Supplemental Materials

Molecular Biology of the Cell

Saravanan et al.

Supplementary Figure legends

Figure S1: The influence of myosin dynamics on pulsed apical constrictions in the amnioserosa

(A) Absolute area dynamics (visualized with ECadhGFP) of AS cells expressing (EC, grey) or not expressing (non-EC, black) myoII^{DN} driven by the patchy AS Gal4. (B) Absolute area dynamics (visualized with ECadhGFP) of control AS cells carrying AS Gal4 but not myoII^{DN}. Colocalisation of GFP (green) and pMLC (purple) in medial myosin structures (arrow) in the AS of sqhGFP embryos shown as a merged Z-projection (C3) and as single plane (C1) and single channel (pMLC, purple) orthogonal projections (C2). Scale bar-10μm.

Figure S2: Effect of laser perturbation on area dynamics.

Absolute area dynamics of the NeNe cells (A1-A4, grey) around laser perturbed cells (black) highlighting distinct phases of the response (A-pre ablation, B-expansion, C-constriction and D-post extrusion). Red boxes point to the time window and phases during which pulse dampening is observed in NeNe cells.

Figure S3: **Effect of Rho inactivation on area dynamics.**

Absolute (A,B) and normalized (A', B') apical area dynamics of single cells (black) expressing UAS Actin5CGFP alone (A1-A3), or in combination with RhoN19 (B1-B3), their NeNe (light grey) and DiNe (dark grey). The normalized area dynamics of the time window represented in the insets in A1-A3, B1-B3 are shown in A1'-A3' and B1'-B3'.

Figure S4: Effect of Rho activation on area dynamics.

Absolute (A,B) and normalized (A', B') apical cell area dynamics of single cells (black)

expressing UAS Actin5CGFP alone (A1-A3; same curves as in Fig. S3A), or in combination with RhoV14 (B1-B3), their NeNe (light grey) and DiNe (dark grey). The normalized area dynamics of the time window represented in the insets in A1-A3, B1-B3 are shown in A1'-A3' and B1'-B3'.

Figure S5: Effect of single cell genetic perturbations on cell adhesion.
Effect of the expression of UAS GFP (A) along with either UAS RhoN19 (B) or UAS RhoV14 (C) on distribution of ECadherin (A', B', C'). Expressing cells are green in A,B,C. White asterisks depict expressing cells showing expansion (B,B') or constriction (C,C') and yellow asterisks depict expressing cells that do not show expansion or constriction. White and yellow arrowheads in A', B', C' point to interfaces with or without ECadherin defects respectively.

Figure S6: Membrane dynamics of naturally delaminating cell cohorts-I.
Apical area dynamics of three cohorts (A,B,C) of delaminating cells (black curves) from ECadherin GFP embryos and nine NeNe cells (NeNe belonging to the same cohort have the same alphabet and are individually represented with the corresponding DC in each graph by the grey curves) to show pulse dampening (grey horizontal bars denote amplitude and black arrows duration) during constriction or extrusion of the delaminating cell. Black horizontal bars show A_{max} and A_{min} pre constriction or upon recovery from dampening.

Figure S7: Membrane dynamics of naturally delaminating cell cohorts-II
Apical area dynamics of seven cohorts (A-G) of delaminating cells (black) from ECadherin GFP, sqhGFP embryos and twenty NeNe cells (grey, 2-4 from each cohort, one individually represented with the corresponding DC in each graph; NeNe belonging to the same cohort have the same alphabet and are individually represented with the corresponding DC in each graph by the grey curves) to show pulse dampening (grey bars denote amplitude and black arrows duration) during constriction or extrusion of the delaminating cell. Black horizontal bars show A_{max} and A_{min} prior to cell constriction or upon recovery from dampening.

Supplementary Videos

Movie S1a: Time lapse confocal movie to show the transition in the nature of myosin organization (visualized using sqhGFP) between Phase I and Phase II of amnioserosa morphogenesis.

Movie S1b: Time lapse confocal movie with simultaneous labeling of membrane (ECadherinGFP) and myoII^{DN} (driven with AS Gal4).

