Zoogloea are very large colonies of immobile floc forming bacteria. These bacteria colonies are characterised by the excessive amounts of polysaccharide coating the bacterial colony. Zoogloea bacteria typically can denitrify.

Zoogloea can grow as “fingered organisms” (Figure 1 and 3), or as amorphous clumps (Figure 2). Zoogloea bacteria are typically Gram negative and Neisser negative.

Zoogloea generally play an important role in wastewater treatment as they are capable of lowering BOD and enhancing the formation of activated sludge flocs. Zoogloea also play a role in the formation of poly-B-hydroxybutyrate (PHB) and biosorption of metals. PHB is produced by microorganisms to store carbon as a response to a stressed environment; it is also key substrate in phosphorus removal (EPBR) processes.

Zoogloea tend to form during overloaded events at wastewater treatment plants and can contribute to viscous, non-filamentous bulking and poor sludge dewatering.

Many options are available to control levels of Zoogloea in MLSS. pH can be increased to above 7, however nutrient addition is generally recommended. The addition of micronutrients or bacterial supplements can be added if high BOD loading is the cause of excessive Zoogloea.

Control of Zoogloea with the use of excessive levels of polymer within the clarifier is not recommended. Dewatering of this sludge is very difficult as large amounts of polymer are required leading to poor water drainage. The use of chlorination to treat excessive Zoogloea concentration is also not recommended as this will only increase the number of slime forming bacteria.

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What is a bacteria’s favourite type of photo? A Cell-fie!