The Drosophiloid, a programmable synthetic embryo

Initiative: "Experiment!" (beendet)

Ausschreibung: Explorative Phase

Bewilligung: 18.12.2019

Laufzeit: 1 Jahre 6 Monate

This project proposes to build a synthetic embryo, the Drosophiloid, by reverse-engineering the genetic and morphological rules derived from a gastrulating Drosophila embryo. The Drosophiloid will have the ability to undergo programmable morphogenetic processes and will be the first synthetic animal of this kind. In the ultimate version of this synthetic animal, the epithelium will be embedded between a biomatrix and an internal bio-fluid to simulate the yolk and egg shell, and made of viscoelastic smart biomaterials that can be derivatized to provide cells with biomechanical and biochemical cues. For the Drosophiloid construction and induction of its gastrulation, approaches from tissue engineering, materials science and optogenetics, supported by computer modelling will be used. While the primary aim is to challenge and refine the knowledge of the processes that generate, shape and form living structures, the Drosophiloid, if successful, will also provide a system to develop rules for producing properly shaped synthetic organs for medical purposes.

Projektbeteiligte

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