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CAWST is a Canadian non-profit organization focused on the principle that clean water changes lives. Safe water and basic sanitation are fundamentals necessary to empower the world's poorest people and break the cycle of poverty. CAWST believes that the place to start is to teach people the skills they need to have safe water in their homes.

CAWST transfers knowledge and skills to organizations and individuals in developing countries through education, training and consulting services. This ever expanding network can motivate individual households to take action to meet their own water and sanitation needs.

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This presentation is used with  
Lesson Plan 10:  
Biolayer Development in the  
Biosand Filter for Technicians  
Trainer Manual.

Available at

[www.cawst.org/resources](http://www.cawst.org/resources)



# Biolayer Development



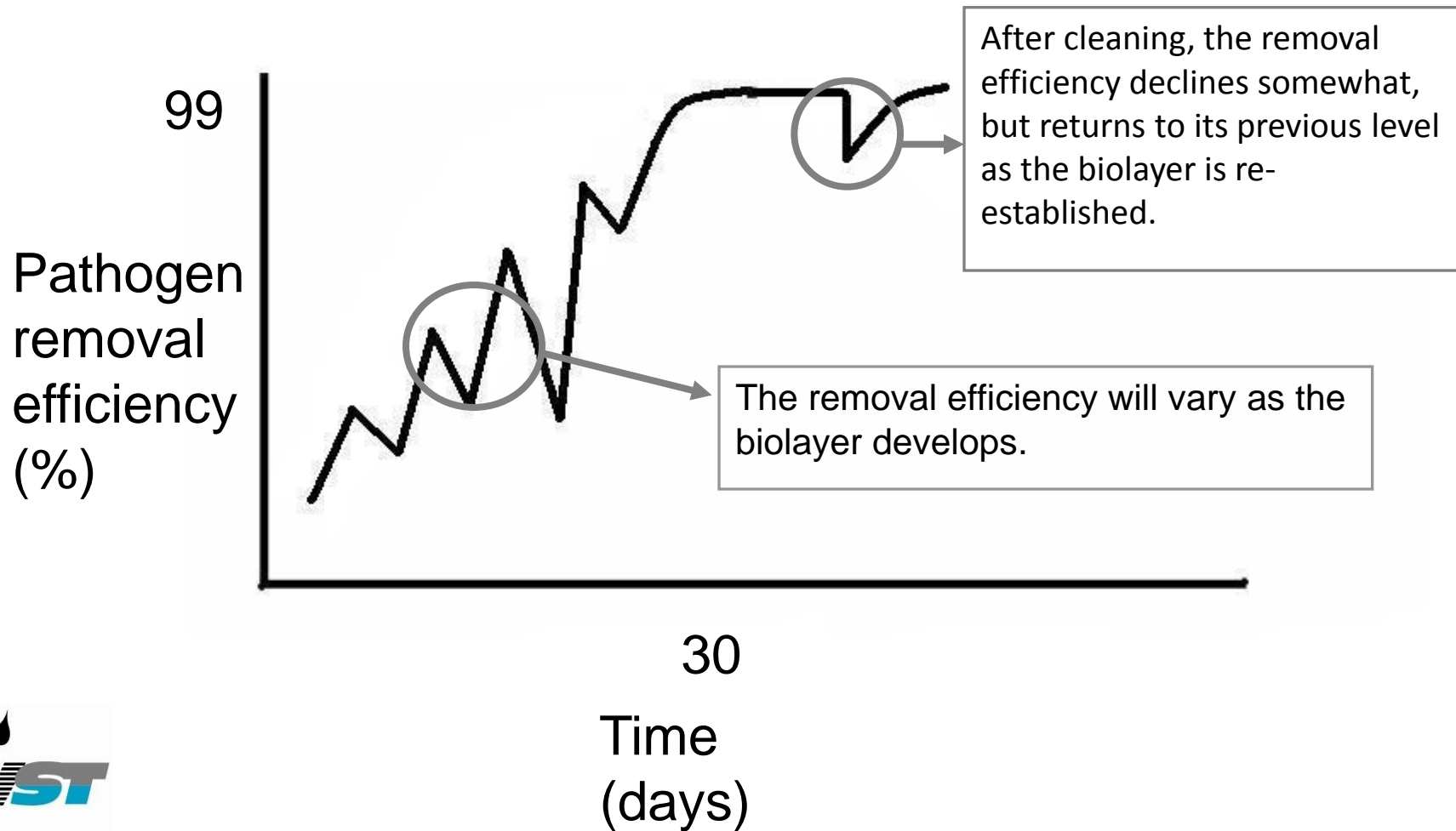
# Learning Expectations

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

The biolayer is a key part of the biosand filter, and 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 important points to check.

