Fridolfsson and Starr, http://www.jcb.org/cgi/content/full/jcb.201004118/DC1



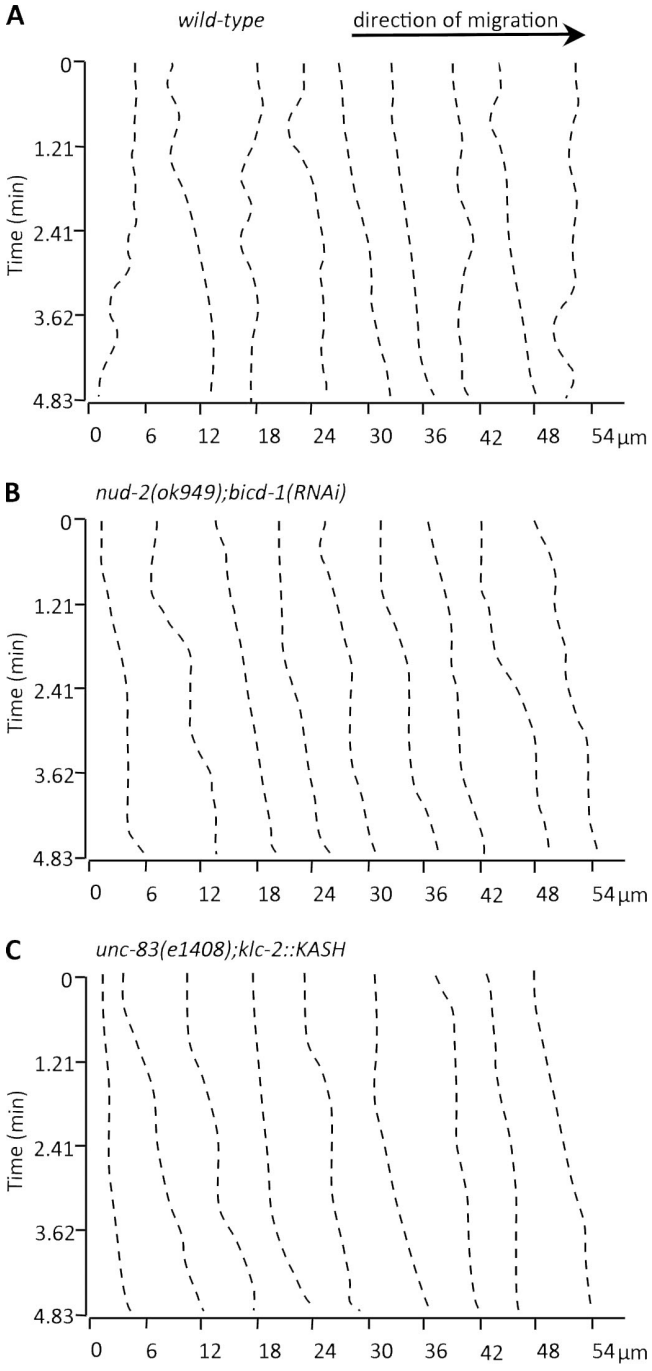
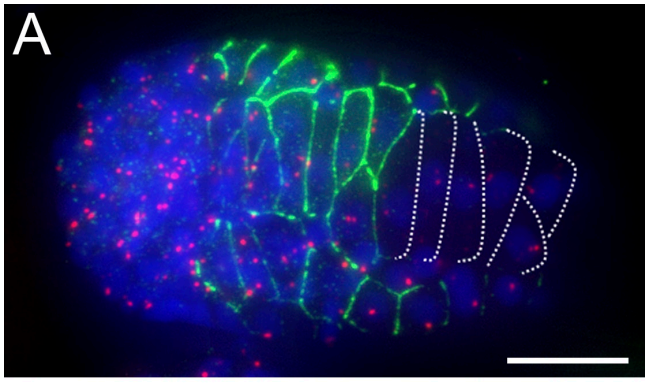


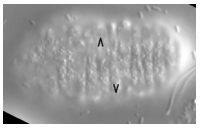

Figure S1. **Bidirectional character of nuclear migrations.** Kymographs of nuclei were made from DIC time-lapse imaging at 200-ms intervals as in Fig. 2. In each panel, kymographs of nine nuclei are represented. Each line represents the rear edge of a migrating nucleus. (A) In wild type, brief, faster nuclear movements and bidirectional movements were observed. (B) Examples of normal forward migrations in *nud-2(ok949);bicd-1(RNAi)* nuclei. (C) Normal forward migrations in *unc-83(e1408);klc-2::KASH* nuclei are shown. (B and C) No backward movements >1 µm were observed.



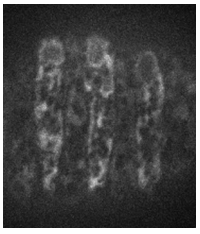

B

| Position | % centrosomes |
|---|---|
| Front | 23.4 |
| Back | 29.8 |
| Sides | 46.8 |

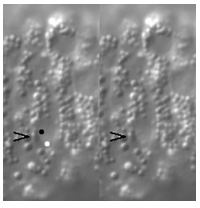
Figure S2. **Centrosome position is random during nuclear migration.** (A) Immunostaining of centrosomes (red) in a fixed wild-type embryo expressing AJM-1::GFP costained with anti-GFP (green) and DAPI (blue) to visualize adherens junctions and nuclei, respectively. Cell–cell boundaries that were faint by fluorescence are outlined in white. Anterior is to the left. (B) Quantification of centrosome position on the nucleus relative to the direction of migration ($n$ = 47). Bar, 10 µm.



