## SUPPLEMENTARY MATERIALS

**SFigure 1 Analysis of Smad1/5/8 phosphorylation**

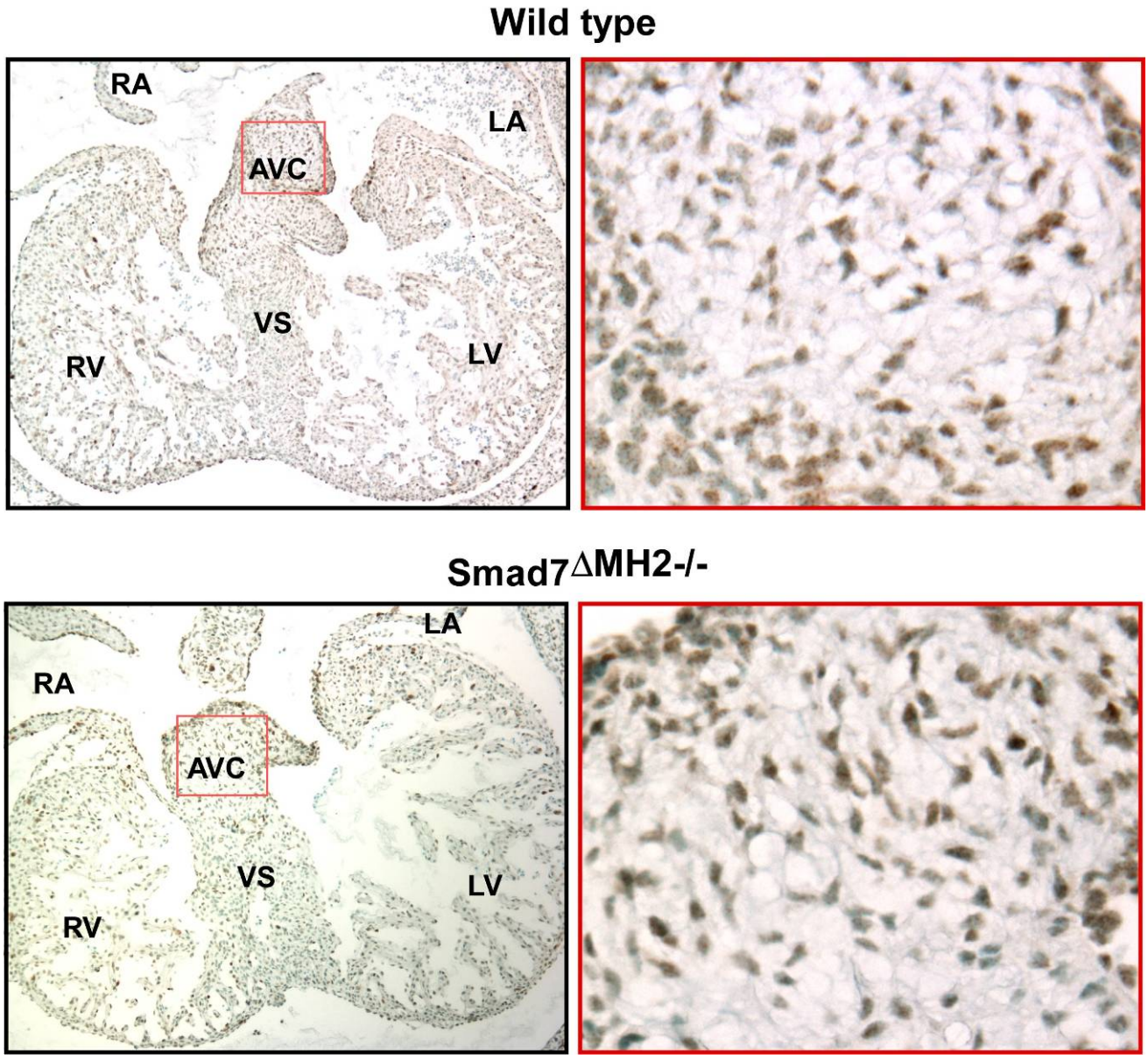
Immunohistochemical staining of heart sections at E11.5 with an antibody against phosphorylated Smad1/5/8 with counter-staining of methyl green. The cardiac cushion areas are amplified on the right. Abbreviations: RA for right atrium, LA for left atrium, AVC for atrioventricular cushion, RV for right ventricle, LV for left ventricle, and VS for ventricular septum.

**SFigure 2 Analysis of cell proliferation in Smad7$^{\Delta MH2-/-}$ mouse**

(A) Smad7$^{\Delta MH2-/-}$ embryos and wild-type controls at E12.5 were stained for BrdU (red) and the nuclei were counterstained with Hoechst 33342 (blue). Results of H/E staining with the same sections are shown in the lower panels. Note the increase of cell proliferation rate in Smad7$^{\Delta MH2-/-}$ mouse at right ventricular trabecula (marked by circles).

