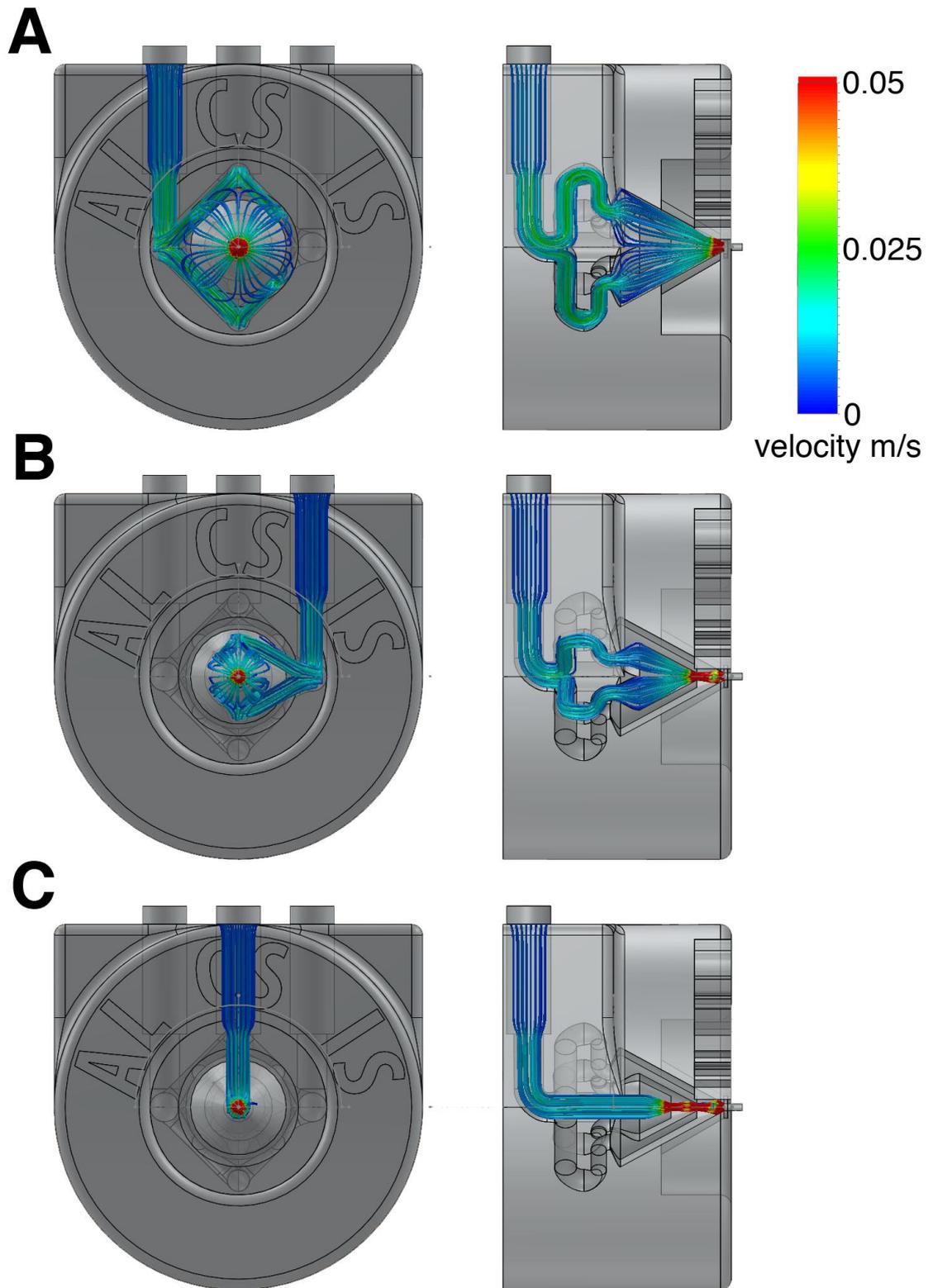
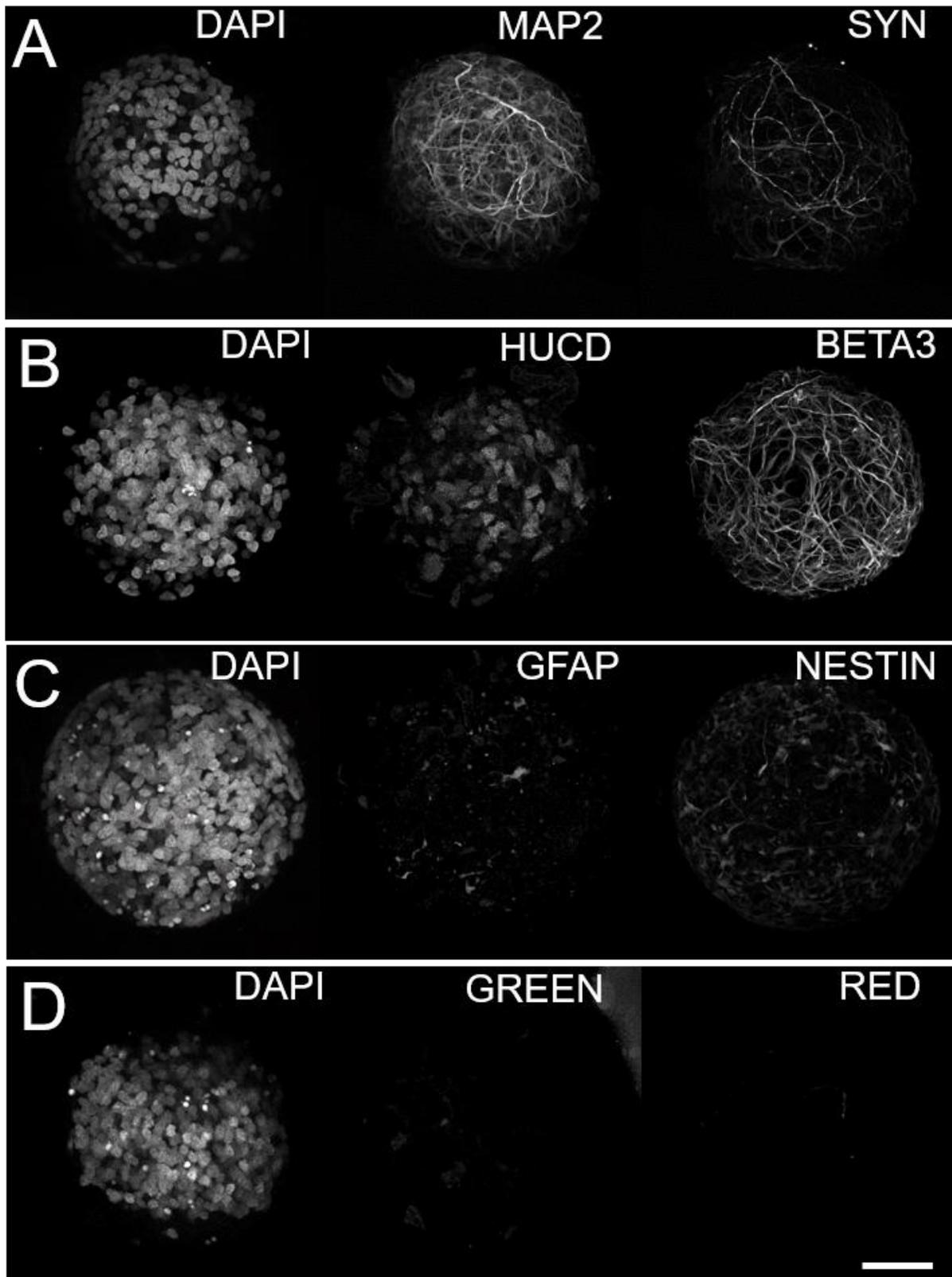


Supplementary Fig. 1: Internal structure of the co-extrusion device. In blue AL in green IS and in orange IS.



Supplementary Fig. 2: Flow simulations within the 3D printed co-extrusion device. Using the flow simulation function of solid works, we simulated the flow for the 3 inputs of the chips, with entry values according to the experimental parameters: A- entry flow 30 ml/h for Alginate Solution (AS), B- entry flow 20ml/h for Intermediate Solution (IS) and C- entry flow 20ml/h for Cell Solution (CS). As seen from the color code, the flow through the chip stays low and fairly constant for all three inputs.



Supplementary Fig. 3: A. DAPI, Microtubule Associated Protein 2 (MAP2) marker for mature neurites and synapsin marker for mature synapses. Confocal images of Capsules fixed with PFA: B, DAPI, HUCD nucleic marker expressed only in neurons, the RNA binding protein HuD/ELAVL4 and tubulin subunit Beta3 marker for neurites of mature neurons. C, DAPI, GFAP marker for glial cells and Nestin marker for progenitors (non-differentiated NSCs). D. DAPI and control secondary antibodies in both channels red and green. Scale bar 50 μ m