A Vascularized Microfluidic Model of the Osteochondral Unit for Modeling Inflammatory Response and Therapeutic Screening.

Kevin D. Roehm[1], Irene Chiesa[2,3], Dustin Haithcock[1] Riccardo Gottardi[2-8], and Balabhaskar Prabhakarpandian[1]

[1]CFD Research Corporation, Huntsville, USA

[2]Department of Information Engineering and Research Center "Enrico Piaggio", University of Pisa, Italy

[3]Division of Otolaryngology, Department of Surgery, Children's Hospital of Philadelphia, Philadelphia, PA, USA

[4]Department of Otorhinolaryngology-Head and Neck Surgery, University of Pennsylvania, Philadelphia, PA, USA

[5]Department of Bioengineering, University of Pennsylvania, Philadelphia, PA, USA

[6]Division of Pulmonary Medicine, Department of Pediatrics, University of Pennsylvania, Philadelphia, PA, USA

[7]Department of Orthopaedic Surgery, University of Pennsylvania, Philadelphia, PA, USA

[8]Ri.MED Foundation, Palermo, Italy

Corresponding Author:

Kevin D. Roehm

CFD Research Corporation

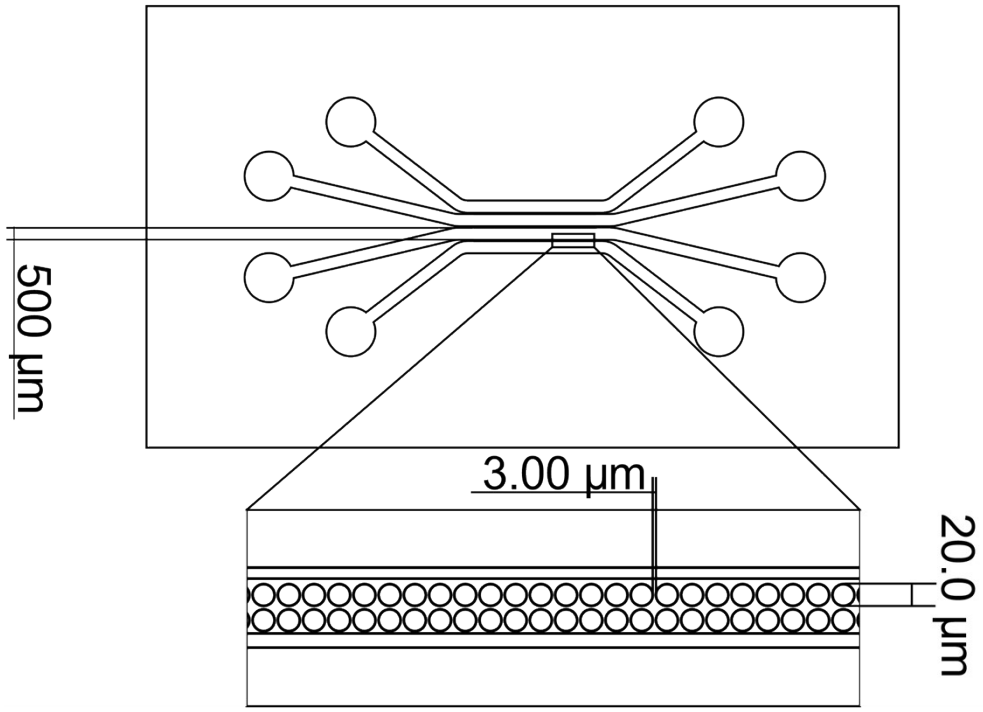
6820 Moquin Dr. N.W.

