

Researchers find key gene in childhood cancer

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(BRONX, NY) - There are no effective treatments for rhabdoid tumors - aggressive childhood cancers that usually strike children under three years old and affect the brain or kidneys. The disease is extremely rare - fewer than 10 cases are diagnosed each year in the U.S. - but is particularly difficult to treat and almost always fatal.

Now scientists at Albert Einstein College of Medicine of Yeshiva University have identified a target for potential therapies for these tumors: a gene called Aurora A that is vital for tumor growth. The research team was led by Ganjam Kalpana, Ph.D., professor of genetics and of microbiology & immunology, the Mark Trauner Faculty Scholar in Neuro-oncology at Einstein. Their findings appear in the April 26 online issue of [Cancer Research](#).

The Aurora A gene is known to be expressed at higher-than-normal levels in many cancers, and its expression is associated with poor prognosis. Scientists have also known that mutations in a tumor suppressor gene called INI1/hSNF5 can lead to rhabdoid tumors. In this study, the Kalpana team found that, in rhabdoid tumors, loss of the tumor suppressor gene INI1/hSNF5 leads to changes in Aurora A's expression that are crucial for tumor growth.

In experiments involving rhabdoid tumors and tumor cell lines, the Einstein scientists showed for the first time that Aurora A is highly expressed in both human and mouse rhabdoid tumors, that the loss of the INI1/hSNF5 tumor suppressor gene from rhabdoid tumor cells leads to

the "de-repression" of Aurora A, and that knocking down Aurora A's expression in rhabdoid tumor cells potently inhibits the growth of those cells.

"Our findings indicate that targeting Aurora A could be an effective strategy for halting rhabdoid tumor growth," said Dr. Kalpana. She notes that many Aurora A inhibitors are now being tested against several types of cancers, including melanoma and non-Hodgkin's lymphoma, and other researchers have now expressed interest in using Aurora A inhibitors in trials for children with rhabdoid brain tumors.

Provided by Albert Einstein College of Medicine

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