Washington University in St. Louis
Office of Technology Management

HIGH THROUGHPUT ACOUSTIC PARTICLE SEPARATION

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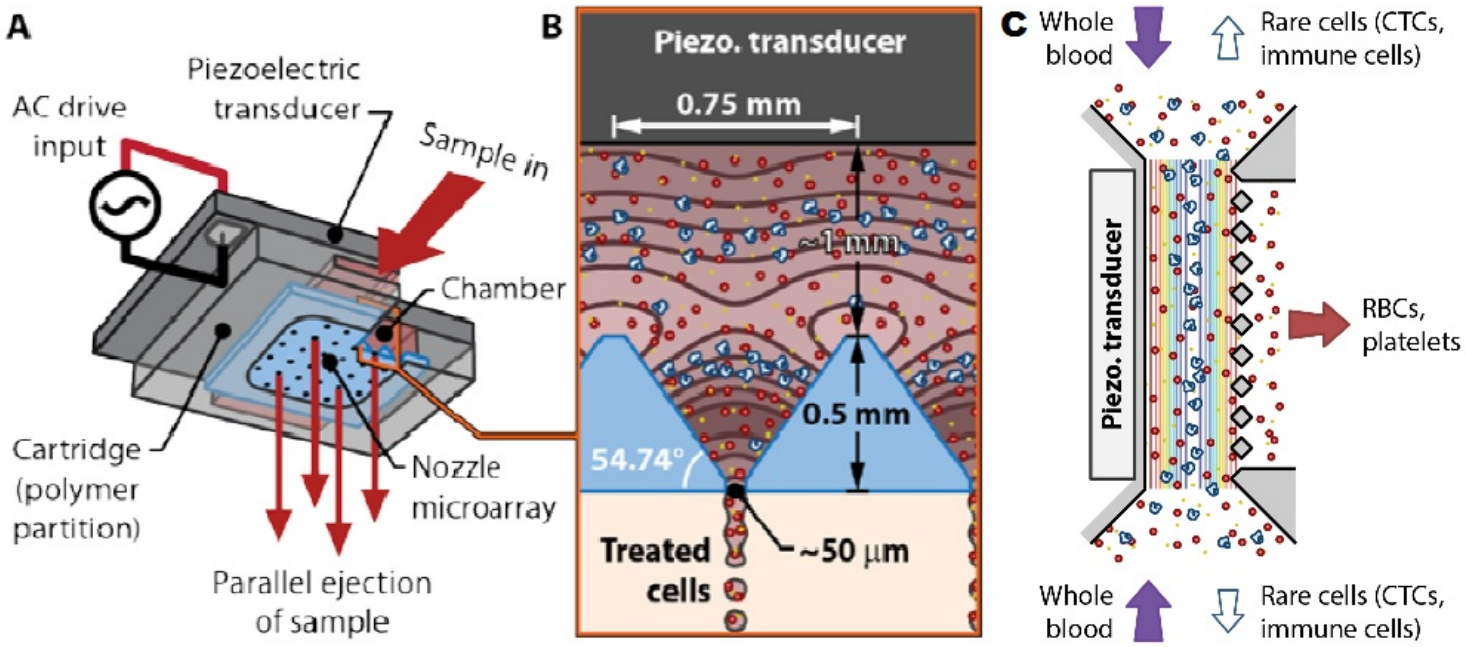
Technology Description:

Methods and devices used for acoustophoresis of biologics have been developed and allow for more than 10,000 fold throughput than existing acoustophoretic devices.

Applications:

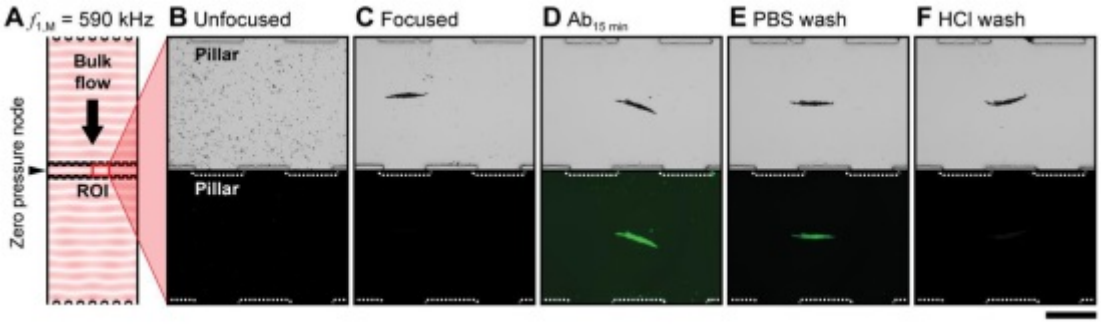
1. Isolation of cells in low abundance (immune cells, circulating tumor cells) from whole blood at the point-of-care. Acoustophoretic separation offers excellent biocompatibility and requires no modification of cells or the culture media. This technique can be easily integrated in microfluidic systems or on microfluidic chips. Below: A shows the high-throughput acoustic particle separation device. B details separation of large cells (blue) from RBCs (red) and platelets (yellow). C shows another possible separation scheme for whole blood.



2. Acoustically-confined microcarrier particles that can aid in automated synthesis and purification of modified biologics including antibody conjugates. The microbeads absorb antibodies and provide a solid support for manipulations and conjugation reactions. Beads can be efficiently separated from the reaction mixture using acoustophoresis.

Stage of Development:

Prototypes for acoustic separation are being built and tested. Proof of principle tests for the microcarrier particles on a microchip have been successful. The beads absorbed antibody (B) and were moved using the acoustic field (C), conjugated dyes were added to the antibodies (D), and then cleaved off (E).



Patents: 62/308547 (Pending); 62/546261 (Provisional)