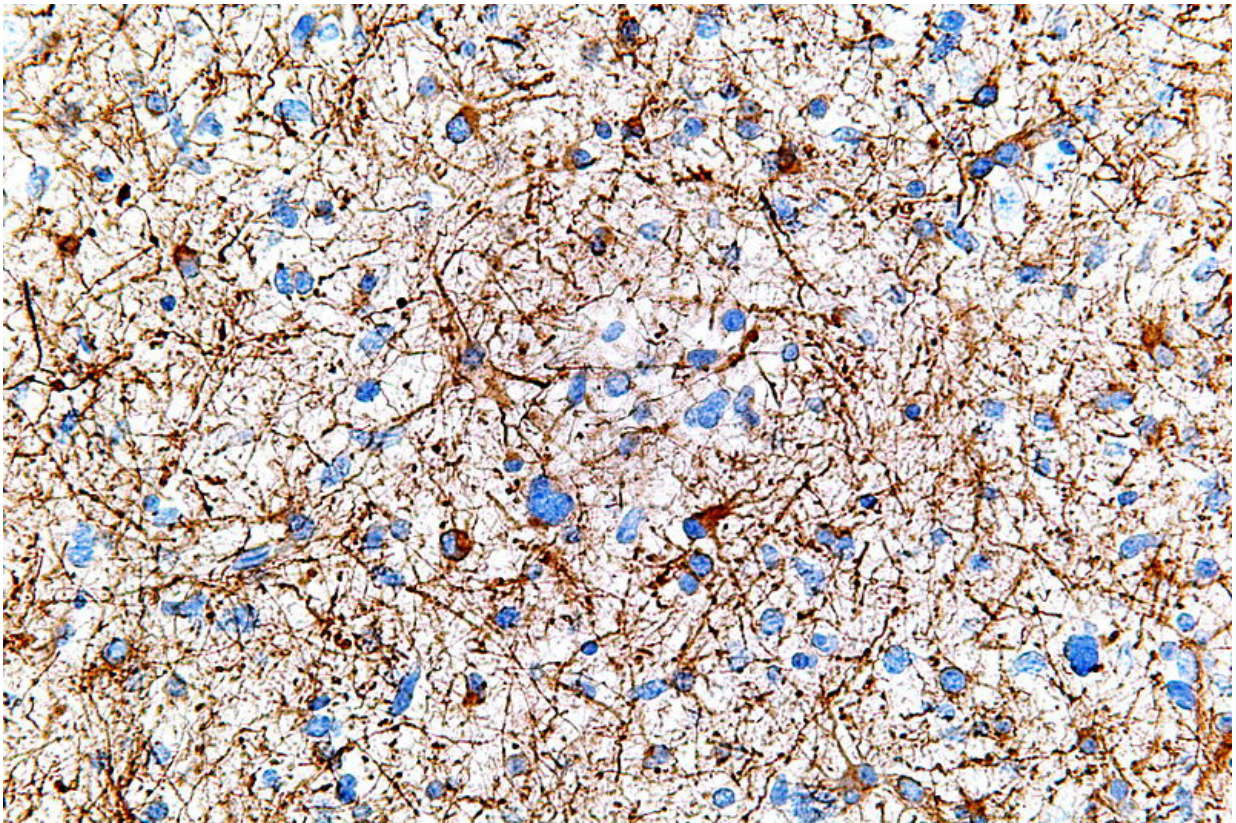


# Neuroscientists pinpoint key gene controlling tumor growth in brain cancers

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A microscope image of brain cancer cells, a glioma tumor type known as anaplastic astrocytoma. Credit: Wikimedia/ CC BY-SA 3.0

Cedars-Sinai investigators have identified a stem cell-regulating gene that affects tumor growth in patients with brain cancer and can strongly

influence survival rates of patients. The findings, published in the online edition of *Scientific Reports*, could move physicians closer to their goal of better predicting the prognosis of patients with brain tumors and developing more personalized treatments for them.

To enhance understanding of how glioma cancer [stem cells](#) (GCSCs) reproduce and how they affect patient survival, investigators spent three years analyzing the genetic makeup of more than 4,000 [brain tumors](#). During their investigation, they identified the gene, called ZEB1, that regulates [tumor growth](#). The investigators' analysis suggests that [brain cancer](#) patients who don't have the gene tend to have lower [survival rates](#).

"Patients without the gene in their tumors have more aggressive cancers that act like stem cells by developing into an uncontrollable number of cell types," said John Yu, MD, vice chair of neurosurgical oncology in the Department of Neurosurgery and senior author of the study. "This new information could help us to measure the mutation in these patients so that we are able to provide a more accurate prognosis and treatment plan."

Brain cancer occurs when cancer cells - also called malignant cells - arise in the brain tissue. This year, more than 23,000 people will develop primary cancerous tumors of the brain. Approximately 16,000 of those patients will die, according to the National Cancer Institute and the American Cancer Society.

Yu and fellow researchers noted that while some brain cancer patients are born without the gene, others have it but over time, the gene has become less powerful - which could have had a role in causing the disease.

"We found an 8 ½-month shorter survival rate in lower grade glioma patients with the ZEB1 gene mutation compared to those individuals

who have the gene," said Yu, who also serves as director of Surgical Neuro-Oncology at Cedars-Sinai. "We are learning that some chemotherapies are not effective in the population of individuals who have the gene deletion so we have to treat them with different medications."

**More information:** Lincoln A. Edwards et al, ZEB1 regulates glioma stemness through LIF repression, *Scientific Reports* (2017). [DOI: 10.1038/s41598-017-00106-x](https://doi.org/10.1038/s41598-017-00106-x)

Provided by Cedars-Sinai Medical Center

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