

Abstract Submitted
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**Wavefronts and mechanical signaling
in early *Drosophila* embryos** TIMON IDEMA, University of Pennsylvania, JULIEN DUBUIS, Princeton University, LISA MANNING, Syracuse University, PHILIP NELSON, ANDREA LIU, University of Pennsylvania — Mitosis in the early syncytial *Drosophila* embryo has a high degree of spatial and temporal correlations, visible as mitotic wavefronts that travel across the embryo. This mitosis wavefront is preceded by another wavefront which corresponds to chromosome condensation. The two wavefronts are separated by a time interval that is independent of cell cycle and propagate at the same speed for a given embryo in a given cycle. We study the wavefronts in the context of excitable medium theory, using two different models, one with biochemical signaling and one with mechanical signaling. We find that the dependence of wavefront speed on cell cycle number is most naturally explained via a mechanical signaling, and that the entire process suggests a scenario in which biochemical and mechanical signaling are coupled.

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