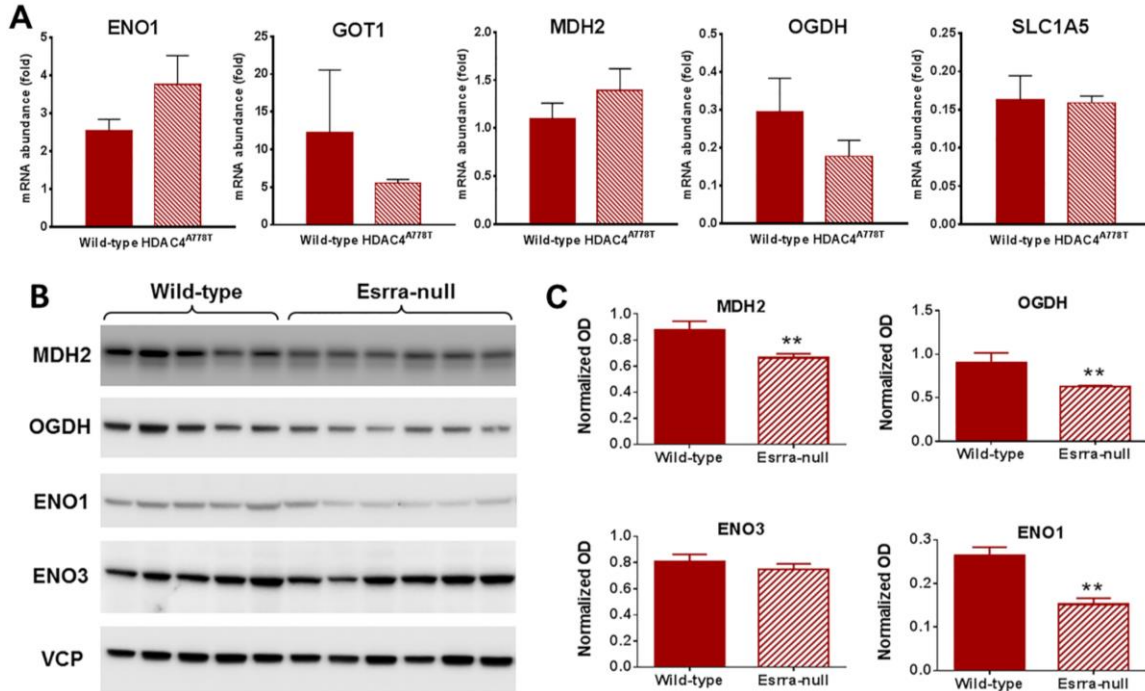
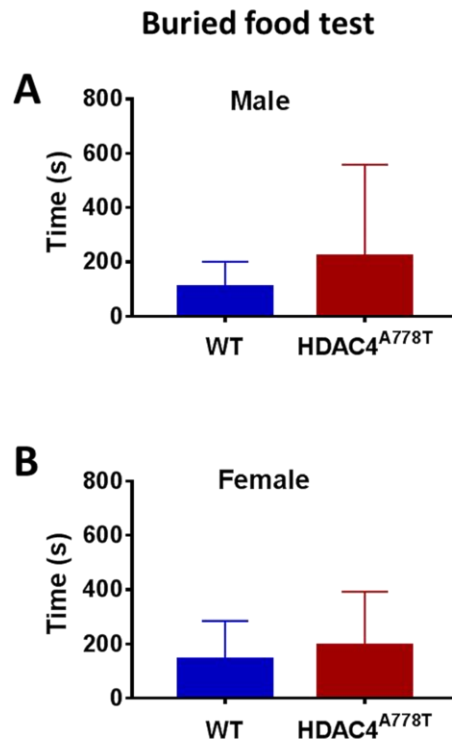


Supplemental information for Figure 1: Twelve-16 week old single- and group-housed female mice (n=10-16/group) were tested in the **(A)** 3 chamber social interaction test and group-housed female were tested in the **(B)** Barnes maze as previously described (1). Data presented as mean \pm S.E.M.



Supplementary information for Figure 2: A. Measure of mRNA abundance by qPCR in cortex of female single-housed HDAC4^{A778T} mice (n=6/group). **B.** Western blot analysis of protein levels in wild-type and ESRRA-null female mice for anti-MDH2, anti-OGDH, anti-ENO1- and anti-ENO3 normalized to anti-VCP (n=6/group). **C.** Data presented as mean \pm S.E.M. **p < 0.01 indicates significant differences between the groups by t-test.



Supplemental information for Figure 3: Eight-15 week old, group-housed male **(A)** and female **(B)** mice (n=7-10/group) were tested for buried food test as previously described (2)

References:

1. Cui H, Lu Y, Khan MZ, Anderson RM, McDaniel L, Wilson HE, et al. (2015): Behavioral Disturbances in Estrogen-Related Receptor alpha-Null Mice. *Cell Rep.* 11:344-350.
2. Yang M, Crawley JN (2009): Simple behavioral assessment of mouse olfaction. *Curr Protoc Neurosci.* Chapter 8:Unit 8 24.