Improved screening means new targets for pediatric neuroblastoma therapies

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Neuroblastoma is one of the most common and lethal types of childhood cancers. In a paper published online today in *OncoTarget*, a researcher at the University of Texas Health Science Center at San Antonio unveils the important role of microRNAs in regulating neuroblastoma development, pointing to new therapeutic possibilities.

Neuroblastomas, which account for 15 percent of childhood cancer deaths, happen when some cells do not differentiate and grow as they should. A promising type of therapy called differentiation therapy targets these malignant cells so that they can resume the process of differentiating into mature cells.

Unlike conventional chemotherapies, this new approach to cancer therapy has fewer toxic side effects, and gives hope for a cancer treatment that is gentler on young bodies. But so far only a few differentiation agents have been successfully used to treat neuroblastoma , and more than half of the young patients treated with such agents still see their cancer return.

To find new treatments, researchers needed improved laboratory screening techniques, and now one has been developed by Liqin Du, Ph.D., an assistant professor in the Department of Cellular and Structural Biology, and her team at the Greehey Children's Cancer Research Institute at the UT Health Science Center.

MicroRNAs are small RNA molecules involved in gene expression, and

play an important role in cell development. This screening approach revealed several microRNA molecules that induce the process of cell differentiation, and those are key to developing new drugs.

"Development of new agents for treating neuroblastoma has been greatly hampered by the lack of efficient high-throughput screening approaches," Dr. Du said. "In our study, we applied a novel high-content screening approach that we recently developed to investigate the role of microRNAs in neuroblastoma differentiation.

"We identified a set of novel microRNAs that are potent inducers of neuroblastoma cell differentiation and found that mimics (synthetic fragments of nucleic acid used to raise microRNA levels in cells) of some of the identified microRNAs are much more potent in inducing neuroblastoma cell differentiation than the current differentiation treatments.

"These mimics are promising new drugs for neuroblastoma differentiation therapy," Dr. Du said. "We look forward to investigating this further in the future."

Provided by University of Texas Health Science Center at San Antonio