileiaensis* (Orchidaceae Pleurothallidinae), a new species from the Atlantic Rainforest in southern Bahia, Brazil. *Phytotaxa* 518(1): 61–68 (<https://doi.org/10.11646/phytotaxa.518.1.7>).

Moreno, J. S., Galindo-Tarazona, R., Alegria-Valencia, Melisa, Mora-A., D. L., and Tróchez, A. Z. 2021. Three new species of *Lepanthes* (Orchidaceae: Pleurothallidinae) from San José del Salado, Valle del Cauca, in southwestern Colombia. *Harvard Papers in Botany* 26(1): 177–188 (<https://doi.org/10.3100/hpib.v26iss1.2021.n11>).

Ocupa Horna, L., Hágsater, E., and Jiménez, M. M. 2021. A new species of *Epidendrum* L. (Orchidaceae) of pendulous habit from Peru. *PhytoKeys* 184: 55–66 (<https://doi.org/10.3897/phytokeys.184.70045>).

Ocupa Horna, L., Vieira-Urbe, S., and Yupanqui Godo, L. E. 2021. Two new species of *Andinia* (Pleurothallidinae) from the Central Cordillera of Peru. *Lankesteriana* 21(3): 297–306 (<https://doi.org/10.15517/lank.v21i3.48840>).

Pérez-Escobar, O. A., Jaramillo, C., Zuluaga, A., García-Revelo, S., Dodsworth, S., and Bogarín, D. 2021. Two new orchid species (*Camaridium*: Maxillariinae; *Lepanthes*: Pleurothallidinae) from the Pacific slope of the Northern Andes, Colombia. *Lankesteriana* 21(3): 351–362 (<https://doi.org/10.15517/lank.v21i3.49471>).

Pessoa, E. M., Cordeiro, J. M. P., Felix, L. P., Almeida, E. M., Costa, L., Nepomuceno, Á., Souza, G., Chase, Mark W., Alves, M., and Van Den Berg, C. 2021. Too many species: morphometrics, molecular phylogenetics and genome structure of a Brazilian species complex in *Epidendrum* (Laeliinae; Orchidaceae) reveal fewer species than previously thought. *Botanical Journal of the Linnean Society* 195(2): 161–188 (<https://doi.org/10.1093/botlinnean/boaa071>).

Ponert, J. 2021. *Pleurothallopsis grandiflora*, un taxón desatendido que se confunde con *P. microptera* (Pleurothallidinae, Orchidaceae) | *Pleurothallopsis grandiflora* a neglected taxon confused with *P. microptera* (Pleurothallidinae, Orchidaceae) *Orquideología* 38(1): 39–48.

Portilla, J., Medina, H., and Portilla, I. 2021. Two new species of *Sudamerlycaste* (Orchidaceae: Maxillariinae[sic]) from Southwestern Ecuador. *Orchids, the Bulletin of the American Orchid Society* 90(3): 230–234.

Pupulin, F. 2021. The New Refugium Botanicum—*Stanhopea ecornuta*. *Orchids, the Bulletin of the American Orchid Society* 90(6): 426–429.

Pupulin, F. 2021. The New Refugium Botanicum—*Stenotyla picta*. *Orchids, the Bulletin of the American Orchid Society* 90(9): 666–669.

Pupulin, F. 2021. On the status of the genus *Hybochilus*, with a new combination in *Leochilus* (Orchidaceae: Oncidiinae). *Webbia* 76(2): 289–293 (<https://doi.org/10.36253/jopt-10856>).

Pupulin, F., Aguilar, J., Belfort-Oconitrillo, N., Díaz-Morales, M., and Bogarín, D. 2021. *Florae Costaricensis subtribui Pleurothallidinis (Orchidaceae) Prodromus II*. Systematics of the *Pleurothallis cardiothallis* and *P. phyllocardia* groups, and other related groups of *Pleurothallis* with large vegetative habit. *Harvard Papers in Botany* 26(1): 203–295 (<https://doi.org/10.3100/hpib.v26iss1.2021.n14>).

Pupulin, F., Bogarín, D., and Karremans, A. P. 2020. Una nueva especie de *Cischweinfia* (Orchidaceae: Oncidiinae) de Costa Rica, con hábito y flores muy pequeñas | A new species of *Cischweinfia* (Orchidaceae: Oncidiinae) from Costa Rica with very small habit and flowers. *Orquideología* 37(1): 4–16.

Rincón-González, M., Barbosa, W., and Moreno, J. S. 2020. Nuevos registros de orquídeas para la flora Colombiana | New records of orchids for the Colombian flora. *Orquideología* 37(1): 27–42.

Rojas-Alvarado, G. and Pupulin, F. 2021. The New Refugium Botanicum—*Epidendrum pseudepidendrum*. *Orchids, the Bulletin of the American Orchid Society* 90(4): 264–267.

Romero-González, G. A., Fernández-Concha, G. C., Ramos, C. M. B., and González, M. A. 2021. New reports of *Galeandra* (Orchidaceae) from Mexico. *Harvard Papers in Botany* 26(2): 371–401 (<https://doi.org/10.3100/hpib.v26iss2.2021.n2>).

Rysy, S. 2021. Der Orchideenschatz der Sierra Madre—Teil 1: Eine Exkursion in den wenig bekannten Norden von Mexiko. *Die Orchidee* 72(3): 228–239.

Rysy, S. 2021. Der Orchideenschatz der Sierra Madre—Teil 2: Zweite Exkursion in den wenig bekannten Norden von Mexiko. *Die Orchidee* 72(5): 342–353.

Salguero, G. and Pupulin, F. 2021. The New Refugium Botanicum—*Mormolyca ringens*. *Orchids, the Bulletin of the American Orchid Society* 90(7): 506–509.

Sambin, A. and Aucourd, M. 2021. Mise à jour de l’inventaire des orchidées présentes autour et sur le pic Coudreau des Monts Bakra. Avec une note taxinomique pour quelques espèces. *Richardiana, nouv. sér.* 5: 121–141 [French Guyana].

Sambin, A. and Aucourd, M. 2021. Une nouvelle espèce de *Specklinia* (Orchidaceae-Pleurothallidinae) glanduleuse à feuilles étroites de Guyane. Avec une note taxinomique sur la variabilité intraspécifique des espèces apparentées. *Richardiana, nouv. sér.* 5: 241–266.

Sambin, A. and Aucourd, M. 2021. Deux nouvelles espèces de *Gongora* (Orchidaceae) de Guyane. *Richardiana, nouv. sér.* 5: 317–328.

Sauleda, R. P. and Uribe-Vélez, C. 2019. Una nueva especie de *Epidendrum* L. (Orchidaceae) de tallo en forma de caña de La Habana, Valle del Cauca para Colombia | A New Species of Reed-stemmed *Epidendrum* L. (Orchidaceae) from La Habana, Valle del Cauca, Colombia. *Orquideología* 36(2): 167–177.



Sauvêtre, P. 2020. *Maxillaria pfisteri*, a new species from Brazil. *Orchid Review* 128(1332): 248–249.

Sierra-Ariza, M. A. 2021. Una nueva especie de *Oncidium* (Orchidaceae: Oncidiinae) de la sección *Heterantha* | A new species of *Oncidium* (Orchidaceae: Oncidiinae) from the *Heterantha* section. *Orquideología* 38(1): 17–38.

Suarez, F. T., López, M. F., Gavilanes, M. J., Monteros, M. F., García, T. S., and Graham, C. H. 2021. Three new endemic species of *Lepanthes* (Orchidaceae, Pleurothallidinae) from the highlands of Ecuador. *PhytoKeys* 180: 111–132 (<https://doi.org/10.3897/phytokeys.180.62671>).

Vélez-Abarca, L., Jiménez, M. M., Moreno, J. S., and Baquero, L. E. 2021. *Pityphyllum mercedes-abarcae* (Maxillariinae) a new species from Ecuador. *Lankesteriana* 21(3): 289–296 (<https://doi.org/10.15517/lank.v21i3.48754>).

Vieira-Uribe, S. and Moreno, J. S. 2020. Una nueva especie minúscula de *Lepanthes* (Orchidaceae: Pleurothallidinae) de los Andes orientales de Colombia | A new tiny species of *Lepanthes* (Orchidaceae: Pleurothallidinae) from the eastern Andes of Colombia. *Orquideología* 37(1): 17–26.

Vieira-Uribe, S., Moreno, J. S., and Pérez Arcila, L. F. 2021. Una nueva especie de *Lepanthes* (Orchidaceae: Pleurothallidinae) del norte de los Andes centrales de Colombia | A new species of *Lepanthes* (Orchidaceae: Pleurothallidinae) from the north central Andes of Colombia. *Orquideología* 38(1): 4–16.

Villegas V., F. 2019. Una especie de *Macradenia* para Colombia descrita desde 2012 pero cultivada bajo nombre erróneo por muchos años. *Orquideología* 36(2): 178–181.

Werner Siebje, M. and Karin, E.-Q. 2021. Orchidaceae flora of Joinville, Santa Catarina, Brazil. *Acta Biológica Catarinense* 3(1): 36–48 (<https://doi.org/10.21726/abc.v3i1.428>).

Wilson, M., Larsen, B., Zhao, K., Posada M., J. F., Aguirre, G. A., and Uribe V., C. 2019. Una hermosa especie nueva de *Pleurothallis* (Orchidaceae, Pleurothallidinae) en el complejo *P. crocodiliceps* en Colombia | A beautiful new species of *Pleurothallis* (Orchidaceae, Pleurothallidinae) in the *P. crocodiliceps* complex from Colombia. *Orquideología* 36(2): 111–126.

Zambrano Romero, B. J., Hágsater, E., and Solano, R. 2021. Miscellaneous of new species in *Epidendrum* (Orchidaceae) from southwestern Ecuador. *Phytotaxa* 511(2): 111–147 (<https://doi.org/10.11646/phytotaxa.511.2.2>).

#### **ASIA - PACIFIC (excluding the MIDDLE EAST, AUSTRALIA, and NEW ZEALAND)**

Adit, A., Jalal, J. S., Koul, M., and Tandon, R. 2021. A conspectus of orchid studies in India. *Rheedea* 31(3): 218–233 (<https://doi.org/10.22244/rheedea.2021.31.03.14>).

