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## Supplemental information

# Functional microvascularization of human myocardium *in vitro*

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## Supplementary Figures

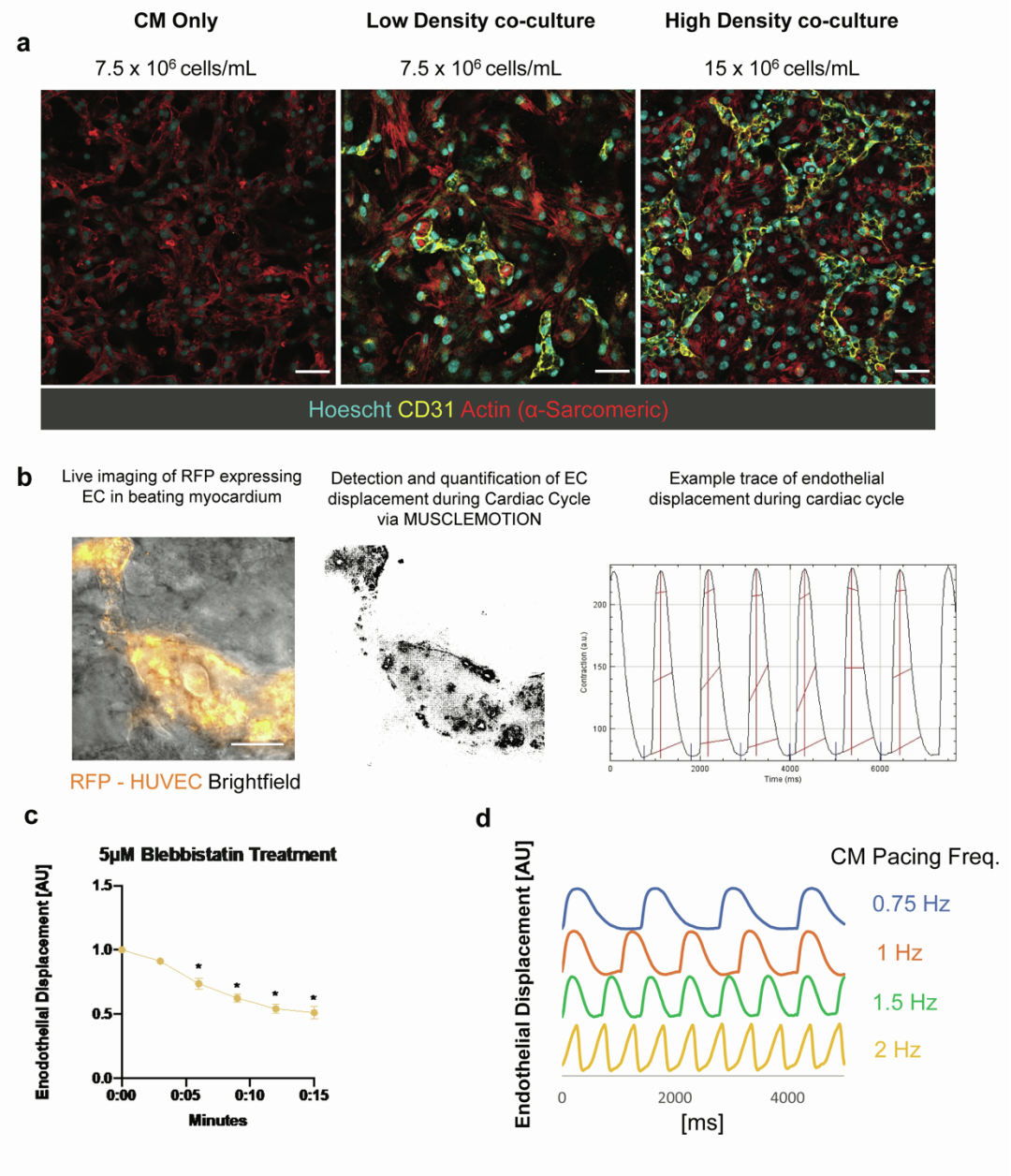


**Fig. S1 Fibrin hydrogel culture scaffold enables mechanical coupling between EC and CM a,** Optimisation of cell density for confluence in 3D fibrin hydrogel. hiPSC-CM (red) and hCMVEC (yellow) were visualised with immunofluorescent confocal microscopy in low and high density co-cultures to establish requisite conditions for confluence in 3D fibrin hydrogel. Scale bar = 50 μm**. b,** Experimental outline of live imaging of RFP-HUVEC to detect and quantify physical displacement of EC by CM contractility. Scale bar = 50 μm. **c,** Reduction of RFP-HUVEC displacement via inhibition of CM contractility via Blebbistatin treatment. Each

datapoint represents average value from 6 dishes, N=3. **d,** EC displacement rate depends on CM electrical simulation frequency. Data is shown as mean ± SEM. *=p<0.05. Related to figure 1 and 2 of main text.