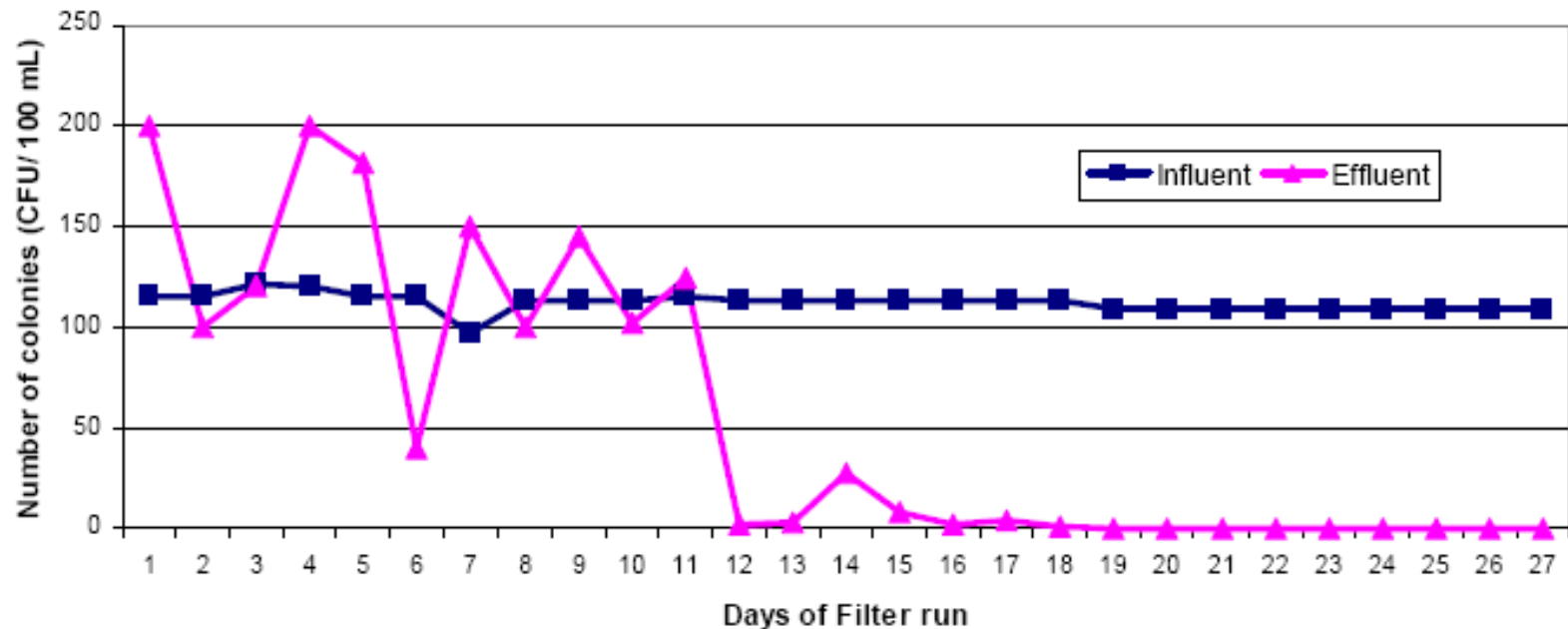


# Establishing the Biolayer



# Establishing the Biolayer

Comparison of Concentration of Total Coliforms for Influent Source Water and Effluent from Biosand Filter over 4 Weeks



(Sharma, D., Masters Thesis, Kathmandu University, 2005)

