

Supplementary Information

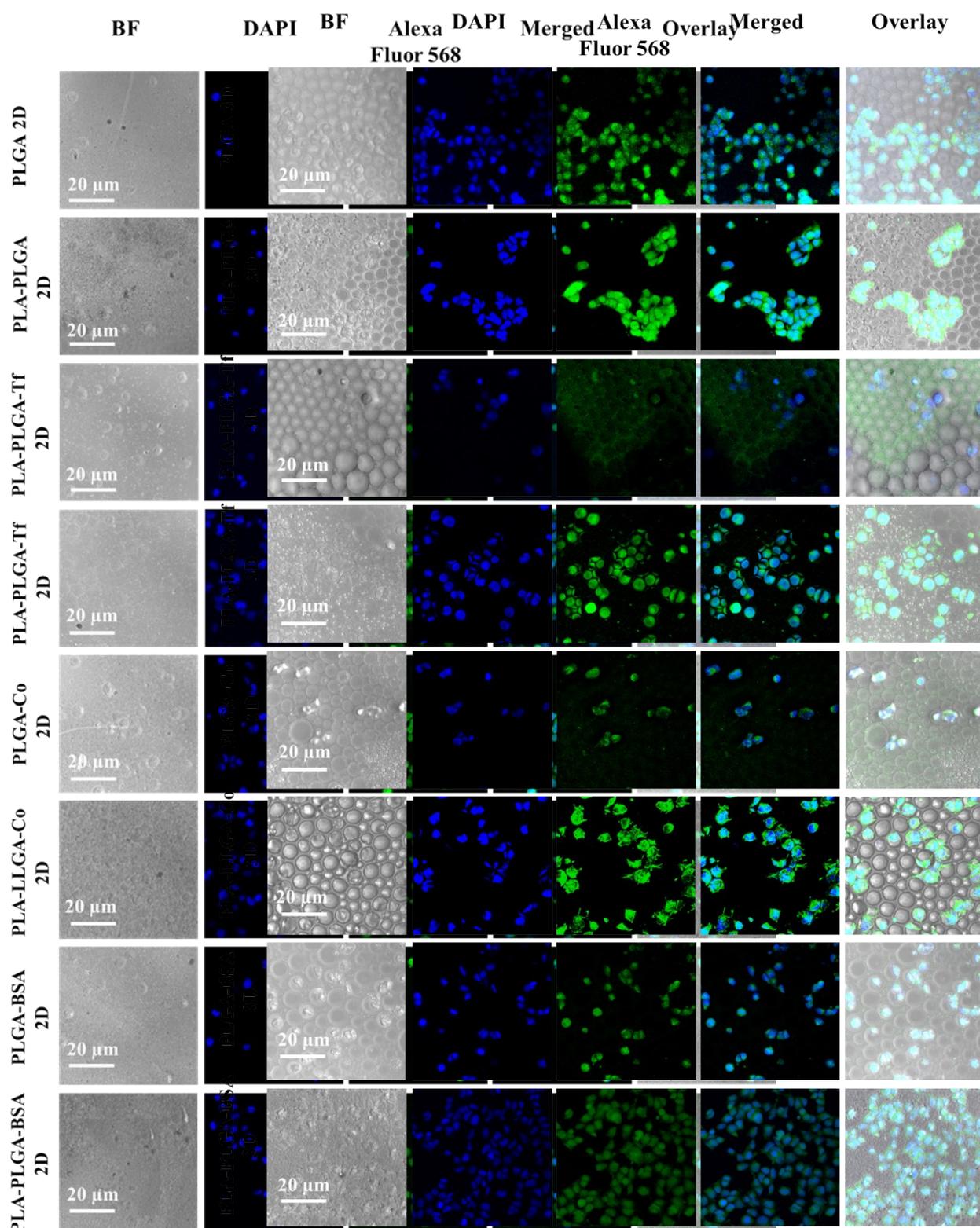


Figure S1. CLSM images of MCF-7 cells grown on inverse 3D polymeric microfilms with and without protein enrichment for 24 h. Blue color: nucleus with DAPI; Green color: actin filaments stained with phalloidin-AF568; Grey color: bright field images of respective 2D or 3D microfilms. Merged image is an overlay of all channels. Scale bar represents 20 μm .

