High-Resolution FluoRespirometry and mitochondrial cardiolipins

Molecular structural diversity of mitochondrial cardiolipins

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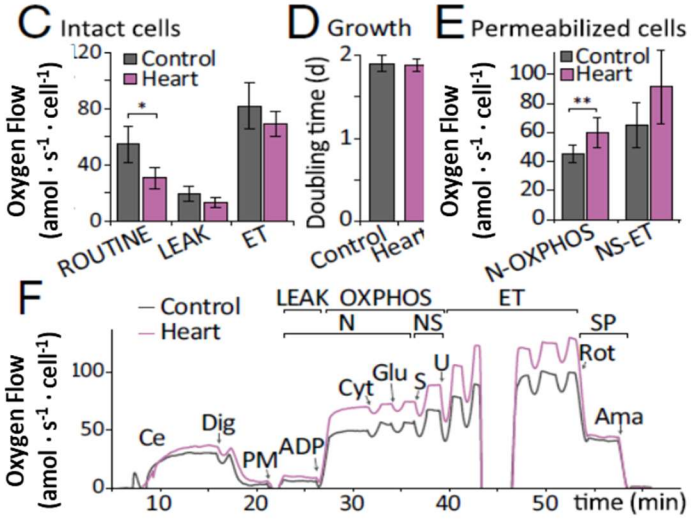
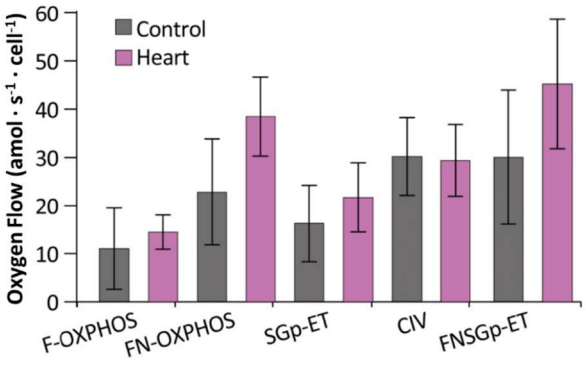


Figure 1. Oxygen flow in intact control and heart samples. (D) Doubling times of control and heart samples (*n*=4). (E) Oxygen flow in permeabilized control and heart samples. NADH-pathway capacity (N-OXPHOS) was significantly increased upon heart lipid supplementation (*n*=8, p-value=0.01, Bonferroni-adjusted with m=7). (F) Representative traces of oxygen flow for experiment shown in E used to calculated respiratory activities in different pathway-control states.

Arrows indicate substrate-uncoupler-inhibitor titration steps; ADP, adenosine diphosphate; Ama, antimycin A; *ce*, cells; Cyt, cytochrome *c*; Dig, digitonin; ET, maximal electron transfer capacity in presence of CCCP uncoupler (*n*=4, Bonferroni-adjusted with m=9); Glu, glutamate; LEAK, respiration after inhibition of ATP synthase; N, NADH-pathway; NS, convergent N- and succinate pathway; PM, pyruvate and malate; Rot, rotenone; ROUTINE, cell respiration in presence of endogenous substrates; S, succinate; SP, succinate-pathway; U, uncoupler (CCCP).

NADH-linked respiratory capacity is increased in cells growing in medium supplemented with pig heart lipids



HeLa cells grown in lipid and serum free medium (**Control**) and pig heart lipids supplemented medium (**Heart**)
F-OXPHOS:
OXPHOS capacity in ß-oxidation of fatty acids
FN-OXPHOS:
Combined F- and NADH-linked OXPHOS capacity
SGp-ET:
Succinate- and glycerophosphate-supported ET-capacity after inhibition with rotenone and uncoupler titration
CIV:
Complex IV activity
FNSGp-ET:
ET-capacity in the combined FNSGp-pathway

Reference: Oemer G, Lackner L, Muigg K, Krumschnabel G, Watschinger K, Sailer S, Lindner H, Gnaiger E, Wortmann SB, Werner ER, Zschocke J, Keller MA (2018) The molecular structural diversity of mitochondrial cardiolipins. Proc Nat Acad Sci U S A 115:4158-63.