

Abstract Submitted  
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**Noise regulation and symmetry breaking during vertebrate body elongation.** THIERRY EMONET, DIPJYOTI DAS, SCOTT A. HOLLEY, Yale University — Elongation of the vertebrate body axis is driven by collective cell migration and cell proliferation at the posteriorly advancing embryonic tailbud. Within the Zebrafish tailbud an ordered stream of cells symmetrically bifurcates to form the left and right halves of the presomitic mesoderm. Maintaining bilateral symmetry during this process is critical to avoid catastrophic spine deformation. Using direct comparison between experimental data and a simple model of cell migration we identified the dynamic regulation of the noise in the direction of motion of individual cells as a critical factor in maintaining symmetric cell flow. Genetic perturbations that reduced noise led to body axis deformation whereas an increase in noise led to retarded elongation as predicted by our model.

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