

Outlineoffungi.org - Note 1232 *Astrotestudinimycetes*

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Astrotestudinimycetes C.J. Pratt, E.E. Chandler, N.H. Youssef & Elshahed

Pratt et al. (2023) introduced *Astrotestudinimycetes* within *Neocallimastigomycetes* (*Neocallimastigomycetes incertae sedis*, *Chytridiomycota*) to accommodate *A. divisus* C.J. Pratt, E.E. Chandler, N.H. Youssef & Elshahed as the type species using morphological characteristics, physiological preferences, and phylogenetic analyses (LSU, ITS, and *rpb1* sequence data). The type species represents one of two genera of obligately anaerobic gut fungi in *Neocallimastigomycetes* and isolated from the dung of *Geochelone platynota*: in the USA. The other is *Testudinimycetes gracilis* (Pratt et al. 2023). Multi-locus phylogenetic analyses (ITS, LSU, and *rpb1*) have confirmed that *Astrotestudinimycetes* belongs to a monophyletic clade that is basal to the *Neocallimastigomycetes*, with *Testudinimycetes gracilis* as its only close relative (Hanafy et al. 2020). *Astrotestudinimycetes divisus* displays a broader temperature growth range than found in the anaerobic gut fungi found in mammalian hosts. This is consistent with the poikilothermic metabolism of its host. *Astrotestudinimycetes divisus* has an optimal growth temperature of 39°C, in contrast to *T. gracilis*, which grows optimally at 30°C (but also has a broad temperature growth range) (Pratt et al. 2023). Growth of *A. divisus* in *in vitro* culture is unusual compared to all other anaerobic gut fungi (including, *T. gracilis*), in that it does not grow on glucose and cellulose (Griffith et al. 2009). However, it does grow well on fructose, mannose, cellobiose, inulin, and starch. In roll tube culture, *A. divisus* forms small pinpoint thalli, comprising a nucleated rhizomycelium with many branched and blunted rhizoids. Multiple elongated subglobose sporangia, originating from a single central swelling, are formed on each thallus. These release uniflagellate zoospores through an apical pore. The branched, blunted rhizoids of *A. divisus* and long zoospore flagellum distinguish it from *T. gracilis* (Pratt et al. 2023).

References

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