

Mutant gum disease bacteria provide clue to treatment for Alzheimer's

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A defective, mutant strain of the bacterium that causes gum disease could provide a clue to potential treatments for Alzheimer's, Parkinson's and a number of other diseases. Researchers from the University of Florida College of Dentistry report their findings today at the 110th General Meeting of the American Society for Microbiology in San Diego.

Autophagy, or "self-eating," is an essential component of cellular survival and defense against invading organisms. It is how the cell degrades and recycles material into [amino acids](#) that can be reused. Several neurological disorders, including Parkinson's and Alzheimer's disease, are associated with the build up of polypeptides within neurons. Current evidence suggests that if the affected cells could break down these [plaque](#) build-ups it would greatly increase the chances of recovery. The ability to activate autophagy within these cells could prove invaluable in the treatment of neurodegenerative disorders.

"Although we do not yet completely understand how these diseases develop, we do know that the proteins clump together and form a plaque buildup in affected patients' neurons. If we can direct the cell's own ability to break down waste products against the plaques, we could keep them from forming and potentially intercept the development of these and other diseases," says Ann Progulsk-Fox, a researcher on the study.

In previous studies Progulsk-Fox and her colleagues demonstrated that the [bacterium](#) *Porphyromonas gingivalis* had the ability to activate

autophagy when exposed to a human cell line, suggesting the bacterium secreted some unknown substance that initiated the process.

In the current study, they report on a mutant strain of *P. gingivalis* (PG0717) that does not induce autophagy.

"Understanding how *P. gingivalis* turns on autophagy in host cells could lead to novel therapeutics for the treatment of neurodegenerative disorders as well as advancements in the general understanding of the autophagic pathway. Study of the mutant will facilitate this understanding and the development of new potential strategies for the treatment of multiple diseases," says Progulske-Fox.

Provided by American Society for Microbiology

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