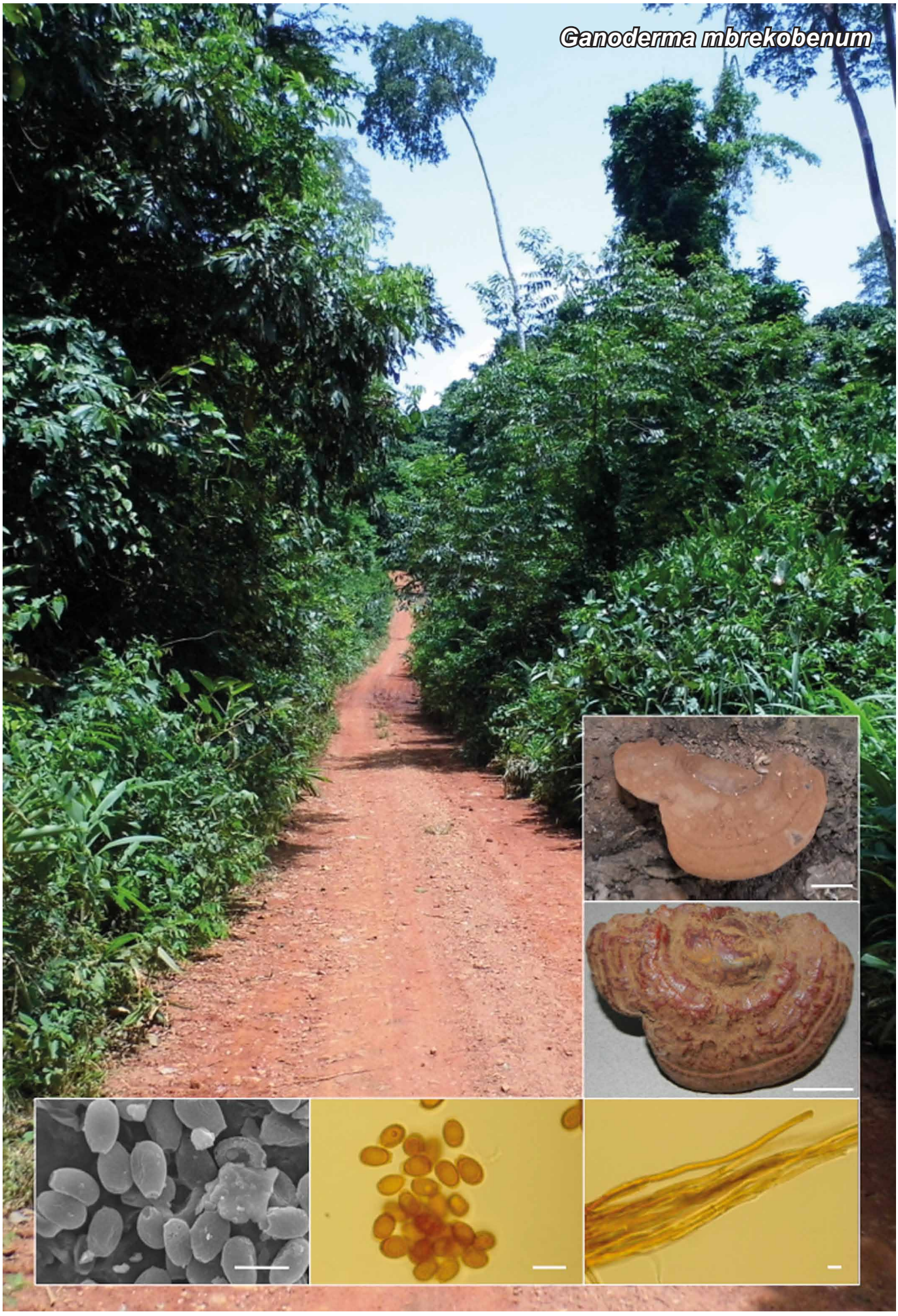

Ganoderma mbrekobenum

Fungal Planet 449 – 4 July 2016

Ganoderma mbrekobenum E.C. Otto, Blanchette, Held, C.W. Barnes & Obodai, *sp. nov.*

Etymology. Named after the Ghanaian Twi word 'mbrekoben', which translates to reddish brown mushroom.

Classification — *Ganodermataceae*, *Polyporales*, *Agaricomycetes*.