Adit, A., Kumar, P., Koul, M., and Tandon, R. 2021. Lectotypification of *Bulbophyllum crassipes* (Orchidaceae) and notes on its taxonomy and distribution. *Phytotaxa* 521(3): 232–235 (<https://doi.org/10.11646/phytotaxa.521.3.9>).

Agrawala, D. K., Bhattacharjee, A., Jalal, J. S., and Deori, C. 2021. *Gastrochilus yei* (Orchidaceae): a new addition for flora of India. *Nelumbo* 63(1): 29–32 (<https://doi.org/10.20324/nelumbo/v63/2021/165148>).

Agrawala, D. K., Panday, S., and Bhaumik, M. 2019. Extended distribution of *Peristylus orbicularis* (Orchidaceae) in Arunachal Pradesh, India. *Indian Journal of Forestry* 42(3): 255–258 (<https://doi.org/10.54207/bsmps1000-2019-Y8I0H6>).

Ahmed, M. and Dhiman, M. 2021. *Brachycorthis*[sic, *Brachycorythis*] *obcordata* (Buch.-Ham. ex D. Don) Summerh. (Orchidaceae): A new record for Jammu and Kashmir India. *Plant archives* 21(1): art. 175 (<https://doi.org/10.51470/plantarchives.2021.v21.no1.175>).

Arigela, R. K., Kabeer K, A. A., and Singh Jalal, J. 2021. Sympodial epiphytic orchid *Oberonia maxima* C.S.P. Parish ex Hook.f. in Kodaikanal Wildlife Sanctuary, Tamil Nadu, India. *Species* 22(70): 388–391.

Atthanagoda, A. G., Aberathna, N., Bandara, C., and Kumar, P. 2021. Taxonomic notes on the genus *Nervilia* (Nervilieae: Epidendroideae: Orchidaceae) in Sri Lanka. *Rheedea* 31(3): 161–174 (<https://doi.org/10.22244/rheedea.2021.31.03.05>).

Averyanov, L., Dat, P. T. T., Truong, B. V., Orlov, N., Maisak, T., Nguyen, T. H., and Dinh, Q. D. 2021. Studies of *Bulbophyllum* (Orchidaceae) in eastern Indochina IV. New species in the flora of Laos and Vietnam. *Phytotaxa* 514(3): 187–204 (<https://doi.org/10.11646/phytotaxa.514.3.1>).

Averyanov, L., Gruss, O., Chu, X. C., and Nguyen, H. T. 2021. Eine neue varietät einer Naturhybride der Gattung *Paphiopedilum* aus Vietnam: *Paphiopedilum* × *aspersum* var. *trantuananhii* O. Gruss, Aver., C. X. Canh et N. H. Tuan. *Die Orchidee* 72(5): 384–387.

Baasanmunkh, S., Oyuntsetseg, B., Efimov, P., Tsegmed, Z., Vandandorj, S., Oyundelger, K., Urgamal, M., Undruul, A., Khaliunaa, K., Namuulin, T., and Choi, H. J. 2021. Orchids of Mongolia: Taxonomy, species richness and conservation status. *Diversity* 13(7): art. 302 (<https://doi.org/10.3390/d13070302>).

Barman, D., Parthasarathy, U., and Rampal. 2020. Analyzing the catalogue of *Dendrobium Swartz* from northeastern Himalayan states and northern part of West Bengal utilizing GIS techniques. *Journal of the Orchid Society of India* 34: 91–99.

Basumatary, S., Baruah, S., and Singh, L. J. 2021. Two new additions to the orchid flora of Assam, India. *Journal of Threatened Taxa* 13(11): 19665–19670 (<https://doi.org/10.11609/jott.7282.13.11.19665-19670>) [*Bulbophyllum*].

Besi, E. E., Nikong, D., Esa, M. I. M., Mus, A. A., Nelson, H. V., Mohamad, N. N., Ombokou, R., Rusdi, N. A., David, D., Aziz, Z. A., and Go, R. 2021. A species checklist of wild orchids in selected sites in Kadamaian, Kota Belud, Sabah. *Journal of Tropical Biology and Conservation* 18: 131–147.

Bhatt, M. R. 2021. A new record of an endangered and endemic rare Rein Orchid *Habenaria rariflora* from Gujarat, India. *Journal of Threatened Taxa* 13(5): 18385–18389 (<https://doi.org/10.11609/jott.6171.13.5.18385-18389>).

Bhattacharjee, A., Agrawala, D. K., Jalal, J. S., and Deori, C. 2021. Status of *Gastrochilus minimus* (Orchidaceae)—a recently described species from China. *Rheedea* 31(3): 181–185 (<https://doi.org/10.22244/rheedea.2021.31.03.07>).

Borah, D., Gogoi, K., Kafley, P., Das, N., and Tangjang, S. 2021. Checklist of orchids of Biswanath district of Assam, India, with a new record for the state. *Richardiana, nouv. sér.* 5: 148–157.

Cámara-Leret, R., Frodin, D. G., Adema, F., Anderson, C., Appelhans, M. S., Argent, G., Guerrero, S. A., Ashton, P., Baker, W. J., Barfod, A. S., Barrington, D., Borosova, R., Bramley, G. L. C., Briggs, M., Buerki, S., Cahen, D., Callmander, M. W., Cheek, M., Chen, C.-W., Conn, B. J., Coode, M. J. E., Darbyshire, I., Dawson, S., de Wilde, W., Dransfield, J., Drinkell, C., Duyfjes, B., Ebihara, A., Ezedin, Z., Fu, L.-F., Gideon, O., Girmansyah, D., Govaerts, R., Fortune Hopkins, H., Hassemer, G., Hay, A., Heatubun, C. D., Hind, D. J. N., Hoch, P., Homot, P., Hovenkamp, P., Hughes, M., Jebb, M., Jennings, L., Jimbo, T., Kessler, M., Kiew, R., Knapp, S., Lamei, P., Lehnert, M., Lewis, G. P., Linder, H. P., Lindsay, S., Low, Y. W., Lucas, E., Mancera, J. P., Melo, P. H. A., Monro, A. K., Moore, A., Middleton, D. J., Nagamasu, H., Newman, M. F., Nic Lughadha, E., Ohlsen, D. J., Pannell, C. M., Parris, B., Pearce, L., Penneys, D. S., Perrie, L. R., Petoe, P., Poulsen, A. D., Prance, G. T., Quakenbush, J. P., Raes, N., Rodda, M., Rogers, Z. S., Schuiteman, A., Schwartzburd, P., Scotland, R. W., Simmons, M. P., Simpson, D. A., Stevens, P., Sundue, M., Testo, W., Trias-Blasi, A., Turner, I., Utteridge, T. M. A., van Welzen, P. C., Walsingham, L., Webber, B. L., Wei, R., Weiblen, G. D., Weigend, M., Weston, P., Wilkie, P., Wilmot-Dear, C. M., Wilson, H. P., Wood, J. R. I., and Zhang, L.-B. 2020. New Guinea has the world's richest island flora. *Nature* 584: 579–583 (<https://doi.org/10.1038/s41586-020-2549-5>).

Chakraborti, S. D., Oraon, D., and Samant, S. 2021. Orchidaceae in Ajodhya Hills of Purulia, West Bengal, India: diversity, threats and conservation strategies. *Richardiana, nouv. sér.* 5: 267–282.

Chakraborty, O., Sengupta, S., Chakraborty, S., Roy, R., and Agrawala, D. K. 2020. *Stereochilus erinaceus* (Rchb.f.) Garay (Orchidaceae)—a new distributional record for India with notes on its relationships and threat status assessment. *Journal of the Orchid Society of India* 34: 149–153.

Chen, B.-H. and Jin, X.-H. 2021. *Neottia wuyishanensis* (Orchidaceae: Neottieae), a new species from Fujian, China. *Plant Diversity* 43(5): 426–431 (<https://doi.org/10.1016/j.pld.2021.01.008>).

Chinchilla, I. F. and Pupulin, F. 2021. The New Refugium Botanicum—*Diplocaulobium lageniforme*. *Orchids, the Bulletin of the American Orchid Society* 90(5): 346–349.

Cribb, P. 2021. An annotated checklist of *Cymbidium* species. *Orchid Digest* 85(4): 212–252.

Cribb, P. 2021. Unexpected variation in well-known and novel *Cymbidium* species in China. *Orchid Digest* 85(4): 254–259.

Cribb, P. 2021. Thoughts on the closely related *Cymbidium seidenfadenii* and *Cymbidium insigne*. *Orchid Digest* 85(4): 276–277.

