

*HUANG, YONG-QING and LI, XIANG-QIAN, Systematic Mycology and Lichenology Laboratory, Institute of Microbiology, Chinese Academy of Sciences, Beijing 100080, China, Identification of biological species within the *Armillaria mellea* species complex from China based on mating studies and IGS-RFLPs.

We used mating tests and RFLP of the intergenic spacer (IGS) to identify biological species within the *Armillaria mellea* species complex collected from different hosts in various areas of northern and northeastern China. As results of monospore mating tests, four intersterility groups were identified within the *Armillaria mellea* species complex from this region. Tester strains of five European biological species were employed for mating studies. Only one of the four Chinese intersterility groups was compatible with the European tester strains of *A. gallica*. The IGS region between the 3' end of the large subunit rRNA and 5' end of the 5S rRNA was amplified using PCR and the products were digested with five restriction enzymes — AluI, HinfI, MspI, HaeIII and HincII — for 27 tester strains, representing four Chinese intersterility groups and five European biological species. Six AluI and HinfI digestion patterns were observed, and one to two digestion patterns were identified as results of digestion by MspI, HaeIII or HincII. The five European and four Chinese biological species can be differentiated by combining the IGS-RFLP digestion patterns of AluI with any one of the digestion patterns of HaeIII, HinfI, and HincII.

HYDE, KEVIN D., Department of Ecology and Biodiversity, The University of Hong Kong, Pokfulam Road, Hong Kong, Mycology in Asia and Australia.

The countries of Asia and Australasia include highly developed industrial or agricultural nations, the financially strapped developing "Asian Tigers", and several very poor underdeveloped nations. Consequently, the status of mycology and plant pathology in these countries varies considerably, but is not necessarily proportional to wealth. Australia has very few funded active mycologists and almost no training or teaching of mycology, but has a good plant pathology program. Thailand has an excellent training program for mycologists who are reasonably well funded, whereas India which has considerable mycological history and a surprisingly large number of mycologists, has very poor funding. Mycologists in Indonesia, the Philippines and Papua New Guinea are extremely thin on the ground, but Hong Kong has extremely active mycology groups and training programs for the region. Collaborative opportunities in Asia are therefore considerable. The poorer nations are crying out for collaborative projects which include training at no expense. Some of the "Asian Tigers" are looking for collaborators and in some cases will provide local funding. The industrial nations such as Hong Kong and Japan are also seeking outside collaboration and may provide funding. Training is especially important as there is a lack of taxonomists throughout most of the region. Training should be basic and realistic. Some excellent students await their chance to develop their mycological expertise and when they return home will provide excellent lifetime collaborators. The development of centers for mycology in both Asia and Australia would be highly desirable and should be given top priority in these regions.

*HUGHES, KAREN W., MCGHEE, LAURA, METHVEN, ANDREW S., JOHNSON, JIM E., AND PETERSEN, RONALD H., Department of Botany, University of Tennessee, Knoxville, TN 37996-1100, USA. Phylogeny of species within the genus *Flammulina*.

Exemplars of most species of *Flammulina* were selected, including several proposed new species within the genus. The new species were suggested on the basis of morphology (Scott Redhead) and mating compatibilities (Ronald Petersen). The ribosomal ITS1-5.8S-ITS2 regions were sequenced for each exemplar. Sequence comparisons suggest that there are two major clades: 1) A clade consisting of *F. velutipes* isolates including the varieties *velutipes*, *lactea* and *lupinicola* (nom. prov.); and 2) A clade consisting of *F. populicola*, *F. rossica*, *F. mexicana*, (all nom. prov.), *F. fennae* and *F. ononidis*. *Flammulina elastica* (nom. prov.) is basal to the *F. populicola* clade. *Flammulina populicola* is polyphyletic with one clade in Europe and a second clade in North America. This suggests that *F. populicola* may be an old species that has undergone differentiation following geographical isolation. An unusual 12 bp exact duplication was found within the 5.8S gene of the exemplar, *F. velutipes* (isolate 7200) from England. The 5.8S gene is a functional ribosomal RNA gene and is highly conserved. The insertion is at the end of a stem structure, extending into a loop and apparently does not affect 5.8S RNA function.

*HYDE, KEVIN D., FROHLICH, J., TAYLOR, J., UMALI, T., WHITTON, S., and YANNA., Department of Ecology and Biodiversity, The University of Hong Kong, Pokfulam Road, Hong Kong, Biodiversity studies of fungi on monocotyledonous plants in the tropics.

We are presently investigating the microfungi occurring on several monocotyledonous families in the Asian and Australian regions. This involves several PhD students and several collaborative projects in Asian countries. The fungi of palms have proved a particularly interesting group. In one study of the ascomycetes on palms in Australia, Brunei, Ecuador and Hong Kong, we identified 202 taxa of which 95 species were new to science. Although palm fungi are not generally specific to a particular host species, they may be specific at the family level. Tissue type of host plants is also an important factor in species composition. Leaves tend to support a differing mycobiota, when compared to rachides. Structures such as rattans also provide substrates for a rather different group of fungi. Bamboo is also an excellent substrate for investigating fungal diversity. In particular, the culms support a wide range of fungi and there is little overlap between the species of fungi occurring on the different host genera *Bambusa* and *Dendrocalamus* in Hong Kong and the Philippines. We have also been investigating the fungi on the Pandanaceae which is also rich in microfungi, particular hyphomycetes. These studies have provided a wealth of mycological specimens, some excellent training for young mycologists and much needed data on fungal diversity. The fungi in the tropics, at least on monocotyledons, are proving to be extremely diverse.