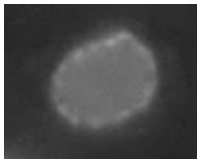
Video 1. **Hyp7 precursor intercalation and nuclear migration in a wild-type *C. elegans* embryo imaged by DIC.** The same embryo is shown as in Fig. 1 A. Arrows point to nuclei on opposite sides of the embryo that migrate past each other after intercalation. Dorsal view, anterior is to the left. Captured at a rate of 15 s/frame for ~60 min and shown at 30 s/frame.



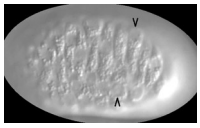
Video 2. **Nuclear migration through the ER in a wild-type *C. elegans* embryo imaged with SP-12::GFP.** The same embryo is shown as in Fig. 3. Anterior is to the left. Captured at a rate of 15 s/frame for 15 min.



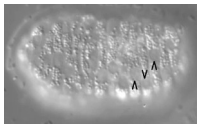
Video 3. **Nuclear rolling during hyp7 nuclear migration imaged by DIC.** The same nucleus is shown as in Fig. 4 A. The arrows point to a rolling nucleus. Migration is down and rolling is clockwise. Two nucleoli are marked (left, black and white circles) that can also be seen in the DIC image (right). Captured at a rate of 15 s/frame for ~25 min.



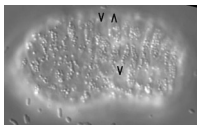
Video 4. **Nuclear rolling during hyp7 nuclear migration imaged with lamin::GFP.** The same embryo is shown as in Fig. 4 B. Migration is to the left, and rolling is clockwise. Captured at a rate of 1 s/frame for 1 min.



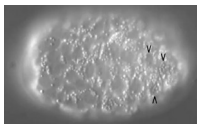
Video 5. **Hyp7 intercalation and nuclear migration in an *unc-83(e1408) C. elegans* embryo imaged by DIC.** The same embryo is shown as in Fig. 1 B. The arrows point to nuclei on opposite sides of the embryo that fail to migrate after intercalation. Dorsal view, anterior is to the left. Captured at a rate of 15 s/frame for ~60 min and shown at 30 s/frame.



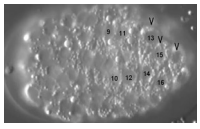
Video 6. **Hyp7 intercalation and nuclear migration in a *klc-2(km11) C. elegans* embryo imaged by DIC.** The same embryo is shown as in Fig. 5 A. Left and center arrows point to nuclei on opposite sides of the embryo that are pushed to the midline during morphogenesis. Right arrow points to a nucleus that moves late to the opposite side of the embryo. Dorsal view, anterior is to the left. Captured at a rate of 15 s/frame for ~60 min and shown at 30 s/frame.



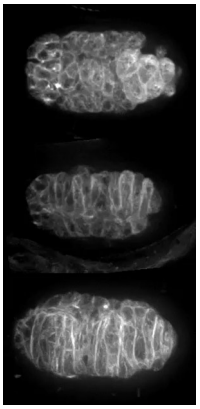
Video 7. **Hyp7 intercalation and nuclear migration in a *nud-2(ok949) C. elegans* embryo imaged by DIC.** Left arrow points to a nucleus that begins migration but fails to reach the opposite side of the embryo. Center and right arrows point to nuclei on opposite sides of the embryo that migrate past each other after intercalation. Dorsal view, anterior is to the left. Captured at a rate of 15 s/frame for ~60 min and shown at 30 s/frame.



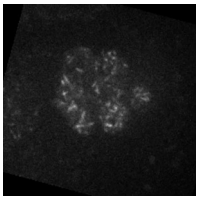
Video 8. **Hyp7 intercalation and nuclear migration in a *nud-2(ok949);bicd-1(RNAi) C. elegans* embryo imaged by DIC.** The same embryo is shown as in Fig. 5 B. Left arrow points to a nucleus that begins migration but fails to reach the opposite side of the embryo. Center and right arrows point to nuclei on opposite sides of the embryo that migrate past each other after intercalation. Dorsal view, anterior is to the left. Captured at a rate of 15 s/frame for ~60 min and shown at 30 s/frame.



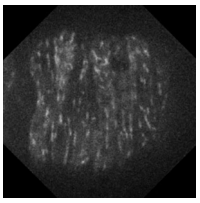
Video 9. **Hyp7 intercalation and nuclear migration in an *unc-83(e1408);klc-2::KASH C. elegans* embryo imaged by DIC.** The same embryo is shown as in Fig. 6. Left arrow points to a nucleus that fails to reach the opposite side of the embryo. Center and right arrows point to nuclei on the same side of the embryo that migrate to the opposite side of the embryo after intercalation. Dorsal view, anterior is to the left. Captured at a rate of 15 s/frame for ~60 min and shown at 30 s/frame.



Video 10. **Microtubule organization early in intercalation and migration imaged by GFP::β-tubulin.** The same three embryos are shown as in Fig. 7. The top embryo is preintercalation, the middle is near completion of intercalation, and the bottom is during nuclear migration. Anterior is to the left. Captured at a rate of 15 s/frame for 15 min.



Video 11. **Direction of microtubule growth early in intercalation imaged by EBP-1::GFP.** The same embryo is shown as in Fig. 8 A. Anterior is to the left. Captured at a rate of 0.08 s/frame for 40 s and shown at 0.16 s/frame.



Video 12. **Direction of microtubule growth during nuclear migration imaged by EBP-1::GFP.** The same embryo is shown as in Fig. 8 B. Anterior is to the left. Captured at a rate of 0.13 s/frame for 65 s and shown at 0.26 s/frame.