

Regular Wednesday IMG seminar



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“Mechanic and energetic principles of leukocyte locomotion”

During metazoan development, immune surveillance and cancer dissemination, cells migrate in complex three-dimensional (3D) microenvironments. These are crowded by cells and extracellular matrix, generating mazes of differently sized spaces typically smaller than the diameter of the migrating cell. Most mesenchymal and epithelial cells actively generate their migratory path using pericellular tissue proteolysis and transmit traction forces via specific adhesion receptors. On the contrary, amoeboid cells such as leukocytes employ non-destructive strategies of locomotion and do not hold on to extracellular substrates. This raises the question how these extremely fast cells negotiate dense tissues. We discovered that leukocytes are able to migrate in the total absence of transmembrane force coupling. Instead, active deformations of the cell body can impose normal forces on the substrate and thereby generate propulsion. We are actively investigating how these normal forces are triggered and generated by the collective activity of the actin and microtubule cytoskeleton and develop new approaches to measure the energetic demands of the process.

The seminar will be held

on Wednesday 25 March 2026 at 15:00

in the Milan Hašek Auditorium at IMG

(Institute of Molecular Genetics of the Czech Academy of Sciences, Vídeňská 1083, Prague 4)
