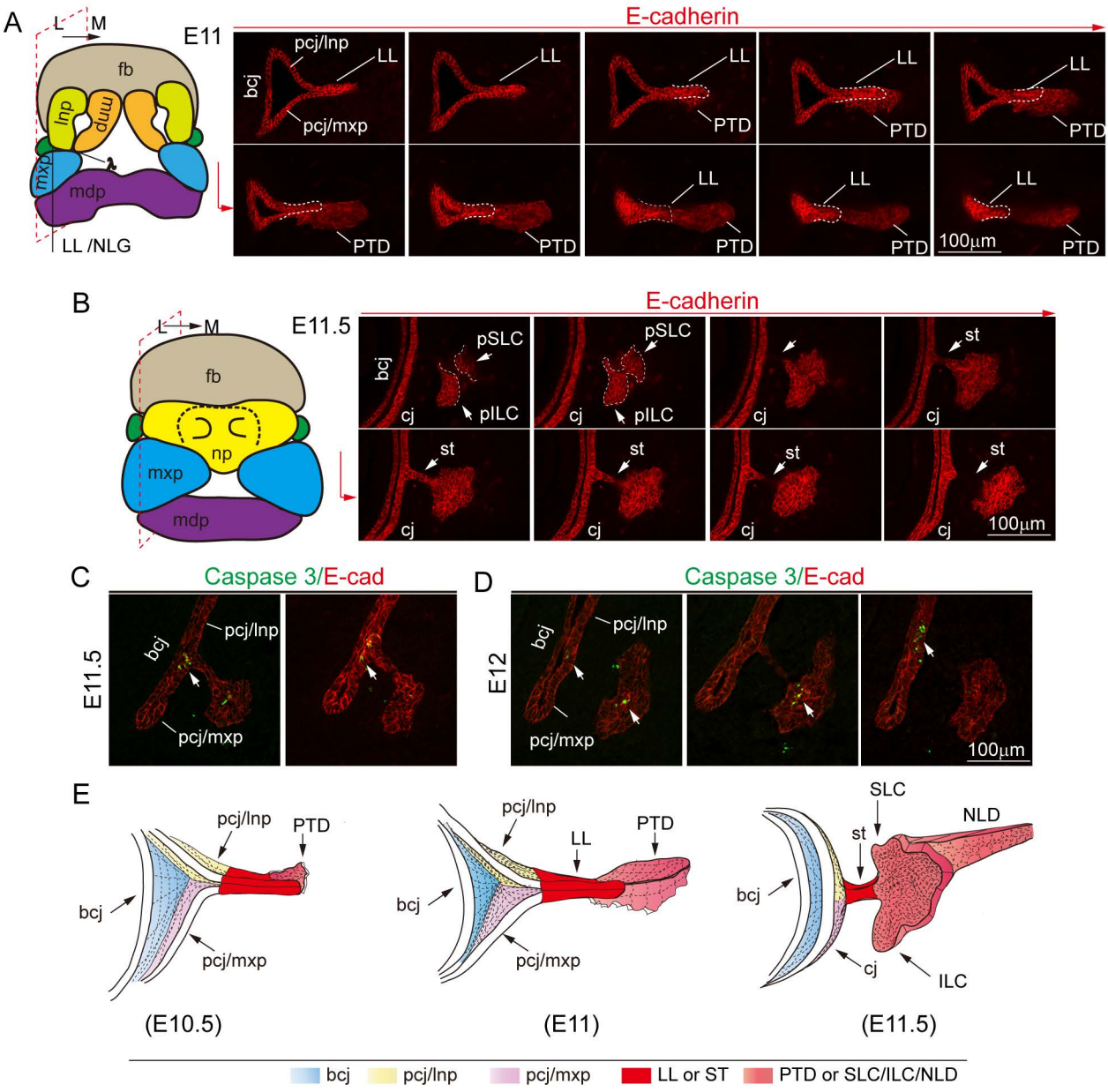

Supplemental Figure 1

Development • Supplementary information

Figure S1. E-cadherin stained parasagittal embryonic sections cutting from lateral to medial axis. (A), Serial sections through the lacrimal lamina (LL) . Diagram left showing frontal picture of E11 mouse face. (B) E11.5 sections showing lateral extreme of PTD. Noting the two separate cell masses. (C). Sections of stalk region at E11.5. Activated Caspase-3 (green) is indicated by arrows in each panel. (D) E12 stalk sections. The stalk is almost detached from the conjunctiva (middle section) at this age. (E), Diagram drawings of E10.5, E11 and E11.5 PTD. White shading represents cutting surfaces of epithelial sheets. “lnp”, lateral nasal process; “mxp”, maxillary process; “mnp”, medial nasal process; “mdp”, mandibular process; LL, lacrimal lamina; NLG, nasolacrimal groove; “fb”, forebrain; L, lateral; M, medial; PTD, primordial tear duct; “pSLC”, presumptive superior lacrimal canaliculus; “pILC”, presumptive inferior lacrimal canaliculus; “st” stalk; “cj”, conjunctiva; “pcj/lnp”, presumptive palpebral conjunctiva from lnp; “pcj/mxp”, presumptive palpebral conjunctiva from mxp;

