Supporting Information

Pukhlyakova et al. 10.1073/pnas.1713682115







Fig. S2. Global deformation of the embryo and cell-shape analysis after uniaxial compression experiments. (*A*) Measurements of the maximal projection of the embryo surface area before and after compression. In each experiment >100 embryos were compressed. Three independent experiments were performed. Measurements show the variability of the embryo sizes before compression and the deformation effects. (*B* and C) Cell-shape analysis before (*B*) and after (*C*) compression. Cells of the plane parallel to the compression plane were analyzed, phalloidin staining. (Scale bar, 10 μ m.) (*D*) Quantification of the cell diameters before and after compression are not significant, paired two-tailed Student's *t* test (*P* > 0.1).



Fig. S3. Putative β -catenin target genes, expressed around the blastopore during gastrulation are down-regulated after ML-7 treatment. (*A* and *B*) *Brachyury* expression in the control and ML-7 treated embryos. (*C* and *D*) *foxA* expression in the control and ML-7 treated embryos. (*E* and *F*) *tcf* expression in the control and ML-7 treated embryos. (*G* and *H*) *axin* expression in the control and ML-7 treated embryos. (*I* and *J*) *apc* expression in the control and ML-7 treated embryos. (*K* and *L*) expression of *snailA*, which is not known to be a target of β -catenin remains unchanged in the control and ML-7 treated embryos. (Scale bar, 50 µm).



Fig. 54. Cell shape and stiffness change during gastrulation of *N. vectensis.* (*A–D*) During gastrulation, endodermal cells apically constrict, which leads to the stretching of the adjacent blastoporal cells. Such cell morphology change indicates that cells experience directional mechanical tensions. (*E–H*) Morphology of the cell on the aboral side of the embryo does not significantly change during gastrulation. Dashed line defines the preendodermal plate. An example of a blastoporal cell colored in red. An example of an aboral cell colored in blue. (Scale bar, 10 μ m.) (*I*) Fold change cell-shape index t0/t1. Increasing of cell-shape index over time indicates cell elongation. (*J* and *K*) Spatial maps of the Brillouin frequency shift ω_B in wild-type embryo during gastrulation in the vicinity of the lip (*J*) and in the aboral side (*K*). A distinct increase in the frequency shift (stiffness) for cells near and at the lip relative to those further away is apparent. Regions of high-frequency shift are colored red for illustrative purposes.



Movie S1. Gastrulation of N. vectensis. Oral side view. An example of a blastoporal cell colored in red. Timing is shown in hours:minutes.

Movie S1

SANG SANG



Movie S2. Gastrulation of N. vectensis. Aboral side view. An example of an aboral cell colored in blue. Timing is shown in hours:minutes.

Movie S2