



**ESM Fig. 6. Phenotypic analysis of aged (52-week old) *Aldh1b1*<sup>tm1lacZ</sup> null mice**

(A) IPGTT on WK 52 *Aldh1b1*<sup>tm1lacZ</sup> null and control mice show a significant delay in blood glucose clearance in the null (n=3, 4).

(B) Acute insulin secretion during IPGTT is impaired in WK 52 *Aldh1b1*<sup>tm1lacZ</sup> null mice (n=3, 4).

(C, D) TUNEL staining indicates increased levels of apoptosis in WK 52 *Aldh1b1*<sup>tm1lacZ</sup> null islets (n=3).

(E, H) Immunofluorescence for P-AMPKA (E, F) and 4-HNE (G, H) revealed that 52 WK *Aldh1b1*<sup>tm1lacZ</sup> null islets are energy depleted and show signs of oxidative stress.

Values are mean  $\pm$ SEM. \*p<0.05. Scale bars, 25 $\mu$ m.