Huntsville, AL 35806

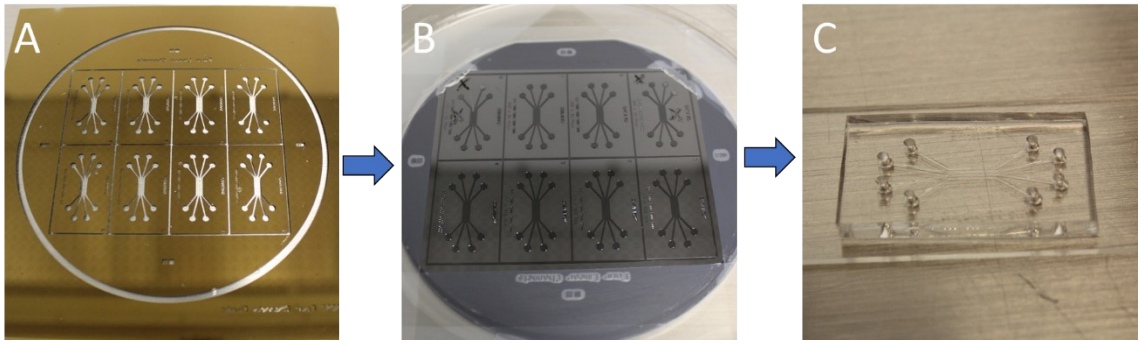
Ph: 256-715-9408

Email: kevin.roehm@cfd-research.com

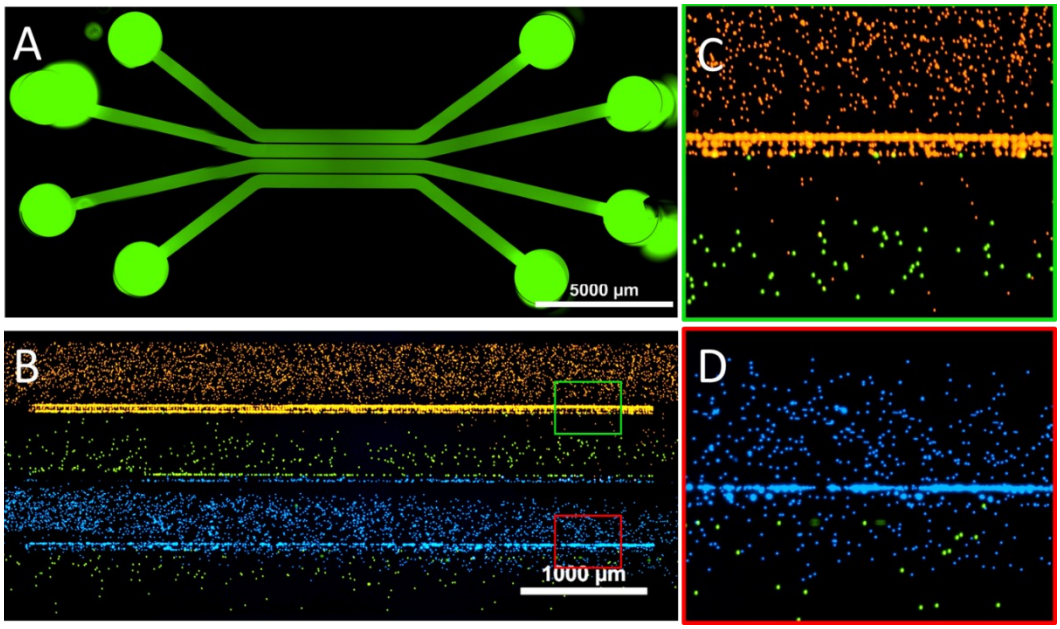
Supplemental Information



Supplementary Figure 1. CAD design of the microfluidic chip with key dimensions.



Supplementary Figure 2. Fabrication of microfluidic chip showing photomask (A), SU-8 master mold (B), and fabricated PDMS chip (C).



Supplementary Figure 3. Validating microfluidic architecture. A) validation of PDMS-glass bonding and lack of obstructions in channels. B) validation of pore size and barrier integrity with fluorescent polystyrene beads (blue and red are 2µm, green are 4 µm). C) Zoom in of Red 2 µm particles passing through the barrier. D) Zoom in of Blue 2 µm particles passing through the barrier.