



Special issue: a tribute to Kevin D. Hyde on his 65th birthday

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This special issue is dedicated to Emeritus Prof. Dr. Kevin D. Hyde in recognition of his contributions to mycology on the occasion of his 65th birthday. He was born on 3rd May 1955. As a young man, his curiosity about animals and plants around his locality and gathering and identifying mushrooms shaped his later career as a great mycologist in the present era. With an early desire to pursue biology, he obtained B.Sc. in Zoology in 1979 from **University of Wales**, Cardiff, UK, his B.Sc. research project being on duck nematodes. He became interested in the degradation of materials by microorganisms, and enrolled on a taught M.Sc. in the Biodeterioration of Materials at **University of Portsmouth**, UK, in 1979. As part of the course, he undertook a dissertation in entomology. At Portsmouth, Kevin first met Professor Gareth Jones, who shaped much of his career thereafter. With his passion for teaching and sharing knowledge with others, Kevin took a postgraduate certificate in education (PGCE) at **Bristol University**, and taught as a high school teacher at The Hurst School in **Aldermaston**, near Basingstoke in 1980. In 1982, he took up a teaching position in the Seychelles and asked Gareth

what research was required in marine mycology, and mangrove fungi was suggested. With boxes of slides and cover slips donated by Gareth, he started to document mangrove fungi of *Seychelles*, many of which were new to science. In 1983, he returned to the UK, where he was awarded a SERC research scholarship to study for a PhD with Gareth Jones and co-supervised by Stephen Moss at the University of Portsmouth. Kevin's PhD dealt with tropical marine fungi and spore settlement and attachment of marine fungi, parts of which were later published as book chapters (Hyde et al.

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Kevin D. Hyde received an award from MFU in 2019



Kevin Hyde (white shirt) with fellow M.Sc. students on the Biodeterioration of Materials course at Portsmouth University in 1980

1986a,b). He completed his PhD in 2 years 3 months and took up a teaching position at Paduka Seri Begawan Sultan Science College, Brunei before he could defend his thesis, which took place in 1986, graduating in 1987. Before leaving for Brunei, he borrowed two microscopes from Gareth to continue his passion for marine fungal research. His hard work and dedication produced multiple papers on Brunei's marine fungi (Hyde 1988a,b,c, 1990a,b; Hyde and Jones 1989a,c; Hyde and Nakagiri 1989), which are still the main checklist on fungal diversity in Brunei. His studies on the mangrove fungi of the Seychelles were published in *Botanica Marina* and *Canadian Journal of Botany* (Hyde and Jones 1985, 1986a, b, 1987, 1989b; Hyde and Borse 1986; Hyde et al. 1986a, c).

His mycological forays in diverse marine-based habitat of tropical Asia established him as an eminent field mycologist. After leaving Brunei, Kevin emigrated to **Australia**, where he was offered a position as Principal Scientist position at Plant Pathology Branch, Queensland Department of Primary Industries in Mareeba. Kevin was the first appointed Northern Australia Quarantine Strategy (NAQS) plant pathologist in Queensland. His task was to survey and collect plant pathogens in North Queensland, the Torres Strait Islands, Papua New Guinea, as well as Irian Jaya (now West Papua) and Java in Indonesia. During these excursions, Kevin surveyed agricultural crops and trees looking for diseases within the region that weren't known yet to occur in Australia. Still, when time permitted, he would also go into the local forests and collect terrestrial, freshwater, and marine substrates, from which he discovered numerous novel species (Hyde 1990a, b, c, 1991, 1992a, b, c; Pearce and Hyde 1993).

Even from these early times in his scientific career, Kevin's work has always been documented using the best means that he could. Therefore, it will always remain valuable to everybody who is trying to identify these fungi by classical microscopic methods. In November 1992, he obtained a tenured Associate Professorship at the



Kevin Hyde going collecting in Brunei with his Mum and Dad in 1986



Portsmouth mycology conference 1995, back row Lilian Vrijmoed, Sundari, Brigit and Jan Kohlmeyer. Front row: Teck Koon Tan, Doris Au, Gareth Jones, Aisyah Alias, Kevin Hyde

Department of Ecology and Biodiversity, **University of Hong Kong**. He built up mycology at the university and became Director of the Centre for Research in Fungal Diversity before 'retiring' to Thailand in 2007. During this time, he established the journal *Fungal Diversity*, now one of the most successful and high impact factor mycological journals in the world. A main accomplishment of his Hong Kong stay was the Fungal Diversity Research Series 1-XIX. He obtained a Doctor of Science from the University of Wales in 2001 with the dissertation title *Biodiversity and Biology of Tropical Microfungi*. He supervised more than 50 Ph.D. and M.Phil. students from a wide range of backgrounds and various countries between 1992–2007.

