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**Mitotic wavefronts mediated by mechanical signaling in early *Drosophila* embryos** LOUIS KANG, University of Pennsylvania, TIMON IDEMA, Delft University of Technology, ANDREA LIU, TOM LUBENSKY, University of Pennsylvania — Mitosis in the early *Drosophila* embryo demonstrates spatial and temporal correlations in the form of wavefronts that travel across the embryo in each cell cycle. This coordinated phenomenon requires a signaling mechanism, which we suggest is mechanical in origin. We have constructed a theoretical model that supports nonlinear wavefront propagation in a mechanically-excitabile medium. Previously, we have shown that this model captures quantitatively the wavefront speed as it varies with cell cycle number, for reasonable values of the elastic moduli and damping coefficient of the medium. Now we show that our model also captures the displacements of cell nuclei in the embryo in response to the traveling wavefront. This new result further supports that mechanical signaling may play an important role in mediating mitotic wavefronts.

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