



Centre for Affordable
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This presentation is used with Lesson Plan 10: Introduction to the Biosand Filter in the Biosand Filter for Project Implementers Trainer Manual.

Available at www.cawst.org/resources



Biolayer Development



Learning Expectations

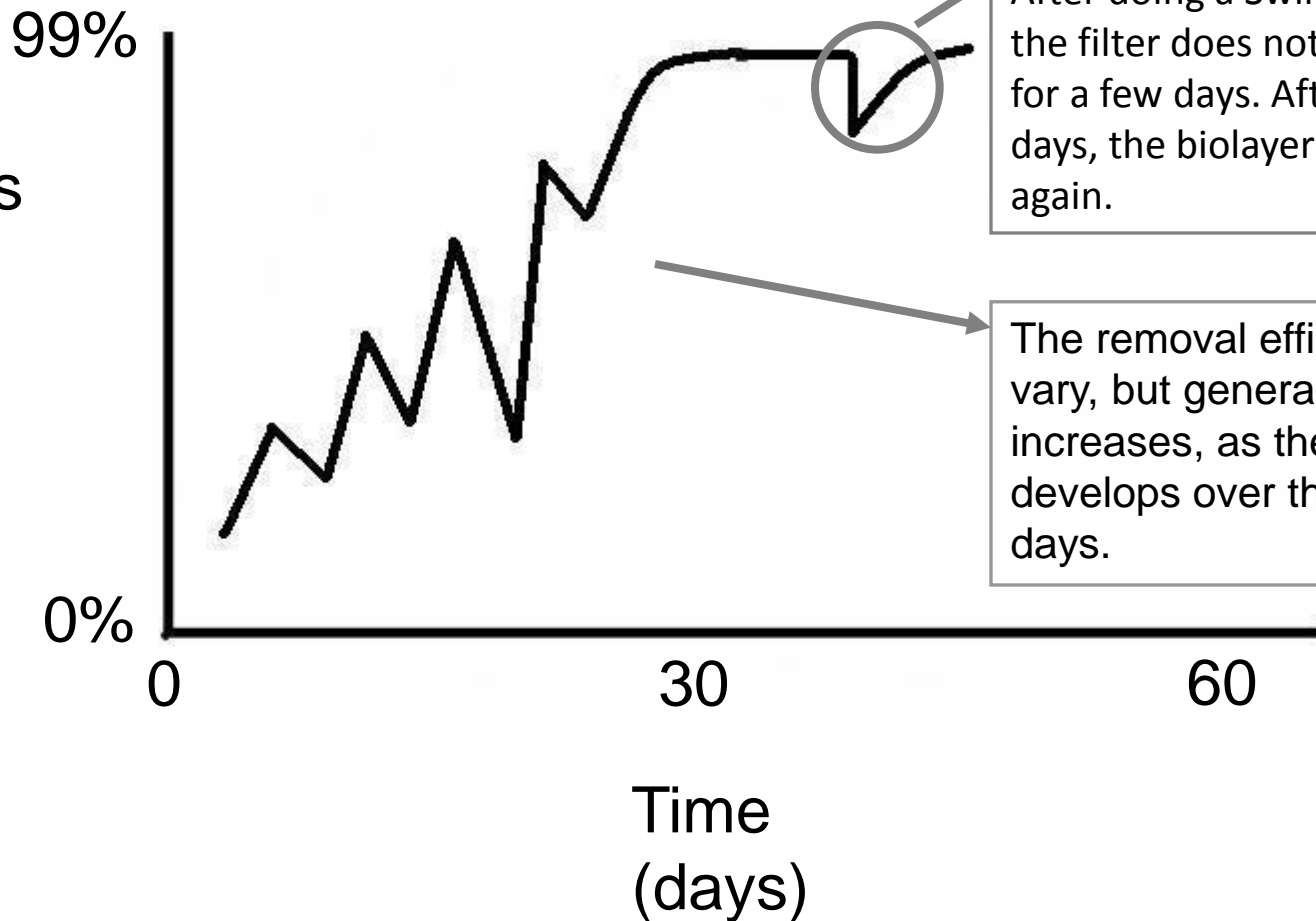
1. List and explain the importance of the 8 important points to check to see if a biosand filter is working well.

The Biolayer

- The biolayer is a key part of the biosand filter
- It helps the filter treat water better
- It takes about 30 days to grow
- Checking that the filter has been used for at least 30 days, so that the biolayer is developed, is one of the 8 key filter performance points that you can check to know that a filter is treating water well.