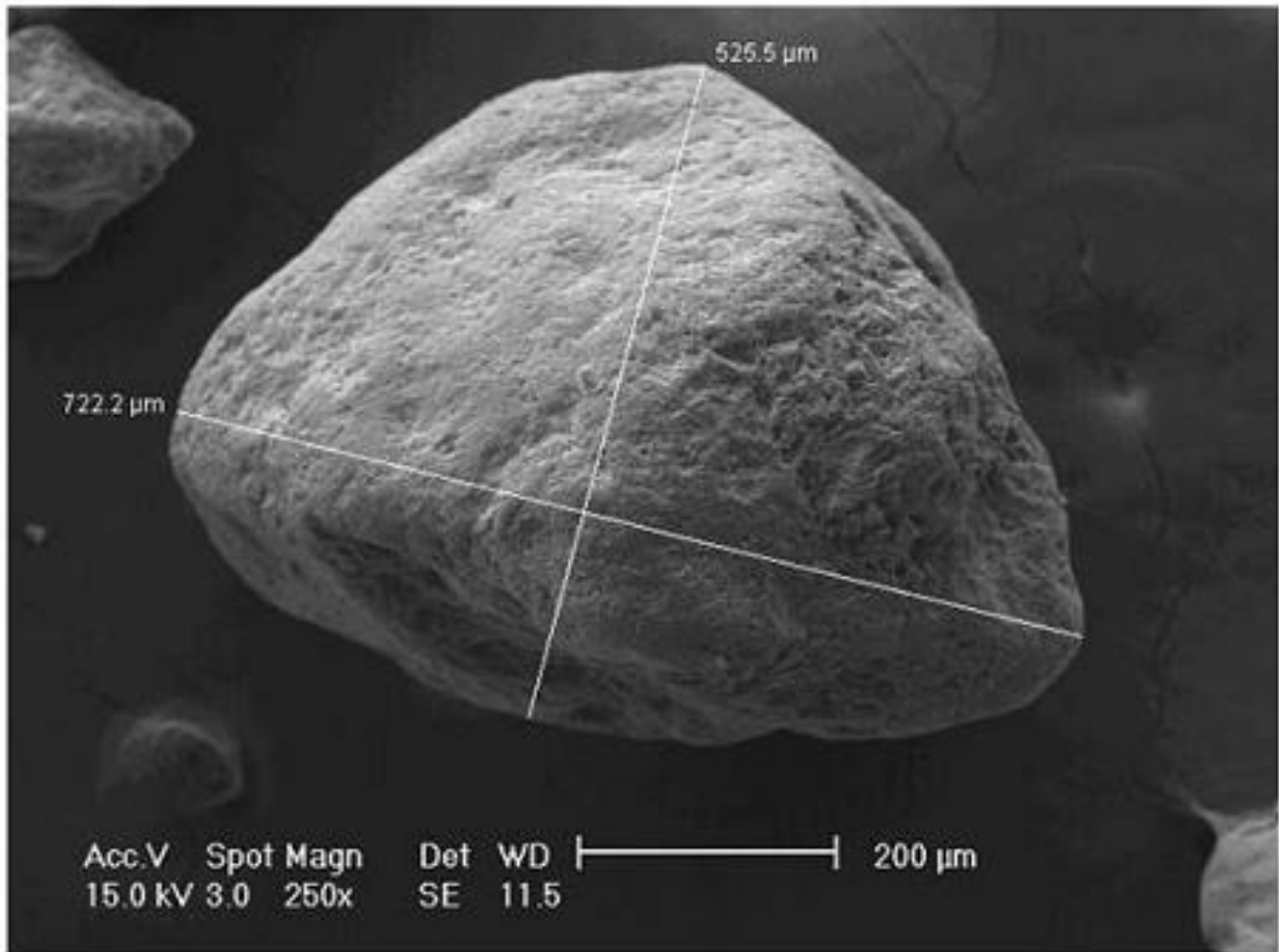


# Establishing the Biolayer

- 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 for a good biolayer to grow.
- In the biolayer, microorganisms eat some of the pathogens in the water. This helps the filter make the water safer to drink.

