Researchers identify new target for treating childhood cancers

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Neuroblastoma is one of the deadliest childhood cancers

(Medical Xpress)—Scientists at the University of Liverpool have uncovered a new target for drugs that could battle a lethal childhood cancer known as neuroblastoma.

Neuroblastoma is one of the deadliest childhood cancers, causing 15% of all paediatric cancer deaths. The majority of sufferers have incurable disease, which has often spread throughout the body when first diagnosed.

Over the past 20 years, long-term survival has improved but children still receive very harsh treatments that not only kill tumour cells but also normal cells. As for many cancers, treatments for neuroblastoma are not specific and patients have limited ability to tolerate such toxic therapies.

Gene signatures

It has been known for some years that certain sub-classes of neuroblastoma cancers express gene 'signatures' associated with very aggressive tumour behaviour such as rapid growth and spread.

Scientists at the University's Institute of Integrative Biology at have now discovered that an enzyme protein called sulfatase 2 (Sulf2) is linked to this high-risk cancer-promoting gene signature.

Significantly they showed that lowering the amounts of Sulf2 in human cancer cells strongly reduced their ability to form tumours. Sulf2 is responsible for modifying sulphated sugars called heparan sulphates, found on the surface of cells. They play crucial roles in controlling cell functions, including promoting cell growth and preventing cell death.

New therapies needed

The research, supported by a Medical Research Council (MRC) PhD Fellowship, shows that it could be possible to inhibit this enzyme, potentially slowing or preventing the growth of some neuroblastomas.

Valeria Solari, who led the research as part of the MRC Fellowship, said: "High-risk neuroblastoma is still very difficult to treat and in order to make improvements, we urgently need new therapies.

"Our findings could be exploited in the development of new drugs for

neuroblastoma to complement existing treatments."

Real potential

Professor Jerry Turnbull, who supervised the Liverpool project, said: "Neuroblastoma is a devastating condition for the affected children and their parents.

"Our research has found that this Sulf enzyme is a key player in making the high-risk forms of neuroblastoma difficult to treat."

Dr Ed Yates, co-supervisor of the project, added: "The exciting thing about this work is that we now have a new drug development target that has real potential since it is found outside the cancer cells and is accessible to chemical inhibitors.

"We hope that further work will open up new opportunities for treatment of this childhood cancer."

The research is published in the journal *Cancer Research*.

Provided by University of Liverpool

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