

SFB 680

MOLECULAR BASIS OF EVOLUTIONARY INNOVATIONS

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Cell and tissue dynamics during *Tribolium castaneum* embryogenesis revealed by versatile fluorescence labeling approaches

Studies on new arthropod models like the beetle *Tribolium castaneum* are shifting our knowledge of embryonic patterning and tissue morphogenesis beyond the *Drosophila* paradigm. In contrast to *Drosophila*, *Tribolium* embryos exhibit the short/intermediate germ-type, and they become enveloped by extensive extraembryonic epithelia, the amnion and serosa. The genetic basis of these processes has been the focus of active research. In our work, we have complemented genetic approaches with fluorescence live imaging of *Tribolium* embryos to make the link between gene function and morphogenetic cell behaviors during *Tribolium* blastoderm formation and differentiation, germband condensation and elongation, and extraembryonic development. I will first show that transient labeling methods result in strong, homogeneous and persistent expression of fluorescent markers in *Tribolium* embryos labeling the chromatin, membrane, cytoskeleton or combinations thereof. I will then demonstrate co-injection of fluorescent markers with dsRNA for live imaging of embryos with disrupted caudal gene function by RNA interference. Using these approaches, I will describe and compare cell and tissue dynamics in *Tribolium* embryos with wild-type and altered fate maps. Our methodology provides a comprehensive framework to test quantitative models of fundamental patterning, growth and morphogenetic mechanisms in *Tribolium* and other arthropod species.

July 10, 15:00

Biocenter, Zùlpicher Str. 47b, Seminar room 3.003, 3rd floor

Host: Siegfried Roth

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