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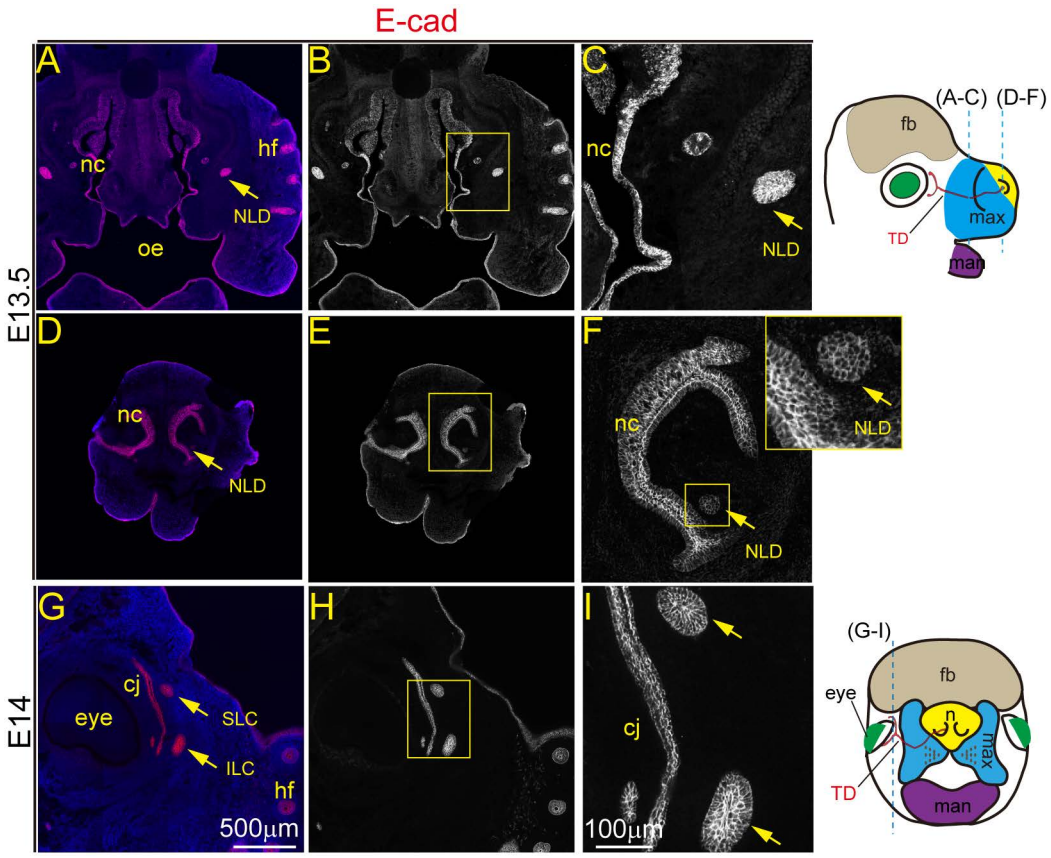
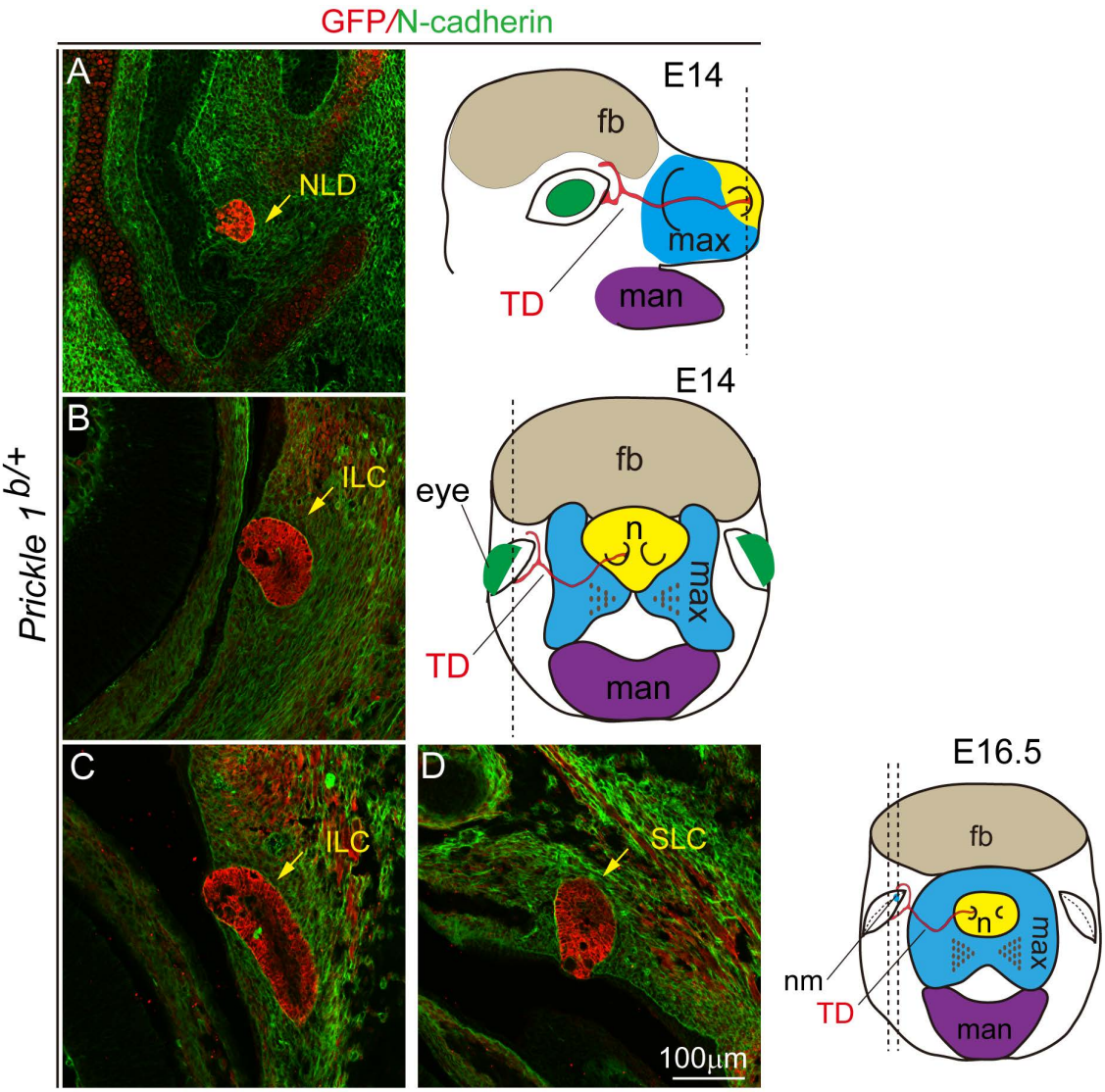


Supplemental Figure 2

Development • Supplementary information

Figure S2. E-cadherin stained embryonic sections. Boxed areas are magnified in the rightmost image. Dashed lines in the diagrams indicate the cutting positions. (A-C) A frontal section further from nasal cavity. Arrows point to nasolacrimal duct (NLD), diagram right to (C) is a lateral view of E13.5 mouse head indicating the cutting position for (A-C) and (D-F) with labeled structures. TD, tear duct; “nc”, nasal cavity; “hf”, hair follicle; “oe”, oral ectoderm; “max”, maxilla; “man”, mandible; “fb”, forebrain. (D-F) A frontal section showing NLD almost reaches nasal cavity. Note the separation of NLD from ‘nc’ in inset of (F). (G-I) A parasagittal section demonstrating the farthest position the superior lacrimal canaliculus (SLC) reaches at E14. Note: the inferior lacrimal canaliculus (ILC) already reaches the lower eyelid by E14, this section shows a region before eyelid. Diagram shows frontal view of E14 mouse head with labeled structures. “n”, nose.

