Supplementary Information

**Figure S1. Lateral RhoGEF2 photo-activation is more effective in fold formation than apical or basal photo-activation**

(A-C’’) Top views (A-C’) and cross-sectional views (A’’-C’’’) of wing discs expressing RhoGEF2-CRY2 and CIBN::pmGFP under control of *ap-Gal4* before and after a two-minute illumination with blue light in the indicated region (boxed area). (A,A’,C,C’) show apical views; (B,B’) show basal views; (A’’-C’’’) show cross-sectional views. GAP43::mCherry marks cell membranes. Scale bars: 10 μm.

**Supplementary materials and methods**

The genotypes of larvae were as follows:

Figure S1A-C: *ap-Gal4, tub-Gal80*, UASp-CIBN::pmGFP; UASp-RhoGEF2-CRY2/ sqh-Gap43::mCherry. Larvae were incubated at 22°C and transferred to 29°C for 3 days before dissection.
Movie 1. RhoGEF2 photo-activation results in a spatially controlled accumulation of F-actin

Time lapse movies of wing discs expressing RhoGEF2-CRY2 and CIBN::pmGFP before and after a two-minute illumination with blue light in the indicated region. MoeABD::mCherry, a marker for F-actin, is shown. (A) apical view; (B) basal view; (C, top) view 15 μm beneath the apical surface; (C, bottom) cross-sectional view. The boxed areas indicate the region of illumination. Time after onset of a two-minutes illumination is indicated. Scale bars: 10 μm.

Movie 2. RhoGEF2 photo-activation results in a spatially controlled increase of mechanical tension at apical and basal cell edges.

Time-lapse movies of wing discs expressing RhoGEF2-CRY2 and CIBN::pmGFP under the indicated control and experimental conditions. Time relative to laser ablation of a single cell edge is shown. Cell membranes are visualized by GAP43::mCherry. Red dots indicate the two vertices of the ablated cell edge; red lines indicate positions of laser cuts. Scale bars: 10 μm.
Movie 3. RhoGEF2 photo-activation results in a spatially controlled increase of mechanical tension at lateral cell edges

Time-lapse movies of wing discs expressing RhoGEF2-CRY2 and CIBN::pmGFP under the indicated control and experimental conditions. Time relative to laser ablation of a single cell edge is shown. Cell membranes are visualized by MoeABD::mCherry. Red dots indicate the apical and basal ends of the ablated cell edge; red lines indicate positions of laser cuts. Scale bars: 10 μm.

Movie 4. Rho-GEF2 photo-activation results in apical or basal cell constriction

Time-lapse movies showing apical (left) and basal (right) views of wing discs expressing RhoGEF2-CRY2 and CIBN::pmGFP before and during illumination with blue light at the apical (left) or basal (right) region of cells. Time after onset of a two-minutes illumination is indicated. Cell membranes are visualized by CIBN-pmGFP. Scale bars: 10 μm.
Movie 5. Repeated lateral RhoGEF2 photo-activation results in a long-lasting and reversible fold formation

Time-lapse movie showing a cross-sectional view of a wing disc expressing RhoGEF2-CRY2 and CIBN::pmGFP. Time periods of illumination are indicated by the red open arrowhead (see Fig. 4B). The boxed area indicates the region of illumination. Cell membranes are visualized by GAP43::mCherry. Scale bar: 10 μm.