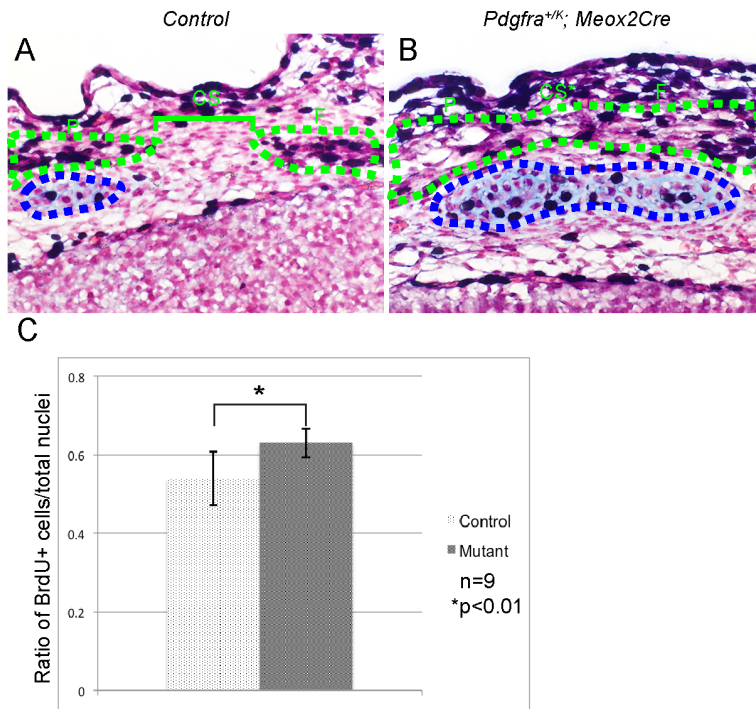
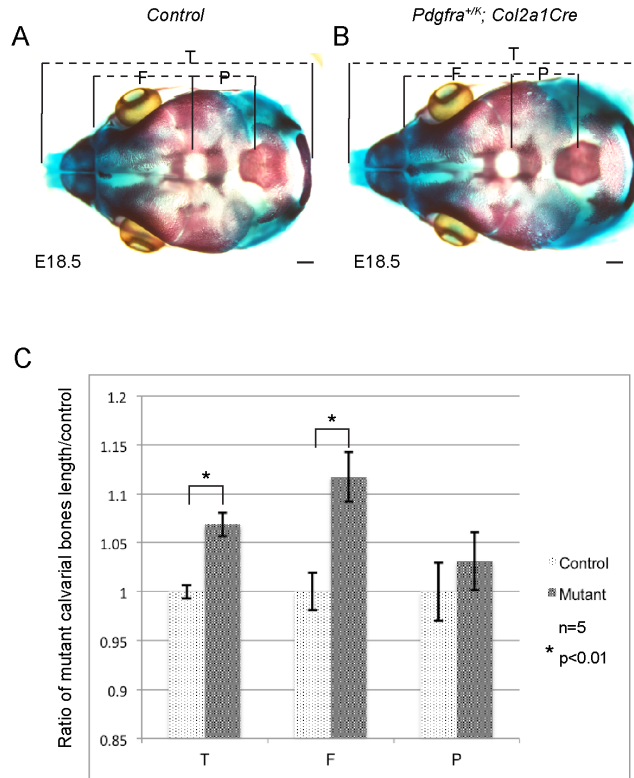


## Supplementary information



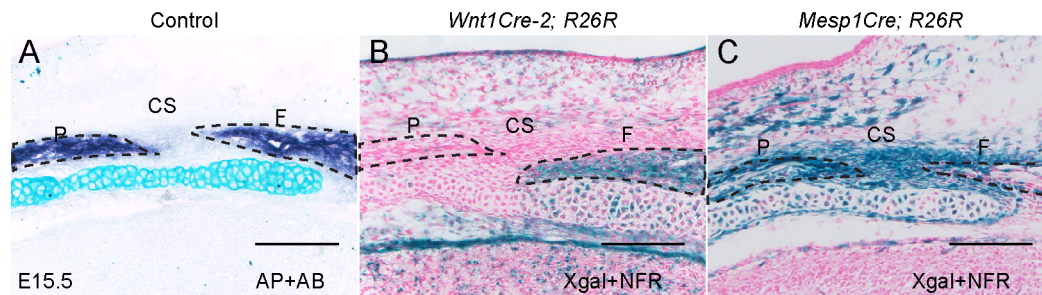
**Figure S1. BrdU labeling of coronal suture and the underlying cartilage in E13.5 embryos.**

