

Nonlinear flows and waves in embryonic development

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Early embryogenesis of most metazoans is characterized by rapid and synchronous cleavage divisions. After fertilization, *Drosophila* embryos undergo 13 swift rounds of DNA replication and mitosis without cytokinesis, resulting in a multinucleated syncytium containing about 6,000 nuclei. The very first cycles involve substantial flows, both in the bulk and at the cortex of the syncytial embryo, while waves of activity of Cdk1, the main regulator of the cell cycle, are observed in late cycles. I shall discuss the corresponding experimental data and theoretical models.