Movie S2: Time lapse confocal movie showing the effect of expression of UAS RhoN19 in a single cell (labeled with actin GFP) on the membrane dynamics (visualized with ECadherin GFP) of the perturbed cell, its NeNe and DiNe.

Movie S3: Time lapse confocal movie showing the effect of expression of UAS RhoV14 in a single cell (labeled with actin GFP) on the membrane dynamics (visualized with ECadherin GFP) of the perturbed cell, its NeNe and DiNe.

Movie S4: Time lapse confocal movie showing the myosin response (sqhGFP) of NeNe and DiNe of a single mechanically perturbed cell.

Movie S5: Time lapse confocal movie showing the effect of expression of UAS RhoN19 in a single cell (yellow dot) on the myosin and membrane dynamics (visualized using sqhGFP and ECadherinGFP respectively) of the perturbed cell, its NeNe and DiNe.

Movie S6: Time lapse confocal movie showing the effect of expression of UAS RhoV14 in a single cell (yellow dot)on the myosin and membrane dynamics

(visualized using sqhGFP and ECadherinGFP respectively) of the perturbed cell, its NeNe and DiNe.

Movie S7: Time lapse confocal movie showing the membrane (ECadhGFP) response of a single mechanically perturbed cell expressing myoII^{DN} (blue dot).

Movie S8: Time lapse confocal movie showing the membrane (ECadhGFP) response of a single mechanically perturbed non-expressing cell surrounded by cells expressing myoII^{DN}.

Movie S9: Time lapse confocal movie showing the membrane (ECadhGFP) and myosin (sqhGFP) response of a naturally delaminating cell (yellow dot) and its NeNe.

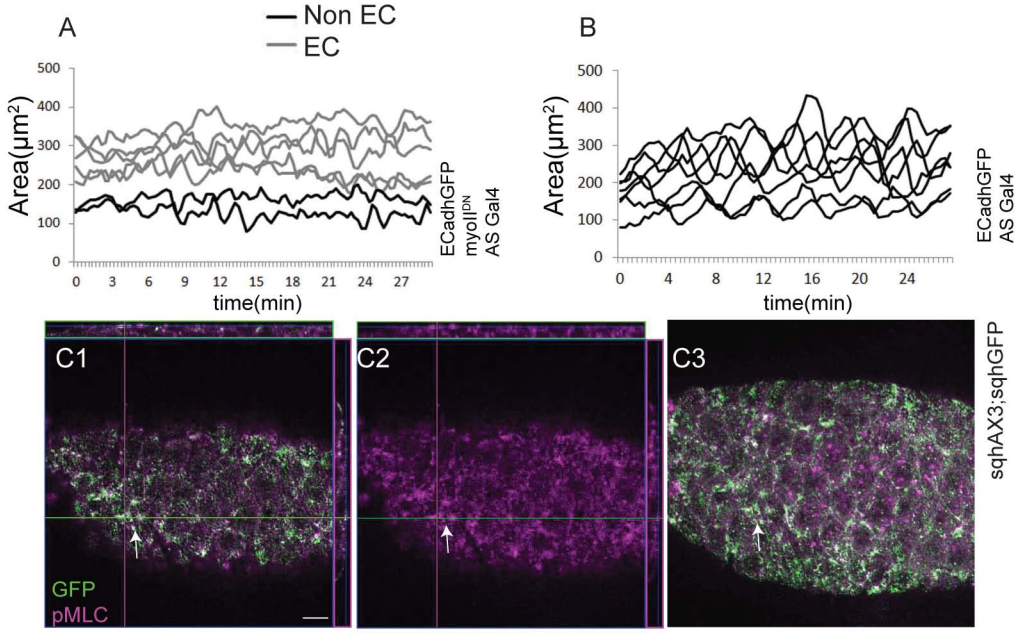
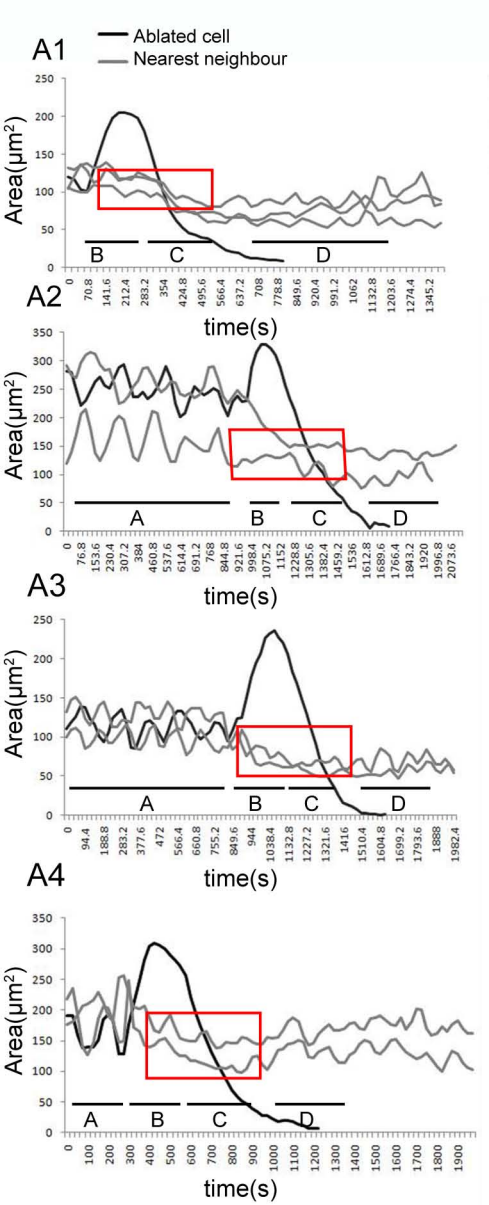