Establishing the Biolayer

Pathogens removed from the water

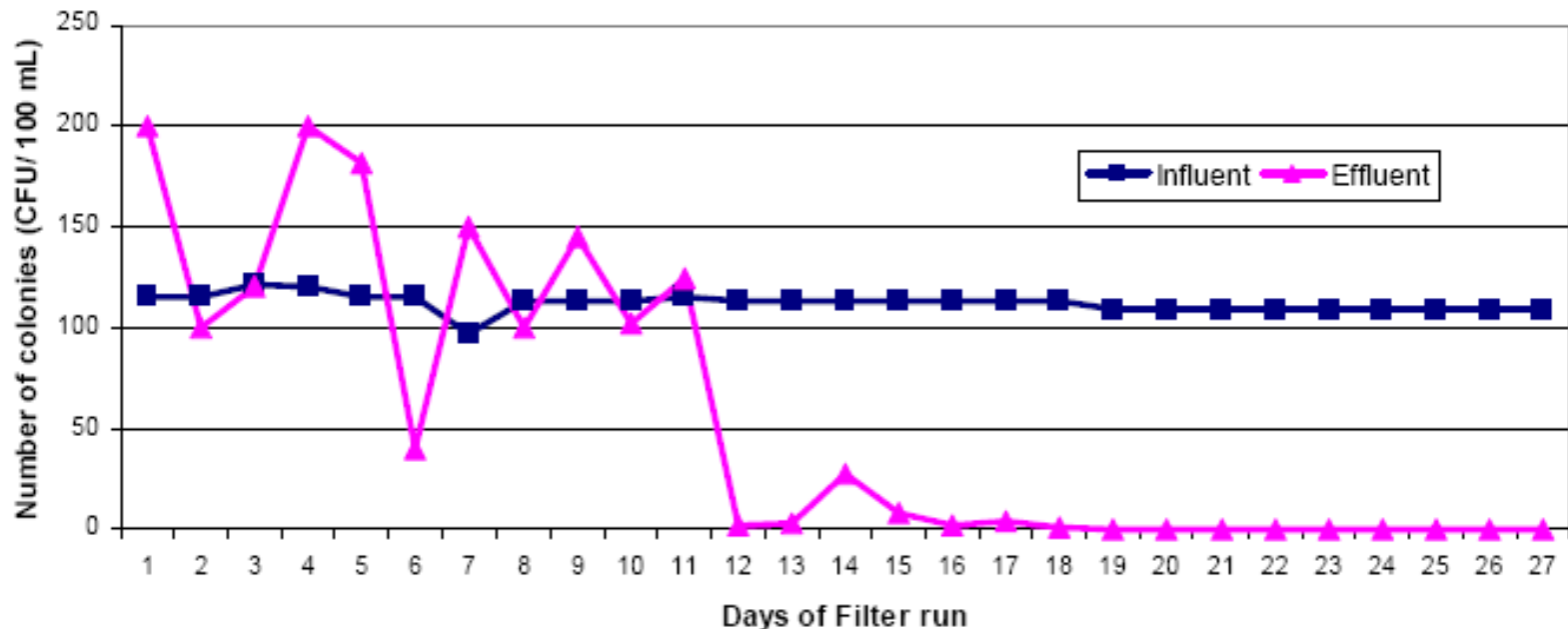


After doing a Swirl and Dump, the filter does not work as well for a few days. After a few days, the biolayer grows back again.

The removal efficiency will vary, but generally increases, as the biolayer develops over the first 30 days.

Establishing the Biolayer

The number of bacteria in source water (blue line) and filtered water (pink line) over first 4 weeks



source water = “influent, filtered water = “effluent”

Credit: Sharma, D., Kathmandu University, 2005.



