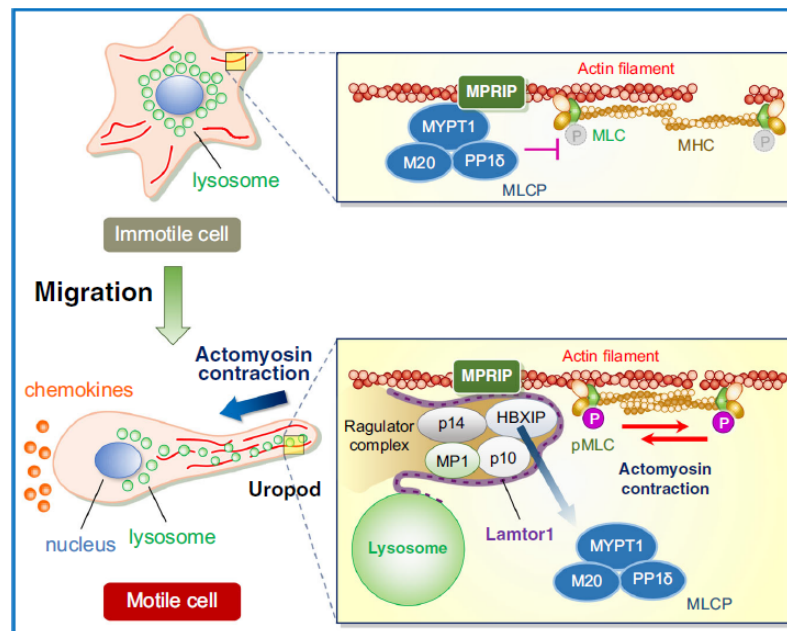


The lysosomal Ragulator complex plays an essential role in leukocyte trafficking

Although the Ragulator complex is required for cell migration, the mechanisms by which it participates in cell motility remain unknown. Hyota Takamatsu, Atsushi Kumanogoh (Immunopathology, IFRc & Graduate School of Medicine, Osaka University), and their research group showed that the lysosomal Ragulator complex plays an essential role in leukocyte migration by activating myosin II.



Schematic of the mechanism of regulation of myosin II activity by the Ragulator complex.

In immotile cells (upper), the Ragulator complex localized to lysosomes is preferentially distributed in the perinuclear region (left), and MPRIP anchors MLCP on myosin-actin bundles by binding MYPT1, a subunit of MLCP, resulting in suppression of MLC phosphorylation (right). In motile cells exposed to chemokines (lower), the lysosomes bearing the Ragulator complex moves to the uropod (left), where the Ragulator complex interacts with MPRIP. This interaction interferes with the interaction between MPRIP and MYPT1 and decreases MLCP activity, thereby increasing MLC phosphorylation. Consequently, cell motility is facilitated (right).

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