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Jumillera rogersii sp. nov. from Taiwan

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Abstract: *Jumillera rogersii* and its cultures and synanamorphs are described. It features a grayish stromatal surface, interperithecial tissue largely of fungal origin, conspicuously inequilateral ascospores, and *Libertella* and *Geniculosporium* synanamorphs.

Key words: *Geniculosporium*, *Libertella*, pyrenomycetes, systematics, Xylariaceae

Introduction: Species of *Jumillera* J. D. Rogers et al. feature bipartite, applanate stromata and were or would have been assigned by Miller (1961) to *Hypoxylon* Bull. section *Applanata* J. H. Miller. Members of *Hypoxylon* section *Applanata* have been segregated from *Hypoxylon* and redistributed mainly among

Biscogniauxia Kuntze (Ju et al., 1998), *Camillea* Fr. (Læssøe et al., 1989), *Jumillera* (Rogers et al., 1997), and *Whalleya* J. D. Rogers et al. (Rogers et al., 1997). *Jumillera* comprises seven species (Rogers et al., 1997; Rogers and Ju, 2002), with anamorphs known in four of the species. *Jumillera mexicana* J. D. Rogers et al. and *J.*

cinerea (Ellis & Everh.) J. D. Rogers et al. produce both *Libertella* Desm. and *Geniculosporium* Chesters & Greenh. synanamorphs with wet, scolecosporous conidia and dry, amerosporeous conidia, respectively, whereas *J. viridis* (Theiss.) J. D. Rogers et al. and *J. hawaiiensis* J. D. Rogers & Y.-M. Ju produce *Libertella* anamorphs only. Presence of *Libertella* anamorphs in *Jumillera* species separate the genus from otherwise similar genera, such as *Biscogniauxia* and *Whalleya*, which have hyphomycetous anamorphs that produce dry conidia. Composition of interperithecial tissue was also employed by Rogers et al. (1997) to separate *Jumillera* from the latter two genera; the interperithecial tissue of *Jumillera* is largely composed of the host tissue but that of *Biscogniauxia* and *Whalleya* is primarily of fungal origin.

In this study, we describe a new species of *Jumillera*, which was first considered a *Whalleya* species due to the interperithecial spaces mostly filled with fungal tissue. However, *Libertella* and *Geniculosporium* synanamorphs obtained from the new fungus via culturing indicate its *Jumillera* nature.

Materials and Methods: Cultures were initiated from multiple ascospores scooped out from hydrated perithecia, from which the overlying stromatal tissue had been aseptically removed. The removed ascospores were transferred into plates containing SMEA (Kenerley & Rogers, 1976). When colonies developed transfers were made to 2% Difco Oatmeal agar (OMA) in 9 cm plastic Petri plates and incubated at 20 C under 12 h fluorescent light. Microscopic features were examined by differential interference microscopy (DIF) and bright field microscopy (BF) with the fungal material mounted in water and Melzer's iodine reagent. Cultures were deposited in the BCRC (the Bioresource Collection and Research Center) in Taiwan. Color designations follow Rayner (1970).

Taxonomy

***Jumillera rogersii* Y.-M. Ju & H.-M. Hsieh, sp. nov. [MB 511277]** Figs. 1–12

A Jumillera cinerea differt in ascosporis conspicue inequilateralibus et in conidiis statu *Libertellae* valde curvis, 16–21 x 1.5–2 µm, luteis aggregatis.

Stromata appanate, with sloped, irregular to regular margins, 0.8–2.3 cm long x 0.5–1 cm broad x ca. 0.6 mm thick; outer dehiscing layer indeterminable; mature surface Pale Mouse Gray (117), plane, overlain with finely striped remnants of host tissue in places; tissue immediately beneath surface 0.2 mm thick, carbonaceous; tissue between perithecia white, largely composed of fungal tissue; tissue beneath perithecia largely of host origin. **Perithecia** depressed-spherical, 0.3–0.4 mm diam x 0.2 mm high. **Ostioles** lower than stromatal surface, with opening punctate, usually fringed with small amount of white substance. **Asci** with 8 ascospores arranged in uniseriate manner, cylindrical, 95–115 µm total length x 6–8 µm broad, the spore-bearing parts 75–90 µm long, the stipes 20–30 µm, with an apical ring staining blue in Melzer's iodine reagent, discoid, 1 µm high x 2 µm broad. **Ascospores** brown to dark brown, unicellular, reniform to ellipsoid-inequilateral, with broadly rounded ends, smooth, 10–12 x 4–4.5 µm, with a straight germ slit spore-length on the convex side; perispore indehiscent in 10% KOH; epispore smooth. Paraphyses copious, septate, 4–5 µm broad, extending beyond ascus tips.