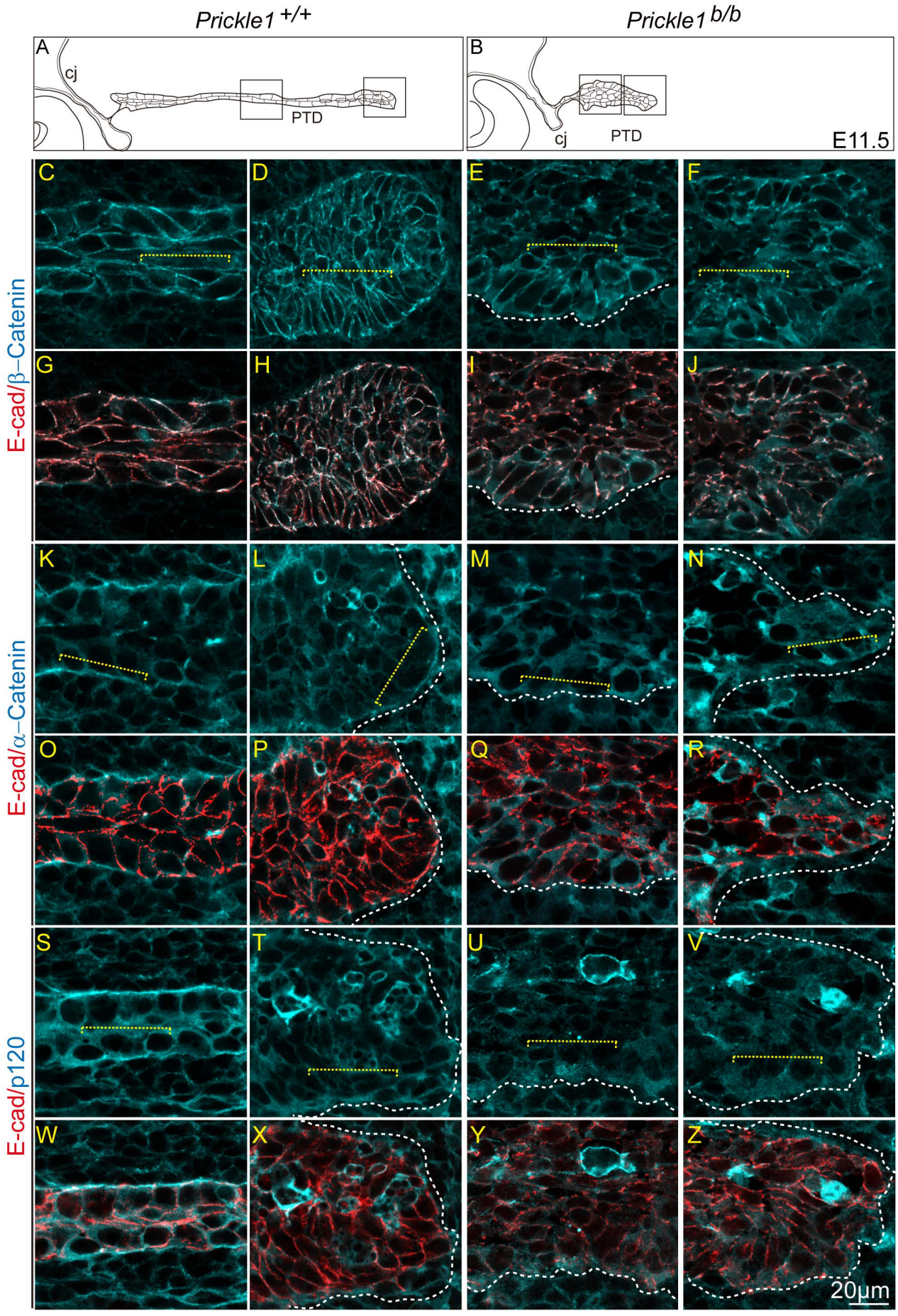
Development • Supplementary information



Supplemental Figure 3

Figure S3. All panels are stained with GFP (red)/N-cadherin (green) antibodies. (A), A frontal section of E14 head as indicated in the right diagram with dashed lines; (B), A E14 parasagittal section with the cutting position indicated in the right diagram. (C, D) E16.5 parasagittal sections with the cutting position indicated in the right diagram. Arrows point to Prickle 1 expression indicated by GFP. Expression of *Prickle 1* in the tip of NLD joining the nasal cavity (A) and ILC joining the lower eyelid (B) at E14. Expression of *Prickle 1* in the tip of ILC joining the lower eyelid (C) and SLC joining the upper eyelid (D) at E16.5.