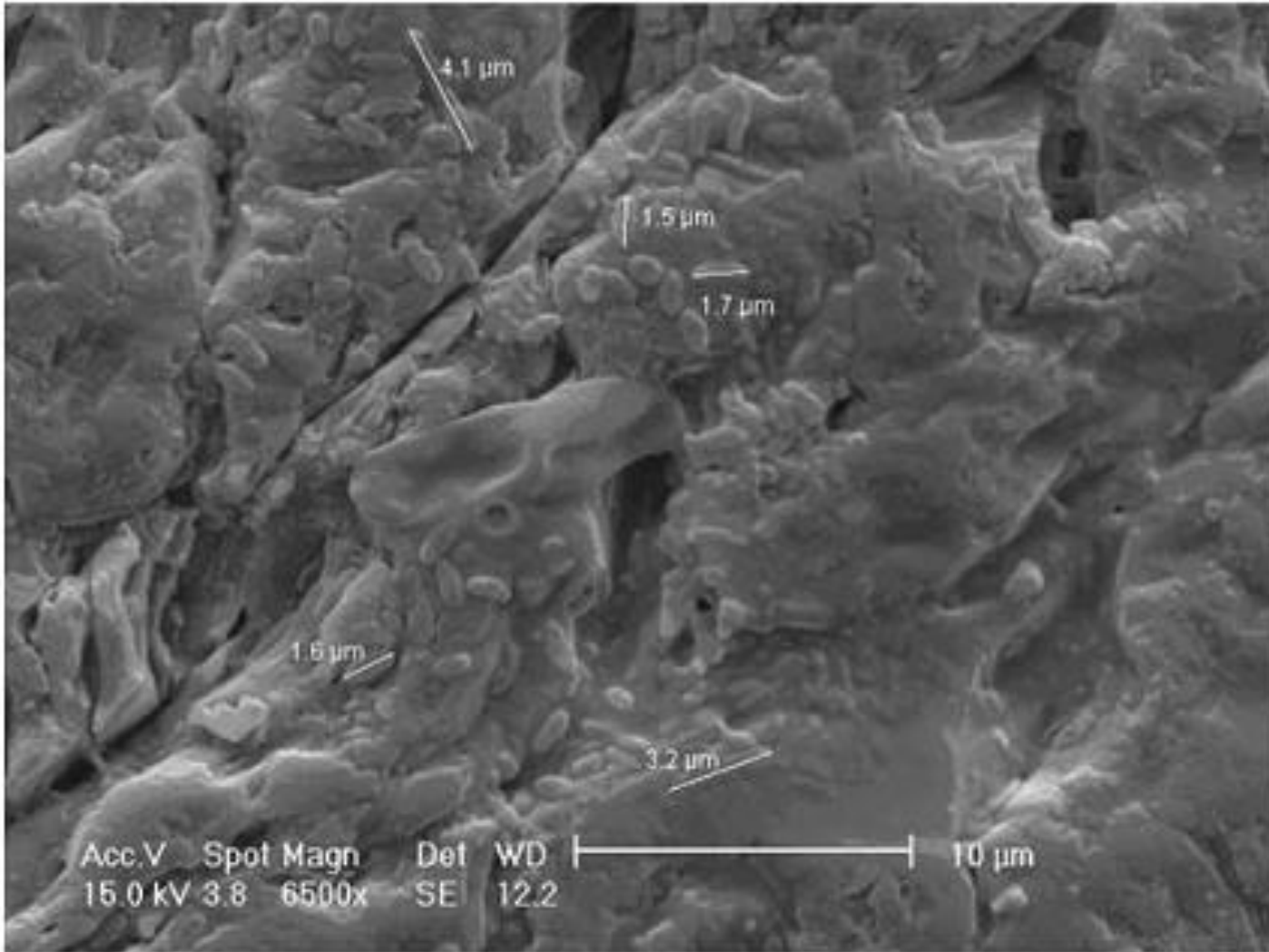


# Sand Grain

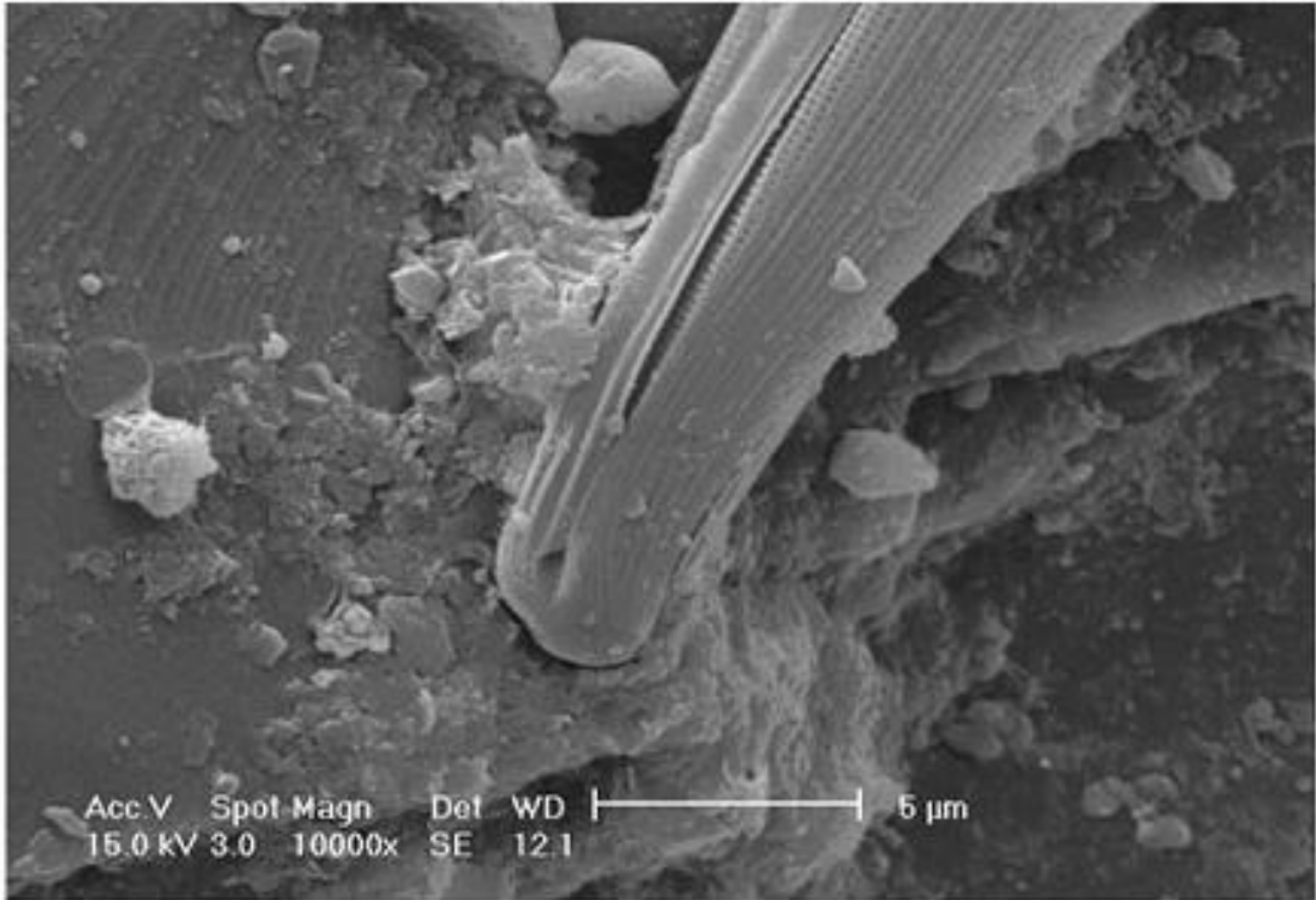




