Abstract

Cell migration is crucial for the formation and maintenance of a multicellular mammalian organism, contributing to important processes such as embryonic development, tissue renewal, and immune surveillance. It is a complex phenomenon involving a plethora of processes, including relevant signalization. An impairment of those processes could be projected into innumerable pathological states, from wound healing disruption to tumour metastasis and invasiveness, thus the interest of many researchers has turned toward migration.

The migration of mammalian cells is dependent on a cytoskeleton, which is being considerably rearranged in motile cells. This thesis aims to summarise the role of intermediated filaments in cell motility – the less understood cytoskeletal network in this context.

Cytoplasmic, as well as nuclear intermediate filaments, due to their unique mechanical properties, affect cell mechanics. They protect against physical stresses (as cells squeeze through confined pores in a complex intercellular microenvironment) and modulate and direct actomyosin-generated forces, which are the main driving force of migration. In addition, they contribute to important migration-involved steps, such as cell polarisation, cell adhesion to surrounding surfaces, cohesion in collective migration, and navigation through an intricate extracellular environment.