Development • Supplementary information

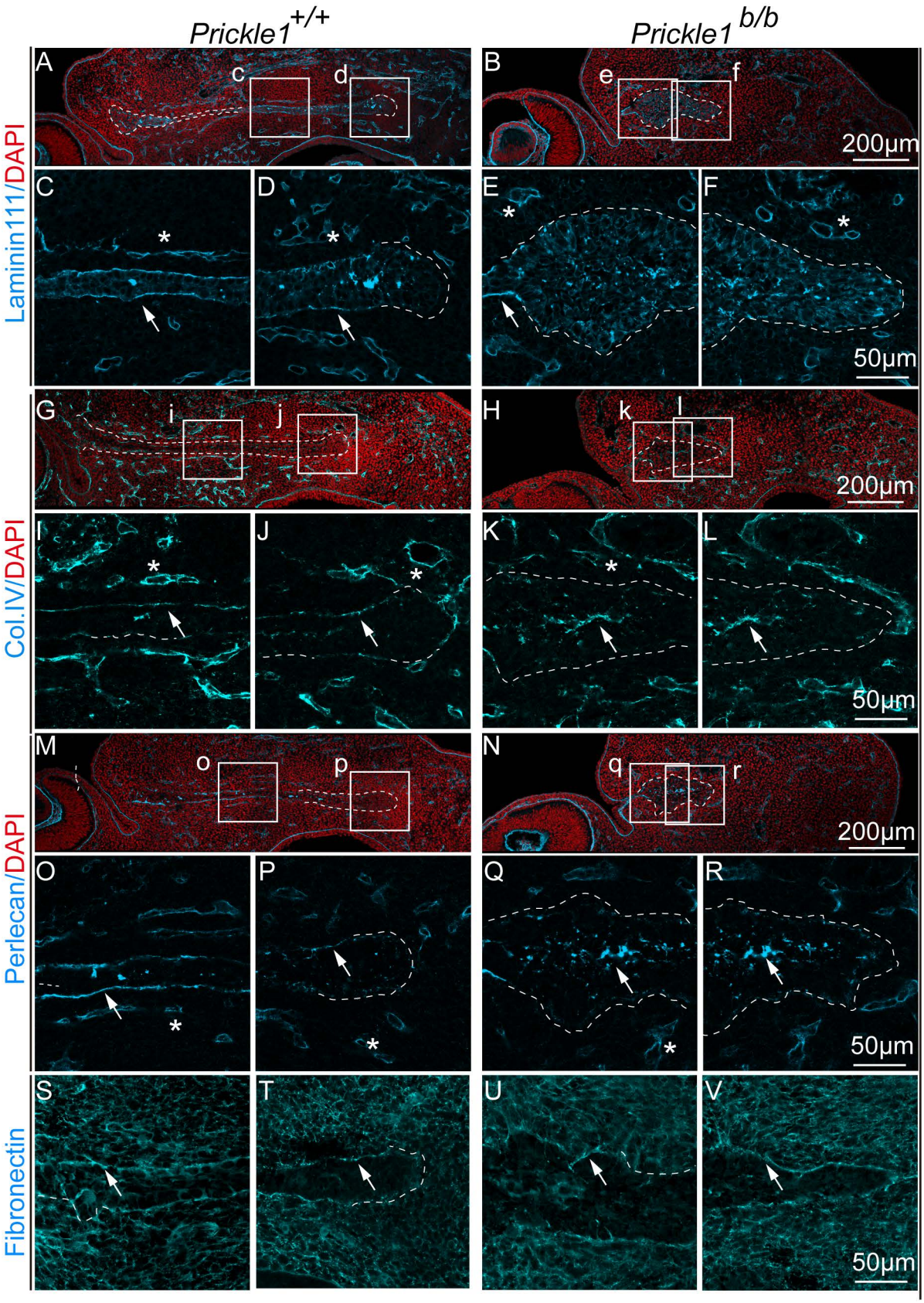


Supplemental Figure 4

Development • Supplementary information

Figure S4. Cadherin/catenin complex localization in different regions of primordial tear duct. Dashed lines demarcate the contours of PTD. Dashed brackets indicate representative stained areas. (A-B), Schematic drawings of wild type (A) and the mutant (B) developing tear duct at E11.5. Boxes in (A) and (B) are roughly corresponding to positions of their below panels. (C-J), E-cadherin/β-catenin double staining; (K-R), E-cadherin/α-catenin double staining; (S-Z) E-cadherin/p120 double staining.

