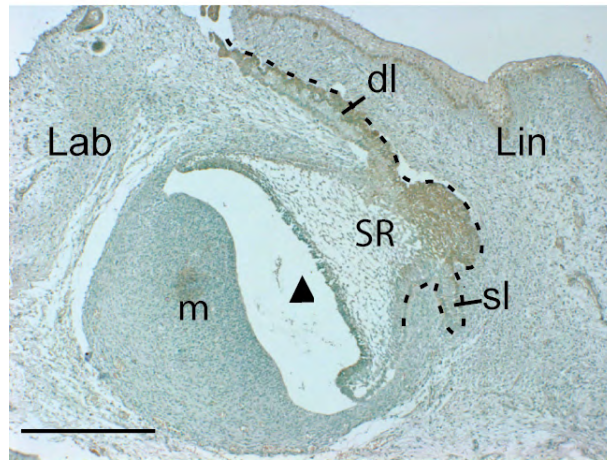
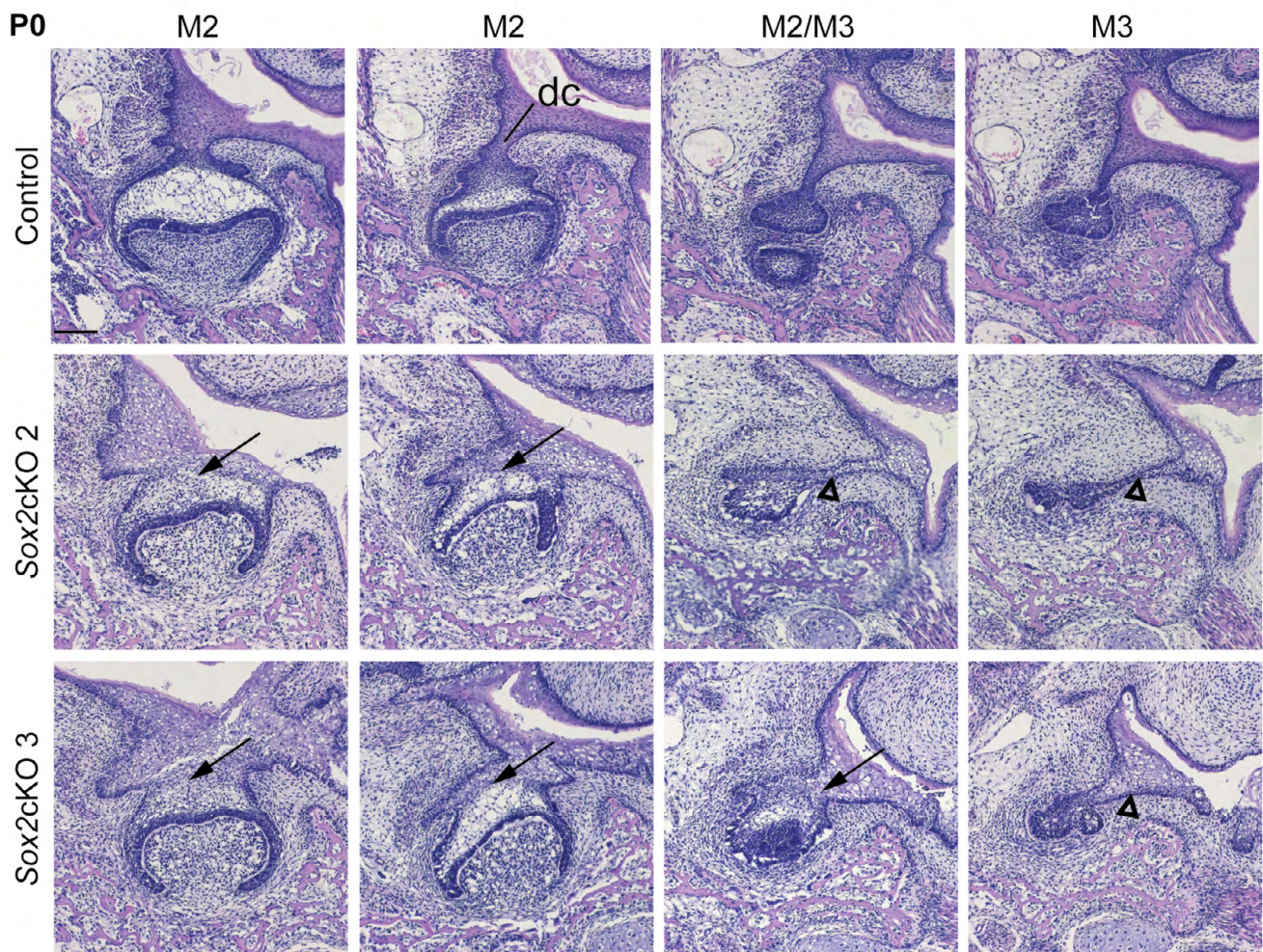


