

Figure 1: Microparticle characterization and Release Profile. **A.** Representative particle size distribution for PLGA microparticles prepared by TROMS employed in the *in vivo* studies. **B.** *In vitro* release of VEGF from PLGA microparticles.

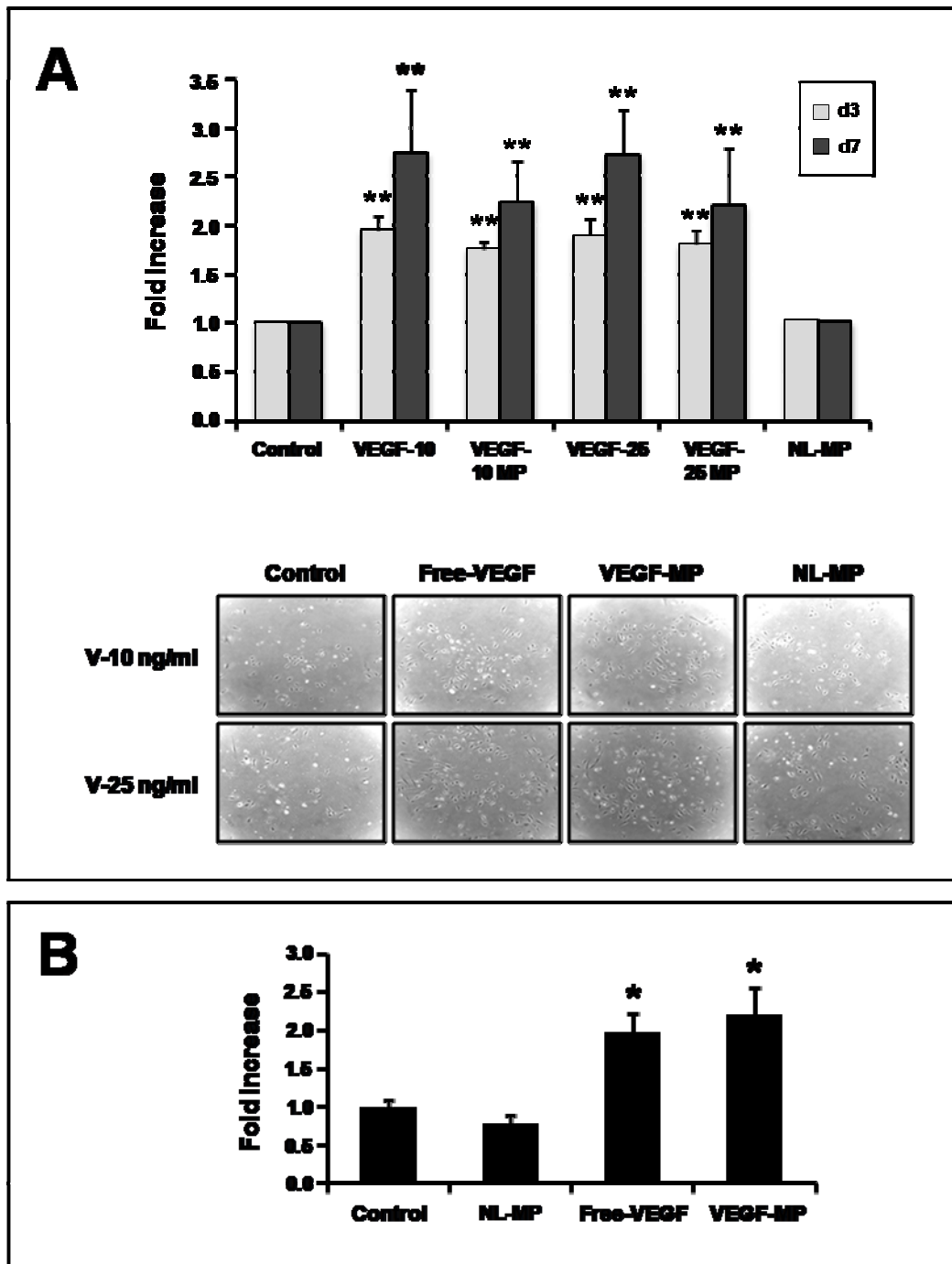


Figure 2: Bioactivity of VEGF-MP. **A.** Proliferation of HIAEC cells was induced by free VEGF at 10ng/mL (VEGF-10) or 25ng/mL (VEGF-25) or VEGF-MP at the same concentration and compared to culture medium alone (control) for 3 and 7 days. Non-loaded microparticles (NL-MP) did not induce cell proliferation. Representative pictures of HIAECs density 7 days after treatment are shown. **B.** KDR activation in HIAECs induced by VEGF stimulation (free or encapsulated at 10ng/mL) and NL-MP (y axis represents fold increase *versus* non treated group). * $P < 0.05$ and ** $P < 0.01$.

