

**P003** Rap1GAP2 is a new GTPase-activating protein of Rap1 expressed in platelets  
**Jan Schultess, Oliver Danielewski and Albert Smolenski**  
*Institute for Biochemistry II, University of Frankfurt Medical School, Frankfurt, Germany*

The guanine-nucleotide binding protein Rap1 controls integrin activity in many cell types including platelets. We have identified a new GTPase activating protein of Rap1 in human platelets. This protein exhibits 52 % sequence identity to the known Rap1GAP and was therefore named Rap1GAP2. Rap1GAP2 is expressed in at least three splice variants, two of which are detectable in platelets. Endogenous Rap1GAP2 protein partially colocalizes with Rap1 in granular structures of human platelets. We show that Rap1GAP2 strongly induces GTPase-activity of Rap1 in transfected COS-1 cells. Furthermore, Rap1GAP2 is a highly phosphorylated protein and we have identified cGMP-dependent protein kinase I (cGKI) as a Rap1GAP2 kinase. cGKI phosphorylates Rap1GAP2 exclusively on serine 7, a residue present only in the platelet splice variants of Rap1GAP2. Phosphorylation of Rap1GAP2 by cGKI might mediate inhibitory effects of NO/cGMP on Rap1. Rap1GAP2 is the first and as yet the only GTPase activating protein of Rap1 found in platelets and is likely to have an important regulatory role in platelet activation and aggregation.