1. The comparisons with WT and SIRT3 KO mice within the ad libitum diets all show WT and KO mice to be very similar. Is this what you would expect, or would you expect WT mice to show more of a difference for liver lysates (figure 1) or SOD2 activity (figure 4) relative to SIRT3 KO mice?

2. In the Qiu *et. al.* paper, the investigators look at specific lysine residues on SOD2 to examine SOD2's ability to reduce cellular ROS levels. Would it have been beneficial for the investigator s to somehow block those lysine residues (K53/89R) from being deacetylated? Do you think it would have added to and/or changed the results of this paper?

3. Both papers seem to support preserved mitochondrial function by reducing ROS. Do you think:

    a. SIRT3-mediated SOD2 activation can be used to prevent age-associated whole-body energy imbalance and muscle insulin resistance?

    b. Targeted expression of catalase to mitochondria also gives evidence of mitochondrial hormesis*?

*Hormesis is a term for a favorable biological response that results from low exposure to stressors. It is thought that ROS produced during oxidative phosphorylation in the mitochondria may be adaptive by producing a increased stress resistance (i.e. mitochondrial homesis).