- Cribb, P. 2021. Thoughts on *Cymbidium insigne* and *Cymbidium seidenfadenii*. *Orchid Review* 129(1335): 59–60.
- Dalström, S., Gyeltshen, C., Gyeltshen, N., and Tobgay, K. 2021. Orchids of Bhutan. *Pleione. Orchids, the Bulletin of the American Orchid Society* 90(8): 604–610.
- Dalström, S., Gyeltshen, C., Gyeltshen, N., Tobgay, K., Gyeltshen, N., Ghalley, B. B., and Rabgay, K. 2019. Orchids in Bhutan. The genus *Diplomeris*. *Orchids, the Bulletin of the American Orchid Society* 88(9): 684–687.
- Dalström, S., Gyeltshen, C., Gyeltshen, N., Tobgay, K., Zam, P., Wangchuk, T., and Rinzin, K. 2021. Orchids of Bhutan. *Phalaenopsis* Blume. *Orchids, the Bulletin of the American Orchid Society* 90(5): 362–367.
- Dang, M. Q., Averyanov, L. V., Maisak, T. V., Bui, V. H., Dang, V. S., Truong, Q. T., and Truong, B. V. 2021. New taxa of *Bulbophyllum* (Orchidaceae) in the flora of Vietnam. *Taiwania* 66(2): 258–266 (<https://doi.org/10.6165/tai.2021.66.258>).
- Dang, M. Q., Ormerod, P., Bui, V. H., Truong, Q. T., Duong, M. T. T. N., Dang, V. S., and Truong, B. V. 2021. *Mycaranthes latifolia* (Orchidaceae), a new record for Vietnam. *Rheedea* 31(3): 206–210 (<https://doi.org/10.22244/rheedea.2021.31.03.12>).
- Das, D., Kar, S., and Datta, B. K. 2021. *Cleisocentron pallens* (Cathcart ex Lindl.) N.Pearce & P.J.Cribb: extended distributional record and addition to the Orchid flora of Tripura in North-East India. *Pleione* 15(2): 293–297 (<https://doi.org/10.26679/Pleione.15.2.2021.293-297>).
- Das, R. and Kumar, S. 2021. Note on the presence of *Spiranthes himalayensis* (Orchidaceae) in the state of Assam, India. *Richardiana, nouv. sér.* 5: 295–302.
- Deb, C. R., Longchar, T. B., Kamba, J., and Jakha, H. Y. 2021. Wild orchid resources of Nagaland, India: updated status. *Pleione* 15(2): 113–122 (<https://doi.org/10.26679/Pleione.15.2.2021.113-122>).
- Dechen, U., Wangchuk, T., and Norbu, L. 2020. *Herminium longilobatum* (Orchidaceae), a new record for Bhutan. *Journal of Threatened Taxa* 12(10): 16396–16398 (<https://doi.org/10.11609/jott.5887.12.10.16396-16398>).
- Deore, S. V., Sonawane, M. D., and Kambale, S. S. 2021. Extended distribution of two endemic epiphytes from the Western Ghats to the Deccan Plateau. *Journal of Threatened Taxa* 13(14): 20258–20260 (<https://doi.org/10.11609/jott.7598.13.14.20258-20260>) [*Bulbophyllum fimbriatum*].
- Dogra, K. S. and Jalal, J. S. 2018. *Habenaria plantaginea* Lindl. (Orchidaceae)—An addition to the flora of Chandigarh. *Indian Journal of Forestry* 41(1): 95–96 (<https://doi.org/10.54207/bsmps1000-2018-4E397Q>).
- Duong, M. T. T. N., Son Dang, V., Averyanov, L. V., Tam Truong, Q., Amsler, R., and Vuong Truong, B. 2021. Two new species of *Bulbophyllum* sect. *Racemosae* (Orchidaceae) from Vietnam. *Nordic Journal of Botany* 39(9): Njb12574 (<https://doi.org/10.1111/njb.03062>).

Elango, B. S., Saravanan, T. S., and Kaliamoorthy, S. 2019. Notes on taxonomy and distribution of *Vanilla walkeriae* Wight (Orchidaceae) in Eastern Ghats of Tamil Nadu. *Indian Journal of Forestry* 42(2): 117–118 (<https://doi.org/10.54207/bsmps1000-2019-8P8CNC>).

Frayssinet, I. and Frayssinet, P. 2021. Fleurs des îles de cendre et de corail, quelques orchidées du Vanuatu. *l'Orchidophile* 52(229): 175–188.

Frayssinet, I., Frayssinet, P., Laudereau, C., and Laudereau, P.-L. 2021. Des fleurs sur le Caillou: quelques orchidées remarquables de Nouvelle-Calédonie. *l'Orchidophile* 52(229): 111–130.

Fukunaga, H., Kitada, Y., Kawamura, N., and Sawa, S. 2021. A new form of the mycoheterotrophic plant *Lecanorchis nigra* var. *patipetala*. *Orchid Digest* 85(1): 48–50.

Gale, S. W., Kumar, P., Lee, K. W. K., and Yukawa, T. 2021. Taxonomic reappraisal of *Tropidia nipponica* (Orchidaceae) and allies in East Asia. *Botany* 47(3): 119–130 ([https://doi.org/10.50826/bnmnsbot.47.3\\_119](https://doi.org/10.50826/bnmnsbot.47.3_119)).

Geiger, D. L., Sulaiman, M., and Murugan, C. 2021. Studies in *Oberonia* 10. A re-evaluation of *Oberonia brachystachys* and *O. subligaculifera* (Orchidaceae: Malaxideae) and their synonyms. *Rheedea* 31(3): 141–160 (<https://doi.org/10.22244/rheedea.2021.31.03.04>).

Gogoi, K. and Borgohain, A. 2021. *Hetaeria oblongifolia* Blume (Orchidaceae, Orchidoideae, Cranichideae, Goodyerinae)—a new record from Assam for North East Indian flora. *Pleione* 15(2): 287–291 (<https://doi.org/10.26679/Pleione.15.2.2021.287-291>).

Gogoi, K., Gogoi, R., Sonowal, R., and Borah, D. 2021. Checklist of orchids of Lakhimpur district of Assam (India) with the addition of two rare orchids. *Richardiana, nouv. sér.* 5: 59–75.

Gogoi, K., Gogoi, R., Sonowal, R., and Borah, D. 2021. *Coelogyne rigida* E.C. Parish & H.G. Reichenbach—A new addition to the orchid flora of Assam (India). *Pleione* 15(3): 463–469 (<https://doi.org/10.26679/Pleione.15.3.2021.463-469>).

Gogoi, K. and Hondiqui, R. 2021. *Oberonia prainiana* King & Pantling (Orchidaceae, Malaxidinae) a new addition to the flora of Assam, India. *Richardiana, nouv. sér.* 5: 217–223.

Gogoi, K. and Hondiqui, R. 2021. Note on the addition of *Nervilia macroglossa* (Orchidaceae) to the flora of Assam, India. *Richardiana, nouv. sér.* 5: 310–316.

Gogoi, K. and Hondiqui, R. 2021. *Bulbophyllum karbianglongensis* (Epidendroideae), a new species from Assam, India. *Lankesteriana* 21(3): 325–331 (<https://doi.org/10.15517/lank.v21i3.49046>).

Gogoi, K. and Nyorak, J. 2021. Synopsis of the genus *Cylindrolobus* Blume (Orchidaceae) with an addition for the flora of Assam (India). *Pleione* 15(2): 273–281 (<https://doi.org/10.26679/Pleione.15.2.2021.273-281>).

Gruss, O. 2020. *Phalaenopsis mirabilis* und *Eclecticus chunii*, zwei interessante kleinblütige Arten aus Südostasien. *OrchideenJournal* 27(4): 152–157.



Gruss, O. 2021. *Phalaenopsis arunachalensis*—Eine neue Art aus Indien. *OrchideenJournal* 28(1): 14–17.

Gruss, O. 2021. *Phalaenopsis honghenensis* und *Phalaenopsis malipoensis* in Vietnam gefunden. *OrchideenJournal* 28(2): 54–57.

Gruss, O. 2021. Eine neue Art der Gattung *Phalaenopsis* aus Myanmar. *Phalaenopsis putaoensis* X.H.Jin & H.A.Mung. *OrchideenJournal* 28(2): 60–62.

Gruss, O. and Averyanov, L. 2020. Interessante neue Arten der Orchideenfamilie aus Vietnam. *OrchideenJournal* 27(4): 148–152 [*Cylindrolobus*].

Gruss, O. and Averyanov, L. 2021. Die Welt ist noch voller Wunder. Neue Orchideen aus Laos Teil 1. *OrchideenJournal* 28(2): 84–86 [*Bulbophyllum brachyscapum*].

Gruss, O. and Averyanov, L. 2021. *Paphiopedilum helenae*. The story of its discovery. *Orchids, the Bulletin of the American Orchid Society* 90(9): 693–699.

Gruss, O. and Han, Z. 2021. *Paphiopedilum villosum* var. *densissimum*—Eine neue Farbform aus China. *OrchideenJournal* 28(1): 40–42.

Gyeltshen, P., Jamtsho, S., Phuntsho, T., Zangpo, P., Gurung, D. B., and Kumar, P. 2021. Additions to orchid flora of Bhutan-II. *Taiwania* 66(3): 415–426 (<https://doi.org/10.6165/tai.2021.66.415>).

Hsu, T.-C., Chen, C.-W., Hung, H.-C., Tram, N. K. T., Truong, Q. C., Luu, H. T., and Li, C.-W. 2020. New and noteworthy orchids (Orchidaceae) discovered in Langbiang Plateau, southern Vietnam 1. *Taiwania* 65(2): 237–248 (<https://doi.org/10.6165/tai.2020.65.237>).

Huang, D.-M., Chen, Y.-T., Wang, K.-H., and Lin, T.-P. 2019. Newly discovered native orchids of Taiwan (XIII). *Taiwania* 64(1): 43–51 (<https://doi.org/10.6165/tai.2019.64.43>).

Huda, M. K., Hoque, M. M., and Alam, M. O. 2020. Notes on four new angiospermic (Orchidaceae) records from Bangladesh. *Journal of the Orchid Society of India* 34: 1–9 [*Chiloschista*, *Coelogyne*, *Conchidium*, *Dendrobium*].

Huda, M. K., Hoque, M. M., and Alam, O. 2021. Three new Angiospermic (Orchidaceae) records from Bangladesh. *Jahangirnagar University Journal of Biological Sciences* 9(1–2): 123–132 (<https://doi.org/10.3329/jujbs.v9i1-2.53712>) [*Cleisostoma*, *Coelogyne*, *Phalaenopsis*].

Ikeda, H., Shimizu, A., and Efimov, P. G. 2021. Retypification of *Bulbophyllum drymoglossum* Maxim. ex Ōkubo (Orchidaceae). *The Journal of Japanese Botany* 96(5): 279–283.

Inuthai, J., Chantanaorrapint, S., Poopath, M., Tetsana, N., Kiewbang, W., and Suddee, S. 2021. *Corybas papillatus* (Orchidaceae), a new orchid species from peninsular Thailand. *Phytokeys* 183: 1–7 (<https://doi.org/10.3897/phytokeys.183.71167>).

Jin, Y., Sun, M., Jiang, H., Kumar, P., Liu, Z., Schuiteman, A., Wu, J., and Tian, H. 2021. *Anoectochilus medogensis* (Goodyerinae, Cranichideae, Orchidaceae), a new species from Tibet, China. *Phytotaxa* 510(3): 213–227 (<https://doi.org/10.11646/phytotaxa.510.3.2>).

