New signaling pathway could shed light on damage repair during brain injury
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Why is this important?

By understanding how the damaged microtubules behave, scientists have a valuable opportunity to potentially prevent neuronal death following brain injury, or upon neurodegeneration, such as in Alzheimer's Disease.

The research took place in fruit flies, but the team tested the applicability of their results by making fly neural cells express human Tau, and also examining post mortem human brain samples from AD patients.

Abnormal human Tau destroys microtubules in both flies' and Alzheimer's brains, and interestingly can trigger the same signaling cascade as discovered in fly neural cells after microtubule damage.

The researchers also found that higher levels of Tau accumulation correlated to a greater frequency of neurons attempting to divide and neuronal death, but have not yet established a direct link or cause.

What needs to happen next?

The work took place in the Plymouth Institute of Health and Care Research (PIHR) and was led by Dr. Torsten Bossing.

He said of the current research and future plans: "While other scientists are exploring Tau and how it builds up, we're looking more at what happens to the cell after it has been damaged.

"The fact that the identified two signaling kinases are found alongside a build-up of Tau in post mortem brains of Alzheimer's Disease patients suggests that the mechanism identified using fruit flies may act similarly in humans. So we want to further our studies by using cultured human neurons next. Ultimately we want to prevent this abnormal cell division entry process from happening in the first place. It's an exciting piece of..."
work, which we look forward to progressing."


Provided by University of Plymouth

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