

## **Abstract**

The cytoskeleton is a cellular structure comprised of three types of protein filaments called microfilaments, intermediate filaments and microtubules respectively. These filaments are highly dynamic and can change their organisation and properties according to the current needs of a cell. This system of cytoskeletal polymers is regulated by a plethora of interacting proteins, among which belong the GIT proteins. GIT proteins contain a great amount of interaction domains, and they form oligomers which function as a scaffold for the binding of associated proteins. In this way they facilitate specific subcellular localisation of many proteins and their complexes. GIT proteins contain a catalytic ARF-GAP domain that regulates the function of ARF GTPases.

GIT proteins interact with PIX proteins. These proteins function as GEFs for Rho GTPases and thus regulate signal transduction influencing the cytoskeleton. GIT and PIX interact with each other by the means of their coiled-coil domains and form complexes called "GIT-PIX signalling cassettes". The cassettes regulates mostly microfilaments during the establishment of cell polarity, formation of membrane protrusions, and in cell motility and adhesion. Results of experiments published in the last few years suggest that the GIT-PIX signalling cassette could play a role also in the regulation of microtubules.

## **Key words**

Cytoskeleton, GIT-PIX signalling cassette, GIT proteins, microfilaments, microtubules, PIX proteins, regulation of cytoskeleton, small GTPases