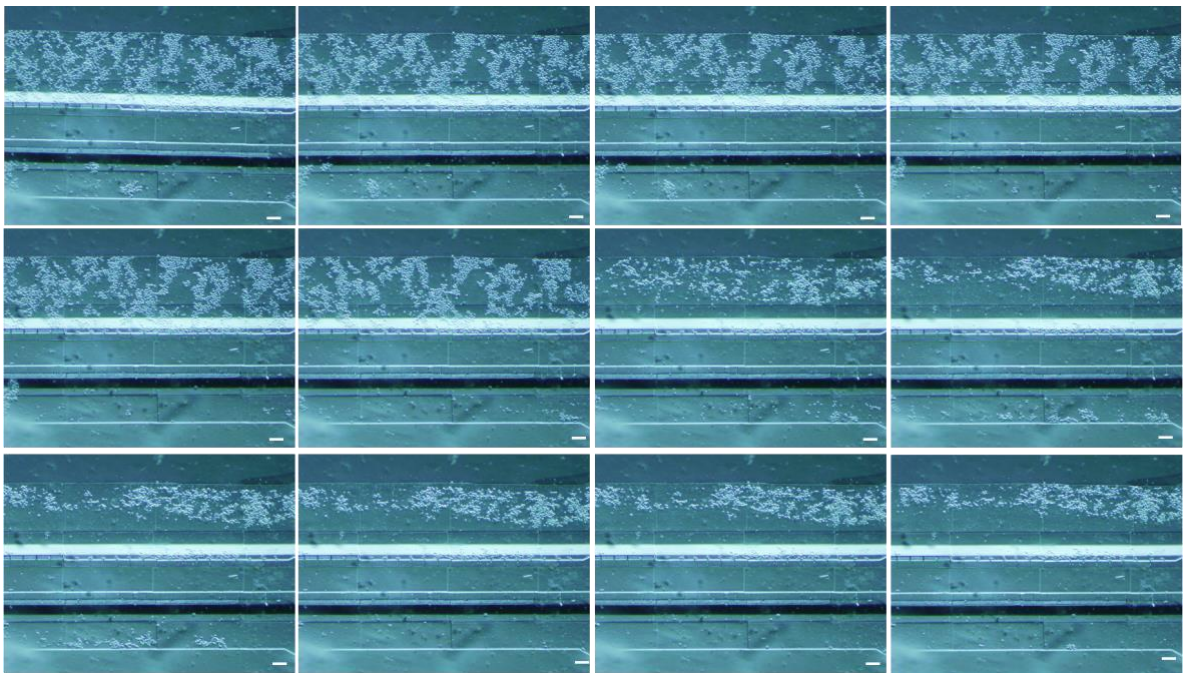
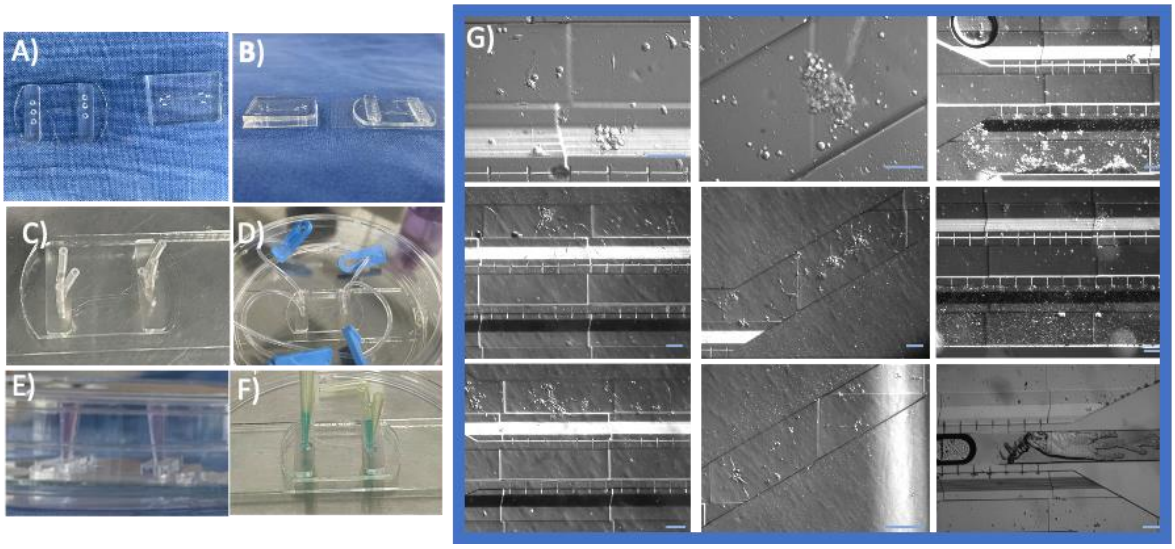
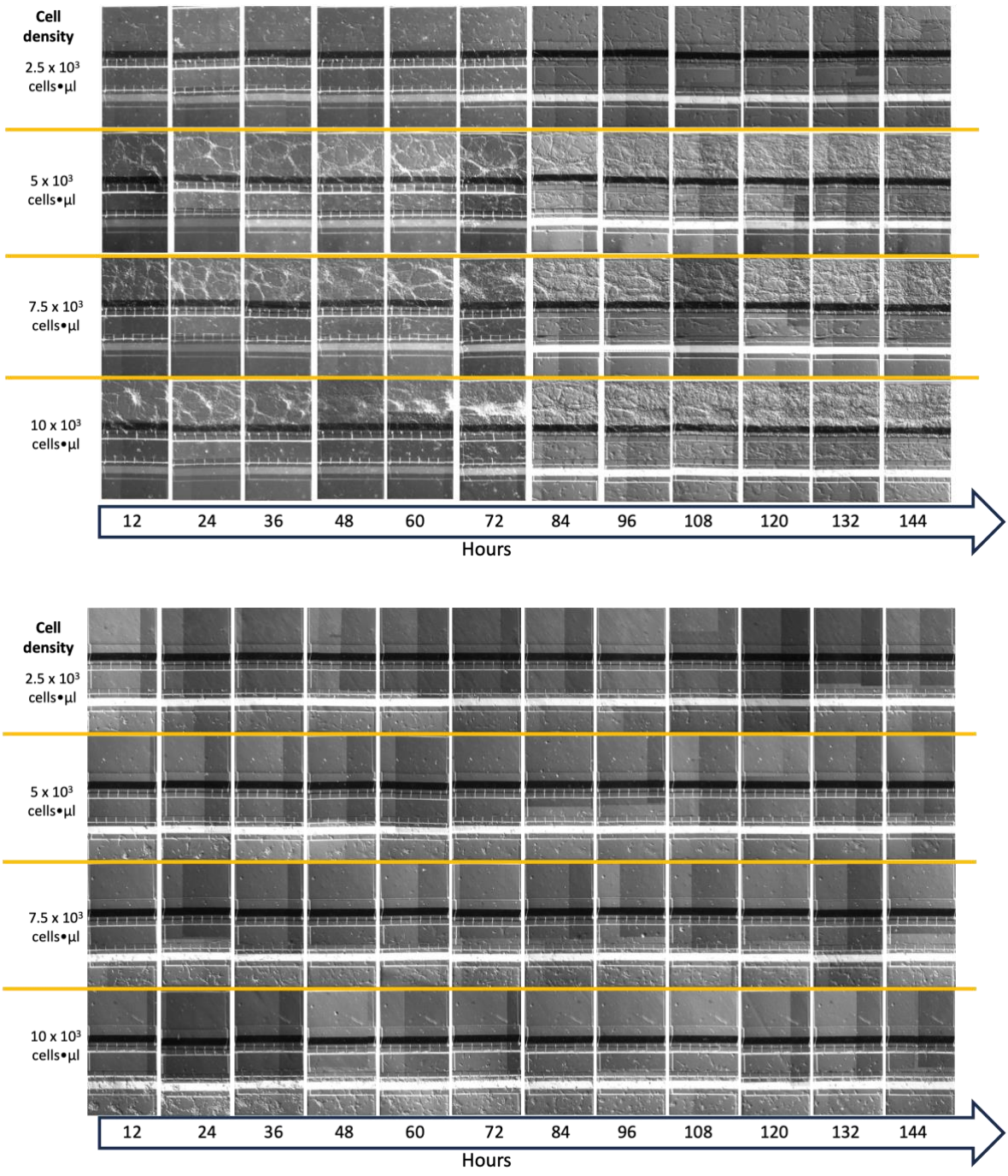