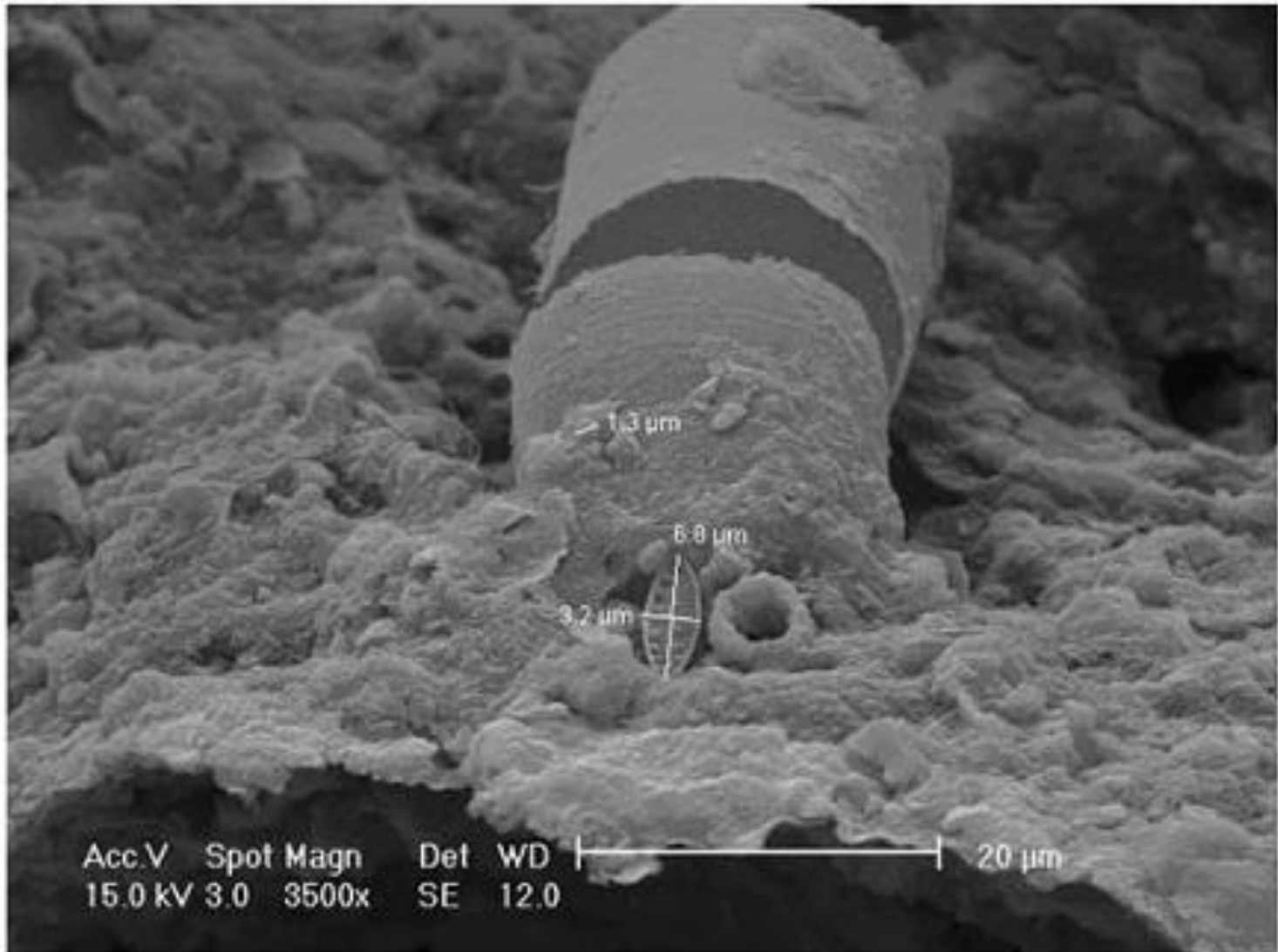
# 1 week after development



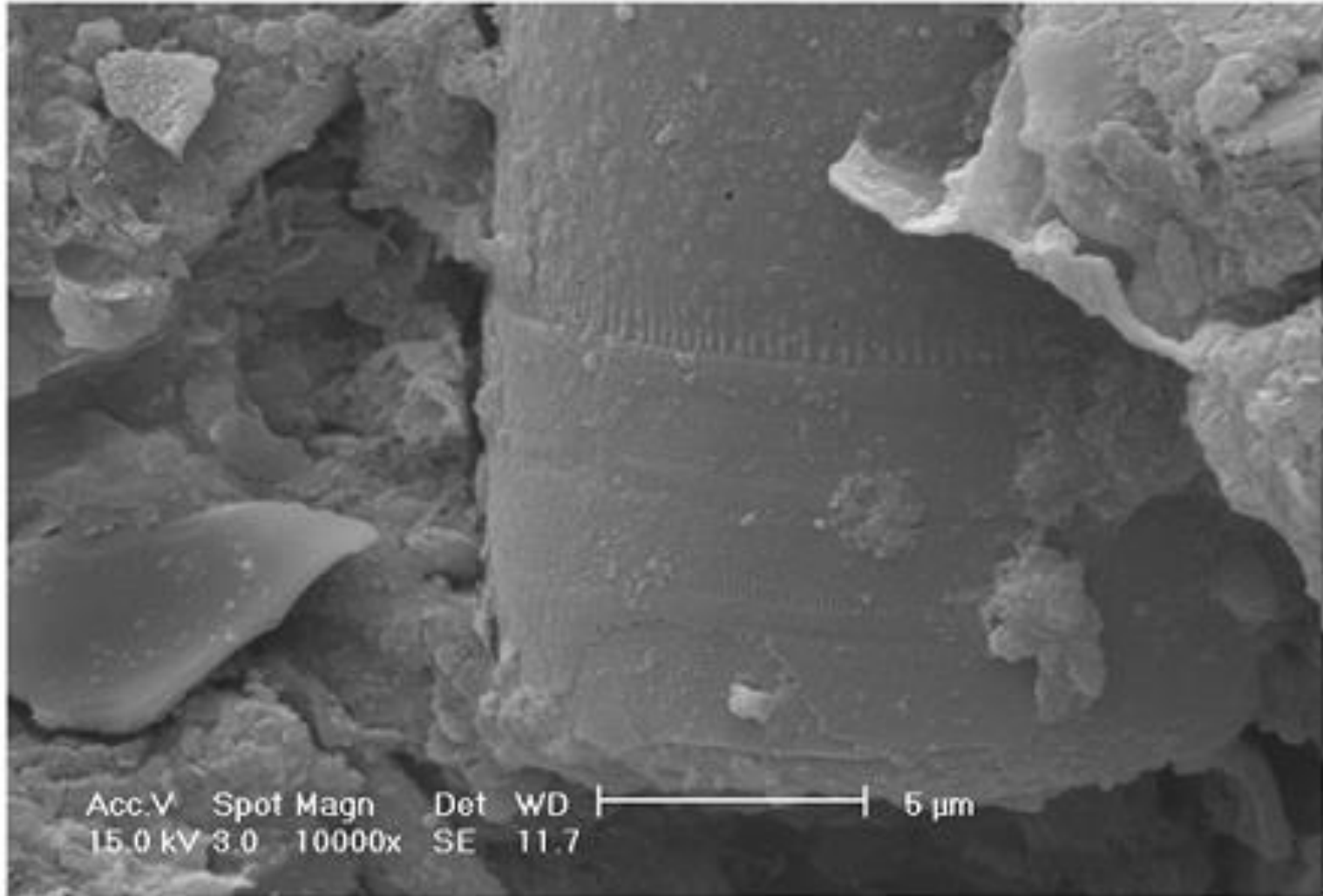
# 3 weeks



