

Abstract Submitted  
for the MAR14 Meeting of  
The American Physical Society

**Determining the Effect of Aluminum Oxide Nanoparticles on the Aggregation of Amyloid-Beta in Transgenic *Caenorhabditis elegans*<sup>1</sup>**  
SUHAG PATEL, JOHN MATTICKS, CARINA HOWELL, Lock Haven University — The cause of Alzheimer's disease has been linked partially to genetic factors but the predicted environmental components have yet to be determined. In Alzheimer's, accumulation of amyloid-beta protein in the brain forms plaques resulting in neurodegeneration and loss of mental functions. It has been postulated that aluminum influences the aggregation of amyloid-beta. To test this hypothesis, transgenic *Caenorhabditis elegans*, CL2120, was used as a model organism to observe neurodegeneration in nematodes exposed to aluminum oxide nanoparticles. Behavioral testing, fluorescent staining, and fluorescence microscopy were used to test the effects of aggregation of amyloid-beta in the nervous systems of effected nematodes exposed to aluminum oxide nanoparticles. Energy-dispersive x-ray spectroscopy was used to quantify the total concentration of aluminum oxide that the worms were exposed to during the experiment. Exposure of transgenic and wild type worms to a concentration of 4 mg mL<sup>-1</sup> aluminum oxide showed a decrease in the sinusoidal motion, as well as an infirmity of transgenic worms when compared to control worms. These results support the hypothesis that aluminum may play a role in neurodegeneration in *C. elegans*, and may influence and increase the progression of Alzheimer's disease.

<sup>1</sup>This work was supported by National Science Foundation grants DUE-1058829, DMR-0923047 DUE-0806660 and Lock Haven FPDC grants.

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Date submitted: 14 Nov 2013

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