Abstract

Transmembrane adaptor proteins (TRAPs) help to orchestrate certain receptor signaling processes by maintaining specific protein-protein interactions important for optimal signal transmission.

Several of the presently known TRAPs are important for development and correct signaling in leukocytes. Using bioinformatic approach, several other potential TRAPs associated with membrane microdomains were identified. One of such candidates was LST1/A protein, whose biochemical and functional characterization is the subject of this diploma thesis.

Using monoclonal antibodies directed to this protein, LST1/A protein was found to be expressed in primary blood cells of myeloid cell lineage. It was definitively confirmed that LST1/A is present in plasma membrane, namely in membrane microdomains. LST1/A expression has not been considerably changed during differentiation of monocytes to dendritic cells, which is in contradiction to currently available data. LST1/A protein was markedly downmodulated after dendritic cells activation by proinflamatory stimuli (LPS, IFN-γ). LST1/A protein expression was decreased also after incubation of monocytes with supernatant from activated T lymphocytes. Based on striking similarity between ITIM motif in LST1/A and in several Siglecs, a negative regulatory function of this protein is proposed.

A part of this diploma thesis deals with biochemical characterization of a so far poorly understood, broadly expressed and evolutionarily highly conserved cytoplasmic protein TFG. Expression of TFG (which appeared as potentially associated with LST1/A) was demonstrated in T lymphocytes, dendritic cells, thrombocytes and erythrocytes. A fraction of the TFG protein was found to be associated with plasma membrane.

Key words: LST1/A protein, transmembrane adaptor proteins, dendritic cells, monocytes, membrane microdomains, TFG protein, cell signaling