Figure S1 Saravanan et al



A - Pre Ablation
B - Expansion
C - Constriction
D - Post Extrusion

Fig. S2 Saravanan et al

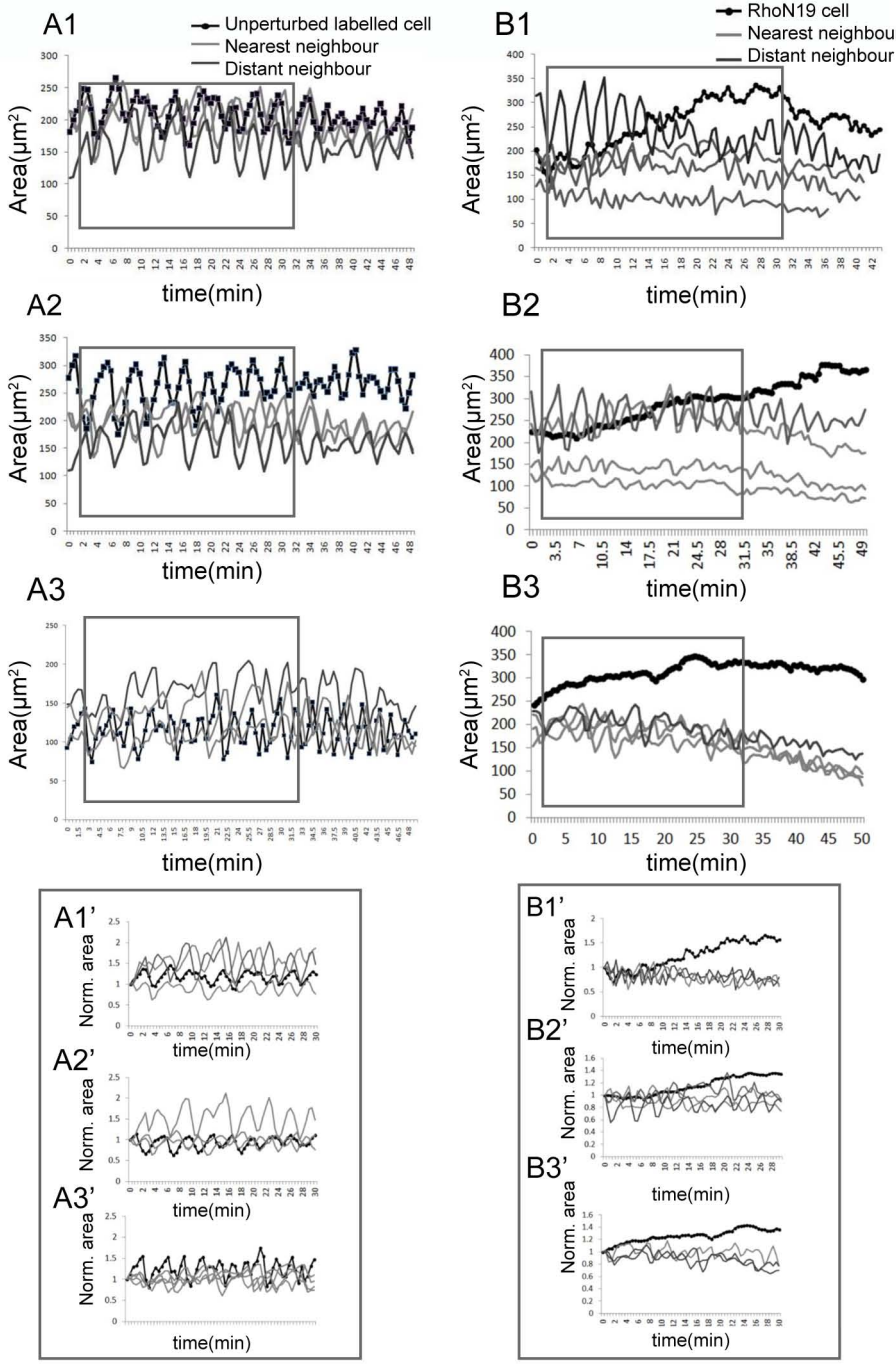


Fig. S3 Saravanan et al

