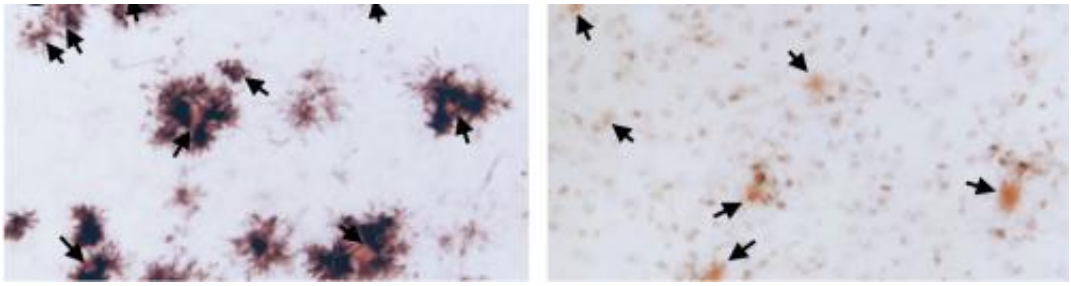
One step closer to defeating Alzheimer's disease

March 2 2015



In mice with Alzheimer's-like disease, removal of TREM2 (right) decreased the formation of toxic plaques (arrows) that characterize the disease. Credit: Jay et al., 2015

Tackling brain inflammation ameliorates Alzheimer's disease (AD), according to a study published in *The Journal of Experimental Medicine*.

AD is characterized by the toxic build-up of a brain protein called beta-amyloid, and clearance of these protein "plaques" reduces disease. Immune cells called macrophages infiltrate the brain during AD and are thought to help clear away these toxic proteins, with the help of resident brain cells called microglia. Macrophages and microglia express a surface receptor called TREM2, and although debilitating mutations in TREM2 have been associated with AD, the function of the receptor is uncertain.

To decipher TREM2's role in AD, Bruce Lamb and colleagues from the

Cleveland Clinic's Lerner Research Institute deleted the receptor in mice that develop an AD-like disease. Removal of TREM2 decreased plaque formation, reduced brain inflammation, and improved the survival of neurons. This protection was associated with fewer infiltrating macrophages. Macrophages lacking TREM2 were apparently better at engulfing beta-amyloid aggregates, suggesting that they might assist in the brain clean-up effort.

Although additional studies are needed to clarify the exact mechanism of TREM2's action in AD, these results suggest that toning down the receptor's activity may help put a stop to neurodegeneration in AD patients.

More information: Jay, T.R., et al. 2015. *J. Exp. Med.* DOI: 10.1084/jem.20142322