LIMNA
Lausanne Integrative Metabolism & Nutrition Alliance

SEMINAR

Friday August 30 , 2019– 11h00
Conference room AI 1153 (*) - EPFL - Lausanne

Dr. Suman DAS
Chemical Biology and Therapeutics, NIBR, Novartis, Basel, Switzerland

"ATP citrate lyase: Novel regulator of skeletal muscle metabolism & myofiber differentiation"

Host: Prof. Kristina Schoonjans

Abstract:
An intricate balance between metabolic regulators, signalling pathways and gene expression is essential for healthy skeletal muscle. Disruptions of this balance by extrinsic and/or extrinsic factors lead to skeletal muscle pathology which results in loss of muscle function and/or mass. During our investigations, we found that ATP citrate lyase (ACL), a cytosolic enzyme that catalyzes mitochondria-derived citrate into oxaloacetate and acetyl-CoA, plays key role regulating mitochondrial function, lipid metabolism as well as myogenesis in skeletal muscle. IGF1 through PI3K-AKT phosphorylates ACL thus inducing its activity. ACL activation and/or overexpression of ACL lead to increased cardiolipin levels, thus increasing mitochondrial complexes as well as supercomplexes. Concomitant increase in oxygen consumption and ATP levels were observed. Moreover, ACL silencing impaired myoblast and satellite cell differentiation specially a significant decrease fast myosin heavy chain as well as MYOD. We identified that ACL regulates availability of acetyl groups leading to alterations in acetylation of (K9/14) and H3(K27) at the MYOD locus, thus increasing MYOD expression. ACL overexpresion led to improved muscle regeneration following cardiotoxin mediated damage. Altogether, our results suggest that ACL plays an important role in skeletal muscle metabolism as well as in myofiber differentiation.

(*) IMPORTANT NOTICE: All external participants have to pass through SV Reception/Welcome Desk to be able to access to AI 1153.
Contact person to call at arrival at SV Reception Desk: Administrative Assistant: 39522.

CHUV Centre hospitalier universitaire vaudois
EPFL
Unil UNIL | Université de Lausanne
Sponsored by Nestlé Institute of Health Sciences

www.limna.ch