Anisomitus miae gen. nov. et sp. nov.

Submitted by Schnupf, Pamela

Genus *Anisomitus*

Etymology

[A.ni.so.mi'tus] **Gr. masc. adj.** *anisos*, uneven; **Gr. masc. n.** *mitos*, thread; **N.L. masc. n.** *Anisomitus*, referring to uneven filamentous form

Nomenclatural type

Species *Anisomitus miae*[Ts]

Description

Genus of bacteria commonly referred to as Segmented filamentous bacteria (SFB); known also as *Candidatus* Arthromitus (greek for “jointed thread”), as proposed by Snel et al. (1995). However, "Arthromitus" describes a non-SFB bacteria (Thompson et al., 2012). The genus name *Anisomitus* (greek for “uneven thread”) was chosen in keeping with the spirit of a morphologically descriptive name for SFB and in recognition of the work by the French zoologist Pierre-Paul Grassé who, in 1925, was the first to describe SFB attached to the intestinal epithelium of a vertebrate, the domestic duck (Grassé, 1925). SFB are Gram variable and spore-forming bacteria that form a monophyletic group in the *Clostridiaceae*, based on **16S** rRNA gene sequence analysis. SFB grow from unicellular bacteria of approximately 1 micrometer in length into filaments reaching over 80 micrometer in length. Particular characteristics include a tip-like structure, present on both the unicellular and filamentous forms, as well as a biphasic filament morphology of thin and smooth to thick and bulbous as the filament ages and unicellular bacteria develop inside the filament to either form spores or to be released from the filament as intracellular offspring. The genus is represented by closed genome sequences of SFB from mice and rat as well as metagenome-assembled genomes from the gut of humans and other vertebrates. Genomes are reduced and range in size from approximately 1.5 to 1.7 Mb, lack nearly all components of the TCA cycle, but include genes involved in flagella synthesis and chemotaxis.

Classification

Bacteria » *Bacillota* » *Clostridia* » *Eubacteriales* » *Clostridiaceae* » *Anisomitus*

References

Effective publication: Kiran et al., 2026 [1]

Registry URL

https://seqco.de/i:51462

Species *Anisomitus miae*[Ts]

Etymology
[mi'ae] **L. gen. fem. n.** *miae*, of Mia, daughter of author

Nomenclatural type
NCBI Assembly: GCA_054906415.1 [Ts]

Description
This bacterium was characterised from the faeces of children living in Mali. It is in the group of bacteria commonly referred to as Segmented filamentous bacteria (SFB); known also as *Candidatus* Arthromitus (greek for “jointed thread”), as proposed by Snel et al. (1995), and now named *Anisomitus* after the first SFB described in vertebrates by French zoologist Pierre-Paul Grassé (1925). This bacterium is Gram variable and spore-forming, hybridises with the 16S rRNA-targeted oligonucleotide probe (5’-GGG TAC TTA TTG CGT TTG CGA CGG CAC-3’; Urdaci et al., 2001), and has a 16S rRNA gene sequence that clusters within the monophyletic group in the *Clostridiaceae* that includes SFB from hosts such as the mouse, rat, turkey, chicken, and human. The genome is approximately 1.6 to 1.7Mb in size with a GC content of approximately 30% and includes genes for chemotaxis and the synthesis of flagella. The bacterium has a short form with an apparent tip and forms filaments that include a tip structure at one end. The filaments can be morphologically uneven, with a more smooth and thin morphology closer to the tip and a thickening with increased distance from the tip including the appearance of more bulbous sections that are particularly pronounced after spore formation.

Classification
Bacteria » *Bacillota* » *Clostridia* » *Eubacteriales* » *Clostridiaceae* » *Anisomitus* » *Anisomitus miae*[Ts]

References
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References

1. Kiran et al. (2026). Segmented filamentous bacteria are worldwide human gut commensals. *Nature Communications*. DOI:10.1038/s41467-026-70010-4

Register List Certificate of Validation

On behalf of the *Committee on the Systematics of Prokaryotes Described from Sequence Data* (SeqCode Committee), we hereby certify that the Register List **seqco.de/r:zlg3gn05** submitted by **Schnupf, Pamela** and including 2 new names has been successfully validated.

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