(A, B) BrdU labeling on coronal sections of littermate control (A) (n=9) and *Pdgfra<sup>+K</sup>; Meox2Cre* (B) embryos (n=9) at E13.5. Sections were counterstained with alcian blue and NFR. (C) Quantification of the proliferation rate of chondrocytes underlying the coronal suture (circled area by blue dashed lines in A and B). Data are presented as mean ± SEM and subjected to double tailed Student's t-tests. CS, coronal suture; F, frontal bone; P, parietal bone.



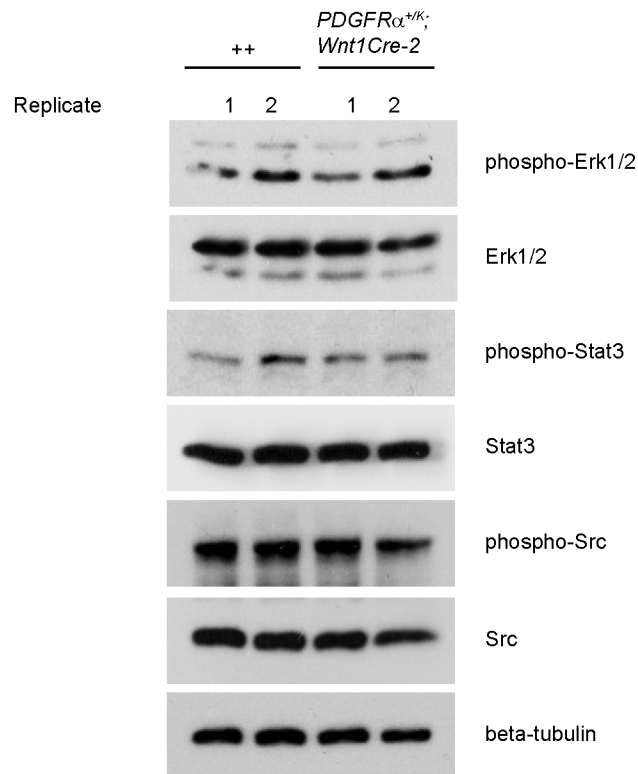
**Figure S2. Skeletal preparations of littermate control and *Pdgfra*<sup>+K</sup>; *Col2a1Cre* at E18.5.**

Dorsal views of skeletal preparations of E18.5 littermate control (A) (n=6) and *Pdgfra*<sup>+K</sup>; *Col2a1Cre* (B) (n=5) calvaria. (C) Quantification and statistical analysis of littermate control and *Pdgfra*<sup>+K</sup>; *Col2a1Cre* skull morphometry. Data are presented as mean  $\pm$  SEM and subjected to double tailed Student t-tests. F, frontal bone; P, parietal bone; and T, total length. Bones are stained with alizarin red, and cartilages are stained with alcian blue. Scale bar=0.5mm.



**Figure S3. Lineage tracing of the cartilage cells underlying the coronal sutures in E15.5 embryos.**

(A) Double staining of AP and AB on coronal section of E15.5 wild type embryo (n=3) across the coronal sutures. (B, C) X-gal staining showing *LacZ* reporter expression (blue) on coronal sections at the same level from E15.5 *Wnt1Cre-2; R26R* (B) (n=3) and *Mesp1Cre; R26R* (C) (n=3) embryos counterstained with NFR. CS, coronal suture; F, frontal bone; P, parietal bone. Scale bars: 50 μm.



**Figure S4. Activity of PDGFR $\alpha$  downstream signaling pathways in FNP lysates.**

Western blot of phospho-Erk1/2, Erk1/2, phospho-Stat3, Stat3, phospho-Src, Src and  $\beta$ -tubulin in primary culture of frontonasal prominence cells generated from E11.5 littermate control and *Pdgfra*<sup>+K</sup>; *Wnt1Cre-2* embryos.