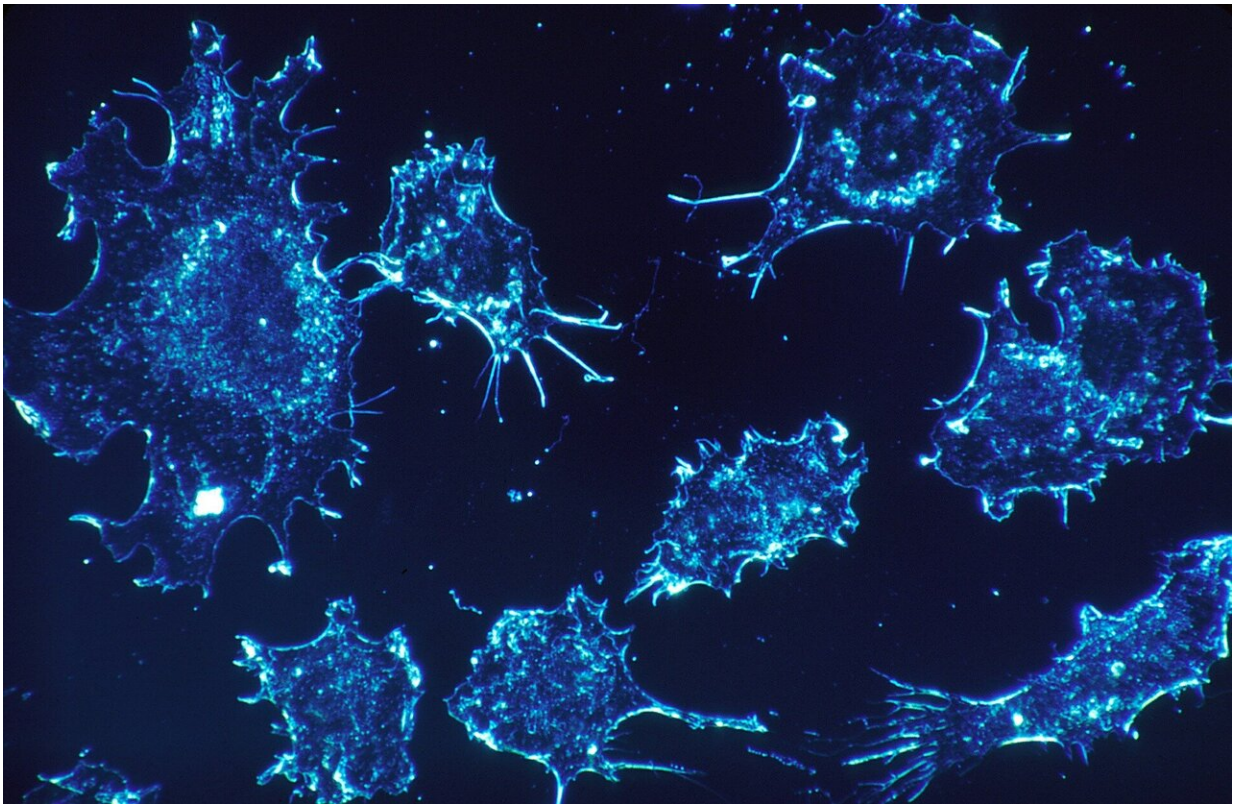
Researchers identify targeted therapy that can help children with deadly nerve cancer

October 17 2019



Credit: CC0 Public Domain

Mount Sinai researchers have identified a targeted therapy for adolescent patients with neuroblastoma, a deadly pediatric nerve cancer, who would otherwise have no treatment options, according to a study published in October in *Cancer Cell*.

Neuroblastoma is one of the most common and aggressive pediatric nervous system tumors and generally has a poor prognosis, particularly when it advances in older children. Treatment success for the disease varies, but is exponentially less in adolescent patients, particularly because the disease lacks effective targeted therapies.

The Mount Sinai researchers found that neuroblastoma in older children and adolescents harboring deletions within a gene called ATRX may be responsive to a targeted therapy called tazemetostat. Tazemetostat disables an enzyme called EZH2 that inhibits genes that promote normal neuron development, in turn killing neuroblastoma cells. Neuroblastoma arises in immature nerve cells of the adrenal glands and portions of the spine during the development of the sympathetic nervous system, which controls the body's "flight or fight" response to stress. EZH2 inhibitors are already being tested in phase I and phase II clinical trials for other cancers, including lymphomas, sarcomas, and other solid tumors, with some favorable results.

"We hypothesized that mutant ATRX proteins contribute to aggressive neuroblastoma," said Emily Bernstein, Ph.D., Professor of Oncological Sciences at The Tisch Cancer Institute at the Icahn School of Medicine at Mount Sinai and senior corresponding author. "In this study, we aimed to decipher the underlying biology of these altered proteins in neuroblastoma, a tumor for which effective therapeutic strategies remain obscure, and to exploit identified dependencies."

Mount Sinai scientists continue to expand this research into the role of the mutant ATRX protein in the laboratory and hope to eventually open a clinical trial with collaborating institutions. Based on this research, they believe that EZH2 inhibitors could also be effective in other ATRX mutant cancers, such as pediatric glioblastoma multiforme and osteosarcoma.

Provided by The Mount Sinai Hospital