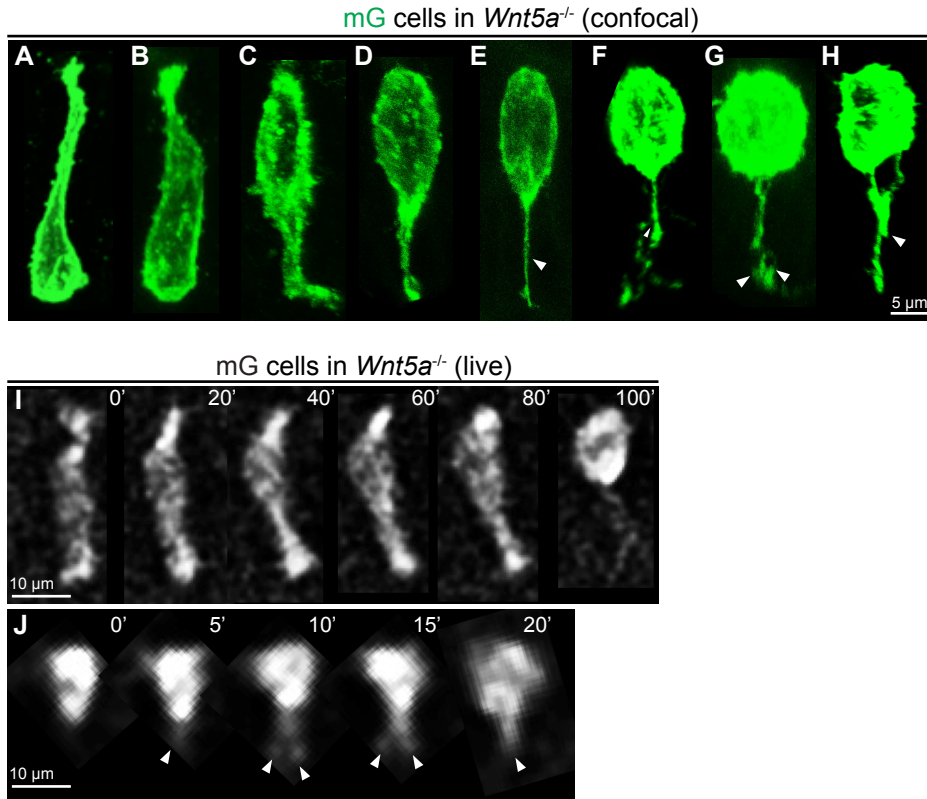


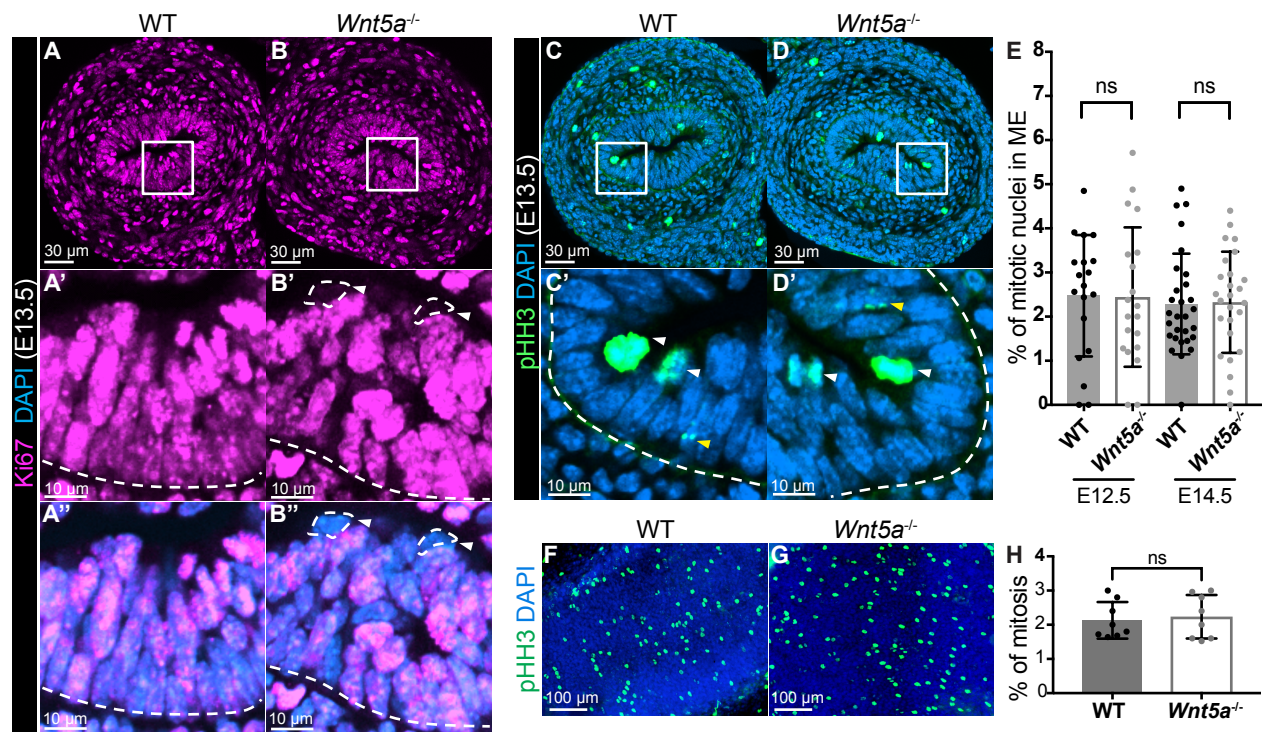
**Figure S1. BP inheritance when two BPs are retained, Related to Figure 3**  
(A, B) 3D morphology of daughter cell pairs at the end of cytokinesis (A) and in early G1 (B). Both BPs are only linked to one of the two daughter cells.



