Supplementary information

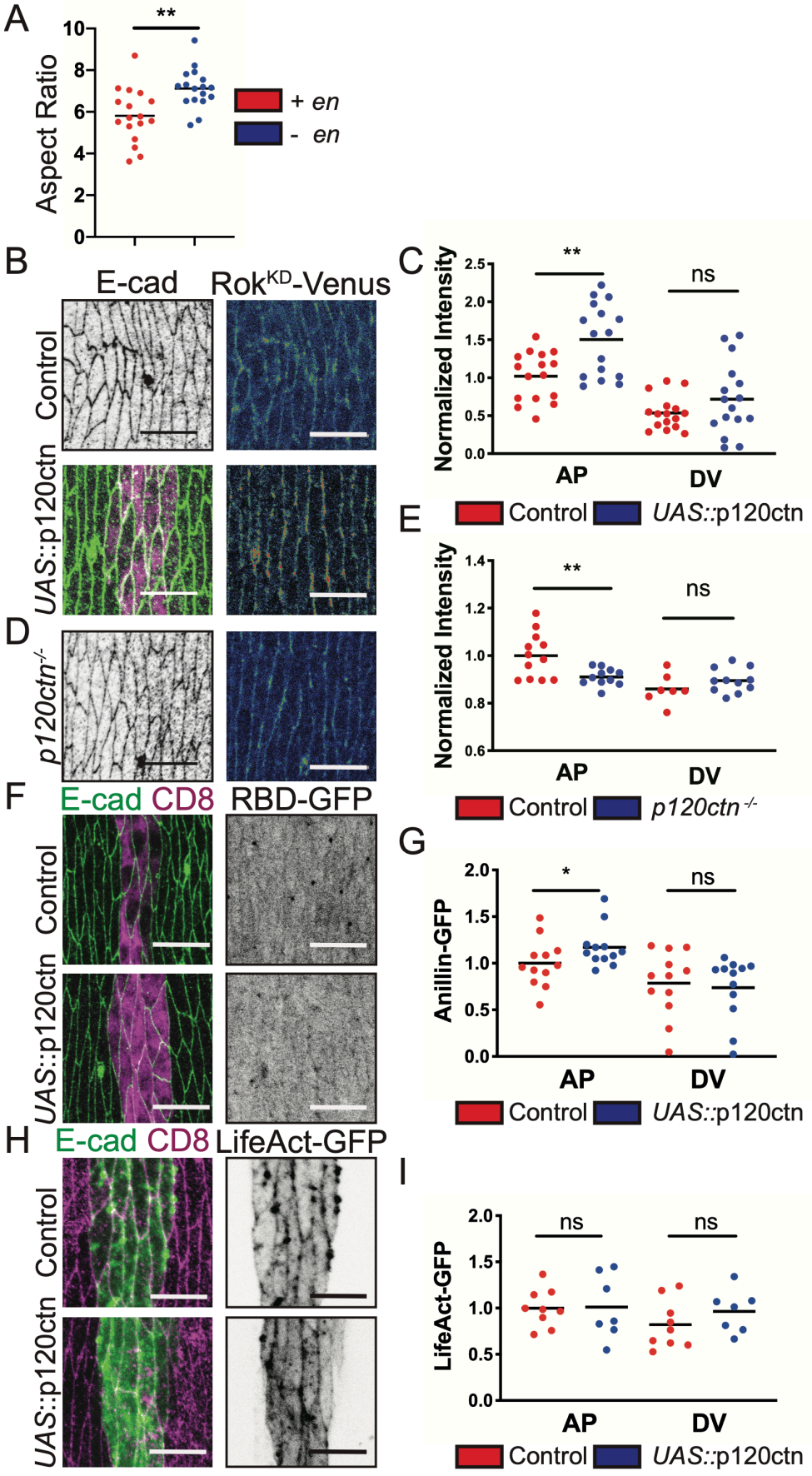

Figure S1. Morphological differences between compartments in embryonic epidermis and effects of p120ctn levels on Rok^{KD}-Venus, RDB-GFP and LifeAct-GFP.

