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## Biofilms in 3D porous media: delineating the influence of the pore network geometry, flow and mass transfer on biofilm development Maxence Carrel<sup>a</sup>, Verónica L. Morales<sup>a,b</sup>, Mario A. Beltran<sup>c,d</sup>, Nicolas Derlon<sup>a,e</sup>, Rolf Kaufmann<sup>d</sup>, Eberhard Morgenroth<sup>a,e</sup> and Markus Holzner<sup>a<sup>3</sup></sup> <sup>a</sup> Institute of Environmental Engineering, ETH Zürich, Stefano-Franscini-Platz 5, 8093 Zürich, Switzerland <sup>b</sup> Department of Civil and Environmental Engineering, University of California, Davis, California, USA <sup>c</sup> School of Science, RMIT, Melbourne, Australia <sup>d</sup> Empa, Swiss Federal Laboratories for Materials Science and Technology, Center for X-ray Analytics, Dübendorf, Switzerland <sup>e</sup> Eawag, Swiss Federal Institute of Aquatic Science and Technology, Dübendorf, Switzerland Email contact of authors: holzner@ifu.baug.ethz.ch <sup>\*</sup> Corresponding author First submitted for publication in Water Research on 13.09.2017

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