

Re-identification of the anamorph of *Leuconectria grandis*

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Abstract — The anamorph of *Leuconectria grandis* was previously reported as *Gliocephalotrichum cylindrosporum* based on morphological characteristics. Re-examination of the anamorph and DNA sequence analysis of ITS and β -tubulin indicate that the anamorph of *L. grandis* is distinct from *G. cylindrosporum* and represents an unnamed species of *Gliocephalotrichum*. Following the recommendation of the current International Code of Botanical Nomenclature, we avoid creating a name for the anamorph of *L. grandis*.

Keywords — correction, morphology, taxonomy

Introduction

When the leaf-inhabiting *Leuconectria grandis* (Nectriaceae, Hypocreales) was established, its anamorph was described at the same time and treated as *Gliocephalotrichum cylindrosporum* based on morphological characteristics. Distinctions between the *Gliocephalotrichum* material from China (ex type culture of *L. grandis*) and the original description of *G. cylindrosporum* from Thailand (Wiley & Simmons 1971) were discussed and treated as infraspecific variations (Zhuang et al. 2007). Following the recent work on *Gliocephalotrichum* by Decock et al. (2006), it becomes necessary to clarify the taxonomic placement of the anamorph of *L. grandis* based on a combination of morphology and ITS and β -tubulin sequence analysis.

Material and methods

Material used in this study is listed in TABLE 1. DNA was extracted from the ex-type culture of *Leuconectria grandis*. DNA fragments and primers were selected and DNA amplified in accordance with procedures outlined in Decock et al. (2006). PCR products were purified using 3S Spin PCR Product Purification

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Kit (Shenergy Bicolor for Life Science Co., Ltd.), then sequenced using the same PCR primers with an ABI 3730 DNA analyzer by SinoGenoMax, Ltd. Sequences were analyzed using the package MEGA4.10 (Tamura et al. 2007). The resulting Neighbor-joining tree was derived from analyses of combined sequences of ITS and β -tubulin genes with *Glionectria tenuis* as outgroup.

TABLE 1. Material studied

TAXA	GENBANK NUMBER	
	ITS	β -TUBULIN
<i>Calonectria pauciramosa</i> C.L. Schoch & Crous	AF210886	AY078121
<i>Calonectria pyrochroa</i> (Desm.) Sacc.	AY078115	AY078120
<i>Gliocephalotrichum bacillisporum</i> Decock & Huret 1	DQ374408	DQ374413
<i>Gliocephalotrichum bacillisporum</i> 2	DQ374409	DQ374414
<i>Gliocephalotrichum bulbilium</i> J.J. Ellis & Hesselst. 1	DQ374406	DQ377830
<i>Gliocephalotrichum bulbilium</i> 2	DQ374407	DQ377829
<i>Gliocephalotrichum cylindrosporium</i> B.J. Wiley & E.G. Simmons 1	DQ366705	DQ377841
<i>Gliocephalotrichum cylindrosporium</i> 2	DQ366706	DQ377842
<i>Gliocephalotrichum longibrachium</i> Decock & Charue 1	DQ278422	DQ377835
<i>Gliocephalotrichum longibrachium</i> 2	DQ278421	DQ377836
<i>Gliocephalotrichum microchlamydosporium</i> (J.A. Mey.) B.J.Wiley & E.G. Simmons 1	DQ366700	DQ374411
<i>Gliocephalotrichum microchlamydosporium</i> 2	DQ366701	DQ374412
<i>Gliocephalotrichum ohiense</i> L.H. Huang & J.A. Schmitt	DQ366707	DQ374415
<i>Gliocephalotrichum simplex</i> (J.A. Mey.) B.J. Wiley & E.G. Simmons 1	DQ366703	DQ377839
<i>Gliocephalotrichum simplex</i> 2	DQ366704	DQ377840
<i>Glionectria tenuis</i> Crous & C.L. Schoch	AF220980	AF320194
<i>Leuconectria grandis</i> Y. Nong & W.Y. Zhuang	EF121859	U984072

