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Title: The role of sex steroids in Irisin's neuroprotective effect

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Alzheimer's is a devastating neurodegenerative disease caused by amyloid plaques and neurofibrillary tangles. It is estimated that 5.4 million Americans have the disease. [1]

The polypeptide Irisin may yield sex differences in tauopathy model mice. This model creates widespread neurofibrillary tangles, mimicking the pathology of Alzheimer's. A recent study conducted in our lab by graduate student Katie Bretland revealed neuroprotective effects especially on female htau mice.[2] Currently, we are attempting to explain the results of the preliminary study showing Irisin's neuroprotective effects on particularly female mice. The method of distinguishing the gender differences must begin with removing the physiological discrepancy between male and female mice. We did this by performing bilateral ovariectomies two mice types, htau and C57 female mice. By removing the ovaries, the site of female gamete development, we eliminate a factor that may contribute to the difference in effects of Irisin on males and females. The mice will be carefully monitored during the next weeks to evaluate changes attributed to Irisin treatment. After 10 days recovery, the models were treated with either Irisin or Saline for 4 weeks. The hippocampus of each specimen was removed, and a Western Blot will be conducted to reveal the ptau protein expression. While this study is not finished, we predict that females ovariectomized female mice may not show the same neuroprotective effects when treated with Irisin.