

### Microdroplets for single-cell encapsulation

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Encapsulation of E. coli cells in picoliter-size monodisperse droplets provides several advantages in biological area. Polymerized poly(ethylene glycol) diacrylate(PEGDA) was used as container of cells. Technology of single cell encapsulation of E. coli using microfluidic devices has some difficulties because these devices are usually for relatively big and spherical shaped cells like mammalian cells and E. coli has a tendency of aggregation. To solve these problems, we developed single cell encapsulation system for E. coli by micropillar structured microfluidic device. This embedded micropillar showed breaking of aggregated E. coli and preventing unwanted colony encapsulation in the droplets. The generated droplet encapsulating E. coli had a monodisperse size and the size could be controlled by changing the oil and aqueous flow rate. Over 95 percent of droplets had less than 3 cells in them and 53 percent of droplets had a single cell.