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Review

Evolving Mechanisms of Vascular Smooth Muscle Contraction Highlight Key Targets in Vascular Disease

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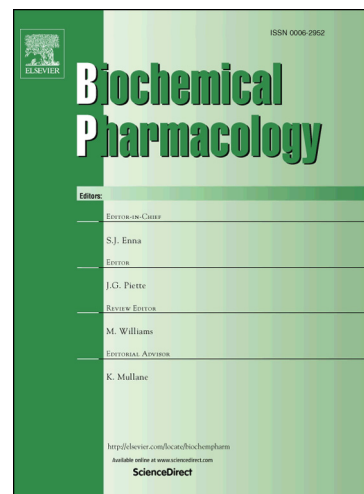
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**Evolving Mechanisms of Vascular Smooth Muscle Contraction**  
**Highlight Key Targets in Vascular Disease**

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**Key Words:** blood vessels, calcium, channels, protein kinase, sarcoplasmic reticulum, signaling

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**List of Abbreviations:** AGE, Advanced Glycation End products; ALDH2, aldehyde dehydrogenase 2; AngII, angiotensin II; BK<sub>Ca</sub>, large conductance Ca<sup>2+</sup>-activated K<sup>+</sup> channel; Ca<sup>2+</sup>, calcium; [Ca<sup>2+</sup>]<sub>c</sub>, cytosolic free Ca<sup>2+</sup> concentration; CaD, caldesmon, CaM, calmodulin; cAMP, cyclic adenosine monophosphate; CaP, calponin; cGMP, cyclic guanosine monophosphate; CICR, Ca<sup>2+</sup>-induced Ca<sup>2+</sup> release; CNP, C-type natriuretic peptide; CPI-17, PKC-potentiated phosphatase inhibitor protein-17; DAG, diacylglycerol; ER, endoplasmic reticulum; ERK, extracellular signal-regulated kinase; ET-1, endothelin-1; HSP, heat shock protein; ICAM-1, intercellular adhesion molecule-1; IP<sub>3</sub>, inositol 1,4,5-trisphosphate; IRS1, insulin receptor substrate 1; K<sub>v</sub>, voltage-gated K<sup>+</sup> channel; LTCC, L-Type Ca<sub>v</sub>1.2 channel; MARCKS, myristoylated alanine-rich C kinase substrate; MLC, myosin light chain; PDBu, phorbol 12,13-dibutyrate; PDGF, platelet-derived growth factor; PDK, phosphoinositide-dependent kinase; PKA, cAMP-dependent protein kinase; PKC, protein kinase C; PKG, cGMP-dependent protein kinase; PMA, phorbol 12-myristate 13-acetate; PMCA, plasmalemmal Ca<sup>2+</sup>-ATPase; PLC, phospholipase C; PS, phosphatidylserine; RAGE, AGE receptor; ROC, receptor-operated Ca<sup>2+</sup> channel; ROCK, Rho-kinase; ROS, reactive oxygen species; SERCA, sarcoplasmic/endoplasmic reticulum Ca<sup>2+</sup>-ATPase; SOC, store-operated Ca<sup>2+</sup> channel; SR, sarcoplasmic reticulum; TRP, transient receptor potential channel, TTCC, T-type Ca<sub>v</sub>3.1/3.2/3.3; VCAM-1, vascular cell adhesion molecule-1; VEGF, vascular endothelial growth factor; VDCC, voltage-dependent Ca<sup>2+</sup> channel; VSM, vascular smooth muscle

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