Colonies on OMA reaching the edge of 9-cm Petri dish in 4 wk, whitish, velvety to floccose, azonate, commonly sectoried in newly initiated cultures but decreasingly sectoried with subsequent transfers, with diffuse margins, sometimes forming Olivaceous Black (108) stromatized areas at junctions of sectors. Reverse Greenish Olivaceous (90). Two synanamorphs produced.

Libertella synanamorph: Sporulating regions distributed over entire surface of colonies but more abundant near the center and at junctions of sectors. Conidiophores di- or trichotomously branched, hyaline, smooth-walled, arranged in dense palisades. Conidiogenous cells terminal, cylindrical, hyaline, smooth, 16–22 x 1.5–2 µm. Conidia produced holoblastically at the apex of conidiogenous cells, hyaline, Luteous (12) in slimy masses, smooth, long cylindrical, strongly curved, 16–21 x 1.5–2 µm, with a flattened base indicating former point of attachment to conidiogenous cell. *Geniculosporium* synanamorph: Sporulating regions confined at the inoculating points and stromatized areas, with scarce sporulation. Conidiophores unbranched or occasionally branched, hyaline, smooth-walled. Conidiogenous cells terminal, long cylindrical, conspicuously geniculate, indeterminately elongated, hyaline, smooth, 1.5–2 µm broad, bearing poroid or crater-like secession scars. Conidia produced holoblastically in sympodial sequence, hyaline, smooth, ellipsoid to cylindrical, 6.5–12 x 2–2.5 µm, with a flattened base indicating former point of attachment to conidiogenous cell.

Colonies on SMEA attaining 2.6–3.8 cm in 4 wk, whitish, velvety, azonate, commonly sectored in newly initiated cultures but decreasingly sectored with subsequent transfers, with diffuse margins, diffusing abundant Olivaceous (48) pigment beyond colonies. Reverse Olivaceous Gray (121). Anamorphic features much as those from OMA.

Etymology. In honor of Prof. Jack D. Rogers, with whom Y.-M.J. shared the naming of the generic name *Jumillera* as well as several contributions concerning the genus.

Material examined. TAIWAN. Nan-tou County, Ren-ai, Aowanda National Forest Recreation area, on decorticated angiospermous stem, 15 Oct 2006, Ju, Y.-M. & Hsieh, H.-M. 95101502 (cultured) (HOLOTYPE HAST).

Jumillera rogersii is typical for the genus in having *Libertella* and *Geniculosporium* synanamorphs and slow-growing colonies on SMEA. It has a grayish stromatal surface, on which remnants of host tissue are often noticed. Unlike the previously described species of *Jumillera* where the interperithecial spaces are largely filled with host tissue, the tissue between perithecia in *J. rogersii* is primarily of fungal origin. *Jumillera cinerea* and *J. mexicana* are similar to *J. rogersii* in having a grayish surface on mature stromata and two synanamorphs. However, *J. cinerea* differs from *J. rogersii* mainly in having ascospores nearly equilateral and in having the conidia produced from the *Libertella* synanamorph slightly curved, somewhat shorter, 10–18 µm long, and appearing dull green in masses, whereas *J. mexicana* differs in having smaller ascospores with narrowly rounded ends, in having a hyaline sheath surrounding the ascospore, and in having smaller conidia produced by both synanamorphs.

