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DOES TAU PATHOLOGY IN THE SUBLATERODORSAL REGION AFFECT SLEEP PATTERNS IN MICE?

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Tauopathies are a class of neurodegenerative diseases associated with the aggregation of tau protein including, but not limited to, Alzheimer's disease (AD), frontotemporal dementia, and progressive supranuclear palsy. In addition to neurodegeneration, Tauopathy patients are predisposed to sleep disturbances such as insomnia, excessive daytime sleepiness, and rapid eye movement (REM) sleep disorder. The neurological basis of this observation is largely unknown. In recent studies, it was determined that an injection carrying a cholinergic agonist to the dorsomedial pons induces REM sleep muscle atonia. Within this region, is the area of the brain known as the sublaterodorsal nucleus (SLD). The SLD is a structure thought to be both necessary and sufficient for generating REM sleep muscle atonia. The Holtzman Lab has identified REM sleep disturbances at a point in the lifecycle of P301S mice that coincides with a significantly increased amount of tau pathology in this region. It is unclear if tau pathology in the SLD region has a significant effect on REM sleep patterns. The purpose of this experiment was to better understand the relationship between tau pathology in the SLD region and the sleep patterns in mice (specifically REM sleep). The SLD regions of the P301S htau transgenic mice were directly injected with wild-type or P301S brain lysate. We studied the REM, non-REM, and wake cycles of the mice. The preliminary results indicate that there is little to no significant relationship between tau pathology in the SLD and the sleep patterns of P301S mice.