(A) Aspect ratio of cells in the *engrailed*-positive (+*en*) and -negative (-*en*) compartments in embryonic epidermis. (**B-E**) Levels of Rok^{KD}-Venus following p120ctn level changes. (**B**) Representative examples (**B**, **D**) and levels **(C**, **E)** of Rok^{KD}-Venus in cells overexpressing *UAS::*p120ctn-GFP (**B-C**) or *p120ctn*$^{-/-}$ mutants (**D-E**). Cell outlines visualized with E-cad antibody (grey or green, left), Rok^{KD}-Venus visualized using rainbow intensity spectrum (right). (**F-G**) Representative images (**F**) and levels (**G**) of RBD-GFP in the epidermal cells of control and *UAS::*p120ctn-GFP expressing embryos. Cell borders were visualized with antibody against E-cad (green in **F**). **(H-I)** Representative images (**H**) and levels (**I**) of cortical actin visualized using *UAS::*LifeAct-GFP (green, left; grey, right). Cell outlines are visualized with E-cad antibody (magenta, left) Scale bars – 10 μm. Statistical analysis between cell borders measured by two-way ANOVA. *, $p < 0.05$, **, $p < 0.01$. Each dot represents an individual embryo, n number was 10-20 embryos per genotype with a minimum of 9 cells imaged per embryo.

