and more drug-resistant cells (yellow). **B)** Cartoon of the three-dimensional tissue engineered BM (3DTEBM) niche with oxygen and drug concentration gradients as a function of scaffold depth. The top of the 3DTEBM is enriched for endothelital cells, where MM cells are exposed to higher oxygen levels and drug concentrations, with more proliferative cells (green). The bottom of the 3DTEBM is hypoxic, receives lower concentration of drugs, and includes less proliferative and more drug-resistant cells (yellow). The 3DTEBM provides a tool for further studying the vascular and endosteal niches in ex-vivo experiments.

Suppl. Figure 1: Characterization of the physico-chemical properties of 3DTEBM cultures.

A) Effect of $CaCl_2$ concentration (0 – 4 mg/ml) on the gelification time of 3DTEBM. $CaCl_2$ concentration (1 mg/ml) induced the fastest gelification time. **B)** Effect of tranexamic acid concentration (0 – 10 mg/ml) on the stability of 3DTEBM at 3 weeks. Tranexamic acid concentration (4 mg/ml) where stabilization effect plateaued. **C)** Effect of tranexamic acid concentration (0 – 10 mg/ml) on the viability of MM cells after 24h by MTT. **D)** 3DTEBM scaffold dimensions as viewed from the **i)** top and **ii)** side of the scaffold. **E)** Scanning electron microscopy images of the 3DTEBM **i)** without and **ii)** with MM cells; scale bar= 5 µm.