

Abstract Submitted  
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**Growth and analysis of anaerobic wastewater methanogens using microfluidics** BEN STEINHAUS, AMY SHEN, LARS ANGENENT, Washington University — A micro-bioreactor ( $\mu$ BR) with a total system volume of 5  $\mu$ l was developed using microfluidics and used to study the anaerobic waste-water methanogen *methanosaeta concilli*. The  $\mu$ BR was contained inside of an anaerobic chamber designed to be placed directly under an inverted light microscope while maintaining the reactor under a N<sub>2</sub>/CO<sub>2</sub> gas mixture. Methanogens were cultured for periods of up to 3 months inside channels of varying width. The varying channel widths created varying fluid velocities and hence varying shear-rates inside the  $\mu$ BR. This allowed for direct study of the behavior and response of the anaerobe to varying shear-rates. After completion of the study, *fluorescent in situ hybridization* (FISH) was performed directly inside the microchannels to allow for further analysis and identification of the methanogens.

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