Development • Supplementary information



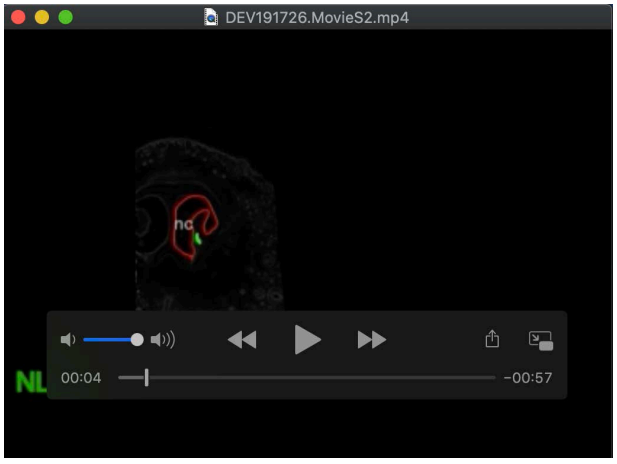
Supplemental Figure 5

Development • Supplementary information

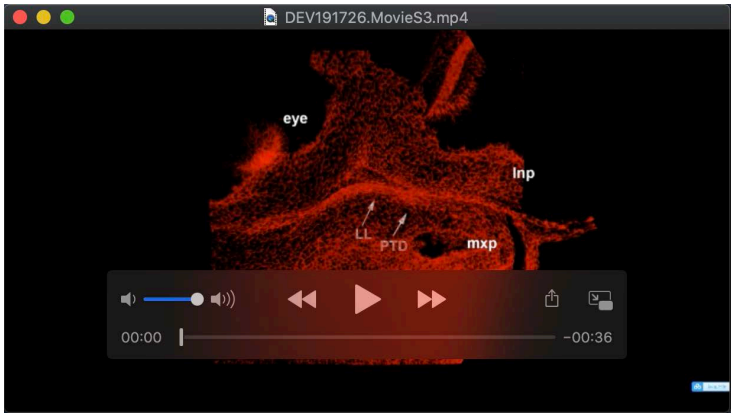
Figure S5. Regional differences of the basement membrane (BM) distribution in developing tear duct. Dashed lines demarcate the contour of PTD. Boxes roughly correspond to positions of panels below them. Arrows point to localizations of BM components. Asterisks show blood vessel BM was not affected in the mutants. (A-F), Laminin staining; (G-L), Col. IV staining; (M-R), Perlecan staining; (S-V), Fibronectin staining.

