

Basel Computational Biology Seminar

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Patterning in dynamic environments

Patterning, growth and morphogenesis are fundamental and interdependent processes in development. However, the mechanisms through which they interact, and the implications of their simultaneous occurrence and feedback between them, are poorly understood. In the first part of my talk, I will present a combination of experimental and theoretical work where we show that transitions in tissue-scale physical properties are coupled to morphogen signaling and transport during early zebrafish development. Our findings show that morphogen transport is actively regulated by cell and tissue architecture *in vivo*. We propose that feedback loops between morphogen signaling and tissue organization lock patterning and morphogenesis in a closed feedback loop that ensures that their dynamics are kept in sync. In the second part of the talk, I will present ongoing work in my group that investigates the interplay between tissue geometry, growth, and GRN-driven patterning. By integrating tools from dynamical systems theory with models of growth, I will demonstrate how cells can autonomously interpret global information about tissue size without the need for global scaling mechanisms.

Date: **Monday, 09 March 2026**
Time: **16:15 h – 17:15h**
Location: **Biozentrum, U1.191**
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