

Supplemental figures and supplemental figure legends

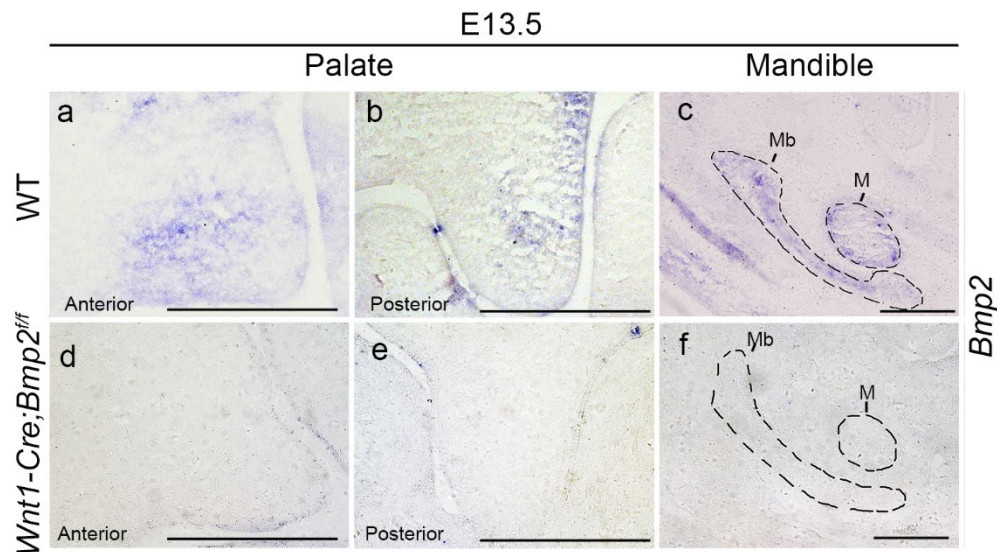


Figure S1. *Bmp2* is significantly reduced in the palate, mandibular bone and Meckel's cartilage but unaltered in the tongue of mutant mice. (a-h) Section in situ of *Bmp2*. (a-d) At E13.5 of wild type controls, *Bmp2* is expressed in the anterior palatal (a) as well as in the nasal side palatal mesenchyme and the medial edge epithelium (MEE) region in the posterior palate (b). *Bmp2* is also detected in mandibular bone, Meckel's cartilage (c) and epithelium of tongue (arrow) (d). (e-h) At E13.5 of *Wnt1-Cre;Bmp2^{fl/fl}* mice, the expression of *Bmp2* is significantly reduced in palate (e, f), mandibular bone and Meckel's cartilage (g), but the signal is unaltered in the tongue (arrow) (h). Scale bars: 100 μ m

