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Oral presentation

Functional role of cGMP-dependent VASP phosphorylation in vascular cells

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This lecture will take a focussed look at key elements of the cGMP signalling cascade in vascular cells and recent advances in our knowledge of cGMP-dependent protein kinase (cGK or PKG) and its substrate VASP (Vasodilator-stimulated phosphoprotein) [1]. In particular, the role of this pathway for the regulation of platelet – vessel wall interactions will be examined [2,3]. Vasodilator-stimulated phosphoprotein (VASP) belongs to the Ena/VASP family, which plays an important role in regulating cytoskeletal dynamics, cell migration and other complex cellular functions [1,4]. Three VASP phosphorylation sites have been identified, serine157, serine239, and threonine278. Serine239 is the preferential phosphorylation site for PKG, whereas serine157 is the preferential phosphorylation site for PKA. Recently, we showed that VASP serine157 is also phosphorylated in vascular smooth muscle cells (SMCs) in response to growth factors mediated by PKC. Additional data suggest that VASP phosphorylation at serine157 is important for the growth-stimulatory effect of VASP in SMCs, whereas VASP phosphorylation at serine239 is involved in the growth inhibitory effects of NO on SMCs [5]. Overall, VASP appears to be a modulator of vascular cell functions by integrating positive and negative signals that target different phosphorylation sites of VASP.

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