SUMMER SEMESTER 2025

RTG 2756 CYTAC SEMINAR SERIES

TUESDAY, APRIL 29
17:00 IN HS5

CYTAC

RTG 2756

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A MATHEMATICAL MODEL FOR BLEB REGULATION

IN ZEBRAFISH PRIMORDIAL GERM CELLS

Primordial germ cells of the zebrafish migrate by the formation of blebs, cell membrane protrusions generated by local membrane-cortex detachments. A potential cellular mechanism for blebbing in a controlled site is based on intracellular flows that redistribute the membrane-cortex linker molecule Ezrin. I will present a corresponding model of coupled partial differential equations in the cell plasma and on the cell membrane. The model rests upon intracellular Darcy flow and a diffusion-advection-reaction system, describing the temporal evolution from a homogeneous to a strongly anisotropic Ezrin distribution. A qualitative comparison between simple simulations and experimental observations suggests the viability of the model. Along the talk I will try to give insights into the employed mathematical concepts as well as into what questions are of particular interest from a mathematical perspective.