

Multiscale studies of embryonic development: experiments and theory

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During embryonic development, a single cell gives rise to an organism with a variety of multicellular functional structures, tissues and organs. This remarkable transformation relies on continuous interaction between the genome and dynamics of biological networks. The first insights into molecular mechanisms of embryogenesis came from studies of early development in *Drosophila*, an experimental model that provides a paradigm for multiscale analysis of development. I will present the results of our computational and experimental studies of this system. These studies include large-scale imaging and statistical analysis of morphogen gradients that pattern the early *Drosophila* embryo, and new analytical results for morphogen gradient dynamics [1-5].

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