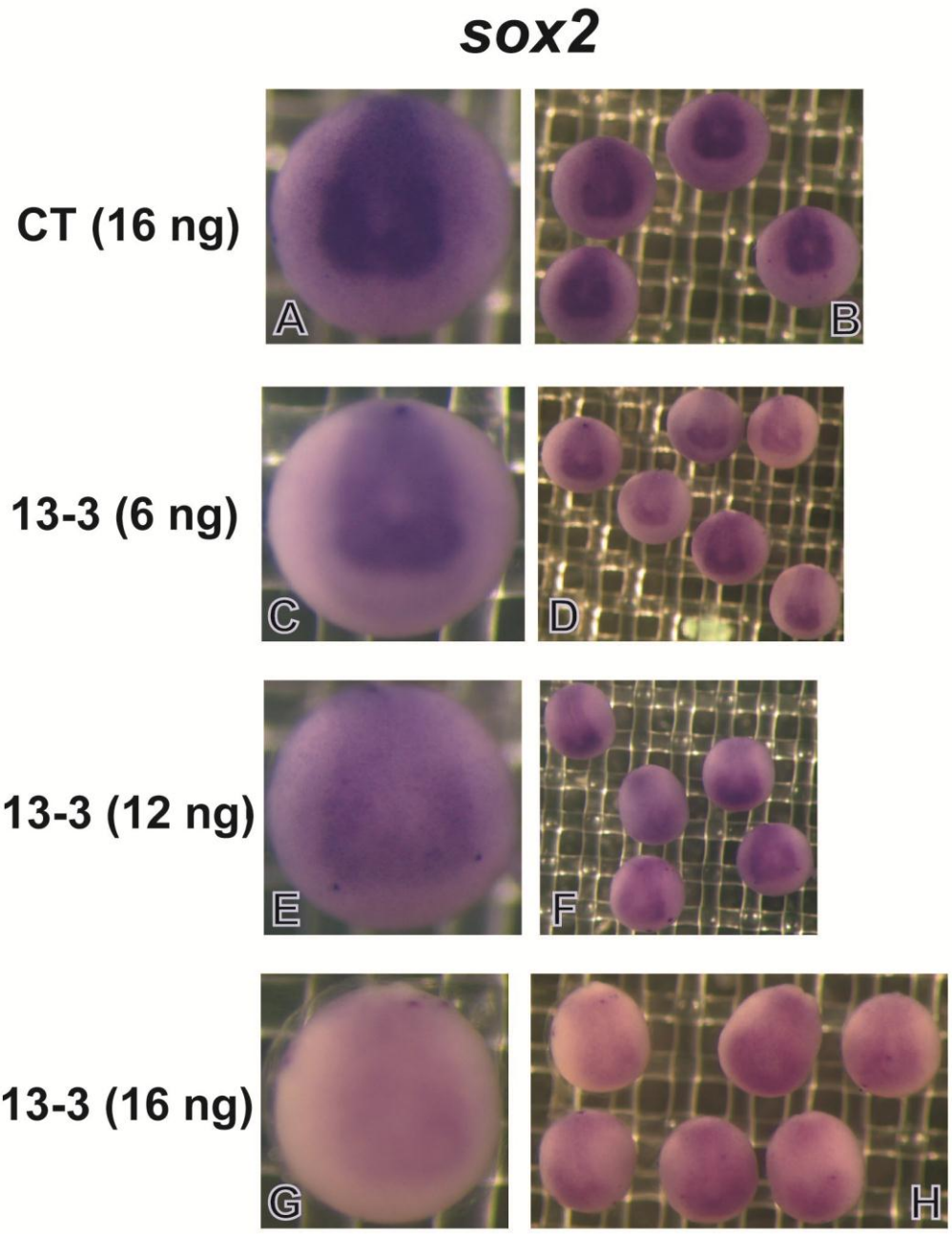
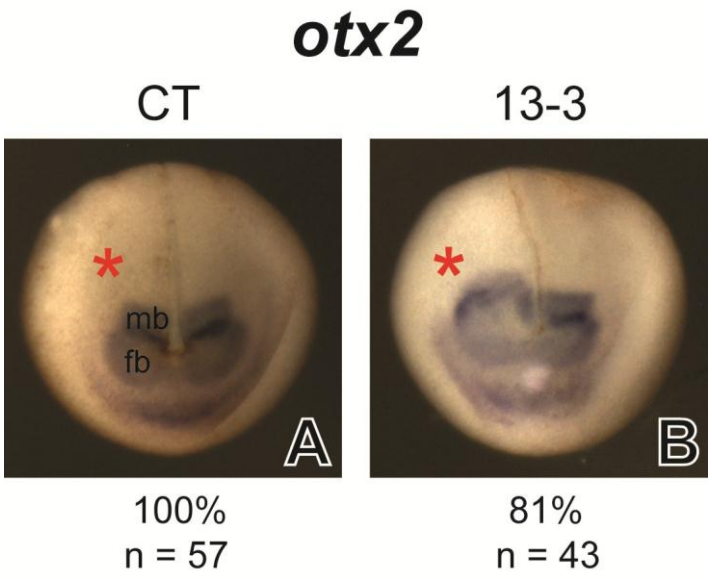
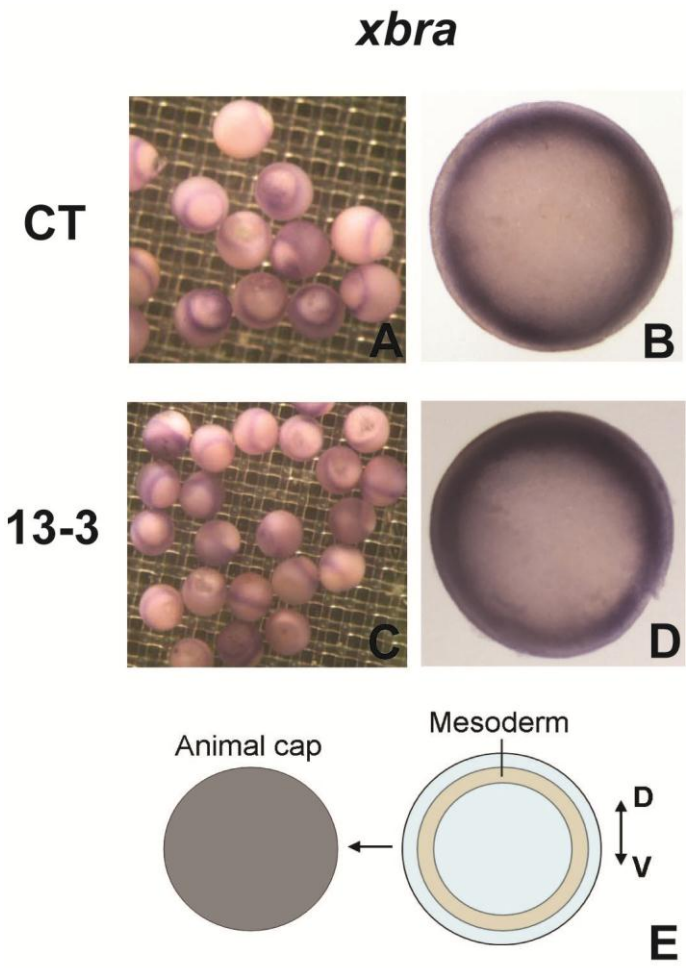
Supplementary data



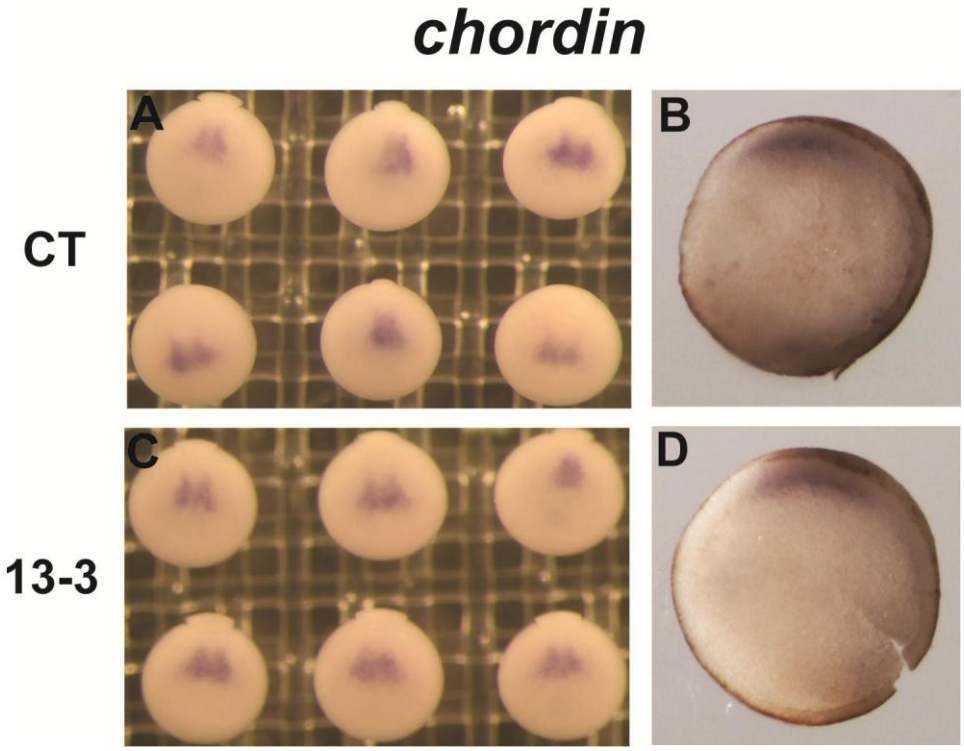
Supplementary Fig. 1. Effects of ADAM13 knockdown on *sox2* expression. One-cell