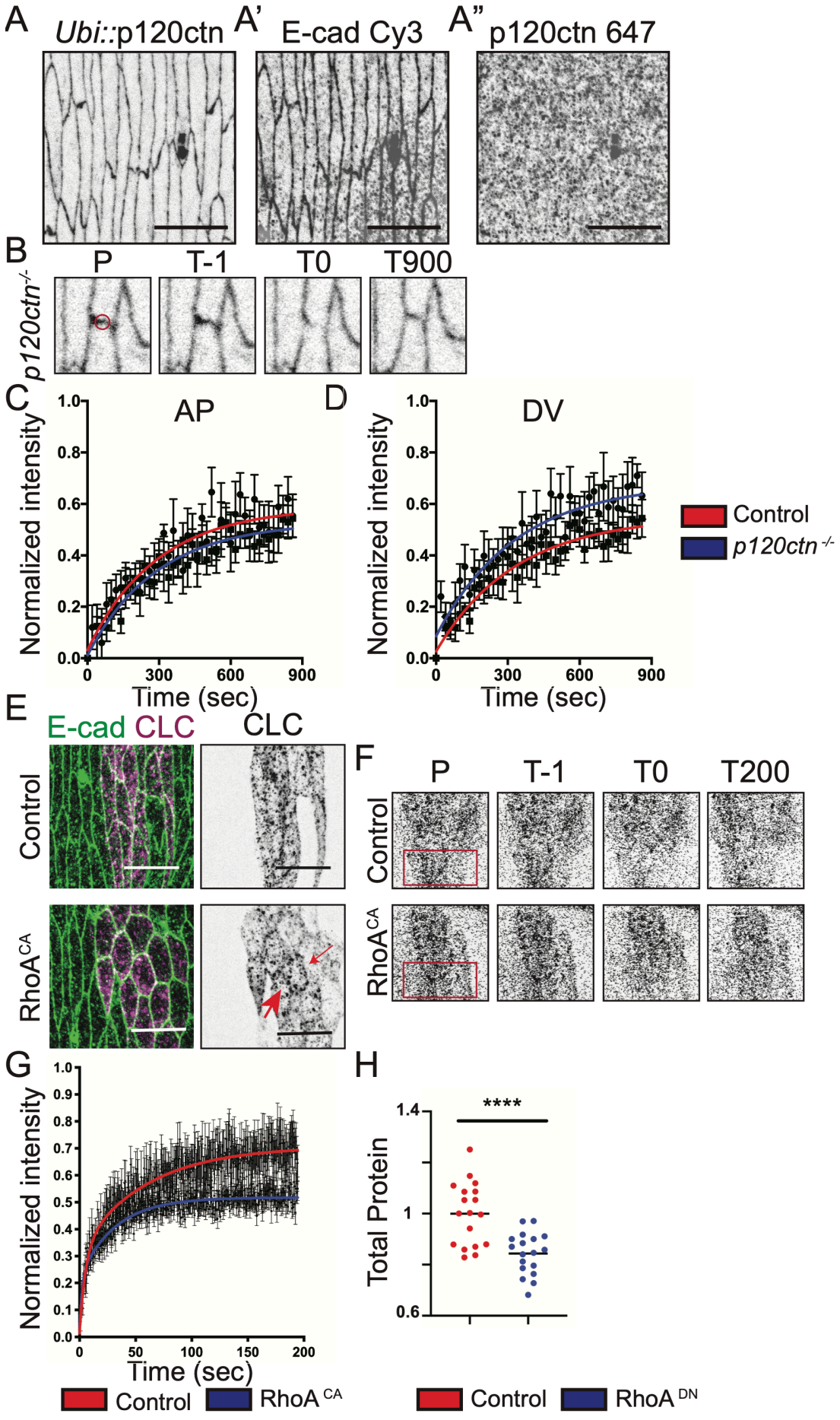

Figure S2. p120ctn antibody staining fails to replicate localisation of GFP tagged variant, while p120ctn loss leads to increase of immobile fraction of endogenously tagged E-cad-GFP and Rho regulatory construct effects the dynamics of CLC.
(A) Apical view of epidermal cells of *ubi::*p120ctn-GFP expressing embryos. The localisation of the p120ctn-GFP (left) compared to the localisation of E-cad stained with an antibody (middle), and the staining pattern of the anti-p120ctn antibody in the same cells (right). (**B-D)** Representative examples (**B**) and quantification (**C-D**) of E-cad-GFP FRAP in *p120ctn*$^{-/-}$ mutant cells. Panels in **B** show the DV cell border region bleached (Position P, red circle) at the prebleach (Time T-1), bleach (Time T0), and the end (Time T900) time points. Time is in seconds. Average recovery curves (mean ± s.e.m.) and the best-fit curves (solid lines) are shown. All best-fit and membrane intensity data are in Table S1. (**E-G**). Localisation (**E**) and FRAP (**F-G**) of clathrin (*UAS*::CLC-GFP, grey, right; magenta, left) in cells co-expressing RhoA^{CA} (bottom) and control co-expressing *UAS*::CD8-Cherry (top). Cell borders are visualized by anti-E-cad antibody (green). Panels in **F** show the region bleached (Position P, red box) at the prebleach (Time T-1), bleach (Time T0), and the end (Time T400) time points. Time is in seconds. Average recovery curves (mean ± s.e.m.) and the best-fit curves (solid lines) are shown in **G**. (**H**) The total levels of E-cad-GFP on the plasma membrane of control and RhoA^{DN} expressing cells. Scale bars – 10 µm. Statistical analysis was done using a two-tailed students t-test with Welch's correction. ****, $p < 0.0001$. Each dot represents an individual embryo, n number was 10-20 embryos per genotype with a minimum of 26 cells imaged per embryo. For FRAP 8-10 embryos were used.

