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Scientists pinpoint gene likely to promote childhood cancers

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Researchers at the Children's Medical Center Research Institute at UT Southwestern (CRI) have identified a gene that contributes to the development of several childhood cancers, in a study conducted with mice designed to model the cancers. If the findings prove to be applicable to humans, the research could lead to new strategies for targeting certain childhood cancers at a molecular level. The study was published today in the journal *Cancer Cell*.

"We and others have found that Lin28b – a gene that is normally turned on in fetal but not adult tissues – is expressed in several childhood cancers, including neuroblastoma, Wilms' tumor and hepatoblastoma, a type of cancer that accounts for nearly 80 percent of all liver tumors in children," said Dr. Hao Zhu, a principal investigator at CRI, and Assistant Professor of Pediatrics and Internal Medicine at UT Southwestern Medical Center. "In our study, we found that overproduction of Lin28b specifically causes hepatoblastoma, while blocking Lin28b impairs the cancer's growth. This opens up the possibility that pediatric liver cancer patients could one day be treated without resorting to chemotherapy."

Lin28b is an attractive therapeutic target in cancer because it is ordinarily only expressed in embryos, so blocking it in children should specifically hinder cancer growth without introducing many side effects.

Each year in the United States, 700 children are newly diagnosed with neuroblastoma, 500 with Wilms' tumor and 100 with hepatoblastoma. At

Children's Medical Center in Dallas, more than 100 children have been treated for those three types of cancers over the last two years.

Previous studies found that Lin28b is a critical factor in stem cell and fetal tissue development, leading Dr. Zhu and his team to hypothesize that the same gene would play a significant role in the development of certain cancers.

"We looked at Lin28b in a multitude of ways in mice to study its effects on cancer, from increasing it significantly to deleting it," said Dr. Zhu, co-senior author of the paper. "From this and earlier studies, it appears that Lin28b activates the metabolic pathways that provide the building blocks of growth for certain cancers."

The next step for the Zhu lab is to establish whether genes related to Lin28b have similar effects on the development of cancer, and to determine if those genes might be more effective targets for potential therapies.

Provided by UT Southwestern Medical Center