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Researchers identify gene that regulates tumors in neuroblastoma

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Virginia Commonwealth University researchers have identified a gene that may play a key role in regulating tumor progression in neuroblastoma, a form of cancer usually found in young children. Scientists hope the finding could lead to an effective therapy to inhibit the expression of this gene.

According to Paul B. Fisher, M.Ph., Ph.D., who is the first incumbent of the Thelma Newmeyer Corman Endowed Chair in Cancer Research with the VCU Massey Cancer Center, and Seok-Geun Lee, Ph.D., assistant professor in the VCU Department of Human and Molecular Genetics, co-lead investigators of the study, the team has shown that astrocyte elevated gene-1, AEG-1, a cancer promoting gene, is frequently activated in neuroblastoma.

In the study published online in the May issue of the journal *Oncogene,* Fisher, Lee and their team found that the elevated expression of AEG-1 makes cancer cells highly aggressive and resistant to factors that may influence cell suicide, and that loss of AEG-1 reduces the tumor-causing properties of highly aggressive neuroblastoma cells. Additionally, the expression of AEG-1 was significantly elevated in six of 10 neuroblastoma patient-derived samples compared to normal peripheral nerve tissues.

Furthermore, they have shown the potential correlation between AEG-1 and MYCN in neuroblastoma. MYCN is a known genetic determinant of neuroblastoma and elevated levels have been observed in one third of

neuroblastoma patients. MYCN is linked to aggressive tumor formation and poor clinical outcome.

"We believe that activation of AEG-1 in addition to MYCN is critical to the development and progression of neuroblastoma. This works shows that AEG-1 plays a crucial role in the development and progression of neuroblastoma through activating important signaling pathway and induction of MYCN," said Fisher, who also is professor and chair of the Department of Human and Molecular Genetics, and director of the VCU Institute of Molecular Medicine in the VCU School of Medicine.

"In addition, we have shown that AEG-1 could be a potential prognostic marker for neuroblastoma and a potential target for novel therapeutic strategies for neuroblastoma patients," he said.

The team has already begun analyzing the expression of AEG-1 and its relationship with MYCN status in neuroblastoma patient samples. Through collaboration with John Maris, M.D., chair of neuroblastoma research at the University of Pennsylvania School of Medicine, the team will acquire data from approximately 2,000 neuroblastoma patient tissues. They will also test if inactivation of AEG-1 using small interfering RNA could be a therapeutic intervention for neuroblastoma through second collaborative effort with Bill Weiss, M.D., associate professor of Neurology at the University of California, San Francisco.

Source: Virginia Commonwealth University (news : web)