- Joshi, B., Panwar, G. S., and Singh, S. K. 2021. An account on *Rhynchostylis retusa*: an exquisite orchid. *Indian Journal of Forestry* 44(1): 16–19 (<https://doi.org/10.54207/bsmps1000-2021-63AXO1>).
- Kaliamoorthy, S. and Saravanan, T. S. 2018. *Cheirostylis parvifolia* Lindl. (Orchidaceae): An addition to the flora of Palakkad District, Kerala. *Indian Journal of Forestry* 41(3): 303–305 (<https://doi.org/10.54207/bsmps1000-2018-6AE3H0>).
- Kamba, J. and Deb, C. R. 2021. *Phalaenopsis wilsonii* (Orchidaceae: Epidendroideae: Vandeeae), a new record for India. *Rheedea* 31(3): 197–199 (<https://doi.org/10.22244/rheedea.2021.31.03.10>).
- Kemprai, K. K., Khersa, B., and Medhi, P. 2021. *Diplomeris pulchella* D. Don (Orchidaceae): an addition to the Assam Flora (India). *Pleione* 15(2): 282–286 (<https://doi.org/10.26679/Pleione.15.2.2021.282-286>).
- Khoirurrais, M., Rahayuningsih, M., and Saptono, S. 2021. Species[*sic*] richness of Orchidaceae in Selo Resort Mount Merbabu National Park Central Java. *Journal of Physics: Conference Series* 1918: art. 052032 (<https://doi.org/10.1088/1742-6596/1918/5/052032>).
- Kolanowska, M., Kras, M., Nowak, S., and Szlachetko, D. L. 2021. Synopsis of *Habenaria* s.l. (Orchidaceae) in New Guinea and adjacent islands. *PeerJ* 9: art. 12011 (<https://doi.org/10.7717/peerj.12011>).
- Kumar N., S. and Kumar, S. 2021. Taxonomic note on *Luisia zeylanica* (Orchidaceae) from Bonai Forest Division, Odisha, India. *Richardiana, nouv. sér.* 5: 142–147.
- Li, J.-L., Wu, L., Qin, Y., and Liu, Y. 2021. *Gastrodia fontinalis*, a newly recorded species of *Gastrodia* to mainland China. *Journal of Tropical and Subtropical Botany* 29(4): 417–420 (<https://doi.org/10.11926/jtsb.4314>).
- Li, J. W., Ya, J. D., Ye, D. P., Liu, C., Liu, Q., Pan, R., He, Z. X., Pan, B., Cai, J., Lin, D. L., and Jin, X. H. 2021. Taxonomy notes on Vandeeae (Orchidaceae) from China: Five new species and two new records. *Plant Diversity* 43(5): 379–389 (<https://doi.org/10.1016/j.pld.2021.01.009>).
- Li, J. W., Ya, J. D., Ye, D. P., Liu, C., Liu, Q., Pan, R., He, Z. X., Pan, B., Cai, J., Lin, D. L., and Jin, X. H. 2021. Four new species and a new record of Orchidinae (Orchidaceae: Orchideae) from China. *Plant Diversity* 43(5): 390–400 (<https://doi.org/10.1016/j.pld.2021.05.003>).
- Li, L. and Li, S.-J. 2021. Proposal to reject the name *Epidendrum flabellum-veneris* (Orchidaceae). *Taxon* 70(6): 1366–1366 (<https://doi.org/10.1002/tax.12628>) [*Bulbophyllum*].
- Lin, T. P. 2021. New addition and observations of the orchid flora of Taiwan: *Calanthe*, *Cheirostylus*[*sic*, *Cheirostylis*], *Gastrodia*, and *Goodyera* (Orchidaceae). *Taiwania* 66(3): 353–359 (<https://doi.org/10.6165/tai.2021.66.353>).
- Liu, B., Jiang, Y.-T., Ma, L., Liu, Z.-J., and Chen, S.-P. 2019. *Paphiopedilum* × *ailaoshanense*, a new natural hybrid species of Orchidaceae from China. *Journal of Tropical and Subtropical Botany* 27(6): 721–725 (<https://doi.org/10.11926/jtsb.4055>).

- Liu, D.-K., Ma, L., Chen, S.-P., Lan, S.-R., and Li, M.-H. 2021. *Chiloschista parishii* Seidenf. (Orchidaceae), a new record to mainland of China. *Journal of Tropical and Subtropical Botany* 29(2): 149–150 (<https://doi.org/10.11926/jtsb.4278>).
- Liu, Q., Ya, J.-D., Wu, X.-F., Shao, B.-Y., Chi, K.-B., Zheng, H.-L., Li, J.-W., and Jin, X.-H. 2021. New taxa of tribe Gastrodieae (Epidendroideae, Orchidaceae) from Yunnan, China and its conservation implication. *Plant Diversity* 43(5): 420–425 (<https://doi.org/10.1016/j.pld.2021.06.001>).
- Lyngwa, C., Meitei, L. R., and Deori, C. 2021. *Calanthe davidii* Franch. (Orchidaceae)—an addition to the orchid flora of Meghalaya, India. *Pleione* 15(3): 476–478 (<https://doi.org/10.26679/Pleione.15.3.2021.476-478>).
- Ma, L., Dong, J.-W., Chen, S.-P., and Zhuang, L.-B. 2020. *Dendrobium naungmungense* Q. Liu & X. H. Jin, a new record of Orchidaceae from China. *Journal of Tropical and Subtropical Botany* 28(2): 201–202 (<https://doi.org/10.11926/jtsb.4109>).
- Martuti, N. K. T., Habibah, N. A., Arifin, M. S., Mutiatari, D. P., and Istantri, D. 2021. Orchid diversity in Kalisegoro village Semarang city, Indonesia. *Journal of Physics: Conference Series* 1918: art. 052040 (<https://doi.org/10.1088/1742-6596/1918/5/052040>).
- Mat Esa, M. I., Nordin, F. A., Go, R., and Raffi, A. 2021. *Vanilla yersiniana* (Orchidaceae), a new record for Peninsular Malaysia. *Reinwardtia* 20(2): 51–55 (<https://doi.org/10.14203/reinwardtia.v20i2.4186>).
- Mathew, M. J., Mathew, J., Salim, P. M., and Szlachetko, D. L. 2021. *Chiloschista confusa* (Orchidaceae), a new species from the Southern Western Ghats, Kerala, India. *Annales Botanici Fennici* 58(4–6): 347–353 (<https://doi.org/10.5735/085.058.0420>).
- Metusala, D., Saputra, R., Trimanto, and Nisyawati. 2021. A new species of *Dendrobium* section *Spatulata* from Maluku, Indonesia. *Phytotaxa* 528(5): 269–278 (<https://doi.org/10.11646/phytotaxa.528.5.1>).
- Naive, M. A. K., Cootes, J., and Ormerod, P. 2019. *Stichorkis davidlohmanii* (Orchidaceae; Malaxideae), a new species from the southern Philippines. *Taiwania* 64(1): 65–68 (<https://doi.org/10.6165/tai.2019.64.65>).
- Naive, M. A. K., Handoyo, F., and Champion, J. 2021. *Dendrobium ormerodii* (Orchidaceae, Dendrobieae), a new *Dendrobium* species from Central Kalimantan, Indonesia. *Phytotaxa* 523(4): 205–209 (<https://doi.org/10.11646/phytotaxa.524.3.5>).
- Naive, M. A. K., Yudistira, Y. R., Romiyadi, Sumardi, D., and Ormerod, P. 2021. *Tuberolabium camperenik* (Orchidaceae), a new Aeridinae species with crystal white flowers from West Java, Indonesia. *Taiwania* 66(3): 273–276 (<https://doi.org/10.6165/tai.2021.66.273>).
- Nguyen, D. H., Averyanov, L. V., Dang, V. S., Pham, P. D., Maisak, T., Bui, V. H., Dang, M. Q., and Truong, B. V. 2021. *Bulbophyllum xuansonii* (Orchidaceae), a new miniature orchid from northern Vietnam and new national record of *B. gracilipes*. *Phytotaxa* 522(2): 150–156 (<https://doi.org/10.11646/phytotaxa.522.2.7>).

Nguyen, H. T., Gruss, O., and Chu, X. C. 2021. *Bulbophyllum macranthum* f. *alboviride*, eine neue Farbform—in Vietnam gefunden. *Die Orchidee* 72(4): 322–326.

Nguyen, H. T., Nguyen, V. C., and Gruss, O. 2021. *Cymbidium munronianum* discovered in Vietnam. *Orchid Digest* 85(4): 260–264.

Nguyen, M. T., Averyanov, L. V., Bui, V. H., Hoang, N. S., Dang, V. S., and Truong, B. V. 2020. *Vanilla tiendatii*, a new climbing orchid from Vietnam. *Taiwania* 65(4): 438–442 (<https://doi.org/10.6165/tai.2020.65.438>).

Nguyen, M. T. and Nguyen, V. H. 2021. Diversity of Orchidaceae in South East Viet Nam. *Thu Dau Mot University Journal of Science* 3(1): 77–85 (<https://doi.org/10.37550/tdmu.ejs/2021.01.150>).

Nguyen, V. C., Averyanov, L. V., Maisak, T. V., Nguyen, T. L. T., Nguyen, V. K., and Truong, B. V. 2021. *Dendrobium parahendersonii*, a new orchid species (Orchidaceae) from southern Vietnam. *Taiwania* 66(3): 3600–3363 (<https://doi.org/10.6165/tai.2021.66.360>).

Nordin, F. A., Othman, A. S., Zainudin, N. A., Khalil, N. A., Asi, N., Azmi, A., Mangsor, K. N. A., Harun, M. S., and Zin, K. F. M. 2021. The orchid flora of Gunung Ledang (Mount Ophir), Malaysia—120 years after Ridley. *Pertanika Journal of Tropical Agricultural Science* 44(2): 369–387 (<https://doi.org/10.47836/PJTAS.44.2.07>).

O'Byrne, P. and Ong, P. T. 2021. Zwei neue *Bulbophyllum*-Arten von der Malaiischen Halbinsel. *Die Orchidee* 72(3): 196–203.

Ong, P. T. 2021. A revision of *Bromheadia* in Peninsular Malaysia. *Malesian Orchid Journal* 25: 11–51.