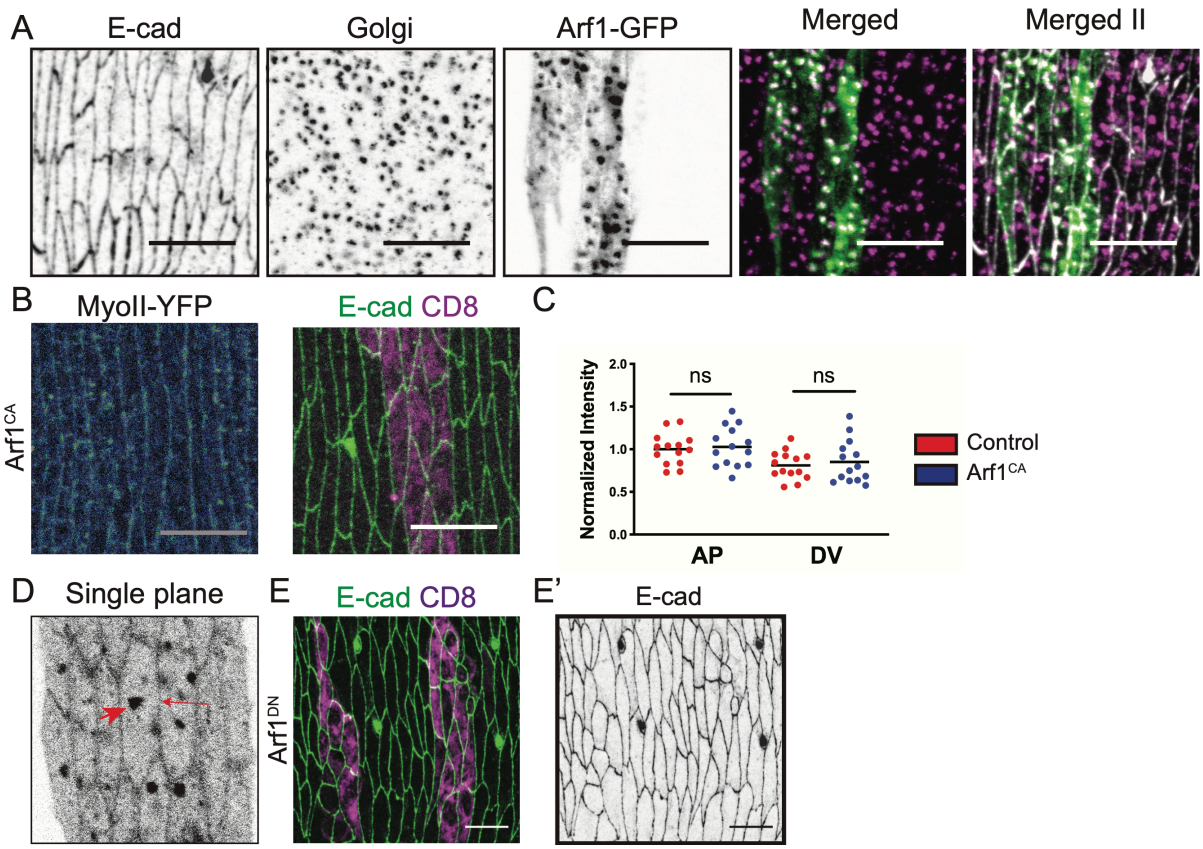

Figure S3. Arf1-GFP localization to the Golgi apparatus and plasma membrane, and effects of Arf^{CA} on MyoII-YFP, and Arf1^{DN} on cell shape.

A. Apical view of the dorsolateral epidermis of *UAS::*Arf1-GFP expressing control embryo with cells borders are marked by antibody staining for E-cad (black, left; white, right), Golgi marked by immunostaining of Trans-Golgi (black, second left; magenta, two right-most), and Arf1-GFP localisation in the engrailed expressing cells (black, middle**;** green, two right-most). The same region is shown in main text (see Fig. 5). (**B-C**) Representative images (**B**) and levels (**C**) of MyoII-YFP (rainbow, left) in the cells expressing a constitutively active Arf1 (Arf1^{CA}). Cell borders are visualized with anti-E-cad antibody (green, right). (**D**) Single plane image of Arf1-GFP in the middle of the AJ. Large arrow indicates Golgi population and small arrow indicates plasma membrane resident population. (**I**) Low magnification image of epidermis expressing Arf1^{DN}. Scale bar is 10 µm. Statistical analysis between cell borders measured by two-way ANOVA. Each dot represents an individual embryo, n number was 10-20 embryos per genotype with a minimum of 17 cells imaged per embryo.