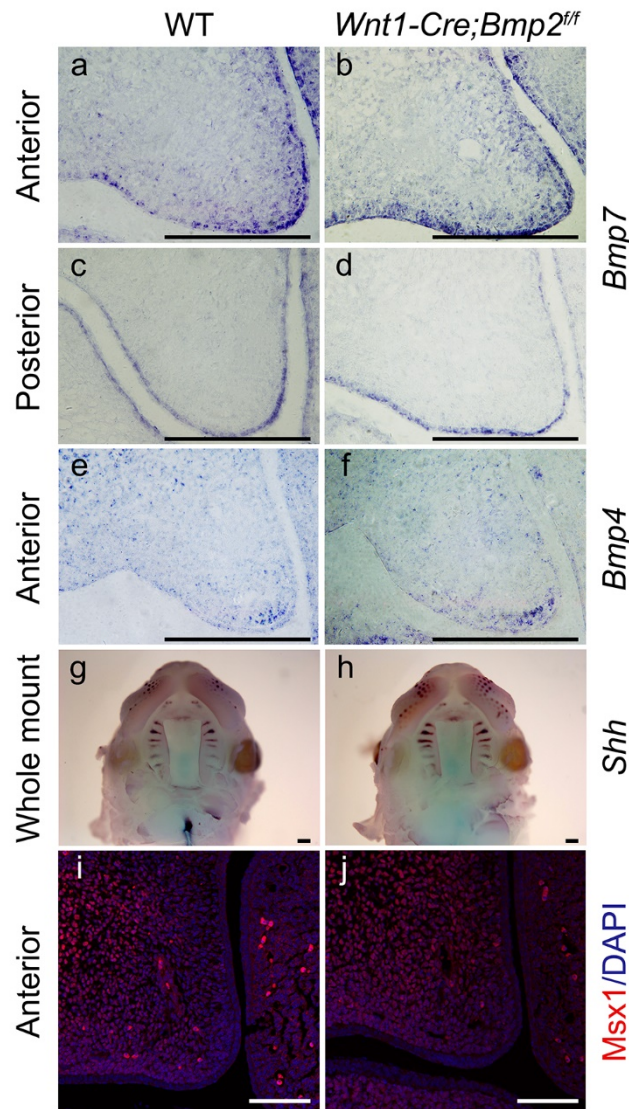


Figure S2. Expression of genes crucial to palate development in the wild type and *Wnt1-Cre;Bmp2^{ff}* mice at E13.5. (a-d) Section in situ of *Bmp7* and *Bmp4*. *Bmp7* is expressed in both the epithelium and mesenchyme in the anterior palatal shelves but only in the epithelium of the posterior palatal shelves. *Bmp4* is expressed in the anterior palatal mesenchyme underlying MEE in both control and mutant (e, f). Whole mount in situ of *Shh* shows the number and localization of rugae in E13.5 mutant is comparable to wide type controls (g, h). *Msx1* immunostaining (red) of wide type control (i) and mutant palate (j). *Msx1* is detected in the anterior palatal mesenchyme of wide type and mutant embryos. Scale bars: 100 μm (a-f, i, j), 500 μm (g, h).

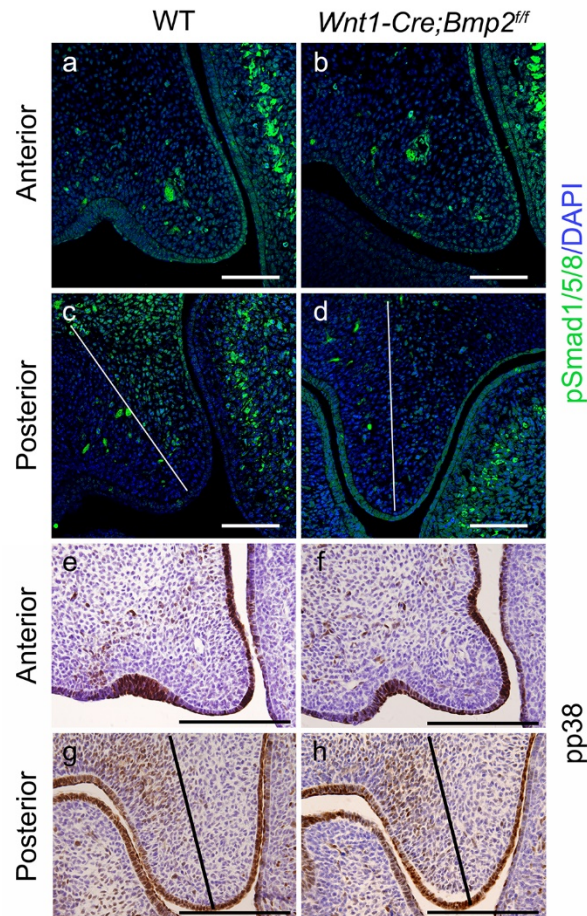


Figure S3. Signal transduction effectors of BMP signaling in the developing palate.

(a-d) At E13.5, pSmad1/5/8 are detected in both the anterior and posterior palatal shelves in the wild type and mutant. In the posterior palatal shelves of wild type, pSmad1/5/8 activity is mainly restricted in the mesenchyme of the future nasal side (c), but the pSmad1/5/8 signals become weakened in mutant embryo (d). (e, f) In wild type control, pp38 signal is at high level in the epithelium but is sparse in the mesenchyme in the anterior palate (e); in the posterior palate, pp38 activity is detected in the epithelium and in the oral side palatal mesenchyme. (f, h) In the mutant palate, comparable level of pp38 expression is found (g, h). The straight white line in c and d and straight black line in g and h divides the palatal shelves into nasal and oral halves.

Mb: Mandibular bone; M: Meckel's cartilage. Scale bars: 100 μ m.

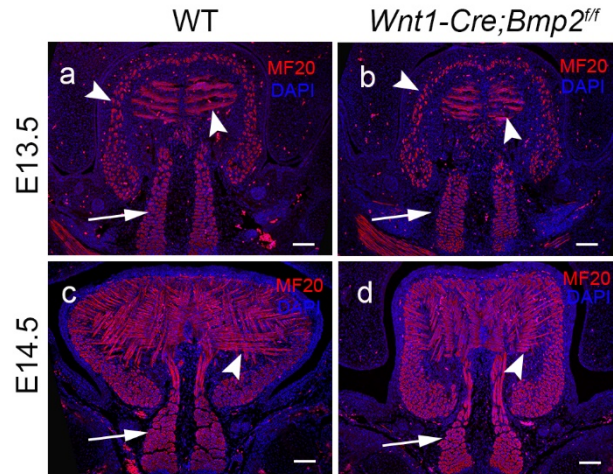


Figure S4. Differentiation are unaffected in *Wnt1-Cre;Bmp2^{ff}* tongues

MF20 immunostaining of coronal sections of E13.5-E14.5 control and *Wnt1-Cre;Bmp2^{ff}* tongues. Arrows point to the extrinsic muscles of the tongue, arrowheads point to the intrinsic muscles. Scale bars: 100 μ m