

Nano-Constriction Devices for Isolation and Cultivation of Environmental Microbes

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The majority of microbial species on earth have not been analyzed. Studying these unknown microorganisms can uncover the epidemiology of many diseases. However, it is exceedingly difficult to obtain pure cultures of unknown species from the environment since this requires isolation of individual cells while allowing the exchange of unknown essential nutrients. In this study, a microfluidic device is used to isolate bacterial species by trapping single cells into size specific nano-constrictions that allow chemical diffusion. Cells then proliferate along the constriction resulting in pure cultures. This method will allow identification of bacteria obtained from contaminated medical implants, blood samples and water purification systems.