

Cell motility

The migration of cells within a tissue is crucial in a variety of processes such as embryogenesis, wound healing, the immune response or in pathogenic cases such as the formation of metastasis. And in order to move, cells need to transmit forces to their environment. However, there are different strategies to do so. For example, in the case of wound healing, cells are migrating on a rather flat surface. This type of migration relies on specific, protein bound adhesion complexes with that substrate. However, other cell types, such as the cells of the immune system, have been shown not to rely on any protein adhesion in order to move. How do such cells transmit forces then? Answer: By friction forces with the surrounding walls. I will explain both types of migration and their corresponding forces involved. I will further describe how we can recreate specific artificial environments which favour one or the other type of migration in order to study them. And we will answer the question if it is the environment which decides on the migration type or if this migration type is an inherent property of cells which can only be fulfilled by the right environment.