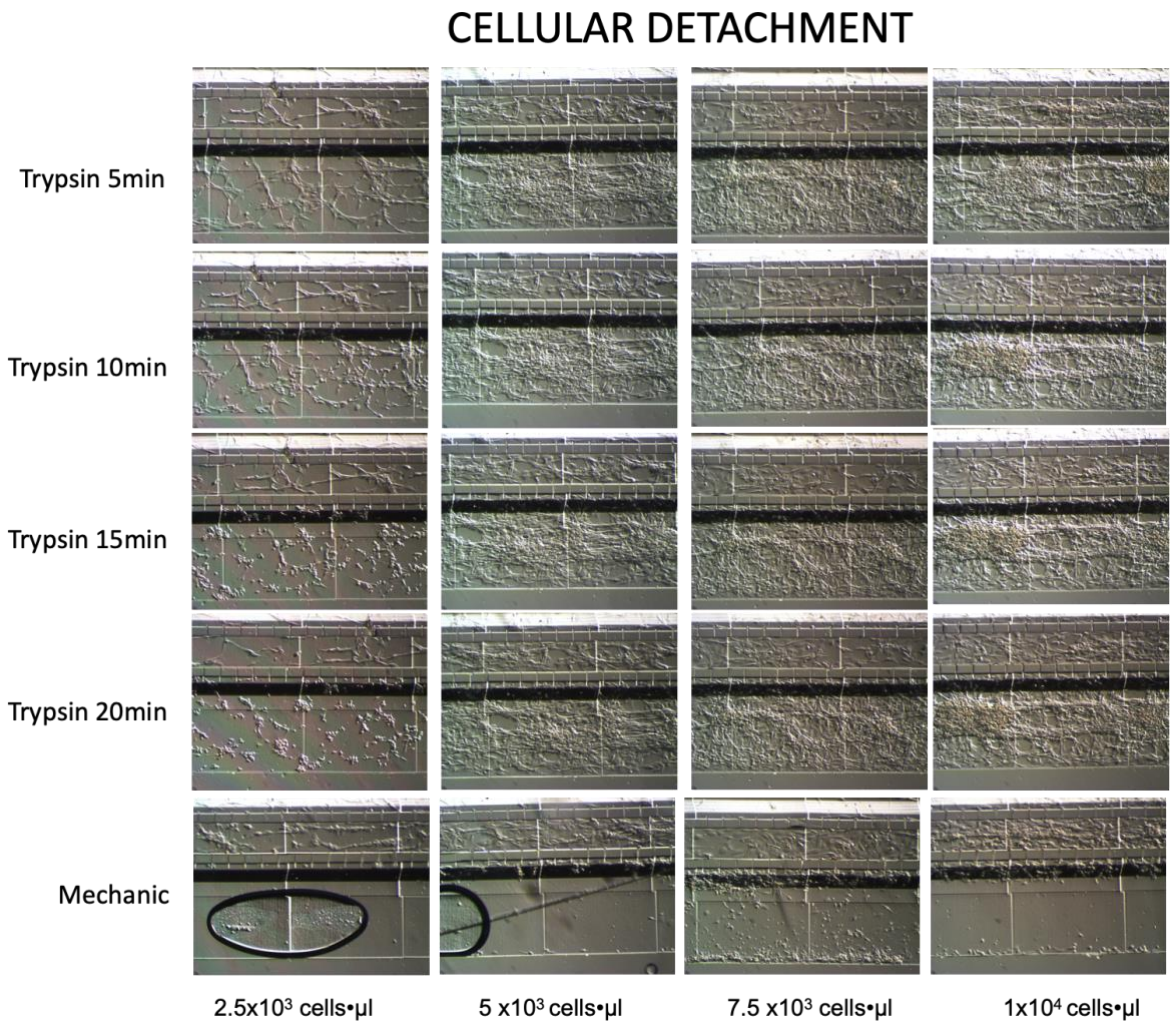
Supplementary Figure 1. Cell inoculation in the microfluidic system. Over a period of 5.25 hours, cells are gradually transported to the ends of the microfluidic system.



