MICROFLUIDIC SETUP FOR LASER-ASSISTED CELL TRANSFECTION

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KEY WORDS: cell transfection, microfluidics, optoporation.

By short term irradiation of a cell with focused laser pulses, the cell membrane can be become transiently permeable [1]. This "optoporation" of the membrane allows for foreign macro molecules to pass this otherwise impenetrable barrier and enter the cell interior. This method can be used for a highly efficient and "hands-off" laser-assisted cell transfection of adherent as well as flowing cells in suspension [2, 3]. We present results towards the development of a combined microfluidic and laser optoporation setup for cells with precise flow control. The precise flow control will allow for a high throughput of flowing cells and combine it with the advantages of highly efficient laser-assisted transfection scheme. First results on suitable parameters like cell flow velocities, cell density and aspects like micro-canal dimensions and are presented.

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We acknowledge financial support from the German Science Foundation (DFG-project number 285718390).