

Postdoctoral Position Available

Developmental Systems Biology

The Özbudak Lab is looking for a postdoctoral fellow interested in combining multidisciplinary approaches to discover biophysical mechanisms governing spatiotemporal pattern formation during embryonic development.

Embryos develop spatiotemporal patterns by encoding and interpreting biological signals in real time. Despite unavoidable fluctuations in gene expression, embryonic development is robust and reproducible, which necessitates several mechanisms buffering stochastic gene expression. A striking example of robust spatiotemporal patterning is the rhythmic segmentation of somites, which are precursors of the vertebral column. Segmentation of somites is controlled by: 1) oscillatory expression of the vertebrate segmentation clock genes, 2) short-distance Notch signaling, 3) long-distance Fgf, Wnt, and Retinoic Acid signaling gradients, 4) a network of transcription factors integrating outputs of the segmentation clock and the signaling pathways, and 5) cytoskeletal and biomechanical processes executing physical formation of segment boundaries. Errors in this regulatory cascade result in various birth defects, including congenital scoliosis. We combine single-cell microscopy measurements, time-resolved perturbation experiments, biophysical modeling, and computational simulations to decipher the mechanism underlying robust spatiotemporal pattern formation and cell fate determination.

Relevant publications: *Nature* 2021 589:431-436; *Nature* 2023 613:153-159; *Dev Cell* 2025 60:669-678.

Interested candidate must have a PhD and have a strong record of accomplishments and experience in:

- 1- Microscopy and image analysis; OR
- 2- Biomechanics and biophysics; OR

We are looking for a colleague who is highly motivated and independent. Please send a cover letter detailing your past research accomplishments and future research goals, and your CV by email to: ozbudak@northwestern.edu