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Droplet based microfluidics for highthroughput screening of antibody secreting cells LIHENG CAI, JOHN HEYMAN, LINAS MAZUTIS, LLOYD UNG, RODRIGO GUERRA, DONALD AUBRECHT, DAVID WEITZ, Harvard University — We present a droplet based microfluidic platform that allows highthroughput screening of antibody secreting cells. We coencapsulate single cells, fluorescent probes, and detection beads into emulsion droplets with diameter of 40 micron. The beads capture antibodies secreted by cells, resulting in a pronounced fluorescent signal that activates dielectrophoresis sorting at rate about 500 droplets per second. Moreover, we demonstrate that Reverse Transcription Polymerase Chain Reaction (RT-PCR) can be successfully applied to the cell encapsulated in a single sorted droplet. Our work highlights the potential of droplet based microfluidics as a platform to generate recombinant antibodies.

Liheng Cai
Harvard University

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