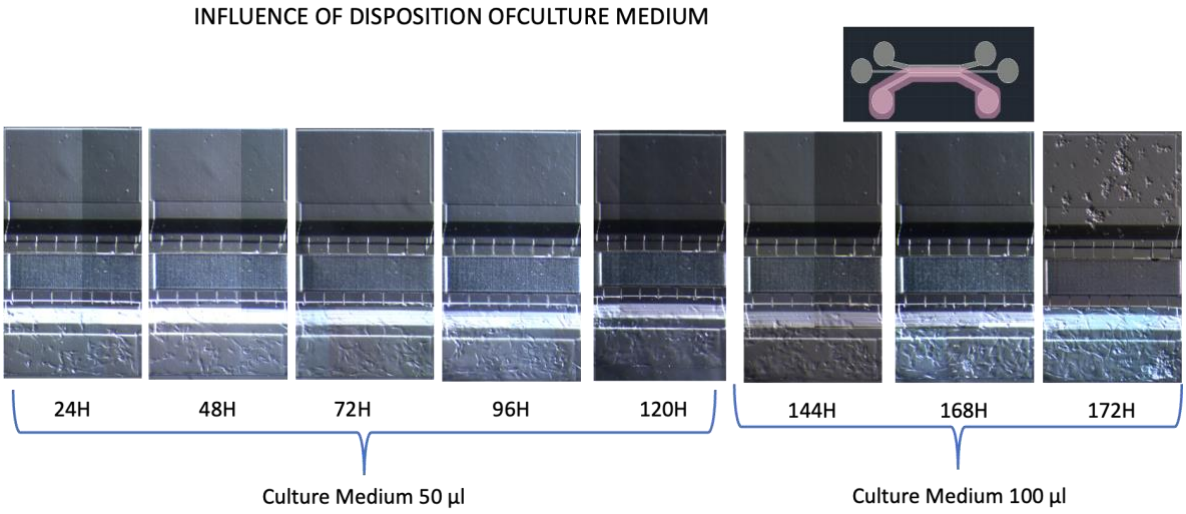
Supplementary Figure 2. Strategies employed for proper cellular adhesion within the microfluidic system. A) Surface view of the microfluidic system with and without steps (left and right sides, respectively), B) Side view of the devices on the right (with steps) and left (without steps), C) Adaptation of medical-grade silicone tubing at each entry and exit of the device, D) Longer adapted tubes using a clamping system, E) Adaptation of the microfluidic system with thousand-microliter pipette tips as a reservoir for culture medium, F) Adaptation of the microfluidic system with two-hundred-microliter pipette tips as a reservoir for culture medium, and G) Representative results showing poor cell adhesion, bubble generation, or, as shown in the bottom right, extracellular matrix blockage.



