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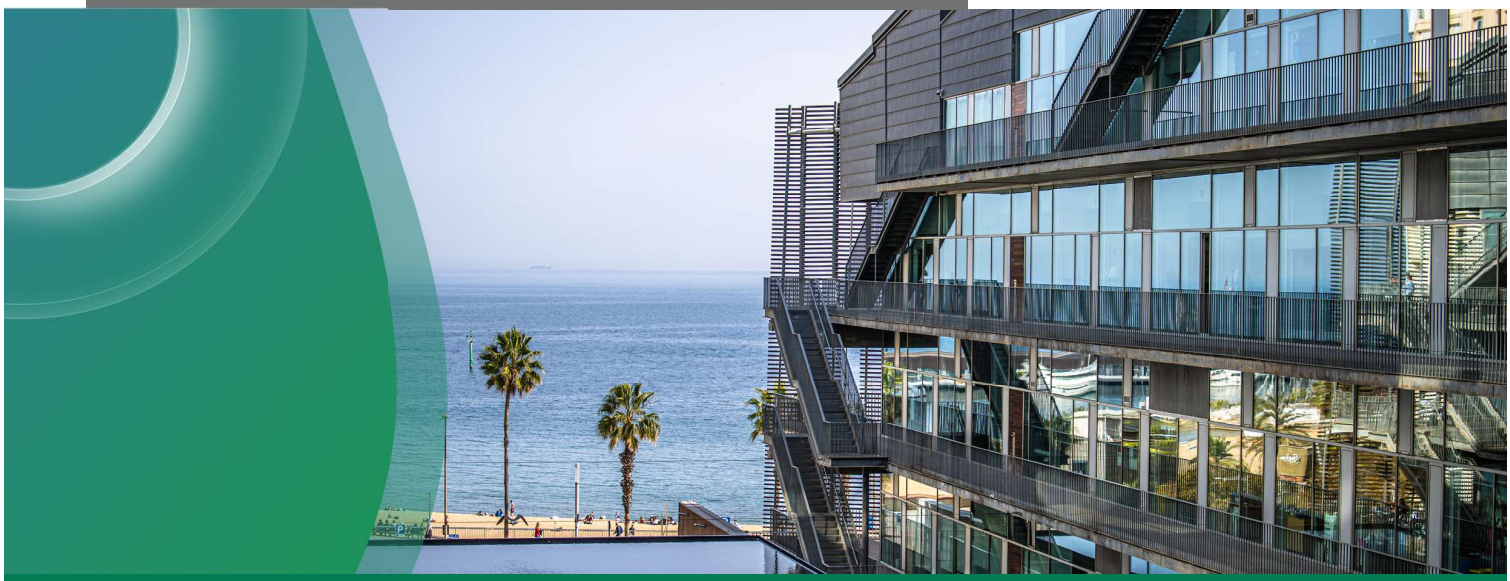

Edouard Hannezo

Institute of Science and Technology, Austria

15 October 2024, 12pm

Barcelona, Charles Darwin - PRBB

Robustness of morphogenesis via mechanical feedbacks

A central question in biology is how genetic information is integrated across many length scales to shape and pattern cells, organs and organisms. Theoretical biophysics have proven instrumental in proposing minimal conceptual frameworks to understand the self-organizing potential of living matter, as well as to identify key predictions that can be verified experimentally. However, a key feature of multicellular development is not simply the emergence of increasing complex shapes and form, but the fact that this process is robust and reproducible. In this talk, I will present two recent works from our group on understanding how checkpoints for robustness can emerge from simple mechanical principles. Firstly, in the context of intestinal organoid morphogenesis, we show how mechano-sensitive feedbacks can give rise to mechanical bistability, rendering morphogenesis robust to subsequent mechanical perturbations once it's completed. Secondly, in the context of early mammalian embryogenesis, we show how mechanical compaction can buffer developmental variability and allow embryos to converge towards robust shapes.

Upcoming speakers

Tue, November 19 2024 – Trudy Oliver, Duke University

A seminar series inviting international researchers, organized by EMBL Barcelona postocs, open to all

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