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Transmembrane adaptor proteins, membrane rafts

Research topics

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 2006-2007 we participated in characterization of mice deficient in the transmembrane adaptor protein NTAL and LIME (gene knock-out); based on these studies, both these proteins appear to be mainly negative regulators of immunoreceptor signalling. Furthermore, we have been working on elucidation of structure and function of four other novel transmembrane adaptors (LST1A, PRR7, "TRAP2", "Nvl") and collaborated on several studies concerning membrane rafts and their components. Also, we identified blood plasma protein vitronectin as a major opsonin of late apoptotic cells. Additionally, we produced a number of novel monoclonal antibodies as valuable research tools, e.g. those to the above-mentioned novel TRAPs, Sos1, H-Ras, SHIP, caprin-1, or ectoenzyme glutamate carboxypeptidase II (GCPII) and related GCPIII and PSMA-L.

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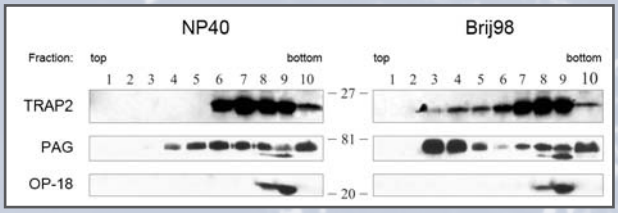
Selected recent papers

1. Tessarz AS, Weiler S, Zanzinger K, Angelisova P, Horejsi V, Cerwenka A. Non-T cell activation linker (NTAL) negatively regulates TREM-1/DAP12-induced inflammatory cytokine production in myeloid cells. **J Immunol.** 2007;178:1991-9.
2. Meraner P, Horejsi V, Wolpl A, Fischer GF, Stingl G, Maurer D. Dendritic cells sensitize TCRs through self-MHC-mediated Src family kinase activation. **J Immunol.** 2007;178:2262-71.
3. Kitaura J, Kawakami Y, Maeda-Yamamoto M, Horejsi V, Kawakami T. Dysregulation of Src family kinases in mast cells from epilepsy-resistant ASK versus epilepsy-prone EL mice. **J Immunol.** 2007;178:455-62.
4. Smida M, Posevitz-Fejfar A, Horejsi V, Schraven B, Lindquist JA. A novel negative regulatory function of the phosphoprotein associated with glycosphingolipid-enriched microdomains: blocking Ras activation. **Blood.** 2007;110:596-625.
5. Hong H, Kitaura J, Xiao W, Horejsi V, Ra C, Lowell CA, Kawakami Y, Kawakami T. The Src family kinase Hck regulates mast cell activation by suppressing an inhibitory Src family kinase Lyn. **Blood.** 2007;110:2511-9.
6. Gregoire C, Simova S, Wang Y, Sansoni A, Richelme S, Schmidt-Giese A, Simeoni L, Angelisova P, Reinhold D, Schraven B, Horejsi V, Malissen B, Malissen M. Deletion of the LIME adaptor protein minimally affects T and B cell development and function. **Eur J Immunol.** 2007;37:3259-69.



Distribution of a novel transmembrane adaptor protein TRAP2 in fractions of density gradient ultracentrifugation

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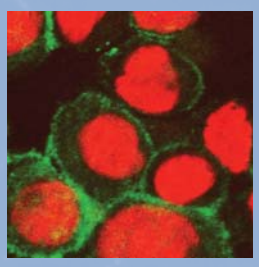
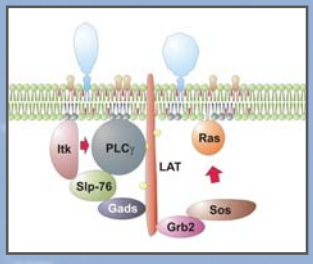


Subcellular localization of a novel transmembrane adaptor, LST1A



Hypothetical organization of a signalosome organized around the pivotal T cell transmembrane adaptor LAT