

GEOFFREY BEENE

2013 Global NeuroDiscovery Challenge

MIND THE DATA

Search for Gender Based Differences In Alzheimer's Disease

Round II: 21CBT INNOVATION AWARD FINALIST

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SEX-SPECIFIC DIFFERENCES IN ALZHEIMER'S DISEASE ARE CHARACTERIZED BY UNIQUE ALTERATIONS IN CELLULAR NETWORK STRUCTURE

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Alzheimer's Disease (AD) affects nearly five million people annually in the US, nearly two-thirds of whom are women. While numerous studies have attempted to identify genetic and environmental causes for the disease, little progress has been made in understanding the mechanisms that drive its development and progression. Gene expression profiling data captures a snapshot of the molecular state of the cell and can provide a window on the processes that are active in normal and disease states. Here we are proposing to use a systems-biology approach to investigate sexual dimorphism in AD by modeling the transcriptional networks that are activated in normal and disease tissue in both males and females. Our preliminary findings suggest that there are sex-specific differences in brain tissue transcriptional networks that converge as AD develops and progresses. We are proposing to further validate our preliminary findings in additional data sets in order to identify sex-specific biomarkers, and to inform potential sex-specific therapeutic interventions that will address the unique aspects of AD in females and males.



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