alzheimer's association®

Celebrating Women in Research

Lisa Taxier, M.S./Ph.D. Candidate, University of Wisconsin-Milwaukee

Lisa has always been interested in learning new things, and science gave her a platform to explore. She graduated from Carleton College with a B.A. in Psychology, then came to UW-Milwaukee where she earned her M.S. in Psychology and is currently working on her Ph.D. with Dr. Karyn Frick. "I'm very interested in memory in general," Lisa shared. "Memory is what makes us human, so understanding how memories are formed is a crucial field. Memory is destroyed in dementia and in a way takes humanity away."

A Focus on Sex in Alzheimer's Research

Women are disproportionally affected by Alzheimer's disease, with almost two-thirds of Americans with Alzheimer's being women. "It's crucial for us to be looking at sex as a variable in Alzheimer's prevalence," Lisa shared. "A lot of people assume the larger number of women being impacted is due to them living longer, but there is quite a bit more going on. There are genetic factors and also research has historically been biased to include males, which biases health outcomes." Lisa lost her Great Aunt to dementia and shared that, "It's unique to find someone who isn't impacted by this disease, so research is even more critical."

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Research Focus

At a high level, the research Lisa works on focuses on how hormones facilitate memory consolidation in women. The research is particularly focused on how hormones affect memory in older women, because the decline of estrogens and progestins at menopause dramatically increases a woman's risk of memory loss and Alzheimer's disease. The research seeks to pinpoint the molecules and cellular processes through which estrogens and progestins enhance memory consolidation throughout the female lifespan.

Women carriers of the ApoE4 genotype, which is the leading genetic risk factor for late-onset Alzheimer's, are more likely than women carriers of other ApoE genotypes and men of any ApoE genotype to develop Alzheimer's. However, factors underlying the interaction between ApoE genotype and sex are not well characterized. The goal of Lisa's studies is to examine the effects of sex, ApoE genotype, and estrogen treatment on memory function.

The Alzheimer's Association has funded several of the research projects for the UW-Milwaukee Lab.

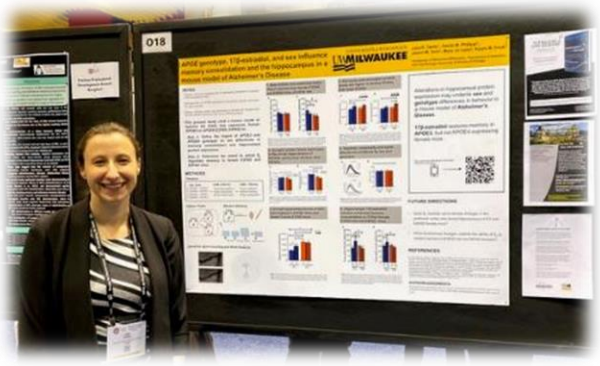
Animal Models Allow a Different Look at the Brain

The research conducted at the UW-Milwaukee lab uses animal models – specifically mice that carry numerous human genes associated with Alzheimer's disease. The use of mice allows researchers examine the brain in a way they couldn't do in humans. Lisa's research includes testing the memories of the mice and then looking at the structure and function of brain cells affected by Alzheimer's disease. To measure memory in a mouse, Lisa allows mice to explore objects and then introduces new objects or moves old objects to see if mice can remember the identity and location of the old objects. Once she has behavior results, she looks in their brains to measure how brain cell structure and function are influenced by sex, estrogen, or ApoE genotype.

The ultimate goal of the Frick lab research is to develop targeted treatment strategies on an individual level. They do this through publishing their results, so clinicians and other researchers can better understand the relationship between ApoE, sex and memory loss.

Next Generation of Women Researchers

"Women are disproportionally affected by Alzheimer's," Lisa said. "We know women have greater risk of developing Alzheimer's, so if we can better understand it in the lab, then we can better understand how to make impact. As a woman researcher, it's even more important to me to better understand sex as a variable in Alzheimer's disease."



Ultimately, Lisa would like to run her own lab. "I would like to study memory dysfunction and also cognitive resilience," Lisa said. "We don't have a great understanding of memory in the un-diseased brain. I'd like to further study what makes certain individuals age optimally and what makes certain individuals be able to maintain memory function."

Lisa and her fellow researchers also annually participate in the Walk to End Alzheimer's® Milwaukee County under the team name, Frick Lab Alzheimer's Army.

The Alzheimer's Association salutes Lisa for her dedication to dementia and Alzheimer's research.