Book Reviews

Crous, P. W., Verkley G. J. M., Groenewald J. Z. & R. A. Samson (eds) (2009) *CBS Laboratory Manual Series 1: Fungal Biodiversity*. – CBS-KNAW Fungal Biodiversity Centre, Utrecht, The Netherlands: 269 pp. (ISBN 978-90-70351-77-9 – ISSN 1879-6877)

What are fungi or fungal-like organisms, and how to study them properly? Questions like these are answered and discussed in this first book of the new "CBS Laboratory Manual Series" in which most of the substantial issues are addressed mycologists are confronted with in doing biodiversity studies.

In twelve, clearly structured chapters, the editors – in collaboration with twelve illustrious co-authors – make a high quantity of information easily accessible through, for example, (1) a stringent writing style that focuses on practical core problems/techniques they have experienced in their annual mycology course given at the CBS, (2) one hundred and sixty-six complex but meaningful illustrations, most of them arranged in plates with excellent micrographs in full colour, and (3) the more than 600 references (Chapter X) accompanied by an index (Chapter XII) with more than 2000 entries ranging from *Absidia* (Mucoromycotina) to *Zythiostroma*, the latter name referring to an anamorphic genus of *Nectria* (Sordariomycetes, Ascomycota). The glossary (Chapter VIII) contains more than 300 descriptive/technical terms that are cross-referenced to illustrations. The most prominent part of the manual is Chapter II, The Fungal System ('system' in the sense of a classification hierarchy). The chapter starts with the fungal-like Chromista or Stramenopila (Oomycota). Although the Oomycota, they belong to the eukaryotic crown-group 'Heterokonta', are phylogenetically far away from opisthokont fungi, but have been studied also by mycologist since historical times. Subsequently, all divisions/phyla of the 'true' fungi (kingdom Fungi) presently accepted by most taxonomists are covered on 138 pages: phenotypes including life cycles of numerous fungi/species are exemplarily presented for all major taxa. The quantity and, more important, the quality of descriptions and illustrations is not only amazing, but a real help even for professional mycologists. By comparing this main part of the book (138 pp.) with the excellently compiled "Molecular and Phylogenetic methods" (Chapter IV; 20 pp.), it becomes obvious that before putting a living thing in a grinder, one ought to guess what it is by (re)checking its phenotype.

Chapters not yet mentioned are the "Introduction" (I), the "General methods" (III) that provide important information on operating procedures, "Nomenclature" (V) pointing at the most important rules, and a dozen of pages with packed information on "Ecological groups of fungi" (Chapter VI).

A special feature of the book, whose usefulness should not be underestimated, is that it is bound with spiral coil so that it opens flat on a desk or table, thus making note-taking and leafing through pages easy.

No doubt, this is the book every mycologist needs, and I am sure that she/he will soon order additional copies for students.

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Jaklitsch W. M (ed.) (2009) *European species of Hypocrea Part I. The green-spored species*. – Studies in Mycology **63**: 91 pp.

An issue of SIM was dedicated to green-spored *Hypocrea* already in 2003. An update became necessary as nine new species have been described since than, six of them in the present publication: *Hypocrea aeruginosa* (anamorph: *Trichoderma aerugineum*), *H. danica* (anamorph: not formed), *H. fomiticola* (anamorph: *T. fomiticola*), *H. longipilosa* (anamorph: *T. longipila* Bisset), *H. parepimyces* (anamorph: *T. parepimyces*), *H. parestonica* (anamorph: *T. parestonicum*). The descriptions of the species are excellent and supplemented with informative pictures of high quality. Based on phylogenetic analyses and ecological characteristics the morphological characters are re-evaluated for their taxonomic value. A dichotomous key to the European green spored *Hypocrea* species is given. The proved mixture of molecular data and morphological characterisation make the book highly valuable for everybody working with *Hypocrea* or its *Trichoderma* anamorph.

