

## Description of Additional Supplementary Files

**Supplementary Movie 1** | Time course (6 frames per second) from widefield fluorescence microscopy showing thrombin (magenta) labelled hMSCs in 2D over a period of 6 hours imaged at 10 minute intervals highlighting gradual internalisation of [rh\_sc\_thrombin][ox890] (top) and rh\_sc\_thrombin (bottom). Scale bar represents 100  $\mu\text{m}$ .

**Supplementary Movie 2** | Time course (5 frames per second) from confocal fluorescence microscopy (z-plane top; x-y plane bottom) of [rh\_sc\_thrombin][ox890] (magenta) labelled hMSCs supplemented with 10 mg.mL<sup>-1</sup> fibrin gel comprising 1 wt.% Alexa 488 conjugated fibrinogen (green). Images were collected immediately after fibrinogen addition and at 30 second intervals for a period of 20 minutes, highlighting fibrin formation emanating from the cell surface. Scale bar represents 100  $\mu\text{m}$ .

**Supplementary Movie 3** | 3D projection (25 frames per second) of 1 mg.mL<sup>-1</sup> fibrin gel comprising 2 wt.% Alexa 594 conjugated fibrinogen (red) and incorporating [sc\_thrombin][ox890] labelled hMSCs stained with Hoechst 33342 (blue). Projection represents 111 slices each 116  $\mu\text{m}$  (x) by 116  $\mu\text{m}$  (y) at 0.1  $\mu\text{m}$  (z) intervals collected after 60 minutes highlighting cell associated fibrin formation.

**Supplementary Movie 4** | Z projection (14 frames per second) of 6 mg.mL<sup>-1</sup> fibrin gel comprising 2 wt.% Alexa 594 conjugated fibrinogen (red) incorporating [sc\_thrombin][ox890] labelled hMSCs stained with Hoechst 33342 (blue). Projection (top to bottom) represents 91 slices each 116  $\mu\text{m}$  (x) by 116  $\mu\text{m}$  (y) at 0.5  $\mu\text{m}$  (z) intervals.  
intervals.