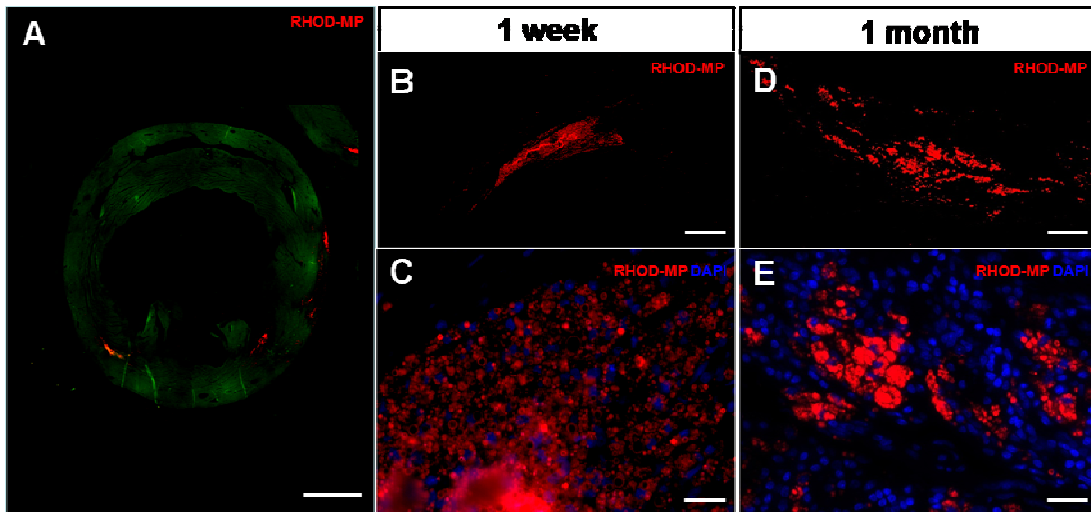


Figure 3: (A) PLGA-microparticles visualization in the heart tissue. A. Microscopy fluorescence visualization of a heart cross-section after fluorescent-labelled microparticle administration. B-E. Rhodamine-labeled-microparticles distribution 1 week (B,C) and 1 month (D,E) after injection. Nuclear staining was performed with DAPI (blue). Scale bars: 500 μm (A), 100 μm (B,D) and 20 μm (C,E).

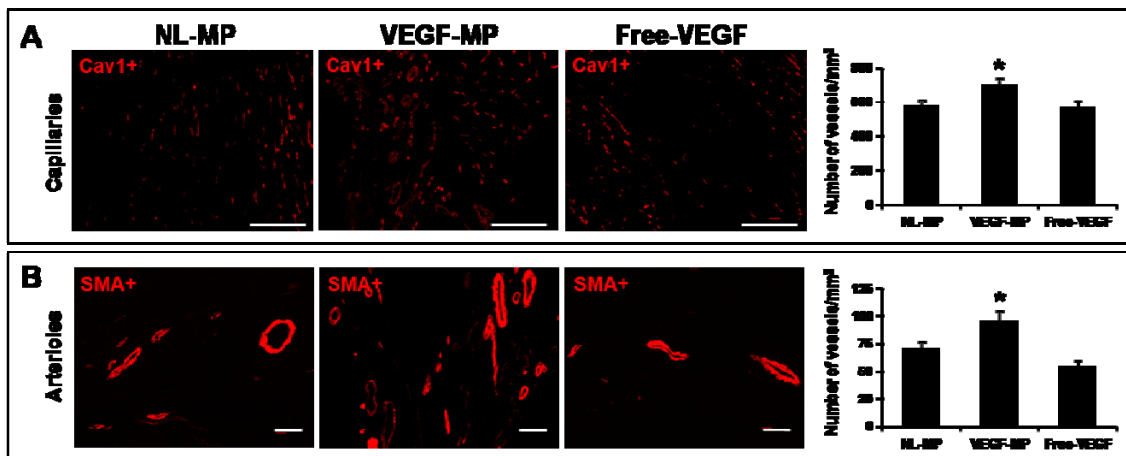


Figure 4: *In vivo* effects of VEGF-MP. Capillary (A) and arteriole (B) densities were determined by quantification of the small caliber ($<15\mu\text{m}$) caveolin-1-positive capillaries/ mm^2 and α -SMA-positive vessels/ mm^2 in the infarcted and peri-infarcted areas, 1 month after administration of non-loaded MP (NL-MP) (control group), VEGF-MP or free-VEGF. Representative images for caveolin-1 α and α -SMA immunofluorescence stainings are shown. A significant increase in capillary and arteriole densities was determined in the hearts injected with VEGF-MP in comparison with the control group (* $P<0.05$). No significant increase was detected in the free-VEGF group. Data are presented as mean \pm SEM. Scale bars: 50 μm .