**Figure S2. Nuclear apical migration, BP retention, splitting and BP retraction are not affected in *Wnt5a*<sup>-/-</sup> ME, Related to Figure 6**

(A–H) Reconstructed 3D morphology of individual mG cells in *Wnt5a*<sup>-/-</sup> ME before and during mitosis. Nuclear apical migration (A–D); BP retention (E); BP splitting (F, G) and BP retraction (H) appear normal.

(I, J) Successive 2D live images captured from cultured *Wnt5a*<sup>-/-</sup> midguts. Nuclear apical migration (20 min intervals, I) and BP splitting (5 min intervals, J) are unaffected.



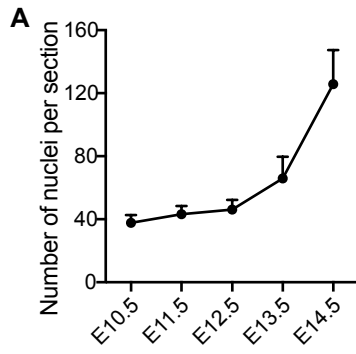
**Figure S3. Mitosis is not impaired in *Wnt5a*<sup>-/-</sup> ME, Related to Figure 7**

(A–B'') Vibratome-sectioned E13.5 WT and *Wnt5a*<sup>-/-</sup> midguts, stained for Ki67 (magenta) and DAPI (nuclei, blue). Some cells at the apical surface of *Wnt5a*<sup>-/-</sup> ME are Ki67 negative, potentially apoptotic (B', B''). A'-B'' are enlargements of the boxed areas in A and B, respectively.

(C–D'') Vibratome-sectioned E13.5 WT and *Wnt5a*<sup>-/-</sup> midguts, stained for pHH3 (green) and DAPI (nuclei, blue). No obvious differences in the distribution of pHH3 positive cells are present (C', D'). C', D' are enlargements of the boxed areas in C and D, respectively.

(E) Quantitation of the percentage of pHH3 positive mitotic cells in ME on cross sections of E12.5 and E14.5 WT and *Wnt5a*<sup>-/-</sup> midguts. Data are represented as mean and SD.

(F–H) Staining of pHH3 (green) and DAPI (nuclei, blue) on the apical surface of opened E14.5 WT and *Wnt5a*<sup>-/-</sup> midguts. H is the quantitation of the percentage of pHH3 positive nuclei; no obvious differences are present. Data are represented as mean and SD.



**Figure S4. Quantitation of cell population change (number of nuclei) on the XY plane, Related to STAR Methods.** Data are represented as mean and SD.