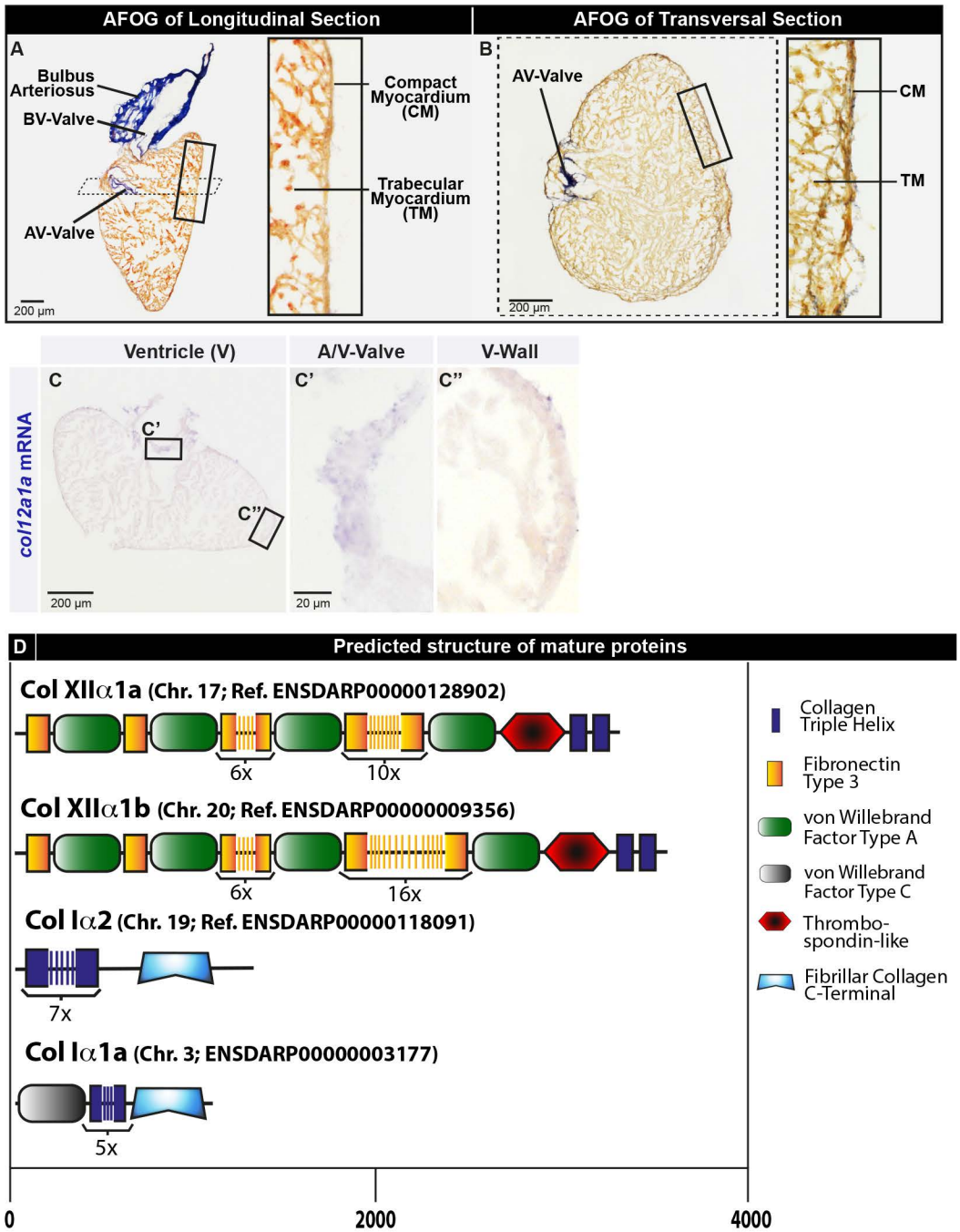
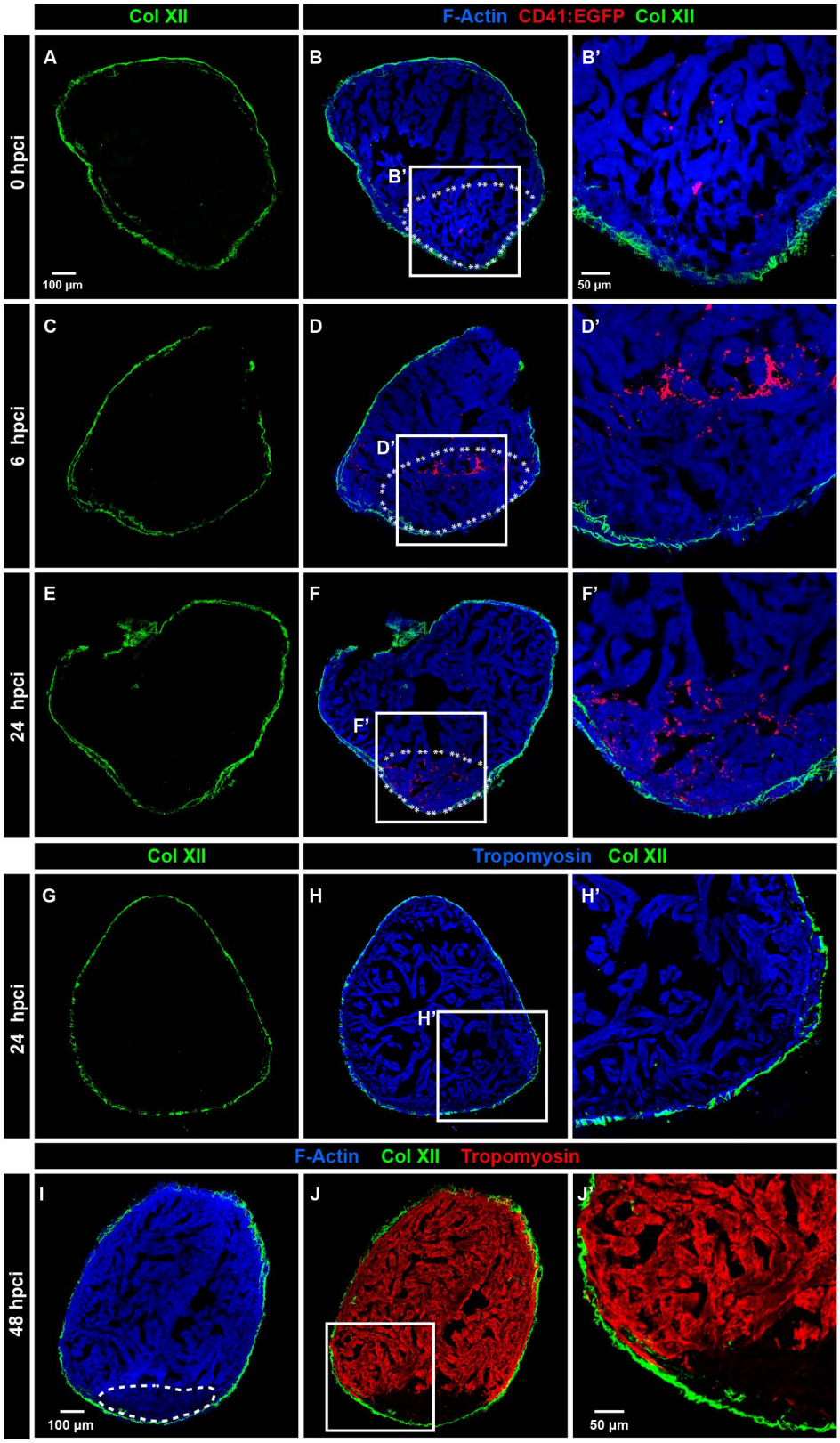