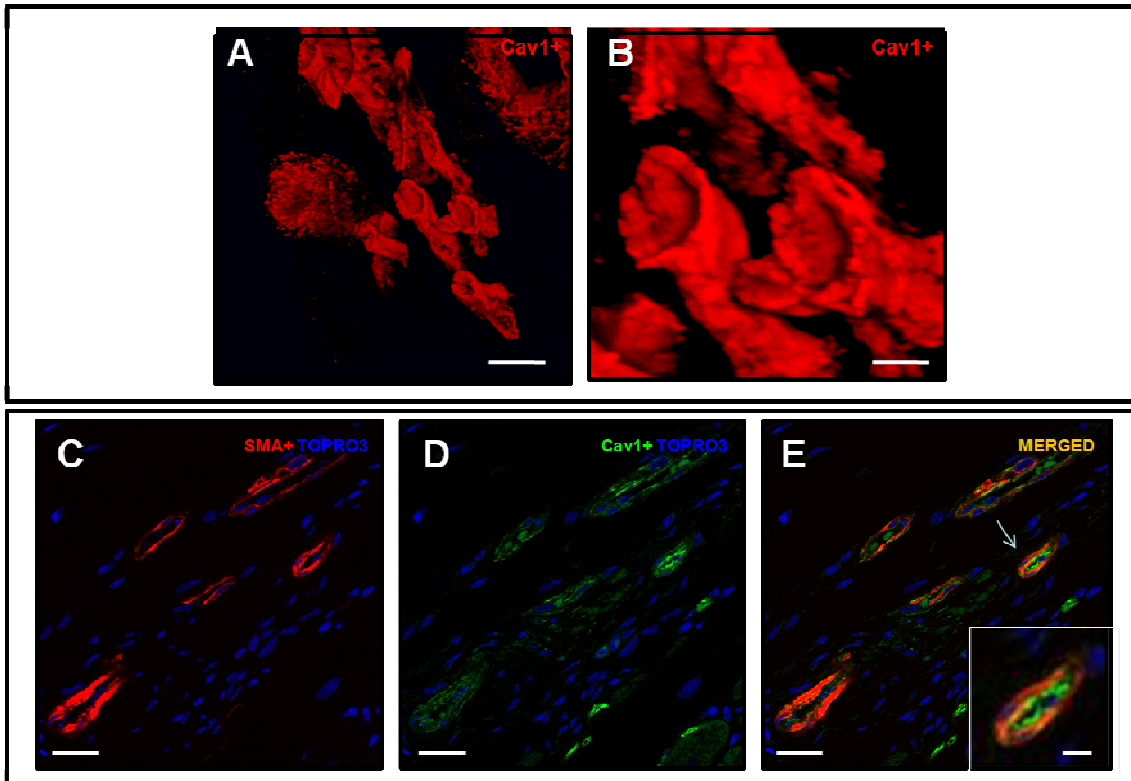


Figure 5: Vessel structure. A,B. Tri-dimensional views of caveolin-1-positive vessels in the VEGF-MP group. Note that the vessels display a regular endothelial structure. C-E. Representative pictures of α SMA-Cy3 (red) and Caveolin-1 (green) double immunostained vessels in VEGF-MP-treated heart sections, showing tightly contact between the smooth muscle and the endothelial cell layers. Nuclear staining was performed with TOPRO-3 (blue). Scale bars: 100 μ m (A), 400 μ m (B), 20 μ m (C-E), 5 μ m (E, insert).

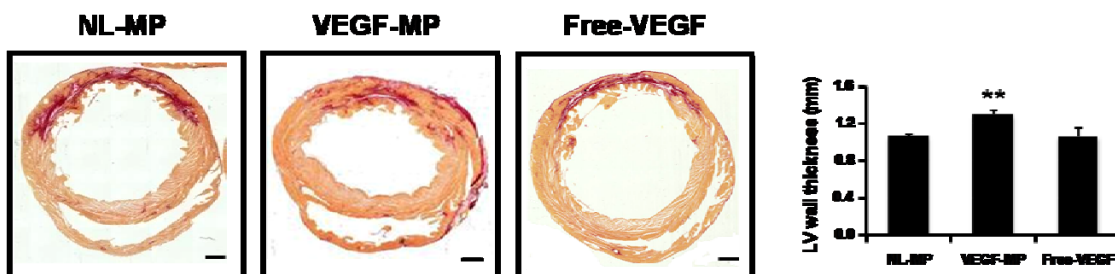


Figure 6: Heart remodeling. Representative Sirius red stained heart sections show greater thickness of the LV wall of the VEGF-MP group in comparison with the NL-MP (control group) (** $P < 0.01$). No significant increase was detected in the free-VEGF treated group. Scale bars: 1 mm.

