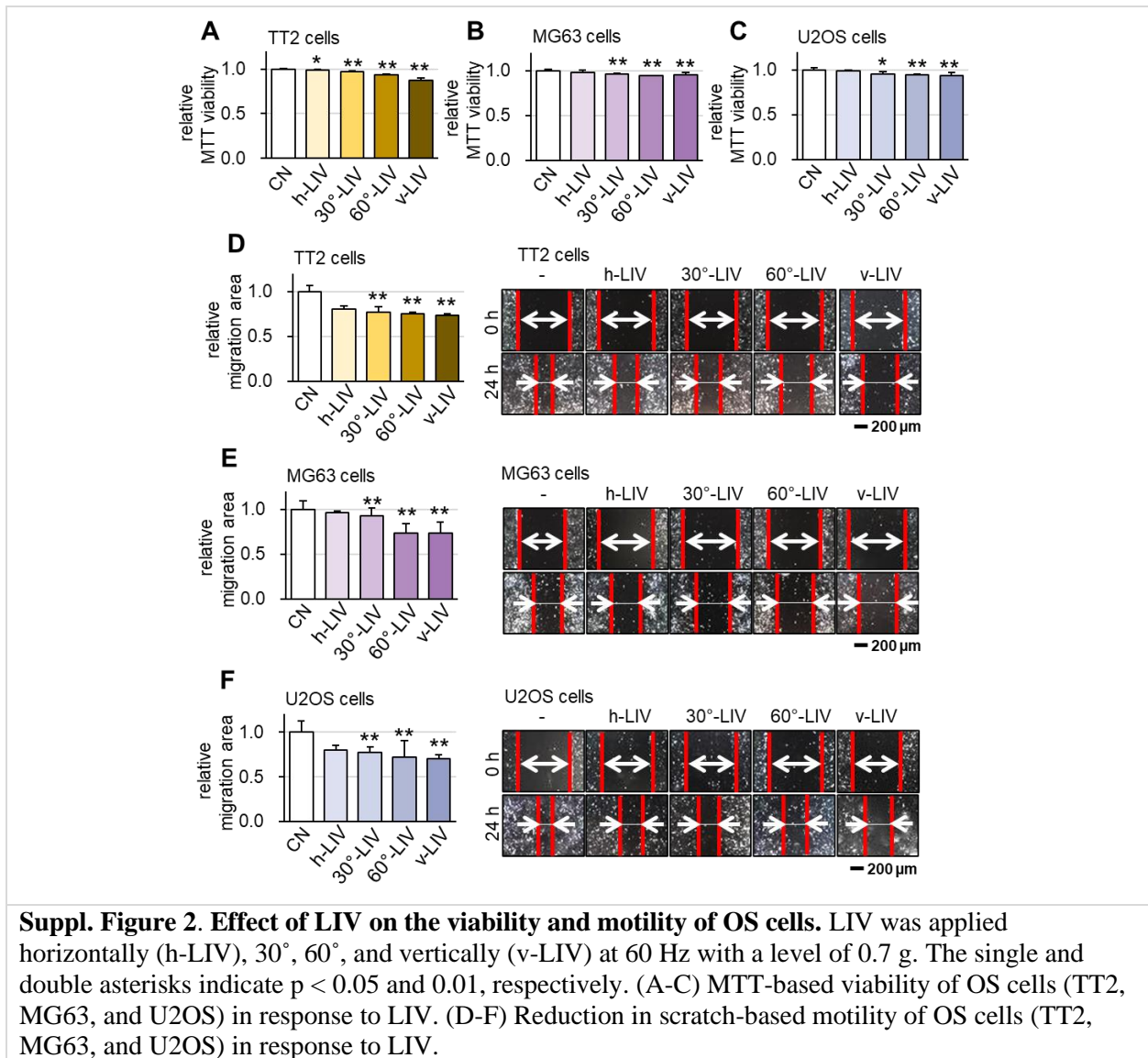
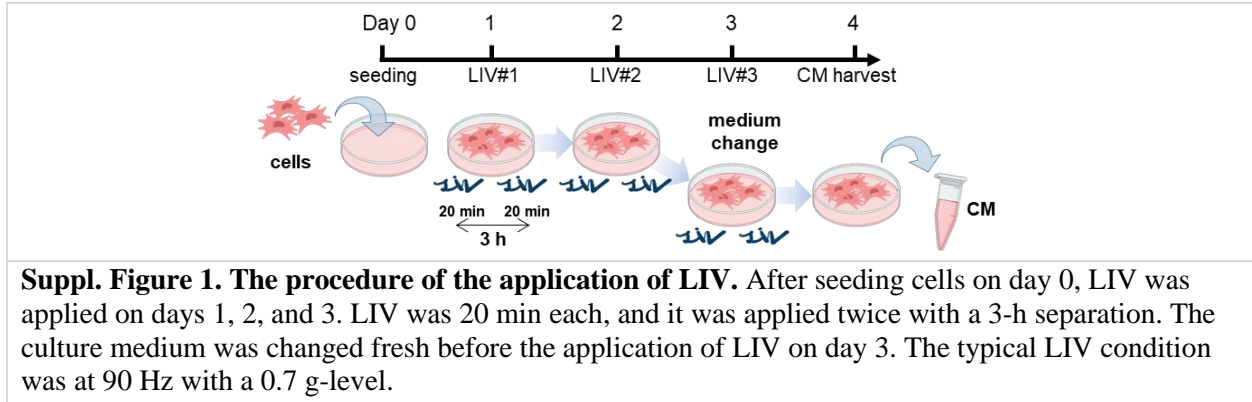
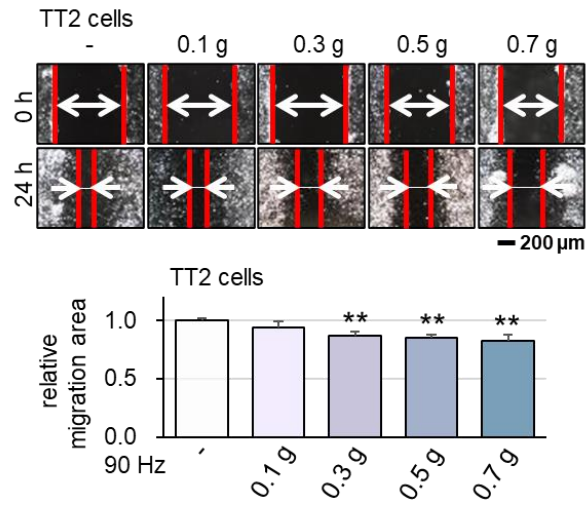
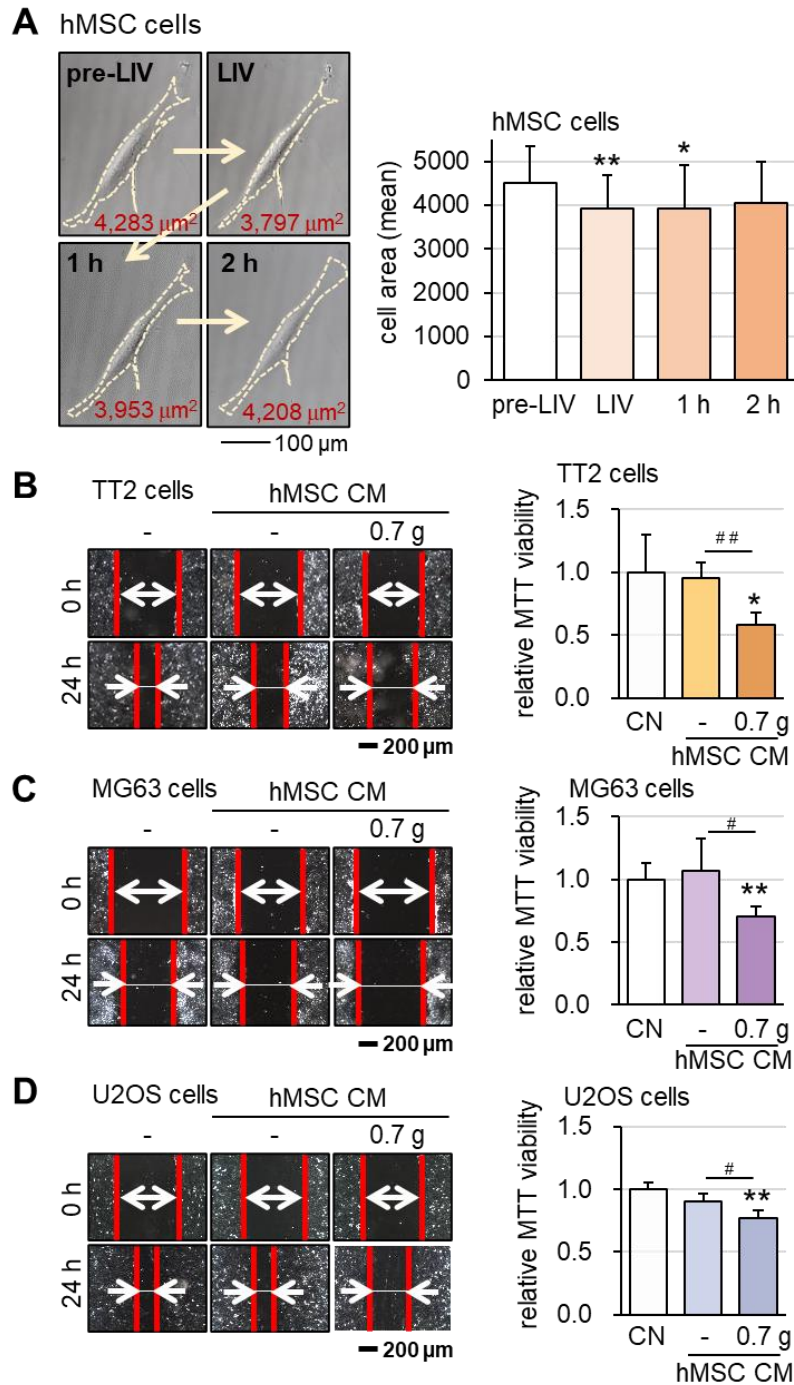


## Supplementary information

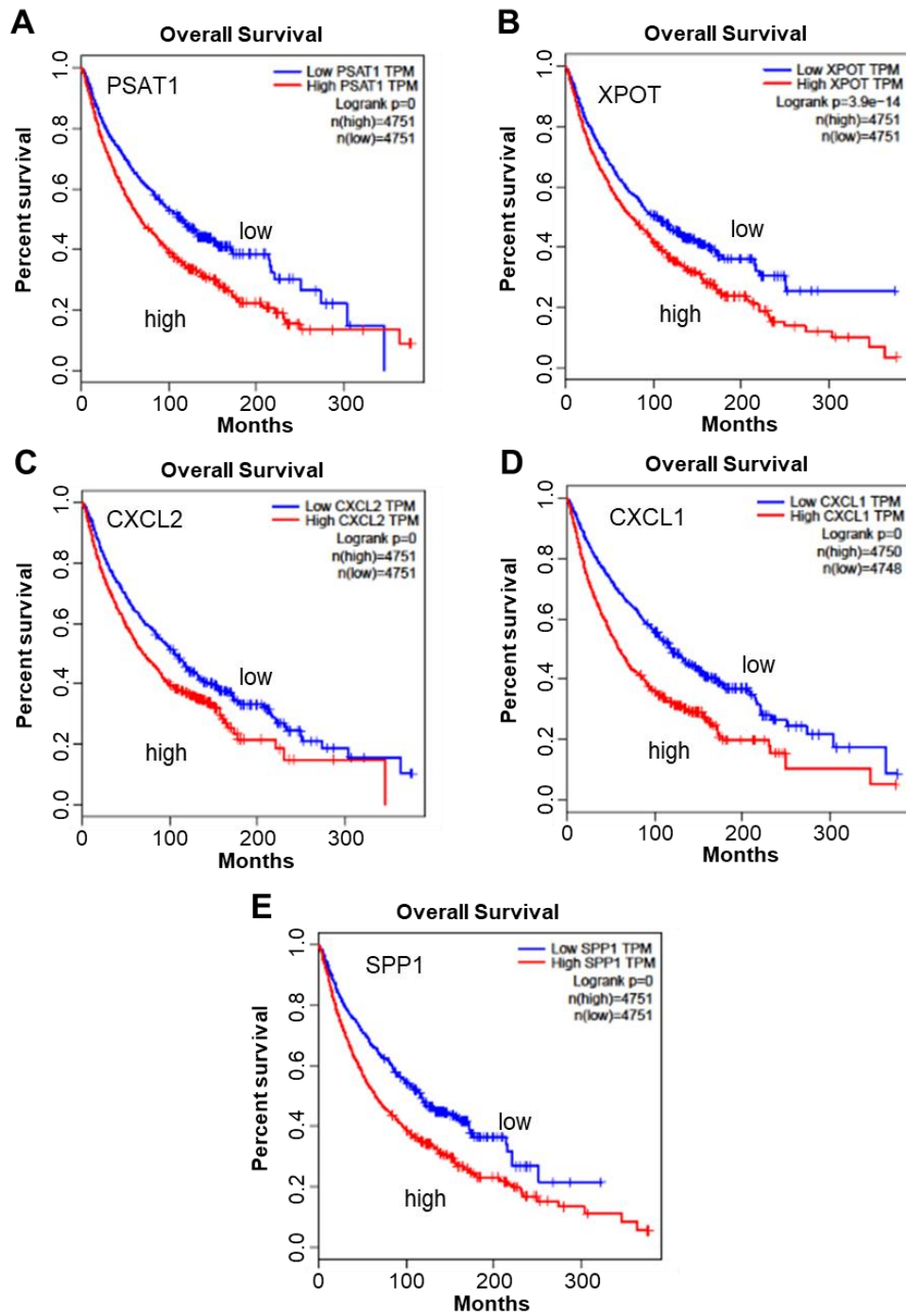




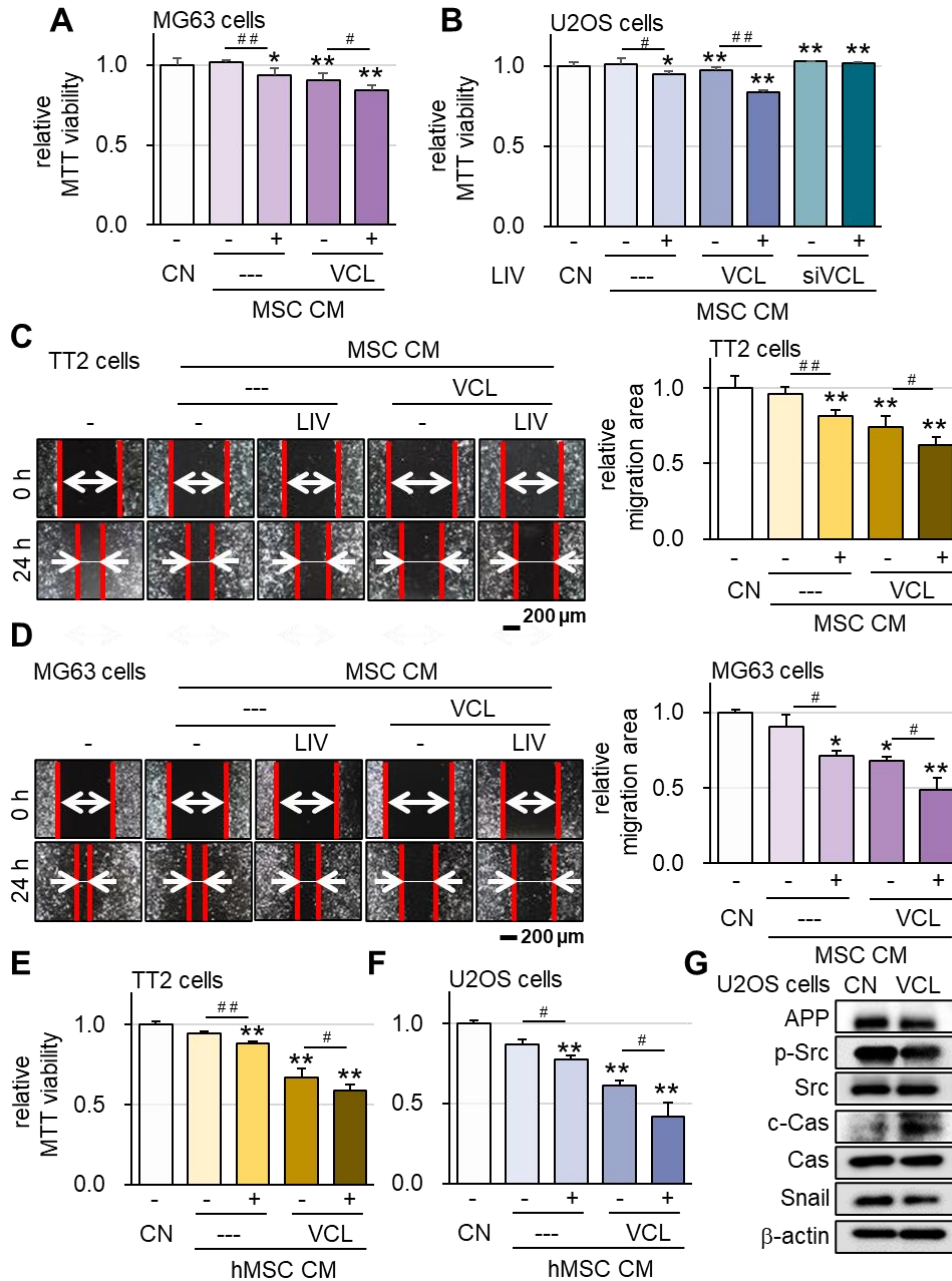
**Suppl. Figure 3. Reduction in the motility of TT2 OS cells in response to LIV.** LIV was applied vertically (v-LIV) at 60 Hz with a level of 0.1, 0.3, 0.5 and 0.7 g. The double asterisks indicate  $p < 0.01$ .



