1135-92-2616 **Abbas Fazal*** (drfabbas@gmail.com), School of Mathematical Sciences, 1 Lomb Drive, Rochester, NY 14623, and **Eberl J Hermann**. *Analytical and Numerical Study of Detachment Effects for the Upscaled Porous Medium Biofilm Reactor Model.*

Starting from the traditional mesoscopic one-dimensional biofilm model we derive a macroscopic model of a simple porous medium biofilm reactor in the convection dominated, laminar regime. The mesoscopic processes included in this model are biofilm growth due to substrate consumption and biomass loss due to cell death and biofilm detachment. The upscaling to the macroscale leads to a stiff quasilinear hyperbolic system of balance laws. In numerical simulations we investigate the role of the mesoscopic detachment description for the macroscopic model. To this end we compare four mesoscopic detachment models that are based on different model assumptions and lead to different mathematical expressions. We find that the particular choice plays only a minor role for macroscopic behavior, both from a quantitative and qualitative aspect. Similarly, we find that the overall reactor performance is rather insensitive with respect to the parameters of the detachment rate expressions. (Received September 26, 2017)