Signals from muscle protect from dementia

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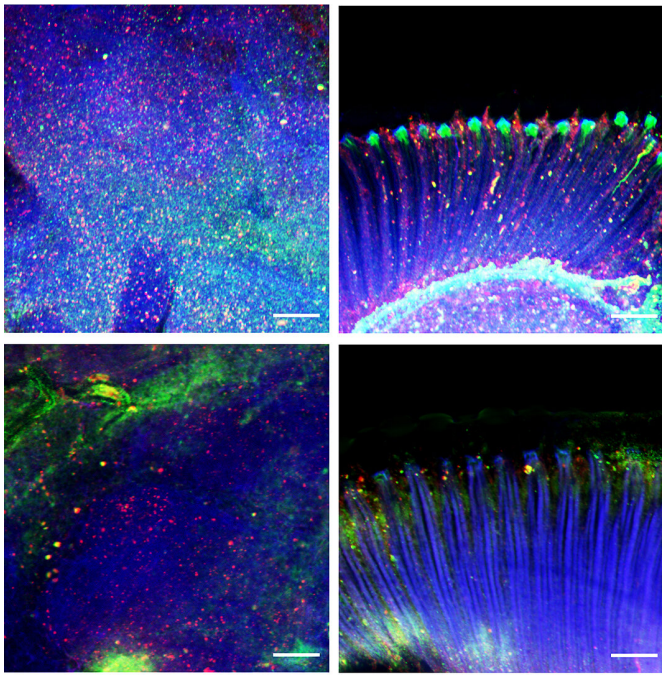

Research in the lab of Fabio Demontis, PhD, of Developmental Neurobiology, used immunostaining and confocal microscopy on fruit fly brain and retina cells to show that Amyrel reduces the accumulation of protein aggregates seen in red and yellow. Credit: St. Jude Children's Research Hospital

How do different parts of the body communicate? Scientists at St. Jude are studying how signals sent from skeletal muscle affect the brain.

The team studied fruit flies and cutting-edge brain cell models called organoids. They focused on the signals muscles send when stressed. The researchers found that stress signals rely on an enzyme called Amyrel amylase and its product, the disaccharide maltose.

The scientists showed that mimicking the stress signals can protect the brain and retina from aging. The signals work by preventing the buildup of misfolded protein aggregates. Findings suggest that tailoring this signaling may potentially help combat neurodegenerative conditions like age-related dementia and Alzheimer's disease.

"We found that a stress response induced in muscle could impact not only the muscle but also promote protein quality control in distant tissues like the brain and retina," said Fabio Demontis, Ph.D., of St. Jude Developmental Neurobiology. "This stress response was actually protecting those tissues during aging."

Cell Metabolism published a report on this work.

More information: Mamta Rai et al, Proteasome stress in skeletal muscle mounts a long-range protective response that delays retinal and brain aging, *Cell Metabolism* (2021). DOI: 10.1016/j.cmet.2021.03.005

Provided by St. Jude Children's Research Hospital

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