**Suppl. Figure 4. LIV-driven alterations in hMSC cell shape as well as suppression of two-dimensional motility of OS cells in response to LIV-treated hMSC CM.** LIV was applied vertically (v-LIV) for 20 min at 90 Hz with a level of 0.7 g. The single and double asterisks indicate  $p < 0.05$  and  $0.01$ , respectively. (A) Transient shrinkage of hMSC cells in response to v-LIV. (B-D) Reduction in scratch-based motility of TT2, MG63, and U2OS cells, respectively, in response to LIV-treated hMSC CM.



**Suppl. Figure 5. Survival rate plots for the selected transcripts that are responsive to LIV. (A-E)** Survival plots for PSAT1, XPOT, CXCL2, CXCL1, and SPP1 transcripts, respectively. Their high transcript levels (threshold at 50% median) provide a significant reduction in the survival rate in the TCGA database.



**Suppl. Figure 6. Vinculin overexpression enhances the tumor-suppressive capability of MSC CM.**

LIV was applied vertically (v-LIV) at 90 Hz with a level of 0.7 g. The single and double asterisks indicate  $p < 0.05$  and  $0.01$ , respectively. VCL = vinculin, CN = control, CM = conditioned medium, pl = plasmid transfection, and si = siRNA. (A-B) Alterations in MTT-based viability of OS cells (MG63 and U2OS) by MSC CM in response to LIV and over- and under-expression of VCL. (C-D) Reduction in scratch-based motility of OS cells (TT2, MG63, and U2OS) by MSC CM in response to LIV and overexpression of VCL. (E&F) Alterations in MTT-based viability of TT2 and U2OS OS cells by hMSC CM in response to LIV and over & under-expression of VCL. (G) Decrease in APP, p-Src, and Snail, and an increase in cleaved caspase 3 (c-Cas) in VCL-overexpressing U2OS cells.