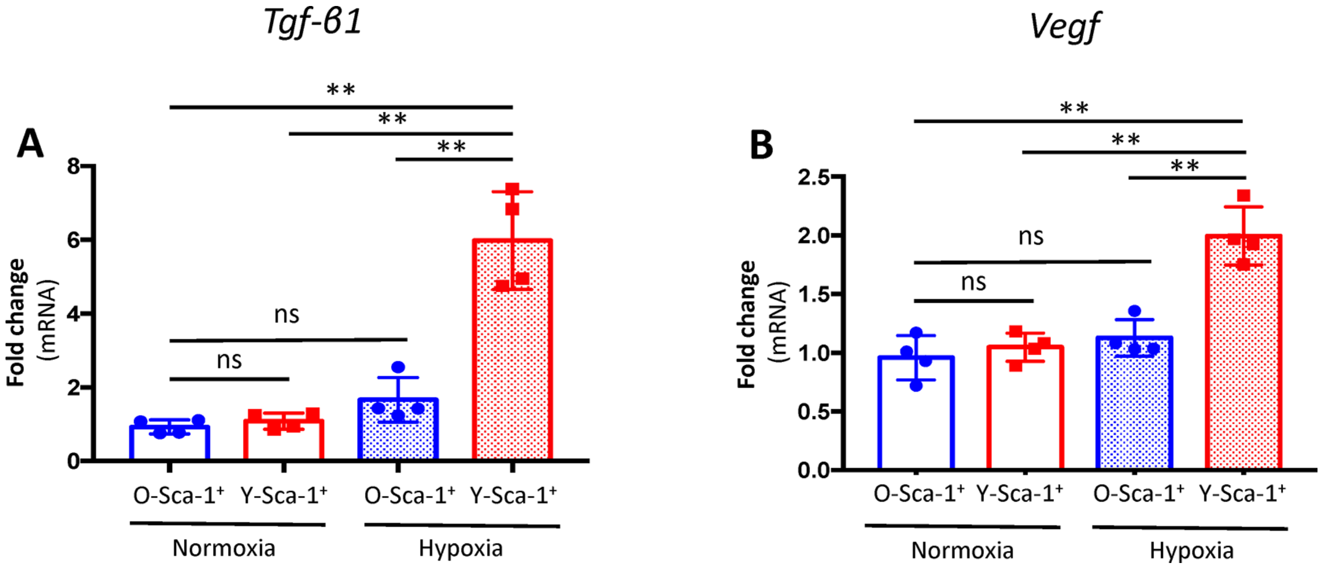
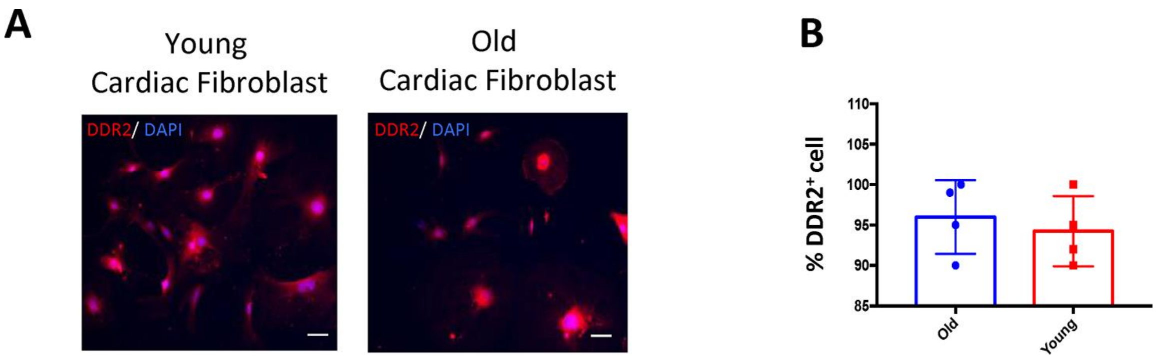
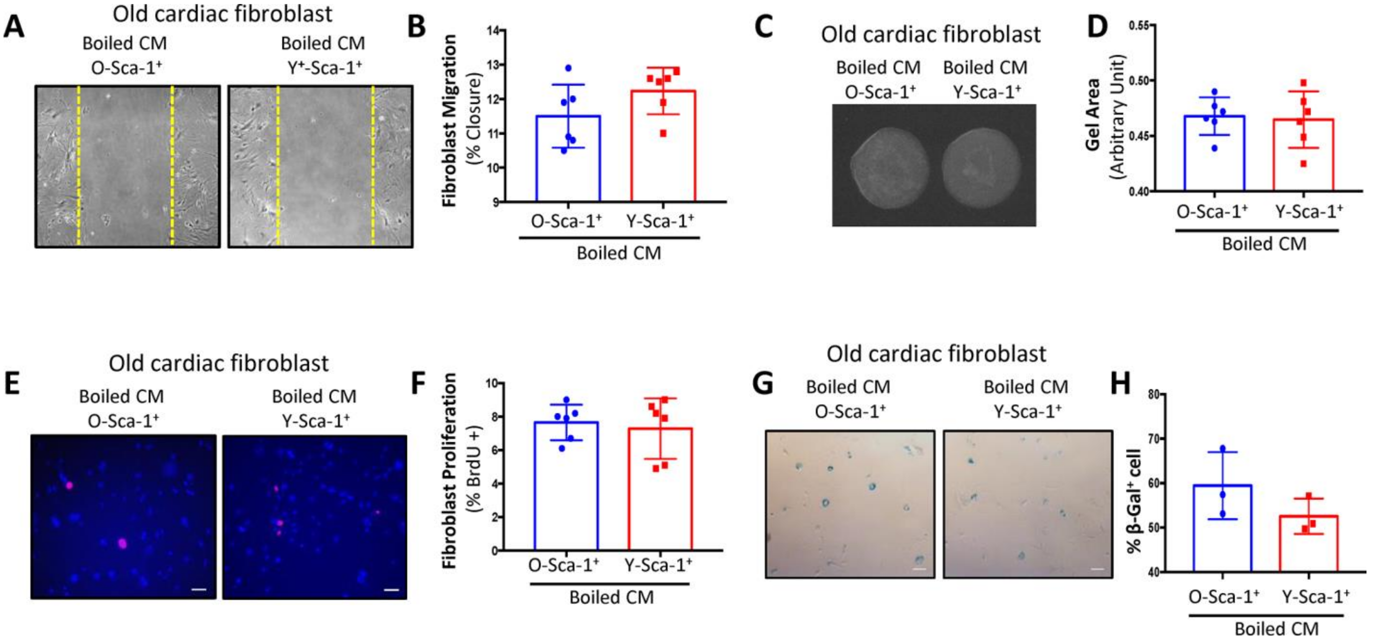
# SUPPLEMENTARY FIGURES



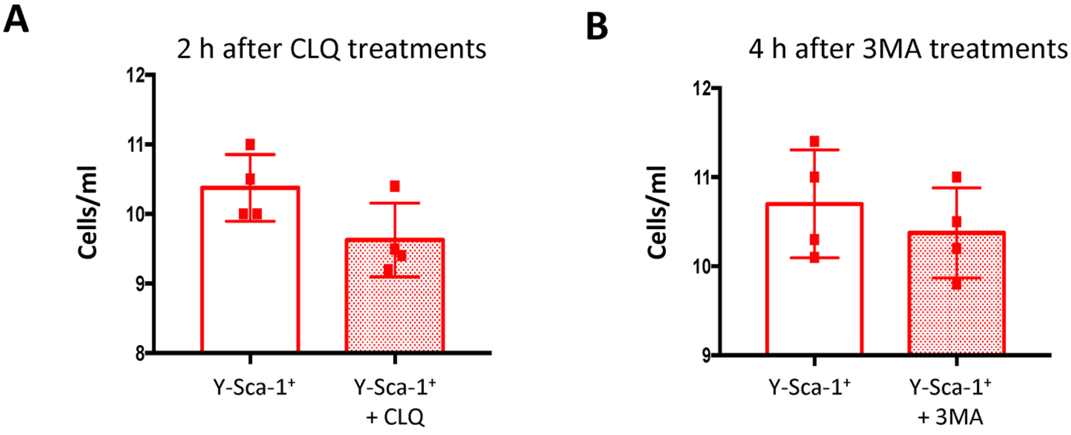
**Supplementary Figure 1.** *Tgf-β1* (**A**) *Vegf* (**B**) expression were measured in Y-Sca-1$^+$ and O-Sca-1$^+$ BMCs under normoxic and hypoxic conditions by qRT-PCR (n=4).