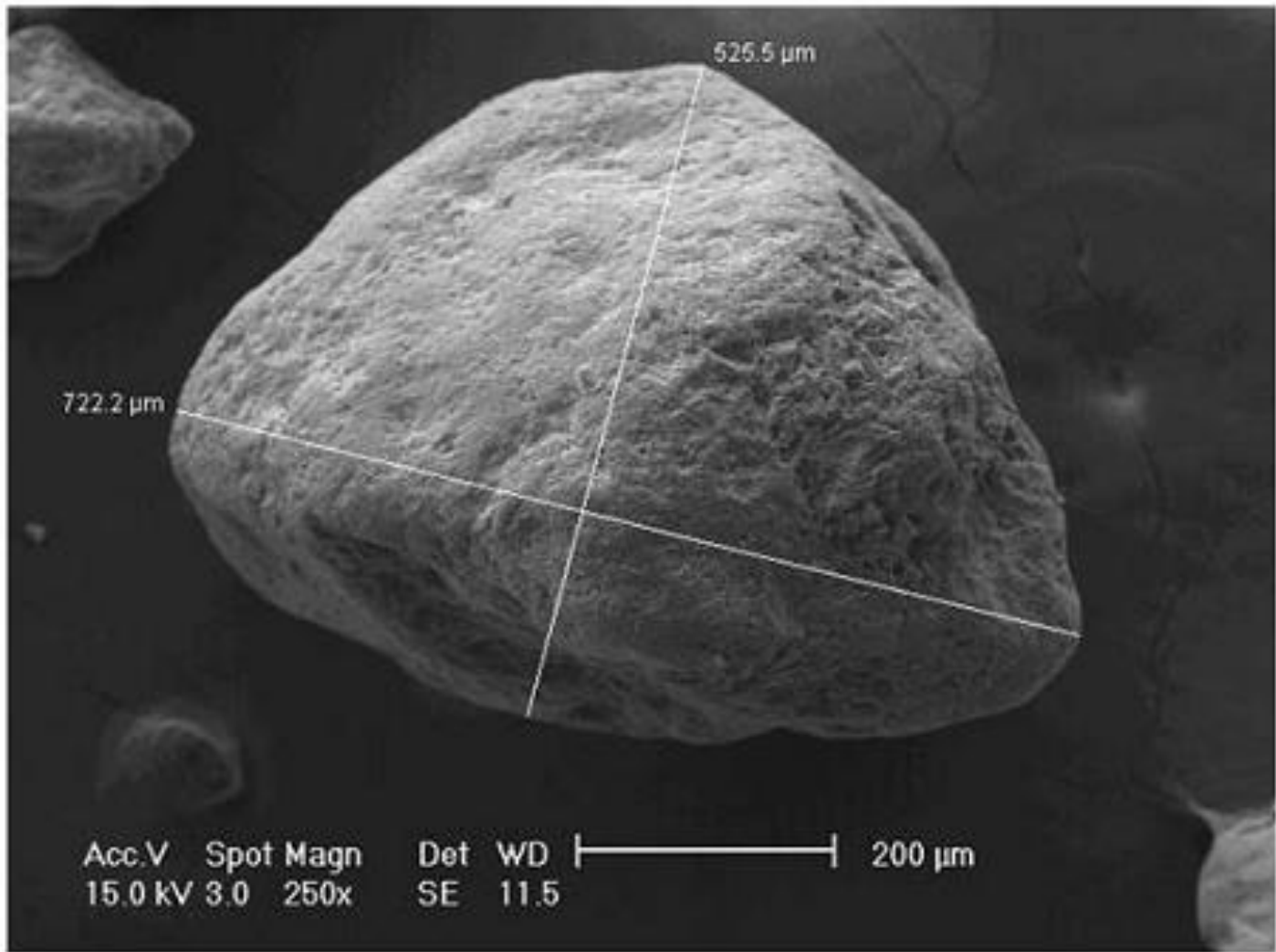
Establishing the Biolayer

- As dirty water is poured through the filter, micro-organisms in the water begin to live in the top 1-2 cm of the sand. They become the biolayer.
- It takes about 30 days to establish a stable “community” of micro-organisms.
- In the biolayer, micro-organisms eat some of the pathogens in the water. This helps the filter make the water safer to drink.

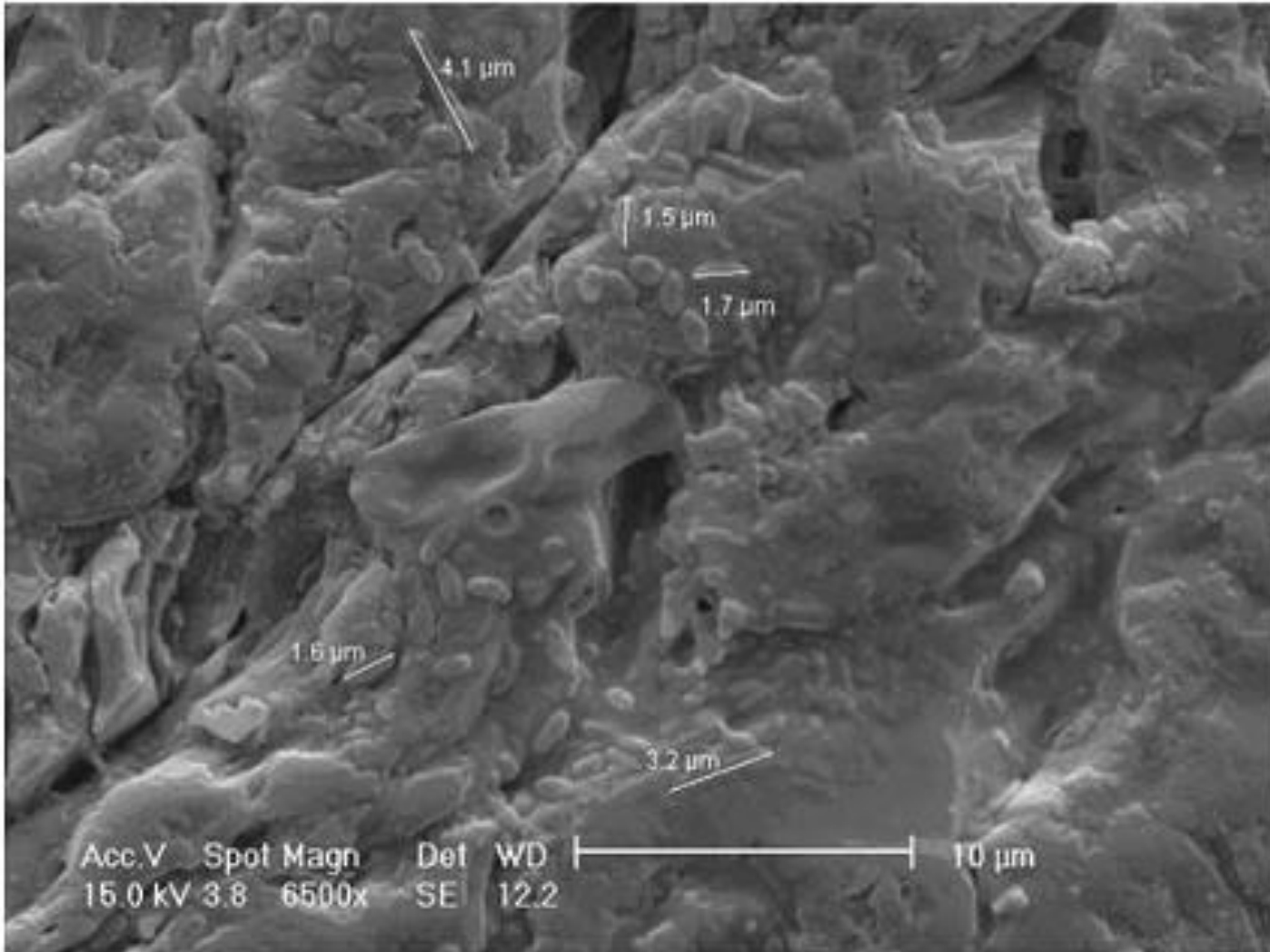
Establishing the Biolayer

- The following pictures show the growing biolayer.
- The pictures are taken through a microscope.
- The pictures show many kinds of micro-organisms that grow and live in the biolayer. Not all the micro-organisms help treat the water, but they live in the “community”.

