



Laboratory of Molecular Immunology

Transmembrane adaptor proteins, membrane rafts, leukocyte signalling proteins

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In recent years a major topic of our laboratory has been signalling molecules present in membrane rafts, namely several transmembrane adaptor proteins discovered previously by us [PAG/Cbp, NTAL/LAB, LIME] and their involvement in immunoreceptor signalling. In 2009-2010 we worked on elucidation of the structure and function of an apparently novel type of "heavy" rafts, differing from the "classical" ones by higher protein-lipid ratio and containing a number of transmembrane proteins. We continued our studies on several novel raft-associated transmembrane adaptors [LST1A, PRR7, Nvl], targeting of protein tyrosine kinase Csk into various membrane compartments, on receptor phosphatase CD148, and collaborated on several studies concerning membrane rafts and their components. Furthermore, we produced a number of novel monoclonal antibodies as valuable research and potentially diagnostic tools, e.g. those to LARGE, CLIC 5, OPAL 1, DDIT4L.

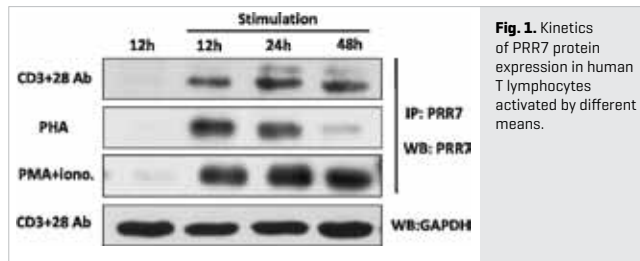


Fig. 1. Kinetics of PRR7 protein expression in human T lymphocytes activated by different means.

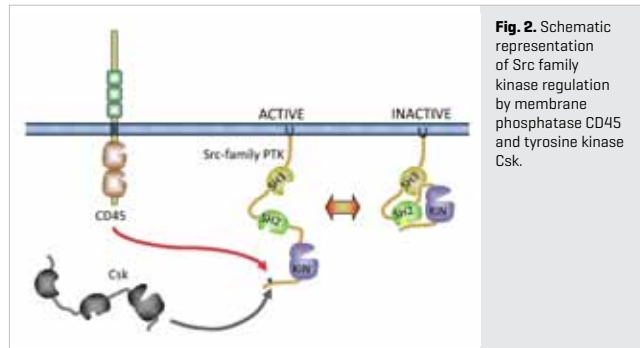


Fig. 2. Schematic representation of Src family kinase regulation by membrane phosphatase CD45 and tyrosine kinase Csk.

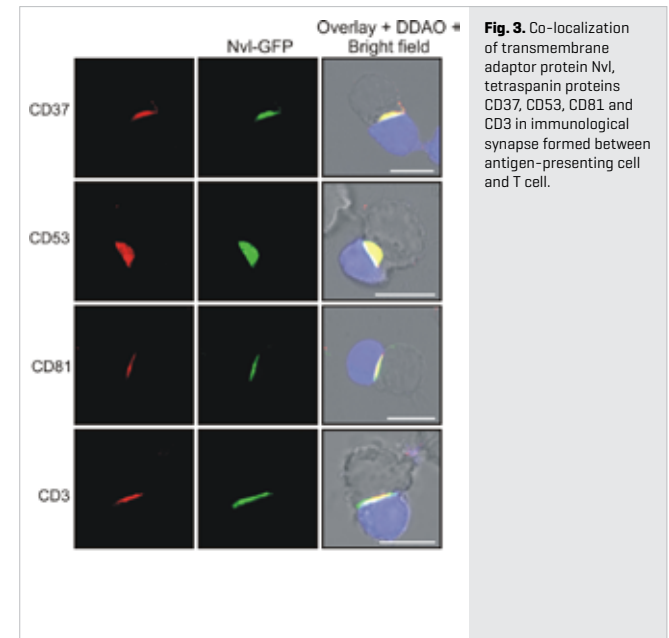


Fig. 3. Co-localization of transmembrane adaptor protein Nvl, tetraspanin proteins CD37, CD53, CD81 and CD3 in immunological synapse formed between antigen-presenting cell and T cell.



- Ministry of Education, Youth and Sports of the Czech Republic, 1M0506 – Centre of Molecular and Cellular Immunology, 2005-2011, V. Hořejší
- Ministry of Education, Youth and Sports of the Czech Republic, 2B06064 – New target genes for childhood leukaemia diagnosis and treatment focused on adaptor molecules of signalling pathways, 2006-2011, T. Brdička
- GA CR, GEMEM/09/E011 – Signalling and adaptor proteins of leukocyte membrane microdomains, 2009-2012, V. Hořejší



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5. Otáhal P, Angelisová P, Hrdinka M, Brdička T, Novák P, Drbal K, Hořejší V. A new type of membrane raft-like microdomains and their possible involvement in TCR signaling. *J Immunol* 2010 184(7): 3689-3696.



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