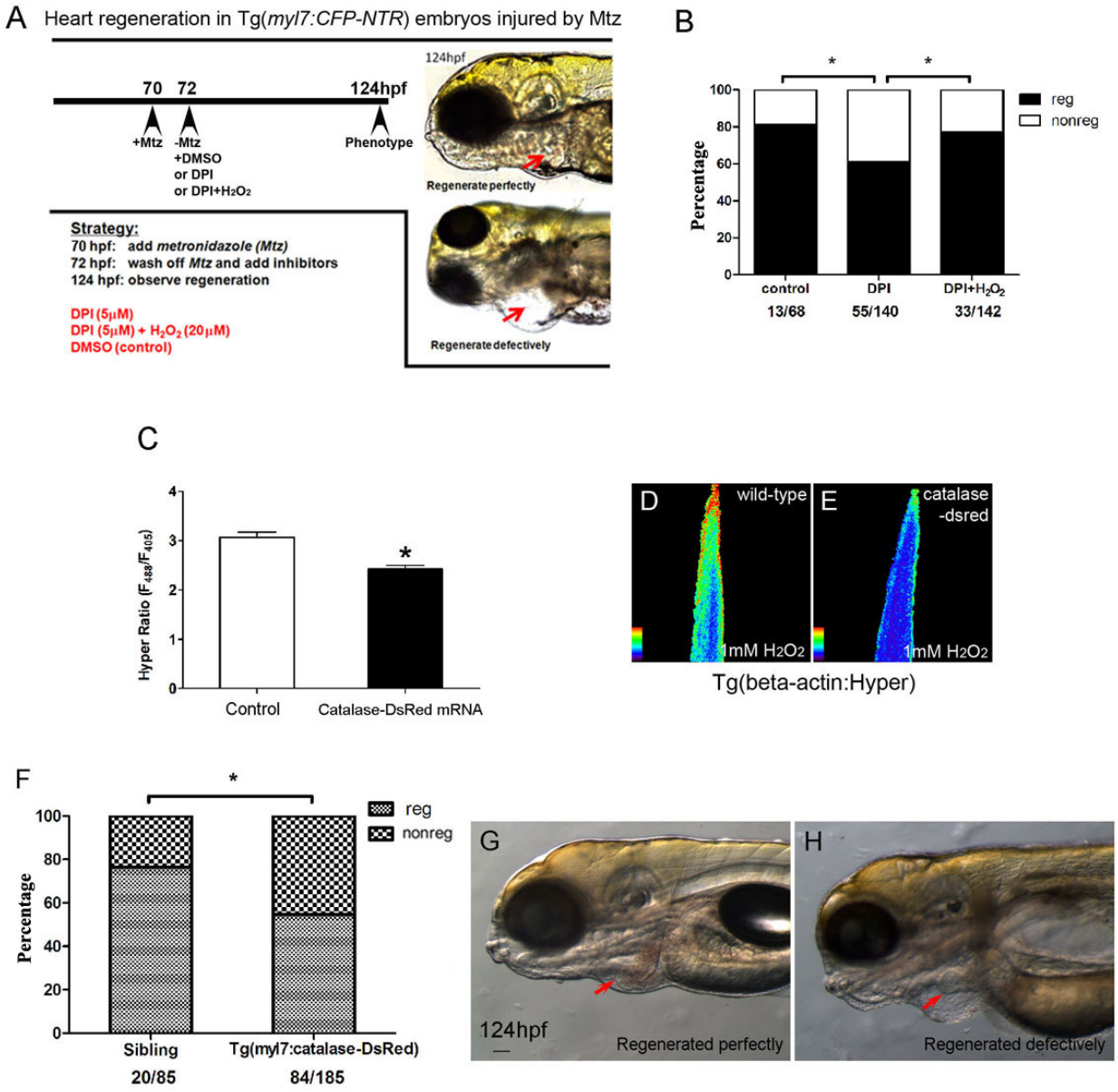

Supplementary information, Figure S13. Exogenous H_2O_2 rescued, while transgenic over-expression of catalase-DsRed suppressed, embryonic heart regeneration. (A-B) A nontoxic metronidazole (Mtz) induced cardiomyocyte death in Tg(*myl7*:CFP-NTR) transgenic embryos, where Mtz was converted into a toxic DNA crosslinking product by nitroreductase (NTR) (A). Our Mtz inducing protocol includes 1) add Mtz at 70 hpf, 2) wash off Mtz and add DMSO or DPI or DPI and H_2O_2 at 72 hpf, and 3) document well-regenerated and non-regenerated embryos at 124 hpf. DPI inhibited cardiac regeneration (55/140=percentage of non-regenerated embryos), which was partially rescued by adding exogenous H_2O_2 (33/142), compared with control embryos (13/68) (B). (C-E) Transient over-expression of catalase-DsRed mRNA reduced Hyper ratio in Tg(*β-actin*:Hyper) transgenic embryos (E), compared with control embryos (D) at 48 hpf,

of which both were treated with 1 mM H_2O_2. Statistics of the Hyper ratio was shown (C). (F-H) A compound Tg(*myl7*:CFP-NTR); Tg(*myl7*:catalase-DsRed) transgenic embryos were sorted based on double CFP and DsRed fluorescence, and then subjected to Mtz-induced myocardial injury as the above. Note more non-regenerated embryos in double Tg(*myl7*:CFP-NTR); Tg(*myl7*:catalase-DsRed) transgenic embryos (84/185=percentage of non-regenerated embryos), compared to Tg(*myl7*:CFP-NTR) transgenic siblings (20/85) (F). (G-H) Bright-field images of fully regenerated (G) and defective Tg(*myl7*:catalase-DsRed);Tg(*myl7*:CFP-NTR) embryos (H). * Statistic significance between the two groups with Chi-square test. Red arrows pointed to the heart. Scale bar: 100 μm.