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Fundamental principles during the egg-to-embryo transition

Life of all sexually reproducing organisms starts with the fusion of two highly specialized cells, the egg and the sperm, to form a single cell, the zygote. This totipotent cell uses the maternally provided macromolecular protein complexes and stored mRNAs to progress through embryogenesis to give rise to all cells of the future organism. The oocyte-to-embryo transition, which is arguably one of the most dramatic developmental transition, has so far been mostly investigated from an RNA-centric point of view. However, our discoveries and initial characterization of new, essential players for fertilization in zebrafish and our recent discovery of a dormant egg ribosome state exemplify how little we know about the molecular mechanisms underlying this fundamental transition.

In my talk, I will share new insights into the egg-to-embryo transition in vertebrates, focusing on three topics: I will present our identification of a dormant ribosome state that keeps ribosomes repressed and preserved in zebrafish and *Xenopus* eggs, discuss our current understanding of the players and molecular mechanisms that mediate vertebrate sperm-egg binding and fusion, and present evidence for a self-generated Toddler gradient guiding mesodermal cell migration during gastrulation.

The long-term vision of the Pauli lab is to unravel new concepts and molecular principles governing the fascinating yet poorly understood transition that marks the beginning of life.

Host: Melina Schuh



Thursday / 9.12.2021 / 13:00

zoom access data will be mailed before the seminar!