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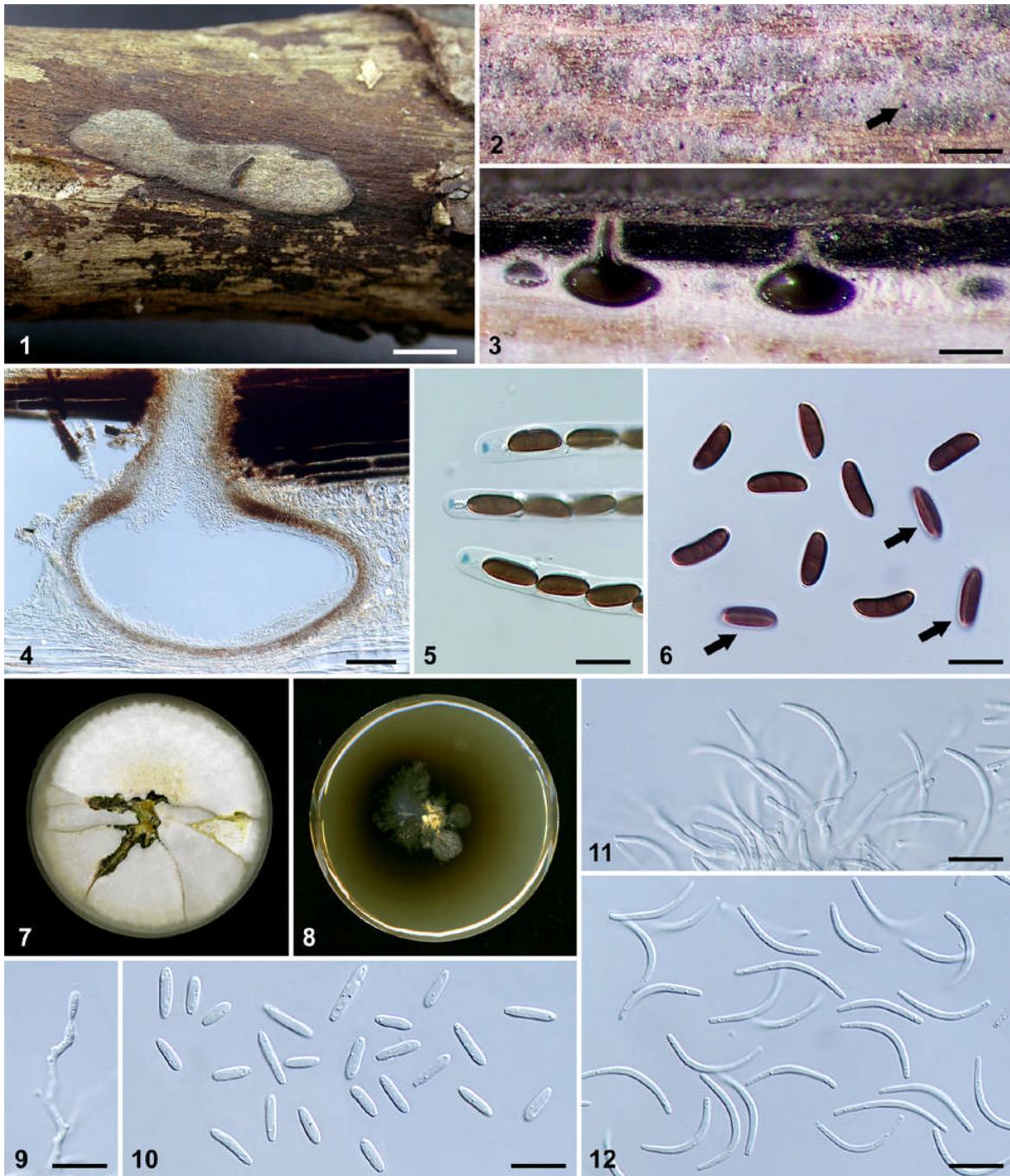
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Figs. 1–12. *Jumillera rogersii* (from holotype). 1. Stroma on stem. 2. Stromatal surface overlain with remnants of host tissue. The arrow points towards one of the ostioles. 3, 4. Vertical sections of stromata showing perithecia embedded within white tissue and located beneath a thick, carbonaceous layer. 5. Ascus apical rings and ascospores. 6. Ascospores. The arrows point towards those showing a germ slit. 7. Colony on OMA in a 9-cm Petri dish at 4 wk. 8. Colony on SMEA in a 9-cm Petri dish at 4 wk. 9. *Geniculosporium* synanamorph. 10. Conidia produced from the *Geniculosporium* synanamorph. 11. *Libertella* synanamorph. 12. Conidia produced from the *Libertella* synanamorph. Figs. 5, 6, 9–12 by DIF; Fig. 5 from material stained with Melzer’s iodine reagent, others from material mounted in water. Bars in Fig. 1 = 0.5 cm; Figs. 2, 3 = 0.2 mm; Fig. 4 = 50 μ m; Figs. 5, 6, 9–12 = 10 μ m.

