



Raft association and lipid droplet targeting of flotillins are independent of caveolin.

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Auteur Rajendran, Lawrence [1], Le Lay, Soazig [2], Illges, Harald [3]

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Résumé en anglais Lipid rafts are liquid ordered platforms that dynamically compartmentalize membranes. Caveolins and flotillins constitute a group of proteins that are enriched in these domains. Caveolin-1 has been shown to be an essential component of caveolae. Flotillins were also discovered as an integral component of caveolae and have since been suggested to interact with caveolins. However, flotillins are also expressed in non-caveolae-containing cells such as lymphocytes and neuronal cells. Hence, a discrepancy exists in the literature regarding the caveolin dependence of flotillin expression and their subcellular localization. To address this controversy, we used mouse embryonic fibroblasts (MEFs) from caveolin-1 knockout (Cav-1(-/-)) and wild-type mice to study flotillin expression and localization. Here we show that both membrane association and lipid raft partitioning of flotillins are not perturbed in Cav-1(-/-) MEFs, whereas membrane targeting and raft partitioning of caveolin-2, another caveolin family protein, is severely impaired. Moreover, we demonstrate that flotillin-1, but not flotillin-2, associates with lipid droplets upon oleic acid treatment and that this association is completely independent of caveolin. Taken together, our results show that flotillins are localized in lipid rafts independent of caveolin-1 and that translocation of flotillin-1 to lipid droplets is a caveolin-independent process.

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