Alzheimer's disease is a neurodegenerative disorder characterized by progressive decline in memory and other functions. The prevalence of Alzheimer's is almost twice as high in women than it is in men, which suggests that there is a female vulnerability to the disease. Alzheimer's is a growing concern as there are no known cures to treat the disease.

To date, animal models of the disease have been used to study the underlying physiological processes associated with memory decline; however, no current model is able to accurately capture the full spectrum of Alzheimer disease symptoms. The necessity to develop better models for the disease is further substantiated by the failure of most therapeutic treatments for Alzheimer's in human clinical trials.

This research addresses the development of two new rat models for Alzheimer's disease. To evaluate how well these new models mimicked human symptoms of Alzheimer's disease, several tests were used to assess behavioral performance. Once it was demonstrated that these models do in fact reflect disease impairments accurately, an additional experiment was conducted to examine the relationship between Alzheimer's and gender more directly; more specifically, the effect of estrogen deficiency via ovariectomy on female behavior was examined.

It was found that surgical removal of the ovaries exacerbated the behavioral deficits associated with Alzheimer's disease, consistent with previous human observation research. Overall, the findings suggest that the present rat models may have distinct advantages over models currently used in the field and thus, could provide new insights into the underlying causes and progression of the disease.