Table S1. Numerical values for each experiment presented in paper.

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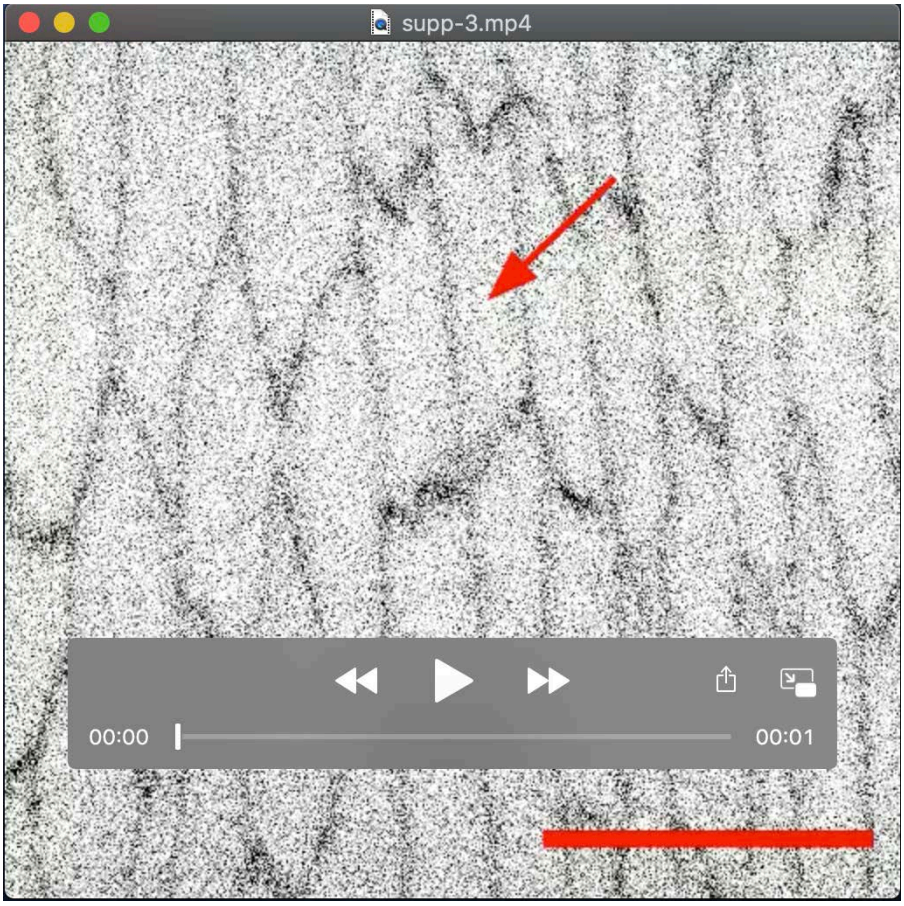
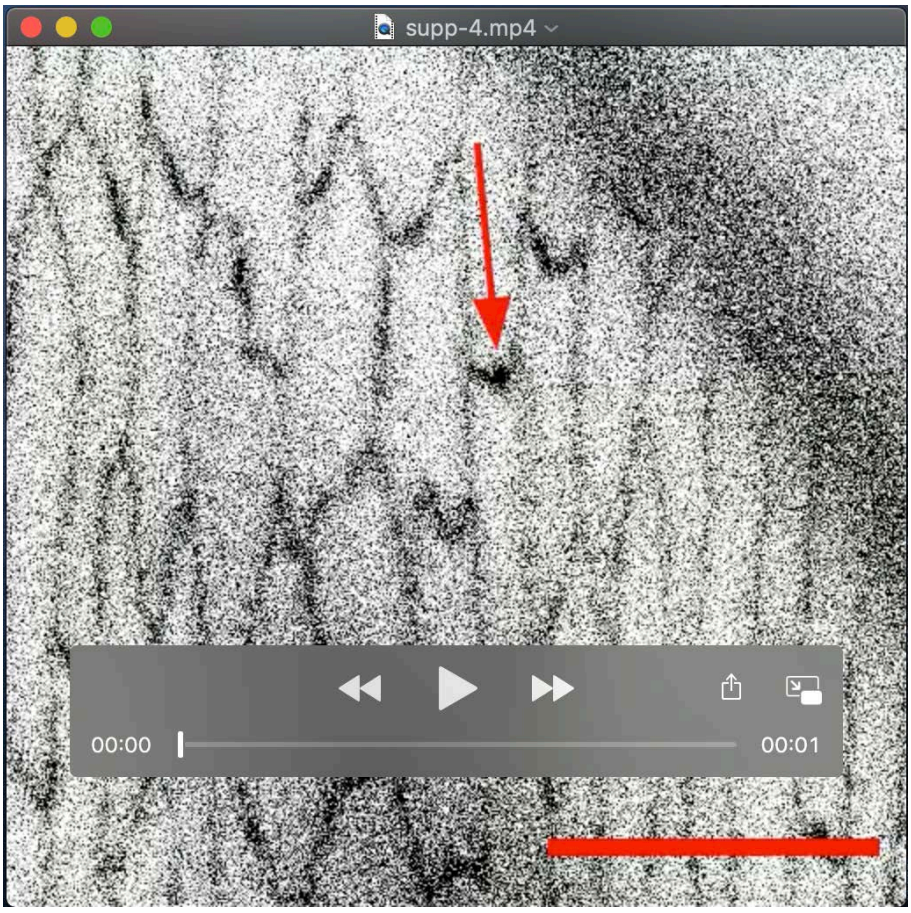
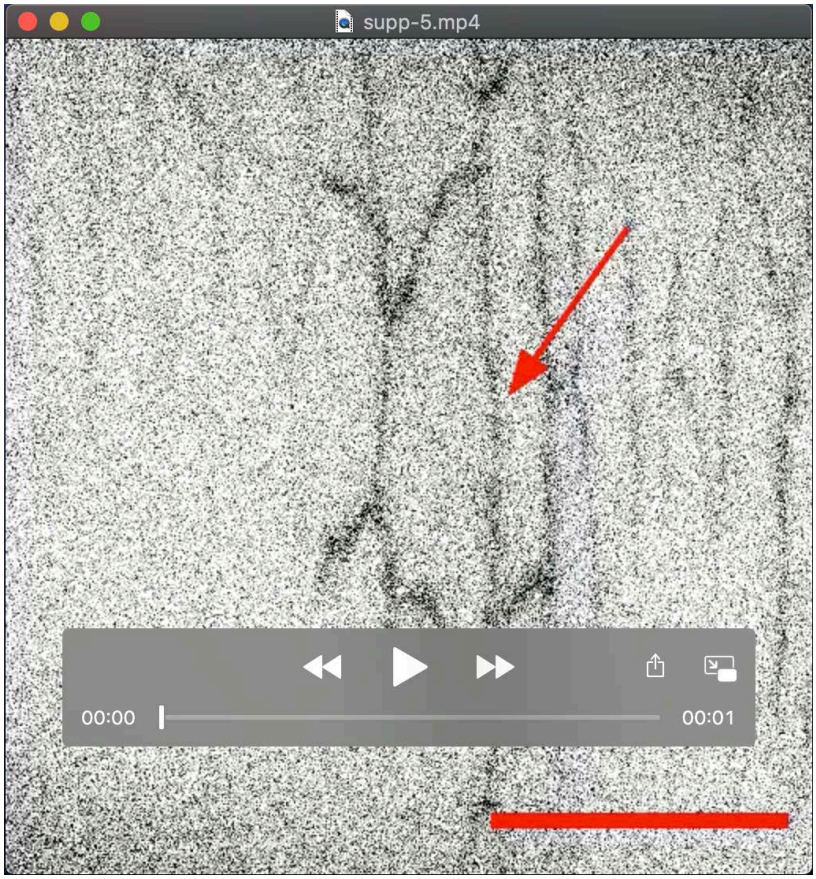


