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<https://www.lf3.cuni.cz/3LF-776.html>

<https://www.kar3lf.cz/en/research-2/>

Topic title

Pathophysiology of intensive care acquired muscle weakness - the role of mitochondrial dysfunction

Description of scientific activity

The focus of our research group is to study altered mitochondrial biology of human tissues (mainly skeletal muscle) in critically ill patients influenced either by severe illness itself (sepsis, ICU-acquired muscle weakness) or e. g. drug administration. We use tools and methods to study both mitochondrial bioenergetics and morphology (high resolution respirometry, extracellular flux analysis, techniques based on confocal microscopy etc.). Our group also works on joint scientific projects with researchers from universities in the UK, Norway and France. We currently plan to open a PhD position which will be focused on intensive care unit-acquired muscle weakness, which is a common complication following critical illness. We seek to identify if critical illness induces alteration of mitochondrial function and structure in satellite cells that could later impair skeletal muscle recovery. In this project, PhD student will study mitochondrial metabolism and dynamics of satellite cells isolated from human skeletal muscle of critically ill patients. The ideal candidate should have a background in either natural sciences or medicine.

Selected publications

Krajčová A, Urban T, Megvinn D, Waldauf P, Balík M, Hlavička J, Budera P, Janoušek L, Pokorná E, Duška F. PLoS One. 2020 Jan 15;15(1):e0226142.

Krajčová A, Lvsletten NG, Waldauf P, Frič V, Elkalaf M, Urban T, Anděl M, Trnka J, Thoresen GH, Duška F. Effects of Propofol on Cellular Bioenergetics in Human Skeletal Muscle Cells. Crit Care Med. 2018 Mar;46(3):e206-e212.

Krajčová A, Waldauf P, Anděl M, Duška F. Propofol infusion syndrome: a structured review of experimental studies and 153 published case reports. Critical Care. 2015 Nov 12;19:398.

Selected or ongoing grants/clinical studies

AZV NU21J-06-00078 Skeletal muscle regeneration in survivors of critical illness: How to prevent satellite cell failure?