stage embryos were injected with the indicated amount of control (CT) MO or MO 13-3, and cultured to stage 13/14. *In situ* hybridization was carried out for *sox2*. A representative embryo of each group is shown in the left panels (anterior views with dorsal at the top), and multiple embryos of the same groups are shown in the right panels.



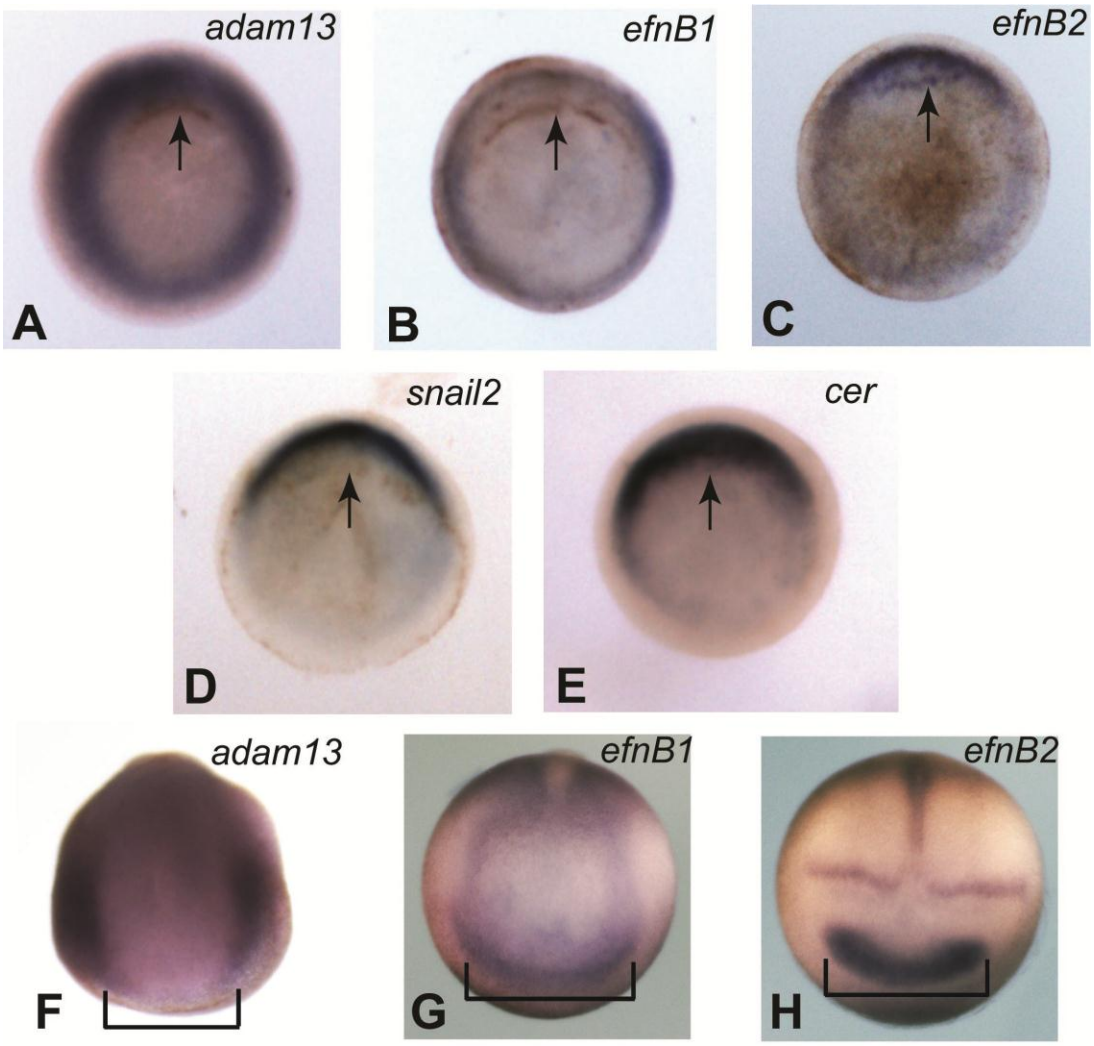
Supplementary Fig. 2. Effects of ADAM13 knockdown on *otx2* expression. Two-cell stage embryos were injected in one blastomere with the indicated MO (6 ng each), cultured to stage 18/19, and processed for *in situ* hybridization for *otx2*. Red asterisks denote the injected side. Of the 43 embryos injected with MO 13-3, 35 (81%) displayed a phenotype similar to that shown in B. Fb, forebrain; mb, midbrain.