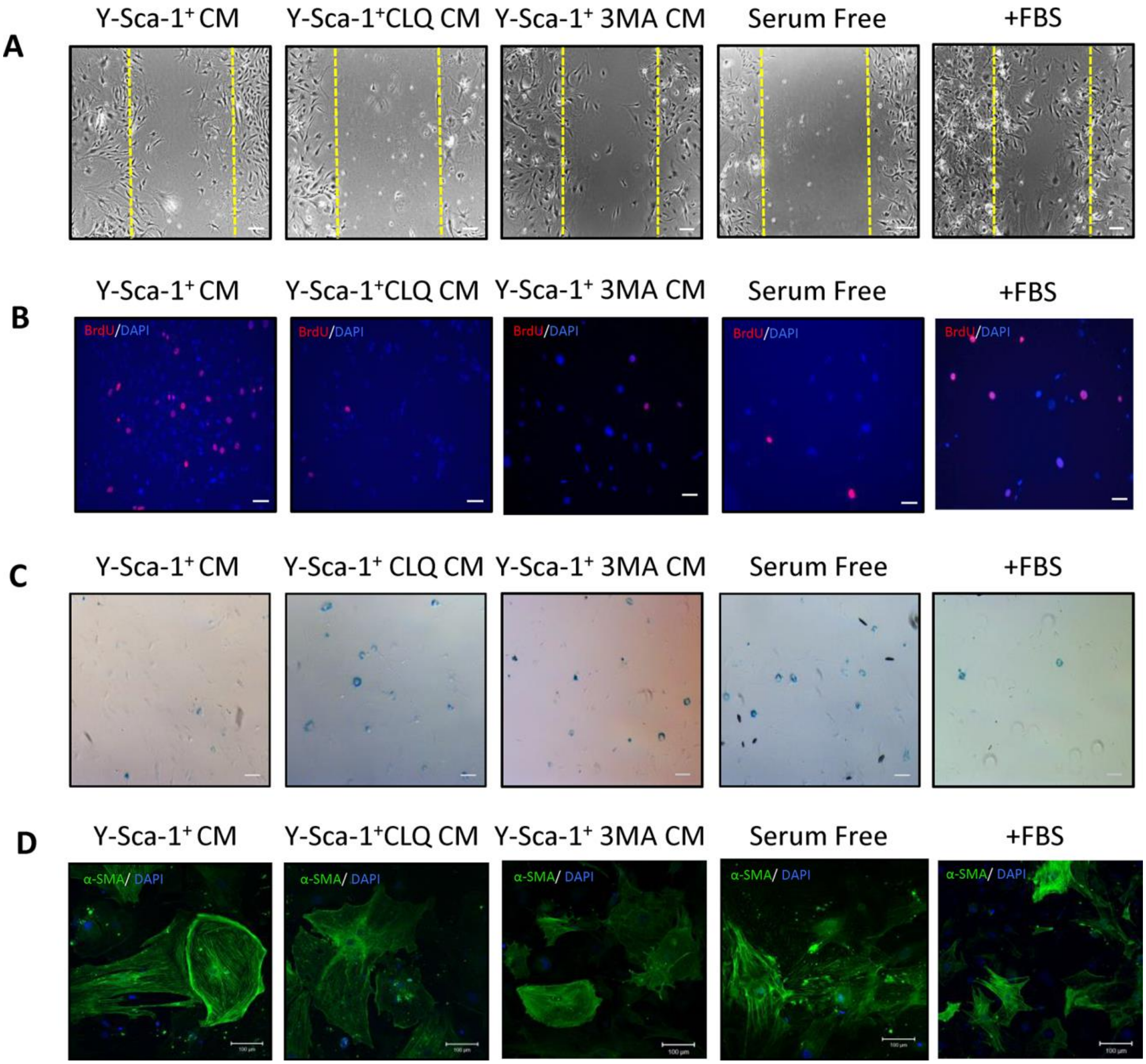
**Supplementary Figure 2. Fibroblast purity.** (**A**) Immunofluorescent staining was performed on old and young cardiac fibroblasts. DDR2 is shown in red and nuclei are in blue. Scale bar represents 50 µm. (**B**) The percentage of DDR2 positive cells normalized to the total cell number calculated. A t-test was used to analyze data. Data are presented as mean±SE; n=3-6.