Ong, P. T. 2021. A revision of *Chiloschista* in Peninsular Malaysia. *Malesian Orchid Journal* 25: 53–59.

Ong, P. T. 2021. A revision of *Chroniochilus* in Peninsular Malaysia. *Malesian Orchid Journal* 25: 61–72.

Ong, P. T. 2021. *Dendrobium hocklengii* (sect. *Pedilonum*), a new orchid species from Peninsular Malaysia. *Malesian Orchid Journal* 25: 73–78.

Ong, P. T. 2021. A revision of *Trichoglottis* in Peninsular Malaysia. *Malesian Orchid Journal* 25: 97–126.

Ong, P. T. and Latif, N. A. 2021. *Cylindrolobus cyrtosepalus*, a new orchid record for Peninsular Malaysia. *Malesian Orchid Journal* 25: 79–86.

Ong, P. T., Rahman, U. N. A., and Kamin, I. 2021. *Vanilla havilandii*—a new orchid record for Peninsular Malaysia. *Orchid Review* 129(1336): 45–47.

Ormerod, P. 2020. Two new Bougainvillean species of *Dendrobium* section *Grastidium*. *The Orchadian* 20(2): 26–30.

Ormerod, P. and Juswara, L. 2021. Notes on some Malesian Orchidaceae III. *Harvard Papers in Botany* 26(1): 197–201 (<https://doi.org/10.3100/hpib.v26iss1.2021.n13>) [*Bambuseria*, *Blepharoglossum*, *Dendrobium*, *Habenaria*, *Pinalia*].

Ormerod, P. and Truong, B. V. 2021. A note on the identity of *Cirrhopetalum roseopunctatum* (Orchidaceae). *Harvard Papers in Botany* 26(2): 443–444 (<https://doi.org/10.3100/hpib.v26iss2.2021.n9>).

Pedersen, H. Æ., Nuammee, A., and Watthana, S. 2021. *Brachycorythis peitawuensis* (Orchidaceae) is non-endemic and significantly more variable than previously perceived. *Rheedea* 31(3): 175–180 (<https://doi.org/10.22244/rheedea.2021.31.03.06>).

Peng, S., Cheng, Y.-H., Mutie, F. M., Yang, J.-X., Wang, J.-J., He, H.-Q. L., Ting-Mei, Hu, G.-W., and Wang, Q.-F. 2021. *Ponerorchis wolongensis* (Orchidaceae, Orchidinae), a new species with variable labellum from the Hengduan Mountains, western Sichuan, China. *Nordic Journal of Botany* 2021: art. e03295 (<https://doi.org/10.1111/njb.03295>).

Pham, P. D., Averyanov, L. V., Dang, V. S., Nguyen, D. H., Maisak, T., Truong, Q. T., Dang, M. Q., and Truong, B. V. 2021. A new species and new record of *Bulbophyllum* (Orchidaceae) from Vietnam. *Phytotaxa* 522(1): 68–72 (<https://doi.org/10.11646/phytotaxa.522.1.8>).

Pham, P. D., Kumar, P., Dang, V. S., Nguyen, D. H., Bui, V. H., Tu, B. N., Dang, M. Q., and Truong, B. V. 2021. Notes on the genus *Chamaeanthus* (Orchidaceae, Epidendroideae, Vandeeae, Aeridinae) with a new species from Vietnam. *Phytotaxa* 524(2): 131–134 (<https://doi.org/10.11646/phytotaxa.524.2.9>).

Pham, P. D., Kumar, P., Dang, V. S., Nguyen, D. H., Bui, V. H., Tu, B. N., Dang, M. Q., and Truong, B. V. 2021. Erratum: Pham et al. (2021) Notes on the genus *Chamaeanthus* (Orchidaceae, Epidendroideae, Vandeeae, Aeridinae) with a new species from Vietnam. *Phytotaxa* 524 (2): 131–134. *Phytotaxa* 528(1): 70–70 (<https://doi.org/10.11646/phytotaxa.528.1.10>).

Pignatelli, M., Laudereau, C., and Laudereau, P.-L. 2021. Un *Pterostylis* R.Br. nouveau (Orchidaceae, Orchidoideae, Cranichideae) de Nouvelle-Calédonie. *Adansonia* 43(15): 177–183 (<https://doi.org/10.5252/adansonia2021v43a15>).

Pradhan, D. K. 2021. Recollection of *Galeola falconeri* Hook. f. (Orchidaceae) from Sikkim Himalaya after 123 years. *Pleione* 15(2): 246–248 (<https://doi.org/10.26679/Pleione.15.2.2021.246-248>).

Prapitasari, B., Amin, B. J. R. A., Rezaldi, T., Ahliyani, A. N., Kenza, M. L., and Nafiah, T. A. 2021. Inventarisasi jenis-jenis anggrek di kawasan Banyak Angkrem dan Kedung Kopong, Kecamatan Salaman, Kabupaten Magelang, Jawa Tengah. *BIOTROPIC The Journal of Tropical Biology* 5(2): 74–83 (<https://doi.org/10.29080/biotropic.2021.5.2.74-83>) [Indonesia].

Pratibha and Pathak, P. 2020. *Dactylorhiza umbrosa* (Kar. & Kir.) Nevski—a new record from Nubra Valley, Ladakh (U.T.), India. *Journal of the Orchid Society of India* 34: 23–25.

Pupulin, F. 2020. The New Refugium Botanicum—*Cymbidium ensifolium* f. *misericors*. *Orchids, the Bulletin of the American Orchid Society* 89(11): 850–852.



Pupulin, F. 2021. The New Refugium Botanicum—*Rhynchostylis gigantea*. *Orchids, the Bulletin of the American Orchid Society* 90(3): 186–188.

Qin, Y., Chen, H., Deng, Z., and Liu, Y. W. 2021. *Aphyllorchis yachangensis* (Orchidaceae), a new holomycotrophic orchid from China. *PhytoKeys* 179: 91–97 (<https://doi.org/10.3897/phytokeys.179.63994>).

Rabgay, K., Qazi, S., Nidup, T., Gurung, D. B., Penjor, L., Lhendup, S., and Kumar, P. 2021. Additions to orchid flora of Bhutan-I. *Taiwania* 66(3): 408–414 (<https://doi.org/10.6165/tai.2021.66.408>).

Rahmiati, Djufri, and Supriatno. 2021. Inventory of orchid species and abiotic factors in Singkil Swamp Wildlife Sanctuary. *Jurnal Penelitian Pendidikan IPA* 7(4): 712–718 (<https://doi.org/10.29303/jppipa.v7i4.803>) [Sumatra].

Rao, A. N. 2021. Review on the new species of orchids discovered from independent India during 1947 to 2021. *Pleione* 15(3): 375–403 (<https://doi.org/10.26679/Pleione.15.3.2021.375-403>).

Ravichandran, V., Manikandan, M., and Murugan, C. 2019. Rediscovery and typification of *Habenaria polyodon* Hook. f., a little known narrow endemic orchid from Nilgiri Biosphere Reserve. *Indian Journal of Forestry* 42(3): 231–233 (<https://doi.org/10.54207/bsmps1000-2019-4U20D0>).

Robinson, A. S. 2021. *Stigmatodactylus dalangpalawanicum[sic]*: Orchidaceae. *Curtis's Botanical Magazine* 38(4): 537–547 (<https://doi.org/10.1111/curt.12418>).

Saravanan, T. S. and Kaliamoorthy, S. 2019. Note on the extended distribution of two terrestrial orchids in Kerala. *Indian Journal of Forestry* 42(3): 235–238 (<https://doi.org/10.54207/bsmps1000-2019-A2473N>) [*Liparis nervosa*, *Peristylus richardianus*].

Sarkar, S., Agrawala, D. K., Chakraborty, S., and Maity, D. 2021. Notes on the identity, extended distribution and Red list assessment of *Phreatia albofarinosa* (Orchidaceae), a little-known species from India. *Richardiana, nouv. sér.* 5: 230–240.

Sathiyadash, K., Karthikeyan, V., and Basu, M. J. 2021. *Tropidia thwaitesii* Hook. f. (Orchidaceae: Tropidieae): A little known orchid from Eastern Ghats, India. *Indian Journal of Forestry* 43(2): 140–142 (<https://doi.org/10.54207/bsmps1000-2021-9270ZU>).

Schuiteman, A. 2021. A new species of *Gastrodia* (Orchidaceae) from Sumatra. *Malesian Orchid Journal* 25: 87–90.

Schuiteman, A. and Forbes, M. 2021. *Galeola keo*, a new species from Lao PDR. *Malesian Orchid Journal* 25: 91–95.

Selviana, Nurtjahya, E., and Sulistiarini, D. 2019. Jenis-jenis anggrek (Orchidaceae) di hutan rawa gambut Kabupaten Belitung. *Floribunda* 6(2): 72–80.

Shankar, U. 2021. Lectotypification and recollection of *Bulbophyllum crabro* in Meghalaya after 125 years. *Rheedea* 31(3): 211–217 (<https://doi.org/10.22244/rheedea.2021.31.03.13>).

