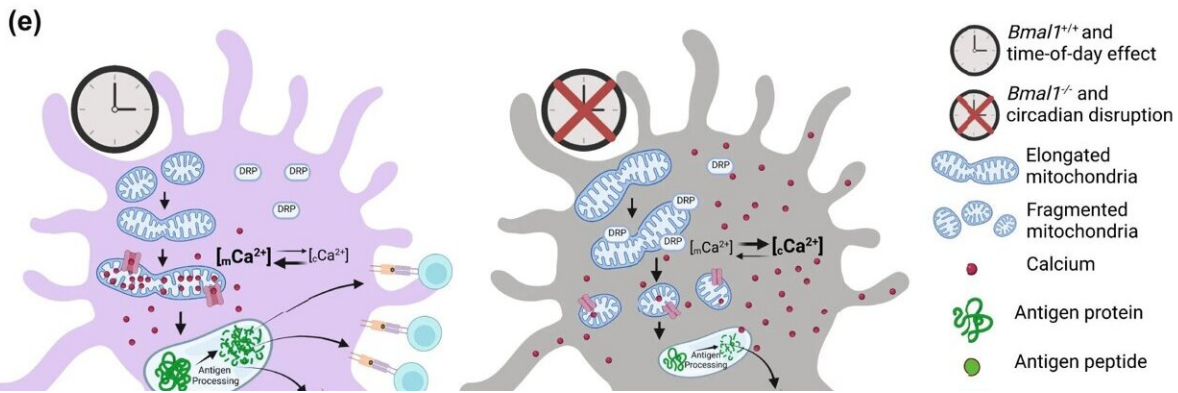
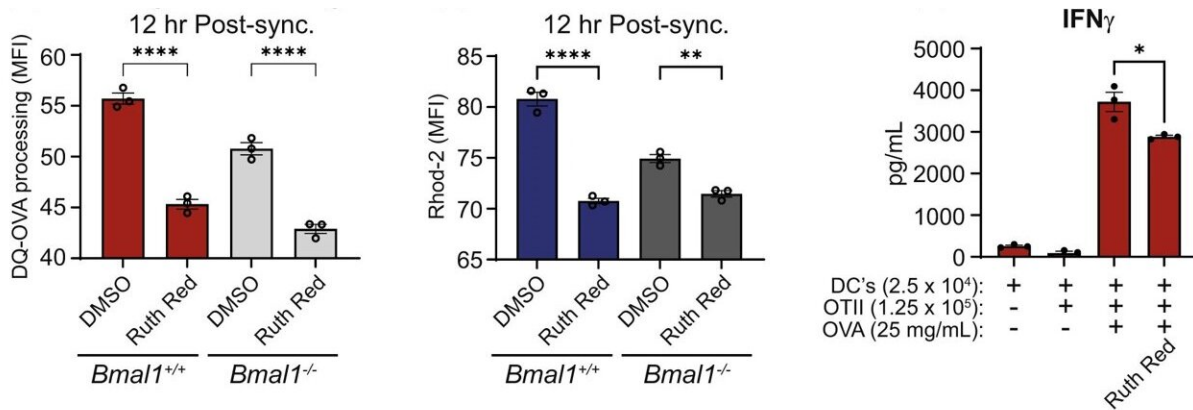


# Research explains how our body clock influences vaccine responses

December 5 2022



Circadian variation in mitochondrial calcium and antigen processing is directed via control of the mitochondrial calcium uniporter. **a** Spleens were isolated from WT mice at ZT 1, 7, 13 and 19. CD11c<sup>+</sup> cells were isolated and mRNA analyzed by qPCR. Circadian analysis was performed using Metacycle and cycMethod set to “JTK”. *P* value for each gene is specified on the graph. (*n* = 3 mice) **(b, c)** *Bmal1*<sup>+/+</sup> and *Bmal1*<sup>-/-</sup> BMDCs were synchronized by serum shock. DQ-OVA and mitochondrial calcium uptake was quantified at 12 h post synchronization in the presence and absence of ruthenium red (5  $\mu$ M) (*n* = 3 biologically

independent samples). **d** CD11c<sup>+</sup> cells were isolated from WT spleen at ZT4 and treated with ruthenium red (10  $\mu$ M) for 3 h. OVA protein (25  $\mu$ g/mL) was then added for 2 h. Supernatants were removed and indicated number of OTII CD4<sup>+</sup> T-cells were added to CD11c<sup>+</sup> cells. Cells were incubated for 3 days before IFN $\gamma$  were analyzed by ELISA (n = 3 biologically independent samples)  $p = 0.02$ . **e** Schematic showing proposed mechanisms by which the circadian clock in DCs controls antigen processing as inferred from the present study. Data shown are means with error bars representing  $\pm$  SEM. Data were analyzed by Ordinary one-way ANOVA with Tukey's post-hoc test for multiple comparisons (**b**, **c**) or by a two-tailed  $t$ -test (**d**). \*\* $p$

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