

Pattern stability under cell culture conditions – a comparative study of patterning methods based on PLL-g-PEG background passivation

Jost W. Lussi¹, Didier Falconnet², Jeffrey A. Hubbell³, Marcus Textor² and Gabor Csucs⁴

¹Bio Micro Metrics Group, ETH Zurich, ²Laboratory for Surface Science and Technology, ETH Zurich, ³Laboratory of Regenerative Medicine and Pharmacobiology, EPFL Lausanne, ⁴Institute of Biochemistry, ETH Zurich

Despite the fast growing number of publications dealing with micro-patterning of cells, little is known about the long term stability of these patterns under cell culture conditions. In the current paper we have investigated the long term stability of cellular patterns created by three different patterning techniques: Selective Molecular Assembly Patterning (SMAP), micro-contact printing (μ CP) and Molecular Assembly Patterning by Lift-Off (MAPL). We show that although all three techniques use the same background passivation chemistry – there are considerable differences between their long-term stability under cell culture conditions. Our results suggest that these differences are not cell-dependent but are due to different interactions between the patterned substrate, the passivating molecule and the serum containing cellular medium.