

A novel system for single transporter analysis

Sebastian Giehring¹, Marc Vor der Brüggen², Guido Böse²

¹Collect Biotech GmbH, Johann-Krane-Weg 23, 48149 Münster, Germany

²Nanospot GmbH, Johann-Krane-Weg 42, 48149 Münster, Germany

Cells use a plethora of active and passive transmembrane proteins to transport a wide range of different molecules through the cell membrane. Especially for biological (macro)-molecules like nucleotides, hormones or peptides electrophysiological assay are not suitable. In order to better characterize these transporters and their interaction with drug candidates Nanospot has developed a new technology platform to directly measure the transport of fluorescent and/or fluorescently labeled molecules through free standing biological membranes on a chip. An array of thousands of cavities on the chip allows the simultaneous analysis of multiple individual transport proteins and transport processes through biological or artificial membrane systems. The chips are read out from the bottom with an inverted fluorescence microscope. The special optical design of the chips cuts off fluorescence from the compartments above the membrane, thereby assuring that only transported molecules are measured.

Here we present the first proof-of principle data using the model protein hemolysin that inserted into giant unilamellar vesicles that spreaded on the chip surfaces before.