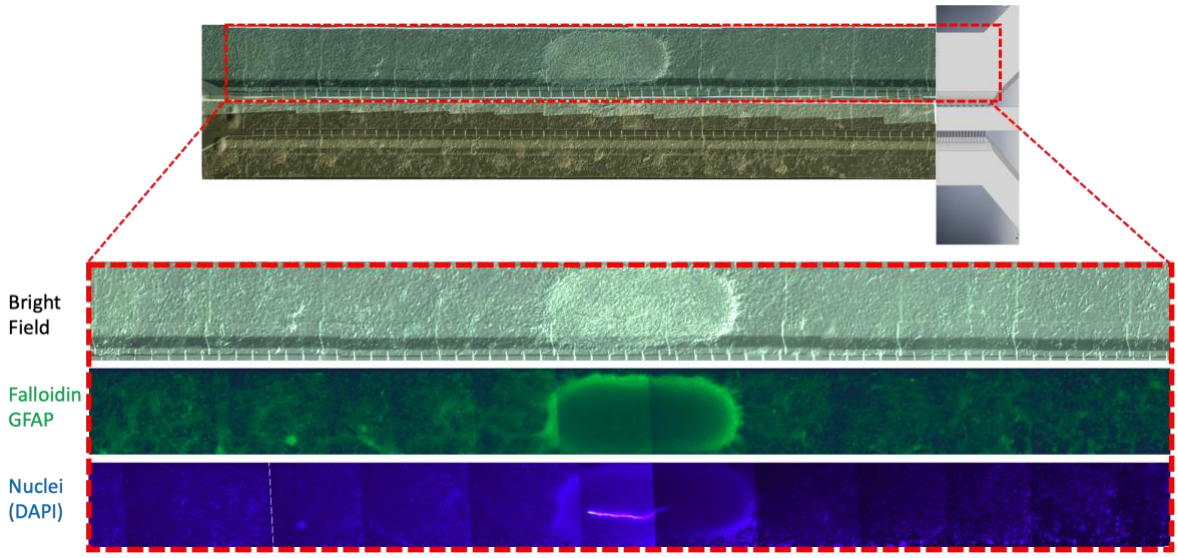
Supplementary figure 3. Mantenimiento celular dentro del sistema de micro fluidos, en la imagen superior se muestran las diferentes densidades de U87MG inoculadas en el sistema de micro fluidos y su mantenimiento en un periodo de 144h, en la imagen inferior se muestran las diferentes densidades de HBEC5i inoculadas en el sistema de micro fluidos y su mantenimiento en un periodo de 144h.



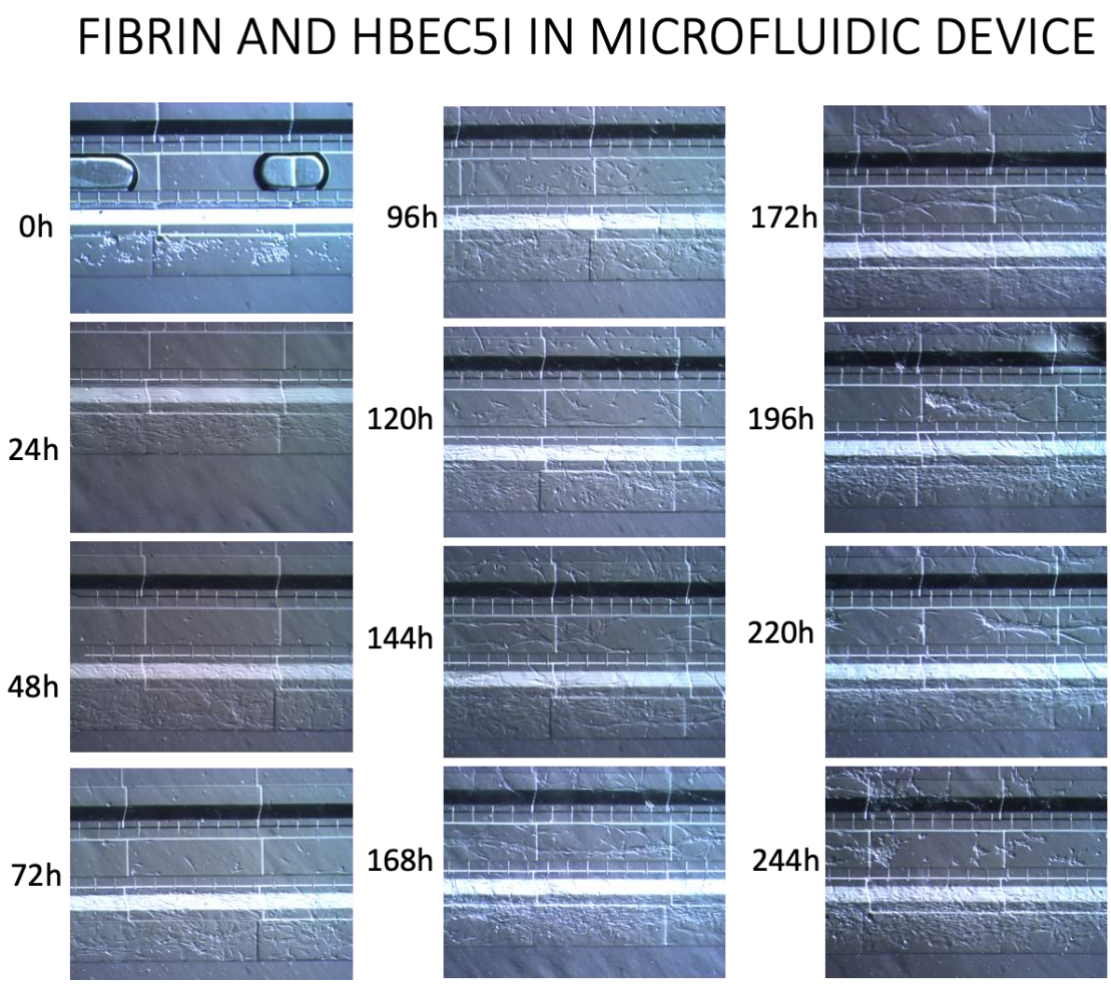