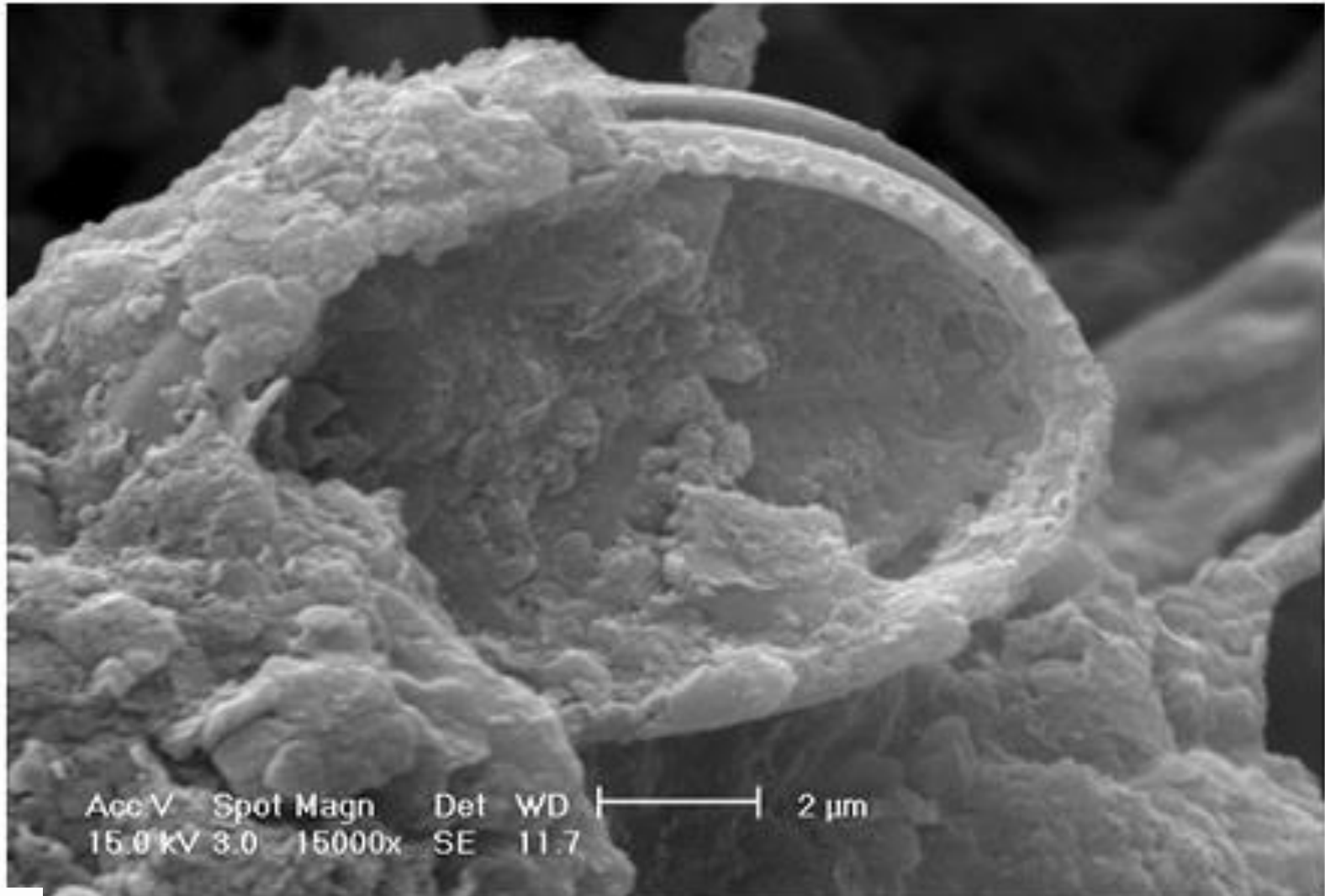
# 4 weeks



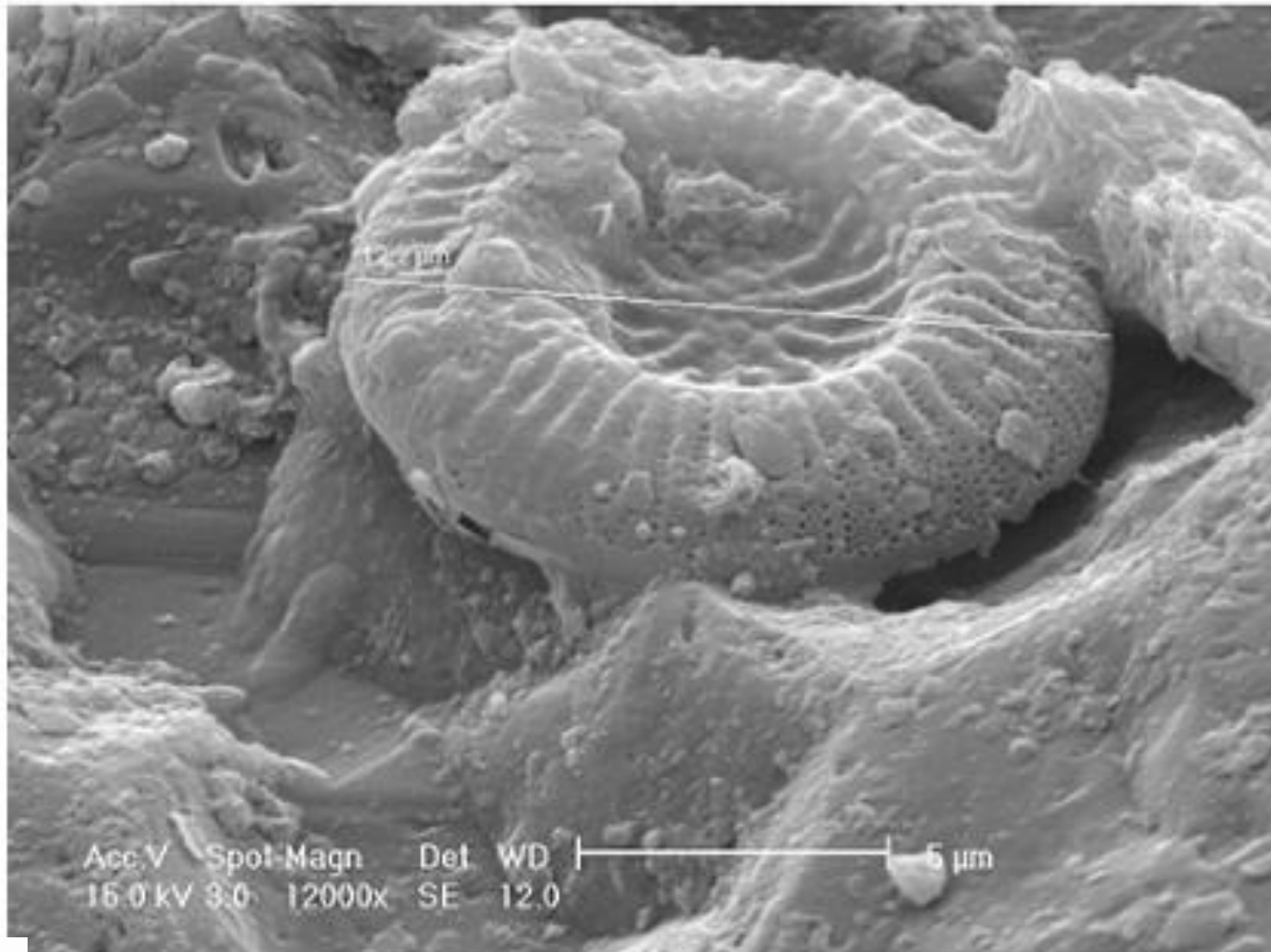
# 5 weeks – Rod Shaped