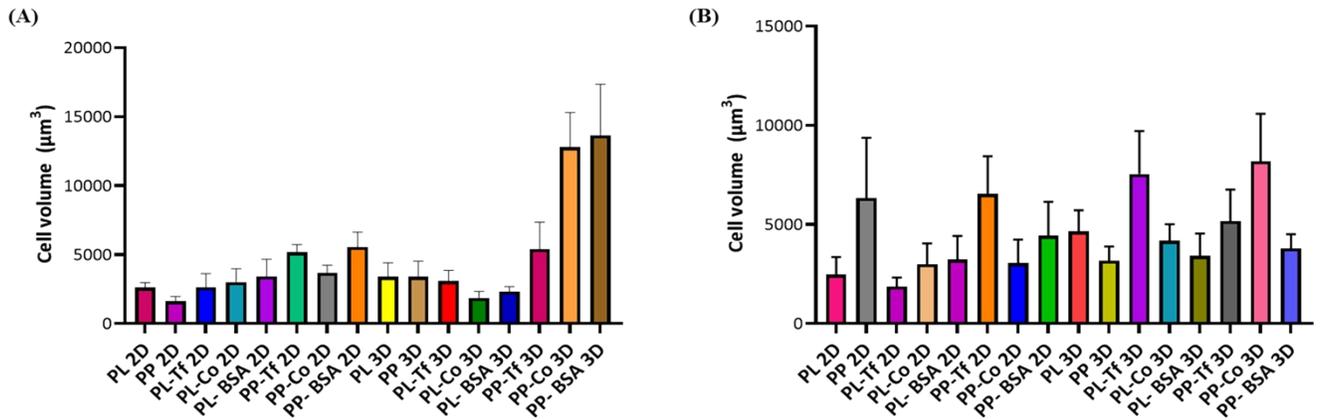


Figure S3. Cell volume of MCF-7 cells grown on various polymeric 2D and inverse 3D microfilms at **A)** 6 h and **B)** 24 h. PL: PLGA, PP: PLA-PLGA.

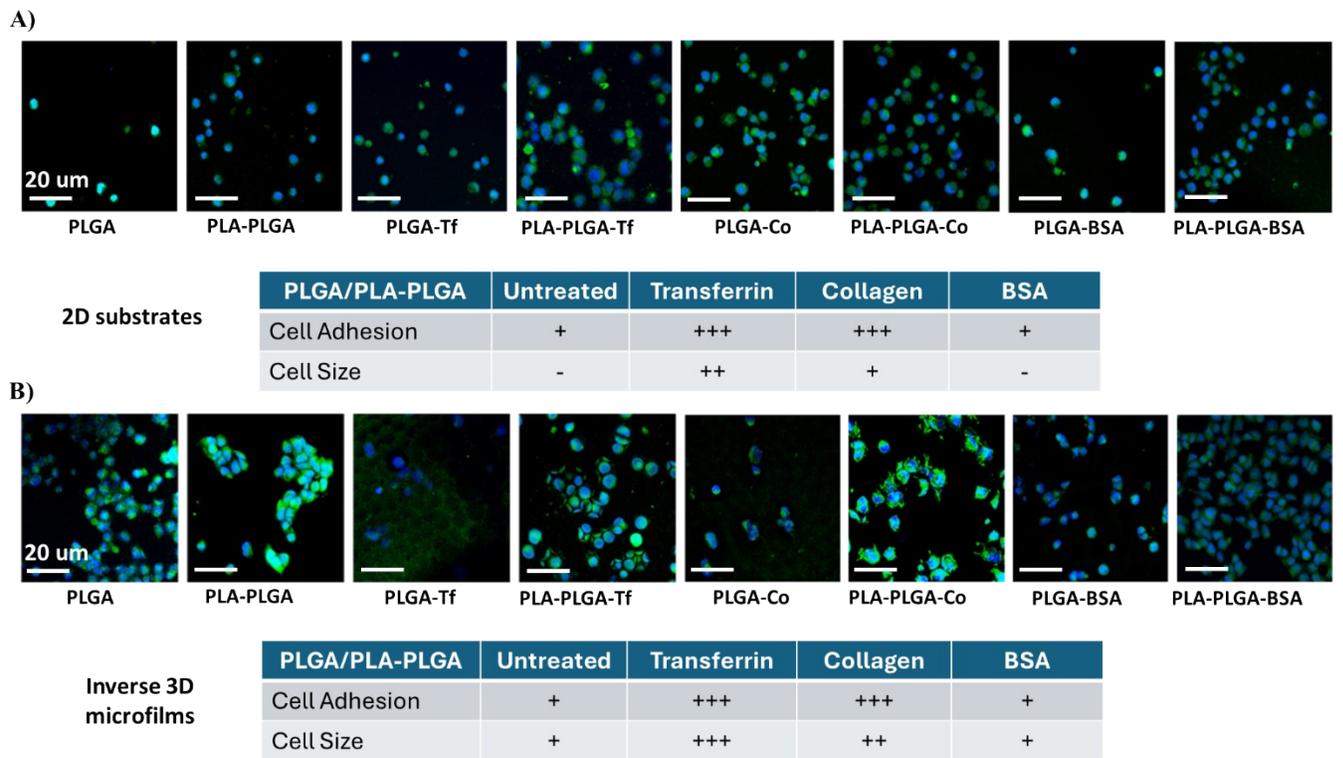


Figure S4. Comparison of cell adhesion and growth on 2D and inverse 3D polymeric microfilms conjugated with Tf, Co and BSA.