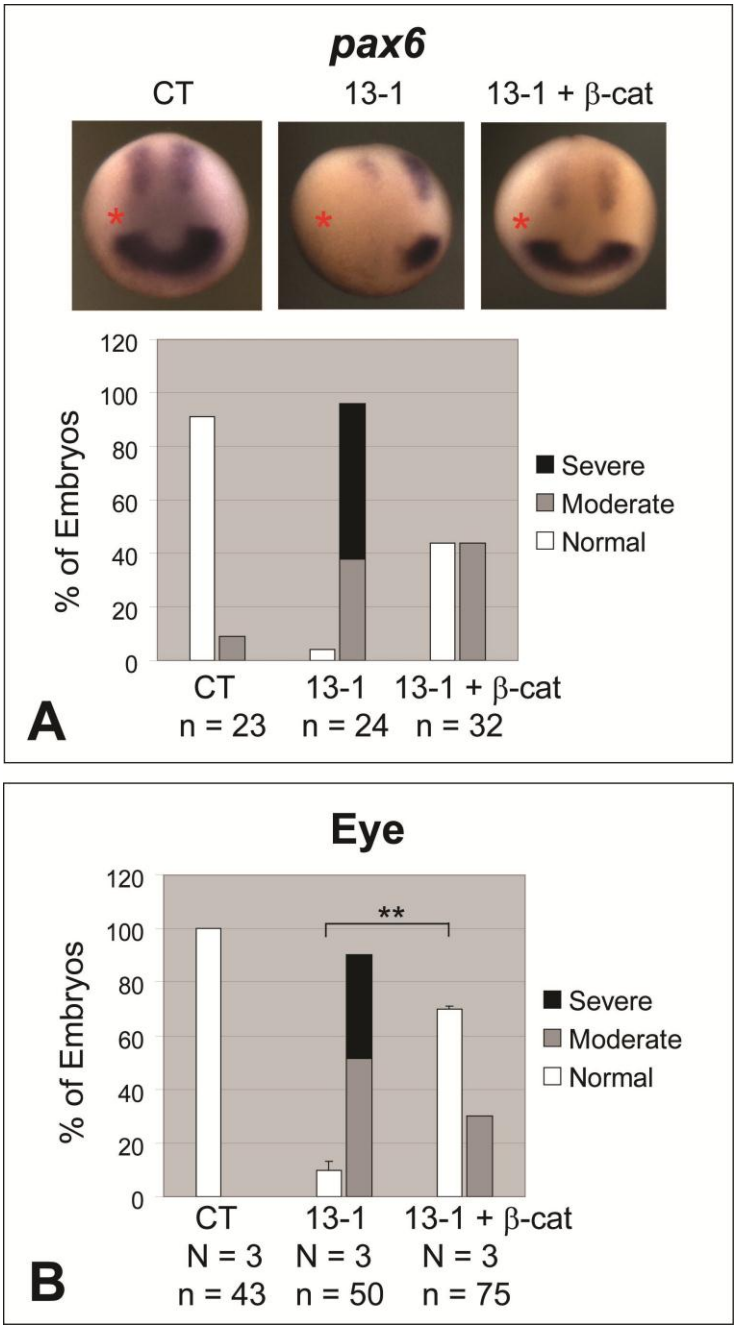
Supplementary Fig. 3. Knockdown of ADAM13 has no apparent influence on *xbra* expression. One-cell stage embryos were injected with the indicated MO (12 ng each), and cultured to stage ~11. *In situ* hybridization was carried out for *xbra*, and multiple embryos of the same injection groups are shown in A and C. Embryos were also sectioned as illustrated in E (with animal cap removed to reveal the staining of *xbra* in mesoderm), and one representative example of each group is shown in B and D (animal pole views with dorsal at the top).



