

**Polyphasic Taxonomy of *Aspergillus* Section *Fumigati*
and Its Teleomorph, *Neosartorya***

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Aspergillus section *Fumigati* (AsF) (teleomorph, *Neosartorya* Malloch & Cain) is a medically and agriculturally important group, but its species differentiation concept has not been established. The study was performed to establish concept of species differentiation in AsF and to clarify the taxonomic position of known AsF species. About 350 strains of AsF were isolated from arable soil in Korea or introduced from Centraalbureau voor Schimmelcultures (CBS) and analyzed with phenotypic characters including macro-, micro-morphology, growth temperature regimes and extrolite patterns, and genotypic characters including multi-locus sequence typing (MLST) of partial *-tubulin*, *calmodulin* and *actin* genes and RAPD-PCR. In polyphasic taxonomy of *Aspergillus fumigatus* and related species, strains previously considered as *A. fumigatus* were divided into five groups, *A. fumigatus* sensu stricto, *A. lentulus*, *A. viridinutans* complex, *A. fumigati*affinis and *A. novofumigatus*. MLST and growth temperature regimes could be critical determinants for the delineation of the *A. fumigatus* sensu stricto species. *A. lentulus* was well distinguished from *A. fumigatus*. *Aspergillus fumigati*affinis sp. nov. and *Aspergillus novofumigatus* sp. nov. were proposed as novel species. 147 strains of *Aspergillus fumigatus*sensu lato previously identified on the basis of morphology were re-identified as *A. fumigatus* sensu stricto (141, 95.9%), *A. lentulus* (3, 2.0%), *A. viridinutans* species complex (1, 0.7%), *Neosartorya udagawae* (1, 0.7%), and *N. cf. nishimurae* (1, 0.7%). Strains of *Neosartorya spinosa*, *N. glabra* and related species were reclassified. Strains of *N. glabra* sensu lato were divided into *N. glabra* sensu stricto, *N. laciniosa*, *N. coreana* and undetermined species. *Neosartorya laciniosa* sp. nov. and *Neosartorya coreana* sp. nov. were proposed as new to science, but *N. botucatensis*, *N. paulistensis* and *N. takaki* were reduced to synonyms with *N. spinosa*. In the other clades, *N. delicata*, *N. primulina* and *N. otanii* were proposed to be synonymized with *N. tatenoi*, *N. quadricincta* and *N. fennelliae*, respectively. The four new species, *Neosartorya denticulata* sp. nov., *Neosartorya assulata* sp. nov., *Neosartorya galapagensis* sp. nov. and *Aspergillus turcosus* sp. nov. were described and illustrated. The other known species in *Aspergillus* section *Fumigati* were

reviewed on the basis of polyphasictaxonomy. Consequently, it was suggested that out of 40 species, 29 species be accepted, 4 species be candidates for acceptance, but the species need more molecular analyses, and 7 species be rejected. MLST of partial-tubulin, calmodulin and actin genes, RAPD-PCR, growth temperature regimes and extrolite patterns were critical tools for the delimitation of AsF species, although morphological characters were also important to describe the species.

Curriculum Vitae			
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