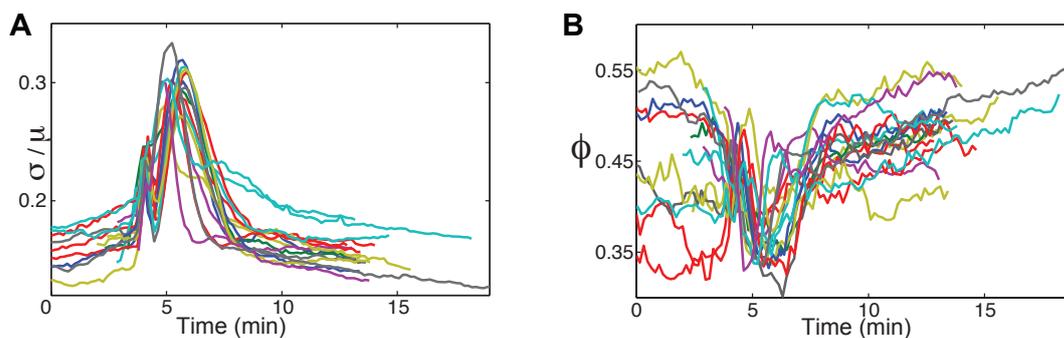


## Supplementary information (ESI) for Integrative Biology

### Dynamic ordering of nuclei in syncytial embryos: a quantitative analysis of the role of cytoskeletal networks

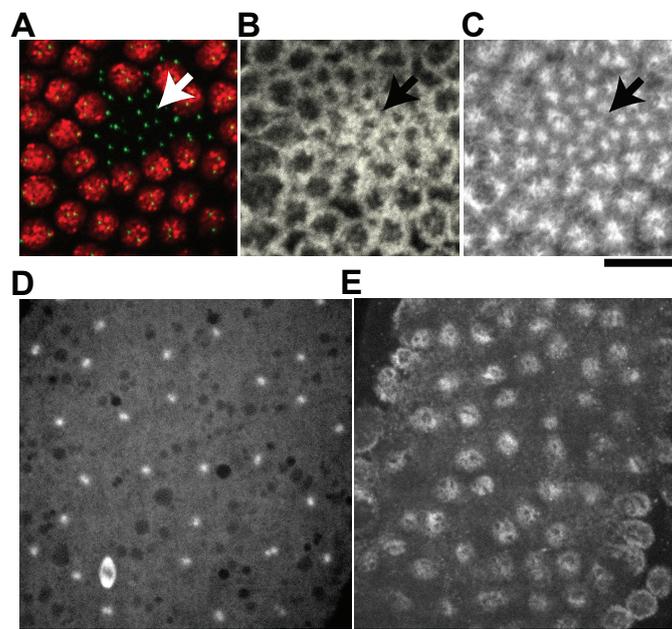
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Figure S1



**S11.** (A,B) Unscaled time course of order parameters  $\sigma/\mu$  (A) and  $\phi$  (B) before and after mitosis 13. Note that the plots for the individual embryos are not adjusted according to anaphase.

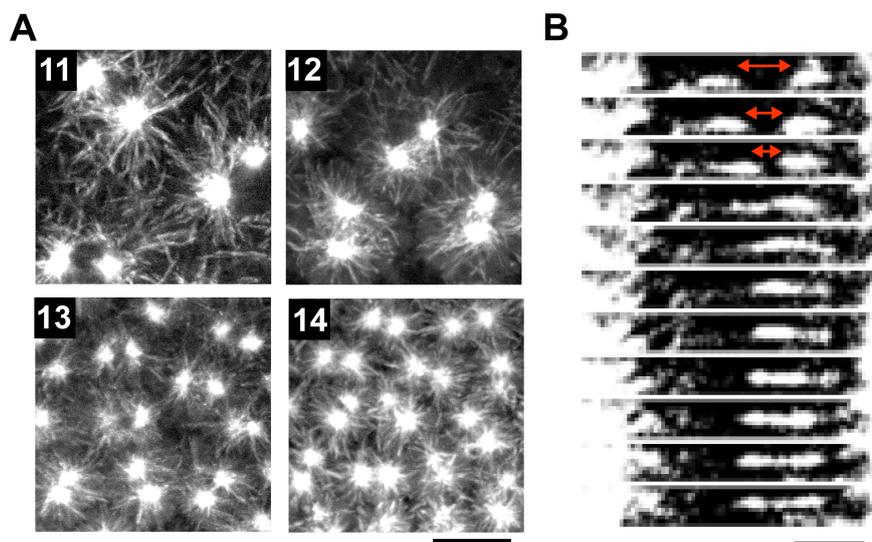
Figure S2



**S12.** Centrosomes organise the cytoskeletal networks. (A-C) Fluorescence images of a fixed embryo expressing SAS6-GFP. (A) Green, GFP; Red, nuclei; (B) f-actin; (C)  $\alpha$ -tubulin. Scale bar 10  $\mu\text{m}$ . SAS6-GFP expression leads to extra centrosomes which are not associated with nuclei (arrow). Scale bar 10  $\mu\text{m}$ . (D, E) Embryos injected with aphidicolin expressing tubulin-GFP (D) and moesin-GFP (E), showing a uniform distribution of nuclei-free centrosomes. Scale bar 20  $\mu\text{m}$ .

## Supplementary information (ESI) for Integrative Biology

Figure S3



**SI3.** Dynamics of overlapping microtubules. (A) Microtubule asters shown by a temporal projection of EB1-GFP that labels the growing tips of microtubules in interphases 11-14. Each image is composed of frames spanning 10 seconds (10 frames). Note that some 'orbits' of microtubules from discrete nuclei overlap in internuclear space. Scale bar 10  $\mu\text{m}$ . (B) Sections from a time-lapse recording (frame rate 2/s) of embryos expressing EB1-GFP showing approaching and potentially aligning tips of microtubules. Approaching tips illustrated by red arrows in first three frames. Scale bar 2  $\mu\text{m}$ .

### Movie files

**Movie1** Wildtype embryo expressing Histone H2Av-GFP during cycle 13 and 14. Note that following mitosis nuclei are first displaced and then arranged into a regular array.

**Movie2** Nuclear array after image processing and segmentation. Colour code for number of neighbours as for Fig. 1.

**Movie3** Dynamics of EB1-GFP in a wildtype embryo. The fluorescence signal marks the plus-end tips of the microtubules. A pair of centrosomes is located at the apical side of each nucleus.

**Movie4** Movement of individual nuclei after late injection of toxins. Embryos expressing Histone H2Av were injected with water, latrunculin A, colcemid, or latrunculin A and colcemid simultaneously.