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CHEMICAL

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Chiral Chemistry

Biocatalysis competes as a synthetic tool

Device puts cells in the flow

Studying how chemicals affect cells requires precise control of the doses they receive. A new device designed by graduate student Rex Nielson and chemistry professor Jason B. Shear at the University of Texas, Austin, allows them to dose multiple cellular targets in parallel (*Anal. Chem.*, DOI: 10.1021/ac061084i). Their method relies on a simple microfluidic device that consists of a pair of stacked flow chambers, one holding the cell culture and the other serving as a reagent flow cell. The cultured cells are grown on a membrane that is inserted as a barrier between the two chambers. With a pulsed laser, Nielson and Shear drill micrometer-scale holes in the membrane, allowing plumes of reagent to flow from the reagent chamber into the cell-culture chamber and wash over the

selected cells or subcellular regions. The reagent streams can be turned off by plugging the holes with photo-cross-linked proteins. Shear and Nielson are starting to use the device to study how multiple neurons in a network respond to chemical stimulation.