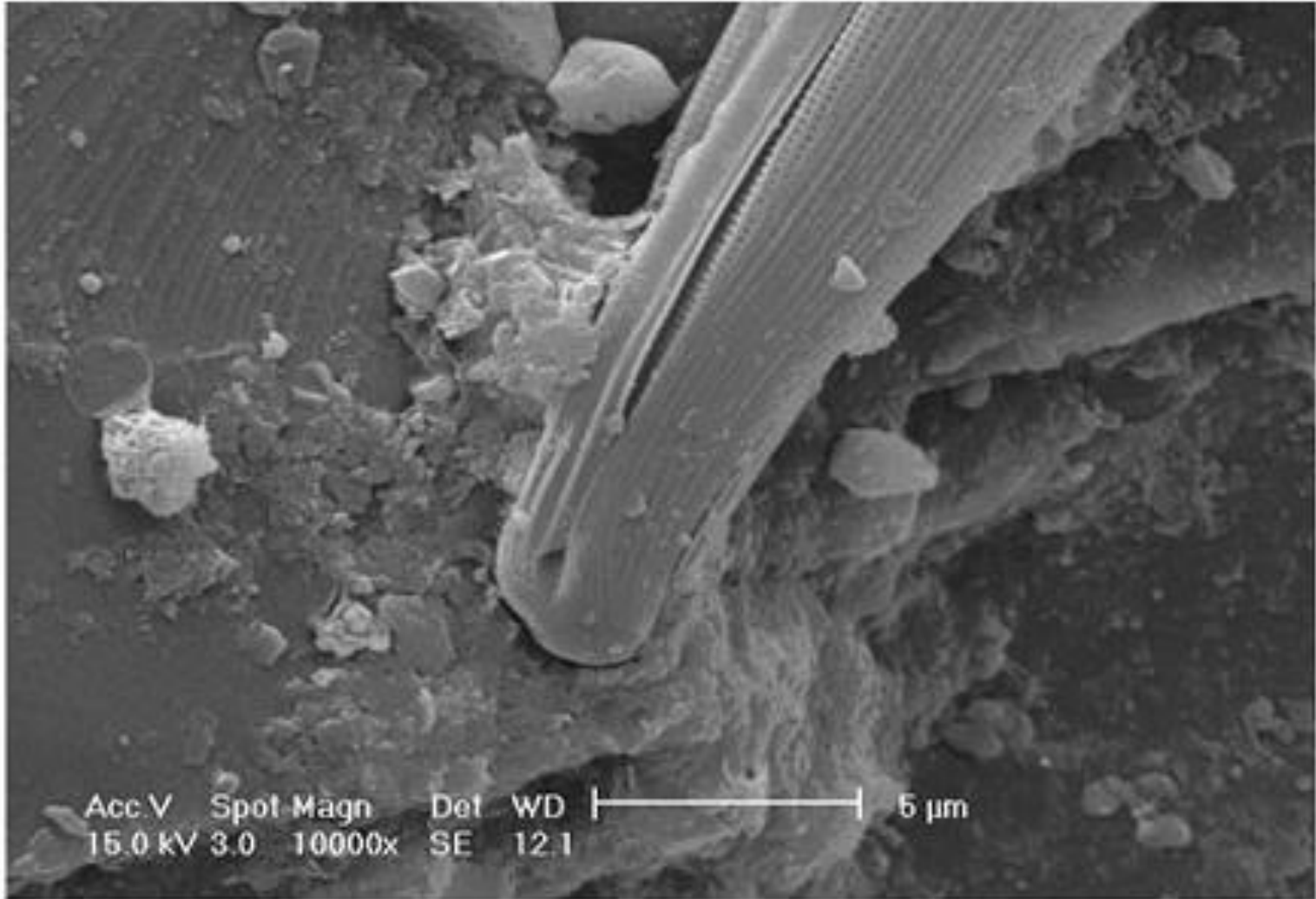
Sand Grain



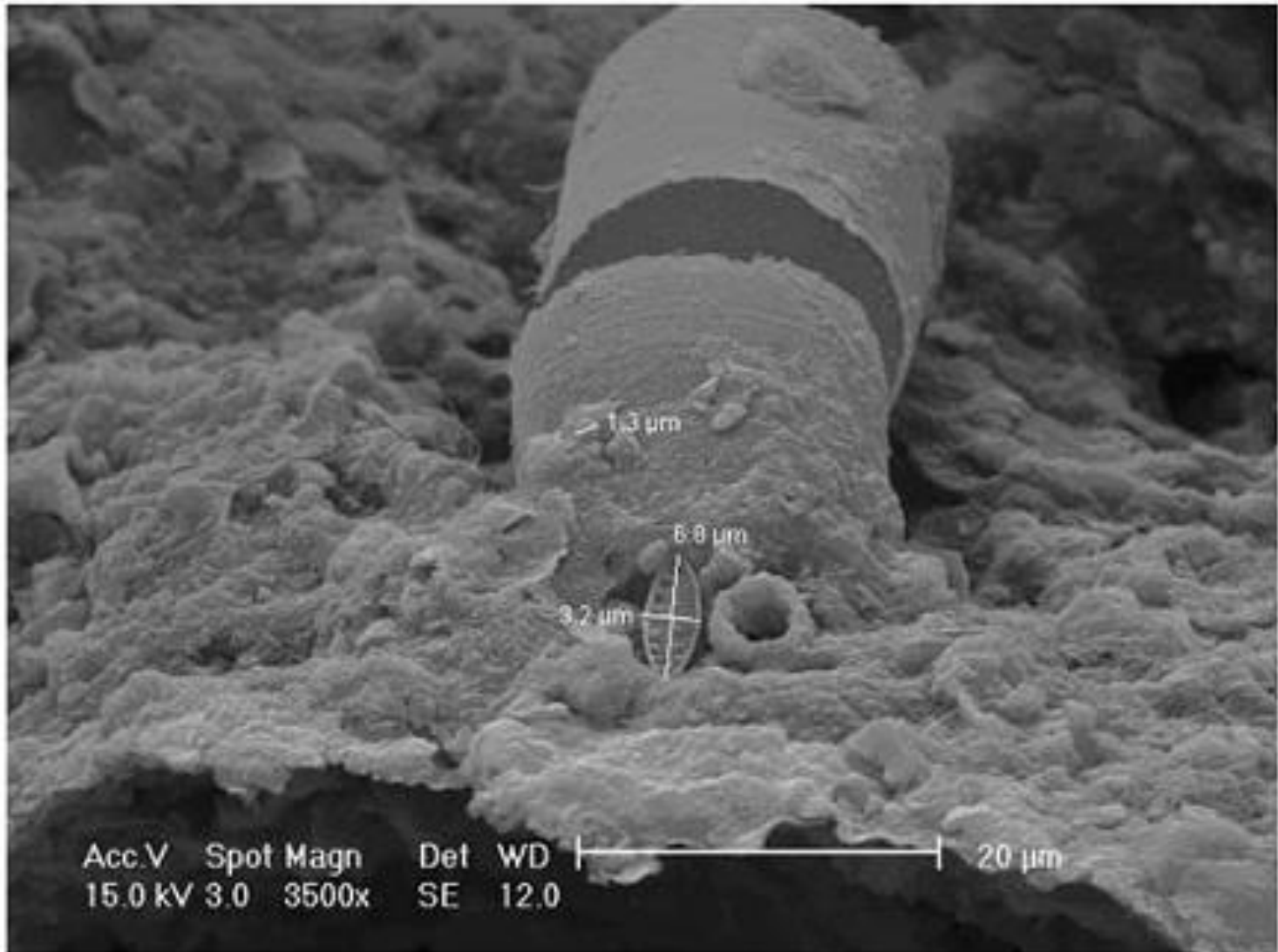