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Schoch, C. L., Spatafora J. W., Lumbsch H. T., Huhndorf S. M., Hyde K. D., Groenewald J. Z. & Crous P. W. (eds) (2009) *A phylogenetic re-evaluation of Dothideomycetes*. – Studies in Mycology **64**: 220 pp.

The Dothideomycetes is the largest and phylogenetically one of the most diverse classes of the phylum Ascomycota. Well known members are found in the genera *Cochliobolus*, *Didymella*, *Venturia*, *Leptosphaeria*, and their anamorphs, to mention only a few, are highly potent plant pathogens responsible for severe crop losses all over the world; freshwater and marine Dothideomycetes play an important role in aquatic food webs.

Although a large number of studies dealing with taxonomic, phytopathological, and molecular evaluations of this group of fungi have already been made, most of its potential members remained under-sampled for a more realistic classification system. The main objective of this monograph-like issue is to provide a broadly sampled phylogeny of Dothideomycetes from species to class level, derived from five genes, nucSSU, nucLSU rDNA, *TEF1*, *RPB1* and *RPB2* for 356 isolates and 41 families (six of them newly described). All currently accepted orders together with previously unplaced lineages of Dothideomycetes are represented, and their monophyly as well as their sister relationship to the lichenized Arthoniomycetes (with the single order Arthoniales) is strongly supported.

The ten articles in this issue provide a huge amount of information including "historical" interpretations of taxa, precise descriptions/definitions of taxa at all categorical levels, ecological data, keys, or, in short, anything the hearts of ascomycetologists/dothideomycetologists desire. The quality of information in general and particularly that of illustrations – the text is dressed with many, many marvellous micrographs in full colour and detailed trees – is CBS standard: simply excellent.

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Gherbawy Y. & .Voigt K. (2010). *Molecular Identification of Fungi*. – Springer Verlag Berlin: 501 pp. (ISBN 978-3-642-05041-1)

Fungi are among the most diverse and numerically most abundant Eukaryotes. Their economic impact on agriculture, public health and many other commercial sectors is enormous. A book on this topic can never be comprehensive and it needs a good sense of substance to provide an overview on the state of the art and to meet the very diverse expectations on a book like this.

The book starts with a discussion of the severe problems of invaders and alien fungal pathogens as a result of biotic homogenisation due to human migration and population expansions. The next two chapters are dedicated to "pseudofungi". Molecular techniques for diagnosing plant pathogenic Oomycetes (e.g., downy mildews like *Pythium* spp.) and a review on plasmodiophorids as plant pathogens, and how to identify them are presented. The application of molecular markers in the identification of grain pathogens is followed by a nice review on qualitative and quantitative detection of *Fusarium* and allied taxa. Detecting fungi causing post harvest contaminations like ochratoxigenic fungi (*Aspergillus, Penicillium*) and Zygomycetes (*Mucor, Rhizopus*) are topics of the subsequent chapters. Papers on the molecular identification of wood- and timber-rotting fungi (e.g., *Armillaria* spp., *Serpula lacrymans*), endophytic fungi, as well as on the anaerobic Neocallimastigomycota close the first part of the book. The second part is dealing with human pathogens and clinical aspects. It starts with new approaches in fungal DNA preparation and multiplex PCR from whole blood samples. How to deal with host background DNA in the diagnosis of fungal pathogens is topic of the second chapter. Molecular tools in the diagnosis of *Malassezia*, "dermatophytes" and opportunistic pathogenic fungi are presented, and the novel tool "loop-mediated isothermal amplification method" (LAMP) is introduced for diagnosing deep mycoses. The book closes with reviews on molecular markers for Zygomycetes.

The editors succeed in putting together different aspects of molecular mycology and in giving – in 20 chapters - a good overview on what is new in molecular identification and diagnosis of fungi. This book is a good choice for anyone - beginners or experienced scientists - interested in all aspects of the molecular identification of fungi.

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