Mechanobiology in Epithelial 3D Tissue Constructs

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LECTURES

GRK 2415

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Mechanical Forces Driving Collective Cell Migration in Development

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at 9:15 am

DWI – Leibniz-Institut für Interaktive Materialien e.V.
(Forckenbeckstr 50, 52074 Aachen North Rhine-Westphalia)

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Abstract: Cell migration is a fundamental process driving embryonic development, tissue homeostasis, and a variety of pathological events, including cancer metastasis and wound healing. While chemical guidance cues have been extensively studied, the role of mechanical forces in orchestrating collective cell movement is only beginning to be understood. In this seminar, I will present our research on the integration of chemical and mechanical signals in the migration of neural crest cells - an embryonic cell population known for its invasive and collective migratory behaviour. The talk will introduce a novel mechanism of directed migration termed *frictiotaxis*, which is driven by a friction gradient between cells and their substrate. This discovery reveals a new layer of regulatory complexity in cell guidance and underscores the importance of physical forces in establishing directionality during migration. The insights shared will have broad implications for developmental biology and the understanding of disease progression.