1 week after starting to use BSF



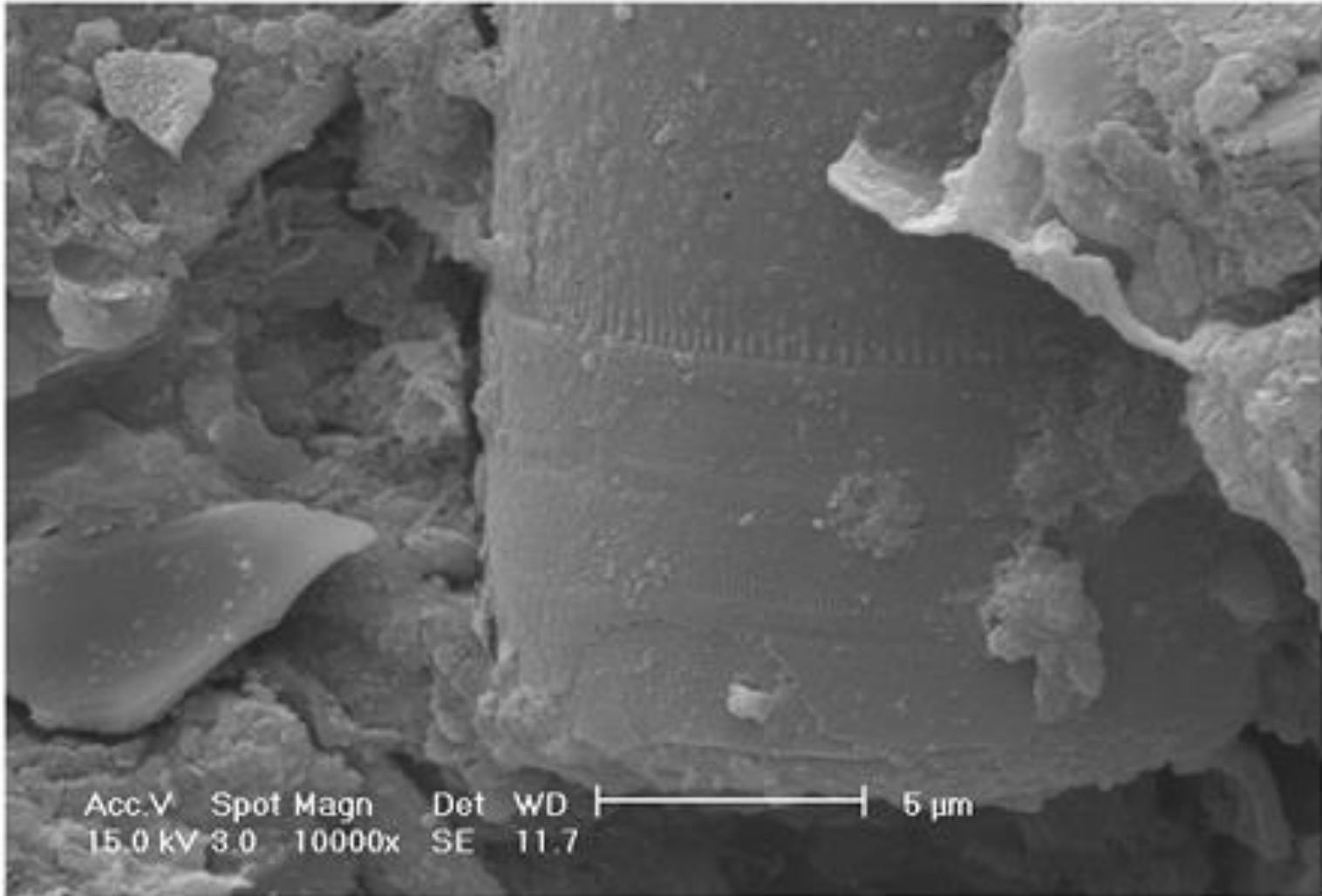
3 weeks