- Singh, M., Negi, H., Jalal, J. S., and Agrawala, D. K. 2021. *Cephalanthera erecta* var. *oblanceolata* (Orchidaceae): a new record for the flora of India. *Nelumbo* 63(1): 20–24 (<https://doi.org/10.20324/nelumbo%2Fv63%2F2021%2F163908>).
- Souvannakhoummane, K., Lanorsavanh, S., Rakthai, P., Kumar, P., and Gale, S. W. 2021. *Cymbilabia sourioudongii* (Orchidaceae), a new species from Lao PDR. *Rheedea* 31(3): 186–190 (<https://doi.org/10.22244/rheedea.2021.31.03.08>).
- Spence, P. 2020. *Dendrobium eksanianum*, eine neue Art aus der Sektion *Latouria* aus dem Norden van Zentral Neuguinea | *Dendrobium eksanianum*, a new species of section *Latouria* from north central New Guinea. *OrchideenJournal* 27(4): 144–149.
- Spence, P. 2020. A new variety of *Dendrobium aberrans*. *Orchid Review* 128(1332): 244–247.
- Suetsugu, K. 2021. *Cremastra saprophytica* (Orchidaceae: Epidendroideae), a new leafless autonomously self-pollinating orchid species from Gifu Prefecture, Japan. *Phytotaxa* 527(2): 89–96 (<https://doi.org/10.11646/phytotaxa.527.2.1>).
- Suetsugu, K., Hirota, S. K., and Suyama, Y. 2021. First record of *Goodyera* × *tamnaensis* (Orchidaceae) from Boso Peninsula, Chiba Prefecture, Japan, based on morphological and molecular data. *Taiwania* 66(1): 113–120 (<https://doi.org/10.6165/tai.2021.66.113>).
- Suetsugu, K., Hirota, S. K., and Suyama, Y. 2021. A new natural hybrid, *Goodyera* × *tanakae* (Orchidaceae) from Japan with a discussion on the taxonomic identities of *G. foliosa*, *G. sonoharae*, *G. velutina*, *G. ×maximo-velutina* and *G. henryi*, based on morphological and molecular data. *Taiwania* 66(3): 277–286 (<https://doi.org/10.6165/tai.2021.66.277>).
- Suetsugu, K., Shitara, T., Nakato, N., Ishida, K., and Hayakawa, H. 2019. First record of *Goodyera* × *maximo-velutina* (Orchidaceae) from Kozu Island, Japan. *Taiwania* 64(4): 347–352 (<https://doi.org/10.6165/tai.2019.64.347>).
- Suetsugu, K. and Tsutsumi, C. 2021. A new variety of *Liparis koreojaponica* (Orchidaceae) from Nara Prefecture, Japan. *Acta Phytotaxonomica et Geobotanica* 72(2): 153–160 (<https://doi.org/10.18942/apg.202020>).
- Sulaiman, M. and Murugan, C. 2021. *Dendrobium gopalanii* (Orchidaceae): A new species from Kerala, Western Ghats, India. *Taiwania* 66(4): 557–560 (<https://doi.org/10.6165/tai.2021.66.557>).
- Sumbembayev, A. A., Matveyeva, E. V., and Imanbayeva, A. A. 2021. *Dactylorhiza salina* (Orchidaceae Juss.) in the flora of the Kazakhstan Altai. *Problems of Botany of South Siberia and Mongolia* | *Проблемы ботаники Южной Сибири и Монголии* 20(1): 538–541 (<https://doi.org/10.14258/pbssm.2021108>).
- Sun, M., Jin, Y., Huang, J., Kumar, P., and Tian, H. Z. 2021. *Odontochilus putaoensis* (Orchidaceae), a new record and key to the genus for China. *Rheedea* 31(3): 200–205 (<https://doi.org/10.22244/rheedea.2021.31.03.11>).

- Timsina, B., Kindlmann, P., Subedi, S., Khatri, S., and Rokaya, M. B. 2021. Epiphytic orchid diversity along an altitudinal gradient in central Nepal. *Plants* 10(7): art. 1381 (<https://doi.org/10.3390/plants10071381>).
- Tiwari, U. L., Bhattacharjee, A., Tian, H. Z., Yukawa, T., and Kumar, P. 2021. *Chamaegastrodia poilanei*—an interesting mycoheterotrophic orchid from India. *Rheedea* 31(3): 191–196 (<https://doi.org/10.22244/rheedea.2021.31.03.09>).
- Truong, B. V., Hsu, T. C., Bui, V. H., Tu, B. N., Dang, V. S., Luu, H. T., and Sutsugu, K. 2020. The genus *Lecanorchis* Blume (Orchidaceae) in the flora of Vietnam. *Taiwania* 65(1): 86–94 (<https://doi.org/10.6165/tai.2020.65.86>).
- Van, H. T., Nguyen, T. H. V., Le, H. T., Trinh, N. N., Huynh, N. T. A., Le, V. S., Phan, T. T. N., and Dang, L. A. T. 2021. *Habenaria diphylla* (Nimmo) Dalzell (Orchidaceae), new record for the flora of Vietnam. *Plant Science Today* 8(1): 185–189 (<https://doi.org/10.14719/pst.2021.8.1.1014>).
- Vermeulen, J. J., Watthana, S., and Pedersen, H. Æ. 2021. Two new species of *Bulbophyllum* (Orchidaceae) from Thailand. *Lankesteriana* 21(3): 319–323 (<https://doi.org/10.15517/lank.v21i3.49313>).
- Victoriano, M. and Yudistira, Y. R. 2020. *Bulbophyllum trinervosum*, a new species of section *Macrocaulia* (Orchidaceae: Bulbophyllinae) from West Java, Indonesia. *Reinwardtia* 19(1): 67–73 (<https://doi.org/10.14203/reinwardtia.v19i1.3850>).
- Wangchuk, T., Rinzin, K., and Dalström, S. 2020. Orchids of Bhutan—*Biermannia*. *Orchids, the Bulletin of the American Orchid Society* 89(11): 883–885.
- Wannakrairoy, S., Chaiyaso, C., and Suesatcha, S. 2021. *Vanda chirayupinia*, a new species from Thailand. *Orchid Review* 129(1335): 56–58.
- Wu, P.-P., Wang, Z., Jia, N.-X., Guo, S.-W., Liu, C.-C., Jin, X.-H., and Guo, K. 2021. *Calanthe* × *yarlungzangboensis*, a new natural hybrid in genus *Calanthe* (Orchidaceae) from China. *Phytotaxa* 518(2): 167–174 (<https://doi.org/10.11646/phytotaxa.518.2.5>).
- Wu, Q.-P., Ye, D.-P., Wu, K.-L., Fang, L., Zeng, S.-J., and Li, L. 2021. *Pholidota advena* (Par. & Rchb. f.) Hook. f., a newly recorded species of Orchidaceae from China. *Journal of Tropical and Subtropical Botany* 29(4): 406–408 (<https://doi.org/10.11926/jtsb.4367>).
- Wu, X.-F., Wang, Y.-Q., Chi, K.-B., Liu, Q., and Wang, W.-H. 2021. *Cleisostoma luopingense*, a new species of Orchidaceae from Yunnan, China. *Phytotaxa* 521(4): 244–248 (<https://doi.org/10.11646/phytotaxa.521.4.2>).
- Ya, J.-D., Lin, D.-L., Han, Z.-D., Cai, L., Zhang, Z.-R., He, D.-M., Jin, X.-H., and Yu, W.-B. 2021. Three new species of *Liparis* s.l. (Orchidaceae: Malaxideae) from Southwest China based on morphological characters and phylogenetic evidence. *Plant Diversity* 43(5): 401–408 (<https://doi.org/10.1016/j.pld.2021.01.006>).

Ya, J. D., Zhang, T., Pandey, T. R., Liu, C., Han, Z. D., Ye, D. P., He, D. M., Liu, Q., Yang, L., Huang, L., Zhang, R. Z., Jiang, H., and Cai, J. 2021. New contributions to Goodyerinae and Dendrobiinae (Orchidaceae) in the flora of China. *Plant Diversity* 43(5): 362–378 (<https://doi.org/10.1016/j.pld.2021.05.006>).

Yan, Q., Li, X.-W., and Wu, J.-Q. 2021. *Bulbophyllum hamatum* (Orchidaceae), a new species from Hubei, central China. *Phytotaxa* 523(3): 269–272 (<https://doi.org/10.11646/phytotaxa.523.3.9>).

Yang, J.-X., Peng, S., Wang, J.-J., Ding, S.-X., Wang, Y., Tian, J., Yang, H., Hu, G.-W., and Wang, Q.-F. 2021. Morphological and genomic evidence for a new species of *Corallorhiza* (Orchidaceae: Epidendroideae) from SW China. *Plant Diversity* 43(5): 409–419 (<https://doi.org/10.1016/j.pld.2021.01.002>).

Yuan, Q., Tan, F., Qin, Y., and Liu, Y. 2020. *Tainia acuminata*, a newly recorded species of Orchidaceae from China. *Journal of Tropical and Subtropical Botany* 28(3): 245–247 (<https://doi.org/10.11926/jtsb.4168>).

Zangpo, P., Gyeltshen, P., and Kumar, P. 2021. *Bulbophyllum spathulatum* (Orchidaceae), a new record for Bhutan. *Journal of Threatened Taxa* 13(1): 17592–17596 (<https://doi.org/10.11609/jott.6393.13.1.17592-17596>).

Zhou, Z., Shi, R., Zhang, Y., and Jin, X. 2021. Orchid diversity in China: Recent discoveries. *Plant Diversity* 43(5): 341–342 (<https://doi.org/10.1016/j.pld.2021.07.004>).

Zhou, Z., Wu, P.-Y., Lin, Y.-J., Zhao, Z., Tu, X.-D., Fu, S.-B., and Ying, Z. 2021. *Bulbophyllum versicolor* (Orchidaceae, Malaxideae), a new species from Yunnan, China: evidence from morphology and molecular analyses. *Phytotaxa* 528(4): 247–254 (<https://doi.org/10.11646/phytotaxa.528.4.3>).

#### AUSTRALIA & NEW ZEALAND

Adams, P. 2021. A review of *Dendrobium kingianum* Bidwill ex Lindl. (Orchidaceae) with morphological and molecular phylogenetic analyses. *Telopea* 24: 203–232 (<https://doi.org/10.7751/telepea14806>).

Ayre, B. M., Hayashi, T., Phillips, R. D., and Reiter, N. 2021. The Kiandra leek orchid is the previously presumed extinct mignonette leek orchid (Orchidaceae; Orchidoideae): evidence from morphological comparisons. *Phytotaxa* 528(2): 71–83 (<https://doi.org/10.11646/phytotaxa.528.2.1>) [*Prasopphyllum morganii*].

Clements, M. A., Clarkson, J. R., Zimmer, H. C., and Jones, D. L. 2021. *Taeniophyllum cylindrocentrum* Schltr. (Vandaeae: Orchidaceae)—a new record for Australia. *Austrobaileya* 11: 118–123.

Clements, M. A. and Jones, D. L. 2021. Notes on Australasian Orchidaceae 7: updates on the nomenclature of *Sullivania* (Diurideae: Drakaeinae). *Lankesteriana* 21(3): 313–317 (<https://doi.org/10.15517/lank.v21i3.49025>).