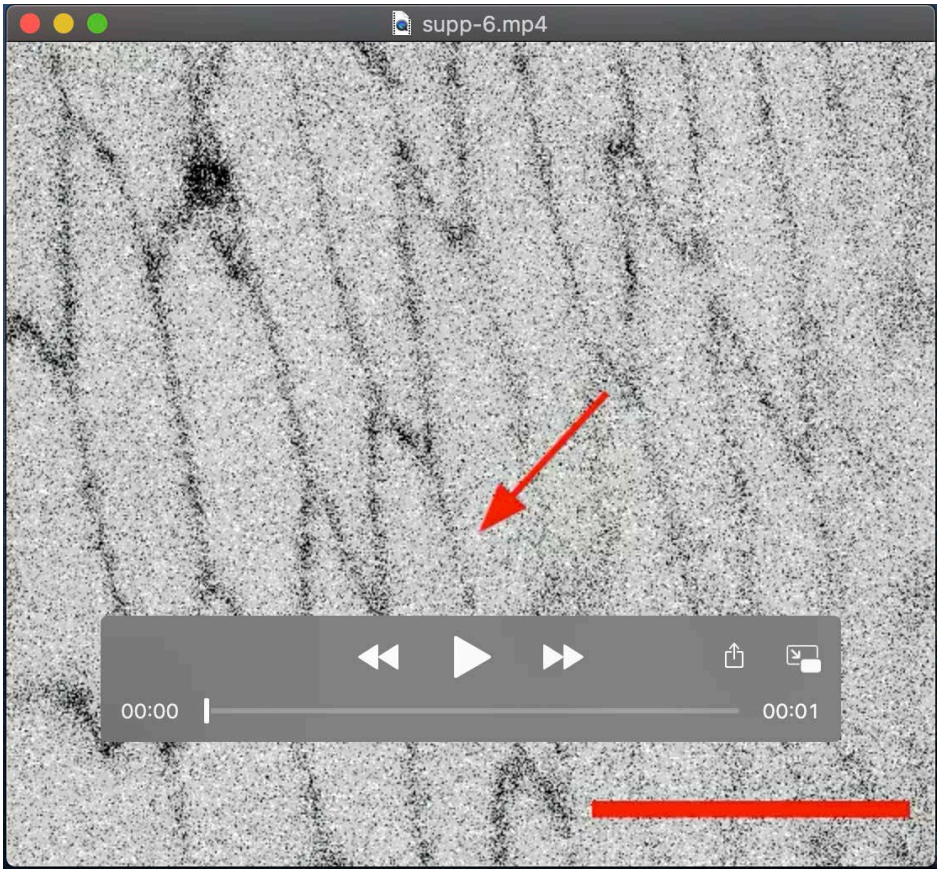
Movie 1. Laser ablation of AP cell border in control embryos. Arrow indicates the ablated junction. Scale bar – 10 µm.



Movie 2. Laser ablation of DV cell border in control embryos. . Arrow indicates the ablated junction. Scale bar – 10 µm.



Movie 3. Laser ablation of AP cell border in *UAS::*p120ctn expressing embryos. . Arrow indicates the ablated junction. Scale bar – 10 µm.



Movie 4. Laser ablation of AP cell border in *p120ctn*$^{-/-}$ mutant embryos. . Arrow indicates the ablated junction. Scale bar – 10 µm.