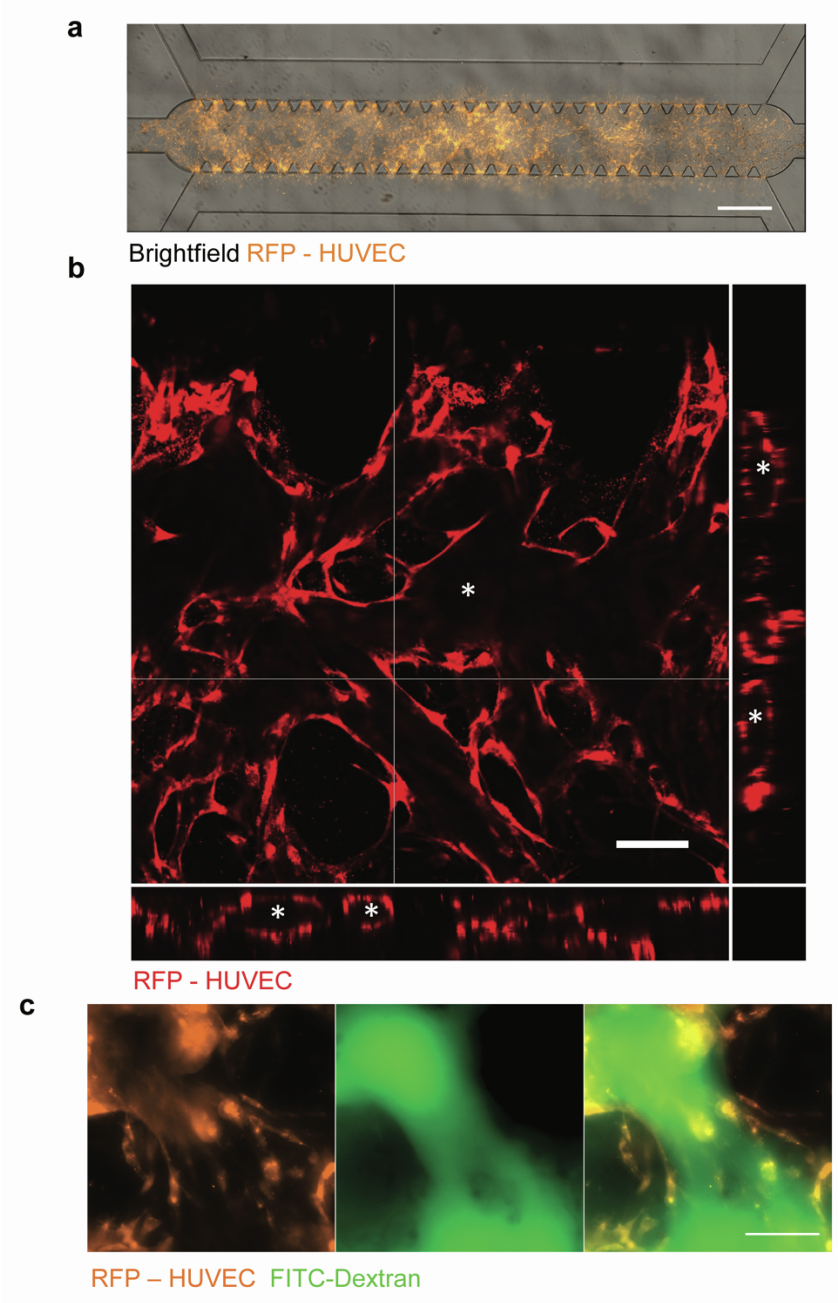


**Fig. S2 Organisation of microvascular network in EC-FB microfluidic co-culture**

**a,** Widefield tile showing distribution of RFP-HUVEC in microfluidic chip after 1 week coculture with hLVFB. Scale bar = 1mm **b,** Confocal z-stack showing endothelial network with

continuous open lumen. White asterisks indicate open luminal spaces. Scale bar = 50 μm. **c,** Perfusion of 40kDa FITC-Dextran through microvasculature in EC-FB co-culture. Scale bar = 50 μm. Related to figures 3 and 4 of main text.