Corbin, G. 2021. *Cymbidium* section *Austrocymbidium* Schltr. *The Orchadian* 20(3): 135–140.

Gray, B., Ormerod, P., and Simpson, L. 2021. *Liparis barbata* Lindl. (Orchidaceae)—new to the flora of Australia. *Austrobaileya* 11: 115–117.

Hervouet, C. and Hervouet, J.-M. 2021. Un aperçu des orchidées de Nouvelle-Zélande. *l'Orchidophile* 52(229): 161–173.

Porteous, P. 2021. *Zeuxine oblonga* R.S.Rogers and C.T.White—the Hairy Jewel Orchid. *The Orchadian* 20(3): 116–120.

Raynal-Rogues, A. and Roguenant, A. 2021. Ça bouge chez les orchidées: une fleur étrange, animée, *Paracaleana minor* (R.Br.) Blaxell. *l'Orchidophile* 52(229): 153–160.

Renner, M. A. M. 2019. A nomenclatural history for *Plectorrhiza purpurata* (Orchidaceae). *Telopea* 22: 157–159 (<https://doi.org/10.7751/TELOPEA13449>).

Roux, J.-L. and Roux, E. 2021. Orchidées du Sud-Ouest australien. *l'Orchidophile* 52(229): 137–152.

Sengstock, O. 2021. *Dendrobium cucumerinum* MacLeay ex.[sic] Lindl.—Habitat and cultural observations. *The Orchadian* 20(4): 178–179.

Wapstra, M. 2020. *Pterostylis atrans* D.L.Jones in Tasmania: distribution and conservation status. *The Orchadian* 20(1): 5–13.

Wapstra, M. and Broadfield, C. 2021. *Caladenia vulgaris* var. *nunguensis* (Orchidaceae), a new narrow-range endemic taxon from coastal Northwest Tasmania. *The Orchadian* 20(4): 149–160.

#### **EUROPE, NORTH AFRICA & THE MIDDLE EAST (excluding the southern part of the ARABIAN PENINSULA)**

Allasia, G. and Lobba, M. G. 2020. Nuove segnalazioni di *Ophrys lacaitae* sui monti Lepini (Frosinone, Lazio). *GIROS Orchidee Spontanee d'Europa* 63(2): 284–288.

Antonio Ruiz De Gopegui Y Valero, J. and García Cayón, L. 2020. Híbridos naturales de la familia Orchidaceae en la montaña Palentina (Castilla y León) y Picos de Europa (Cantabria) | Natural hybrids in Orchidaceae found on N Palencia and SW Cantabria (N of Spain). *Flora Montiberica* (78): 86–89.

Antonj, M. 2020. Checklist delle Orchidaceae del territorio di Tarquinia (Viterbo, Lazio). *GIROS Orchidee Spontanee d'Europa* 63(2): 289–302.

Attila, M. V., Löki, V., Verbeeck, M., and Süveges, K. 2021. Orchids of Azerbaijani cemeteries. *Plants* 10(12): art. 2779 (<https://doi.org/10.3390/plants10122779>).

Averyanova, E. A. 2021. Biology and distribution of *Orchis purpurea* subsp. *caucasica* (Regel) B. Baumann et al. (Orchidaceae Juss.) in the Sochi Black Sea region. *Проблемы ботаники Южной Сибири и Монголии (Problems of Botany of Southern Siberia and Mongolia)* 20(1): 5–10 (<https://doi.org/10.14258/pbssm.2021001>) [in Russian].



- Bateman, R. M. 2021. Challenges of applying monophyly in the phylogenetic shallows: taxonomic reappraisal of the *Dactylorhiza maculata* group. *Kew Bulletin* 76: 675–704 (<https://doi.org/10.1007/s12225-021-09971-2>).
- Benigni, F., Barigelli, G., and Petroselli, M. 2020. Due nuovi ibridi di *Ophrys* in provincia di Ancona (Marche). *GIROS Orchidee Spontanee d'Europa* 63(2): 303–310.
- Berisha, N., Rizani, K. L., Kadriaj, B., and Millaku, F. 2021. Notes on the distribution, ecology, associated vegetation and conservation status of *Gymnadenia* (Orchidaceae) in Kosovo. *Italian Botanist* 12: 1–27 (<https://doi.org/10.3897/italianbotanist.12.65699>).
- Blanc, C. 2020. Des nouvelles de l'*Ophrys* du Bugey. *Bulletin de la Société Française d'Orchidophilie Rhône-Alpes* 42: 64–68.
- Borovečki-Voska, L. and Horvatić, B. 2021. Orchid hybrids (Orchidaceae) on the island of Krk. *Glasnik Hrvatskog Botaničkog Društva* 8(2): 78–87 (<https://doi.org/10.46232/glashbod.8.2.2>) [Croatia].
- Brullo, S., Brullo, C., Cambria, S., Tavilla, G., Pasta, S., Scuderi, L., and Zimmitti, A. 2021. A new subspecies of *Epipactis microphylla* (Orchidaceae; Epidendroideae) from Pantelleria Island (Sicily). *Phytotaxa* 512(2): 83–96 (<https://doi.org/10.11646/phytotaxa.512.2.1>).
- Buono, S. and Rempicci, M. 2020. Aggiornamento sulla distribuzione di *Orchis* × *colemanii* nel Lazio (Italia centrale). *GIROS Orchidee Spontanee d'Europa* 63(2): 311–315.
- Chetta, F. S., Gennaio, R., Gargiulo, M., and Serafino, S. 2020. Presenza di *Ophrys tarentina* lungo la costa ionica leccese (Salento, Puglia meridionale). *GIROS Orchidee Spontanee d'Europa* 63(2): 316–321.
- D'alonzo, F., Perilli, M., and Biagioli, M. 2020. Nuovi ibridi di *Ophrys* nella Murgia barese (Puglia centrale). *GIROS Orchidee Spontanee d'Europa* 63(2): 322–337.
- de Luca, A. 2020. Sistematica e nomenclatura di *Ophrys tenthredinifera* subsp. *neglecta* nella Murgia barese (Puglia). *GIROS Orchidee Spontanee d'Europa* 63(2): 338–347.
- Delforge, P. 2019. Présence d'*Ophrys druentica*, d'*Ophrys virescens* et de leur hybride dans la haute vallée de la Gervanne (Drôme). *Bulletin de la Société Française d'Orchidophilie Rhône-Alpes* 40: 72–75.
- Djordjević, V., Veljković, M., and Vukojičić, S. 2021. *Orchis provincialis* (Orchidaceae), a new species in the flora of Serbia. *Wulfenia* 28: 66–72.
- Efimov, P., Machs, E., Liksakova, N., and Chetverikov, P. 2021. New records of *Liparis kumokiri* group (Orchidaceae) in Eurasia suggest its recent dispersal from East Asia. *Russian Journal of Biological Invasions* 12(3): 326–335 (<https://doi.org/10.1134/S207511172103005X>).
- Ferrer-Gallego, P. P. 2021. Effective typification of *Ophrys apifera* (Orchidaceae; Orchidoideae). *Phytotaxa* 521(1): 57–62 (<https://doi.org/10.11646/phytotaxa.521.1.6>).

- Ferrer-Gallego, P. P. 2021. Proposal to conserve the name *Ophrys sphegodes* (Orchidaceae) with a conserved type. *Taxon* 70(6): 1367–1368 (<https://doi.org/10.1002/tax.12629>).
- Gennaio, R. and Pellegrino, G. 2021. *Serapias ausoniae* (Orchidaceae; Orchideae): a new species from southern Italy confirmed by morphological, cytological and molecular analyses. *Phytotaxa* 516(2): 159–168 (<https://doi.org/10.11646/phytotaxa.516.2.3>).
- Grasso, M. P. 2020. ADDENDUM all'articolo “La possibile presenza di *Epipactis leptochila* in Sardegna”. *GIROS Orchidee Spontanee d'Europa* 63(2): 348–357.
- Hennecke, M. and Galanos, C. J. 2020. *Ophrys* subgen. *Bombyliflorae* sect. *Tenthrediniferae*, a synopsis. *GIROS Orchidee Spontanee d'Europa* 63(2): 358–419.
- Jakubska-Busse, A., Żołubak, E., Górniak, M., Łobas, Z., Tsiftsis, S., and Steiu, C. 2020. A revision of the taxonomy and identification of *Epipactis greuteri* (Orchidaceae, Neottiae). *Plants* 9(7): art. 783 (<https://doi.org/10.3390/plants9060783>).
- la Rosa, A., Gianguzzi, L., Salluzzo, G., Scuderi, L., and Pasta, S. 2021. Last tesserae of a fading mosaic: Floristic census and forest vegetation survey at Parche di Bilello (south-western Sicily, Italy), a site needing urgent protection measures. *Plant Sociology* 58(1): 55–74 (<https://doi.org/10.3897/pls2020581/04>) [*Ophrys*, *Serapias*].
- Licheri, A. 2020. Descrizione di tre nuovi ibridi naturali di *Ophrys* nella Sardegna sudoccidentale. *GIROS Orchidee Spontanee d'Europa* 63(2): 445–463.
- Lumare, F., Medagli, P., and Anelli, S. 2020. Presenza di *Barlia robertiana* nel Salento leccese e tarantino. *GIROS Orchidee Spontanee d'Europa* 63(2): 464–471.
- Lumare, F., Medagli, P., and Anelli, S. 2020. Primo ritrovamento in Salento di *Ophrys* × *hoeppneri* (*O. bombyliflora* × *O. sphegodes* subsp. *classica*). *GIROS Orchidee Spontanee d'Europa* 63(2): 472–480.
- Martin, R., Rebbas, K., Véla, E., Beghami, Y., Bougaham, A. F., Bounar, R., Boutabia, L., De Belair, G., Filali, A. D., Haddad, M., Hadji, K., Hamel, T., Kreutz, K., Madoui, A., Nemer, W., Telailia, S., and Ludinant, S. 2020. *Etude cartographique des orchidées de Kabylie, Numidie, Aurès (Algérie)*. *Société Méditerranéenne d'Orchidologie*. [<https://hal.archives-ouvertes.fr/hal-02483998/document>].
- Nallet, B. 2021. Avancées 2021 d'*Himantoglossum robertianum* dans l'Ain. *Bulletin de la Société Française d'Orchidophilie Rhône-Alpes* 43: 32–33.
- Oddone, L., Andreoli, M., Maschio, A., Gerbaud, O., Gerbaud, M., Veya, P., Wainsenker, M., Lombardo, R., Morelli, F., Casabianca, A., and Gargiulo, M. 2020. One of the rarest Alpine intergeneric hybrid[sic]: ×*Pseudadenia huxleyana* [*Gymnadenia (Nigritella) corneliana* × *Pseudorchis albida*] (Orchidinae, Orchidaceae). *GIROS Orchidee Spontanee d'Europa* 63(2): 481–499.
- Perilli, M. and Biagioli, M. 2020. Tre nuovi ibridi di *Ophrys* nel Gargano (Puglia). *GIROS Orchidee Spontanee d'Europa* 63(2): 500–515.