Mature *basidiomata* annual, pileate, stipitate, dimidiate, applanate, woody to corky when dried, homogenous context structure, pileus maroon to liver brown when dry, surface hard and glabrous, margin rounded, thickened, maroon to liver brown when dry. *Stipe* substibe (> 5 cm), lateral, columnar, with one solitary column, maroon; borders with hymenophore thickened. *Pore surface* smooth, creamy to snuff brown when dry, pores 4–6 per mm, round to somewhat irregular and slightly elongated, 105–247 × 76–207 µm (av. 167.2 × 123.8 µm; SD 32, 26; n = 100), dissepiments 44–152 µm (av. 83.6 µm; SD 23; n = 100); tubes 0.1–0.7 mm long, dark brown. *Hyphal system* dimitic; generative hyphae slightly inconspicuous, branched, thin-walled and hyaline; skeletal hyphae most prevalent in the basidiocarp, occasionally branched, pale to dark brown, 2.5–7 µm thick, tapering towards the end. *Basidia* not observed. *Basidiospores* brown, ovoid to broadly ellipsoid with a truncate base, bitunicate, verruculose, 8–11.5 × 6–8 µm (av. 10.4 × 7.1 µm; SD 0.7, 0.4; n = 100), perisporium thin, smooth; exosporium with intermediate thick inter-walled pillars; endosporium thick, dark brown. *Chlamydospores* not observed.

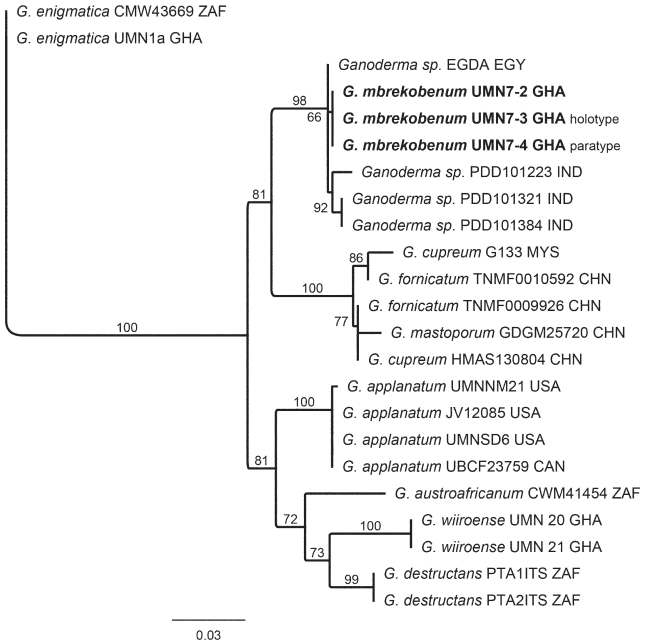
Culture characteristics — No live culture obtained.

Typus. Ghana, Brong Ahafo and Greater Accra Regions, on angiosperms, June 2015, *M. Obodai* (holotype MIN 850481, paratype MIN 850482, holotype ITS sequence GenBank KX000896, LSU sequence GenBank KX000897; paratype ITS sequence GenBank KX000898, LSU sequence GenBank KX000899, holotype MycoBank MB816172).

The phylogenetic tree with *G. mbrekobenum* was constructed using the Maximum Likelihood plugin PHYML in Geneious R9 (http://www.geneious.com, Kearse et al. 2012), and the substitution model determined by jModelTest (Posada 2008) according to Corrected Akaike Information Criterion (AICc). *Ganoderma enigmatica* (GenBank KR183855 and KR150678) is the outgroup. Bootstrap support values ≥ 50 % are given above branches. The phylogenetic position of *G. mbrekobenum* is indicated in **bold**. The *Ganoderma* species is followed by the sample ID and the three letter United Nations country code, in order of appearance ZAF: South Africa, GHA: Ghana, EGY: Egypt, IND: India, MYS: Malaysia, CHN: China, USA: United States.

Colour illustrations. Ghana, Brong Ahafo Region, native tree species along the road of the Ayum forest (background); basidiocarp in the field with basidiospores covering the pileus, basidiocarp in lab with basidiospores cleaned off; skeletal hyphae, basidiospores by light microscopy and SEM. Scale bars = 3 cm (basidiocarps), 10 µm (microscopic structures).

Notes — *Ganoderma mbrekobenum* causes decay in the roots and trunks of angiosperm trees in the southern regions of Ghana. Sequences were downloaded from GenBank for phylogenetic analysis with *G. mbrekobenum* sequences using the program Geneious R9 (http://www.geneious.com, Kearse et al. 2012). The complete ITS sequence of the *G. mbrekobenum* holotype was used for the Blastn search. The results gave the highest score to an isolate *Ganoderma* sp. (EGDA, GenBank LN774971) from Egypt, with a single nucleotide difference. The next 14 Blastn hits were to *Ganoderma* sp. sequences from a single institution in India. The analysis included only the top three of these sequences, having four to six differences from the *G. mbrekobenum* holotype. A few isolated sequences with various *Ganoderma* species names had relatively high Blastn scores, but were excluded from the analysis because they did not align with their respective species and are likely *G. mbrekobenum*, or closely related. The closest legitimate *Ganoderma* species were *G. applanatum* and *G. fornicatum*, both with 94 % identity. Additional sequences of other recently described *Ganoderma* species from Africa (Coetzee et al. 2015, Crous et al. 2015b) were included in the analysis. The final alignment was edited by hand for alignment errors.



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