

A new mechanism affecting cell migration found

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Fruit fly border cells move with the help of actin-rich protrusions

Cell migration is important for development and physiology of multicellular organisms. During embryonic development individual cells and cell clusters can move over relatively long distances, and cell migration is also essential for wound healing and many immunological processes in adult animals. On the other hand, uncontrolled migration of malignant cells results in cancer invasion of metastasis.

Cell migration has mainly been studied in cell culture environment. However, in animal tissues cells predominantly migrate in a three-dimensional environment, where they have to push through adjacent cell-layers and extracellular matrix. Migrating cells are known to form dynamic protrusions at their leading edge, but the function of these actin-rich protrusions has remained elusive.

By using fruit fly as a model system, Minna Poukkula working at the Institute of Biotechnology, University of Helsinki, has found out how actin-rich protrusions contribute to [cell migration](#) in [animal tissues](#). She revealed that GMF, a protein that

promotes the disassembly of branched actin filament networks, controls the size and lifetime of protrusions in border cell clusters migrating in fruit fly egg chambers. Importantly, diminished protrusion dynamics in GMF-deficient flies correlated with problems in border cell cluster migration.

"These findings demonstrate that efficient actin filament disassembly by GMF is essential for rapid dynamics of cell protrusions, and that this dynamics are important for cell migration in a three-dimensional tissue environment", says Minna Poukkula from the research group of professor Pekka Lappalainen.

More information: "GMF Promotes Leading-Edge Dynamics and Collective Cell Migration In Vivo." *Curr Biol.* 2014 Oct 8. pii: S0960-9822(14)01130-0. [DOI: 10.1016/j.cub.2014.08.066](#). [Epub ahead of print]

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