

Lipid droplet analysis in caveolin-deficient adipocytes: alterations in surface phospholipid composition and maturation defects.

Submitted by Soazig Le Lay on Tue, 01/27/2015 - 10:22

Titre	Lipid droplet analysis in caveolin-deficient adipocytes: alterations in surface phospholipid composition and maturation defects.
Type de publication	Article de revue
Auteur	Blouin, C�dric M. [1], Le Lay, Soazig [2], Eberl, Anita [3], K�feler, Harald C [4], Guerrera, Ida Chiara [5], Klein, Christophe [6], Le Liepvre, Xavier [7], Lasnier, Fran�oise [8], Bourron, Olivier [9], Gautier, Jean-Fran�ois [10], Ferr�, Pascal [11], Hajduch, Eric [12], Dugail, Isabelle [13]
Editeur	American Society for Biochemistry and Molecular Biology
Type	Article scientifique dans une revue � comit� de lecture
Ann�e	2010
Langue	Anglais
Date	Mai 2010
Num�ro	5
Pagination	945-956
Volume	51
Titre de la revue	Journal of Lipid Research
ISSN	0022-2275
Mots-cl�s	3T3-L1 Cells [14], Adipocytes [15], Animals [16], Caveolin 1 [17], Humans [18], Mice [19], Phospholipids [20], Proteome [21], Rats [22]
R�sum� en anglais	<p>Caveolins form plasmalemmal invaginated caveolae. They also locate around intracellular lipid droplets but their role in this location remains unclear. By studying primary adipocytes that highly express caveolin-1, we characterized the impact of caveolin-1 deficiency on lipid droplet proteome and lipidome. We identified several missing proteins on the lipid droplet surface of caveolin-deficient adipocytes and showed that the caveolin-1 lipid droplet pool is organized as multi-protein complexes containing cavin-1, with similar dynamics as those found in caveolae. On the lipid side, caveolin deficiency did not qualitatively alter neutral lipids in lipid droplet, but significantly reduced the relative abundance of surface phospholipid species: phosphatidylserine and lysophospholipids. Caveolin-deficient adipocytes can form only small lipid droplets, suggesting that the caveolin-lipid droplet pool might be involved in lipid droplet size regulation. Accordingly, we show that caveolin-1 concentration on adipocyte lipid droplets positively correlated with lipid droplet size in obese rodent models and human adipocytes. Moreover, rescue experiments by caveolin- green fluorescent protein in caveolin-deficient cells exposed to fatty acid overload demonstrated that caveolin-coated lipid droplets were able to grow larger than caveolin-devoid lipid droplets. Altogether, these data demonstrate that the lipid droplet-caveolin pool impacts on phospholipid and protein surface composition of lipid droplets and suggest a functional role on lipid droplet expandability.</p>

URL de la notice	http://okina.univ-angers.fr/publications/ua7115 [23]
DOI	10.1194/jlr.M001016 [24]
Lien vers le document	http://dx.doi.org/10.1194/jlr.M001016 [24]
Autre titre	J. Lipid Res.
Identifiant (ID) PubMed	19965594 [25]

Liens

- [1] [http://okina.univ-angers.fr/publications?f\[author\]=606](http://okina.univ-angers.fr/publications?f[author]=606)
- [2] <http://okina.univ-angers.fr/soazig.lelay/publications>
- [3] [http://okina.univ-angers.fr/publications?f\[author\]=607](http://okina.univ-angers.fr/publications?f[author]=607)
- [4] [http://okina.univ-angers.fr/publications?f\[author\]=608](http://okina.univ-angers.fr/publications?f[author]=608)
- [5] [http://okina.univ-angers.fr/publications?f\[author\]=609](http://okina.univ-angers.fr/publications?f[author]=609)
- [6] [http://okina.univ-angers.fr/publications?f\[author\]=610](http://okina.univ-angers.fr/publications?f[author]=610)
- [7] [http://okina.univ-angers.fr/publications?f\[author\]=611](http://okina.univ-angers.fr/publications?f[author]=611)
- [8] [http://okina.univ-angers.fr/publications?f\[author\]=612](http://okina.univ-angers.fr/publications?f[author]=612)
- [9] [http://okina.univ-angers.fr/publications?f\[author\]=613](http://okina.univ-angers.fr/publications?f[author]=613)
- [10] [http://okina.univ-angers.fr/publications?f\[author\]=562](http://okina.univ-angers.fr/publications?f[author]=562)
- [11] [http://okina.univ-angers.fr/publications?f\[author\]=614](http://okina.univ-angers.fr/publications?f[author]=614)
- [12] [http://okina.univ-angers.fr/publications?f\[author\]=615](http://okina.univ-angers.fr/publications?f[author]=615)
- [13] [http://okina.univ-angers.fr/publications?f\[author\]=23809](http://okina.univ-angers.fr/publications?f[author]=23809)
- [14] [http://okina.univ-angers.fr/publications?f\[keyword\]=6018](http://okina.univ-angers.fr/publications?f[keyword]=6018)
- [15] [http://okina.univ-angers.fr/publications?f\[keyword\]=1124](http://okina.univ-angers.fr/publications?f[keyword]=1124)
- [16] [http://okina.univ-angers.fr/publications?f\[keyword\]=964](http://okina.univ-angers.fr/publications?f[keyword]=964)
- [17] [http://okina.univ-angers.fr/publications?f\[keyword\]=6013](http://okina.univ-angers.fr/publications?f[keyword]=6013)
- [18] [http://okina.univ-angers.fr/publications?f\[keyword\]=991](http://okina.univ-angers.fr/publications?f[keyword]=991)
- [19] [http://okina.univ-angers.fr/publications?f\[keyword\]=1102](http://okina.univ-angers.fr/publications?f[keyword]=1102)
- [20] [http://okina.univ-angers.fr/publications?f\[keyword\]=1126](http://okina.univ-angers.fr/publications?f[keyword]=1126)
- [21] [http://okina.univ-angers.fr/publications?f\[keyword\]=1127](http://okina.univ-angers.fr/publications?f[keyword]=1127)
- [22] [http://okina.univ-angers.fr/publications?f\[keyword\]=975](http://okina.univ-angers.fr/publications?f[keyword]=975)
- [23] <http://okina.univ-angers.fr/publications/ua7115>
- [24] <http://dx.doi.org/10.1194/jlr.M001016>
- [25] <http://www.ncbi.nlm.nih.gov/pubmed/19965594?dopt=Abstract>

Publié sur *Okina* (<http://okina.univ-angers.fr>)