

# Study uncovers unexpected connection between gliomas, neurodegenerative diseases

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A protein typically associated with neurodegenerative diseases like

Alzheimer's might help scientists explore how gliomas, a type of cancerous brain tumor, become so aggressive.

The new study, in mouse models and human brain [tumor](#) tissues, was published in *Science Translational Medicine* and found a significant expression of the protein TAU in glioma cells, especially in those patients with better prognoses.

Patients with glioma are given a better prognosis when their tumor expresses a mutation in a gene called isocitrate dehydrogenase 1 (IDH1). In this international collaborative study led by the Instituto de Salud Carlos III-UFIEC in Madrid, Spain, those IDH1 mutations stimulated the expression of TAU. Then, the presence of TAU acted as a brake for the formation of new blood vessels, which are necessary for the aggressive behavior of the tumors.

"We report that the levels of microtubule-associated protein TAU, which have been associated with [neurodegenerative diseases](#), are epigenetically controlled by the balance between normal and mutant IDH1/2 in mouse and human gliomas," says co-author Maria G. Castro, Ph.D., a professor of neurosurgery and cell and [developmental biology](#) at Michigan Medicine. "In IDH1/2 mutant tumors, we found that expression levels of TAU decreased with tumor progression."

That means levels of TAU could be used as a biomarker for tumor progression in mutant IDH1/2 gliomas, Castro says.

**More information:** Ricardo Gargini et al. The IDH-TAU-EGFR triad defines the neovascular landscape of diffuse gliomas, *Science Translational Medicine* (2020). [DOI: 10.1126/scitranslmed.aax1501](https://doi.org/10.1126/scitranslmed.aax1501)

Provided by University of Michigan

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