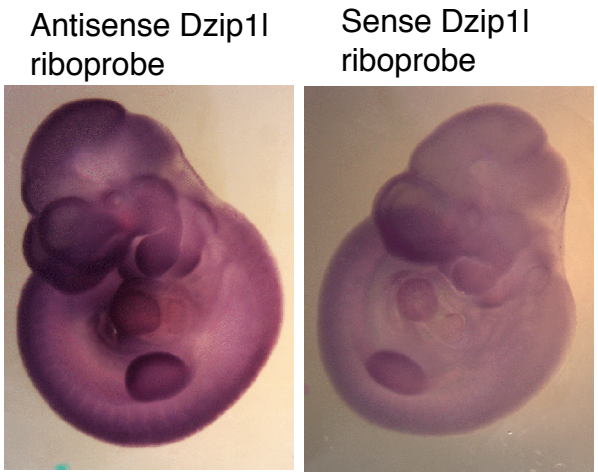


Fig. S1

**Figure S1.** Dzip1l is ubiquitously expressed in E10.5 embryos. Whole mount in situ hybridization of E10.5 wt embryos using antisense or sense (control) Dzip1l riboprobe.

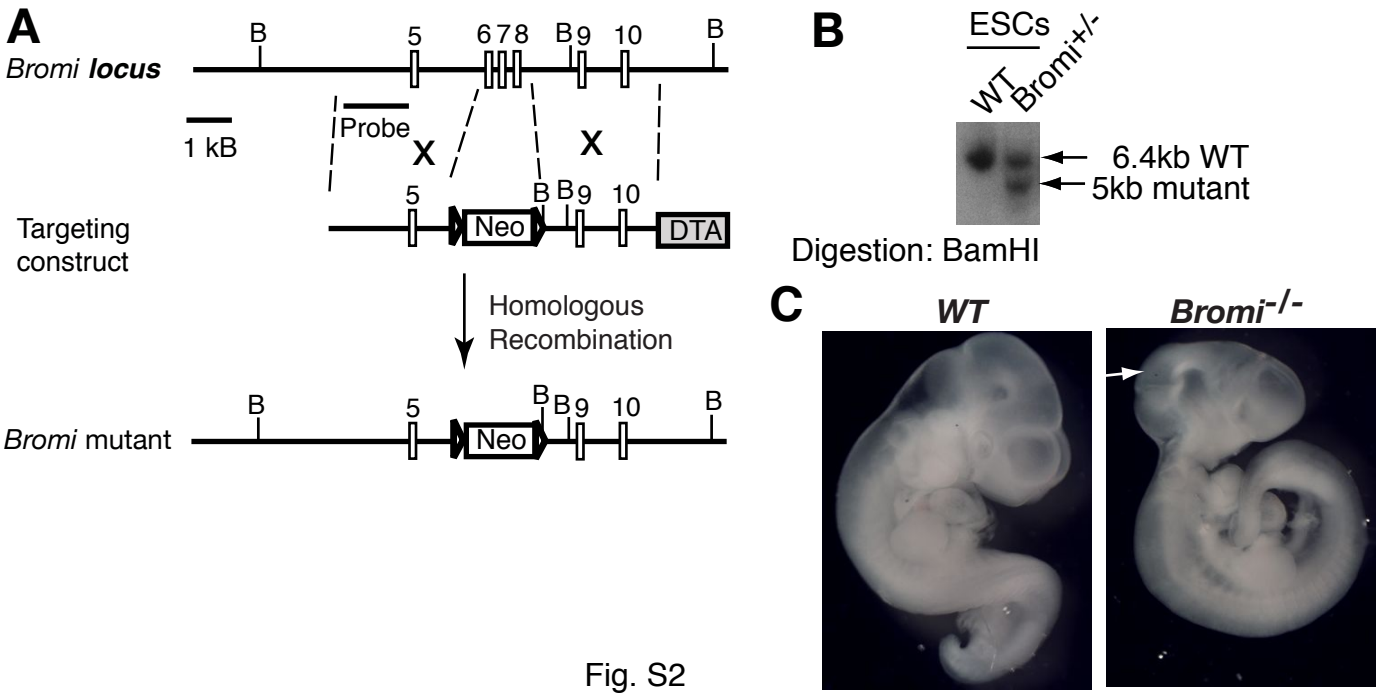


Fig. S2

**Figure S2.** *Bromi* mutant embryos display exencephaly. (**A**) The gene targeting strategy used to create a mouse *Bromi* mutant allele. Open rectangles are referred to as exons and lines as introns. The probe used for Southern blot is shown. Triangle, loxP site; Neo, neomycin; DTA, diphtheria toxin A; number, exons; B, BamHI. The deletion of exons 6-8 is expected to cause a reading frame shift and premature stop at 227th aa, if exon 5 were spliced to exon 9. (**B**) Southern blot of representative mutant and wt ES cell clones. (n = 1 experiment). (**C**) E10.5 wt and *Bromi*$^{-/-}$ embryos. An arrow points to exencephaly in the mutant.

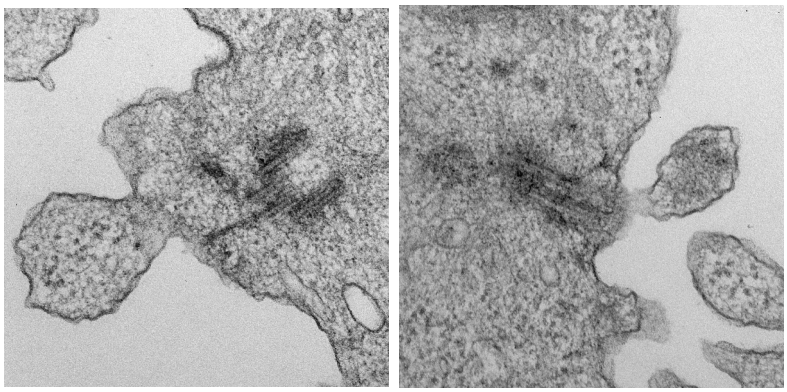

Fig. S3

**Figure S3.** Additional TEM micrographs of *Dzip1l* mutant cilia.

**Table S1** MS/MS identified unique peptides for protein chibby homolog 1 (IPI00133582.1, sequence coverage: 41.73%)

| # | Peptide sequence | z | m/z [Da] | $MH^+$ [Da] | ΔM [ppm] | XCorr |
|---|---|---|---|---|---|---|
| 1 | ELELGLDYGTPTmNLAGQSLK | 2 | 1133.57471 | 2266.14214 | 6.57 | 5.79 |
| 2 | NQQLEEENNLLR | 2 | 750.37927 | 1499.75127 | 4.23 | 4.6 |
| 3 | SASLSNLHSLDR | 2 | 650.33905 | 1299.67082 | 4.33 | 3.64 |
| 4 | DKELDELK | 2 | 495.2627 | 989.51811 | 3.13 | 3.36 |

Note: m is referred to as oxidized methionine. #4 peptide contains a trypsin missed cleavage site.