"*Candidatus* Sphaeronema italicum"

Resembles: several other *Alphaproteobacteria* and *N. limicola* I and III
Probes: class specific: ALF-968 [7]; species specific: Sita-649 + Compsita-649 [6]
Frequency occurrence (200 samples; 175 WTPs):

- observed with a FI ≥ 1 in 23 samples
- observed with a FI ≥ 3 in 4 samples

Example of filaments comprised of spherical cells

Characteristics

- bent/curled filaments, sometimes tangled;
- free in the liquid phase as well as inside and around the flocs;
- filament length usually > 200 µm;
- filaments not branched;
- not motile;
- cell diameter may vary from 1.1 µm to 1.8 µm;
- no sheath;
- attached growth absent;
- septa and constrictions clearly visible;
- either discus/discoid shaped cells or nearly spherical cells. These two cell shapes only rarely occur together in activated sludge. In filaments comprised of spherical cells, small packages of two or four cells might be present. Moreover, probably due to the pre-treatment required for FISH, the filaments often disintegrate into separate cells;
- no sulphur storage, but other granules might be present inside the cells;
- Gram negative or somewhat Gram variable;
- usually Neisser negative.

See "*Candidatus* Alysiomicrobium bavaricum" for remarks, physiology, occurrence in activated sludge, control options and references.

Slide show images

- 1: morphology at a low magnification
- 2-6 : examples of spherical cells
- 7-9: spherical cells change into more square cells

- 10-13: cell packages inside the filaments (image 13: also parallel cell growth)
- 14: FISH image with probe Sita-649: disintegration of the filaments during fixation
- 15-17: example 1 of discoid cells; image 17: extremely curled filament
- 18-20: example 2 of discoid cells
- 21: FISH image with probe Sita-649: filaments not disintegrated
- 22: Gram stained
- 23: occasionally Neisser positive
- 24: cells are occasionally filled with stored compounds
- 25-26: parallel growth of cells inside filaments.