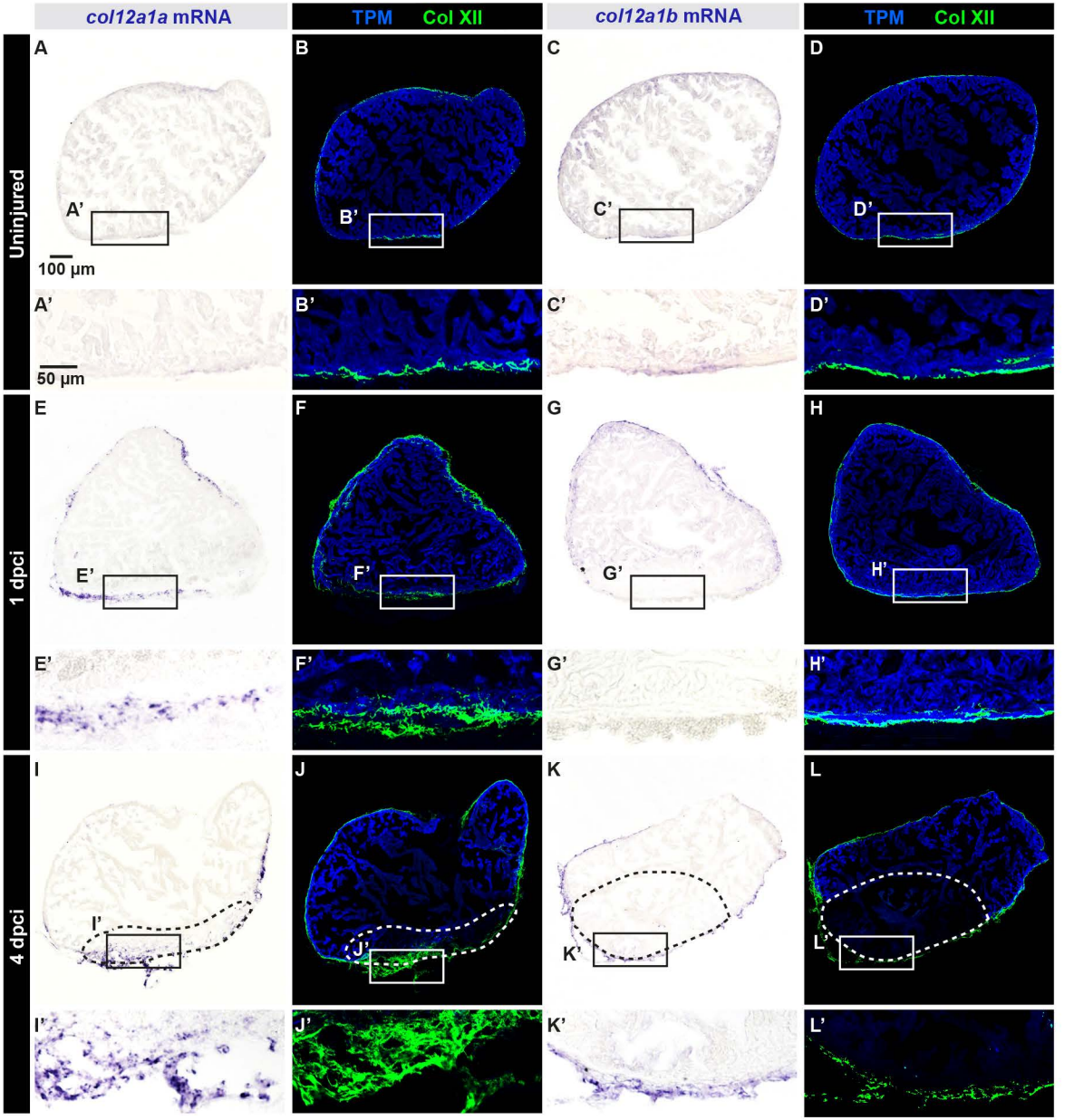
S1 Fig. The adult zebrafish heart and its collagenous components.
