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LES SÉMINAIRES DE L'INMG

The role of the myokine FGF21 in skeletal muscle homeostasis

par

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Abstract :

Skeletal muscle is a major site of metabolic activity and the most abundant tissue in the human body accounting for almost 40% of the total body mass. It is a plastic tissue that adapts to changes in exercise, nutrition and hormones, which also induces the release of myokines and myometabolites. These muscle-secreted factors have autocrine, paracrine and endocrine effects, explaining how muscles regulate metabolic homeostasis in other tissues. These systemic effects help to explain why physical activity, and thereby muscle recruitment, elicits several beneficial effects in many different diseases. Indeed, exercise preserves and ameliorates mitochondrial function and muscle metabolism, thereby affecting the release of myokines and metabolites that systemically counteract organ deterioration. We have recently proposed an interplay between the myokine Fgf21 and the mitochondrial quality control pathways that greatly contributes to a pro-senescence metabolic shift. However, even though the myokine field is exponentially increasing, little is known about their role in muscle homeostasis.

Selected Publications:

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2. Romanello V*., Sandri M. Mitochondrial Quality Control and Muscle Mass Maintenance Front Physiol. 2016 Jan 12;6:422. doi: 10.3389/fphys.2015.00422*corresponding

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4. Romanello V*, Sandri M. Mitochondrial biogenesis and fragmentation as regulators of protein degradation in striated muscles. J Mol Cell Cardiol. 2013 Feb;55:64-72. *corresponding

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8. Zampieri S, Mammucari C, **Romanello V**, Barberi L, Pietrangelo L, Fusella A, Mosole S,Gherardi G, Höfer C, Löfler S, Sarabon N, Cvecka J, Krenn M, Carraro U, Kern H, Protasi F, Musarò A, Sandri M, Rizzuto R. Physical exercise in aging human skeletal muscle increases mitochondrial calcium uniporter expression levels and affects mitochondria dynamics. Physiol Rep. 2016 Dec;4(24). pii: e13005. doi: 10.14814/phy2.13005.

9. Varanita T, Soriano ME, **Romanello V**., Zaglia T, Quintana-Cabrera R, Semenzato M, Menabò R, Costa V, Civiletto G, Pesce P, Viscomi C, Zeviani M, Di Lisa F, Mongillo M, Sandri M, Scorrano L. The Opa1-Dependent Mitochondrial Cristae

Remodeling Pathway Controls Atrophic, Apoptotic and Ischemic Tissue Damage. Cell Metab. 2015 Jun 2;21(6):834-44. doi: 10.1016/j.cmet.2015.05.007.