Supplementary Figure 4. Cell detachment. Cell detachment was evaluated at various cell densities using the trypsinization process conducted over a 5-20 minute standard incubation period. At the bottom, mechanical detachment via air injection is demonstrated.



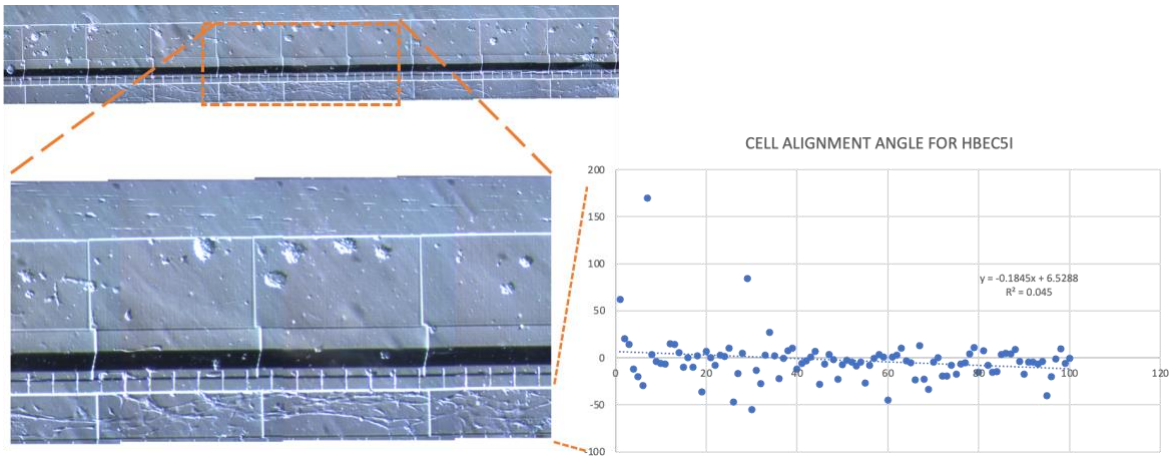
Supplementary Figure 5. Influence of cell culture medium on maintenance and proliferation in the devices. Two quantities of culture medium were evaluated with constant changes every day. From 24-120 hours, 50 microliters of culture medium were used, while from 144-172 hours, the volume was increased to 100 microliters."