Development • Supplementary information

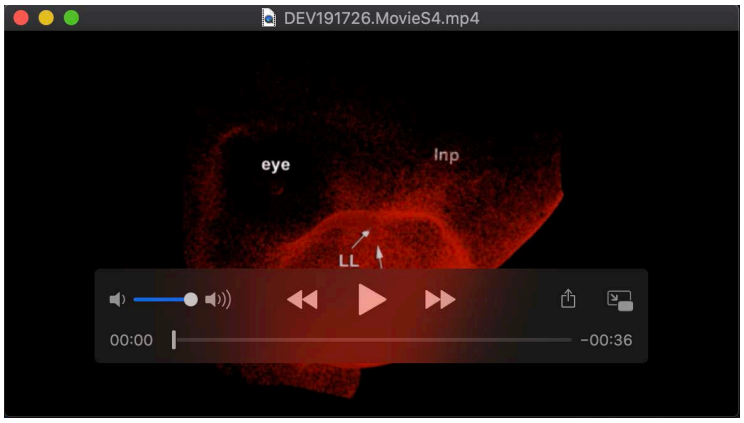
Movie 1: 3D reconstruction of P1 tear duct



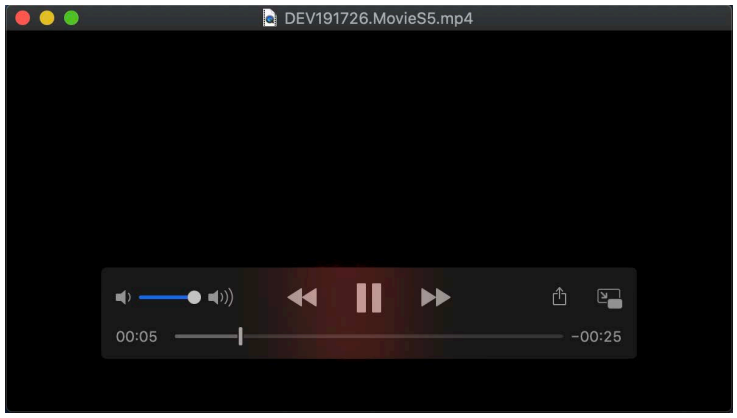
Movie 2: Sequential traced images of P1 tear duct for 3D reconstruction



Movie 3: 3D reconstruction of E10.25 embryonic head

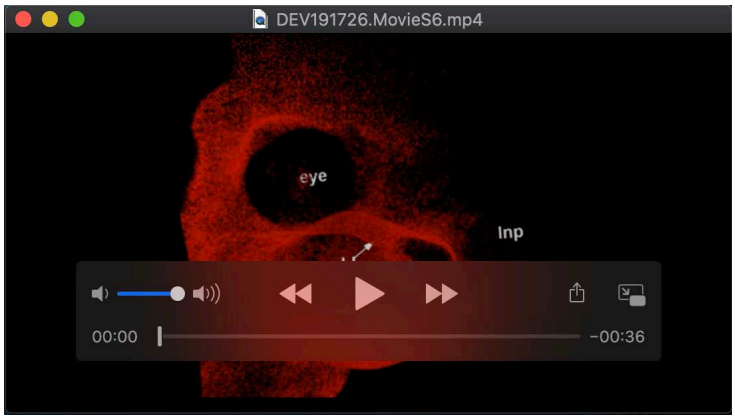


Movie 4: 3D reconstruction of E10.5 embryonic head

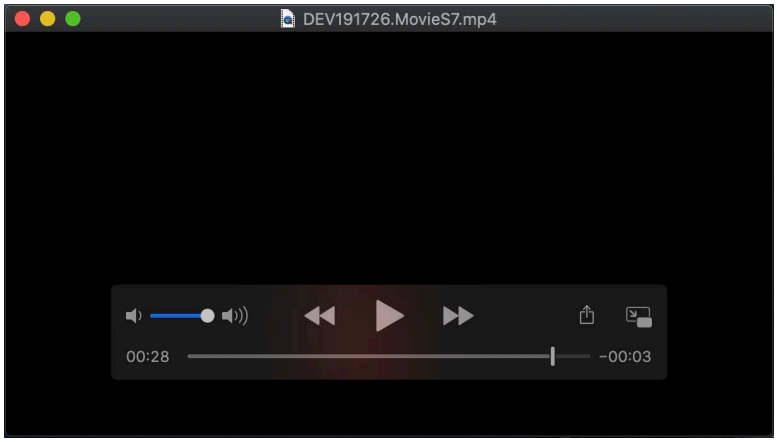


Movie 5: Sequential images for 3D reconstruction of E10.5 embryonic head

Development • Supplementary information



Movie 6: 3D reconstruction of E11 embryonic head



Movie 7: Sequential images for 3D reconstruction of E11 embryonic head

Development • Supplementary information