Vimentin expression influences flow dependent VASP phosphorylation and regulates cell migration and proliferation

Titre	Vimentin expression influences flow dependent VASP phosphorylation and regulates cell migration and proliferation
Type de publication	Article de revue
Auteur	Lund, N. [1], Henrion, Daniel [2], Tiede, P. [3], Ziche, M. [4], Schunkert, H. [5], Ito, W. D [6]
Editeur	Elsevier
Type	Article scientifique dans une revue à comité de lecture
Année	2010
Langue	Anglais
Date	2010
Numéro	3
Pagination	401 - 406
Volume	395
Titre de la revue	Biochemical and Biophysical Research Communications
ISSN	1090-2104
Mots-clés	Animals [7], Cell Adhesion Molecules/metabolism [8], Cell Movement [9], Cell Proliferation [10], Cyclic GMP-Dependent Protein Kinases/metabolism [11], Endothelial Cells/cytology/metabolism/physiology [12], Mice [13], Mice, Knockout [14], Microfilament Proteins/metabolism [15], Phosphoproteins/metabolism [16], Phosphorylation [17], Rats [18], Serine/metabolism [19], Vimentin/biosynthesis/genetics [20]

Résumé en anglais	The cytoskeleton plays a central role for the integration of biochemical and biomechanical signals across the cell required for complex cellular functions. Recent studies indicate that the intermediate filament vimentin is necessary for endothelial cell morphogenesis e.g. in the context of leukocyte transmigration. Here, we present evidence, that the scaffold provided by vimentin is essential for VASP localization and PKG mediated VASP phosphorylation and thus controls endothelial cell migration and proliferation. Vimentin suppression using siRNA technique significantly decreased migration velocity by 50% (videomicroscopy), diminished transmigration activity by 42.5% (Boyden chamber) and reduced proliferation by 43% (BrdU-incorporation). In confocal microscopy Vimentin colocalized with VASP and PKG in endothelial cells. Vimentin suppression was accompanied with a translocation of VASP from focal contacts to the perinuclear region. VASP/Vimentin and PKG/Vimentin colocalization appeared to be essential for proper PKG mediated VASP phosphorylation because we detected a diminished expression of PKG and p(Ser239)-VASP in vimentin-suppressed cells, Furthermore, the induction of VASP phosphorylation in perfused arteries was markedly decreased in vimentin knockout mice compared to wildtypes. A link is proposed between vimentin, VASP phosphorylation and actin dynamics that delivers an explanation for the important role of vimentin in controlling endothelial cell morphogenesis.
URL de la notice	http://okina.univ-angers.fr/publications/ua8458 [21]
DOI	10.1016/j.bbrc.2010.04.033 [22]
Lien vers le document	http://dx.doi.org/10.1016/j.bbrc.2010.04.033 [22]
Titre abrégé	Biochem Biophys Res Commun

Liens

[1] http://okina.univ-angers.fr/publications?f[author]=15099
[2] http://okina.univ-angers.fr/d.henrion/publications
[3] http://okina.univ-angers.fr/publications?f[author]=15100
[4] http://okina.univ-angers.fr/publications?f[author]=15101
[5] http://okina.univ-angers.fr/publications?f[author]=15017
[6] http://okina.univ-angers.fr/publications?f[author]=15102
[7] http://okina.univ-angers.fr/publications?f[keyword]=964
[8] http://okina.univ-angers.fr/publications?f[keyword]=14048
[9] http://okina.univ-angers.fr/publications?f[keyword]=7985
[10] http://okina.univ-angers.fr/publications?f[keyword]=6111
[11] http://okina.univ-angers.fr/publications?f[keyword]=14049
[12] http://okina.univ-angers.fr/publications?f[keyword]=14050
[13] http://okina.univ-angers.fr/publications?f[keyword]=1102
[14] http://okina.univ-angers.fr/publications?f[keyword]=1147
[15] http://okina.univ-angers.fr/publications?f[keyword]=13870
[16] http://okina.univ-angers.fr/publications?f[keyword]=14051
[17] http://okina.univ-angers.fr/publications?f[keyword]=1711
[18] http://okina.univ-angers.fr/publications?f[keyword]=975
[19] http://okina.univ-angers.fr/publications?f[keyword]=14052
[20] http://okina.univ-angers.fr/publications?f[keyword]=14053
[21] http://okina.univ-angers.fr/publications/ua8458
[22] http://dx.doi.org/10.1016/j.bbrc.2010.04.033