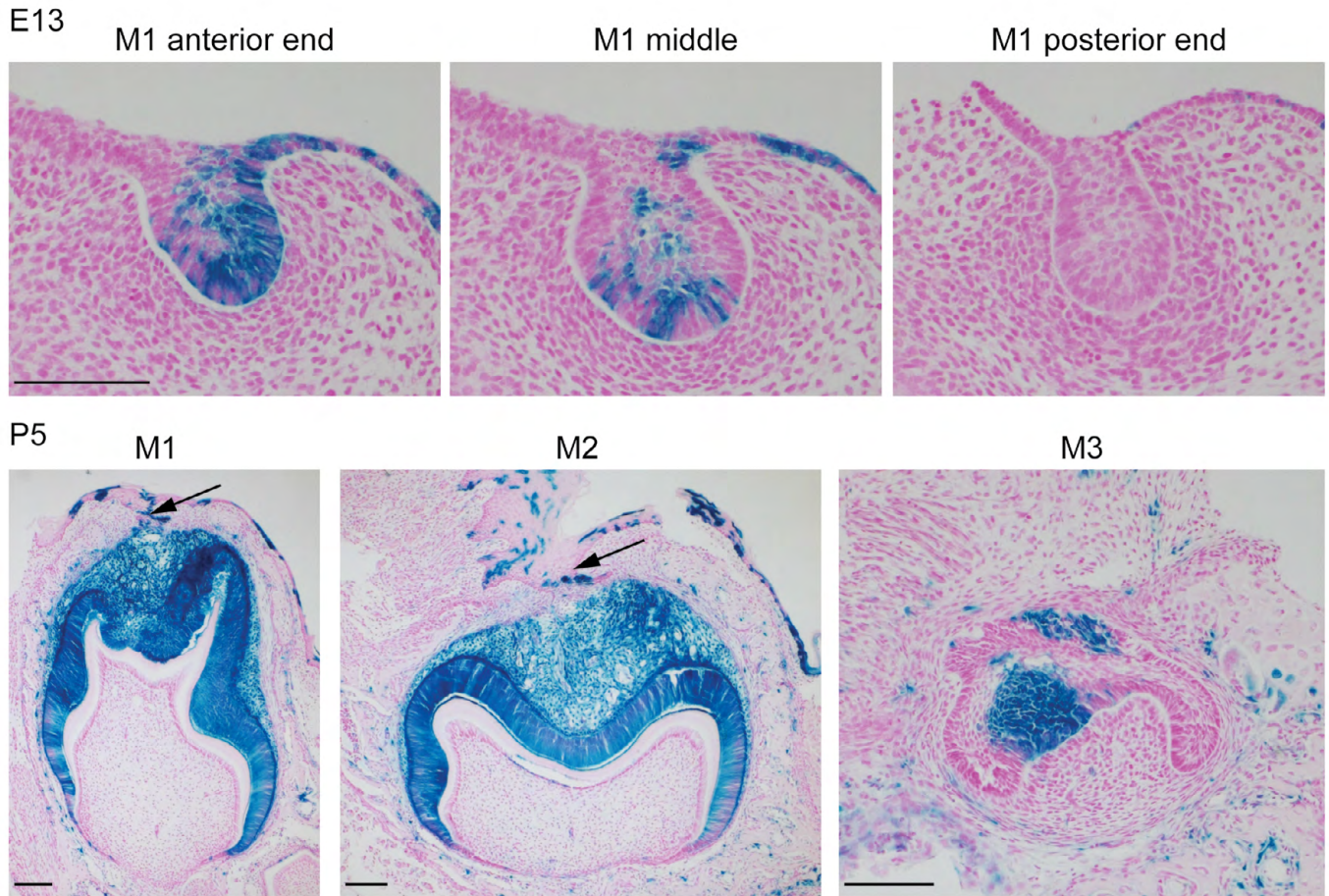
## Human



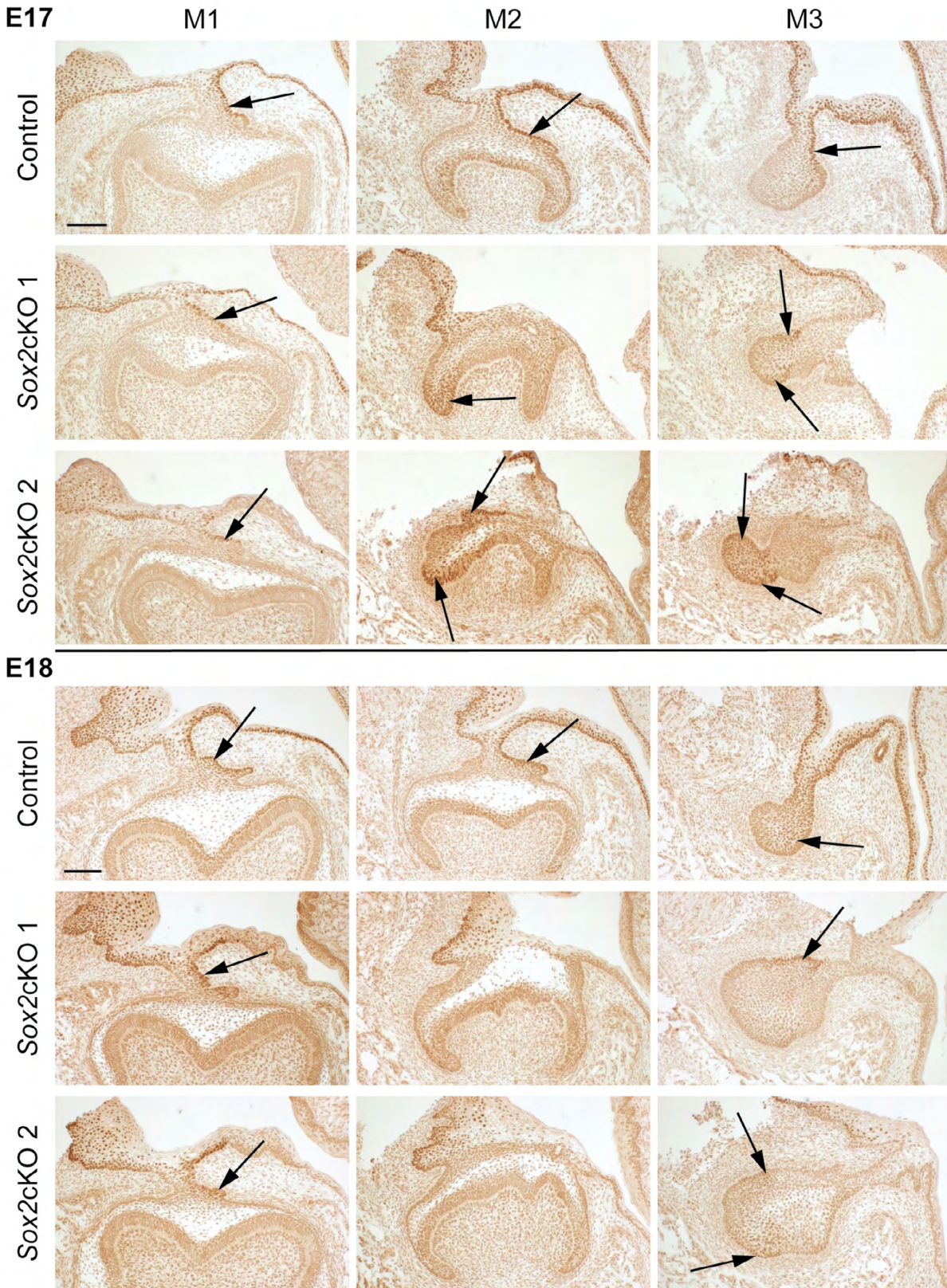
**Fig. S1. Related to Fig. 3. Localization of SOX2 expression in dental epithelium in human tooth replacement.** Localization of SOX2 protein in human deciduous premolar at 13 weeks of gestation. SOX2 expression localizes to the lingual side of the dental lamina connecting the tooth to oral epithelium. SOX2 expression is absent from the successional dental lamina. Black arrowhead points to artefactual splitting between epithelial and mesenchymal tissues. Lab, labial; Lin, lingual; m, mesenchyme; sl, successional dental lamina; SR, stellate reticulum. Scale bar: 100  $\mu$ m.



**Fig. S2. Related to Fig. 7. Conditional deletion of Sox2 leads to aberrant epithelial morphology in M2 and M3.** Hematoxylin and eosin-stained serial frontal sections of mandibular molars of control and two *Sox2cKO* mice at P0. In the *Sox2cKO* M2 the dental cord is expanded (arrows) and the dental lamina of M3 is elongated (arrowheads). Dc, dental cord. Lingual is towards the right side of the pictures. Scale bar: 100  $\mu$ m.



**Fig. S3. Related to Fig. 7. Confirmation of *Shh::GFPCre* recombinase activity using *Shh::GFPCre;R26<sup>lacZ</sup>* mice.** Frontal sections of X-gal-stained molars of E13 and P5 *Shh::GFPCre;R26<sup>lacZ</sup>* mice. At E13, Cre recombinase activity decreases towards the posterior end of M1. At P5, both M1 and M2 dental epithelium show high recombinase activity whereas the dental cord (arrows), oral epithelium and M3 show a mosaic recombination pattern. Lingual is towards the right side of the pictures. Scale bars: 100  $\mu$ m.



**Fig. S4. Related to Fig. 7. Sox2 protein expression in Sox2cKO embryos.** Localization of Sox2 protein in frontal sections of mandibular molars of control and two Sox2cKO embryos at E17 and E18. Arrows point to most intense Sox2 expression in the dental epithelium. Lingual is towards the right side of the pictures. Scale bars: 100  $\mu$ m.