Generation of larger numbers of separated microbial populations by cultivation in segmented-flow microdevices.

Martin K, Henkel T, Baier V, Grodrian A, Schön T, Roth M, Michael Köhler J, Metze J (2003) Generation of larger numbers of separated microbial populations by cultivation in segmented-flow microdevices. *Lab Chip* 3(3), 202-207.

Abstract

The high speed production of fluid segments for the highly parallelized cultivation of monoclonal cell populations was carried out by the use of microchip segmentor modules. Aqueous fluid segments, embedded in a non-miscible carrier liquid, were produced with frequencies up to 30 s(-1) and showed a high homogeneity in size. This corresponds with the production of about 2.5 million samples per day. The segment volumes can be adapted between about 4 nl and 100 nl. The typical segment size for cultivation experiments is in the range between 40 nl and 80 nl. Nutrient medium can be applied instead of pure water. It is possible to aliquot a cell suspension in such a way that most of the aqueous fluid segments contain only one cell. In model experiments with four microbial species chip-produced aliquots of 60 nl, each containing one or a few cells, were incubated in Teflon capillary tubes. Rapid growth of the microcultures was observed. Cell densities were found to be as high as in conventional shake flask cultures.

Involved units

Bio Pilot Plant Miriam Agler-Rosenbaum Read more

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Topics

Droplet-based micro-fluidics

Identifier

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