(A-B) Aniline blue, acid Fuchsin and Orange G (AFOG) histological staining demarcates the muscle of the ventricle (orange) and non-muscular structures that are rich in collagen (blue). (A) The longitudinal section of the zebrafish heart shows a pyramidal shape of the ventricle and peer-shaped bulbus arteriosus of the outflow tract. The atrium is not included in the section, but the atrio-ventricular valve is visible.
(B) Transversal section of the zebrafish ventricle at the level of the atrio-ventricular valve.
Magnified images of the ventricular wall (framed areas) reveal an outer layer of a compact myocardium, which surrounds the main spongy (trabecular) myocardium. Little collagen (blue) is visible in the epicardium.
(C) In-situ hybridization of the heart ventricle display a weak expression of *col12a1a* in the uninjured zebrafish heart.
(D) Predicted mature protein structures of zebrafish FACIT collagens: Collagen XII alpha 1a (Col XIIα1a) and Collagen XII alpha 1a (Col XIIα1b); and fibril-forming collagens: Collagen I alpha 1a (Col Iα1a) and Collagen I alpha 2 (Col Iα2), based on the conserved domain analysis of the annotated genes in the public database.
Pre-pro-peptide sequences are not shown.

S2 Fig

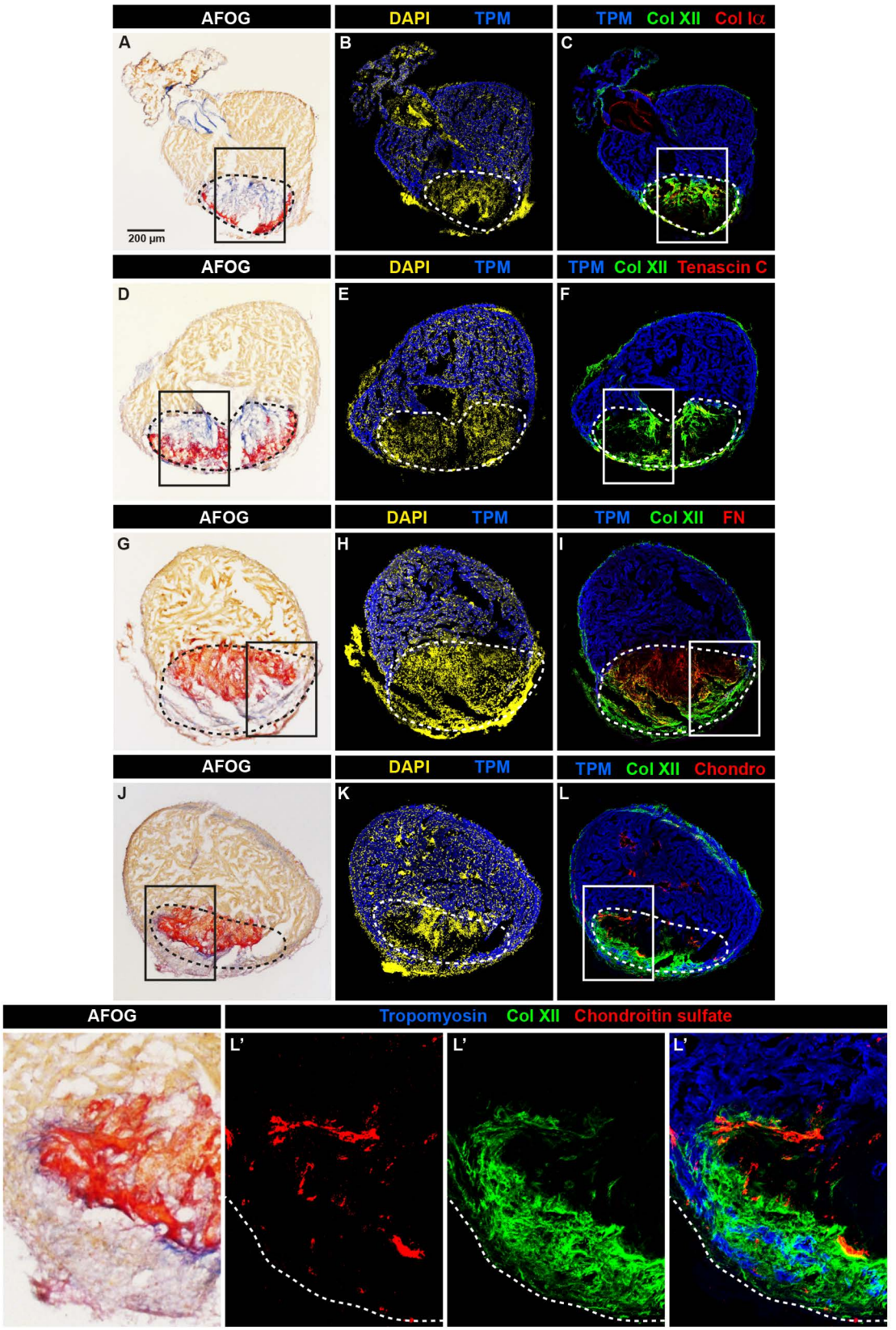


S2 Fig. Croyinjury does not damage the pre-exisiting Col XII protein in the epicardium.