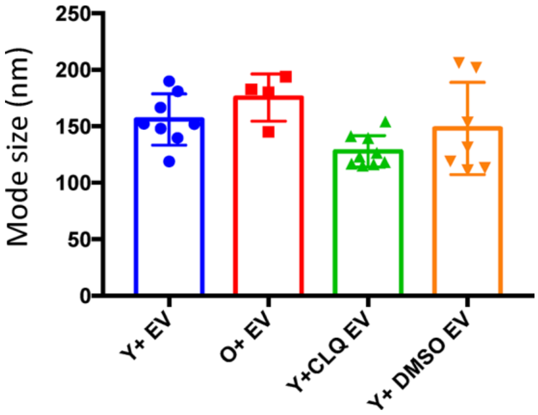
**Supplementary Figure 3. Heat inactivated conditioned medium (CM) from Y-Sca-1$^+$ BM cells did not stimulate autophagy in old cardiac fibroblasts.** (**A**) Representative images from a scratch wound assay of old cardiac fibroblasts treated with boiled Y-Sca-1$^+$ CM or boiled O-Sca-1$^+$ CM for 48 hours. The dashed yellow line indicates the wound edge at 0 hour. (**B**) The closing distances were measured using ImageJ. (**C**) Representative images of gels from a gel contraction assay of old cardiac fibroblasts treated with boiled Y-Sca-1$^+$ CM or boiled O-Sca-1$^+$ CM for 48 hours. (**D**) The gel area measured using ImageJ. (**E**) Representative images from a proliferation assay of old cardiac fibroblasts related with boiled Y-Sca-1$^+$ CM or boiled O-Sca-1$^+$ CM for 24 hours. (**F**) The percentage of BrdU positive cells to total cell number calculated. (**G**) Representative images of β-galactosidase$^+$ old cardiac fibroblasts treated with boiled Y-Sca-1$^+$ CM or boiled O-Sca-1$^+$ CM for 48 hours. (**H**) The percentage of β-galactosidase$^+$ cells to total cell number calculated. A t-test was used to analyze data. Data are presented as mean±SEM; n=3-6.



**Supplementary Figure 4. CLQ treatment does not induce cell death.** (**A**) Y-Sca-1$^+$ BM cells were counted after 2 hours of CLQ treatment and (**B**) Y-Sca-1$^+$ BM cells were counted after 4 hours of 3MA treatment. A t-test was used to analyze the data. Data are presented as mean±SEM.



**Supplementary Figure 5. Y-Sca-1$^+$ BM cell autophagy regulates the beneficial effects of Y-Sca-1$^+$ CM on cardiac fibroblast function.** (**A**) Representative images from a scratch wound assay of old cardiac fibroblasts treated with Y-Sca-1$^+$ CM, Y-Sca-1$^+$ CLQ CM, Y-Sca-1$^+$ 3MA CM, serum free media or full medium (+FBS) for 48 hours. The dashed yellow line indicates the wound edge at 0 hour. (**B**) Representative images from a proliferation assay of old cardiac fibroblasts treated with Y-Sca-1$^+$ CM, Y-Sca-1$^+$ CLQ CM Y-Sca-1$^+$ 3MA CM, serum free media or full medium (+FBS) for 24 hours. (**C**) Representative images of β-galactosidase$^+$ old cardiac fibroblasts treated with Y-Sca-1$^+$ CM, Y-Sca-1$^+$ CLQ CM Y-Sca-1$^+$ 3MA CM, serum free media or full medium (+FBS) for 48 hours. (**D**) Representative images from α-SMA staining of old cardiac fibroblasts treated with Y-Sca-1$^+$ CM, Y-Sca-1$^+$ CLQ CM Y-Sca-1$^+$ 3MA CM, serum free media or full medium (+FBS) for 24 hours. Scale bar represents 100 µm.



**Supplementary Figure 6. EV analysis from Y- and O-Sca-$1^+$ BMCs.** EV mode size of EVs isolated from CM harvested from Y-Sca-$1^+$ ($Y^+$ EV); O-Sca-$1^+$ ($O^+$ EV); Y-Sca-$1^+$ +CLQ (Y+CLQ) and, Y-Sca-$1^+$ +DMSO (Y+DMSO). One-way ANOVA was used to analyze data. Data presented as means ±SEM; n=4-8.