Already during his time in Hong Kong, Kevin set up the **Mushroom Research Centre (MRC)** in a forested area

north of Chiang Mai City in northern Thailand to promote studies of fungal diversity and taxonomy throughout Asia. The center includes a well-equipped laboratory, library, lecture hall and student accommodation, some of the latter being funded by other notable mycologists. He later set up the **Mushroom Research Foundation**, which provides scholarships for higher degrees in mycology. MRC has been the site of many workshops, drinking sessions and training programs, viz. fungal diversity and taxonomy, plant quarantine, aquatic fungi, and macrofungi identification. Many students registered at various universities in Thailand, and students from neighbouring Asian countries have completed their MS and PhD research while working at MRC. In addition, students and teachers from Europe and USA have also undertaken researches being stationed in MRC.

Kevin initially worked with Professor Saisamorn Lumyong at Chiang Mai University, and their collaboration continues to the present. In January 2008, he obtained a position at Mae Fah Luang University in Chiang Rai, Thailand, with the sole objective of carrying out research on fungi. With funding from various avenues, Kevin took a first group of PhD students in Thailand, eventually numbering over 50.

In 2015 he established the **Center of Excellence in Fungal Research (CEFR)** with the aspiration to become a leading organization in Thailand and Asia, carrying out research and training in key areas of basic and applied mycology. Kevin is the founding director of the CEFR. Aside from his busy schedule, he devotes much of his leisure time on his farm, where he grows over 500 tropical fruit trees and various vegetables. Aside from collecting fungi, and training highly talented students, he also has a foible for accumulating classic cars. He has numerous oldtimers of various models, ages and brands (but only British or European). The one thing they have in common is that they invariably break down when he uses them to pick up guests from the airport, or when on his way to an early morning meeting at the university.

Kevin always has had a passion for great monumental works in taxonomy, morphology and systematics of the Ascomycota and fungal ecology. Over the years, other mycologists were skeptical about all the new species and genera that he and his students produced since the beginning of his career. He was sometimes criticized, in particular by the conservative mycologists who defended a very broad taxonomic concept, and purists who would rather take it slowly to accept new generic and species concepts before they have travelled the world and studied all the types in the fungaria, only to realize that most of them are depauperate, or cannot even be located anymore. **Taxonomy, after all, has always been, and will probably forever remain to be, a rather subjective science which is being carried out by passionate persons who have developed strong opinions!**

In some cases the species he described were later shown by others (in particular, “specialists” who are familiar with a narrow range of genera or families) to be later synonyms of earlier erected taxa. In other cases, the excessive splitting of genera was criticized by those among the mycological community who have traditionally been characterised as “lumpers”.

Nevertheless, the above critics could not have arisen in the first place, were it not for the fact that the descriptions and illustrations had been provided. However, the advent of modern, polythetic taxonomy, have marked a change of paradigms and truly revealed that the diversity of fungi is even higher than anyone among the “lumpers” could ever have envisaged. Kevin has set the standard for the description of new taxa with good quality descriptions and photoplates, supported by molecular data.

With the advent of DNA sequence based molecular phylogeny, his group applied these techniques to polyphasic taxonomy for a better understanding of biodiversity, taxonomy and phylogeny of fungi, especially in the Sordariomycetes and various ecological and morphological groups of the “hyphomycetes”, many of which belong to the bitunicate ascomycetes and are characterized by very beautiful anamorphic structures that are a delight to view with a microscope. Over the next years, his research team examined the types of each species, genus and family of Dothideomycetes, which resulted in the copiously illustrated monograph “*Families of Dothideomycetes*” (Hyde et al. 2013). This was followed by a similar study on Sordariomycetes published as “*Towards a natural classification and backbone tree for Sordariomycetes*” and “*Families of Sordariomycetes*” (Maharachchikumbura et al. 2015, 2016). These papers and their follow-ups are extremely useful for both taxonomists and the user communities (plant pathologists, biotechnologists etc.) who want to obtain first hand information on certain groups of fungi without having to consult hundreds of virtually inaccessible papers that date back to the past two centuries.