Results and discussion

Re-examination of the *Leuconectria grandis* anamorph indicates that it differs from any known species of *Gliocephalotrichum* by combining the following features: sterile arms that more or less directly subtend a conidiogenous penicillus in groups of 1–3 with a single arm sometimes growing distantly at the lower portion of conidiophore or occasionally present on both the upper and basal portions; the surface of the sterile arms often covered by an amorphous substance; and narrow-cylindrical conidia that average $8.5\text{--}13 \times 1.2\text{--}1.5 \mu\text{m}$. Although the *L. grandis* anamorph more closely resembles *G. cylindrosporium* than any other *Gliocephalotrichum* species with respect to conidial shape and size, the position of the sterile arms is different. Compared to all species producing similarly placed sterile arms, the *L. grandis* anamorph produces narrower, longer conidia that distinguish it (Decock et al. 2006). The anamorph appears to represent an unnamed species of *Gliocephalotrichum*.

To help determine the taxonomic position of the fungus, ITS and β -tubulin gene sequences obtained from the known species of *Gliocephalotrichum* and *L. grandis* were analyzed, and a Neighbor-joining tree was constructed (FIG. 1). Our molecular data indicate that 1) *Gliocephalotrichum* is a monophyletic genus with a relatively high bootstrap support (92%); 2) a sister-group relationship can be recognized within the genus that correlates with the positioning of the sterile arms; 3) *G. cylindrosporum* and *G. simplex* (both producing sterile arms arising at a distance from the conidiogenous penicillus) form one highly (100%) supported group; 4) the remaining species (all producing sterile arms that directly subtend the conidiogenous penicillus) belong to a moderately (73%) supported second group; and 5) there is a very low (42%) bootstrap support for a relationship between *L. grandis* and *G. longibrachium*. Our data clearly indicate that the *L. grandis* anamorph is not conspecific with *G. cylindrosporum* but rather represents a distinct and unnamed species of *Gliocephalotrichum*.

In accordance with the current International Code of Botanical Nomenclature (McNeill et al. 2006: Rec. 59A.3), we do not propose a separate name for the new *Gliocephalotrichum* species. The holomorph name *Leuconectria grandis* adequately designates both teleomorph and anamorph.

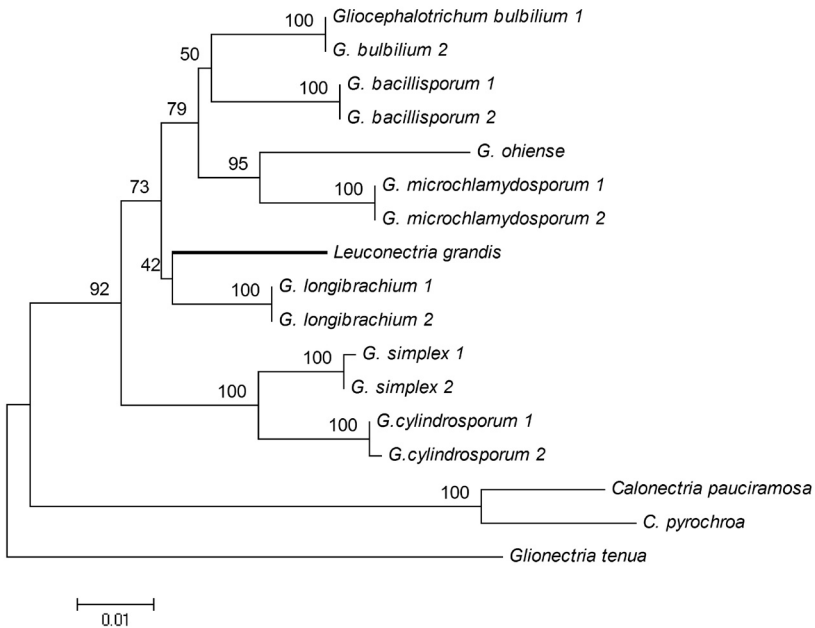


FIG. 1 Neighbor-joining tree based on sequence analysis of ITS and β -tubulin genes, showing the relationships among species of the anamorphic genus *Gliocephalotrichum*.

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