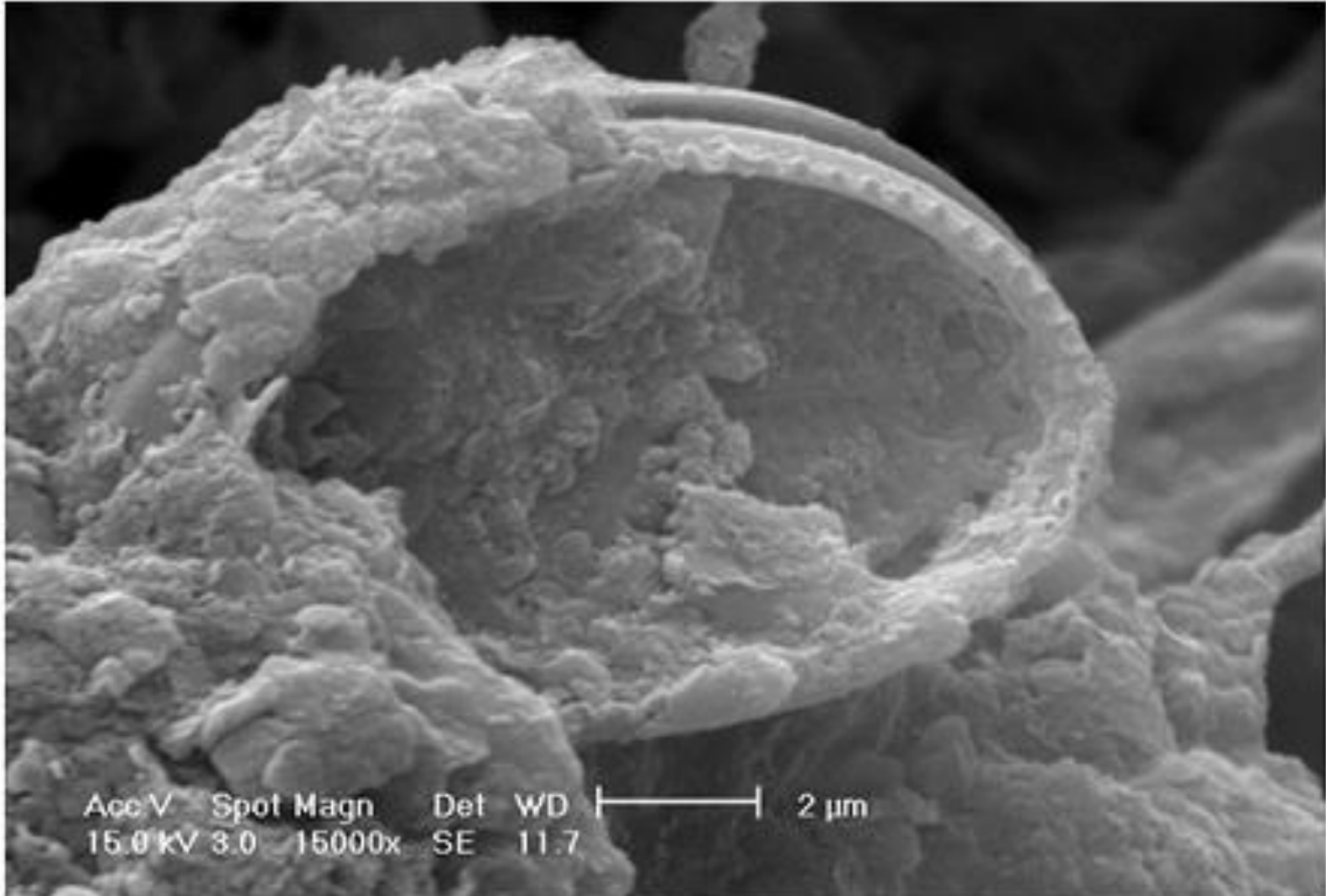
4 weeks



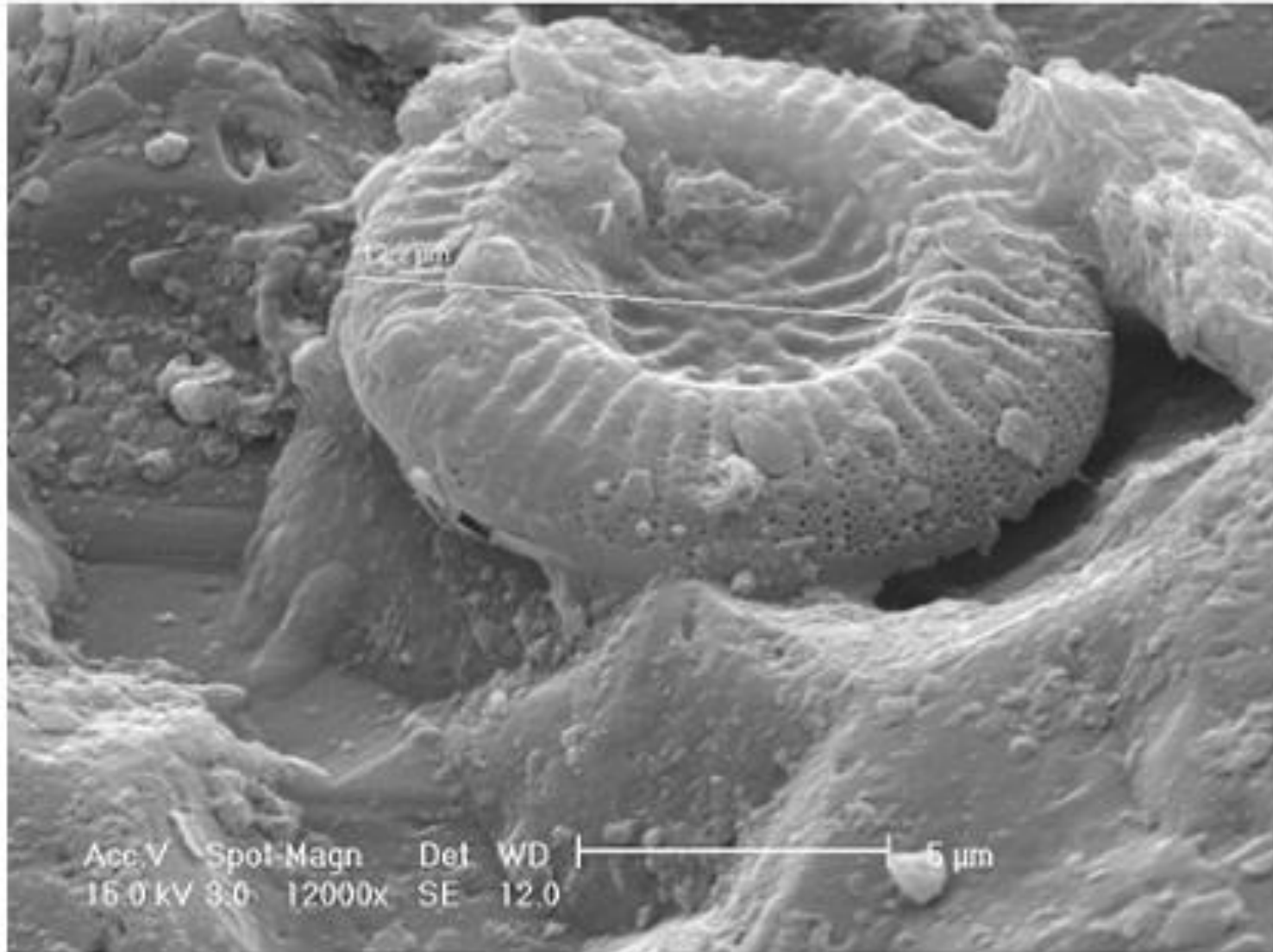
5 weeks