- Pezzetta, A. 2020. Le Orchidaceae di Buie (Istria, Croazia). *GIROS Orchidee Spontanee d'Europa* 63(2): 516–528.
- Pica, A., Lupoletti, J., and Biagioli, M. 2020. Nuove segnalazioni di Orchidaceae nel territorio comunale di Chieti (Abruzzo). *GIROS Orchidee Spontanee d'Europa* 63(2): 537–543.
- Popovich, A., Averyanova, E. A., and Shagarov, L. 2020. Orchids of the Black Sea coast of Krasnodarsky Krai (Russia): current state, new records, conservation. *Nature Conservation Research* 5(Suppl. 1): 46–68 (<https://doi.org/10.24189/ncr.2020.047>).
- Roleček, J. and Academy of Sciences, I. o. B. o. t. C. 2021. A recent find of *Ophrys insectifera* (Orchidaceae) in Ukraine—will it survive another 100 years? *Ukrainian Botanical Journal* 78(4): 297–302 (<https://doi.org/10.15407/ukrbotj78.04.297>).
- Romolini, R. and Sodi, F. 2020. Revisione critica dei campioni di Orchidaceae della Toscana conservati nell'Erbario Centrale Italiano di Firenze - I. il genere *Epipactis*. *GIROS Orchidee Spontanee d'Europa* 63(2): 420–444.
- Šabanović, E., Djordjević, V., Milanović, Đ., Boškailo, A., Šarić, Š., Huseinović, S., and Randjelović, V. 2021. Checklist of the Orchidaceae of Bosnia and Herzegovina. *Phyton, Annales Rei Botanicae, Horn* 61: 83–95 (<https://doi.org/10.12905/0380.phyton61-2021-0083>).
- Salmanova, R. 2021. *Orchis simia* Lam. in the Nakhchivan Flora. *Bulletin of Science and Practice* 7(8): 16–21 (<https://doi.org/10.33619/2414-2948/69/02>).
- Scappaticci, G. 2020. Nouvelle répartition d'*Epipactis fageticola* en Rhône-Alpes. *Bulletin de la Société Française d'Orchidophilie Rhône-Alpes* 42: 45–55.
- Scappaticci, G. 2021. Petit inventaire des orchidées hypochromes connues en Rhône-Alpes. *Bulletin de la Société Française d'Orchidophilie Rhône-Alpes* 43: 34–52.
- Trávníček, P., Chumová, Z., Závěská, E., Hanzlíčková, J., Kupková, L., Kučera, J., Gbúrová Štubňová, E., Rejlová, L., Mandáková, T., and Ponert, J. 2021. Integrative study of genotypic and phenotypic diversity in the Eurasian orchid genus *Neotinea*. *Frontiers in Plant Science* 12: (<https://doi.org/10.3389/fpls.2021.734240>).
- Turkmen, N. 2021. Turkey's wild orchids. In: Öztürk, M., Efe, R. & Altay, V. (eds.), *Biodiversity, Conservation and Sustainability in Asia: Volume 1: Prospects and Challenges in West Asia and Caucasus*, pp. 101–109. Springer International Publishing. *Biodiversity, Conservation and Sustainability in Asia*: ([https://doi.org/10.1007/978-3-030-59928-7\\_6](https://doi.org/10.1007/978-3-030-59928-7_6)).
- Viglione, J. and Martin, R. 2021. Découverte d'*Ophrys splendida* Gözl & Reinhard dans les Alpes-de-Haute-Provence. *Bulletin de la Société Française d'Orchidophilie Rhône-Alpes* 43: 60–61.
- Voelckel, H. 2021. Über die Orchideen Zyperns. Der Norden—(Teil 2). *Die Orchidee* 72(4): 310–319.

## GENERAL

- Alrich, P. and Higgins, W. 2021. Compendium of Orchid Genera. 2020 updates. *Orchids, the Bulletin of the American Orchid Society* 90(4): 268–271.
- Dalström, S. 2021. *Calypso bulbosa* (L.) Oakes—Die Geheimnisvolle. *Die Orchidee* 72(4): 280–289.
- Efimov, P. G. 2020. Orchids of Russia: Annotated checklist and geographic distribution. *Nature Conservation Research* 5(Suppl. 1): 1–18 (<https://doi.org/10.24189/ncr.2020.018>).
- Efimov, P. G. 2021. Typification of 20 names in Orchidaceae of the Russian flora. *Turczaninowia* 24(2): 51–55 (<https://doi.org/10.14258/TURCZANINOWIA.24.2.6>).
- Hartung, T. J. 2021. "New" *Vanilla* species—the last 20 years. *Orchids, the Bulletin of the American Orchid Society* 90(7): 526–531.
- Krajnc, A. U., Ivanuš, A., Ivanuš, A., Luthar, Z., and Lipovšek, M. 2020. Morphological variability and taxonomic concepts of Broad-leaved Helleborine ingroup *Epipactis helleborine* (L.) Crantz | Raznolikost morfoloških lastnosti in taksonomski koncepti oblikovnega kroga širokolistne močvirnice *Epipactis helleborine* (L.) Crantz. *Folia Biologica et Geologica* 61(2): 97–125 (<https://doi.org/10.3986/fbg0071>).
- Liu, H., Jacquemyn, H., Chen, W., Janssens, S. B., He, X., Yu, S., and Huang, Y. 2021. Niche evolution and historical biogeography of lady[sic] slipper orchids in North America and Eurasia. *Journal of Biogeography* 48(11): 2727–2741 (<https://doi.org/10.1111/jbi.14224>) [Cypripedium].
- Łobas, Z., Khapugin, A., Żołubak, E., and Jakubska-Busse, A. 2021. The *Epipactis helleborine* group (Orchidaceae): an overview of recent taxonomic changes, with an updated list of currently accepted taxa. *Plants* 10(9): art. 1839 (<https://doi.org/10.3390/plants10091839>).
- Olędrzyńska, N. and Szlachetko, D. L. 2021. Contribution to the taxonomic revision of *Brachycorythis*-complex (Orchidaceae, Orchidoideae). *Biodiversity: Research and Conservation* 62: 5–116 (<https://doi.org/10.2478/biorc-2021-0004>).
- Schuiteman, A. 2021. Leopard spots, chequerboards and spider's webs: classification, systematics and function of variegated leaves in Orchidaceae. *Rheede* 31(3): 105–132 (<https://doi.org/10.22244/rheede.2021.31.03.02>).
- Serna-Sánchez, M. A., Pérez-Escobar, O. A., Bogarín, D., Torres-Jimenez, M. F., Alvarez-Yela, A. C., Arcila-Galvis, J. E., Hall, C. F., de Barros, F., Pinheiro, F., Dodsworth, S., Chase, M. W., Antonelli, A., and Arias, T. 2021. Erratum: Author Correction: Plastid phylogenomics resolves ambiguous relationships within the orchid family and provides a solid timeframe for biogeography and macroevolution (Scientific reports (2021) 11 1 (6858)). *Scientific reports* 11(1): 14297 (<https://doi.org/10.1038/s41598-021-93674-y>)t.

Smidt, E. C., Salazar, G. A., Silvério Righetto Mauad, A. V., Engels, M. E., Viruel, J., Clements, M., Jiménez Pérez, I., and Chase, M. W. 2021. An Indomalaysian origin in the Miocene for the diphyletic New World jewel orchids (Goodyerinae, Orchidoideae): molecular dating and biogeographic analyses document non-monophyly of the Neotropical genera. *Botanical Journal of the Linnean Society* 197(3): 322–349 (<https://doi.org/10.1093/botlinnean/boab028>).



## Literature categories

<b>Anatomy and morphology</b>	.....	<a href="#">10</a>
<b>Bioinformatics</b>	.....	<a href="#">13</a>
<b>Books</b>	.....	<a href="#">14</a>
<b>Conservation</b>	.....	<a href="#">15</a>
<b>Cytogenetics and horticultural genetics</b>	.....	<a href="#">17</a>
<b>Ecology</b>	.....	<a href="#">18</a>
<b>Ethnobotany/(Ethno)pharmacology</b>	.....	<a href="#">19</a>
<b>History</b>	.....	<a href="#">34</a>
<b>Horticultural science</b>	.....	<a href="#">35</a>
<b>Micropropagation/seed germination/cryopreservation</b>	.....	<a href="#">36</a>
<b>Molecular biology</b>	.....	<a href="#">39</a>
<b>Mycorrhiza and endophytes</b>	.....	<a href="#">48</a>
<b>Pathology</b>	.....	<a href="#">51</a>
<b>Physiology/Phytochemistry</b>	.....	<a href="#">53</a>
<b>Pollination, etc.</b>	.....	<a href="#">55</a>
<b>Systematics and distribution</b>	.....	<a href="#">59</a>
<b>AFRICA</b>	.....	<a href="#">59</a>
<b>AMERICA</b>	.....	<a href="#">60</a>
<b>ASIA - PACIFIC</b>	.....	<a href="#">66</a>
<b>AUSTRALIA &amp; NEW ZEALAND</b>	.....	<a href="#">79</a>
<b>EUROPE</b>	.....	<a href="#">80</a>
<b>GENERAL</b>	.....	<a href="#">84</a>