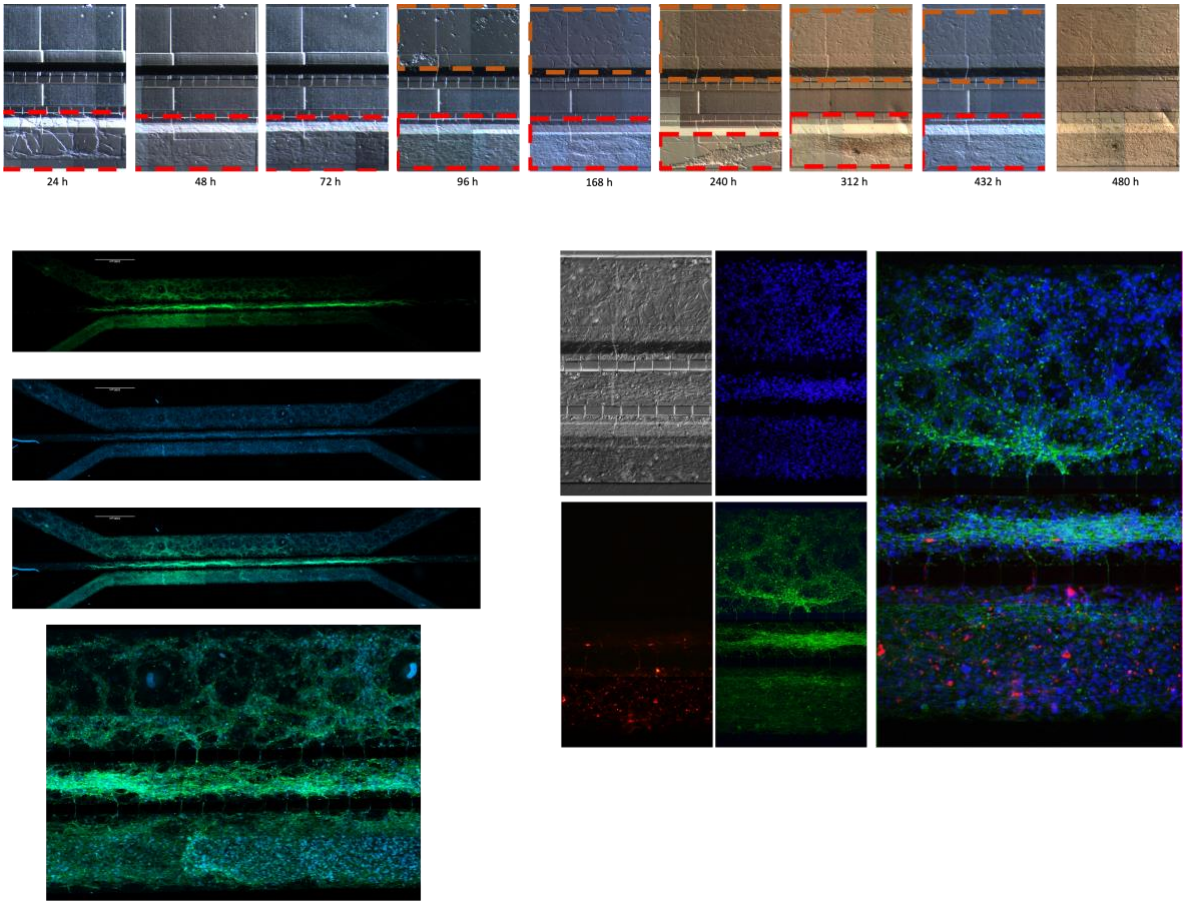
Supplementary Figure 6. Glial Fibrillary Acidic Protein (GFAP) expression in U87MG microfluidic systems. Following the seeding of U87MG cells in the microfluidic system, the expression of GFAP was assessed within the device (green), with cell nuclei stained in blue (DAPI).



supplementary Figure 7. Cellular encapsulation of HBEC5i with human fibrin. The cellular behavior was assessed within microfluidic devices utilizing a fibrin matrix at cellular density of$2.5x10^3$ cells•µl.



Supplementary Figure 8. Influence of human fibrin on the cultivation of HBEC5i in a microfluidic device. The growth of endothelial cells is observed to be influenced by the fibrin matrix. In the cellular growth within the U87 MG channel, spherical cell growth is evident, whereas in channel 2 originally populated by astrocytes, the migrated HBEC5i cells exhibit cellular polarization (graph on the right).



supplementary Figure 9. Supplementary Figure 9. Brain Tumor Microenvironment. The temporal scaling of cell culture is observed, starting with the inoculation of HBEC5i cells (labeled with Texas Red Dextran). Subsequently, cells from the opposite end (U87MG) were introduced, and finally, astrocyte cells were inoculated. F-actin expression is shown in green (Phalloidin), and cell nuclei are stained in blue (DAPI)