# Lecture Abstract or Synopsis for publication

# DYNAMIC ROLE OF TRANSMEMBRANE PROTEIN CD36/SR-B2 IN MYOCARDIAL LIPID SENSING AND UTILIZATION

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## Abstract

The widely expressed transmembrane glycoprotein CD36, a scavenger receptor class B protein (SR-B2), serves many functions in lipid metabolism and signaling. In the heart, CD36 is the main sarcolemmal lipid transporter and presents a rate-limiting step in cardiac lipid utilization. The cellular fatty acid uptake rate is governed primarily by the presence of CD36 at the cell surface, which is regulated by the subcellular vesicular recycling of CD36 from endosomes to the plasma membrane. CD36 has been implicated in dysregulated fatty acid and lipid metabolism in pathophysiological conditions, particularly in high-fat diet-induced insulin resistance and diabetic cardiomyopathy. Thus, under chronic lipid overload conditions, CD36 is increasingly being expelled to the cell surface, setting the heart on a route towards increased lipid uptake, excessive myocardial lipid accumulation, insulin resistance and eventually contractile dysfunction. Insight into the subcellular trafficking machinery of CD36 is expected to provide novel targets to treat the lipid-overloaded heart. A recent systematic screen for CD36-dedicated trafficking proteins yielded, amongst others, vacuolar type $H^+$-ATPase (v-ATPase) and specific vesicle-associated membrane proteins (VAMPs) to be uniquely involved in CD36 recycling. Preliminary data suggest that these latter proteins may offer clues to manipulate myocardial lipid uptake and utilization, and thus be promising targets for metabolic intervention therapy to treat the failing heart.

***Keywords***

*CD36, SR-B2, cardiac fatty acid uptake, diabetic cardiomyopathy, metabolic intervention*