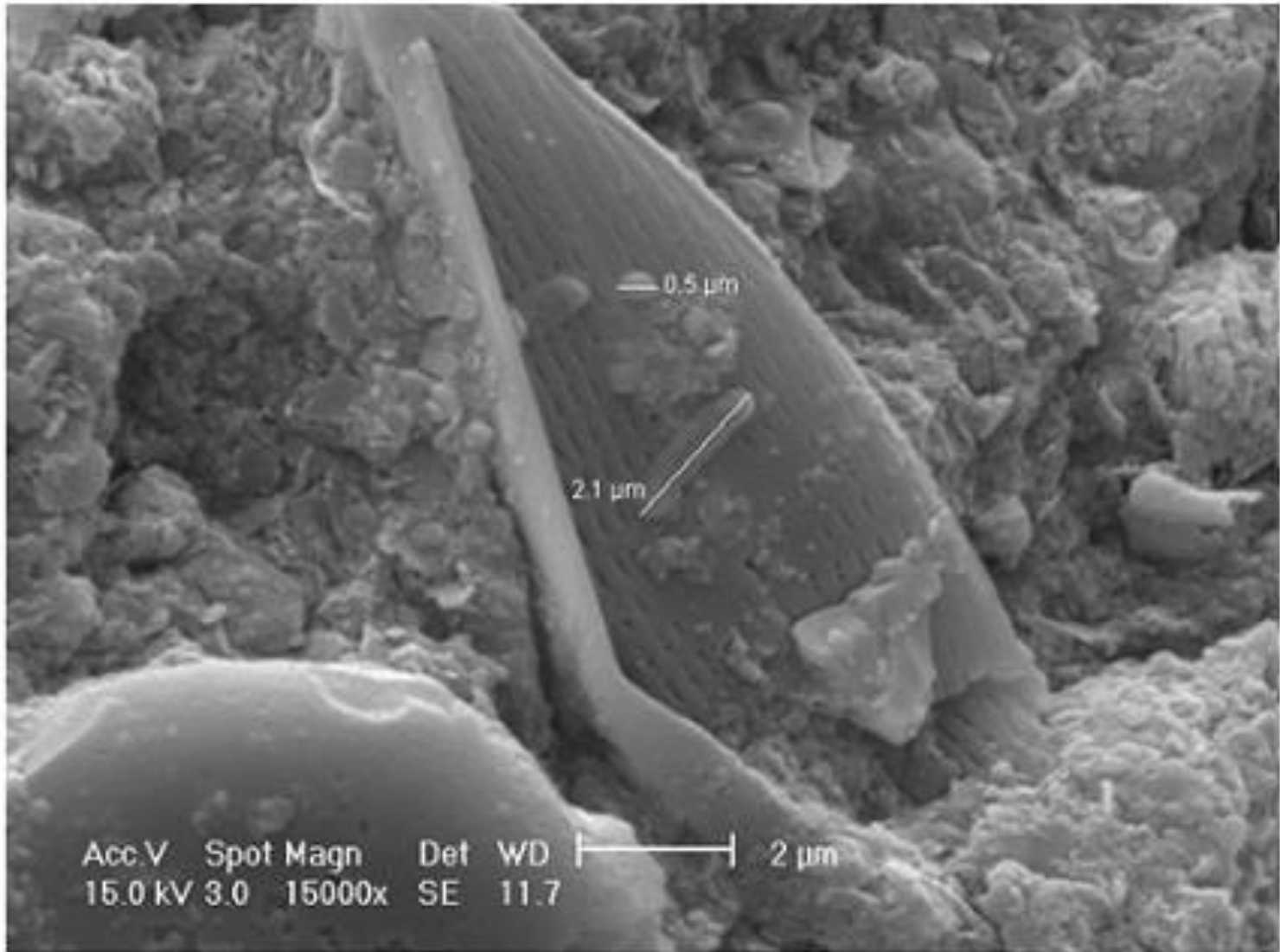
# 5 weeks – Cocci Shaped



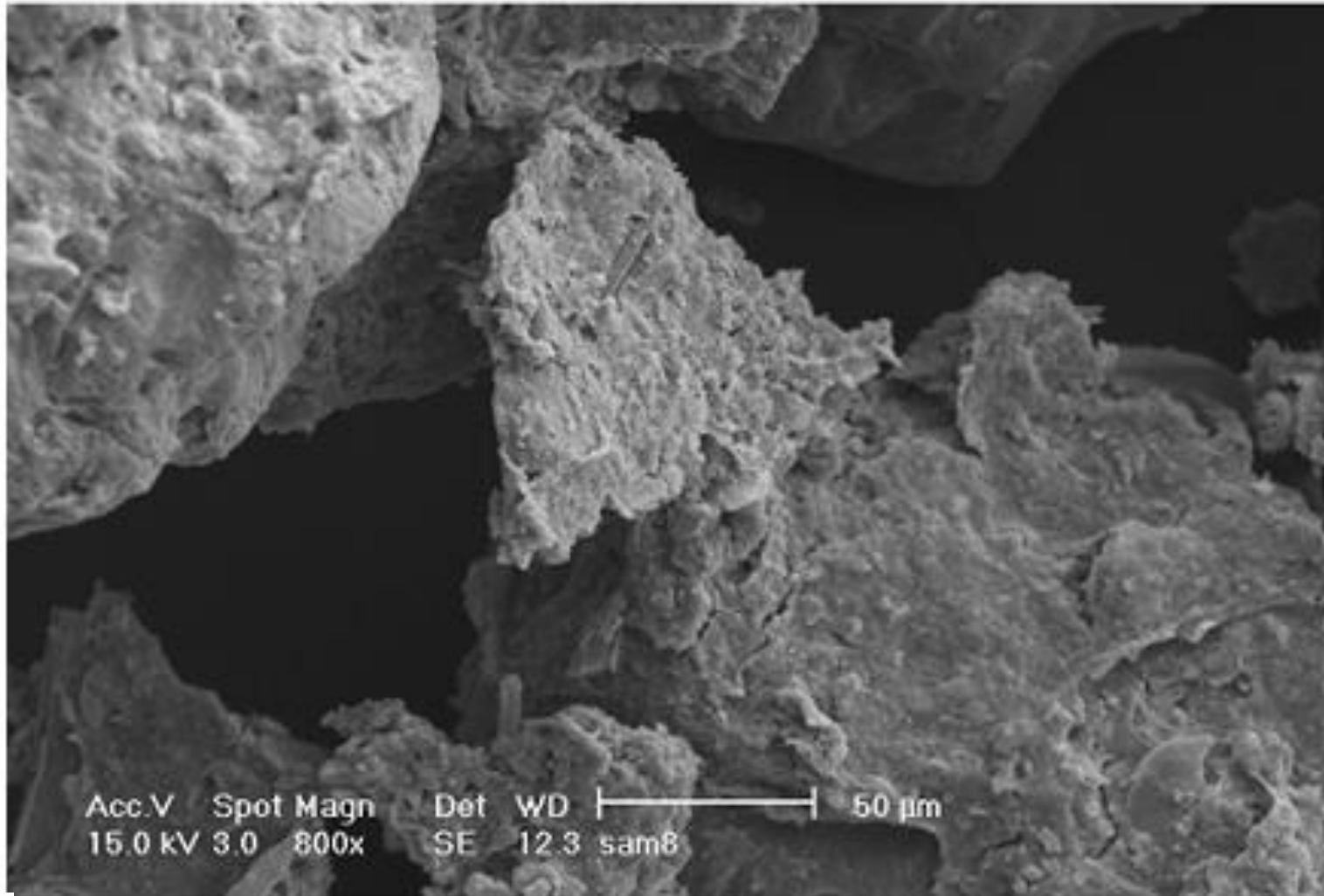
# 6 weeks



# 7 weeks - diatoms



# 8 weeks – no sand surface visible





# Review

- Discuss with a partner how the biolayer develops