

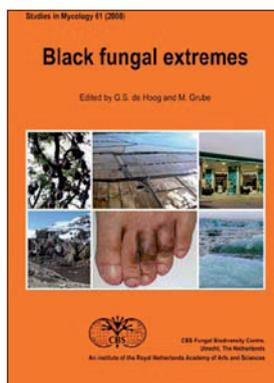
Newsletter of the Mycological Society of America

Black Fungal Extremes

Black fungal extremes. 2008. G.S. de Hoog, M. Grube (eds.). Centraalbureau voor Schimmelmcultures, P.O. Box 85167, Utrecht, The Netherlands, www.cbs.knaw.nl/publications/index.htm. *Studies in Mycology* 61: 1-194. Price: €60.00.

Wow-what an exciting book! From salt pans in the Netherlands to rocks in Antarctic deserts, the fungi have proven amazing colonists in otherwise biologically bleak circumstances and this volume gets down to some great details and lots of suggestions for future research. *Black fungal extremes* is a fascinating collection of research papers on the biology and phylogeny of dematiaceous micro-fungi that inhabit extreme environments or are human pathogens. This series of papers is an outcome of two Working Groups of the International Society for Human and Animal Mycology. One working group titled "Black Yeasts" met in Graz in 2006, and another group titled "Chromoblastomycosis" met in Utrecht in 2007, representing participants from 19 countries. One of the more outstanding features of this collection is the interdisciplinary nature of most of the papers. A single paper may include research into the ecology, biochemical pathways, taxonomy of a fungus, with phylograms to compare the ecology and biochemistry of the fungus at hand with a larger consort.

As the Preface points out, early mycologists used dark coloration as a convenient way to separate groups of species, and today the term "dematiaceous" is used to refer to dark colored hyphomycetes. Today we know dark coloration alone is not phylogenetically significant. The dark colors are known to be or in many cases presumed to be DHN-like (dihydroxynaphthalene) melanins, which is the topic of a num-



ber of papers dealing with the biochemical characterization and functionality of these pigments in the fungi. There is extensive coverage of biochemical pathways to melanin production as well as its role in cellular metabolism and in regulation of protein synthesis.

It is shown in many papers that melanins are critical to fungal adaptation in extreme environments, providing protection from UV rays, high temperatures, and in some species affecting the functionality of cell membranes in high saline environments. Black, extremophilic fungi are also used in the fledgling science of Astrobiology, comparing their capabilities of surviving in rocks in the harsh Antarctic environments to the possibilities of survival in outer space and on the fourth planet, Mars, should they be transported there from Earth. Understanding their biology may aide in our ability to optically seek out extraterrestrial life on other planets.

Several genera and species new to science are described as well as an extensive use of phylograms to discuss relationships between black fungal extremophiles and their less melanized relatives. The latest on *Aureobasidium* and its new varieties is given as well as the new genera *Elasticomyces* and *Recurvomyces* are described. The latter two are inhabitants of ice-free Antarctica, one of the coldest and driest environments on Earth. I applaud the subtle use of color in most phylograms to point out assemblages of interest, and especially the use of icons to indicate habitat or timescales.

The printing and page quality of this paper-bound volume are excellent. The use of color is well mastered and done in a thoughtful manner especially in illustrations. The binding is glued and the cover also sewn onto the body.

I heartily recommend this volume; it really sets the mark for excellent interdisciplinary work in mycology and research topics we have yet to even begin to fully understand.

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