(A-F') Immunofluorescence imaging of the cryoinjured hearts of transgenic fish *Tg(CD41:GFP)* that visualizes thrombocytes (false colored red). The site of injury is demarcated by the accumulation of thrombocytes. The injured area does not display any change of muscle protein F-Actin (Phalloidin, blue) and epicardial Col XII (green). Dashed line surrounds the predicted injured zone based on the presence of thrombocytes. Within 24 hpci, the expression of ColXII remains unaltered.
(G-H') At 24 hpci, hearts displayed unaltered expression of the cytoskeletal protein Trompoyosin (blue) in the muscle and Col XII (green) in the epicardium.
(I-J') At 48 hpci, the injured myocardium can be detected by the lower levels of F-Actin (detected by Phalloidin, blue) and complete absence of Tropomyosin (TPM, red).
Col XII-positive fibrils in the epicardium remain unaltered around the cryinjured zone.

S3 Fig

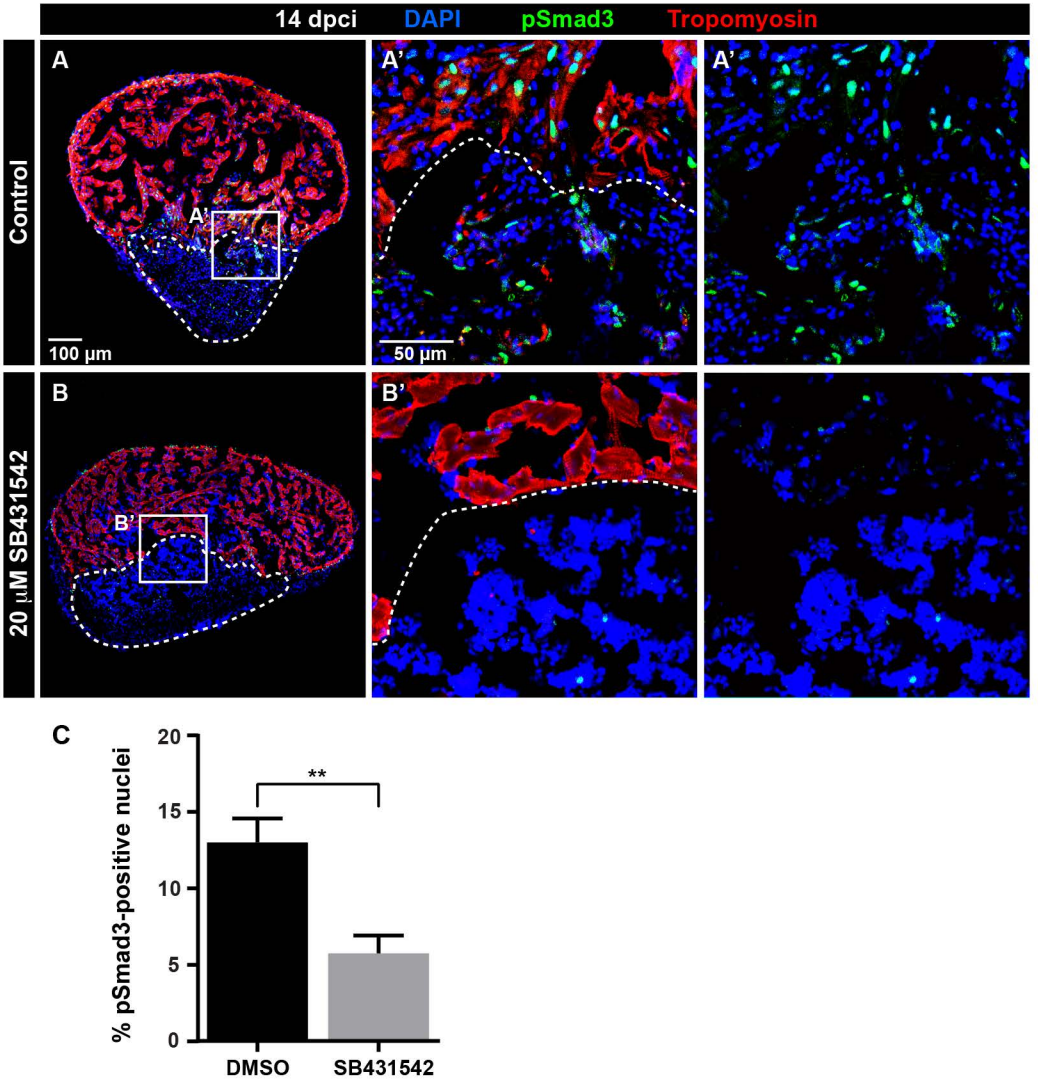


S3 Fig. *col12a1a*-expressing cells accumulate at the site of injury at the onset of heart regeneration.
(A-K) In-situ hybridization of heart sections at early time points after cryoinjury with probes of two *col12* paralogs (purple) followed by immunofluorescence staining against Tropomyosin (blue) and Col XII (green).