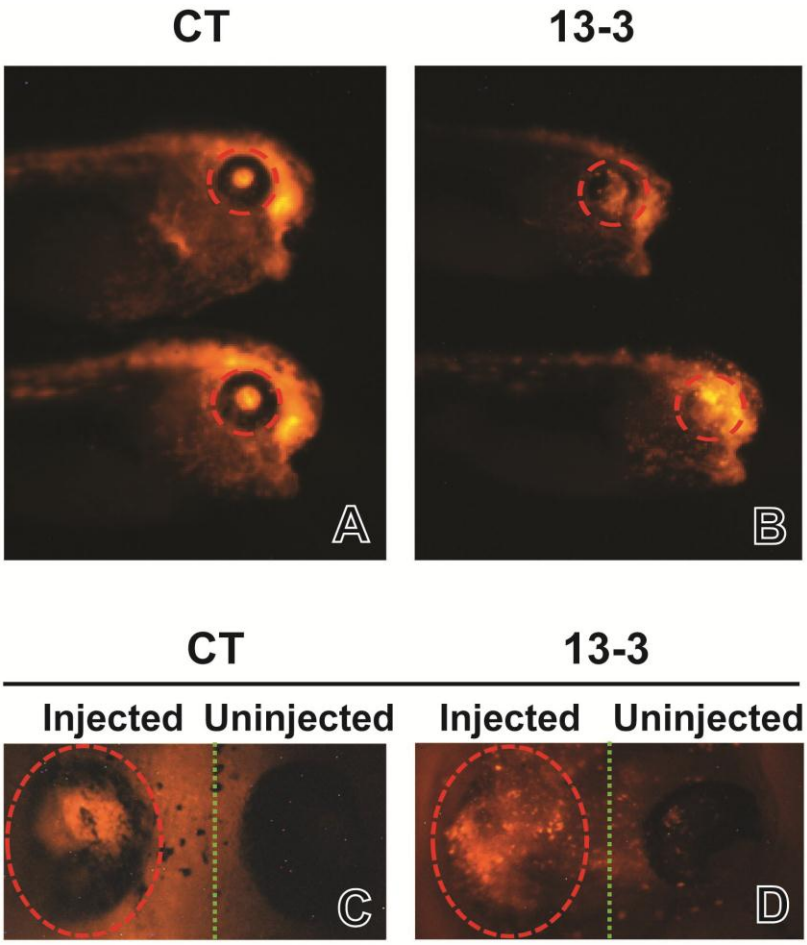
Supplementary Fig. 4. Knockdown of ADAM13 does not alter *chordin* expression. One-cell stage embryos were injected with 12 ng control MO (A and B) or MO 13-3 (C and D), and cultured to stage 12/12.5. *In situ* hybridization was carried out for *chordin*, and multiple embryos of the same injection groups are shown in A and C (dorsal views with vegetal pole at the top). Embryos were also sectioned as illustrated in Supplementary Fig. 3E, and one representative example of each group is shown in B and D (animal pole views with dorsal at the top).



Supplementary Fig. 5. Developmental expression of *adam13* and related genes. (A-E) The expression pattern of *adam13* (A) overlaps with those of *efnB1* (B), *efnB2* (C), *snail2* (D) and *cerberus* (*cer*; E) in dorsal mesoderm during early gastrulation (stage ~10.5). Embryos were cleared with 2:1 benzyl benzoate/benzyl alcohol before photographed. All embryos are shown in vegetal pole views, and arrows point to dorsal lip of blastopore. (F-H) Expression of *adam13* (F), *efnB1* (G) and *efnB2* (H) in the presumptive eye field during early neurulation (stage 13-15). All embryos are shown in dorsal views, and brackets indicate the anterior neural plate that corresponds to the eye field.



Supplementary Fig. 6. The effects of ADAM13 knockdown on *pax6* expression and eye morphology can be rescued by exogenous β-catenin (β-cat). One dorsal-animal blastomere of 8-cell stage embryos was injected with the indicated MO (1.5 ng) together with or without β-cat transcript (50 pg). Embryos were processed for *in situ* hybridization for *pax6* at stage ~12.5 (A), or scored for eye defects at stage ~35 (B). The injected side is denoted with a red asterisk. See Fig. 1A and Materials and Methods for phenotype scoring. **, $p < 0.001$.



Supplementary Fig. 7. Knockdown of ADAM13 does not affect the contribution of D1.1 blastomere to the eye field. The D1.1 blastomere of 16-cell stage embryos was injected with the indicated MO (0.75 ng) together with red Dextran, as described in Material and Methods. Embryos were cultured to stage 37/38 and analyzed for the presence of red fluorescence in the eyes. (A and B) Injected side of whole embryos showing fluorescence in the eye field. Note the lack of eye pigments in 13-3 morphants. (C and D) Cross sections of the eyes of control (CT; C) and 13-3 (D) morphants showing fluorescence on the injected side. Red dashed circles indicate the eye field, and green dotted lines demarcate the midline of the embryos.