Skeletal muscle

http://wiki.oroboros.at/index.php/O2k-Publications:_Skeletal muscle

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

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

Mario Ost[1,*,†,‡,§], Carla Igual Gil[1,2,†], Verena Coleman[1,2], Susanne Keipert[3], Sotirios Efstathiou[1], Veronika Vidic[1], Miriam Weyers[1] & Susanne Klaus[1,2,‡,**]

Muscle mitochondrial stress promotes GDF15 as a myokine in mice

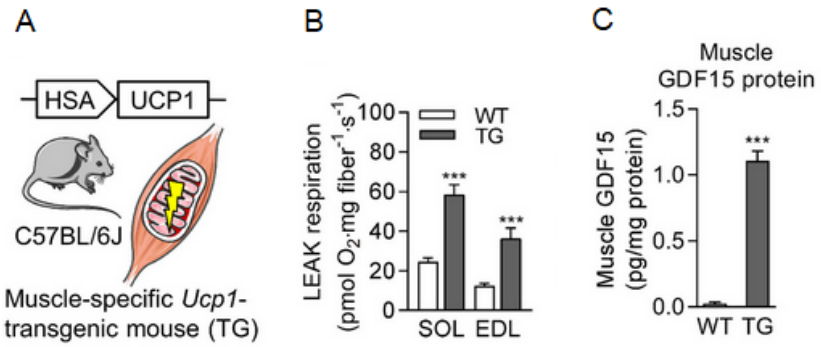

Figure 1. (A) Model introduction HSAUcp1-TG transgenic (TG) mice with compromised skeletal muscle-specific mitochondrial OXPHOS capacity via respiratory uncoupling; **(B)** Increased uncoupled (LEAK) respiration in different skeletal muscle fibers soleus (SOL, slow-oxidative fiber type) and extensor 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

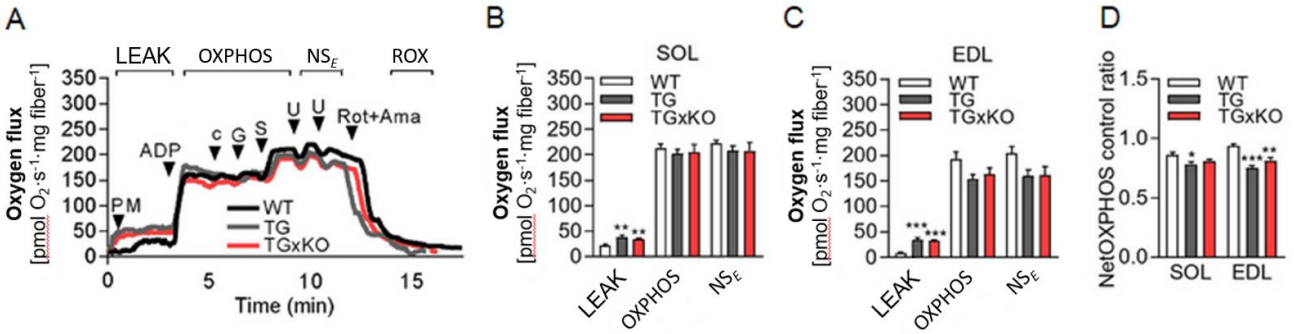

Figure 2. (A) Representative traces for the skeletal muscle mitochondrial respiratory capacity between WT, TG and TGxKO; Higher uncoupled respiration for oxidative **(B)** soleus and **(C)** glycolytic extensor digitorum longus fibers; **(D)** reduction in total OXPHOS capacity independent of GDF15 action.
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: Ost M, Igual Gil C, Coleman V, Keipert S, Efstathiou S, Vidic V, Weyers M, Klaus S (2020) Muscle-derived GDF15 drives diurnal anorexia and systemic metabolic remodeling during mitochondrial stress. EMBO Rep [Epub ahead of print].

Text slightly modified based on the recommendations of the COST Action MitoEAGLE CA15203. Doi:10.26124/mitofit:190001.v6

O2k-brief communicated by D Antunes and L Tindle-Solomon
Oroboros Instruments

Supported by project NextGen-O2k which has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 859770