

ORIGINAL RESEARCH ARTICLE

3D-printed triaxial nozzles fabricated by stereolithography to prevent backflow in soft matter biofabrication

Supplementary File

The nozzles were 3D-printed using FormLabs 3B 3D printer. The slicing of the STL file was done on PreForm, which is the compatible software for the selected printer, using the finest resolution available for the printer and the selected material. We tested two different orientations, vertical and horizontal, to evaluate printability. During the slicing process, we observed that the orientation of the nozzles in the software significantly affects the printability of the inner channels. The results showed that vertical slicing produced the best outcome in the printing of the inner channels, while horizontal slicing resulted in no inner channels (Figure S1).

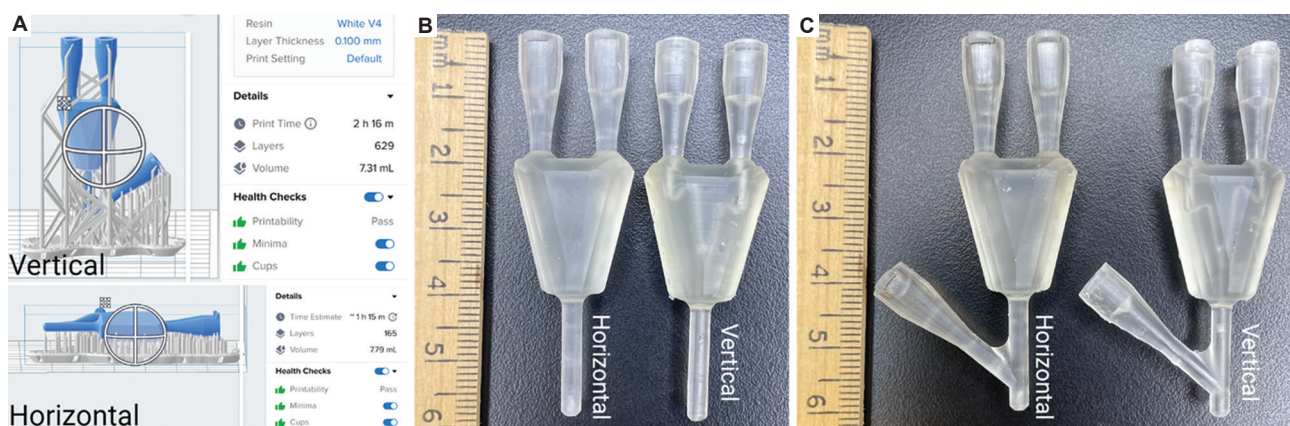


Figure S1. The preview of the nozzle in the PreForm slicing software includes the selected resolution of the white material (A). The 3D-printed nozzles without the cell inlet are printed vertically and horizontally (B). The 3D-printed nozzles with the cell inlet are printed vertically and horizontally (C).

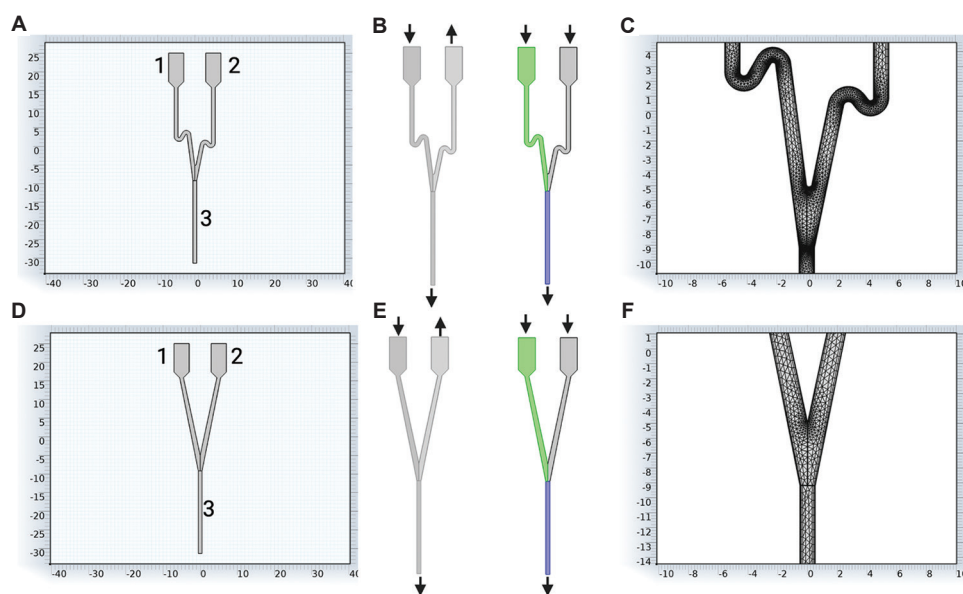


Figure S2. Segmentation of the 2D domains for the new and typical nozzle designs (A and D). Inlet and outlet configurations for the backflow assessment and normal operation models for the new and typical nozzle designs (B and E). Mesh detail for the new and typical nozzle designs (C and F).

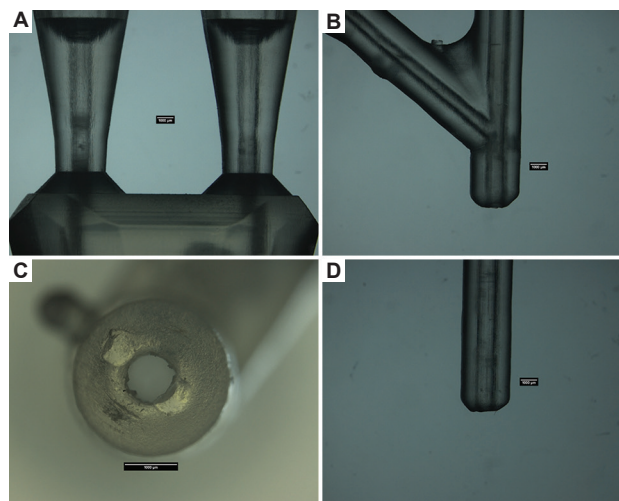


Figure S3. Stereoscopic images of printed nozzles demonstrating different area details. (A) Peptide and PBS inlets, (B) outlet with cells inlet, (C) outlet tip, and (D) outlet. Scale bar = 1 mm.