The progress on OTKA grant K 100918 for the time interval 2015-2016 is as follows:

1) ANT1 has been identified as the voltage-sensor of the permeability transition pore. This has been published in http://www.nature.com/articles/srep26700. In this work we showed that in human fibroblasts lacking completely or partially the isoform 1 of the adenine nucleotide translocase (ANT1), the mitochondrial permeability transition pore is not responsive to changes in the electrochemical gradient. We have further verified this in C2C12 cells engineered to exhibit a diminished expression of ANT1. In those cells we also recorded altered responses to mPT opening protocols by following cytochrome c release in situ.

2) The work regarding the identification of the total, mitochondrial and mitoplastic Artemia lipidome has been published in Biochim Biophys Acta. 2016 Nov;1861(11):1727-1735.

3) We collected fractions of yeasts as well as mitochondria and mitoplasts from these yeasts that will serve as controls for those yeast strains that express the Artemia ANT isoform. These fractions are currently being evaluated for their lipidomes. The plan is to investigate the effect of allogenic expression of the Artemia ANT isoform on the mitochondrial lipidome of yeasts.

4) Unrelated to the OTKA project, we published that itaconic acid abolishes substrate-level phosphorylation prooduced by LPS-induced Irg1 expression in cells of murine macrophage lineage (FASEB J. 2016 Jan;30(1):286-300).

5) Unrelated to the OTKA project, we published that divalent cation chelators citrate and EDTA unmask an intrinsic uncoupling pathway in isolated mitochondria (J Bioenerg Biomembr. 2016 Mar 14).

6) Unrelated to the OTKA project we published our work on two transgenic mouse models for β-subunit components of succinate-CoA ligase yielding pleiotropic metabolic alterations (Biochem J. 2016 Oct 15;473(20):3463-3485).

7) We have a paper under review regarding the effect of the mPT modulator, cyclophilin D, on regulating the lifespan and protein expression of aging markers in the brain of mice.

8) Unrelated to the OTKA project, we published our work on simultaneous measurement of mitochondrial respiration and ATP production in tissue homogenates and calculation of effective P/O ratios (http://onlinelibrary.wiley.com/doi/10.14814/phy2.13007/full).

9) Furthermore, on the basis of preliminary experiments, we have reasons to believe that the mitochondrial NAD/NADH ratio plays an important role in modulation of the PTP, through the ATP synthasome, in which the ANT participates. This is also the reason why we have purchased the NQO1 -/- mouse colony, as NQO1 has been suggested to modulate the matrix NAD+/NADH ratio (Biochem Biophys Res Commun. 2013 Jun 14;435(4):727-32).

Overall, we have published 6 papers in this time interval, totalling a cumulative impact factor of 21.7.