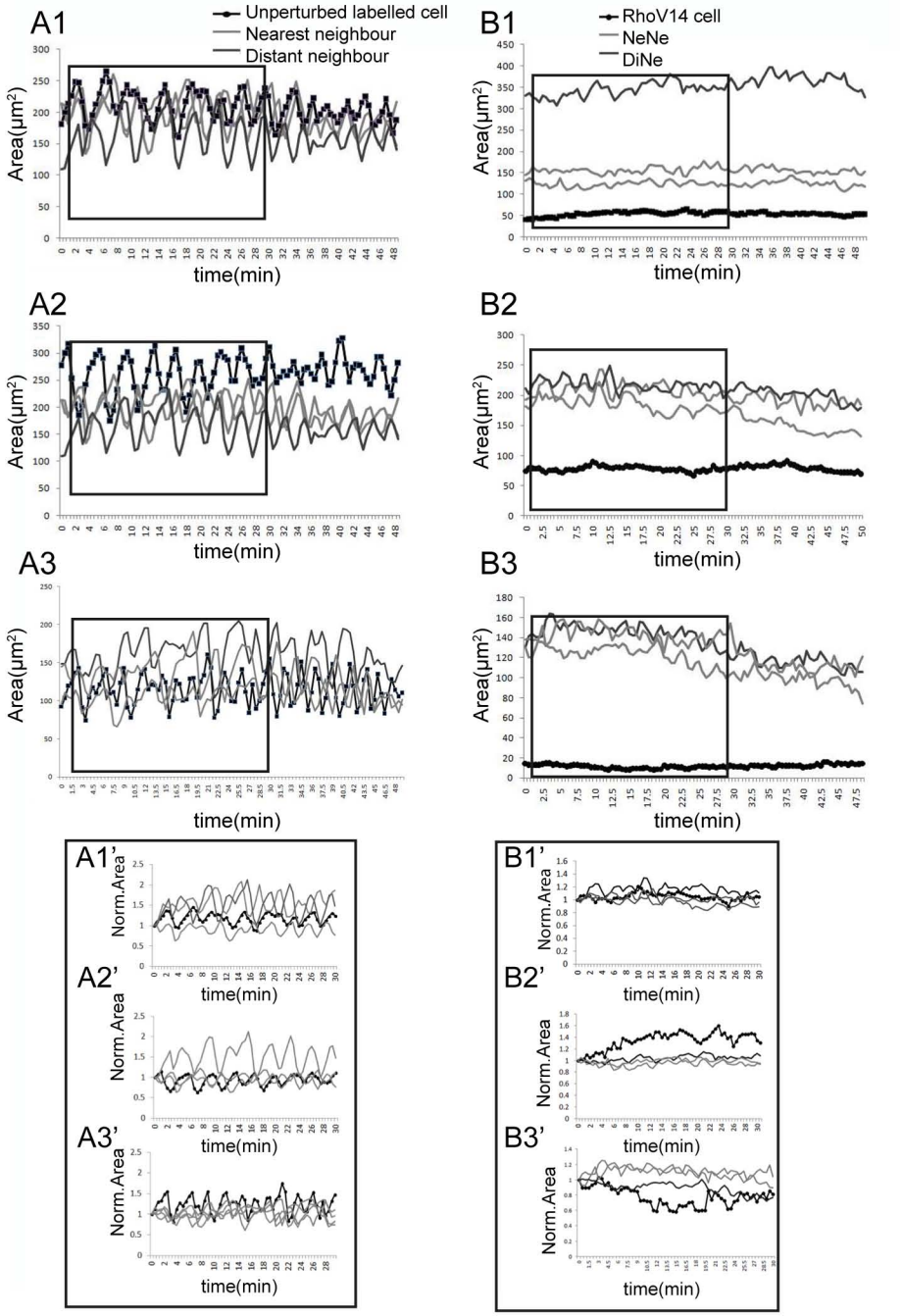


Fig. S4 Saravanan et al