The core driving force of Kevin’s life is his love for mycology and his aspiration to train more mycologists in Asia. To provide an easy access for describing new fungal taxa, his team started the series “*Fungal Diversity Notes*” which allow a multi-authored, community-wide classification for the fungal kingdom and to date 12 issues have been published. The series “*One stop shop: backbone trees for important phytopathogenic genera*” provides phylogenetic backbone trees for plant pathogenic fungi, with world experts involved, and four series have been released with 100 genera so far in total. Kevin has introduced 3,851 new taxa comprising six subclasses, 38 orders, 139 families, 495 genera and 3,153 species, and 32 species and three genera have been named after him to honour his contribution in mycology. For his outstanding work in mycology, not only

Gareth Jones, Kevin Hyde, Eric McKenzie, Lei Cai and PhD students from MFU (IMC 10, Bangkok, 2014)



Kevin Hyde received the Emeritus professor from Kunming Institute of Botany, Chinese Academy of Science (CAS) (Zhu L. Yang, Kevin Hyde and Hang Sun, Kunming 2018)

2019 CEFR Biannual Conference, Kevin Hyde and his team in MFU (Chiang Rai, 2019)



his numbers of publications, but also training students (he has supervised 10 Master and 108 PhD students), Prof. Hyde has been recognized as a **Highly Cited Researcher** in “Plant and Animal Science” every year since 2015 by Clarivate Analytics. Many of his students became leading mycologists in various fields, as university professors and institute researchers. He was awarded “**Distinguished Mycologist of the Asian Mycological Association (AMA)**” in 2011.

Apart from brief visits Kevin never returned to his home country but chose to stay in the warmer climates of subtropical and tropical Australasia and south-east Asia. Aside from collecting fungi he also enjoys the scenery of tropical beaches, the food and bars that sell lashings of good beer. He has become adapted to this geographic area, so that whenever he goes to Europe, he always feels cold and miserable

and can be found sometimes wearing a thick parka coat even in summer.

This special issue of Fungal Diversity is dedicated to Kevin D. Hyde on his 65th birthday and comprises papers from his students and collaborators paying tribute to his efforts in promoting mycology in Asia and world-wide.

The contribution by Wibberg et al. constitutes the first higher taxa level phylogenetic study based on 3rd generation genome sequencing techniques like Oxford nanopore and PACBIO data. It was conducted to establish relationships within the Hypoxylaceae, an important family of Sordariomycetes that is well-known for its prolific secondary metabolism, as well as for its interesting ecology. Twelve representatives derived from the major phylogenetic clades were selected for this study and the data matrix based on high quality genome sequences will now serve as a reliable backbone for expansion of the phylogenomics. The paper also includes the first example of a marine fungal species (*Hypomontagnella spongiphila*) that was recognized from a comparison of the genome sequences and morphology of its cultures with those of the next related terrestrial counterpart. The second paper from Zhang et al. investigated the culturable mycobiota in karst caves from southwest China. This is the second paper targeting diversity of cave fungi from Zhang and his colleagues. Karst caves are special environments characterized by darkness, low temperature, high humidity, and oligotrophic organisms. A total of 2344 fungal strains isolated from various substrates including air, rock, water and soil were identified to 610 species in 253 genera, including one new genus, 33 new species and five new combinations. This study, together with their earlier paper, have significantly improved our understanding on the biodiversity of cave fungi, with the world known genera, species and new species from caves increased by 20.8%, 35.1% and 230% respectively. Devadatha et al. document some 850 mangrove fungi reported from various substrates, their geographical distribution, their taxonomic affinity and discuss future areas for research. The last paper from Maharachchikumbura et al. covers the fungi in the poorly sampled desert and isolated habits in Oman, these taxa were identified based on phylogenetic analyses of sequence data and phenotypic comparisons. Two new orders, a new family and four new genera and seven new species are described. This study showed the existence of a remarkable diversity of fungi in desert habitats.

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