

**Supplementary File1a. MICU1 effect on MCU<sub>cx</sub> as determined by previous electrophysiological experiments.**

Citation	MCU current	
	Low [Ca <sup>2+</sup> ] <sub>cyto</sub>	High [Ca <sup>2+</sup> ] <sub>cyto</sub>
(Hoffman et al., 2013)		Inhibition
(Patron et al., 2014) Lipid bilayer experiments; EMRE subunit, essential for MCU activity and MICU1 interaction, was absent	No effect	Activation
(Vais et al., 2016)		No change
(Kamer et al., 2018)		No change

**Supplementary File1b. MICU1 effect on MCU<sub>cx</sub> as determined by previous Ca<sup>2+</sup> imaging experiments.**

Reference	Effect of MICU1 on mitochondrial Ca <sup>2+</sup> uptake	
	Low [Ca <sup>2+</sup> ] <sub>cyto</sub>	High [Ca <sup>2+</sup> ] <sub>cyto</sub>
(Mallilankaraman et al., 2012)	Inhibition	No effect
(Hoffman et al., 2013)	Inhibition	Inhibition
(Plovanich et al., 2013)		Activation
(Csordas et al., 2013)	Inhibition	Activation
(de la Fuente et al., 2014)	Inhibition	Activation
(Kamer and Mootha, 2014)	Inhibition	
(Logan et al., 2014)	Inhibition	No effect
(Patron et al., 2014)	Inhibition	Inhibition
(Hall et al., 2014)		Inhibition
(Antony et al., 2016)	Inhibition	Activation
(Liu et al., 2016)	Inhibition	Activation
(Bhosale et al., 2017)	Inhibition	
(Kamer et al., 2017)	Inhibition	
(Paillard et al., 2018)	Inhibition	Activation
(Phillips et al., 2019)	Inhibition	

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