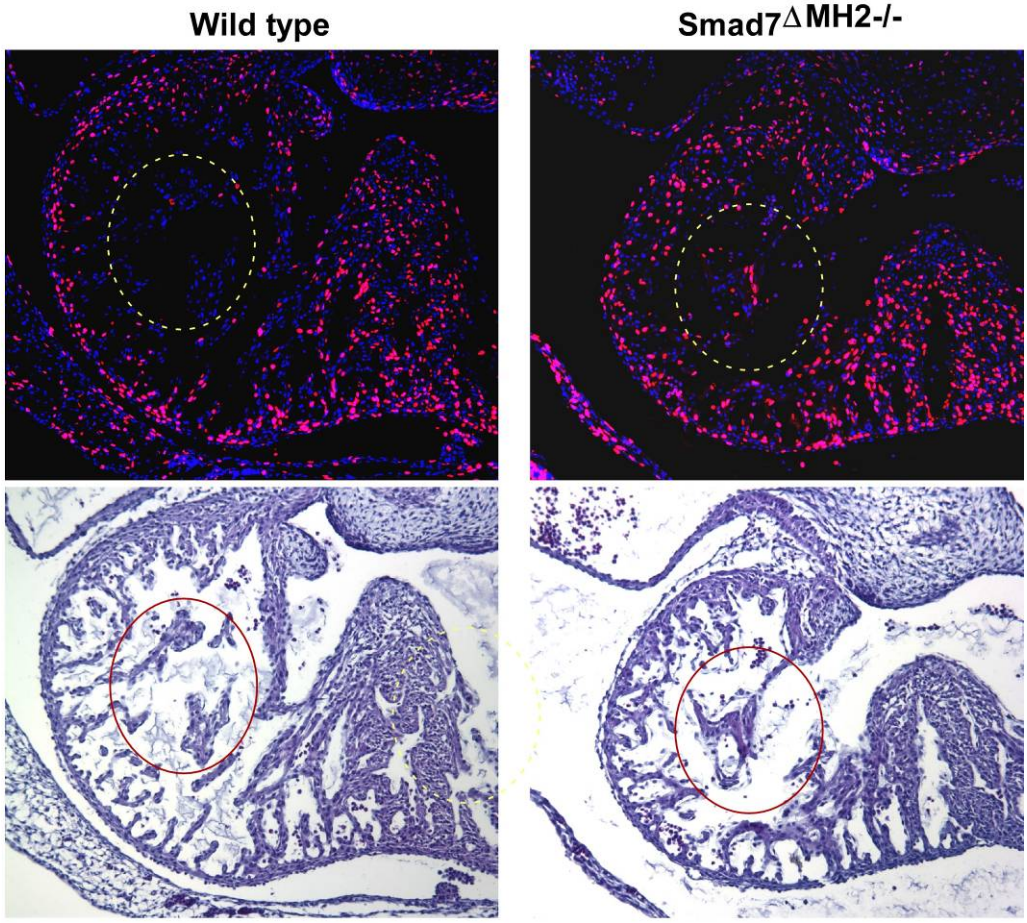
(B) The table illustrates detailed analysis of cell proliferation rate in different regions of the heart (n = 4 for both Smad7$^{\Delta MH2-/-}$ and wild type embryos). Cell proliferation rate was calculated as the ratio of BrdU-positive cells versus Hoechst-positives cells.

**SFigure 1**



**SFigure 2**

**A**




**B**

| | Area | Smad7$^{\Delta MH2}$ | Average | SD | p value |
|---|---|---|---|---|---|
| Right ventricle | Wall | wt | 0.304 | 0.051 | 0.213 |
| | | -/- | 0.342 | 0.043 | |
| | Trabecular | wt | 0.071 | 0.010 | 0.010 |
| | | -/- | 0.192 | 0.042 | |
| Left ventricle | Wall | wt | 0.317 | 0.059 | 0.746 |
| | | -/- | 0.343 | 0.098 | |
| | Trabecular | wt | 0.083 | 0.011 | 0.296 |
| | | -/- | 0.109 | 0.034 | |
| Cushion | Bottom | wt | 0.279 | 0.085 | 0.915 |
| | | -/- | 0.273 | 0.142 | |
| | Top | wt | 0.185 | 0.027 | 0.771 |
| | | -/- | 0.205 | 0.117 | |
| Septum | Middle | wt | 0.324 | 0.049 | 0.802 |
| | | -/- | 0.307 | 0.091 | |
| | Bottom | wt | 0.332 | 0.132 | 0.414 |
| | | -/- | 0.301 | 0.074 | |