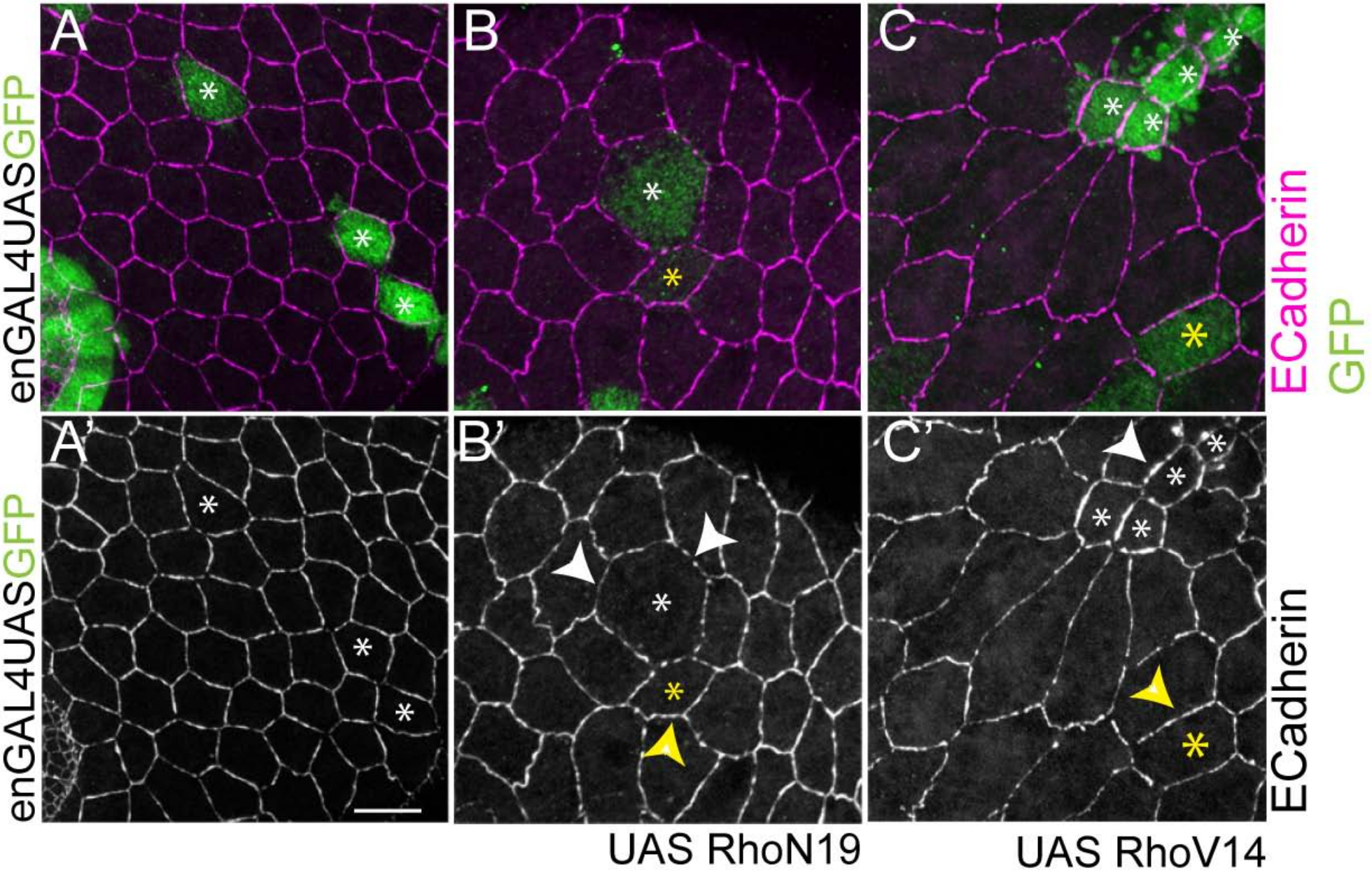


Fig. S5 Saravanan et al

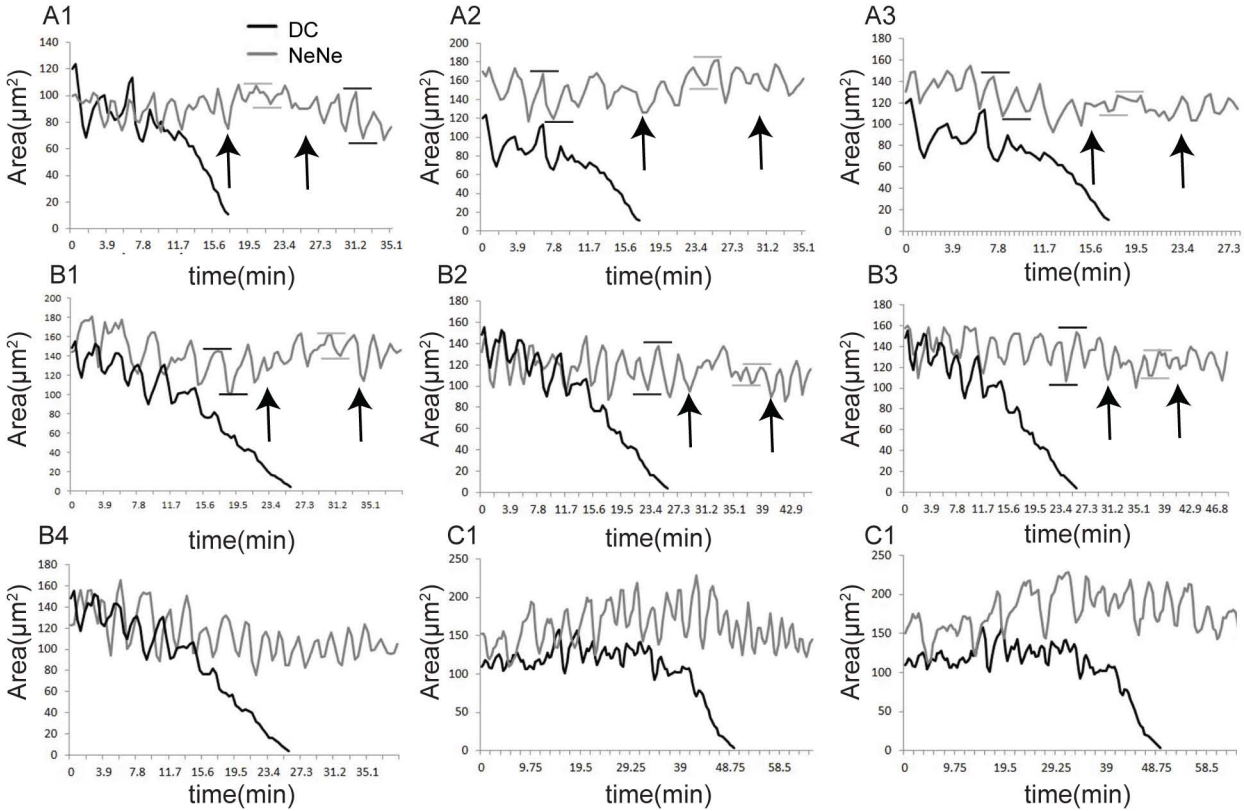


