Skeletal muscle

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High-resolution respirometry: Skeletal muscle, permeabilized tissue, mouse

Muscle-derived GDF15 drives diurnal anorexia and systemic metabolic remodeling during mitochondrial stress

EMBO reports

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Muscle mitochondrial stress promotes GDF15 as a myokine in mice

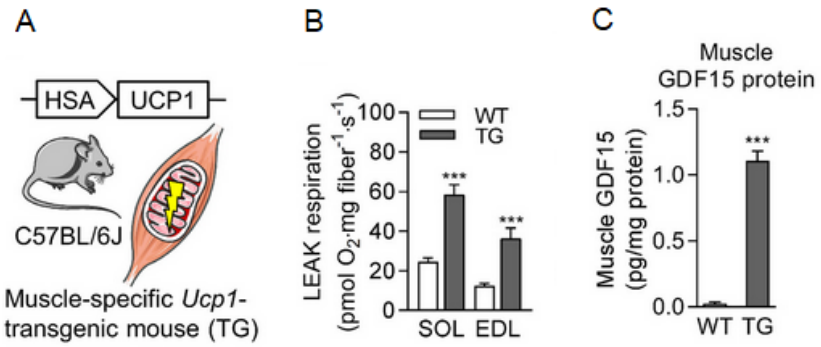

Figure 1. (A) Model introduction HSAUcp1-TG transgenic (TG) mice with compromised skeletal muscle-specific mitochondrial OXPHOS capacity via respiratory uncoupling; **(B)** Increased uncoupled (LEAK) respiration in different skeletal muscle fibers soleus (SOL, slow-oxidative fiber type) and extensor digitorum longus (EDL, fast-glycolytic fiber type) of TG mice compared to wild-type (WT) controls; **(C)** GDF15 expression normalized to total protein content.
Data are expressed as means ± SEM; *p < 0.05, **p < 0.01, ***p < 0.001.

GDF15-independent mitochondrial integrated stress response

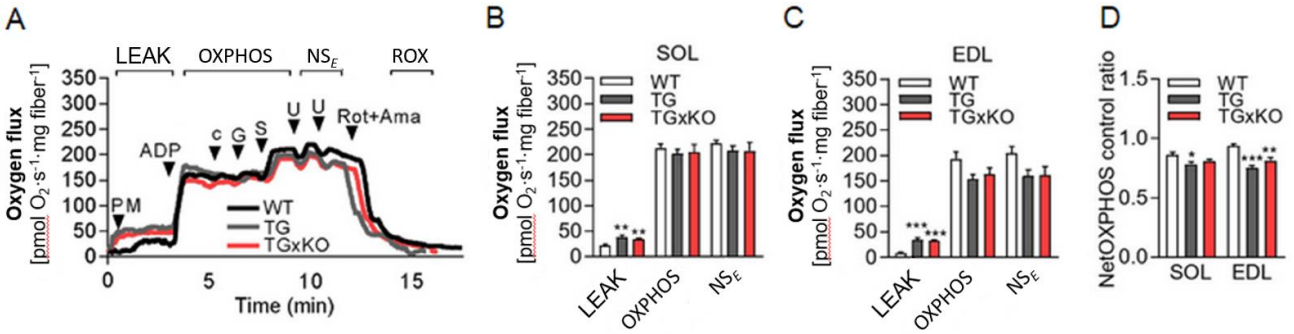

Figure 2. (A) Representative traces for the skeletal muscle mitochondrial respiratory capacity between WT, TG and TGxKO; Higher uncoupled respiration for oxidative **(B)** soleus and **(C)** glycolytic extensor digitorum longus fibers; **(D)** reduction in total OXPHOS capacity independent of GDF15 action.
Data are expressed as means ± SEM; *p < 0.05, **pP < 0.01, ***p < 0.001.

High-resolution respirometry can be used as a tool to link muscle mitochondrial dysfunction and remodeling of systemic energy homeostasis

Reference: No MH, Heo JW, Yoo SZ, Kim CJ, Park DH, Kang JH, Seo DY, Han J, Kwak HB (2020) Effects of aging and exercise training on mitochondrial function and apoptosis in the rat heart. Pflugers Arch 472:179-93.

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