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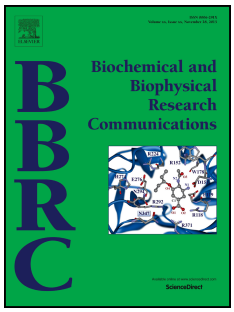

Endoplasmic reticulum-mitochondrial interaction mediated by Mitofusin-1 or Mitofusin-2 is not required for lipid droplet formation or adipocyte differentiation

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Endoplasmic Reticulum-Mitochondrial Interaction Mediated by Mitofusin-1 or Mitofusin-2 is not required for Lipid Droplet Formation or Adipocyte Differentiation

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Abstract

Organelles in cells physically interact with each other. Specifically, the interaction of ER and mitochondria has been shown to be important for transporting lipids between these two organelles. Lipid droplets are also closely associated with both the ER and mitochondria suggesting the interaction of ER and mitochondria may be important for triacylglycerol storage in lipid droplets. We tested the hypothesis that the efficient synthesis and storage of triacylglycerol in lipid droplets is dependent on the interaction of the ER and mitochondria using mouse embryonic fibroblasts lacking mitofusin-2 (Mfn2). Mfn2 is a GTPase that is present in mitochondrial-associated membranes (MAM) and is also present in the outer mitochondrial membrane. Mfn2 in MAM and mitochondria interact forming an interorganellar bridge. Cells lacking Mfn2 have loose ER-mitochondria contact. We found that mouse embryonic fibroblasts lacking Mfn2 have altered lipid droplet morphology. However, triacylglycerol biosynthesis was not dependent on ER-mitochondrial tethering mediated by mitofusins. Lastly, Mfn2 does not have a role in adipocyte differentiation.