Fig S6 Saravanan et al

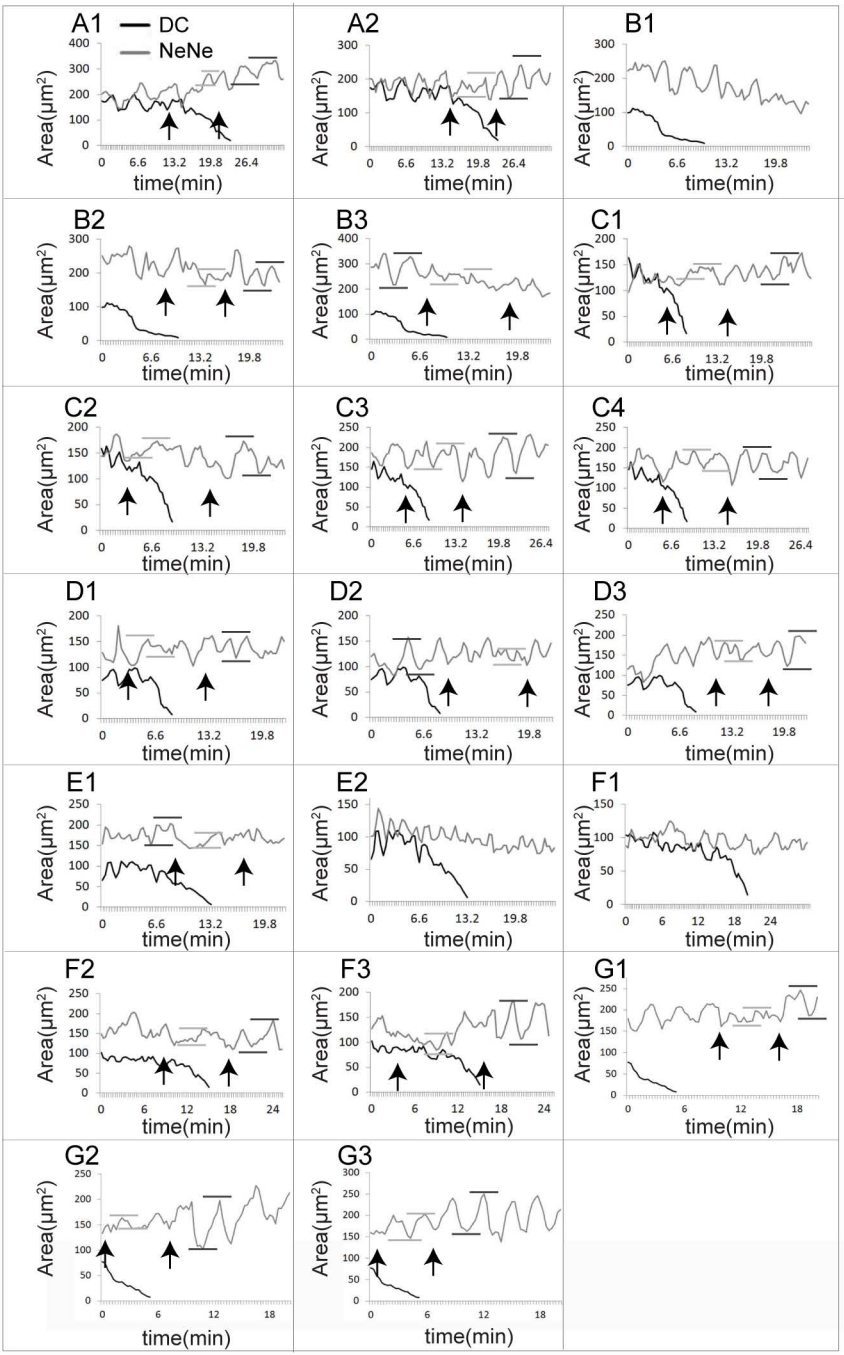


Fig. S7 Saravanan et al