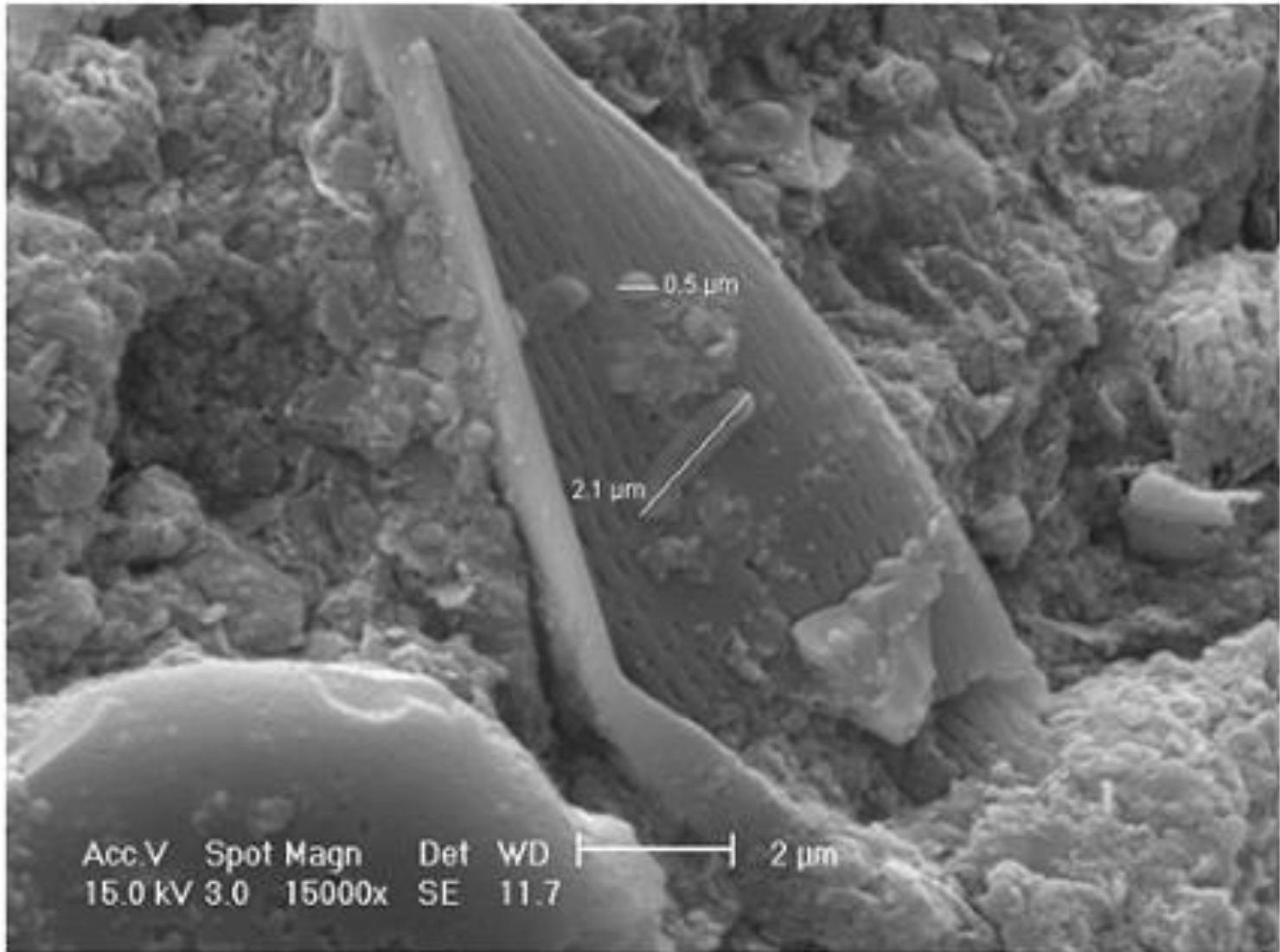
5 weeks



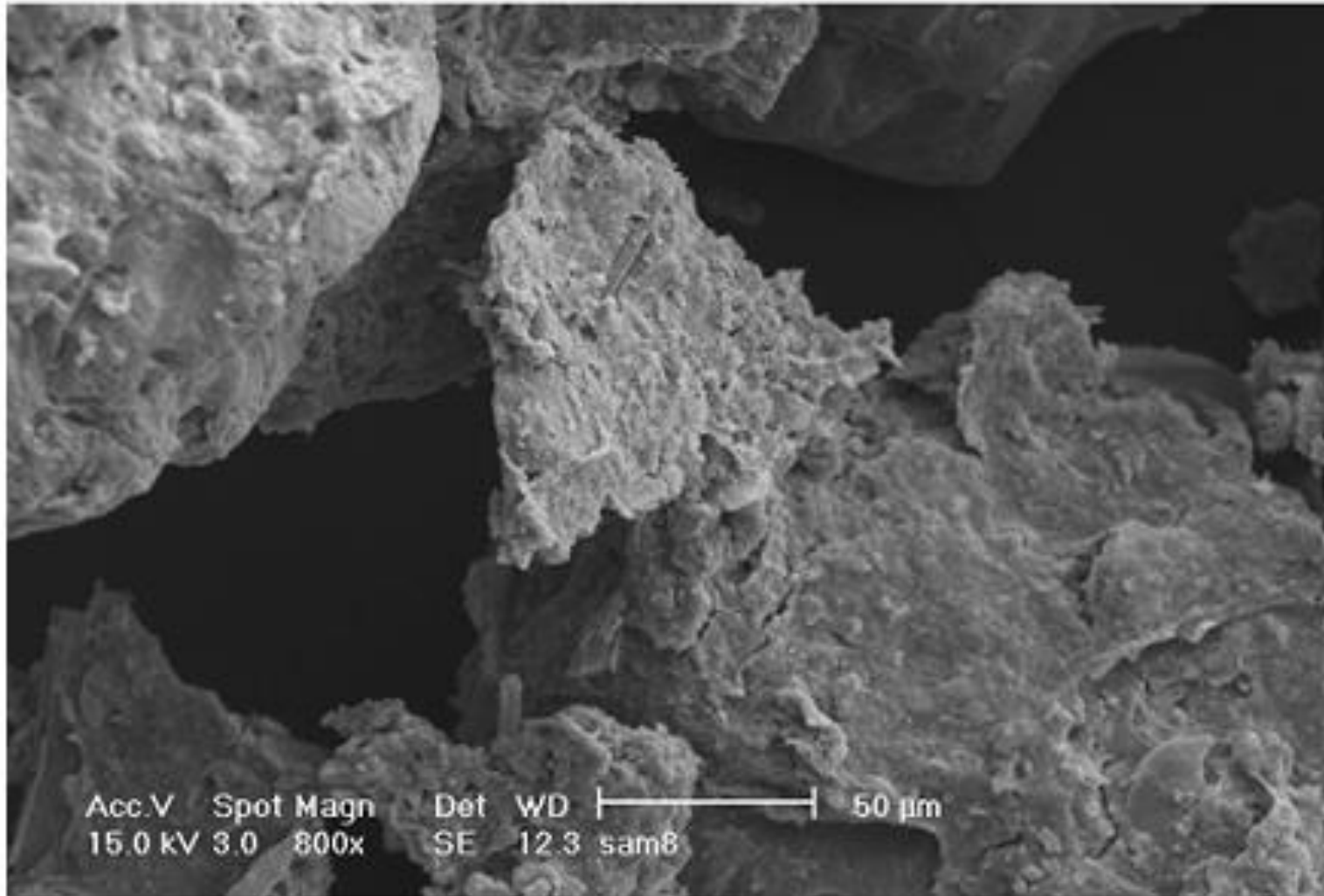
6 weeks



7 weeks



8 weeks – no sand surface visible



Review

- Discuss with a partner how the biolayer develops