(A-D) Uninjured hearts do not markedly express *col12a1a*, but *col12a1b* in the epicardium, which is surrounded by the Col XII deposition. (E-G) At 1 dpci, *col12a1a*-expressing cells cover the circumference of the injured heart, while original *col12a1b*-postive cells were destroyed at the cryoinjury site.
Col XII persists at the epicardium at the side of injury.
(I-L) At 4 dpci, *col12a1a*- and *col12a1b*-expressing cells accumulate at the surface of the injury site.
The gene expression correlates with the localization of Col XII protein.



S4 Fig. Complete ventricle sections that were used for analysis of fibrotic tissue at 14 dpci in Figure 5.
(A-I) The framed areas correspond to the selected regions that are shown at higher magnification in Figure 5. Dashed line encircles the fibrotic tissue.
(J-L') Chondroitin sulfate (red) does not markedly co-localize with Col XII (green).

S5 Fig



S5 Fig. Treatment with 20 μM SB431542 reduces the activity of the TGFβ signaling pathway in injured hearts. (A, B) Immunofluorescence imaging of the control cryoinjured hearts detects the presence of pSmad3-positive cells within the peri-injured myocardium (Tropomyosin-positive area, red) and fibrotic tissue (encircled by a dashed line). Exposure to the inhibitor of TGFβ signaling (SB431542) markedly reduces the number of pSmad3 immunoreactivity. (C) Quantification of the pSmad3-positive cells shown as the percentage of DAPI-labeled nuclei. N = 6. ** P = 0.002.