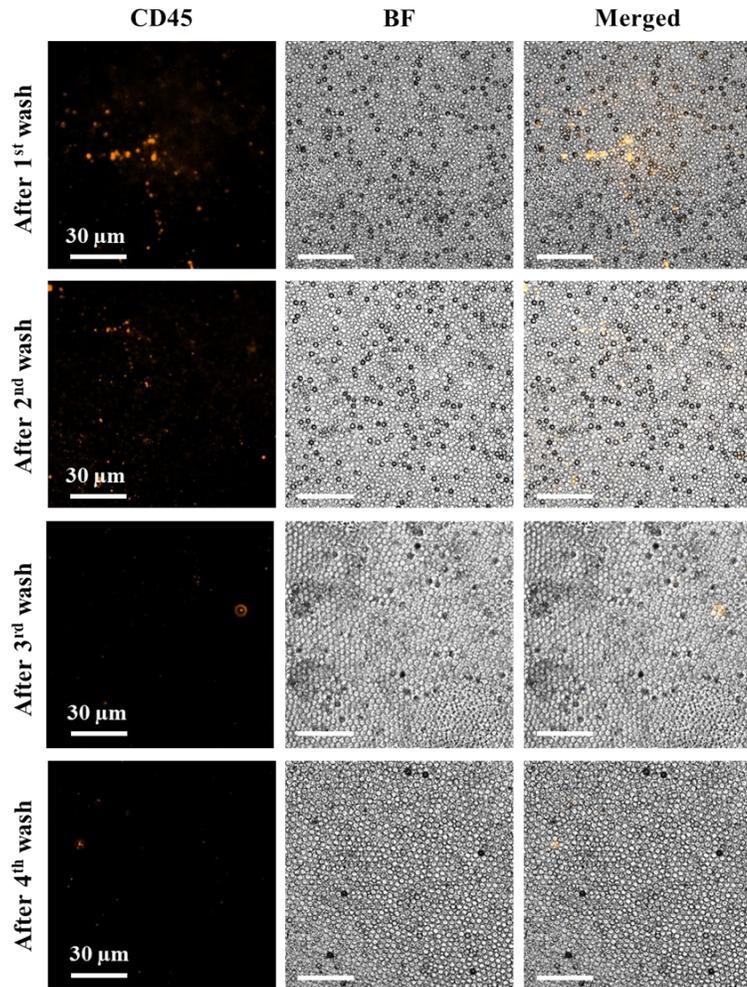


Figure S5. Fluorescence microscopy images of non-target cells, such as leukocytes, observed while processing blood samples of healthy individuals using inverse 3D PLA-PLGA-Tf microfilms. Orange color: leukocytes stained with anti-CD45 tagged with AF555; Grey color: bright field images of respective 3D microfilms. Merged image is an overlay of all channels. Scale bar represents 30 μm .

Video files:

Video 1. 3D projections of MCF-7 cells cultured on 2D substrates obtained using CLSM, magnified view. Blue: nucleus stained with DAPI and Green: cytoplasm stained with AF568 tagged phalloidin.

Video 2. 3D projections of MCF-7 cells cultured on PLA-PLGA-Tf inverse 3D microfilms, at lower magnification. Blue: nucleus stained with DAPI and Green: cytoplasm stained with AF568 tagged phalloidin.

Video 3. 3D projections of MCF-7 cells cultured on PLA-PLGA-Tf inverse 3D microfilms, at higher magnification. Micropores housing the cells with their nucleus oriented towards the micropore opening and most of the cytoplasm inside the pore. Blue: nucleus stained with DAPI and green: cytoplasm stained with AF568 tagged phalloidin.

Video 4. 3D projections of MCF-7 cells cultured on PLA-PLGA-Tf inverse 3D microfilms, magnified view without the micropores. It was observed that the cells exhibit notable cell volume and area. Blue: nucleus stained with DAPI and green: cytoplasm stained with AF568 tagged phalloidin.

Video 5. 3D projections of MCF-7 cells cultured on PLA-PLGA-Tf inverse 3D microfilms, at lower magnification. Enhanced cell adhesion inside the spatially constricted micropores was noted. Blue: nucleus stained with DAPI and green: cytoplasm stained with AF568 tagged phalloidin.